

US Air for Sale: A Classroom Game for Chapter 4

On October 2, 1995, USAir, at the time the nation's fifth largest airline, announced that it had approached United Airlines and American Airlines about a possible buyout. United and American are the two largest U.S. airlines, and both are interested in growth in the highly competitive airline market. United and American must now consider what to do.

Financial analysts for both United and American have made projections for all the possible scenarios, on the request of the strategic bidding consultants. They say that United and American start in equally strong positions, but that can change depending on who wins the auction.

The three possible outcomes for an airline are:

Neither firm bids enough for US Air to accept. Both United and American will maintain their strong positions, and they can expect future profits of \$50 billion each.

Our airline wins. The winning airline will become the dominant firm in the market, and can expect future profits of \$80 billion. The purchase cost of US Air, however, must be subtracted from this in order to calculate net profit. Therefore, the payoff for the firm with the winning bid is

$$\text{Payoff}_{\text{Winner}} = 80 - B_{\text{winning}}.$$

The minimum price US Air will accept is \$10 billion.

Our airline loses. The losing firm may have trouble competing with the larger network of the winner because of the greater variety of flights a large airline can offer. The more, however, that the winner pays for US Air, the better off is the loser, because the cash flow the winner uses to pay for the acquisition is no longer available for other investments in new equipment and lenders will be more reluctant to lend to the newly enlarged firm. The analysts suggest that a good approximation to the payoff of the losing firm will be

$$\text{Payoff}_{\text{Loser}} = 30 + .25 * B_{\text{winning}}.$$

In particular, if the winner pays just \$10 billion for US Air, the loser's profit will be \$32.5 billion.

We will look at two kinds of auction rules: ascending, and first-price.

First-Price Auction Rules: US Air will solicit bids in writing from anyone who cares to bid. Once all bids are received, they will be announced publicly. If there is just one bid, it wins if it is \$10 billion or above. If there are no bids, US Air will continue as an independent firm. If there are two bids, and at least one is \$10 billion or above, the winner has purchased US Air, ties being broken by the flip of a coin.

Ascending Auction Rules: US Air will solicit initial bids in writing from United and American, choosing the first bidder randomly and announcing its bid publicly before asking the other for a written bid. If there are no written bids of at least 10 billion dollars, US Air will continue as an independent firm. If there is at least one bid of 10 billion dollars or above, US Air will allow counteroffers, and an ascending auction commences. The winner has purchased US Air.

Students playing the game will be put into groups of three representing either United or American. Groups will be paired up to play out the auction under the ascending or first-price rules. First, play all the pairs by the first-price rules, then by the ascending rules.

Instructor's Notes

This case was developed by John Maxwell for G570 at Indiana University, following an idea of Patrick Meister and Kyle Anderson. See J. Patrick Meister & Kyle J. Anderson, "Lessons from a Failed Airline Auction," forthcoming, *Economic Inquiry*, 2005.

The equilibrium of the first-price auction is for each player to bid \$40 billion. Then,

$$Payoff_{Winner} = 80 - 40 = Payoff_{Loser} = 30 + .25 * 40 = 40.$$

A deviation to 50 would win, but yield a payoff of only 30. A deviation to 30 would not affect the payoffs, since the other player would win with his bid of 40.

In the equilibrium of the ascending auction, both players make initial bids of less than \$10 billion, and the auction ends. The equilibrium payoffs are \$50 billion each. A player's optimal strategy is to make some amount less than 10 his initial bid, but to bid higher if someone has placed an initial bid of 10 or more, and then to bid up to 40.

What commonly happens, though, is that some player starts by submitting a bid of \$10 billion. Once that happens, the other player enters the bidding, and the price rises all the way to 40.

Note that if the ascending auction were to be started with simultaneously submitted written bids, there would be multiple equilibria. One equilibrium, a pareto-dominant one, would be to submit bids of less than \$10 billion, as before. Another class of equilibria would be for both players to submit bids of between \$10 and \$40 billion, inclusive of those limits. Given that United believes that American is going to submit a bid of \$12 billion, for example, United thinks the auction is going to proceed all the way up to 40, and its initial bid hardly matters. These would be weak equilibria, in weakly dominated strategies, though. If there is even an ϵ chance that American will bid less than \$10 billion at the start, United should submit a bid of less than \$10 billion too.

On the next page I have put some news excerpts that you should show the class after the discussion is over. I have put them on a separate page so you can make this into an overhead slide or a handout.

USAIR NEWS

October 15, 1995: “The other suitor is AMR Corp.’s American Airlines, which also is considering a bid either to purchase the airline or possibly create a marketing arrangement that would pump cash into financially strapped USAir in exchange for an instant major East Coast feed to American’s international operations.

Crandall’s Response: AMR Chairman Robert L. Crandall would not comment directly on American’s potential interest in USAir. ‘I have said in the past that the most effective way for an airline to grow is internally,’ Crandall said last week. ”What I have not said and will not say today is what I would do if others made the first step.” He strongly emphasized ‘others.’ ” (*The Washington Post*, p. HA1)

November 14, 1995: “After more than a month of speculation about a possible merger with United Airlines, USAir will remain independent.

United’s board of directors, facing difficulties convincing the airline’s unions and unable to meet their own criteria, yesterday declined to bid for Pittsburgh’s largest employer and ended merger discussions. A buyout could have cost thousands of jobs in the Pittsburgh region.

Analysts said the United decision and a statement by American Airlines that it would not make a bid unless United moved first effectively ensures USAir’s independence for the near future. American last night reiterated its statement but would not comment further.” (*Pittsburgh Post-Gazette*, Bus. A1)

For the full articles in ascii, go to <http://rasmusen.org/GI/problems/04.usair.15oc95.txt> and

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