Policy Study No. 254

PASSENGER-FRIENDLY AIRPORTS:
ANOTHER REASON FOR AIRPORT PRIVATIZATION

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Executive Summary

Since the privatization of the British Airports Authority in 1987, over 20 countries have privatized airports by means of equity divestitures, leases, and incentive-laden management contracts. After more than a decade of experience, many of the benefits of airport privatization are becoming more discernible:

- *Capital infusion:* Privatization enables airports to raise additional capital and avoid potentially severe congestion due to funding constraints.
- *Cost savings:* Privatization brings gains in efficiency by means of effective cost management.
- *Revenue windfall:* Privatization provides governments with budget relief generated from the proceeds of the sale or lease of airports.
- *Passenger-friendliness:* Privatization stimulates a managerial culture at airports which is highly responsive to passenger needs.

Recognizing some of these benefits, Congress approved a pilot privatization program in 1996 to test the waters. After one year of operation, the pilot program has raised a few eyebrows in the aviation community —a good thing, if only to keep sleepy eyes open. However, despite numerous backroom discussions and boardroom conferences on the topic, there have been only a few applications to participate in the program.

One of the reasons for this sluggish satisfaction with the status quo is a failure to recognize the common ground in the privatization debate. Detecting common ground requires identifying objectives of airport privatization which are desired by all of the key players in the debate—airlines, government officials, and the traveling public. This report identifies, measures, and analyses one shared objective of privatization: passenger-friendliness (defined more formally as passenger-responsiveness). For all three stakeholder

groups, creating a managerial culture which is responsive to passenger needs at airports is a highly desirable common goal.

This study assesses whether privatized airport ownership has an impact on passenger-responsiveness. It has not been entirely clear that passengers, who often have little choice but to use their local airport, will always benefit from privatization in its various forms—divestiture, leases and management contracts. But as a result of overseas airport privatization trends, it is now possible to find evidence to examine this issue. Consequently, this study presents the results of a 50-item survey administered to airport managers worldwide. Passenger-responsiveness is a scaled measure of the extent to which an airport adopts a managerial culture which emphasizes serving passengers. Responses from 201 airports in 67 countries are analyzed. (The sample includes 54 airports in the United States.) This represents one of the most comprehensive and international studies of managerial culture in the airport industry conducted to date.

Based on results of the empirical analysis, the main conclusions of this report are as follows:

- Privatization matters: privatized airports have a significantly higher level of passenger-responsiveness than government-owned airports.
- Privatization matters, in all its forms: this relationship holds for both types of airport privatization: equity divestiture and private sector leases/management contracts.
- Common ground exists: given that privatization leads to a more responsive managerial culture desired by all stakeholders, state and local officials should emphasize, in their negotiations with airlines, that delaying privatization does a disservice to all parties, especially the traveling public.

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Part 1

Background

A. From Passengers to Customers: A Short History of Airport Privatization

History is fraught with examples of policy innovations that, once revealed to the world, seem obvious and almost too simple to be considered revolutionary. When Margaret Thatcher privatized the British Airports Authority in 1987, the aviation industry woke up to the idea that airports—long considered public utilities—held tremendous untapped potential for revenue generation and efficiency gains. It now seems amazing to fathom but, while Ronald Reagan was President, it was impossible to buy batteries for a Walkman while waiting in most airport lounges.

After the BAA privatization, a cottage industry of consultants emerged to investigate how passenger "dwell time" could produce potentially revenue-enhancing gains. The profit motive led to a greater emphasis on "customer service." The nomenclature changed as well: the passive term "passenger" was replaced with the active term "customer" as is common in the private sector. (Private-sector providers, such as shoe stores and jewelers, cater to "customers" not "shoe wearers" and "jewelry users," unlike public sector providers, such as schools and libraries, who cater to "students" and "library users.") In 1990, BAA began benchmarking its airports against each other and against other airports in order to identify key areas for improvement such as bad quality food, poorly marked signposts, and uninspired retail offerings.[1] Sophisticated typologies of airport management were developed to understand branding and positioning of airports. In 1992, Prof. Rigas Doganis, an aviation expert in the UK, proclaimed in an influential book that airports are businesses.[2] This book provides the first systematic treatment of the differences between the traditional public-utility model and the new commercial model of airport management.

At about this time, a few countries cautiously began the process of privatizing commercial-service airports. A partial stake in Austria's Vienna Airport was listed on the Vienna Stock Exchange in 1992. Similarly, two Danish airports were corporatized as Copenhagen Airports Ltd. and listed on the Copenhagen Stock Exchange in 1994. In both of these divestitures, the private sector now holds slightly less than 50 percent of the shares of the airport companies.

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1 Text of presentation by Stan Maiden at conference entitled "Practicalities of Successful Benchmarking and Competitive Intelligence in Aviation," London, September 29, 1997.

2 Rigas Doganis, *The Airport Business* (London: Routledge, 1992).

Since the early 1990s, governments worldwide have become more accustomed to the concept of airport privatization.[3] Several countries have actively been preparing for airport divestitures, sometimes in conjunction with large-scale privatization programs in the industrial sector. At the time of this writing, over 20 countries have successfully completed the sale or lease of airport facilities, including: Argentina, Australia, Austria, Bahamas, Bolivia, Cambodia, Canada, Chile, China, Colombia, Denmark, Dominican Republic, Germany, Hungary, Italy, Japan, Malaysia, Mexico, New Zealand, Singapore, South Africa, Switzerland, and the United Kingdom.[4] It is worth noting that this list includes countries from almost all continents, at almost all stages of industrial development, and at almost all levels of per-capita income. Airport privatization is truly a worldwide phenomenon.

B. The U.S. Experience: Catching Up With The World

Airport authorities in the United States sat up and took notice when the British Airports Authority was privatized. Shortly thereafter, Albany County in New York attempted to lease its airport to the private sector in order to reduce operating costs and recover its original investment. The lease was ultimately vetoed by the Federal Aviation Administration, but only after its task force deadlocked over both the legality and the desirability of the proposed transaction. Since then, a few similar attempts at privatization have failed in cities such as Baltimore, Boston, Los Angeles, and New York.

One notable exception is the case of Indianapolis International Airport which, although unable to lease its airport, was able to contract-out airport management to the private sector in 1995. Since then, the airport has become a media darling for touting the success of airport privatization—and for good reason. In addition to generating significant cost savings for airlines and the City of Indianapolis, the airport has imported BAA's retailing expertise. Along with the growth in airport retailing has come a change in managerial culture which, for example, has led to frequent surveys of passenger preferences and the provision of a toll-free phone line for questions and comments.[5]

Given the success of the Indianapolis management contract and the numerous divestitures overseas, the benefits of airport privatization have come into clearer focus. It has become possible to clearly articulate the benefits and, in some cases, provide supporting evidence:

- **Capital Infusion.** Forecasts of passenger growth at U.S. airports have a sobering effect. Domestic and international passenger traffic is forecast to grow at 3.9 percent annually through 2007, suggesting that airports will be required to double their capacity over the next two decades.[6] Depending solely on debt capital markets and government funding for this massive expansion of terminals and runways may lead to periods of congestion. Foreign airports such as Copenhagen Airport have demonstrated that tapping

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[3] In a strict sense, "privatization" refers to the transfer of asset ownership from one party to another. In the U.S. debate on airport privatization, the term has come to refer to a number of organizational practices which reduce public sector control of the airport. In this study, it refers mainly to equity divestiture, but also includes leases and/or airport management contracts when specified. This is discussed in more detail in a subsequent section of the report.

[4] This list does not include several countries with privately-financed airports under construction or privately-financed non-commercial airports.

[5] Cited in *World Airport Week*, July 29, 1997, p.8.

[6] United States General Accounting Office, *Airport Privatization: Issues Related to the Sale or Lease of US Commercial Airports*, November 1996, GAO-RCED-97-3, Chapter 3:1.

the equity market through privatization is an effective means of avoiding congestion and upgrading facilities.

- **Efficiency Gains.** Although airports are traditionally better able than most public sector entities to manage costs, there is much room for improvement. Indianapolis Airport, long considered one of the more efficient airports in the country, has attracted private sector managers who will not make a profit unless about $140 million is saved over the course of their 10-year contract. Some evidence of efficiency gains is already available from overseas privatization. A study by the Reason Foundation demonstrated that labor productivity improved after the privatization of the British Airports Authority.[7]

- **Revenue Windfall.** If current restrictions on the use of airport revenue are changed, the proceeds from the sale or lease of airports would generate significant funds to relieve public sector budget pressures. Recently, in Australia, the sale of 50-year concessions for airports in Brisbane, Melbourne, and Perth raised a total of $2.6 billion. An estimate by the Reason Foundation indicated that the 87 largest U.S. airports have a market value of $29 billion.[8]

- **Passenger Friendliness.** Until now, there have been no studies which systematically demonstrate that privatized airports have a higher level of passenger friendliness than government-owned airports. However, anecdotal data from the BAA divestiture suggests that privatization leads to a more responsive managerial culture.[9]

Recognizing some of these benefits of privatization, Congress directed the Federal Aviation Administration to implement a pilot privatization program in 1997 to test the waters. Specifically, the pilot program cleared legal obstacles to privatization for up to five airports. (For details, see Reason Policy Brief No. 4, "Airport Privatization Pilot Program.") However, despite numerous backroom discussions and boardroom conferences on the topic, there have been few applications to participate in the pilot program.[10] One reason for this slow progress is the time-consuming nature of handling the bidding procedure for privatization.

However, a more fundamental reason for the slow progress is that airlines and airport officials have been hesitant to lend their requisite support to municipal and state authorities seeking airport privatization. The hesitance is rooted in a sluggish satisfaction with the status quo—as well as the fear of the airport becoming a cash cow for the municipality, at the expense of airport users. In particular, airline groups have been comfortable with the public-utility culture of airports, apparently unaware of how it might adversely affect the traveling public (their customers). In an interview about the likely results of airport privatization with *World Airport Week*, Tom Browne of the Air Transport Association asked, "What is in it for the traveling public other than a higher cost?"[11]

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[7] Robert W. Poole, Jr., "Airport Privatization: What the Record Shows," Reason Foundation, Policy Study No. 124, August 1990.

[8] Robert W. Poole Jr., "Revitalizing State and Local Infrastructure: Empowering Cities and States to Tap Private Capital and Rebuild America," Reason Foundation, Policy Study No. 190, May 1995.

[9] Kyle Pope, "Airport Privatization Begins to Take Off, Led by Britain's BAA," *The Wall Street Journal*, September 24, 1996.

[10] By September 1998, only two airports had made formal applications for privatization: Brown Field in California and Stewart International Airport in New York.

[11] Cited in an interview with Tom Browne of the Air Transport Association, a group representing major airlines that operate in the US, *World Airport Week (Aviation Today* web edition*)*, Dec. 17, 1997.

Indeed, this question should be at the forefront of the discussion on airport privatization.

C. The Need to Assess Passenger-Friendliness

Over the past few years, the interests of the traveling public (i.e. passengers) have been overlooked in the privatization debate. For instance, in a 1996 GAO report prepared for Congress that was intended to describe the main issues related to airport privatization, the views of the traveling public were seldom considered. In a detailed discussion of the advantages of selling or leasing U.S. commercial airports, the report made no reference to the impact of privatization on the managerial culture of airports and on the airports' responsiveness to passengers' needs.[12] To be fair, this is mainly because of the lack of available evidence on this topic. But, if there is one thing which airport directors and airline executives should agree on, it is that the views of passengers should be closer to the forefront of the discussion on airport privatization.

Clearly, there is some potential conflict between the views of passengers and the interests of airlines, who are the airports' primary customers. One well-known area of conflict regards the degree of emphasis on airport retailing: there is a potential trade-off between designing a shopping-mall which happens to be an airport and designing a compact, efficient terminal which leads to on-time departures.[13] Nevertheless, there are many areas in which the interests of airlines and passengers converge. Here is a short list of shared desires:

- proper connecting traffic facilities;
- efficient check-in layout;
- productive and courteous airport staff;
- skill at bottleneck management;
- atmosphere of security;
- ease of ground transport;
- accessible baggage carts;
- clean washrooms;
- clear signposting;
- comfortable waiting areas.

What leads to the provision of these mutually desirable services at airports? Under what conditions do airports have a managerial culture which is responsive to passenger needs? Does private ownership matter? These are questions to which all the key players in the airport privatization debate—airlines, state and local authorities, and the traveling public—need answers.

At present, however, for each of the stakeholder groups, the focus of their ruminations has been away from the shared objective of passenger-friendliness. Airlines, concerned with how privatization might lead to higher costs, are forgetting the potential gains in service quality and responsiveness to their customers'

[12] United States General Accounting Office, *Airport Privatization: Issues Related to the Sale or Lease of US Commercial Airports*, November 1996, GAO-RCED-97-3, Chapter 3:1.

[13] Text of presentation by Dave Bluett at conference entitled "Maximising Passenger and Airline Satisfaction," London, March 18, 1997. It should be noted that several airports have reduced this trade-off with effective terminal design (e.g. Pittsburgh International Airport).

needs. State and local officials, too wary of "losing control" of their airports, are forgetting how privatization would benefit many of their constituents—the traveling public. Finally, the traveling public (i.e. passengers), too disparate and disordered to organize a collective voice, have been unable to communicate how they would benefit from a customer-oriented managerial culture following privatization. Given that passenger-friendliness is desirable for all parties, it has the potential to represent common ground in the airport privatization debate.

Along these lines, this study seeks to inform the debate by examining whether privatized ownership has an impact on passenger-friendliness at airports. More specifically, this report describes the results of an empirical study which compares the level of what we will define as "passenger-responsiveness" at government-owned and privatized airports worldwide. The next section describes how passenger-responsiveness is measured and provides details about the sample of airports used in the study. The third section presents the empirical results of study. The final section draws conclusions from these results.

Part 2

Assessing Passenger-Responsiveness

Put simply, *passenger-responsiveness reflects the extent to which an airport adopts a managerial culture which emphasizes serving passengers.* It is derived from a perceptual measure in management theory called "market orientation," which is a well-tested and precise means of assessing amorphous concepts such as organizational culture and management philosophy.

The measure of passenger-responsiveness is based on nine items in the questionnaire (see Figure 1). These items were selected to assess passenger-oriented managerial culture (as opposed to specific passenger services) desired by all stakeholders and users of the airport. This is consistent with the objective of identifying common ground in the airport privatization debate. As such, the measure of passenger-responsiveness is based on: (a) the extent to which information on passenger preferences is collected (e.g. surveys by the airport company); (b) the extent to which this information is disseminated within the organization (e.g. complaints passed between top management and airport workers); and (c) the extent to which this information is acted upon by airport management (e.g. timely response to preferences and complaints). Airport managers are asked to indicate the extent to which they agree or disagree with the items on a 5-point scale. The passenger-responsiveness score, ranging between 1 (low) to 5 (high), is based on an average of the nine responses.

Combining these three elements (collection, dissemination, action) into one measure has been suggested by Ajay Kohli and Bernard Jarowski, two prominent business school professors in the United States.[14] This approach to assessing managerial culture has been developed and tested in several industries. In addition, the measure of passenger-responsiveness used in this study was tested for statistical reliability and validity with industry experts.[15]

The objective of assessing passenger-responsiveness is to compare the managerial culture of airports under private ownership and public ownership. It is not entirely clear that passengers, who often have little choice but to use their local airport, will always benefit from privatization in its various forms—divestiture, private sector leases and management contracts. But since a number of airports overseas have been privatized, it is possible to conduct an international study and identify the impact of ownership status (public vs. private) on the level of passenger-responsiveness.[16]

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[14] Ajay Kohli and Bernard Jarowski, "Market Orientation: The Construct, Research Propositions, and Managerial Implications," *Journal of Marketing*, vol. 54 (1990), pp. 1-18.

[15] For a detailed account of how it was tested for statistical reliability and validity, see Asheesh Advani, *Market Orientation: The Case of Airport Privatization*, DPhil dissertation, Oxford University (1998).

[16] In strict terms, since this report includes cross-section data as opposed to time-series data on airports, it documents the impact of private ownership (not privatization) on passenger-responsiveness. (Privatization implies a change in

Figure 1: Questions to Assess Passenger-responsiveness

- QB1A: At my airport, we conduct formal surveys of our passengers.
- QB3B: At my airport, we survey passengers to determine desired airport facilities, such as the convenience of toilets and smoking lounges.
- QB3C: At my airport, we provide a well-publicized means for passengers to complain about airport problems (e.g. a complaints phone line).
- QB4A: At my airport, passenger preferences and complaints expressed to airport workers are often passed on to senior management.
- QB4B: At my airport, passenger preferences and complaints which are passed to senior management are often communicated throughout the airport organization.
- QB4C: At my airport, airline representatives have immediate access to airport management.
- QB5A: At my airport, we design our staffing levels and shift schedules based on information we collect on passenger flows.
- QB5B: At my airport, we respond to passenger preferences and complaints quickly.
- QB5C: At my airport, we approach potential retailer tenants who would be successful in meeting passenger preferences.

These nine items measure passenger-responsiveness at airports. Airport managers are asked to indicate the extent to which they agree or disagree with the items on a 5-point scale. The passenger-responsiveness score, ranging between 1 (low) to 5 (high), is based on an average of the nine responses. They were selected to assess passenger-oriented managerial culture (as opposed to specific passenger services) desired by all stakeholders and users of the airport.

Accordingly, this report describes the results of a survey of 201 airports in 67 countries and territories. (Appendix 1 includes a list of airports in the sample.) As part of the Oxford University Airport Study, a 50-item survey questionnaire was sent to airport managers worldwide between April 1997 and April 1998. It was conducted with the cooperation of Airports Council International who supplied postal labels for its member airports. Airport managers responded under the condition of confidentiality, such that results would only be reported in aggregate form. In order to increase the integrity of the responses, it was noted on the questionnaire that data on individual airports would not be singled out.

The characteristics of the 201 airports in the sample are representative of the characteristics of the airport population in general. For example, as in the case of the commercial airport industry in general, a relatively small number in the sample are under private ownership: 14 airports (about 7 percent). Table 1 provides a list of these airports and their share of private ownership. Similarly, the geographical breakdown of airports

ownership). However, this is mitigated somewhat by the fact that all the privately-owned airports in the sample were privatized (i.e. none have always been under private ownership). The next section provides further analysis to address this issue.

in the sample is roughly similar in proportion with the airport population at large.[17] In addition, the size of airports in the sample ranges from small single-terminal airfields with 40,000 annual enplanements to large multiple-terminal hubs, with over 40 million annual enplanements.[18] More details on the sample are provided in Appendix 2.

Table 1: Airports in the sample under private ownership

	IATA code	Airport	Country	Size—passengers enplaned and deplaned	% Private
1	ABZ	Aberdeen Airport	UK	2,574,840	100%
2	BFS	Belfast Intl. Airport	UK	2,057,878	100%
3	BHD	Belfast City Airport	UK	1,228,218	100%
4	BHX	Birmingham Airport	UK	6,030,241	40%
5	CPH	Copenhagen Airport	Denmark	16,837,115	49%
6	CWL	Cardiff Wales Airport	UK	1,157,490	100%
7	EMA	East Midlands Airport	UK	1,887,853	100%
8	GLA	Glasgow Airport	UK	6,115,817	100%
9	KIX	Kansai Airport	Japan	19,750,613	5%
10	LGW	Gatwick Airport	UK	26,961,453	100%
11	LHR	Heathrow Airport	UK	58,142,836	100%
12	RKE	Roskilde Airport	Denmark	45,872	49%
13	STN	Stansted Airport	UK	5,426,658	100%
14	VIE	Vienna Airport	Austria	9,738,292	48%

Note: The 14 airports shown above were privatized by means of equity divestiture. They represent over 50% of the world's total number of commercial airports privatized using equity divestiture before April 1997 (when the survey was first administered).

In order to better understand the concept of passenger-responsiveness, it is helpful to contrast it with the well-understood concept of passenger satisfaction. The latter is assessed from the passenger's point-of-view, based on passenger surveys. The former is assessed from the airport manager's point-of-view, based on manager surveys. Passenger satisfaction is an output-oriented measure of how service provision meets passenger expectations. Passenger-responsiveness is a process-oriented measure of how managerial culture treats passenger needs. One might say that passenger-responsiveness is the managerial precursor to passenger satisfaction and other desirable outputs such as service quality.

Under ideal circumstances, it would have been preferable to compare both process- and output-oriented measures for airports under public and private ownership. However, the airport industry has only recently begun collecting information on customer service, much of which is specific to a single airport and not comparative in scope. One notable exception is the comprehensive work done by IATA to measure "passenger convenience" by surveying 55,000 international passengers at airport facilities worldwide. Despite its rigor, the IATA study presently includes 54 airports, very few of which are privatized (only four

[17] The geographical breakdown of the sample (categorized by ACI's six regional groups) is as follows: Africa: 4%, Asia: 6%, Europe: 40%, Latin America/Caribbean: 7%, North America: 32%, and Pacific: 13%. African and Asian airports are somewhat underrepresented in the sample.

[18] The size breakdown of the sample is as follows: Small airports (under 500,000 passengers per annum—ppa): 28%; Mid-size airports (500,000—5,000,000 ppa): 40%; Large airports (over 5,000,000 ppa): 32%.

at last count).[19] Therefore, it is impossible to draw any meaningful conclusions about the impact of private ownership on passenger convenience.

Nevertheless, the IATA measures are useful tools for testing the validity of the measure used in this study. As suggested above, it is reasonable to suppose that there would be a high correlation between passenger-responsiveness, based on the manager surveys in this study, and passenger convenience, based on IATA's study of passenger surveys. The results of a test confirmed a high correlation between scores of airports in both studies.[20] In other words, it appears, that a customer-oriented managerial culture leads to higher customer service levels, as intuition would suggest.

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[19] IATA Aviation Information and Research, *Airport Monitor 1996*, Hounslow: IATA-AIR (1997).

[20] IATA kindly provided data on top-performing airports (scoring above the mean) in their study. A comparison of the airports which were included in both the IATA study and this study revealed a high correlation in scores. Specifically, 79% of the aforementioned airports were also top-performers (scoring above the mean) in terms of passenger-responsiveness.

Part 3

Results of the Study

A. Comparing Government-Owned and Privately Owned Airports

As discussed above, the objective of this report is to compare the level of passenger-responsiveness at airports under public ownership and private ownership in order to draw conclusions about the likely effects of privatization. This section provides a detailed description of the results of a study of passenger-responsiveness at airports worldwide. (Appendix 2 provides the statistical tests underlying the results discussed in this section.)

Privatization matters. The most important result is that *privatized airports are found to have a significantly higher level of passenger-responsiveness than government-owned airports*. (See Figure 2.) More specifically, based on an assessment of managerial behaviour, the organizational culture at privatized airports is found to be more customer-oriented than the organizational culture at government-owned airports.

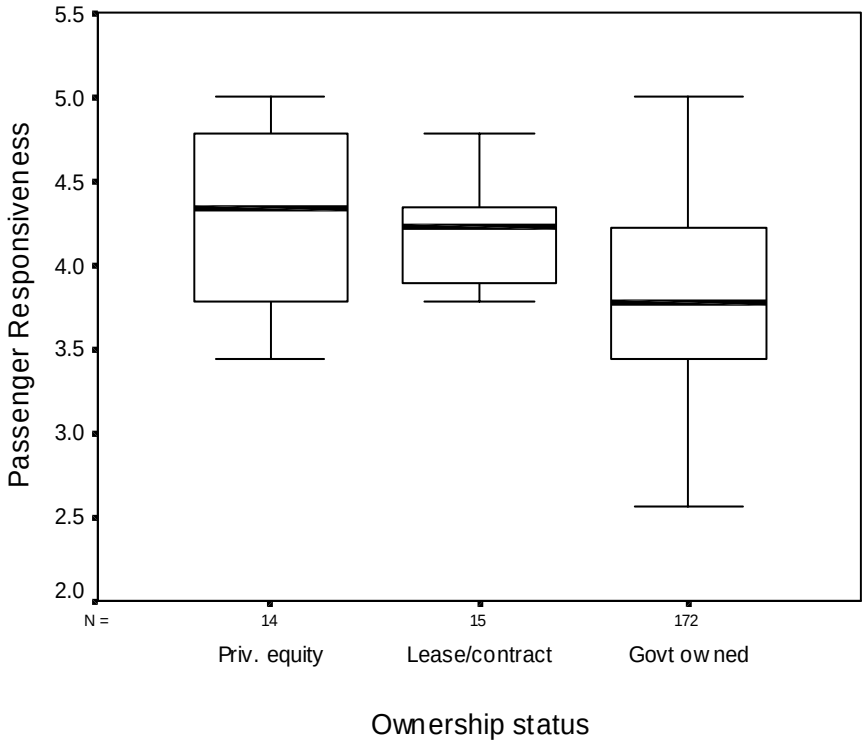
It doesn't matter how, just do it. As shown in Figure 2, both types of privatization lead to significantly higher passenger-responsiveness. In order to investigate whether the type of privatization has an impact on organizational culture, this study differentiates between *equity divestiture* in which capital market pressures are directly exerted on airport owners and *leases & management contracts* which arguably provide less direct, although not necessarily weaker, incentives for airport owner/operators.

Defining privatization is a complex issue. Private ownership is just one of many ways of introducing market-oriented incentives to airport management. Management contracts and long-term leases represent another form of privatization which is increasingly common at airports worldwide. Contracts and leases introduce market-oriented incentives to airport management in two ways: (a) they introduce pressures from "contestable markets" arising from the process of contract renewal and renegotiation; and (b) they stimulate managerial autonomy by reducing government influence. It should be emphasized that the extent to which they meet these two objectives varies greatly and depends on the terms of the contracts and leases. Table 2 provides a list of airports in the sample which operate under leases and management contracts. In some cases, the extent of managerial autonomy is relatively high (e.g. the airport redevelopment arrangements in Cambodia and Hungary) and, in some cases, it is relatively low (e.g. the form of privatization adopted in Canada and France, which involves some degree of public sector governance).[21] In all cases, however,

[21] All forms of privatization involve some degree of public sector governance and control. For a detailed discussion of different forms of private sector participation in the airport industry, see Ellis J. Juan, "Airport Infrastructure: The Emerging Role of the Private Sector," CFS Discussion Paper Series No. 115 (Washington: The World Bank, November 1995).

airports which operate under leases and management contracts are subject to pressures from contestable markets. For example, the Canadian form of airport privatization involves 60-year leases with periodic lease renegotiation based on meeting operational and financial targets. A complete consideration of the subtle differences between each form of privatization is beyond the scope of this report; however, as shown in Figure 2, the results indicate that airports privatized by means of equity divestiture and leases/management contracts have a significantly higher level of passenger-responsiveness than government-owned airports.

Figure 2: Passenger-responsiveness for each category of ownership



These box-plots display the median (marked by the central heavy line) and inter-quartile range (marked by the box and its whiskers) of the passenger-responsiveness scores. Passenger-responsiveness is scored from 1 (low) to 5 (high). The mean score for the sample of 201 airports is 3.87. The mean scores for airports privatized using equity divestiture (N = 14, mean = 4.29), leases and management contracts (N = 15, mean = 4.19) are significantly higher (99% confidence) than the mean score for government-owned airports (N = 172, mean = 3.81). It is worth noting that the sub-sample of 29 privatized airports is drawn from 9 countries.

Table 2: Airports In The Sample Under Lease Or Management Contract

	IATA code	Airport	Country	Size—passengers enplaned and deplaned	Form
1	ACY	Atlantic City Airport	USA	902,724	lease
2	ALB	Albany Airport	USA	2,128,466	contract
3	BOD	Bordeaux Airport	France	2,604,822	contract
4	BUD	Budapest Ferihegy Airport	Hungary	3,619,074	lease
5	IND	Indianapolis Airport	USA	7,171,845	contract
6	LIL	Aeroport de Lille	France	824,934	contract
7	MRS	Marseille Provence Airport	France	5,473,556	contract
8	PNH	Phnom Penh Airport	Cambodia	711,146	lease
9	SXB	Strasbourg Airport	France	2,094,526	contract
10	YEG	Edmonton Airport	Canada	3,720,623	lease
11	YMX	Montreal Mirabel Airport	Canada	2,255,080	lease
12	YUL	Montreal Dorval Airport	Canada	6,843,242	lease
13	YVR	Vancouver Airport	Canada	15,039,592	lease
14	YYC	Calgary Airport	Canada	7,436,257	lease
15	YYZ	Toronto Pearson Airport	Canada	26,094,527	lease

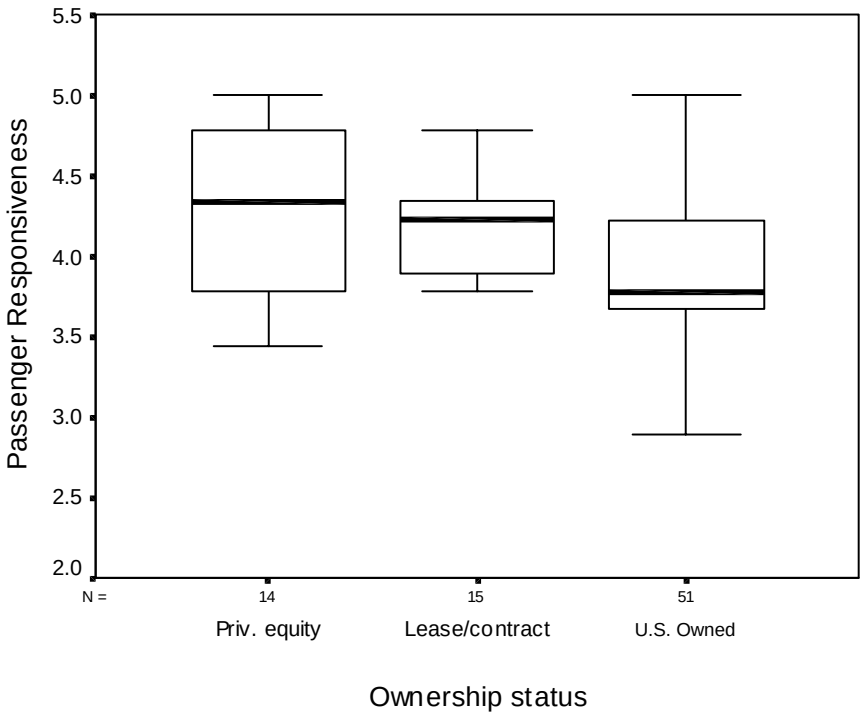
The 15 airports shown above operate under leases or management contracts. In all cases, the terms of the leases and contracts are subject to periodic renewal and/or renegotiation.

Sell the dogs. One further result which is apparent from Figure 2 is that privatization appears to reduce the likelihood that an airport will be particularly *non-responsive* to passenger needs ("a dog"). In statistical terms, not one of the privatized airports (of either type of privatization) in the sample scored less than one standard deviation below the sample mean. In other words, dogs tend not to be owned or managed by the private sector. This result will not be a surprise to most frequent fliers. Airports which are renowned for providing sub-standard terminal facilities and herding passengers about like cattle are victims of the public-utility managerial culture (and often, public sector capital shortages).

American airports have room for improvement. It is widely-known that government-owned airports in the United States tend to have a more commercial approach to airport management than many of their government-owned counterparts elsewhere. Although this commercial approach is likely due to several factors, three primary causes stand out: (a) the relatively high degree of private sector participation in concessions at airports in the U.S.; (b) the tendency for many foreign airports to be owned and operated by centralized federal governments rather than local authorities; and (c) the relatively high degree of collaboration between U.S. airports and airlines operating in a competitive marketplace. Based on this reasoning, it was decided to extract a subset of government-owned airports in the United States from the sample of 172 government-owned airports worldwide and replicate the tests described above.

As shown in Figure 3, the results are consistent with the findings noted earlier: privatized airports are found to have a significantly higher level of passenger-responsiveness than government-owned airports in the United States. As in the case of government-owned airports worldwide (shown in Figure 3), there are a few high-performing airports under public ownership; yet, the mean level of passenger-responsiveness is not as high as it is at privatized airports. Furthermore, a significant difference continues to hold for both types of privatization (although it falls to a 95 percent confidence level in the case of leases and management contracts). More specifically, the organizational culture at privatized airports is found to be more customer-oriented than the organizational culture at government-owned airports in the United States. There appears to some room for improvement.

Figure 3: Passenger-responsiveness: Privatized airports vs. government-owned U.S. airports



As indicated in Figure 3, these box-plots display the median (marked by the central heavy line) and inter-quartile range (marked by the box and its whiskers) of passenger-responsiveness scores. The mean scores for airports privatized using equity divestiture (N = 14, mean = 4.29), leases and management contracts (N = 15, mean = 4.19) are significantly higher (99% and 95% confidence, respectively) than the mean score for government-owned airports in the U.S. (N = 51, mean = 3.87). It is worth noting that the difference between the mean scores for government-owned airports in the U.S. (N = 51, mean = 3.87) and government-owned airports not located in the U.S. (N = 171, mean = 3.79) is not significant (p = 0.354). Appendix 2 displays the t-tests comparing these statistics in more detail.

B. Ensuring That Privatization Really Matters

There are two limitations to the approach shown above: (1) the small sample size of privatized airports and (2) the possibility that factors other than privatization might be driving the results. These will be addressed in turn.

Advance benefits of privatization. First, since the sample includes only 14 airports under private ownership and 15 airports operating under leases or management contracts, the results of analysis may seem inconclusive. This small sample is due to the very small number of airports which had been privatized before

the survey was administered in 1997.[22] Indeed, several airports were in the process of being privatized (e.g. Melbourne Airport) or planning to be privatized (e.g. London's Luton Airport) when the survey was conducted. Therefore, a separate variable was created for airports *expecting privatization*. This sample includes 40 airports whose managers indicated that their airports would be privatized within three years. (These airports are indicated on the list provided in Appendix 1.)

It was hypothesized that these airports expecting privatization would have a higher level of passenger-responsiveness than government-owned airports not expecting privatization. This hypothesis is based on the reasoning that preparing for privatization creates a similar set of economic incentives for airport managers as actual privatization. In anticipation of a change in ownership, airport managers would want to become commercially-oriented to please the new owners in order to retain their jobs. In addition, it may be argued that the seller of the airport (i.e. the state or local government) would also have an incentive to reform the managerial culture prior to privatization in order to attract potential buyers and maximize the sale price.

The empirical results confirm this hypothesis: The level of passenger-responsiveness at airports expecting privatization is significantly higher than at government-owned airports. (See Figure 4). In fact, passenger-responsiveness at airports expecting privatization is almost as high as it is at privatized airports.[23]

Controlling for other causes of passenger-responsiveness. Another limitation of the approach described in the previous section is that it does not compare airports pre- and post-privatization; rather, it compares passenger-responsiveness at airports at one point in time.[24] Therefore, it might be argued that the private airports in this study were always highly responsive to passengers, even before privatization—for reasons independent of privatization (e.g. due to airport size). This limitation is impossible to remedy without time-series data; however, in order to counteract for this problem somewhat, the study also included several other variables:[25]

- Capacity: An airport which cannot accommodate more passengers because of capacity constraints has less incentive to be responsive to passenger needs.
- Competition: A hub airport which competes fiercely for connecting traffic is likely to be more responsive to passenger needs.
- Size: Large airports that benefit from economies of scale are able to invest more readily in passenger surveys and benchmarking studies enabling them to be more aware of passenger needs.
- User-fees: An airport which collects user fees directly at the departure gate (e.g. Vancouver Airport) is more likely to be responsive to passengers because of the psychological underpinnings of the exchange relationship.[26]

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[22] The 14 privatized airports in this sample represent over 50% of the world's total number of commercial airports privatized using equity divestiture before 1997. Notice that the 7 BAA airports (6 of which are included in this study) represent much of this total.

[23] The mean score of passenger-responsiveness at privatized airports (mean = 4.29, N = 14) is higher, but not significantly higher than the mean score of airports expecting privatization (mean = 4.01, N = 40). However, the p-value is 0.08 suggesting that the difference is *almost* significant.

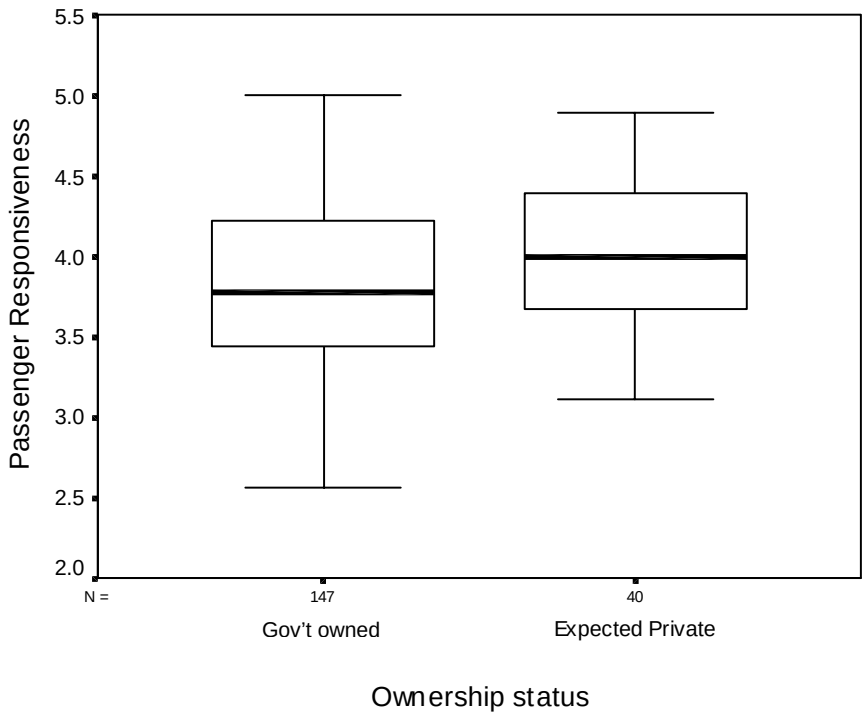
[24] A related limitation is the possibility that organizational change itself might have an impact of passenger-responsiveness (*regardless of the type of change*). This reasoning is somewhat similar to the famed "Hawthorne Effect."

[25] Appendix 2 includes a short discussion on how each of these variables were measured.

[26] This argument is drawn from the work of Michael Barzelay, *Breaking Through Bureaucracy: A New Vision for Managing in Government* (Berkeley: University of California Press, 1992), p. 112.

- Response bias: It is also possible that the job background of survey respondents (airport managers) is a factor which affects the level of passenger-responsiveness. This is always a concern when measures are based on survey data. Therefore, two types of response bias are tested: (1) for respondents with a marketing background; and (2) for respondents who are in senior management.

Figure 4: Passenger-responsiveness For Airports Expecting Privatization



These box-plots display the median (marked by the central heavy line) and inter-quartile range (marked by the box and its whiskers) of the passenger-responsiveness scores. The sub-sample includes 187 airports, omitting the 14 airports which have already been privatized by equity divestiture. The mean score for airports expecting privatization (N = 40, mean = 4.01) is significantly higher (95% confidence) than the mean score for government-owned airports not expecting privatization (N = 147, mean = 3.80). It is worth noting that the sub-sample of 40 airports expecting privatization is drawn from 26 countries.

Including these additional factors is clearly necessary because it is not likely that private ownership is the sole driver of passenger-responsiveness; multiple factors may be at work. The important question is whether private ownership is a significant factor, *controlling for other factors*. In order to answer this question, it is helpful to conduct a multivariate regression on passenger-responsiveness.

The results of the regression are summarized in Table 3. (See Appendix 2 for a complete presentation of the results of the step-wise regression on passenger-responsiveness.) Several variables are found not to have a

significant relationship with passenger-responsiveness: capacity, size, and user fees. In addition, the two response bias variables are also not significant, suggesting that the survey responses do not suffer from a bias due to the job background of the respondents. However, competition and the three privatization-related factors were found to be highly significant. The basis for these results are considered below.

Competition: Airports operating as hubs compete for connecting traffic. Although passengers make ticket purchase decisions based on several factors (e.g. price, schedule, loyalty programs, etc.), one factor of increasing importance is the transfer airport. Recognizing this trend, airports are turning to highly creative forms of end-user marketing to attract passengers. One familiar example is the case of Singapore's Changi Airport. Competing fiercely with airports in Hong Kong and Kuala Lumpur for transfer traffic, Changi is consistently ranked in the top three airports in the world in terms of passenger convenience. According to IATA's *Airport Monitor*, "Almost a third of the passenger sample at Singapore Changi Airport gave the airport ratings 10 out of 10 for *overall passenger convenience*.[27]

Table 3: The main drivers of passenger-responsiveness at airports

Rank	Factors	t-statistics
1.	Competition (hubs)	3.99**
2.	Private (equity divestiture)	3.53**
3.	Private (lease/contract)	2.69**
3.	Expected privatization	2.69**
ns	Size	1.70
ns	Capacity	-0.88
ns	User-Fees	-0.71
ns	Response bias—mktg employee	0.39
ns	Response bias—senior manager	0.08

** = significant at 99% confidence level * = significant at 95% confidence level ns = not significant

This chart indicates the strength of the relationship between each factor and passenger-responsiveness. The ranking shown in the first column is based on the t-statistics shown in the third column, which represent the result of a step-wise regression of all factors on passenger-responsiveness. The t-statistic indicates the strength of the relationship between each factor and passenger-responsiveness, *controlling for the effects of other factors.*

Privatization: The multivariate regression confirms that private ownership has a significant relationship with passenger-responsiveness, after controlling for other factors. Furthermore, the results indicate that both types of privatization (equity divestiture and leases/management contracts) continue to influence the managerial culture of the airport, after controlling for other factors. Copenhagen Airport is a good example of how privatization has led to greater passenger-responsiveness. Built in 1925, it is the oldest civil airport in the world; however, it has undergone more physical and cultural change since its privatization in 1994 than it had during its previous 70-year history. It has recently opened a new terminal, which also includes a rail-link (built in the shape of a delta wing) that has a direct subway connection to downtown Copenhagen. On the cultural front, after privatization, airport management initiated customer service training for front-line employees—including employees not working for the airport, but for its on-site tenants. The objective of this exercise, according to Alan Bork, a senior airport manager, was "to ensure a common understanding of

[27] IATA Aviation Information and Research, *Airport Monitor 1996*, Hounslow: IATA-AIR (1997), p. 2.

excellent customer service."[28] In doing so, Copenhagen Airports Ltd. has chosen a somewhat peculiar mission statement: "We create exciting experiences at the airport." For example, one recent addition to the airport is a sauna for passenger use.

The regression results also show that the *expectation* of privatization has a significant relationship with passenger-responsiveness. The reasoning for this was discussed earlier. One airport which clearly demonstrates the causation underlying this relationship is Bristol Airport in the U.K. When the survey for this empirical study was conducted in mid-1997, Bristol was preparing for privatization; it has since been sold to a trade investor in the UK. Prior to privatization, senior management at Bristol hired away a commercially-experienced airport manager from BAA's Gatwick Airport. He was given the position of Marketing Director and given the mandate of preparing the airport for commercial success. In doing so, he implemented programs intended to increase passenger-responsiveness including sophisticated customer survey research. [29]

The case of Bristol also raises a final point about airport privatization: it leads to competition for the best managerial talent. As noted by Robert Poole of the Reason Foundation, this competition may serve to accelerate the privatization trend:

> *As airport privatization becomes the mode of choice for large airports worldwide, more and more of the best airport managers will shift to these airports, gaining significantly higher compensation (including stock options) and better career paths. That will put U.S. airports at a further disadvantage—unless they switch.*[30]

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[28] Text of presentation by Alan Bork at conference entitled "Maximising Passenger and Airline Satisfaction," London, March 18, 1997.

[29] Ibid.

[30] Text of presentation by Robert W. Poole Jr. at American Association of Airport Executives' Privatization Workshop, Washington, D.C., January 15, 1998.

Part 4

Conclusions

For several decades, some observers have recognized the importance of the profit motive and private ownership at U.S. airports. As long ago as 1930, in a study of the airport industry conducted at Harvard University, one of the main objectives was to explore the interplay of private ownership and managerial "calibre."[31] Similarly, this report finds a revealing interplay between private ownership and managerial culture.

Understanding the relationship between private ownership and managerial culture is particularly important because it has the potential to serve as common ground in the airport privatization debate. The stimulation of a managerial culture at airports which is responsive to passenger needs is highly desirable for all of the main stakeholder groups in the debate—airlines, state and local officials, and the traveling public. Given this background, the following conclusions may be drawn from this report:

A. Privatization Matters

Privatized airports have a significantly higher level of passenger-responsiveness than government-owned airports. This result holds even when controlling for other factors such as competition (which is the most significant driver of passenger-responsiveness), capacity, user-fees, and airport size. Furthermore, privatized airports are much less likely to be particularly poor performers ("dogs") than government-owned airports.

B. Privatization Matters, In All Its Forms

Whether airports are privatized using equity divestiture or using leases and management contracts, they have a higher passenger-responsiveness than government-owned airports. Furthermore, even the expectation of privatization leads to a higher level of passenger-responsiveness at airports. One must be careful, however, in concluding that the expectation of privatization is a *sustainable* driver of a renewed managerial culture. After all, if privatization is not realized, false expectations may not be enough to sustain the improvements in passenger-responsiveness for very long.

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[31] H.V. Hubbard, M. McClintock, and F. B. Williams, *Airports: Their Location, Administration and Legal Basis* (Cambridge: Harvard University Press, 1930), p. 62.

C. Common Ground Exists

State and local officials considering airport privatization should emphasize the results of this study to airlines. Better, cleaner, more efficient airport facilities and a more responsive managerial culture are shared objectives—for airlines, state and local officials, and for the traveling public. Given that privatized airports have been found to have higher level of passenger-responsiveness than government-owned airports, delaying privatization further is doing to a disservice to all parties, especially the traveling public.

About the Author

Asheesh Advani's professional background includes positions in investment banking, strategy consulting, and policy advising. He is currently in the process of completing a book on airport privatization, based on the results of the Oxford University Airport Study (OUAS@pobox.com) which he directed between 1996 and 1998. Dr. Advani holds a BSc (Economics) from The Wharton School at the University of Pennsylvania. In addition, he was a Commonwealth Scholar at Oxford University, where he earned an MSc (Economics for Development) and a DPhil (Management).

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Other Relevant RPPI Studies

Airport Privatization Pilot Program. *(8 pg. Policy Brief)* By Robert W. Poole, Jr., September 1997.

Reinventing Air Traffic Control: A New Blueprint for a Better System. By Robert W. Poole, Jr. and Viggo Butler, May 1996.

How to Privatize Orange County's Airports. By Robert W. Poole, Jr., August 1995.

Privatizing Milwaukee's Airport. By Robert W. Poole, Jr., July 1994.

Appendices

Appendix 1: Airports included in this study, listed by IATA code

Note: Airports marked with an asterisk [*] were deemed to be "expecting privatization" (within three years) based on the input of survey respondents (airport managers). This is a measure of managerial perception rather than actual privatization policy; however, several of the airports noted have since been privatized.

1	ABE	Lehigh Valley Airport	*30*	BON*	Bonaire Flamingo Airport
2	ABZ	Aberdeen Airport	*31*	BRN	Bern—Belp Airport
3	ACY	Atlantic City Airport	*32*	BRS*	Bristol Airport
4	ADL*	Adelaide Airport	*33*	BUD	Budapest Ferihegy Airport
5	AES	Alesund Airport	*34*	BWI	Balt./Washington Intl. Airport
6	AKL*	Auckland Airport	*35*	CAI	Cairo Airport
7	ALB*	Albany County Airport	*36*	CDG	Charles de Gaulle Airport
8	ANG	Angouleme-Champniers Airport	*37*	CFE	Clermont Ferrand Airport
9	APW	Faleolo Airport	*38*	CGK*	Jakarta Airport
10	ARN	Stockholm-Arlanda Airport	*39*	CGN	Cologne/Bonn Airport
11	ASM*	Asmarra Airport	*40*	CHC*	Christchurch Airport
12	ASP*	Alice Springs Airport	*41*	CLT	Charlotte/Douglas Airport
13	AUA	Aruba Airport	*42*	CMB*	Bandaranaike Airport
14	AUS	Austin Municipal Airport	*43*	CMH	Port Columbus Airport
15	AVN	Avignon—Caumont Airport	*44*	COS	Colorado Springs Airport
16	BAH	Bahrain Airport	*45*	CPH	Copenhagen Airport
17	BDA	Bermuda Airport	*46*	CUR	Curacao Hato Airport
18	BDL	Bradley Airport	*47*	CVG	Cincinnati Airport
19	BET	Bethel Airport	*48*	CWL	Cardiff Wales Airport
20	BEY*	Beirut Airport	*49*	DAB	Daytona Beach Airport
21	BFS	Belfast Intl. Airport	*50*	DAL	Dallas Love Field Airport
22	BGR	Bangor Airport	*51*	DEL*	New Delhi Gandhi Airport
23	BHD	Belfast City Airport	*52*	DRO	Duranga La Plata Airport
24	BHX	Birmingham Airport	*53*	DSI	Des Moines Airport
25	BJL	Banjul Airport	*54*	DUB*	Dublin Airport
26	BKK*	Bangkok Airport	*55*	DUD	Dunedin Airport
27	BLL	Billund Airport	*56*	DUS*	Dusseldorf Airport
28	BOD	Bordeaux Airport	*57*	DXB	Dubai Airport
29	BOI	Boise Airport	*58*	ELP	El Paso Airport

59	EMA	East Midlands Airport
60	ENF	Enontekio Airport
61	FAI	Fairbanks Airport
62	FLR*	Florence Airport
63	FRA*	Frankfurt Airport
64	FWA	Fort Wayne Airport
65	FYV	Fayetteville Municipal Airport
66	GBE	Gabarone Airport
67	GCI	Guernsey Airport
68	GEN	Oslo Gardermoen Airport
69	GFK	Grand Forks Airport
70	GLA	Glasgow Airport
71	GOT	Gothenburg-Landvetter Airport
72	GRU	San Paulo Airport
73	GRZ	Graz Airport
74	GSO	Piedmont Triad Airport
75	GUM	Guam Airport
76	GVA	Geneva Airport
77	HAJ	Hannover-Langenhagen Airport
78	HAM*	Hamburg Airport
79	HBA*	Hobart Airport
80	HKG	Hong Kong Airport
81	HNL	Honolulu Airport
82	HRE	Harare Airport
83	HSV	Huntsville Airport
84	HUY	Humberside Airport
85	IND	Indianapolis Airport
86	INN	Innsbruck Airport
87	IOM	Isle of Man Airport
88	JED	King Abdulaziz Airport
89	JER	Jersey Airport
90	KAG*	Zagreb Airport
91	KAJ	Kajaani Airport
92	KAO	Kuusamo Airport
93	KEF	Keflavik Airport
94	KHH*	Kaohsiung Airport
95	KHI	Karachi Airport
96	KIX	Kansai Airport, Osaka
97	KKN	Kirkenes Airport
98	KRS	Kristiansand Airport Kjevik
99	KSC*	Kosice Airport
100	KWI	Kuwait Airport
101	LBA	Leeds Bradford Airport
102	LBC*	Lubeck Airport
103	LGG	Liege Airport
104	LGW	London Gatwick Airport
105	LHR	London Heathrow Airport
106	LIL	Aeroport de Lille
107	LJU	Ljubljana Brink Airport
108	LNK	Lincoln Airport
109	LNZ	Linz Airport
110	LPA	Aeropuerto de Gran Canaria
111	LPB	La Paz Viru Viru Airport
112	LTN*	Luton Airport, London
113	LUN*	Lusaka Airport
114	MAD	Madrid Barajas Airport
115	MAH	Menorca Airport
116	MAN	Manchester Airport
117	MCI	Kansas City Airport
118	MCO	Orlando Airport
119	MEL*	Melbourne Airport
120	MEX*	Mexico City Airport
121	MFM	Macau Airport
122	MIA	Miami Airport
123	MLA*	Malta Airport
124	MLE	Male Airport
125	MNL*	Manila Airport
126	MRS	Marseille Airport
127	MRU	SSR Airport
128	MSU*	Moshoeshoe Airport
129	MUC	Munich Airport
130	MYR	Myrtle Beach Airport
131	NAP*	Naples Capodichino Airport
132	NGO	Nagoya Airport Terminal
133	NRT	New Tokyo Airport, Narita
134	NTL	Newcastle Airport
135	NUE	Nuremberg Airport
136	NWI	Norwich Airport
137	OMA	Omaha Airport
138	ORF	Norfolk Airport
139	OSL	Oslo Fournebu Airport
140	PAH	Barkley Regional Airport
141	PBI	Palm Beach Airport
142	PDX	Portland Airport
143	PHF	Newport News Airport
144	PHX	Phoenix Airport
145	PIT	Pittsburgh Airport
146	PMI	Palma de Mallarca Airport
147	PMV	Aeropuerto del Caribe
148	PNH	Phnom Penh Airport
149	PNI*	Pohnpei Airport
150	POS	Piarco Airport

151	PPT*	Tahiti Faa'a Airport
152	PZY	Piestany Airport
153	QEF	Egelsbach Airport
154	RDU	Raleigh-Durham Airport
155	REU	Aeropuerto de Reus
156	RIC	Richmond Airport
157	RIX	Riga Airport
158	RKE	Roskilde Airport
159	RTM*	Rotterdam Airport
160	SAL*	El Salvador Airport
161	SAV	Savannah Airport
162	SBA	Santa Barbara Airport
163	SBD	San Bernandino Airport
164	SCL*	Santiago Airport
165	SDF	Louisville Airport
166	SEL	Kimpo Airport, Seoul
167	SFO	San Francisco Airport
168	SGF	Springfield Branson Airport
169	SHJ	Sharjah Airport
170	SHV	Shreveport Airport
171	SJU*	Puerto Rico Airport
172	SLC	Salt Lake City Airport
173	SLD	Sliac Airport
174	SMF	Sacramento Airport
175	SPN	Saipan Airport
176	STN	London Stansted Airport
177	STR	Stuttgart Airport
178	SWF*	Stewart Airport
179	SXB	Strasbourg Airport
180	SXM*	St. Maarten Airport
181	SZG	Salzburg Airport
182	TLV	Ben Gurion Airport
183	TPE	Chiang Kai-Shek Airport
184	TSV*	Townsville Airport
185	TYS	Knoxville Airport
186	VIE	Vienna Airport
187	WRO	Wroclaw Airport
188	YEG	Edmonton Airport
189	YHZ	Halifax Airport
190	YMX	Montreal Mirabel Airport
191	YOW	Ottawa Airport
192	YQB	Quebec City Airport
193	YQM	Moncton Airport
194	YQR	Regina Airport
195	YUL	Montreal Dorval Airport
196	YUM	Yuma Airport
197	YVR	Vancouver Airport
198	YWG	Winnipeg Airport
199	YYC	Calgary Airport
200	YYG	Charlottetown Airport
201	YYZ	Toronto Pearson Airport

Appendix 2: Statistical Testing

T-Tests to Compare Passenger-responsiveness at Airports Under Different Forms of Ownership

Table A1: Six T-Tests for Inequality of Means: Passenger-Responsiveness (MOPSGR)

Variable categories:		Group Statistics:				t-test for inequality of means	
Variable	Sub-group	N	Mean	Standard Deviation	Mean Difference	t-value	Significance
MOPSGR	Private (equity) Public	14 187	4.29 3.84	0.52 0.51	+0.45	3.16**	0.002
MOPSGR	Private (lease/contract) Public	15 172	4.19 3.81	0.31 0.51	+0.38	2.82**	0.005
MOPSGR	Expecting privatization Public (not exp. private)	40 147	4.01 3.80	0.48 0.50	+0.21	2.45*	0.015
MOPSGR	Private (equity) Public (U.S. only)	14 51	4.29 3.87	0.52 0.50	+0.42	2.75**	0.008
MOPSGR	Private (lease/contract) Public (U.S. only)	15 51	4.19 3.87	0.31 0.50	+0.32	2.35*	0.022
MOPSGR	Public (U.S. only) Public (non-U.S. only)	51 121	3.87 3.79	0.50 0.51	+0.08	0.93	0.354

** significant at $p < 0.01$ * significant at $p < 0.05$

Based on an analysis of the t-tests, the following hypothesis are considered:

H1: ③MOPSGR (private—equity) > ③MOPSGR (public)

Confirmed: The mean level of passenger-responsiveness is significantly higher at airports privatized by equity divestiture than at public airports (i.e. the mean differences are positive and significant).

H2: ③MOPSGR (private—lease/contract) > ③MOPSGR (public)

Confirmed: The mean level of passenger-responsiveness is significantly higher at airports privatized by leases or management contracts than at public airports.

H3: ③MOPSGR (exp. privatization) > ③MOPSGR (not exp. privatization)

Confirmed: The mean level of passenger-responsiveness at airports expecting privatization is significantly higher than at airports not expecting to be privatized.

H4: ③MOPSGR (private—equity) > ③MOPSGR (public—US only)

Confirmed: The mean level of passenger-responsiveness is significantly higher at airports privatized by equity divestiture than at public airports in the United States.

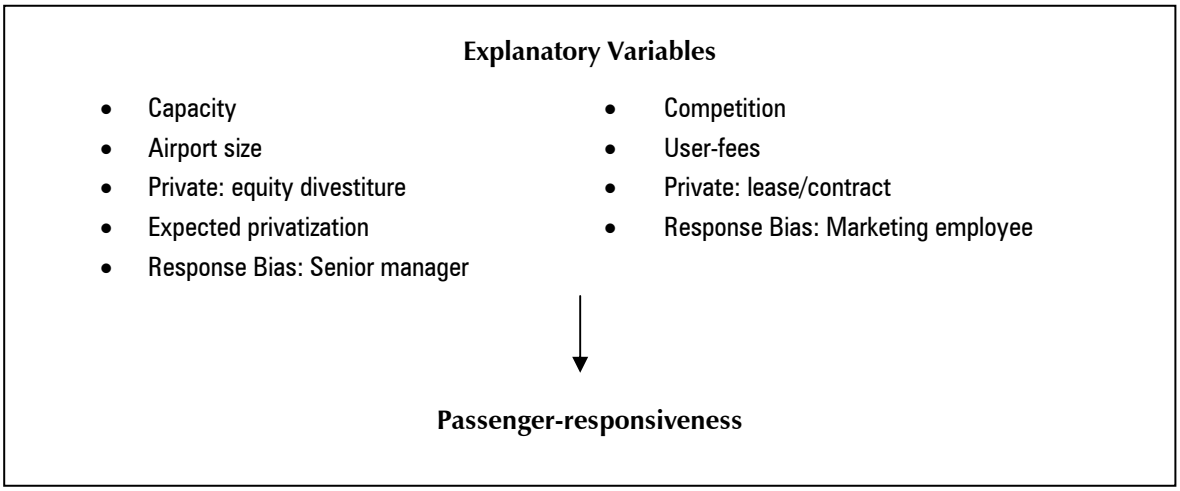
H5: ③MOPSGR (private—lease/contract) > ③MOPSGR (public—US only)

Confirmed: The mean level of passenger-responsiveness is significantly higher at airports privatized by leases or management contracts than at public airports in the United States.

H6: ③MOPSGR (public—US only) > ③MOPSGR (public—non-US only)

Rejected: The mean level of passenger-responsiveness is *not* significantly higher at public airports in the United States than at public airports outside the U.S.

Multivariate Step-Wise Regression on Passenger-responsiveness



Model specification: $Y = a + b_1X_1 + b_2X_2 + \ldots + b_NX_N + e$
Y = passenger-responsiveness
X_1 through X_N correspond to the N explanatory variables

Measuring variables: All variables are based on perceptual measures from responses in the questionnaire, except the following variables which were based on data received from industry bodies: private ownership (ACI), size (ACI), and user fees (Official Airlines Guide). All variable measures were subject to validation by industry experts.

Stepwise criteria: Variables are added to each subsequent model in the order of their relationship with the dependent variable, controlling for previously included variables (i.e. partial correlation), and within a pre-specified significance threshold (F <= 0.05); variables are excluded if their significance falls outside a pre-specified threshold (F >= .10).

Goodness of Fit: The R-squared statistic of the final model is 0.186. This is quite low; however, it should be noted that low goodness of fit is common in cross-section analysis. The R-squared statistic increases with the addition of several organizational factors; however, including these factors in the same regression equation as the factors shown here violates the assumption of independence among explanatory variables.

Table A2: Results of a Stepwise Regression on Passenger-responsiveness (Final Model)

Factors	Regression coeffecient	t-statistics	p-value
Competition (hubs)	0.262	3.99	0.000
Private: equity divestiture	0.234	3.53	0.001
Private: lease/contract	0.178	2.69	0.008
Expected privatization	0.178	2.69	0.008
Size	0.112	1.70	0.091
Capacity	-0.058	-0.88	0.380
User-Fees	-0.049	-0.71	0.478
Response bias—mktg employee	0.026	0.39	0.696
Response bias—senior manager	0.005	0.08	0.937

R = .0431

R-squared = 0.186

F = 11.024 (p = 0.000)