

Policy and Implication of Price Elasticity of Domestic Commercial Flight Tickets

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Abstract: The purpose of this study is to analyze the effect of macroeconomic variables, the aviation industry environment, airline operating costs, and airport services on the price elasticity of demand (PED) and the implications of PED on airline performance, tourism performance, and airline service rankings. The research approach uses mixed methods. The population calculation is adjusted to the characteristics of each variable in the period year 2013-2019 and the sample, which comes from a diverse population, is calculated with the average value so that the number of samples (n) = 84. The difference in scale in each variable data is converted through the natural logarithm (LN) before the data is processed. Primary data collection techniques are carried out through survey methods and Focus Group Discussion (FGD); while secondary data collection techniques are carried out through library studies, from the Board of Statistics Centre, airlines, and the Directorate General of Civil Aviation of the Ministry of Transportation. The data analysis technique is descriptive statistical analysis and inferential statistical analysis by using Structural Equation Modeling (SEM)-PLS. The qualitative data analysis technique uses analysis based on the results of NVivo data processing. The results concluded that the macro economy had a negative and insignificant effect on PED, however, the aviation industry environment, airline operational costs, and airport services fees have a positive and significant effect on PED. Furthermore, PED has a positive and significant effect on airline performance, a negative and significant effect on tourism performance, and a positive and significant effect on airline service rankings. It is recommended to the government that (i) airfare pricing arrangements are made based on the PED index per route per flight class; (ii) the government tighten supervision of airline unfair business competition (cartel) & airline services; (iii) provide fiscal policy by reducing the cost of avtur VAT; (iv) maintain currency exchange rate stability and revoke the monopoly on aviation fuel supply at Indonesian airports from PT. Pertamina (persero).

Keyword: Price elasticity, commercial flights, economy class tickets

Introduction

An interesting phenomenon in the airline business in Indonesia in 2018-2019 is the high increase in the price of commercial airline tickets, especially commercial airline tickets for economy class domestic routes. The high ticket price increase has a big impact on passengers of low-cost carriers (LCCs). Therefore, the phenomenon of the extraordinary increase in the price of economy class airline tickets has become significant in the aviation business. Data from the Association of Indonesian Express Delivery Service Companies (Asperindo) recapitulates that the extraordinary 2018-2019 ticket price increase started from June 2018 to June 2019, involving airlines with different compositions. In the six-month period, there was an increase in ticket prices for domestic routes, with an average increase of around 50% for each airline (Tamara, 2019).

The Central Statistics Agency (BPS) noted that the number of domestic air transport passengers in February 2019 was 5.6 million people which dropped 18.5% from 6.9 million in February 2018. Actually, the downward trend in passengers was seen from July 2018 and continued until February 2019. The extraordinary increase in airfare prices also had an impact on other sectors. BPS recorded that the star classification hotel room occupancy rate (TPK) in Indonesia in July 2019 decreased by 0.57 points. TPK in July 2019 was recorded at 59.30% (Putra, 2019). Another impact of the extraordinary increase in airline ticket prices is inflation. According to the Head of BPS Suharyanto, in April 2019 flight ticket prices rose 11% compared to the same period in 2018 (year to year) and contributed to April 2019 inflation of 0.03%, or equivalent to an 11% increase in prices.

Economically and politically, the impact of the extraordinary increase in airline tickets was, among others, the emergence of accusations of unfair business competition on airlines. Price fixing that is carried out jointly among business actors (producers or sellers), will eliminate competition in terms of price for the products/services they sell or market, which can then result in a consumer surplus that should be enjoyed by buyers or consumers being forced to switch to producers or consumers. The power to set prices is a manifestation of the power to dominate the market and determine unreasonable prices (see among others Mazzoli et al, 2019 and Laucerano, 2019).

The public reaction was relatively massive regarding the extraordinary increase in air ticket prices. The government's response was relatively fast. This can be seen in changes in government decisions. The Decree of the Minister of Transportation Number 72 of 2019 which was issued on March 29, can be seen as supporting the increase in ticket prices by airlines in June 2018, October 2018, and January 2019. On the other hand, the Decree of the Minister of Transportation Number 106 of 2019 which replaces The Decree of the Minister of Transportation Number 72 of 2019, which was issued on May 15, has impressed the government to absorb the aspirations of the public who objected to the extraordinary increase in air ticket prices, by reducing 12 to 16% of TBA for all domestic flight routes with economy class services. By this second decree, TBA and Lower Limit Tariff (TBB) ticket prices are 14.54% cheaper.

From the empirical phenomenon of the extraordinary increase in ticket prices for domestic routes, this paper is interested in researching the issue of air ticket prices, then examines the causes and implications of the phenomenon of the price increase. Theoretically, ticket prices in this study use a proxy for the price elasticity of demand (PED) variable, which was initiated by Bharucha (2016). The results of Bharuca's research (2016) on PED Air India found that Air India ticket prices tend to be elastic when Air India has a competitor (Kingfisher airline), because when there is a slight price change, consumers will react. That is the condition of the oligopoly market. However, after Kingfisher left the market, Air India ticket prices became inelastic anymore, because Air India became monopolistic (no longer oligopolistic).

Based on the explanation above, this research objectives are: (i) analyze and examine the effect of macroeconomics, aviation industry environment, airline operational costs, and airport service fees on PED; (ii) Analyze and examine the effect of PED on airline performance, tourism performance, and airline service rating; and (iii) analyze and review the policy recommendations to the government and airlines regarding the causes and implications of PED. Furthermore, the novelty of this research is as follows: (i). There has no been found research on the use of PED for a period of 7 years (period 2013 – to 2019), where the condition of the shift in the number of airlines operating in Indonesia is compared between the period 2013-2017 (when the ticket price curve is relatively flat) and the period 2018-2019 (when the ticket price curve arrives soaring upwards); and (ii). There are no studies that have included the causes and impacts/implications of PED. Through this complete construct, it will be known with certainty how far the variables that have been assumed to have an effect on the increase in PED, as well as variables that have been assumed to be the impact of PED, are proven in this study.

Literature Review

There are a number of previous studies that are in line with this research. Research on ticket prices, among others, put forward by Suhite et al., (2015) showed that the increase in commercial airline tickets for domestic economy class services was quite significant in the aviation world because ticket prices were the main determinant of airline choice for economy class passengers. The results of the research by Escobari et al., (2018) show that consumers are more accepting of higher ticket prices if the flight schedule is during office hours because the affairs of these passengers are more on a tight time schedule. The results of Bharuca's research (2016) on PED Air India found that Air India ticket prices tend to be elastic when Air India has competitors.

Research by Abdella et al., (2019) shows that the price prediction model on both sides (consumer side, and airline side) relies on a limited set of features such as historical ticket prices, ticket purchase dates, and departure dates. The research of Bambruo, et al., (2019) found that although the algorithm was different for all airlines and was never disclosed it was possible to predict the variation of PED. Meanwhile, Research by Li, & Li (2018) found a predictive model for PED changes using an application. Research by Escobari et al., (2018) investigates when changes in PED occur. Dutta & Santra (2017) shows that competition and price dispersion increase prices as the departure date get closer. Zou, & Zhou Research. (2019) highlights the pricing strategy of airlines in a multi-oligopoly market structure. The research of Mathisen et al., (2017) found that the nominal amount of the pass-on rate depends on the characteristics of supply and demand, and the market structure. Research by An, Mikhaylov, & Moiseev (2019) shows that the exchange rate is one of the macroeconomic variables that affect PED.

Some research by Kaufman (2017), An et al., (2019), Bambroo et al., (2019), and Chawla & Kaur (2017) prove that the macro economy that affects PED is world oil prices. The research by Istiak & Alam (2019) found asymmetric effects of oil prices and policy uncertainty on inflation expectations for positive and negative shocks and for the pre- and post-financial crisis periods. Research by An et al., 2019 proves that the inflation variable is a variable that affects the PED. On the other hand, changes in the PED ticket price itself can cause inflation. Likewise, interest rate variables also include variables that affect PED (see among others: Lee, 2016; Harswari, 2017; and An et al., 2019).

The airline business industry environment is assumed to influence ticket price determination. As previously explained, since 2000 the commercial aviation business in Indonesia has been characterized by an oligopoly form of industry. No less than 20 airlines brighten up the aviation business competition; both low cost carriers (LCC) and full service airlines (FSA). In its development, one by one the airlines fell or merged with other airlines (Tamara, 2019).

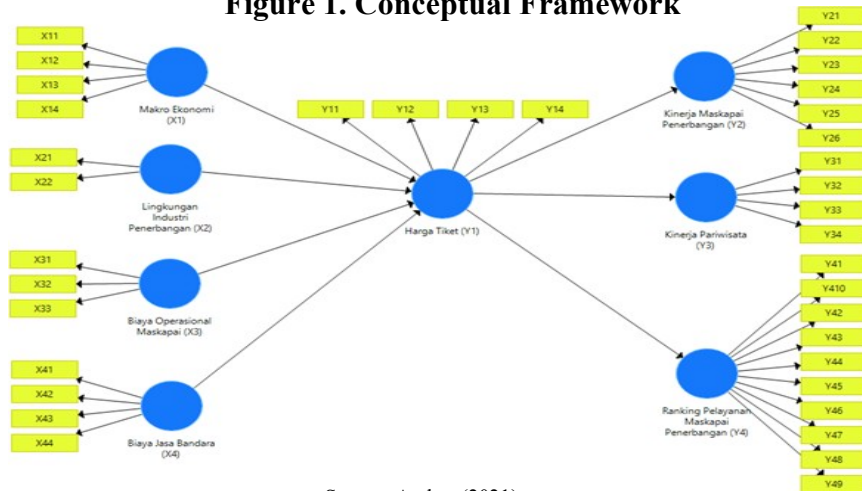
Research Methodology

The research approach is a combination method (mixed methods) between quantitative and qualitative approaches. In quantitative research, the causal type chosen in this study is an asymmetric relationship, which means the type of causal research has only one effect, namely the influence of the independent variable on the dependent variable (Cooper & Schindler, 2014 and Cresswell, 2018). The population of this study consisted of 1,344 flight routes in Indonesia, with a sample of 84 routes from 4 (four) airlines, near and far routes, and from two flight classes (FSA and LCCs).

Data collection techniques are carried out by: (a) Specifically for data on Macroeconomics and the Industrial Environment, data collection techniques are carried out through library research; and (b) Specifically related to route data, flights, and airline data, namely for the variables of Flight Operational Costs, Airport Services, and PED, obtained through each airline (Garuda Indonesia, Citilink, Lion Air, and Batik Air). Other secondary data were also obtained from the Directorate General of Civil Aviation at the Ministry of Transportation, INACA, the Central Statistics Agency (BPS), and Bank Indonesia (BI). Meanwhile, for the qualitative model, the data was collected from a Focus Group Discussion (FGD).

Data analysis techniques include descriptive statistical analysis and inferential statistical analysis. Inferential analysis in this study uses Structural Equation Modeling (SEM)-PLS with the tools of the Smart-PLS 3 device. Finally, based on the description above, the conceptual framework and hypotheses of this research are as follows in Figure 1:

Figure 1. Conceptual Framework



Source: Author (2021)

Based on the quantitative research objectives, theory, and previous research, the following hypotheses are formulated: (a). H1: Macroeconomics has a positive effect on PED; (b). H2: Industrial environment has a positive effect on PED; (c). H3: Airline operating costs have a positive effect on PED; (d). H4: Airport Service Fee has a

positive effect on PED; (e). H5: PED has a positive effect on Airline Performance; (f). H6: PED has a negative effect on Tourism Performance; and (g). H7: PED has a positive effect on Airline Service Rating.

Research Results and Discussion

In this section, can be seen the research results as recapitulated in the following table 1:

Table 1. Research Result

Hypothesis	Path Coefficient	T Statistics	P Value	Conclusions
H ₁ : Macroeconomics (X ₁) → PED (Y ₁)	-0.019	0.193	0.847	Negative and insignificant
H ₂ : Aviation Industry Environment (X ₂) → PED (Y ₁)	0.028	0.223	0.823	Positive but insignificant
H ₃ : Airline Operation Cost (X ₃) → PED (Y ₁)	0.300	2.897	0.004	Positive and significant
H ₄ : Airport Service Cost (X ₄) → PED (Y ₁)	0.465	4.323	0.000	Positive and significant
H ₅ : PED (Y ₁) → Airline Performance (Y ₂)	0.775	17.070	0.000	Positive and significant
H ₆ : PED (Y ₁) → Tourism Performance (Y ₃)	-0.327	5.420	0.000	Positive and significant
H ₇ : PED (Y ₁) → Airline Service rank (Y ₄)	0.115	0.522	0.602	Positive but insignificant

Source: Data processed

The results of the study prove that macroeconomics has a negative and insignificant effect on the increase in ticket prices with the PED proxy. Macroeconomic variables use indicators of world oil prices, the exchange rate of the rupiah (IDR) against the US dollar (USD), inflation, and interest rates. The research data show that the PED for all airlines varies between elastic demand ($PED > 1$) in elastic demand ($PED < 1$). However, there is neither perfectly inelastic ($PED=0$) nor perfectly elastic (infinite PED). An interesting finding of this research is that the elasticity of the PED actually varies, not only between airlines but between flight routes. The same airline on different routes may have different elasticities with respect to PED. The flight route has become a factor in the market equilibrium, between the quantity demanded (Qd) and the quantity supplied, or $Q_d = Q_s$. The equilibrium price is at the point of intersection of S and D, namely at point E (equilibrium). If then the ticket price is below the equilibrium price, then there is excess demand. This is because the quantity demanded increases, while the quantity supplied decreases. Conversely, if the price exceeds the equilibrium price, then there is an excess supply, where the quantity supplied increases, the quantity demanded decreases (Mazzoli et al, 2019). The results of this study do not support the results of previous studies that macroeconomic factors affect the increase in ticket prices. The exchange rate, for example, is one of the macroeconomic variables that affects the price of airplane tickets, as evidenced in the research of An, Mikhaylov, & Moiseev (2019). However, the results of this study support a number of previous studies which found that world oil prices have a negative effect on economic activity, such as the results of research by Hamilton (2004).

The results showed that the Aviation Industry Environment has a positive and insignificant effect on PED. The industrial environment uses two indicators, namely the shift in the number of scheduled airlines, from an oligopoly to a duopoly; and recent market demand (Abdella et al, 2019). The results show that there is an effect of shifting the number of scheduled airlines, from oligopoly to strict oligopoly (KPPU, 2020) or cartel oligopoly (Pindyck & Rubinfeld, 2018: 465), on ticket price increases. The results of this study support the results of Bharuca's (2016) research regarding ticket price elasticity.

The results showed that Airlines Operational Cost has a positive and significant effect on PED. Operational Costs uses three indicators, namely the price of aircraft fuel, aircraft rental costs, and aircraft maintenance costs. The results of this study are in line with the results of previous studies. The results of Chawla, and Kaur (2017) research prove that there is an effect of fuel prices on ticket prices. Avtur is a vital aviation component and accounts for 45% of airline costs (Daud-1, 2019). Based on the price in accordance with PM 14/2016 the percentage effect of avtur

price is 24 percent. However, it was 2016 assuming the price (avtur) in late 2015 to early 2016, and assuming a load factor of 65 percent (Desfika, 2019).

The results showed that the Airport Service Fee (Airport Service Fee) has a positive and significant effect on PED. Airport services use four indicators, namely landing fees, parking fees, garbarata fees, and counter check-in fees. The results of this study support the results of previous studies. Research by Burghouwt, Boonekamp, Sanchez, Volta, Pagliari, and Mason. (2017) found that air fares at congested airports will be higher when airport capacity is insufficient/accommodates the demand for the number of passengers.

The results showed that the Effect of PED on Airline Performance has a positive and significant effect on Airline Performance. It means that hypothesis 5 is proven. Airline performance variables use six indicators, namely Available seat kilometers (ASK) or available seat miles (ASM), Revenue passenger kilometers or passenger kilometers (RPK), Load factor (percent) or Passenger load factor, Number of Passengers or Passengers carried (PAX).), Yield, and Cost per ASK (demydyuk, 2011). The interesting thing is from the airline management side. The increase in airline ticket prices is profitable in terms of airline revenue. The airline's revenue increased with the increase in ticket prices. Even though there was a decline in ticket prices, the decline in flight ticket prices did not return to their original prices (prices before the extraordinary price increase. In addition, the increase in flight ticket prices did not seem to have much effect on FSA class airline tickets. Then on Both groups of airlines have available both LCC and FSA classes, so that as a group they have two complementary markets. Garuda Group, for FSA it is played by Garuda Indonesia and for LCC, played by Citilink. Likewise for Lion Group, for FSA is played by Batik, and for LCC is played by Lion, then the market structure has led to a duopoly, so that the increase in ticket prices that they set does not make airplane passengers switch to other airlines.

The results showed that the Effect of PED on Tourism Performance has a negative and significant effect on Tourism Performance. Tourism performance uses four indicators, namely Room Occupancy Rate (TPK), Number of foreign tourists, Number of domestic / domestic tourists, Number of visits to tourist objects. The results of this study support the fact that hotel occupancy rates are decreasing. This means that when ticket prices increase, hotel occupancy actually decreases. BPS recorded that the star classification hotel room occupancy rate (TPK) in Indonesia in July 2019 decreased by 0.57 points. TPK in July 2019 was recorded at 59.30 percent (Putra, 2019). The Central Bureau of Statistics (BPS) noted that the number of domestic air transport passengers in February 2019 was 5.6 million people or a drop of 18.5% from 6.9 million in February 2018. (Tamara, 2019). Why this PED has a negative effect on tourism performance, this is appropriate, because when the PED goes up, it will cause a decrease in demand for the use of aircraft services. The decline in demand for this aircraft service will reduce the number of tourists, especially domestic tourists. The decline in domestic tourists will certainly affect the decline in tourism performance, because those who use tourism indicators such as hotel occupancy are the class of airplane passengers who have relatively purchasing power to travel. Thus there is an inverse trend between the PED trend and tourism performance, which means that when there is an increase in PED, tourism performance will actually decrease.

The results showed that the Effect of PED on Airline Service Ratings has a positive and insignificant, effect on Airlines' Service Ratings. Passengers assume, with tickets rising so high, then as compensation, passengers will get better service from the airline. This study measures the level of airline service to passengers using the "Airlines' Service Rating" measurement from Kenkew (2010). Airline Service Quality includes 10 indicators, namely Receive information by airline's website; Ease of reservation and payment via online (internet); Various sales agencies to contact; Courtesy of airline staff; Effective handling of baggage; Able to check-in from home; Fast check-in process; Departure & arrival flight on schedule; Cleanliness of cabins; Safety. The results of this study indicate that the extraordinary increase in airline ticket prices is not necessarily accompanied by a significant increase in airline services. Therefore, in the respondents' perception, they feel that the quality of airline service has not increased even though ticket prices have increased tremendously. Management may allocate excess revenue from the increase in ticket prices for other items, or to cover losses for their respective airlines. In the author's opinion, there is an anomaly in the airline industry in Indonesia. In terms of economic morals, the increase in PED should be accompanied by an increase in airline services, but in reality the increase in service does not occur even though the PED price increases.

Based on the results and discussion of qualitative research that have been described previously in the following table 2, several conclusions can be drawn related to this research, as follows: (i) The results of qualitative data processing also support that the cost structure affects the formation of airline fares. This is indicated by the effect of exchange rates, aviation fuel prices, operational costs, taxes, to airport service fees. Furthermore, avtur prices dominate the cost structure of airlines and disparities are still found in avtur prices in each region; (ii) The

results of qualitative data processing also support the results of testing the hypothesis that, an increase in prices is not necessarily supported by an increase in service, this depends on whether the increase is still within the specified corridor. In addition, these results also support the hypothesis regarding the effect of elasticity of demand on airline performance. Consumer preferences, which are still dominated by price, create a relatively large elasticity of demand so that price changes can change demand.

Table 2. Reference Nodes

No.	Nodes	References
1	Aviation Industry Barrier	46
2	Elasticity of Demand	38
3	TBB	32
4	Business Sustainability	30
5	Airline Performance	27
6	Ticket Price Determination	25
7	Government Rule	24
8	TBA	23
9	Airline Expenditure	22
10	Consumers Preferences	17
11	Non-Fiscal	16
12	TBA Settlement	13
13	Price of Avtur	12
14	Purchasing Power	11
15	Stakeholders Involvement	10
16	Flexibility of Tariff Adjustment	8
17	Write-off TBA & TBB	7
18	Avtur Price Disparity	7
19	Perception Disparity	5
20	Market Structure of Oligopoly	4

Source: Data processed

Conclusions and recommendations

Conclusions

Based on the results of quantitative research, it can be concluded that Macroeconomics has a negative and insignificant effect on PED. The Aviation Industry Environment has a positive and insignificant effect on PED. Airline Operational Costs have a positive and significant effect on PED. Airport Service Fee has a positive and significant effect on PED. PED has a positive and significant effect on Airline Performance. PED has a positive and significant effect on Tourism Performance. PED has a positive and insignificant effect on Airline Service Ratings.

Based on the results of qualitative research, it can be concluded that These results indicate that the 20 nodes above have the largest contribution in the overall hierarchy as follows : (i) Qualitative results show results that are in accordance with the theme of this research, namely Policy Analysis and Implications of Price Elasticity of Domestic Commercial Flights. There are 20 reference nodes that are touched on by all the resource persons; (ii) The influence of the rupiah exchange rate, aviation fuel prices, taxes, to airport service fees are components of the airline's operating cost structure. The avtur price dominates the airline's cost structure plus the discovery of avtur price disparities in each region and the monopoly of avtur suppliers carried out by Pertamina.; (iii) Changes in PED are not necessarily supported by improvements in airline services. In addition, these results also support the hypothesis about the effect of PED on airline performance ; (iv) The market, which is mostly dominated by LCC services, is very price sensitive, so that setting the TBA tariff is very necessary for consumer protection and also setting the TBB tariff for protection against airline competition.

Recommendation

Recommendations from research results are submitted to the government and to airlines. Based on the research results, recommendations for government are formulated as follows: (i) It is recommended that the government not only categorize the upper and lower limit tariffs (TBA and TBB), but also make a more comprehensive categorization, namely a price index based on PED per flight route. Through this index, if there is an increase or decrease in price, the percentage increase or decrease in ticket prices will be based on the PED value per route. This index will better reflect the match between supply and demand. In addition, the index should pay attention to the difference in sensitivity between FSA and LCC class passengers, where LCC class passengers are more sensitive to ticket price increases. This means that if a price increase is needed, the pressure to increase the price will be more on the FSA flight class than the LCC, thus reflecting fairness, and reducing socio-political turmoil when ticket prices increase ; (ii) The increase in PED is not necessarily accompanied by a significant increase in airline services to passengers; it is recommended to the Government to carry out strict supervision of airline services ; (iii) The government needs to maintain the stability of the rupiah exchange rate because it has an impact on the operating cost structure of airlines and if necessary evaluates fiscal policy by providing fiscal incentives such as reducing VAT on avtu ; (iv) The government needs to carry out strict supervision and firm action so that the airline industry does not practice unfair business competition such as cartels ; (v) The determination of TBA must be carried out comprehensively and ensure that the airline has efficiently run its business in order to obtain a balance price between the interests of consumers to be able to use aircraft transportation services and also the interests of airlines to run their business on an ongoing basis and (vi) The government must evaluate the monopoly of avtur suppliers in order to give other companies the opportunity to supply avtur so as to create competition.

Recommendations for airlines are formulated as follows : (i) Airlines should make discriminatory price increases, which means that price increases are more directed at FSA flights than LCC because the increase in ticket prices has an impact on other sectors such as decreasing tourism, increasing inflation, and reducing public accessibility ; (ii) Airlines should use PED as a consideration in increasing ticket prices not only discriminatory between FSA and LCC, but also discriminatory based on routes according to the PED value of each route ; (iii) Airlines are expected to continue to improve their service ratings, so that passenger satisfaction and loyalty increases, and this is good for the development of the aviation industry and (iv) Airlines are recommended to perform operational cost efficiency so that the ticket prices set can be affordable by the community and have an impact on the economic growth of an area.

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