Economics of Airport Regulation

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The modern airport provides the modern laboratory for the application of both legal and economic principles. The airport is a basic economic unit though which is funneled a myriad of economic activities affecting not only interstate and international trade, but also the local economy in which the airport is very often the center. But the airport's very status as an economic hub requires a legal superstructure not required of more ordinary economic activities. As a "natural monopoly" its resources can not be permitted to be controlled by those representing narrowly defined economic interests. In short, regulation of its activities can not be left solely to market forces, but must rely, at least in part, on allocative decisions made through the political and legal processes.

Maintenance of free market competition in the airline industry depends upon an allocative process which insures broad access to airport resources. That private control of a vital economic artery can cause the destruction of competition was recognized as early as 1912 when the United States Supreme Court in *United States v. Terminal Railroad Asso-*

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ciation of St. Louis[1] invalidated a scheme by which a few powerful railroads took control of a central railroad terminal and excluded competitors from its use. This decision was based on the Sherman Act, which provides that "(e)very person who shall monopolize . . . any part of the trade or commerce . . . shall be punished.[2]

Nowhere is the need for the cross-fertilization of legal and economic principles more apparent than in the area of airport regulation. And yet it is in this very area that such cross-fertilization has failed to materialize. Judges rarely give full consideration to economic principles, as illustrated by such cases as *In Re Braniff Airways*[3] (in which the Court declined to analyze airline slots in terms of their economic value) and *Northwest Airlines v. Goldschmidt*[4] (in which the Court failed to fully consider the economic impact of an administrative regulation which allocated specific slots to individual airlines.)

Legal scholars writing in the area of transportation regulation rarely incorporate or discuss the application of economic principles in reaching their conclusions.[5] Economists are often equally insular, as revealed by their published articles which make few references to legal factors or decisions.[6] It is not surprising, therefore, that lawyers and economists come out at opposite ends of the spectrum in the deregulation debate.[7] Some critics have suggested that lawyers tend to favor regulation because its administration requires the services of lawyers.[8] Economists, on the other hand are criticized for putting undue emphasis on such considera-

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1. 224 U.S. 383 (1912).

2. 15 U.S.C. sec. 2 (1982).

3. 700 F.2d 935 (5th Cir. 1983).

4. 645 F.2d 1309 (8th Cir. 1982).

5. *See e.g.*, , *Transportation Deregulation - On a Collision Course*, 13 TRANSP. L. J. 329 (1984); Brewer, *Regulation-The Balance Point*, 1 PEPP. L. REV. 355 (1974); Note, *Staggers Rail Act of 1980; Authority to Compete with Ability to Compete*, 12 TRANSP. L. J. 301 (1981).

6. *See e.g.*, Trapani & Olson, *An Analysis of the Impact of Open Entry on Price and the Quality of Service in the Airline Industry*, 64 REV. ECON. & STAT. 67 (1982); Carlton & Lanches, *Benefits and Costs of Airline Mergers: A Case Study*, 11 BELL J. ECON. & MGMT. SCI. 65 (1980); Schmatensee, *Comparative Stotic Properties of Regulated Airline Oligopolitics*, 2 BELL J. ECON. & MGMT. SCI. 565 (1971); Stigler, *The Theory of Economic Regulation*, 2 BELL J. ECON. & MGMT. SCI. 3 (1971); Levin, *Railroad Rates, Profitability and Welfare Under Deregulation*, 12 BELL J. ECON. & MGMT. SCI. 1 (1981); Anderson & Kraus, *Quality of Service and the Demand for Air Travel*, 63 REV. ECON. & STAT. 533 (1981); Spann & Erickson, *The Economics of Railroading: the Beginning of Cartelization and Regulation*, 1 BELL J. ECON. & MGMT. SCI. 227 (1970). (Articles in the Journal of Law and Economics have a decidedly economic bias, with very few cross-references to the legal periodicals.) *See e.g.*, Stigler & Friedland, *What Can Regulators Regulate? The Case of Electricity*, 5 J.L. & ECON. 1 (1962); Jordan, *Producer Protection, Prior Market Structure and the Effects of Government Regulation*, 15 J.L. & ECON. 151 (1972); Peltzman, *Toward a More General Theory of Regulation*, 19 J.L., & ECON. 211 (1976).

7. *See* notes 5 and 6, *supra*.

8. *See e.g.*, Hirshleifer, *Comment*, 19 J.L. & ECON. 241 (1976)("[T]he regulators themselves constitute an interest group."), *Id.*

tions as economic "efficiency" at the expense of broader considerations of social policy. But whatever the explanation, it is clear that a full understanding of airport regulation requires a cross-fertilization of legal and economic principles, and the application of both.

Airline Deregulation

The economics of airport regulation has been directly affected by the manner in which airlines have been regulated. The Civil Aeronautics Act of 1938[9] virtually created an airline cartel. Under that Act, the Civil Aeronautics Board (CAB) was empowered to control entry by the issuance of "certificates of convenience." As a result, not a single major trunk carrier was permitted to enter the industry between 1938 and 1978 despite seventy-nine applications during that period. Nor were inefficient carriers permitted to go out of business. Rather they were kept afloat by enforcement of rates based on the average costs of the industry.[10] With no incentive to gain a competitive advantage by cutting costs or reducing fares, airlines engaged in extravagant service competition.[11] Airlines also competed by offering more flights than were dictated by demand, thus resulting in costly and wasteful over capacity. (One economist has calculated that the fare-service combination during regulation was suitable only for passengers whose time was worth $60,000 per year in 1969).[12]

With no incentive to reduce costs, airlines showed little resistance to wage demands. The result was that airline employees received wages far in excess of that received by their counterparts in deregulated industries. When such technological advances as the stratoliner appeared in the 1950's (and jets in the 1960's), more of the productivity gains were translated into higher pilot wages and reduced flying time than reduced fares. Average flying hours per month declined by eight hours during the period 1955-1975.[13]

By regulating entry, routes, and fares, the CAB created economic effects similar to those achieved where there is but one producer in the industry; that is, it created economic conditions in which airline profits were maximized not at the most efficient level of price at marginal cost, but rather of price at marginal revenue.[14] It was therefore not surprising that the effects of monopoly predicted by economic theory (i.e., too high a

9. Ch. 601, 52 Stat. 973 (1938).

10. See M. LAZARUS, AIRLINE PRICING REGULATION AND UNITED'S FARE POLICIES (1983).

11. *See* Hardaway, *Transportation Deregulation (1976-1984) : Turning the Tide*, 14 TRANSP. L. J. 101 (1985).

12. *Id.* at 205.

13. OFFICE OF ECONOMIC ANALYSIS, CIVIL AERONAUTICS BOARD, COMPETITION AND THE AIRLINES: AN EVALUATION OF DEREGULATION 117-123 (1982).

14. SAMUELSON, ECONOMICS, (MCGRAW-HILL 8th Ed., 1970).

price and wastage of resources)[15] were the same as those actually observed in the regulated air industry. In 1975; U.S. Senate Judiciary Subcommittee[16] hearings revealed that fares were forty to one hundred percent higher than would have been the case under deregulation. Non-regulated air fares on intrastate routes were found to be fifty to seventy percent of the CAB regulated fares for the same distances.[17] It therefore came as no surprise when load factors on aircraft jumped five points in the first year of deregulation.[18]

Thus, deregulation was in large measure a vindication of the theories of such economists as George Stigler, who in his landmark article *The Theory of Economic Regulation* proposed his general hypothesis: "(E)very industry or occupation that has enough political power to utilize the state will seek to control entry."[19] Under Stigler's theory, any industry with sufficient political power will seek to fix prices above the level which would be determined by supply and demand. In 1976 Roger Noll described public interest theories as "no larger widely shared";[20] in 1977 Jean Luc Mique' observed: "It seems fair to say that among economists the most widely accepted theory of government regulation is that, as a rule, regulation is acquired by the industry regulated and is designed and operated primarily for its benefit."[21] As early as 1957 A. Downs observed "a government run by individuals trying to maximize a private, rather than public utility function."[22]

In the case of airline regulation, CAB policy was ambivalent. The CAB had difficulty in deciding whether its purpose was to keep prices up in order to protect the industry, or down to protect the consumer. Ultimately, it did neither: On the one hand, as the 1975 Senate Hearings revealed, prices were far too high; on the other, as a CAB chairman observed in 1977, "(o)nly three times in the past twenty-six years, and never in the past decade, has the industry earned the . . . allowable return on the investment."[23]

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15. *Id.* at 93.

16. *Oversight of the CAB Practices and Procedures: Hearings Before the Subcom. on Administrative Practice and Procedure of the Senate Com. on the Judiciary*, 94th Cong., Ist Sess. 454 (1975).

17. STAFF OF SENATE SUBCOMM. ON ADMINISTRATIVE PRACTICE AND PROCEDURE OF THE SENATE COMM. ON THE JUDICIARY, 84TH Cong., 1st Sess., REPORT ON CAB PRACTICES AND PROCEDURES 41 (COMM. PRINT. 1975).

18. CAB Report, *supra* note 13 at 19-24.

19. Stigler, *The Theory of Economic Regulation*, 2 BELL J. ECON MGMT. SCI. 3, at 6 (1971).

20. R. NOLL, GOVERNMENT ADMINISTRATIVE BEHAVIOR AND PRIVATE SECTOR RESPONSE: A MULTIDISCIPLINARY SURVEY 12 (1976).

21. Mique, *Controls v. Subsidies in the Economics Theory of Regulation*, 20 J.L. & ECON. 213, 213 (1977).

22. *See* DOWNS, AN ECONOMIC THEORY OF DEMOCRACY (1975).

23. TRAFFIC WORLD, July 18, 1977, at 14.

By 1984, airline deregulation had achieved most of the results predicted by economists:[24] average fares in real terms decreased dramatically[25] despite staggering increases in the cost of fuel;[26] concentration in the industry eased as the market share of the major trunks decreased from ninety-seven and three-tenths percent in 1978 to ninety two percent in 1983,[27] while eleven newly formed airlines entered the industry;[28] industry employment increased to 294,930 from 265,777 during the period 1977 to 1979 alone;[29] subsidies to small communities were reduced, while,[30] service to such communities improved. One important study concluded: "(a)s a group, small communities (both small hubs and non-hubs) were receiving more scheduled airline service after deregulation than before."[31] Contrary to popular perception, even safety improved as the number of fatal crashes per 100,000 take-offs declined from .10 in 1978 to .08 in 1982.[32]

Nevertheless, some critics of deregulation pointed out that certain small communities had lost service or had access only to smaller commuter type aircraft rather than large passenger jet service.[33] Concern was also expressed over the trend toward increased industry reliance on the system of hubs and spokes, which tended to increase economies of scale that might encourage industry concentration.[34]

Such concerns appeared justified when, beginning in 1985 a rash of airline merger applications was approved by the Department of Transportation (DOT). Increased reliance on hubs and spokes created economies of scale that favored the larger carriers and gave them the economic incentive to concentrate. Consequently, during the period 1986-1987, the percentage of traffic enjoyed by the five largest airlines increased from fifty-four percent to seventy-two percent,[35] while most of the nation's major airports became effective monopolies serving as hubs for one, or at

24. *See* Hardaway, *Transportation Deregulation 1976-1984): Turninq the Tide*, 14 TRANSP. L. J. 101 (1985).

25. STAFF OF THE CIVIL AERONAUTICS BOARD, CAB PROFIT REPORT 13, at 20 (Table 1.2) (1984).

26. J. MEYER, C. OSTER, I. MORGAN, B. BERMAN AND D. STRASSMANN, AIRLINE DEREGULATION; THE EARLY EXPERIENCE 71 (1981).

27. *Id.*

28. OFFICE OF ECONOMIC ANALYSIS, CIVIL AERONAUTICS BOARD, COMPETITION AND THE AIRLINES: AN EVALUATION OF DEREGULATION at 125 (1982).

29. *Id.* at 35 (Table 1.4).

30. *Supra* note 27 at 50.

31. *Supra* note 28 at 156.

32. WALL ST. JOURNAL, Oct. 18, 1983 at 7, Col. 1.

33. *Supra* Note 5.

34. *Supra* Note 5.

35. *See* , *Empirical Results of Deregulation: A Decade Later and the Band Played On*, 17 TRANSP. L. J. 5.

most two airlines.[36] Biased computer systems and frequent flier programs which favored the largest carriers also raised concerns.[37]

These concerns were eased somewhat by the most comprehensive study of airline competition ever undertaken by the Department of Transportation.[38] This 1990 study cited a few "pockets of problems" resulting from the increased concentration of market power, but nevertheless concluded that airlines were competing vigorously, and that the public was enjoying lower fares and broader service than had been the case several years before when there were more airlines.[39] These findings, which the report itself described as "seemingly counter-intuitive", led to its conclusion that the changes in the industry had resulted in "more service at a lower cost."[40] (A 1990 Report of the Economic Policy Institute has criticized such conclusions, however, arguing that estimates of fare reductions resulting from deregulation fail to take into account fuel prices and the fact that fares were falling downward even before deregulation).[41]

The DOT conclusions, however, do not appear to have altered the perception of the flying public that the quality of air service has declined, as reflected by increased incidents of passenger complaints, lost baggage, and delayed and canceled flights. Advocates of a return to regulation point to such problems in support of their conclusion that deregulation has been a failure. In fact such problems highlight an entirely different kind of failure. The direct result of deregulation has been a dramatic increase in air travel. However, there has been no corresponding expansion of the airport infrastructure to accommodate this increase in air travel. The inevitable result has been an increase in flight delays and cancellations.

Expansion of the airport infrastructure by building new airports has become increasingly problematic due to lack of available land near major population centers, environmental requirements and concerns (particularly noise), and the reluctance of Congress to release funds from the Airport Trust Fund which now exceeds 7 billion dollars. Only one major airport is presently planned in the United States for the rest of this century,

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36. ID.

37. *See* McGinley, *U.S. Probes Airline Reservation Systems Over Complaints They Curb Competition*, WALL ST. JOUR., at 14, (Feb. 3, 1987); GENRAL ACCOUNTING OFFICE, AIRLINE COMPETITION: IMPACT OF COMPUTERIZED RESERVATION SYTEMS (1986); , *Antitrust Law and Policy in Transportation: Monopoly is the Name of the Game*, 21 GA. L. REV. 505 (1987).

38. DEPT. OF TRANS. SECRETARY'S TASK FORCE ON COMPETITION IN THE U.S. DOMESTIC AIRLINE INDUSTRY: AIRPORTS, AIR TRAFFIC CONTROL, AND RELATED CONCERN (Feb., 1990) (hereinafter referred,to as 1990 DOT Report) at 3-2.

39. NEW YORK TIMES, Feb. 14, 1990 at C-1.

40. *Id.*

41. P. DEMPSEY, FLYING BLIND: THE FAILURE OF AIRLINE DEREGULATION Economic Policy Institute (1990).

the regional airport in Denver, Colorado. Expansion of facilities at existing airports is only a partial solution and by itself can not accommodate the expected increases in air traffic.

Airport expansion faces many of the same obstacles as the building of new airports. The means by which existing airport resources are allocated therefore takes on increased importance. Although laws and regulations have been promulgated by both federal and state authorities to deal with the problem of allocation,[42] any solution cannot fail to take account of economic factors. Within the bounds of existing law (including the anti-trust laws) the following questions will therefore be considered: 1) how should existing airport resources (including ground facilities, terminal space, gates and slots) be allocated to individual airlines in order to insure the most efficient use of those resources? and 2) once airport resources have been allocated to individual airlines, how should the use of those resources be restricted or regulated?

Ground Resource Allocation

Although terminal space may be owned by either an airport, airline or third party, actual control over terminal use is determined by an elaborate web of interlocking agreements, leases, and industry custom. Access to terminal space is as critical to airline operations as was the issuance of an "operating certificate" during the period of airline regulation. Denial of access serves as an absolute barrier to entry. Many of the agreements now in force which determine the rights of airlines to use airport facilities were entered into many years ago at a time when airlines were still regulated by the CAB. With this fact in mind, it is apparent that the Airline Deregulation Act of 1978 brought about only a partial end to regulation. Airline activities previously regulated by CAB administrative action continue to be restricted by a complex labyrinth of long-term agreements sanctioned by the CAB administrators of the regulation period. In a very real sense, therefore, airline regulation continues to do its work from the grave, or as the Shakespearian character in Julius Caesar observed, "the evil that men do lives after them."

Airport ground resources may be divided into two elements: 1) "Gate Elements A" which includes passenger loading and unloading facilities, passenger hold room facilities, and aircraft parking facilities, and 2) "gate elements B", which include passenger check in facilities and baggage claim facilities.[43] A 1989 Airport Operators Council International (AOCI) Report on Airport gate availability revealed that nineteen of the nation's

42. 1990 DOT Report, *supra* note 38 at 3-2.

43. *Id.* at 3-9.

thirty largest airports have no available terminal gates with both A and B elements. The remaining airports had only very limited availability.

Airport leases of ground facilities to airlines are typically exclusive, and are usually for extended periods up to thirty years. Airports are financed by use of one of two methods: 1) the residual cost method under which the airline assumes the greater financial risk by guaranteeing payment of airport costs, and 2) the compensatory method under which the airport authority assumes the financial risk for its operations, and charges airlines on a cost-recovery basis. A study of thirty major airports in 1983 revealed that fifteen used the compensatory method, and fifteen used the residual method.[44]

Leases often contain "majority in interest" clauses which give the lessee airline the right to approve decisions affecting such airport costs as capital improvements or expansion. Other clauses prevent the airport from charging airlines additional rates, fees, or charges. A small number of such leases permit airport authorities to reclaim such facilities for redistribution to new entrants. In most cases, however, a new entrant must approach an incumbent for a sub-lease since most leases have no such provision. Not surprisingly, the 1990 DOT study revealed that rents changed by incumbent airlines were very high when the gates could be obtained at all. For example, Southwest airlines has been reported as paying Northwest $150 per flight for a sub-lease of two gates or "about nineteen times what Northwest pays the airport authority to lease the space."[45]

The present system of ground resource allocation completely frustrates the policies set forth in the Airport and Airway Improvement Act of 1982 which states that an airport "will be available for public use on fair and reasonable terms."[46] The reality is that once a long-term lease is entered into with an airline, there are few restraints on how the property rights of the leasing airline may be exercised.

There is a significant economic incentive for an incumbent airline to charge an exorbitant rent or refuse to sub-lease to a competitor. By keeping out a competitor, an incumbent can take maximum advantage of the scarcity of gates and allow the incumbent to face a steeper demand curve them would be the case were the competitor permitted to obtain the gate.[47] A declining demand curve means that the incumbent will maximize its profit at a price higher than marginal cost. The result is a misallocation of resources, and the earning by the incumbent of an "oligop-

44. *"Aborted Take-offs,"* WALL ST. JOURNAL, at p. 16 (July 18, 1989), cited in 1990 DOT Report, *supra* note 38.

45. DOT Report, *supra*, note 38.

46. 49 U.S.C.A. sec. 2201-25 (1982).

47. P. SAMUELSON, ECONOMICS, (MCGRAW-HILL), 8th Ed. 1970) at 471.

oly profit" far above that which it would earn were there free entry into the market.[48] As economist Paul Samuelson has observed, the net effect is that society does not get "as much (service from the incumbent) as it really wants in turns of what (the air service) really costs society (to) produce."[49] For the oligopolist, profits are maximized "by equating marginal revenue to marginal cost, thus lead(ing) to a price that is above marginal cost. The canny seller contrives an artificial scarcity of his product so as not to spoil the price he can get on earlier pre-marginal units."[50] The price obtained above marginal cost represents the oligopolist's "excess profit."

When an incumbent sub-leases a terminal facility it is, from an economic standpoint, also "selling" an operating certificate. Such a certificate enables its holder to reap an excess profit, which is why such certificates always command a premium. For example, a New York city taxicab medallion is a kind of operating certificate. Its value is based on the scarcity it represents. In the case of the taxicab medallion, this value can exceed hundreds of thousands of dollars. Were unlimited entry permitted, the value of such a medallion would, of course, fall to virtually zero. The value of operating certificates of truckers during the period of motor carrier regulation has been conservatively estimated at over four billion dollars.[51]

The value of an airport terminal lease therefore includes the "premium" value of the oligopoly profits it enables its holder to reap. From an economic standpoint, however, it does not matter whether the oligopoly profits are earned by the lessor or the lessee. The misallocative effects exist regardless of who earns the profits. The amount of rent paid by a sub-lessee which is in excess of what the market rent would be were it sold by a disinterested seller approximates the value of the oligopolist's "premium."

It may be concluded, therefore, that the allocation of terminal resources under the existing system of leases and sub-leases results in a misallocation of terminal resources. The obvious solution, of course is to expand total airport resources in order to minimize their scarcity value. This option is severely restricted, however, by such political factors as community resistance to increased noise, and such legal factors as clauses in existing leases which give airlines effective veto power over such expansion. The 1990 DOT Study of Airports and Air Traffic Control concluded:

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48. *Id.*

49. *Id.* at 476.

50. *Id.*

51. SNOW AND SOBOTKA, *Certificate Value*, *in* MACAVOY AND SNOW REGULATION OF ENTRY AND PRICING IN TRUCK TRANSPORTATION at 153 (1974).

> (G)ate facilities are a potential barrier to entry into the aviation industry. (A)t best the numerous contractual barriers make it difficult for a new entrant to obtain cost-competitive access to airports. At worst, contractual clauses such as MII (majority in interest clauses) deter efficient development of new gate capacity, with a negative effect on new entry.[52]

Seeking another solution, the Department of Justice has taken the view that, as leases eventually expire, they should be auctioned to the highest bidder.[53] Such a change would be an improvement in the existing system of allocation, and would have the advantage of giving potential new entrants a practical opportunity to obtain access to terminal resources. Presumably, such auctions would award such resources to the airline which could put them to the best economic use. However, it would not eliminate the misallocative effects of oligopoly pricing any more than the auctioning off of taxi-cab medallions. It would simply award oligopoly profits to the highest bidder. The net effect would be to put the oligopoly profits into the hands of the airport rather than the airline, thus constituting a kind of indirect tax paid ultimately by the airline passenger. While such a result might be more desirable from a social welfare standpoint and provide a convenient means of financing airport operations, it does not solve the problem of misallocation of airport resources.

Since most regional airports meet the economist's definition of a "natural monopoly," there may be no better solution than to channel oligopoly profits to where they provide maximum social utility. The misallocative effects of oligopoly pricing may be reduced, however, by vigorous enforcement of the antitrust laws where it appears that market power is being used to deny entry for anti-competitive purposes.

Airport Slots

Regardless of who owns an airport's ground resources, the airport's capacity to accommodate air traffic is restricted by such factors as runway space, weather, and air traffic control capabilities. In short, only a limited number of aircraft can safely be permitted to land or take-off during any particular time period. The specific authorization for particular aircraft to land or take-off is known as a "slot." Since the demand for such slots exceeds the supply at most airports, the slots must be rationed in some way. Any evaluation of an allocative method depends upon a determination of the "value" of a slot. This in turn depends upon whether the law recognizes a slot as property.

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52. DOT Report, *supra*, note 38.

53. Separate Views of the Department of Justice as Applicable to Working Group B-Terminal Space and Gates. REPORT OF THE AIRPORT TASK FORCE, HEARING BEFORE THE SUBCOMM. ON INVESTIGATIONS AND OVERSIGHT OF THE COMM. ON PUBLIC WORKS AND TRANSPORTATION, 98th Cong., Ist Sess. 1 (1983) [hereinafter referred to as AIRPORT ACCESS REPORT].

SLOT VALUES

The Courts have had difficulty in determining whether a slot is property capable of having economic value. As early as 1969, airport congestion made it necessary for the FAA to limit administratively the total number of slots at five high density airports: Washington National, O'Hare International, LaGuardia, Kennedy International, and Newark International.[54] This High Density Rule (HDR)[55] was originally intended to be a temporary regulation to cope with delays caused by excessive congestion at these five airports. Each "slot" permitted one operation each day during the same time period, usually for seven days a week. In 1973 the HDR was made permanent for all of the original five HDR airports except Newark International,[56] and was later superseded by the Interim Operations Plan[57] and the Interim Final Rule in 1984.[58] Limits at the remaining HDR airports have not changed since 1984.

In 1983 the Fifth Circuit Court of Appeals ruled in *In Re Braniff* that a Bankruptcy Court could not prevent the FAA from recovering a slot from a bankrupt carrier on grounds of non-use since "slots are actually restrictions on the use of property airplanes, not property in themselves."[59] The hesitancy of the Courts to recognize the economic value of slots was also reflected in *Northwest Airlines v. Goldschmidt*, which characterized an allocation of slots to individual carriers as having only "incidental economic impact."[60]

Bankruptcy decisions subsequent to *In Re Braniff* have split on the question of whether slots are "property". *In Re Air Illinois* followed *In Re Braniff* in holding that slots did not constitute property.[61] *American Central Airlines*[62] and *In Re McClain Airlines*,[63] however, took a contrary view, the former holding that "(s)uch a possessory interest constitutes property of the estate."[64]

On April, 1986, an FAA regulation provided that "slots may be bought, sold or leased for any consideration and any time period."[65] In

54. Newark is not currently subject to HDR.
55. 14 C.F.R. Part 93, Subpart K.
56. 38 Fed. Reg. 29463 (Oct. 25, 1973).
57. SFAR No. 44.
58. 49 Fed. Reg. 8237 (Mar. 6, 1984).
59. 700 F.2d 935, 942 (5th Cir. 1983).
60. 645 F.2d 1309 (8th Cir. 1982).
61. 53 B.R. 1, 2-3 (Bankr. S.D. Ill. 1985).
62. 52 B.R. 567, 570-71 (Bankr. N.D. Iowa 1985).
63. 80 B.R. 175, 178 (Bankr. D. Ariz. 1987).
64. 52 B.R. 567 at 571.
65. 14 C.F.R. sec. 93.221(A) (1989).

adopting this regulation (popularly referred to as the "buy-sell" rule)[66] the Secretary of Transportation made it clear that the purpose of it was to permit "maximum reliance on market forces to determine slot distribution."[67]

In the 1989 case of *FAA v. Gull Air*,[68] however, the FAA nevertheless took the view that slots were not property, but rather "operating privileges subject to absolute FAA control." As in *Braniff*, the FAA attempted to recover slots from a carrier in bankruptcy. Unlike the petitioners in *Braniff*, however, Gull Air could rely on the FAA "Buy-Sell" Rule to support its contention that slots had value on the very open market created by the FAA regulation. With some uncertainty the Bankruptcy Judge agreed in substance with Gull's contention, stating that "pressed to the wall, (Gulls' slot) would be a property right. But I don't know that I have to find that it is a property right in its total sense. It's a license in which the debtor has a proprietary interest since the regulation gives the debtor the privilege to sell it."[69] The First Circuit Court of Appeals reversed, holding that, whatever interest Gull held, it was subject to a provision of the "Buy-Sell" Regulation which provided that the FAA had the power to reclaim any slot which was not utilized at least sixty-five percent of the time over a two month period.[70] In so doing, however, the Court used the terminology of property law in characterizing Gull's interest as similar to a "determinable fee interest . . . which reverts to the FAA upon failure to use the slots as mandated in the regulations."[71]

Despite the law's ambivalence on the subject of slots as property, economists and analysts have been able to make precise estimates of the economic value of slots. The actual market price of slots provides only limited data in making such estimates. Since slots are not publicly traded on a slot exchange or clearinghouse, all slot sales are privately traded. However, a 1990 DOT study[72] did obtain some information about slot sales. During a 1982 forty-two day experiment in slot sales, 248 slots were traded at prices ranging from $12,000 to $500,000, depending on the time period and airport. In 1984 Air Florida sold slots to Eastern at prices estimated at $218,000 per slot. Several years later, Texas Air/Eastern sold Pan Am three gates and thirty-two slots for $65 million. Shortly thereafter, American West reportedly offered to buy ten gates and

66. *See* Hardaway, *The FAA "Buy-Sell" Slot Rule: Airline Deregulation at the Crossroads*, 52 J. AIR L. & COM. 1 (1989).

67. 50 Fed. Reg. 52,180 at 52,184 (1985).

68. No. 88-1780 (Ist Cir. Dec. 7, 1989).

69. *Id.* at 5.

70. 14 C.F.R. sec. 93.227(a) 1989.

71. *Id.* at 16 (footnote 6), .602 F.2d 998, 1001 (Ist Cir.), *cert den.*, 444 U.S. 992 (1979).

72. 1990 DOT Report, *Airports, supra* note 42 at App. B-3.

ninety slots from Eastern for $375 million or 4 million dollars for each gate/slot combination.[73] There are, however, few slots being sold on the open market today. Since an airline can never be sure of being able to get a slot in the future, airlines prefer to lease them out only for very limited periods if they are inclined to relinquish them at all.

Any estimate of slot values must take into account the following factors:

1. The amount of increase in revenue for each flight which uses the slot relative to an available alternative slot.
2. Costs at slot-constrained airports which exceed those at other available airports.
3. The risk of the FAA reclaiming the slot under applicable regulations.
4. Capacity of the air traffic control system.

Several of these factors have been studied. One study which considered such variables as the distance of a flight and the number of competitors has estimated that the revenue "premium" per slot at the four HDR airports ranges from $226,000 to $261,000.[74]

Costs at HDR airports which exceed costs at other airports are attributable to such factors as congestion delays. The DOT reports that the costs of delay for each operation ranges from a low of thirteen dollars at National Airport to eighty-three dollars at Chicago O'Hare.[75] Based on such costs, DOT has estimated that slot values at HDR airports range from $800,000 to over $1 million, depending upon time of day, size of aircraft, carrier's load factors, actual delay at the HDR airport compared to other airports, and access to gates. Estimates made by such independent investment companies as Morgan-Keegan and Prudential-Bache range from a low of $100,000 at JFK in 1987, to a high of 1.1 million at National Airport in 1989.[76] A comparison of these studies is difficult since the investment company estimates were made without an explanation of the factors taken into consideration.

Estimates of slot values, whether measured by anecdotal reports of actual exchanges, or analysis of variable factors, reflect the scarcity value of each slot. As in the case of ground resources, a slot serves as an "operating certificate" without which a carrier can not operate. The holder of a rationed slot earns a premium based on the oligopolist carrier's market power to set prices above marginal cost, since the oligopolist maximizes revenue at the point at which price equals marginal revenue.

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73. *Id.*

74. *Id.*, using data from Morrison and Winston, *Empirical Implications and Tests of The Contestability Hypothesis*, JOUR. OF LAW & ECON., (April 1987).

75. *Id.* at B-9.

76. *Id.* at B-10.

A 1983 FTC Report summed up the value of a slot as follows:

> The maximum price an airline would pay for a slot is the amount that, when added to the other costs of the flight that will use the slot, equals the flight's expected revenues. This amount is directly related to the value that passengers place on the flight which, in turn, is a function of such variables as passengers' income, purpose of trip, etc.[77]

Since it is not possible, given present resources, to increase the number of slots to the point where price equals marginal cost, the more realistic goal is to determine a least anti-competitive method of allocating scarce slots. A variety of methods have been used to allocate scarce slots:

1. "first come-first serve"
2. scheduling committees
3. administrative regulation
4. open market sales, exchanges, auctions
5. variable landing fees
6. lotteries

Each will be discussed and evaluated separately.

First Come—First Served

All but a handful of American airports use a "first come-first serve" system as the primary method of allocating scarce slots. Such a system takes advantage of the fact that the real rationing has already taken place through restrictions on access to ground resources. The number of aircraft eligible to use slots is drastically reduced by the limited availability of gates and terminal space. The aircraft of airlines who have the rights to gates simply queue up on the taxi-ways and await their turn to take-off. Incoming aircraft are either stacked up overhead or delayed at their origination points.

There is virtually no support among economists for this system, which allocates scarce slots based on who is willing to waste the most time in line or the most fuel on the taxi-way. A 1985 Report revealed that the cost to airlines of such delays at one major airport exceeded 100 million dollars per year.[78]

While such methods of allocation are common in the centralized economies of socialist countries (witness the long lines on Moscow streets for scarce price-controlled goods), they are relatively rare in the United States. Such a system at airports reflects a *de facto* policy of refusing to recognize slots as having economic value; that is, slots are given

77. Staff Report, Bureaur of Economics, FTC, Airport Access Problems: Lessons Learned From Slot Regulation by the FAA (1983) [hereinafter referred to as FTC Report].

78. Rocky Mountain News, Report on Stapleton Airport, Denver Colorado, Mar. 6, 1986, at 7.

free of charge to any airline willing to wait in line long enough or waste enough fuel to get one. Slots are awarded to an airline based not on which airline will most efficiently use them but rather on the basis of which airline has the most time to waste. Just as the unemployed Moscow consumer may get his eighteenth bar of soap by waiting in line for six hours because he has nothing better to do while his employed brethren whose time is more valuable cannot get even one bar of soap, so "first-come first serve" at American airports results in an inefficient allocation of resources. But while efficient allocation of soap bars to Moscow consumers who most value them might eventually take place by the selling of them on the black market, slots may be legally sold at market prices only at the four HDR airports.

Scheduling Committees

The 1969 High Density Rule restricted the total number of slots at high density airports. It did not, however, allocate slots to individual carriers. Prior to 1985, such allocation was done by scheduling committees made up of representatives of airlines using the airport. Prior to its sunset, the CAB approved a number of agreements, including schedule adjustment agreements, and granted anti-trust immunity under section 414 of the Federal Aviation Act. This enabled airlines to collude in allocating slots without violating the anti-trust laws.

During the period of airline regulation, scheduling committees provided a convenient way of allocating slots. Since all participants were CAB-protected incumbents, there was ample incentive to reach agreement since the alternative was to suffer the uncertainty of administrative allocation. After deregulation, however, the demand for slots by new entrants complicated matters considerably. Incumbents were naturally reluctant to part with their slots, particularly if it meant giving them to potential competitors who threatened to undercut their fares. It soon became apparent to the CAB that incumbent members of scheduling committees were deliberately trying to keep out the competition. A 1983 FTC Report observed the results of a scheduling committee at National Airport:

> At the last meeting the dispute was so intense that nine airlines voted against a proposal that would have given each of them exactly the number of flights they wanted. They did so, they said, to keep New York Air and US Air from increasing the number of their flights.

In approving a 1984 request for antitrust immunity for proposed scheduling agreements at six air side congested cities, the CAB observed: "For the past six months (Air Atlanta) has unsuccessfully . . . attempted to obtain slots from the airline scheduling committee. Despite the existence of twenty-five unused slots, the committee has been unable

to agree; thus Air Atlanta's request for ten slots has not been granted."[79]

In another order, the CAB acknowledged that scheduling discussion "could reduce competition substantially."[80] Nevertheless the CAB was reluctant to withdraw anti-trust immunity for scheduling agreements on grounds that "(t)he alternative could be a frustrated public that eventually could demand a return to some form of regulation or another government agency forcefully regulating airline actions without concern for the benefits of competition."[81] It therefore continued to approve the agreements for lack of a "reasonably available less anti-competitive alternative."[82]

Numerous studies have revealed that the allocation of slots by scheduling committees is anti-competitive.[83] One recent study by Grether[84] conducted simulations of the scheduling committee allocative process in order to assess their impact on economic efficiency. The study concluded that any economic efficiency obtained is purely coincidental. It did note, however, that the degree of inefficiency depended to a large extent on the default provisions triggered by failure to reach a consensus. In this regard, it found that lotteries provided a better default provision then grandfathering in easing barriers of entry to new carriers.

In summary, allocation of slots by scheduling committee results in allocation of slots to low-valued flights. Decisions on such committees are the result of the political power structure of each committee and are not based on market factors. It is to the advantage of an incumbent to use a slot on a low-valued flight rather than relinquish it to an aggressive competitor for a higher valued flight, since such relinquishment would result in a flatter demand curve for that incumbent and a reduction of the oligopoly premiums that it can obtain from use of its other slots.

As a result of the difficulties in reaching agreement on scheduling committees after deregulation, many committees ceased to function and allocations were frozen.

ADMINISTRATIVE REGULATION

It has been settled law since the passage of the Air Commerce Act in 1926 that the federal government may exercise exclusive control over the

79. CAB Order No. 84-10-120 at 9 (Oct. 25, 1984).

80. CAB Order No. 84-8-129 at 9 (Aug. 31, 1984).

81. CAB Order No. 84-10-120 at 8 (Oct. 25, 1984).

82. CAB Order No. 84-8-129 at 9 (Aug. 31, 1984).

83. *See* Hardaway, *The "Buy-Sell" Slot Rule: Airline Deregulations at the Crossroads*, 52 JOUR. AIR L. & COM. 1 (1986); L.F. DAY AND J.M. WHITE, A SLOT ALLOCATION MODEL FOR HIGH DENSITY AIRPORTS, (Washington: U.S. Department of Transportation, 1980) FAA APO-80-13.

84. GRETHER D., ISSAC R., PLOTT C., THE ALLOCATION OF SCARCE RESOURCES: EXPERIMENTAL ECONOMICS AND THE PROBLEM OF ALLOCATING AIRPORT SLOTS, (Boulder, Co: Westview, 1988).

use of airspace pursuant to its Commerce and Supremacy Powers under the U.S. Constitution (See Chapter Two). The FAA/DOT therefore has ultimate authority to allocate slots to individual carriers. This power was reaffirmed in *Northwest Airlines v. Goldschmidt*. In that case the DOT had issued SFAR/43 which allocated specific slots to particular carriers. It had done so, however, only as a last resort where a scheduling committee had deadlocked on an air allocation plan. Despite the Deregulation Act of 1979 which withdrew direct DOT power of economic regulation of the airlines, the Court upheld SFAR/43 under the Federal Aviation Act which gave the DOT power not only to regulate safety, but also to regulate for the purpose of achieving "the efficient utilization of . . . airspace."[85]

Some analysts have suggested that administrative regulation can improve the efficiency of allocation by considering such factors as a previous period's allocation, the average number of locations served, airline preferences, and the number of passengers enplaned.[86] These analysts have noted that administrative allocation has the added advantage of enabling the FAA to ensure slot availability to new entrants and to airlines serving essential service to small communities.[87] Others, however, have opined that administrative allocation is based on political rather than economic considerations.[88] A 1990 DOT study cited this author for his conclusion that administration allocation is "cumbersome and the least viable, and certainly least palatable method of allocation."[89]

In order to avoid administrative allocation, the CAB as early as 1984 began approving scheduling agreements which it conceded to be anticompetitive, believing that the alternative of administrative allocation could lead to demands for economic re-regulation.[90] In order to avoid the need for administrative allocation at HDR airports, the DOT promulgated the "buy-sell" regulation which permitted sale of slots on the open market.[91]

Slot Sales and Exchanges

The 1986 DOT "buy-sell" rule permitted an after market in slot sales.

85. 49 U.S.C. sec. 1348(c) (1982); H.R. Rep. No. 2360, 85th Cong. 2d Sess 2.

86. *See e.g.*, Carlin A., Pank R., *Marginal Cost Pricing of Airport Runway Capacity*, 60 Am. Econ. Rev. 310-19 (1970) cited in 1990 DOT Report, *Airports*, supra note 42 at E-6.

87. Rogers J., Geisinger K., DeCarne D., Regulatory Analysis: Allocation of IFR Reservations at Washington National Airport, (Washington: U.S. Department of Transportation, 1980) FAA AVP-80-6, Cited in 1990 DOT Report, *Airports*, *supra* note 42 at E-6.

88. Boreinstein S., *On the Efficiency of Competitive Markets for Operating License*, 103 Q. J. Econ. at 357-85 (1988), *cited in* 1990 DOT Report, *Airports, supra* note 42 at E-7.

89. 1990 DOT Report, *Airports*, *supra* at note 42.

90. *See* text accompanying note 80-93, *supra.*

91. FAR Part 93, Subpart 5: 50 FR 52180, (Dec. 20, 1985); amended 51 FR 21708 (June 13, 1986).

Its most controversial provision, however, was one that "grandfathered" existing slots to those already holding them. Other provisions provided that slots not used at least sixty-five percent of the time were subject to reclamation by the FAA for distribution by lottery.[92] The rule also made it clear that it did not authorize airport proprietors to sell slots, and that the FAA retained sole jurisdiction over the nation's airspace.

At a series of public hearings, opponents to the Rule voiced four major objections to the rule: 1) it would give an undeserved windfall to incumbents, 2) increase air fares, 3) result in carriers to some small communities being out-bid by carriers intending to use slots for longer and more lucrative routes, and 4) create anti-competitive incentives for large carriers to outbid smaller ones for slots.

With the support of an FTC Economic Staff Report[93] and a Department of Justice economic analysis,[94] the FAA responded to these objections as follows: 1) the economic scarcity of a slot existed before the promulgation of the "buy-sell" rule, and the rule therefore did not create a windfall, but simply recognized existing economic values, 2) airfares would not increase, since fares already reflected the scarcity value of the slots. Rather, airfares would decrease due to a decrease in delays and more efficient use of slots, 3) service to small communities is protected by the Essential Air Service Program; under the hub and spoke system many short hauls are now highly valued, and in any case would be available for lease or purchase, 4) small carriers would not necessarily be out-bid by larger carriers since slot sales could be financed. Lenders are more likely to lend money to carriers using a slot profitably. Thus, smaller, efficient carriers might actually be favored over larger, debt-laden, or inefficient carriers.

The FAA maintained that "buy-sell" would improve efficiency by providing the incentive for an airline to "liquidate a slot at a price higher than the value to the using carrier"[95] and "to acquire a slot at a price which will permit a return on investment higher than the next preferable investment alternative."[96]

An FTC Report supported the DOT conclusions:

> The likelihood of successful monopolization by buying slots . . . appears to be small. While a slot market would facilitate the obtaining of slots by the airline attempting to monopolize, it would be necessary for the airline to obtain most of the slots available at an airport to monopolize any route into that

92. 50 Fed. Reg. 52,193.

93. REPORT, OFFICE OF ECONOMIC ANALYSIS, CIVIL AERONAUTICS BOARD, COMPETITION AND THE AIRLINES: AN EVALUATION OF DEREGULATION (1982).

94. COMMENTS OF THE UNITED STATES DEPARTMENT OF JUSTICE BEFORE THE FAA/DOT, Docket No. 24, 110 (Aug. 6, 1084) [hereinafter cited as DOT Comments].

95. 50 Fed. Reg. 52,194.

96. *Id.*

airport. And, the existence of the slot market would also facilitate entry by rivals, if the would-be monopolizer attempted to raise his price.[97]

This analysis overlooks several critical factors. The alternative is not between total contestability or total monopolization. Each slot held by an incumbent represents exactly one slot not held by a competitor whose operations could flatten the incumbent's demand curve. The degree of this flattening would, of course, depend on the extent of the competitor's operations. The Report states with confidence that "an airline would not buy a slot in order to operate a flight that is expected to have a relatively low value simply because it has the cash to do so," since "(c)apital markets exist precisely to evaluate such investment and to provide funds for those that appear sufficiently attractive."[98] This analysis fails to take into account the premium oligopoly value of a slot for an airline facing a relatively non-horizontal demand curve. For a large firm facing a steeply declining demand curve, the oligopoly premium of the slot is in inverse proportion to the percentage of that firm's market share. For the smaller firm, the only premium for a slot is represented by the value of the slot as the equivalent of an "operating certificate," and will vary with that firm's potential to charge prices above marginal cost. Thus, "to the extent that the large firm's total premiums exceed the smaller firm's total premiums, the large firm will have the economic incentive to outbid the smaller firm for a slot."[99]

If a larger firm outbids a smaller firm for a slot or refuses to sell at marginal cost, the following results occur: 1) a barrier to entry is created, and the incumbent firm will face a more steeply declining demand curve, thus enabling it to set prices at a profit-maximizing and misallocative level above marginal cost (but equal to marginal revenue), and 2) large firms will, in order to avoid losing a slot under the "use it or lose it" clause of the "buy-sell" rule, use that slot for a lower valued flight even if it does not cover variable costs; it will do so in order to preserve the oligopoly premium for its other flights. The result is a misallocation of slot resources.

Empirical data collected since "buy-sell" suggests that the result predicted by the above analysis has in fact occurred. The 1990 DOT Report on Airports concludes from its data that "the slot aftermarket has few sellers,"[100] and that only a relative handful of actual slot transactions has been reported.[101]

The efficiency of open market slot sales cannot be properly evaluated without considering gates and ground resources. A new entrant

97. FTC Report, *supra* note 77 at 16.
98. *Id.* at 28.
99. Hardaway, *supra* note 65 at 29.
100. 1990 DOT Report, *Airports, supra* note 42 at 2-16.
101. *Id.*

needs both a gate and a slot to begin operations. Without a gate a slot has no value to an airline. Slots and gates are rarely sold in pairs, and slots do not usually become available at the same time as a gate. Since one has no value without the other, the oligopoly premium for a gate/slot combination may exceed the sum of each when valued separately. This in return serves to increase the anti-competitive and misallocative effects of slot sales.

Analysts differ in their evaluation of slot sales. Some argue that a market system puts slots to their highest valued use.[102] Others have argued that slot sales do not necessarily achieve this result; rather the results of slot sales depend upon such factors as elasticity of demand, the extent to which an airline is able to exercise price discrimination, and the degree to which an airline's ability to capture increases in surplus is correlated with expected profits.[103]

An auction of all slots has been proposed as a means of avoiding the "windfall" to incumbent carriers.[104] Under this proposal all slots would be reclaimed and then sold to the highest bidder.[105] This would have the added benefit of raising money for airport operations and expansion.

Proponents of auctions argue that the government should not give valuable slots away for nothing, as is presently being done. The problem with this view, however, is that slots have already been given away, and to reclaim them now without compensation would result in a forfeiture to those who now possess them. It should also be noted that most major airlines have made considerable financial contributions to the airport infrastructure, and these contributions have heretofore entitled them to the use of airport facilities and slots.[106] Nor would auctions cure any of the anti-competitive or misallocative effects experienced under "buy-sell".

LOTTERIES

Under the 1986 FAA "Buy-Sell Rule, five percent of total slots were to be allocated by lottery."[107] The Rule also provided that if any slots became available under the "use it or lose it" provision they would be

102. *See e.g.*, Carlin, A., and R.E. Park, *Marginal Cost Pricing of Airport Runaway Capacity*, 60 AMER. ECON REV. (1970) at 310- 19; D. Starkey and D. Thompson, *The Airports Policy White Paper: Privatization and Regulation*, 6 Fiscal Studies at 30- 41 (1985).

103. BORENSTEIN, S., TESTIMONY BEFORE THE UNITED STATES CONGRESS, HOUSE OF REPRESENTATIVES. COMMITTEE ON PUBLIC WORKS AND TRANSPORTATION. SUBCOMMITTEE ON AVIATION. HEARINGS ON GOVERNMENT POLICIES ON THE TRANSFER OF OPERATING RIGHTS GRANTED BY THE FEDERAL GOVERNMENT. PARTICULARLY CERTIFICATES OF PUBLIC CONVENIENCE AND NECESSITY AND AIRPORT SLOTS. 99th Congress, Ist session. (Washington: 1986).

104. 1990 DOT Report, *supra* note 38 at E-12.

105. *Id.*

106. *See* text accompanying note 47-48, Chapter One, *supra*.

107. 50 Fed. Reg. 52,193 (1985).

redistributed by lottery. The primary rationale for slot distribution by lottery is that it gives new entrants an opportunity to obtain slots. Since financially healthy sellers rarely give up slots which can be distributed by lottery, however, lotteries have not achieved this purpose.

The 1990 DOT Airport Study reveals that of the 145 slots made available to new entrants under HDR, only fifteen remain in the hands of the new entrants who obtained them.[108] The rest were simply sold in the minimum time permitted. Such a result is predictable under a system which allocates slots based on chance rather than on considerations of efficiency. Certainly there is no expectation under such a system that slots will initially be distributed to those who can use the slots most efficiently. However, as long as an after-market exists, lottery-allocated slots can ultimately be sold to those to whom they have the greatest marginal utility. The ultimate benefactors are the lottery recipients who reap a windfall when they sell the slots.

Even if lotteries resulted in allocation of slots to new entrants who could most efficiently use them, those slots would still be useless to any new entrant who did not also have a gate. In addition, the obtaining of a slot at an HDR airport would be useless without control of a matching gate/slot at another airport.

VARIABLE LANDING FEES

Congestion at high density airports is due not so much to lack of total available capacity as to lack of capacity at peak hours. If flights could be spread out evenly over twenty-four hour periods, existing congestion could be significantly reduced or even eliminated. Unfortunately, however, hours of flight operations at most airports are severely restricted, particularly in late evening and early morning hours. Such restrictions take the form of curfew, noise, and other environmental regulations. Passengers, moreover, prefer to travel during convenient day-time hours. In response, competitive airlines schedule flights at peak times to accommodate passenger demand. As a result, there is excessive congestion at peak travel times, which causes expensive and time - consuming delays.

User fees imposed at most airports exacerbate the congestion problem by failing to extract the full economic rental from airport resources, particularly slots. Typical fees include a passenger embarkation fee,[109] a fee based on aircraft weight,[110] a fee based on distance[111] and a flat fee

108. 1990 DOT Report, *supra* note 38 at 2-15.

109. *See* Evansville - Vanderburgh Airport Authority Dist. v. Delta Airlines, 405 U.S. 707, 709 (1972).

110. *See* Nierenberg, *Incentives Versus Regulation: The Case for Airport Noise Changes*, 2 GEO. MASON U. L. REV. 167 (1978).

111. *Id.*

based on aircraft movements. All such fees are based on the premise that the primary purpose of airport user fees is to cover the cost of airport operations. Indeed, such a purpose appears justified in light of the Airport and Airway Improvement Act[112] which states that as a precondition to approval of an airport development project, airport fees must not be "excessive in relation to costs incurred by the taxing authorities." Thus, most airports simply impose the most convenient fee which will allow it to recover its costs.

Michael Levine, in his landmark article *Landing Fees and the Airport Congestion Problem*,[113] analyzes the economic effects of the most common types of airport user fees. His study concludes that fees based on weight encourage airlines to schedule flights at peak hours. Since fees cause airlines to experience "the average, rather than marginal, delay, measuring the cost to the airline of adding the schedule against the incremental revenue will yield a more favorable result than would be the case if the cost to all users were taken into account."[114]

Fees based on a flat rate do not allow airlines which are capable of efficient aircraft unitization to obtain savings from such efficient use: "(i)t delays equally long-haul passengers who have few substitutes for air travel and short-haul passengers who have many."[115] Fuel flowage fees encourage the most frivolous airport uses: "The recreational flight for lunch or a cup of coffee, the short trip to pick up or drop-off a passenger who could make the trip by surface, the instructional approach landing to give the student a taste of operating at a busy airport."[116]

Embarkation fees do not accurately reflect the actual cost of airport use, with the result that "smaller aggregate charges (are) assessed against unpopular flights than against popular ones - precisely the opposite of the effect desired at peak hours when capacity is of prime value."[117] This in turn causes distortions in demand which results in investment mistakes.[118]

Such fees therefore fail to take advantage of a second important function of pricing: efficient rationing. It is through a market-oriented pricing system that the value of uses is tested and resources are ultimately allocated to highly valued uses. Congestion at peak hours could be elimi-

112. 49 U.S.C.A. sec. 2202(a)(5).

113. M. Levine, *Landing Fees and the Airport Congestion Problem*, 12 J.L. & ECON. 79 (1969).

114. *Id.* at 91.

115. *Id.*

116. *Id.* at 94.

117. *Id.* at 101.

118. *Id.*

nated by setting landing fees at a price at which the supply of an airport resource equalled its demand.

For example, assume that an airport is experiencing extreme congestion during the hours of eight to eleven a.m. and three to six p.m. Business travelers prefer to get an early start so that they can arrive at their destination with sufficient time to conduct their business on that same day. Recreational travelers also prefer to get an early (but not too early) start. The value of the business traveler might be higher than that of the recreational traveler, since a business traveler's time is expensive and business negotiations or conferences may involve higher economic stakes. The business traveler must compete with the recreational traveler for use of this desirable time slot. An aircraft using this time slot, however, is not charged any more for it than for another unpopular, low demand time slot. Although an airline attempting to use this time slot sustains costs due to delay, this cost will be no more than the average cost for all other aircraft attempting to use this time slot.

Thus, no incentive exists for an airline to use a less congested time period, since it will suffer no competitive disadvantage by using the congested time period; its competitors will experience the same costs and delays by using that same congested time period. The result is that a time slot will not be used in a way which provides the highest marginal utility to its user. A seat on an aircraft using the desirable time slot may not be available to a business traveler who highly values it, because it is being used by a recreational traveler to whom it is only marginally more valuable than a less congested time period.

By charging a landing fee which results in the supply of an airport resource equalling the demand for it at that price, the resource will be allocated to its most highly valued use. A business traveler who values the resource highly, or a passenger who needs to use that time period to get to a daughter's wedding or visit a dying parent, can obtain a seat on an aircraft using the desired time period, *albeit* at a higher price reflecting its higher valued use. The recreational traveler going on a two week vacation, however, to whom the use of another less desirable time slot involves only marginal inconvenience, reaps the advantage of a sharply reduced fee. In such a manner, the airport resource is put to its highest valued use. The business traveler or passenger who values a slot highly will not experience the costly delays experienced under the present system of landing fees since the desired time slot will no longer be congested. The recreational passenger will be able to enjoy his vacation at a lower price. The decision as to what value to put on the use of a time period is up to the individual consumer. An efficient pricing system merely permits him to make that decision. If that decision is instead made by a committee or a bureaucrat, the result is misallocation since it is im-

possible to fully take into account the multitude of individual choices and preferences of each consumer.

Although variable landing fees should, in theory, equalize the demand for airport use at high and low peak periods, the question arises as to whether such fees will be passed on to the consumer who ultimately determines the value of the use at that time period. If the landing fee is charged directly to the airline, that airline might, for a variety of reasons, elect not to charge fares which reflect that fee. It might, for example, wish to maintain its visibility during a popular time period. A large airline might wish to use its market power to saturate a time slot, electing to subsidize ticket fares on those flights at the expense of its flights at low-peak periods. This would in turn prevent smaller competitors from using its aircraft in the most efficient manner. Since a smaller carrier might be less able to sustain the economic losses caused by such inefficient use, it might be forced to exit the market entirely, thus benefitting its larger competitor. The purpose of a system of variable landing fees could therefore be frustrated.

To prevent this result, landing fees should be imposed as a direct tax on the price of a passenger's ticket. Proceeds from the fee would go directly to the airport authority. Thus, regardless of a particular airline's ticket price, a passenger electing to take a flight at a high-peak period would have to pay a higher fee. Passengers electing to take a flight at a low-peak period might pay no fee at all, or even receive a rebate on their ticket. In such a way, high and low peak periods would be evened out and congestion relieved.

Although the economic rationale for variable landing fees seems clear, these may be legal obstacles to its implementation. It has been noted that the Airport and Runway Improvement Act requires that airports prevent "unjust and discriminatory practices."[119] The Interstate Commerce Clause also acts as a restraint on the amount of fees which can be charged. In *Evansville-Vanderburg Airport Authority District v. Delta Airlines*, the Supreme Court held that airport fees must reflect "a fair, if imperfect approximation of the use of facilities for whose benefit they are imposed,"[120] and must not be "excessive in relation to costs incurred."[121] It has been argued and indeed held by some Courts, that if fees are raised to a level sufficient to reduce demand to the level of supply, such fees would not reflect actual costs and would therefore be prohibited. Such an argument is based on a very narrow definition of the cost to an airport of an airline's use of it. Costs can not be determined

119. 49 U.S.C.A. sec. 2202(A)(5) (1982).

120. 405 U.S. 707, at 717 (1972) citing Nippert v. Richmond, 327 U.S. 416 (1946).

121. *Id.*

simply by calculating the total expense of building and operating an airport and dividing this sum by the number of minutes an airline wishes to use it. An airport is paying fixed costs on its assets twenty-four hours a day, 365 days a year. Any definition of cost must take into account the *scarcity value* of an airport resource.

A short illustration makes the point: if the government (or any economic entity) were to open a diamond mine, a considerable amount of time, effort and expense would be expended in searching for diamonds. Assume that an expenditure of a thousand man-hours results in the finding of ten diamonds. Nine of the diamonds are of little value on the open market. The tenth however, is ten carats and worth a million dollars. Assume also that a statute requires that the government sell its diamonds based on the "cost" of producing them. One way to calculate the "cost" of the ten carat diamond would be calculate the average number of hours spent on finding each diamond (i.e., 100 hours) and multiply that by the hourly wage (say ten dollars an hour). Under such a calculation, the government would be required to sell its ten carat diamond for $1,000, i.e., a price equal to that of the other nine less valuable diamonds. (Such a method is analogous to the way "costs" of airport resources are now calculated at most airports).

It is submitted that a more accurate way of calculating the "cost" of producing the ten carat diamond would be to use a weighted formula which takes into account the greater demand for and scarcity value of the ten carat diamond. Even this is not a truly satisfactory solution since, even though the ten carat diamond will now be priced higher than the less valuable diamonds, it will still be sold at a price which is far lower than the price it would command on the open market. There is no way to get around the latter problem, however, if a statute requires that the diamonds be priced only at a level which "recovers the cost" of production. Were the government to sell the ten carat diamond at its true market value of one million dollars, such a sale would be in violation of the statute which prohibits the government from selling it at a price which is "excessive" in relation to the "costs of producing it." The hapless taxpayer is thus deprived of a potential "profit" on the ten carat diamond; the profit will instead go to the lucky buyer who purchases it at its below market price on a first come, first serve basis.

In summary: since the Airport and Runway Improvement Act requires that airport resources be rented at prices "not excessive in relation to costs," valuable slots are now priced at the average cost of providing it, and allocated at most airports on a first come, first serve basis. The term "cost" should not be limited to a definition based on a calculation of average costs, but rather should be based on a definition which takes into account the scarcity value. This would permit the imposition of landing

fees which vary according to demand. It would not, however, necessarily permit fees based on the function of a flight (i.e., general aviation vs. commercial). Rather the value of a flight should be determined by each individual user. The Airport and Runway Act would, however, restrict pricing based purely on supply and demand. Until this law is changed, the value of an airport resource above its market value will continue to be enjoyed by those lucky enough to obtain that resource on a first-come, first-serve basis.

Unfortunately, there has been fierce opposition to demand determined pricing of landing fees. The DOT has upheld complaints by general aviation andd small regional carriers directed against landing fees which take into account the opportunity costs of landing slots. In the 1989 case of *New England Legal Foundation v. Massachusetts Port Authority* the First Circuit Court of Appeals upheld such a DOT determination.

Noise Regulation

The nature and extent of local and proprietary noise abatement regulations and restrictions is described in Chapter Two. While the federal government has the exclusive power to regulate use of navigable airspace,[122] local governments have the power to regulate activities which are of purely local concern. Thus, local governments may regulate ground operations and impose height and zoning restrictions.[123] Although local and state governments do not have the direct police power to regulate aircraft noise, such governments may, in their capacity as airport proprietors, fill the vacuum left by Congress' failure to exercise its powers of preemption; that is, they may promulgate noise abatement regulations as long as they do not violate the Interstate Commerce Clause.[124] The result is what an FAA General Counsel has described as "(a) patchwork quilt of local airport use restrictions which threatens to 'Balkanize' the national system and strangle its vitality."[125] By refusing to exercise its preemptive powers to regulate noise at the local airport level, however, the federal government has been able to avoid liability for noise pollution. Under the case of *Griggs v. Allegheny County*,[126] the airport is responsible for any "taking" of an avigational easement.

A 1983 Airport Access Task Force has concluded that the existing "patchwork guilt" of local noise restrictions has "significantly impaired airport capacity and access." This study also concluded that while single

122. *See* text accompanying notes 21-23, Chapter Two, *supra.*

123. *Id.*

124. *Id.*

125. E. Tazewell Ellett, *The National Air Transportation System: Design by City Hall*, 53 J. AIR L. & COM. 1 at 20 (1987).

126. 369 U.S. 84 (1961).

restrictions at individual airports do not substantially burden interstate commerce, the haphazard application of non-uniform restrictions would have that effect. Such non-uniform restrictions at airports now vary considerably. Such restrictions now include bans, capacity limits, perimeter rules, single-event noise limits, noise abatement profiles and tracks, displaced landing thresholds, training restrictions, ground run-up restrictions, and aircraft towing requirements. The Task Force concludes by suggesting a more active federal role in establishing uniform noise standards. The DOT, however, disagrees with this suggestion, noting that while national standards would benefit the airlines, they might also subject individual communities to more or less noise than they would otherwise tolerate. Instead, the DOT has suggested a plan for placing direct charges on airlines for noise pollution based on such factors as time of day operation and individual aircraft noise levels. The Department of Justice has also taken an approach based on economic factors, suggesting that "noise charges" be imposed on airlines, and that these charges be based on the amount of noise damage actually caused by flight operations.

Statistical studies have determined the effect of airport noise on the value of property surrounding airports. It has been found that an increase in noise exposure by one NEF (Noise Exposure Forecast) reduces the value of property surrounding an airport by about one percent. (NEF is a sound measurement based on a twenty four hour exposure which takes into account the extra sensitivity of the human ear to nighttime noise). For example, a property valued at $100,000 would decrease in value by $5,000 if the NEF increased by five percentage points. Nierenberg has suggested that noise charges be assessed based on a fee using average noise levels. The technology for measuring such noise levels presently exists. The Manchester International Airport in England and Washington National Airport have had such monitoring systems in place for a number of years.

The money obtained from such noise fees could then be placed in a fund to compensate property owners who sue for inverse condemnation. Such a system would be preferable to direct administrative regulation by either federal or local authorities. Considerations of public policy would dictate the total amount of noise to be permitted at any individual airport. Once this political decision is made the question of what percentage of the total noise is to be allotted to a particular airline would be determined by the economic decisions of each airline. Noise pollution "rights" at each airport could be sold or allocated to airlines in the same manner that slots are now sold and allocated at HDR airports. Airlines which have invested substantial sums in quiet, third generation engines for their aircraft would be permitted a greater number of flight operations within their

noise allotments, while airlines with older and noisier aircraft would have fewer. Economic incentives for airlines to invest in quieter aircraft would thereby be created. Economic considerations would also affect an airlines decision to operate aircraft at less noise sensitive times of the day and to develop procedures for the quieter operation of aircraft.

Only by making the producer of noise pollution pay for the actual cost of it can noise be restricted in a manner which permits maximum efficiency of aircraft operations within the total noise perimeters set by public policy. If an airport were to condemn private property for the purpose of building a runway, there would be no question as to its obligation to pay fair compensation to the property owner. *Griggs* applied this same principle to condemnation of avigational easements, and allocated liability for such avigational takings to the airport proprietor.

Since the technology now exists for precise determination of the damage caused by noise as measured by NEF, there is no reason for an airport not to charge its users a fee which is based on a formula which reflects the degree of liability which that use creates for the airport. It is submitted that a such fee would meet the definition of reasonableness as set forth in the Airport Acceleration Act which provides that states which own or operate an airport may collect "reasonable rental charges, landing fees, and other service charges from aircraft operations for the use of airport facilities."

It does not follow from the above analysis, that a separate noise fee system should be imposed at each individual airport. If each airport is free to set its own total noise parameters, a potential threat to interstate commerce would persist if some airports set unreasonably low parameters in order to satisfy purely provincial considerations. Lack of uniformity in noise fee schedules would also create unnecessary burdens on interstate carriers, and increase the costs of administration. Rather, the FAA should use its preemptory powers to set a range of total noise parameters within which each local administrator could set local parameters which take into account local factors and considerations. In addition, the FAA should establish, on a nation-wide basis, an administrative procedure for the funding of a national noise "fund" and the processing of claims for noise damage to property owners. National NEF standards and property appraisal formula should be adopted and standardized. Criteria for the submission of inverse condemnation claims based on noise damage and the taking of avigational easements should also be established. The institution of such uniform administrative procedures should replace existing local procedures for the processing of claims sounding in inverse condemnation, nuisance, and trespass. These procedures now vary considerably from state to state. However, while local property owners should retain the option of pursuing state or local remedies, a national system

would doubtless provide an attractive alterative and set *de facto* national standards.

The establishment of a national administrative structure would and should bring with it federal liability for noise pollution. However, if noise fees are set at levels which adequately compensate for actual damages sustained, there would be no net drain on the federal treasury.

Finally, the setting of federally established noise fees should be combined with fees for use of slots. Slot fees should also be federally administered, and imposed at all airports serving aircraft conducting interstate operations. Ground resources and gates should be retrieved as leases expire at airports owned and operated by the federal government (such as National and Dulles). Gates and slots should be then paired and redistributed in the same manner as slots are allocated under the present "buy-sell" rule at HDR airports.

Only through a uniform and federally administered system of noise, slot, and use fees can the highest and most efficient use of airport resources be assured, and the threat to interstate commerce effectively neutralized.