

Competition in the Airline Industry — A Multiplayer Game*

Competition in the airline industry is sometimes fierce. In this simulation you get to make the major decisions for operating an airline: choosing which aircraft to operate to a given destination, and what price to charge.

Imagine you are the route manager for a single destination, say, Melbourne–Jakarta. Only two airlines offer flights on this route: AirBlue (your company) and AirGreen (your competitor). It is well known in the industry that both airlines have the same types of aircraft available to operate on this route: A300, A370, and A440. Each aircraft type is equally configured, and both airlines incur the same cost as the other for each type. Due to the operating requirements (viz., staffing: captain, 1st officer, number of flight attendants; fuel; landing fees; etc) each aircraft incurs a given fixed cost per trip to Jakarta. In addition, there is a nominal marginal cost per passenger – between \$35 and \$50 per passenger, depending on the efficiency of the aircraft.

The table below summarizes the fixed, marginal and average cost (when all seats are occupied) for each aircraft. The A440 is the newest, largest, and most fuel efficient plane. The average cost at full capacity as well as the marginal cost per passenger are the lowest for this aircraft. The A300 is the oldest plane, with less capacity and highest per-passenger operating cost at full capacity. Here are the details:

Parameters	A300	A370	A440
Number of passengers (max)	300	370	440
Fixed cost per trip	33,000	38,850	39,600
Marginal cost per passenger	50	40	35
Avg cost (if full)	160	145	125

Some customers shop online for the cheapest tickets, while others have a preference for one of the airlines. As you enter different ticket prices into the forecasting tool below you will notice that by charging a lower price than your competitor, you will sell more tickets than the competitor, while the competitor is still able to attract some of the less price sensitive passengers; and vice versa.

Your goal is to maximise your profit from the route to Jakarta by selecting the aircraft type and setting a price. The choice of the aircraft affects your operating cost and the capacity available on the route. The ticket prices charged by each airline determines the demand both for your and for your competitor's flights. This demand—and the availability of seats by each airline, determine your total sales and thus your profits.

Rules

Each airline charges a single, uniform price for all its tickets, and it cannot sell more tickets than there are seats on the plane they have allocated to the route.†

* © Sven E. Feldmann and Boğaçhan Çelen, 2018. We thank Nicolas Gruyer at Economics Games for implementing it.

In order to determine your best choice you may use the forecasting tool (available inside the game and also at page <https://economics-games.com/differentiated-bertrand>)

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Once both airlines have submitted their respective choices, the tool will inform you about the competitor's choices and calculate your profit for this period. You now have a new chance to select your aircraft type and set the price, and so does your competitor. You will play **6 rounds** of these choices, each time earning a profit (or loss) from the choices you made.

Your goal is to maximise your profit *in each round*...

[†] In practice airlines “overbook”, i.e., they sell more tickets than available seats in the expectation that some passengers make last-minute changes. They also charge different prices for tickets with different restrictions or sold at different times. We will ignore these complications in this exercise to keep it simple enough.