

**Comment of the Staff of the Bureau of Economics
of the Federal Trade Commission¹**

Summary

The staff of the Bureau of Economics of the Federal Trade Commission (FTC) appreciates this opportunity to provide its views on the economic issues raised in the Federal Aviation Administration (FAA) Supplemental Notice of Proposed Rulemaking regarding the “Congestion Management Rule for LaGuardia Airport.”² In this public notice, the FAA has discussed two broad auction-based approaches that are designed to provide a more efficient allocation of take-off and landing rights to air carriers and to provide incentives for the carriers to use capacity more efficiently. Although this proposal potentially raises some interesting legal and regulatory issues, our comment focuses on the economics underlying this proposal.

Currently, congestion at LaGuardia is controlled by limiting the number of slots, or rights to land or take-off, allowed during each hour of operation. The two alternative auction-based approaches proposed for allocating a limited number of these slots reflect the FAA’s desire for market forces to determine the most efficient uses for the limited capacity available at LaGuardia. At present, take-off and landing fees are time-invariant and based solely on the weight of the aircraft. Accordingly, these fees are unrelated to the demand for takeoffs and landings. We believe that the imposition of slots and slot auctions represent one promising approach to

Interest and Experience of the Federal Trade Commission

The FTC is an independent administrative agency charged with maintaining competition and safeguarding the interests of consumers.³ The staff of the Federal Trade Commission, typically upon request from federal, state, or local governmental bodies, comments on a variety of regulatory proposals that may affect competition, consumers, or economic efficiency. In the course of this work, as well as in antitrust and consumer protection research, nonpublic investigations, and litigation, the staff applies established principles and recent developments in economic theory to competition and consumer protection issues.

The staff of the Bureau of Economics has a longstanding interest in issues involving airport regulation, as well as a general interest in issues involving competition and regulation in the airline industry. This interest has been reflected in comments submitted by the Bureau of Economics staff in previous FAA administrative proceedings on slot allocation and transfer methods and in previous FAA proceedings involving other aspects of airline competition and regulation.⁴ In addition, the staff has issued research reports on slot allocation and airline deregulation.⁵

Proposed Rule Changes

Under the proposed rule, the FAA would auction a limited number of landing and take-off slots but grandfather the majority of current operations at LaGuardia Airport. A limited number of slots throughout the day would be selected by the FAA and affected airlines to be auctioned. The ownership of slots resulting from the auctions would terminate ten years from the first auction. The auctions are to be staggered within the first five years of the rule, and since all slot ownership terminates at the same date, this results in slot tenures of six to ten years. Two options are given for the proposed rule: (1) auctions where the proceeds are used for LaGuardia investment and that are accompanied

³ Federal Trade Commission Act, 15 U.S.C. 45.

⁴ See the comments of the staff of the Bureau of Economics of the Federal Trade Commission, *Study of the High Density Rule*, FAA Docket No. 27664 (November 23, 1994); *High Density Traffic Airports: Slot Allocation and Transfer Methods*, FAA Docket No. 25758 (November 15, 1991); *Slot Allocation Alternative Methods*, FAA Docket No. 24110 (July 27, 1984). Comments on other aspects of airline competition and regulation include, *Elimination of Airport Delays*, FAA Docket No. 24206 (August 30, 1994);

by the retirement of a number of slots and (2) auctions of a greater number of slots but where the proceeds go to the airline that held the slot originally. According to the notice, the number of slots to be auctioned under each option is equivalent to 7 or 18 daily roundtrips, respectively.

The proposed rule has two major procedures: the selection of slots to be auctioned and the auction itself. Based on the schedule that was in place during the second week of January 2007, the slot selection process begins by determining the number of operations each airline will lose. The slots corresponding to the operations an airline will lose are called "limited slots." For both options, each airline is "grandfathered" up to 20 operations, which creates a baseline of the number of operations in the second week of 2007 minus twenty. Under option one, the number of slots a carrier will lose is ten percent of the baseline. Under option two, the number of slots a carrier will lose is twenty percent of the baseline.

Once the number of operations each airline will lose is determined, the time window for each of these limited slots must be established, which occurs in three steps. During the first step (only for option 1), any hour window with more than 75 operations will have excess operations retired. Airlines are randomly selected to have an operation retired during each of these windows until the number of operations is reduced to 75. No airline will lose more than one operation in this step. During the second step, the airlines designate the time window for one-half of their limited slots. During the third step, the FAA determines the time window for each of the remaining limited slots. These assignments to each time window are determined in a random process that also attempts to spread the limited slots throughout the day. However, this three-step process may not spread slots up for auction evenly throughout the day.

The final step in the slot selection process is determining the year in which each of an airline's limited slots will "revert" and be subject to auction. Each airline's limited slots are assigned a reversion year of either 0, 1, 2, 3, or 4 where a slot of reversion year x will be auctioned x years after the start of the program. These assignments are arranged so that each airline's limited slots have an average reversion year of 2.

After the slots to be auctioned (or retired) are selected, auctions are conducted for the limited slots at 0, 1, 2, 3, and 4 years after the start of the program, depending on each limited slot's reversion year. Slots that are obtained through the auctions will remain in the purchasing airlines possession until ten years after the operation retirement.

incumbents having incentives to exclude entrants, the FAA proposes a secondary market in which bidders are initially anonymous and cash bids are submitted for slots. Once a slot has been won, the parties to the transaction have the option to renegotiate the deal to include non-cash assets, such as other slots. Negotiation over these non-cash assets would require dropping the anonymity. If no alternative agreement is reached, the deal proceeds under the terms of the cash-only bid.

Economic Analysis of the Proposal

Background

In general terms, congestion arises from a basic economic problem of a failure to correctly allocate a scarce resource. In this context, time on the runway is the scarce resource. Congestion is caused by a failure to balance supply and demand efficiently. At airports without slot controls, runway time is allocated base

proceedres

Potential Benefits of the Proposal

We agree that the proposal represents a step towards a more reasonable approach to improve the efficiency of the allocation of scarce resources at LaGuardia Airport. Efficiency of the distribution of landing and take-off slots is a concern because the typical solution to runway congestion, administratively assigned slots, is likely inefficient. An auction of landing and take-off slots is a mechanism that could increase the efficiency of the slot distribution, if successfully implemented.

Historically, the FAA has solved the worst congestion problems in a likely inefficient manner by administrative assignment of landing and take-off times (slots). For an allocation of slots to be efficient, each slot should be assigned to the airline that places the highest value on it. One airline may place a higher value on a slot than another airline because it can serve a greater number of customers with the slot or can serve customers who place a higher value on the flight that the slot will enable. The current system is most likely inefficient because typically these assignments are based on some measure of historical usage and do not necessarily reflect any airline's value of the slot.

Auctions have the potential to produce an efficient distribution of slots. Auctions use a competitive bidding process to determine which airline receives which slot. Because the airline that values the slot the most can be expected to bid the most for the slot, the expected outcome of the auction is likely more efficient than the current allocation.⁷

The higher prices for scarce runway time that would result from an auction may cause airlines to use larger planes ("up-gauge") or to change routes to accommodate higher value customers. Up-gauging and route changes may occur as auctions increase the efficiency of the distribution of slots since slots are allocated to the airlines who value them the most. An airline that is able to serve a greater number of customers by up-gauging or by changing routes will value a slot more than another airline that cannot do so and therefore should win the slot in an auction.

In addition to enhancing efficiency, auctions may also increase the competitiveness of the market by replacing historically-based slot allocations with market-based slot allocations. Historically-based slot allocations are a relatively anti-competitive mechanism because they lock in the market structure and increase the difficulty of entry. To the extent that slot allocations will still largely be based on historical precedent under this proposal, we feel that a robust secondary market as envisioned in the proposal could mitigate the inefficiencies inherent in such an assignment. We have commented previously that

⁷ See Whalen, W.T., Carlton, D., Heyer, K., Richard, O. "Proposal For A Market-Based Solution to Airport Delays." Economic Analysis Group Discussion Paper, 07-14, October 2007. However, as they note, one potential source of value of a slot is that it prevents a competitor from using the slot, with potential negative implications for competition. For a parallel argument in the patent context, see Gilbert, R. and Newbery, D. "Preemptive Patenting and the Persistence of Monopoly," *American Economic Review*, 72(3), 514-26. Given the very limited number of slots to be auctioned under this proposal, consolidation of market power is probably not a concern in the primary auction, but care should be taken to make sure the secondary market for slots does not create a mechanism for a carrier to purchase market power.

anonymity can encourage more competitive bidding in auctions, and believe the same is true in this secondary market.⁸

Although it may be difficult to design a perfectly efficient allocation mechanism, we find the notion of a limited step toward a market-based approach a reasonable way to attempt to increase the efficiency with which existing resources are used at LaGuardia Airport. The use of auctions to find an efficient allocation is based on sound economic reasoning. However, we would like to raise some concerns about the limitations

of the other slots in the package. If slots are used to control congestion and package bidding is implemented effectively, auctions should enhance efficiency *vis à vis* non-market-based administrative allocations of slots by ensuring that an airline that values a slot the most is likely to obtain it.

Should one of the two proposed options be implemented, the FAA may be tempted to view its experience at LaGuardia as a basis for implementing additional slot auction programs at congested airports outside of the New York area, for example at Chicago's O'Hare International Airport.¹¹ However, establishing slots and slot auctions at additional airports may cause significant problems that will not be observed when auctions are limited to just LaGuardia and may worsen problems that do arise.¹² The network-related problems previously discussed in the context of auction design may worsen should airports with flights serving LaGuardia also allocate slots through auctions. Every flight from one auction-allocated airport to another would require coordinated slots at both airports for both take-off and landing. Designing an auction mechanism that allows bidders to coordinate slots at LaGuardia and at other airports serving LaGuardia may prove to be difficult, especially given the small number of slots to be auctioned. To a certain extent, the secondary market for slots may lessen the coordination problems caused by slot auctions at multiple airports. However, competitive concerns may lessen the willingness of an airline to sell a slot to a competitor.

Lessons from Spectrum Auctions

The Federal Communications Commission began auctioning licenses to use portions of the wireless spectrum in 1994 using a novel auction approach, the simultaneous multiple round (SMR) auction. This auction format had not been implemented previously outside of experimental economics laboratories.¹³ The auction rules used by the FCC have evolved over time; both in response to perceived problems with previous auctions, and to

C

complementarities between landing slots and take-off slots at other airports, FAA would be well advised to keep this in mind should the auction mechanism be expanded to airports other than LaGuardia. It is possible that running a sequence of separate auctions for slots at individual airports could result in inefficient allocations.

Results from auctions for third generation wireless licenses across Europe in 2000 and 2001 also demonstrated that the performance of auctions can depend crucially on the rules of the auction and the characteristics of the pool of potential bidders. By most accounts, the first such auction which took place in the UK was quite successful, where success can be measured by the extent of participation or the revenue per capita generated by the auction. Italy, the Netherlands, and Switzerland all roughly stuck with the UK auction design, and raised much less revenue per capita. Germany and Austria modified the rules, but the results were mixed; Germany's auction resulted in high per-capita revenues, but Austria did not.¹⁶ Obviously, these countries are different in many respects, including per-capita income and number of incumbent mobile providers, but the varying results seem likely to be a signal that careful attention needs to be paid to auction design, as has been argued by many economists.¹⁷

Auctions and Congestion Pricing

In addition to the use of slots and slot auct

set whereas congestion pricing requires that the correct price be set. It is more reasonable that airport authorities know the correct quantity of slots than the correct congestion price. As market conditions change, the correct quantity of slots will not vary but the correct congestion price will, so any difficulties with determining the correct price will be repeated, while in any additional auctions the bidders will take the new conditions into consideration.

Congestion pricing however offers several advantages over auctions with regard to efficiency and competition. Congestion pricing may have an advantage in producing an efficient allocation of slots because it allows air carriers to adjust their schedule more frequently. Any slot allocation, either by administratively assigning slots, auctioning slots, or by assigning slots by some other means will be relatively inflexible compared to congestion pricing due to the increased difficulty of schedule adjustments. The increased flexibility afforded by congestion pricing may increase efficiency by allowing airlines to more easily change their schedules to reflect changing market conditions.

Congestion pricing may also have an advantage with regard to competition. First, congestion pricing may lead to a more competitive market because its flexibility is more conducive to entry. When congestion is controlled by the use of slots, entry can only occur if capacity is increased or an administrative or market-based reallocation of slots is undertaken, such as when an auction is conducted. Moreover, with the use of slots, potential entry is limited by the degree to which capacity is increased or by the number of slots being reallocated or auctioned. Under congestion pricing, an entrant is able to enter at any time or scale. Given that entry often requires experimentation by entrants, the scheduling flexibility of congestion pricing seems more favorable to entry. Second, slot-based congestion controls limit the competitive response of those airlines that do have slots. Existing competitors can only gain a limited number of customers through price competition because they too have a limited number of slots. Further, congestion pricing eliminates the notion of property rights to slots – a notion that allows incumbent airlines a measure of control over entry, while auctions serve to continue it. However, we should note that absence of property rights creates the possibility of a tragedy of the commons, wherein excessive operations degrade the quality of service of all airlines due to some continued congestion. It is unclear whether the net impact of the potential increased competition and the possibility of continued congestion is positive or negative for consumers.

