Federation of Indian Airlines
The Capital Court, 6th Floor,
Olof Palme Marg, Munirka,
New Delhi – 110067
Tel: +91-11-46161318/19/20
Fax: +91-11-46164318
Website: www.fiaindia.in

22 February 2011

Shri. Sandeep Prakash
Secretary,
AERA Building, Administrative Complex,
Safdarjung Airport, Aurobindo Marg,
New Delhi - 110003.

Subject: Comments & submissions of the Federation of Indian Airlines (FIA) tendered in response to the Consultation Paper No. 13/2010-11 titled "The Airports Economic Regulatory Authority of India (Terms and Conditions for Determination of Tariff for Airport Operators) Guidelines, 2011"

Dear Sir,

The FIA sincerely appreciates AERA for bringing out Consultation Paper No.13 on the above subject matter as FIA feels that as these AERA Guidelines 2011(Terms and Conditions for Determination of Tariff for Airport Operators) will go a long way in the determination of a fair and just Tariff. FIA is hereby placing on record the following submission (Enclosed) which has been arrived solely from discussions, deliberations and past experiences of the member airlines for the kind consideration by the authority.

Enclosed are the following documents for your kind consideration.

- Attachment –I, FIA Preliminary submission.
- Attachment – II, *Association of European Airlines*, Position Paper on Airport Charges, June 2007.
- Attachment – III, *Official Journal of EU*, Directive 2009/12/EC of the European Parliament and of the Council, 11 March 2009 on airport Charges.
- Attachment – IV, *The Aeronautical Journal*, April 2006, Impact of Privatisation on the Financial and Economic performance of European Airports (Dr. H.A. Vogel, Transport Studies Group, University of Westminster, London, UK).

Thanking you,

Yours Sincerely,

Ujjwal Dey
Sr. Executive Officer

I. Background & Scope of Present Consultation

1. The members of FIA hereby place on record submissions on the Consultation Paper No.13/2010-11 issued by the Authority on 02.02.2011 titled "Economic Regulation of Services Provided by Airport Operators" and the Draft Terms and Conditions for Determination of Tariff for Airport Operators by way of Airport Economic Regulatory Authority of India (Terms and Conditions for Determination of Tariff for Airport Operators) Guidelines, 2011 (***"Draft Guidelines"***).

2. At the threshold, it is necessary to place on record the legal and factual context, material for the decision making by the Authority:-

(a) With effect from 12.05.2009, the Airports Economic Regulatory Authority was established to perform the functions vested under "The Airports Economic Regulatory Authority of India Act, 2008" (***'Act'***), including determination of tariff for aeronautical services taking into consideration, inter alia, revenue received from services other than aeronautical services[1].

(b) Aeronautical services comprise "ground handling services relating to aircraft, passengers and cargo at the airport, cargo facility at the airport and supplying fuel to the aircraft at an airport"[2].

(c) The International Civil Aviation Organization (***'ICAO'***) is an agency of the United Nations created pursuant to the Chicago Convention on International Civil Aviation, 1944 by 52 nations to assure the safe, orderly and economic development of international air transport. India is one of the contracting states of the Chicago Convention. The effective implementation of the ICAO Convention is one of the important elements that must be borne in mind by the Authority in terms of Section 13(1)(a)(vii) of the Act, in view of Articles 73, 245, 246 and 254 read with entries 13, 14 and 29 of the Union List in the 7th Schedule of the Constitution of India. ICAO has, inter alia, published its Policies on Charges for Airports and Air Navigation Services being Doc 9082 [8th Edition of 2009] as also its Airports Economics Manual being Doc 9562 [2nd edition of 2006] which, inter-alia, provide for various factors to the taken into account while determining the cost to be recovered from users and support single till regime.

(d) At this nascent stage, the Authority would benefit from examining and adapting international best practices as suitable to India, reflected in Directives issued by European Union on airport charges, and studies conducted on financial and economic performance of European and other airports[3].

(e) The foundational elements of the Regulatory Philosophy and Approach in Economic Regulation of Airport Operators are recorded in the Order No. 13/2010-11 dated 12.01.2011 of the Authority. Pursuant to the said Order, Consultation Paper No. 13 was issued with a view to evolve detailed Guidelines on Regulatory Philosophy and

[1] Section 13(1)(a) of the AERA Act, 2008.

[2] Section 2(a) of the AERA Act, 2008.

[3] Please refer to paragraph 5(d) to (f) below.

Approach with Stakeholder Consultation, to implement Order No. 13/2010-11 and the Act.

3. FIA assumes that all the Guidelines shall be evolved and implemented consistent with Order No. 13/2010-11. FIA appreciates the factors/approach proposed by the Authority and supports its view subject to the submissions made and additions proposed in the present submissions. It is noteworthy that the civil aviation industry revolves around a sustainable carriage of passengers and cargo by airlines from airports. As such, it is submitted that while fixing the tariff the Authority must bear in mind the prevalent financial realities of the industry in terms of Section 13(1)(a) of the Act, including:-

(a) Global economic downturn that gravely affected the aviation industry.

(b) Considerable cost increase arising from airport development works in the form of additional fuel burns due to congestion both in ground and in air.

II. Main Aspects of Regulatory Regime as decided on 12.01.2011

4. It is submitted that the Order No. 13/2010-11 dated 12.01.2011 which deserve appreciation and effective implementation are set out below.

5. **Single Till Regulatory Regime.** The Authority has decided to adopt a single till regulatory regime for major airports in India such that:-

(a) Cost of land and facilities/assets in the hands of the stakeholders shall be considered as a cost of providing the aeronautical services by such stakeholders.

(b) Revenue received by Airport Operator from the stakeholder on account of provision of land and facilities (including access payments, royalty etc.) shall be counted towards passenger yield calculations, irrespective of whether such revenue is regulated or otherwise.

(c) The charges for land and facilities shall not be regulated by the Authority.

(d) Any revenues or costs associated with items excluded from Regulated Asset Base shall not be considered in the passenger yield.

6. Authority adopted **Price Cap or incentive based regulation** to secure:-

(a) Viable Operations of Airports by way of Fair Rate of Return on "net investment" in the Airports, incentivizing efficient airport investment and operations.

(b) Secure quality of service commensurate with net investments and user expectation through qualitative and quantitative parameters.

(c) Ensure efficiency, adequacy and consistency in services.

7. **Price Cap Model** State Support Agreements for Mumbai and Delhi Airports adopt a price cap model Shared Till Inflation – X. Even though the OMDA is not a concession offered by Government of India but an agreement between Private Airport Operator and Airport Authority of India, the Authority shall separately determine the extent to which State Support

Agreements would impact general framework laid down.

8. The Authority will determine the **Fair Rate of Return** for Airport Operators while protecting reasonable interest of users, considering:-

(a) Weighted Average Cost of Capital approach to estimate the nominal post-tax cost of capital, making appropriate assumptions for inflation.

(b) Capital Asset Pricing Model for determining cost of equity, adopted to circumstances of a particular case.

(c) To estimate cost of debt, consider the forecast cost of existing and future debt (and debt subject to floating rate) likely to be faced by the airports, subject to reasonableness of such costs based on review including of the sources, procedure and method through which the debt was raised.

(d) Take the weighted average gearing for each airport over the period of tariff determination, while appropriately considering factors like relatively low level of gearing adopted by the Airport Operator due to past business decisions, management philosophy or specific constraints.

9. **Regulatory Asset Base (RAB)** will be the fixed assets of the Airport Operator (including assets with fixed locations inside terminal buildings), after –

(a) Providing for such exclusions/inclusions as determined in respect of specific assets based on specified principles.

(b) Stakeholder Consultation.

(c) Suitable accounting separation to ensure that the costs and revenues associated with assets be clearly identified for preparation and audit of regulated airport accounts.

(d) Exclusions from RAB – (i) working capital, (ii) Work in Progress (WIP) assets until they have been commissioned and are put to use, and (iii) investment made from pre-funding levy (DF). An allowance for an appropriate rate of return on the cumulative cost of bringing the asset into operation will be capitalised as part of WIP assets.

(e) Land Value Adjustment norms to be applied for assets excluded from RAB.

10. **Capital Investment plans** should be firmed up after appropriate user consultations by the Airport Operator as per a specified Consultation Protocol.

11. **Depreciation** shall be:-

(a) Provided as per straight line method of depreciation.

(b) Using depreciation rates based on reasonable estimates of the useful economic lives of respective assets and minimum residual value of the asset at 10%.

(c) Land is not a depreciable asset and its cost shall be excluded from the original cost while computing the depreciable value of the asset.

(d) Depreciation on pre-funding receipts like levy of Development Fee and other capital receipts (contributions from stakeholders like subsidies/ grants from the government)

shall not be considered for the purpose of tariff determination.

12. **O&M Expenditure** shall be approved by the Authority:-

(a) After a review of the operation and maintenance expenditure forecast submitted by the Airport Operator based on assessment of:

(i) Baseline O&M expenditure as per actual audited accounts and prudency check including for variance, treatment of one-time costs or atypical costs.

(ii) Efficiency improvement with respect to such costs based on review of factors like trends in OPEX, productivity improvements, cost drivers and other appropriate factors.

(iii) Factoring other mandated or statutory operating costs including fees, levies, taxed or other charges directly imposed on and paid by the Service provider – as uncontrollable costs.

(b) Expenses required to meet the quality standards, exchange risks and cost to overcome under-performance by allied parties shall be considered as controllable.

(c) Financing costs of any short term debt raised towards working capital with maturity of less than 12 months shall be considered as part of O&M expenditure, provided the Airport Operator demonstrates that such loans are not excessive in relation to the levels of working capital.

(d) O&M expenditure re mandated security expenditure laid down by Government/ Bureau of Civil Aviation Security (BCAS) shall be considered as a part of the PSF charge and excluded from O&M expenditure.

(e) Any allowance for working capital should be net of allocations for bad debts.

13. **Form of price control and tariff structure** shall be:-

(a) Determination on the basis of a Multi Year Tariff Proposal made by the Airport Operator for 5 years, involving annual compliance process, tariff proposals, user consultation and compliance of relevant regulations/guidelines.

(b) Initial determination of a yield per passenger under the tariff process and subsequently detailed annual tariff proposals from Airports Operators (pertaining to the approved yield per passenger).

(c) The Authority may require the Airport Operator to submit an Annual PSF Proposal for determination of Passenger Service Fee (PSF) as per guidelines issued.

(d) At the end of each year, the Airport Operator will be required to submit a compliance statement setting out how it has complied with the price control formula, identify any under/over-recovery, and rectify the same in subsequent year(s).

(e) UDF is a revenue enhancing measure, to ensure economic viability of the airport operations to be allowed only on a case specific basis if justifiable.

(f) Pre-funding by levy of Development Fee will be a measure of last resort, to be utilized

only if, after consultation with users it is found to be in the long term interest of users.

Re. Single Till Regime and Price Cap Regulation

14. In terms of its Order No 13 dated 12.01.2011, the Authority decided to adopt the "Single Till" regulatory regime and the Price Cap Regulation/incentive based regulation for major airports in India. The "Single Till approach" has been favoured by the Airlines, Airports Authority of India and the Planning Commission. In this respect, the following are noteworthy:-

(a) 133rd Report of the Department Related Parliamentary Standing Committee on Transport, Tourism and Culture on the Airports Economic Regulatory Authority of India Bill 2007 was submitted on 17.04.2008. In the said Report, the Parliamentary Standing Committee has inter alia observed that ***economies of airport operation depend on both revenue streams, i.e., aeronautical revenue and non-aeronautical revenue***[4] and recommended for suitable modification in the Bill.

(b) Based on the Standing Committee's recommendations to amend the Airports Economic Regulatory Authority of India Bill, clause (v) was included in Section 13(1)(a) to bring revenue received from services other than aeronautical services as one of the considerations in tariff determination by the Authority.

(c) Single till regime is consistent with the ICAO principle of cost relatedness. In this behalf the following are noteworthy:

(i) ICAO Policies on Charges for Airports and Air Navigation Services[5] states that cost of an airport should be charged to airport users. Since non aeronautical revenue is generated by passenger, they should benefit from non aeronautical surplus.

(ii) The Airport Economics Manual[6] endorses Single Till as the appropriate regime.

(d) Association of European Airlines submitted its position paper on Airport Charges in June 2007[7], which endorsed the single till approach and stated that:

> *"The activities of airlines and airports are complementary in nature. They need one another to fulfill their function. Revenue gained from passengers brought to the airport by airlines must be factored into the equation and taken into account when airport charges are being set. This principle, usually achieved in practice via a single till, must be included in the regulation. This also provides strong incentives for efficiency and productivity improvements by the airport".*

(e) European Union's Directive No. 2009/12/EC issued on 11.03.2009 on airport charges[8].

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[4] At paragraphs 26 and 27 of the Report.

[5] Being ICAO Doc 9082 [8th Edition of 2009], para 30

[6] Being ICAO Doc 9562 [2nd Edition, 2006], paras 1.1 to 1.15

[7] At paragraph 3. This document was submitted to the EU in a public consultation process

(f) A Paper titled Impact of Privatization on the Financial and Economic Performance of European Airports, published in The Aeronautical Journal in April 2006[9] has, inter alia, observed that[10]:-

(i) The level of aeronautical charges and the revenue may also be, to a certain extent, influenced by the respective regulatory regime, which tends to result in higher airport fee in mainland Europe.

(ii) Conversely, application of the single till concept in the UK tends to result in comparatively lower airport charges, since cross-subsidized by revenue from commercial activities. This method is similar to the residual approach in the US.

Copies of the Position Paper issued by Association of European Airlines in June 2007, European Union's Directive No. 2009/12/EC issued on 11.03.2009 on airport charges and the Report on impact of privatization on the financial and economic performance of European Airports published in The Aeronautical Journal in April 2006 are attached hereto and marked as **Attachment A to C** respectively.

15. It is submitted that it is very difficult to segregate Airport Project cost between Aeronautical and Non- Aeronautical segment. Hence it is in the best interest of everyone to have the concept of Single till evolved as a mechanism for determination of tariff. FIA intends to implead itself in the appeals preferred by the Airport Operators before the AERA Appellate Tribunal to defend the appropriateness of adopting single till regulatory regime for Indian civil aviation. It is noteworthy that with about Rs. 30,000 Crores of capital investment likely to be commissioned over the next 12 months, it is of vital importance that an appropriate and prudent regulatory regime is put in place rather than permitting any stakeholder to hold the sector to ransom by presenting a fait-accompli to the Authority.

Regarding Passenger Service Fees

16. The fundamental issue that has to be considered by the Authority at this juncture is the appropriateness of the level of the fees being charged and recovered at each of the major airports. This has to be done in the following backdrop/context:-

(a) The Authority is obliged to exercise prudence and to determine a suitable charge such that the passenger yield or any element thereof does not result in onerous and unfair charges/windfall gains.

(b) To satisfy itself that the current levy of PSF is appropriate, the Authority must examine:-

(i) How are the funds generated out of PSF levy being utilized. The amount being levied and collected at airports like Delhi and Mumbai in the name of PSF versus the actual legitimate expenditure incurred by the Airport Operators under this head.

[8] Published in Official Journal of the European Union on 14.03.2009, in particular recitals 1, 8 and 9 read with Articles 6 to 10.

[9] The Paper was written by Dr. H.A. Vogell, Transport Studies Group, University of Westminster, London, U.K.

[10] Para 4.1.1 of the Report

(ii) The Current recovery of Rs. 228 per passenger is substantially more than warranted, which can be borne out of the fact that considerable funds are held in the Escrow account managed by the Airport Operators and the fact that the Operators are perhaps paying income tax on the interest earnings therefrom.

(iii) There have been numerous directives issued by the Ministry of Civil Aviation, which have been modified from time to time. Various Airport operators have taken a divergent view on how they apply these directives particularly in respect of in-line baggage screening costs. There is a need for a conceptual clarity regarding extent of recovery, its deployment and also the taxability (Income Tax) of the same in the hands of the Airport operator.

(iv) Unlike a monopolist Airport Operator, the Airlines having to cope with vagaries of a competitive, price-sensitive and fluctuating market place. Often yields do not always matching the ever increasing input costs. In this behalf the Authority must ensure that the recoveries from the passenger is not excessive and that the Airlines are able to price its fares to be able to sustain its operations.

Regarding User Development Fees

17. It is submitted that User Development Fee (UDF) is a mechanism of revenue enhancement. This measure, as it is presently implemented, may be suitable from the point of view of Airport Operators and passengers. However, it is inefficient from a tax pass through perspective since:-

(a) On the entire UDF collected by the Airport operators, service tax is charged by them at the rate of 10.3%.

(b) However, Airlines do not get the benefit of Input tax credit, with UDF being a pass through mechanism.

It is noteworthy that it appears that UDF is likely to be significant with substantial capital outlay being expended by the Airport operators. Hence, there is a need to evaluate the benefits of implementing the same as is being done presently by increasing airport charges or whether it should be implemented through Landing/parking/housing/PSF.

Regarding Consultation for departures from the Guidelines

18. It is submitted that the Authority shall ensure that there is due consultation with the stakeholders including the Airlines before any change in charging system/tariff is introduced. The purpose of the consultation is to ensure that the airport operator gives adequate inform Report on impact of privatization on the financial and economic performance of European Airports was published in The Aeronautical Journal in April 2006ation to users relating to the proposed changes and gives proper consideration to the views of users and the effect that the

proposed change would have on the existing tariff. The aim is to reach an understanding between the Airport Operators and users.

19. Major Airports were privatized sometime between 2003 and 2006 with an agreement signed between the Airport Operator, AAI and Govt. of India. The Tariff mechanism was evolved in a document called OMDA (Operation, Management, Development agreement) with respect to MIAL and DIAL and separate agreements concluded for Green field Airports with HIAL and BIAL at Hyderabad and Bangalore. The tariff determination methodology was detailed at length in the said document and the concepts like ADF and UDF (at Mumbai and Delhi) were non-existent. To give a broader understanding, ADF levy proposed for DIAL and MIAL in 2009 has already taken away Rs. 3500 Crores out of the system resulting in incremental cost to the passengers without Airlines getting any benefit. If such a scenario were to be prevalent going forward, the yields will be constantly under pressure and would be a detriment for operational sustenance in future.

20. In particular, this is vital if the entire objective of the national policy have to be met and a prudent, viable regime has to evolve. It is axiomatic that civil aviation sector, of which airports form an element, shall grow only if airlines are viable and grow. For the purpose of appropriate implementation of any justifiable deviations from the basic regulatory regime approved by the Authority in view of the provisions of OMDA and SSA for Delhi, Mumbai, Bengaluru and Hyderabad Airports, it is submitted that the following may be evolved after comprehensive stakeholder consultations:-

(a) Airport specific regulatory regime and tariff structures including specific deviations with justifications for each deviation.

(b) The consultation must transparently share the filings and justification for each deviation submitted by the Airport Operator and the prima facie view of the Authority.

21. In furtherance to the Govt's policy on privatization, Private Airport operators were roped in for operation, maintenance and developments of the Airports at the Metropolitan cities. Government had transferred valuable parcels of land to various companies formed for this purpose under the Public private partnership programme for commercial development of real estate. The underlying reasons for doing so is to ensure that Airport charges to Airlines are kept at the minimum and do not go up both in the short and in the long run, and so that the benefits are equally shared by all the stake holders. FIA appreciates in this context the recommendation of the Authority that the value of Land as determined by the valuer needs to be reduced from the project cost, for the purpose of determination of Aeronautical tariff. While this is the best method that could be evolved under the circumstances, it is also important to ensure that valuation of land is undertaken by a valuer of repute, taking into consideration the market realities and also the end use concessions / restrictions given to the Airport operators for development of Real estate. Alternatively, the Airlines in proportion to their market share be allotted certain space out of the said land for conducting its Airline operations at concessional cost, which will enhance the value to all the stake holders meeting the ultimate objective of restricting the passenger cost increase to the bare minimum.

Regarding Prudence check and Process for Tariff Determination

22. Since Airports operate under a Cost plus contract, there should be a mechanism to ensure that Costs (both Operating and Capital) are in order and in this regard, it will not be out of place to suggest that the Accounts of the Airport must be audited separately under Section 209 (1) d of the Companies Act 1956, which is more often referred to as Cost Audit and this process must be formalized with Scope outlined by the regulator.

23. As regards the allocation of costs in respect of the Regulated Services, it is recommended that the Authority should ensure that the users are not burdened with costs which are not properly allocable to them. The charges should not be imposed in such a way as to discourage the user facilities and services necessary for safety or the introduction of new aids and techniques. The charges should be levied in such a way that no service is charged for twice with respect to the same utilization. However, where there are certain facilities which have a dual utilization (For example, approach and aerodrome control as well as en-route air traffic control), their cost should be equitably distributed in the charges concerned.

24. In determining the cost for calculating the tariff, following aspects should be considered by the Authority:-

(a) Aircraft Operators and other airport users should not be charged for facilities and services they do not use.

(b) Allocation of costs should be considered in respect of space or facilities utilized by Government Authorities.

(c) Proportion of costs allocable to various categories of users should be determined on equitable basis, so that no user shall be burdened with costs not properly allocable to them.

(d) To avoid undue disruption to users, increase in charges should be introduced on a gradual basis; however, it is recommended that in certain circumstances a departure from this approach may be necessary.

25. The Tariff Proposal should be duly served upon the stakeholders and should be posted on the website of the Authority. While submitting the Tariff Proposals to the Authority, the Service Provider shall indicate whether copy of the complete Tariff Proposal has been served on each of the beneficiaries and whether the application has been posted on its own website. The Authority should then invite comments and suggestions from the Stakeholders on the aforesaid Tariff Proposal. The accounts related statements submitted with the Tariff Proposal should be duly audited and certified.

26. Any exclusion from the Regulatory Asset base must be properly documented and operating expenditure arising out of such investments must not be included in the "Operating Costs of the Airports" from a tariff determination perspective.

IV. Some proposed inserts on the miscellaneous provisions.

27. **Issue of Orders and Practice Directions:** Subject to the provision of the Act and these

Guidelines, the Authority may, from time to time, issue Orders and Practice directions in regard to the implementation of these Guidelines and procedure to be followed on various matters, which the Authority has been empowered by these Guidelines to direct, and matters incidental or ancillary thereto.

28. **Powers to remove difficulties:** If any difficulty arises in giving effect to any of the provisions of these Guidelines, the Authority may, by a general or special order, not being inconsistent with the provisions of these Guidelines or the Act, do or undertake to do things or direct the Airport Operator to do or undertake such things which appear to be necessary or expedient for the purpose of removing the difficulties.

29. **Power of Relaxation:** The Authority may in public interest and for reasons to be recorded in writing, relax any of the provision of these Regulations.

30. **Interpretation:** If a question arises relating to the interpretation of any provision of these Regulations, the decision of the Authority shall be final.

31. **Saving of Inherent Powers of the Authority:** Nothing contained in these Regulations shall limit or otherwise affect the inherent powers of the Authority from adopting a procedure, which is at variance with any of the provisions of these Regulations, if the Authority, in view of the special circumstances of the matter or class of matters and for reasons to be recorded in writing, deems it necessary or expedient to depart from the procedure specified in these Regulations.

32. **Power to Amend:** The Authority, for reasons to be recorded in writing, may at any time vary, alter or modify any of the provision of these Regulations by amendment.

Association of European Airlines

Position Paper

June 2007

Position Paper on Airport Charges

GENERAL PRINCIPLES

Introduction

The Association of European Airlines (AEA) welcomes the Commission's intention to develop a harmonised legislative framework with a Directive on airport charges, the Communication on Airport Capacity and the Report on ground handling.

The Directive on airport charges could provide incentives for European airports to achieve a high degree of competitiveness and to reduce distortions of competition. While governments have been active in reforming other markets such as the telecommunications, water, energy and airline industry, they have been slow to tackle airports. It is encouraging that the Commission has taken up this challenge. AEA welcomes the Commission's proposal and believes it will improve the situation in Europe. However, in AEA's view a lot still remains to be done to fulfil the requirements of its "10 Golden Rules" on Airport Charges issued in September 2006.

Enhancing the competitiveness of Europe

In accordance with the Lisbon objectives to increase the competitiveness of Europe, a harmonised EU framework on airport charges would create a level-playing field, taking into account specific regional requirements without creating a burdensome additional layer of bureaucracy. A consistent and integrated regulatory framework would harmonise the various charging regimes based on a set of commonly agreed principles to address market failures (e.g. excessive profits) and to ensure efficient functioning of the airport market: The sustainable profitability of European aviation and a healthy airline-airport relationship will depend on efficient and viable airports and airlines that can compete in an open and competitive market without monopolistic cost structures.

Association of European Airlines - Avenue Louise 350 - 1050 Brussels Belgium
Tel. +32 (0)2 639 89 89 - Fax. +32 (0)2 639 89 99
aea.secretariat@aea.be - www.aea.be

ICAO's policies on charges for airports

The basis of any EU legislation should be the harmonised implementation of the general ICAO policies on charges for airports, i.e. cost-relatedness, transparency, consultation and non-discrimination. Unfortunately, these policies are not applied across Europe. Moreover, AEA submits that EU legislation must go further than these policies, in particular because the commercialisation and privatisation of airports has fundamentally affected the European aviation value chain resulting in, among other things, higher charges instead of increased efficiency.

ANALYSIS OF THE COMMISSION'S PROPOSAL FOR A DIRECTIVE

1. ESSENTIAL ELEMENTS

AEA has identified the following essential elements which are missing from the Commission's proposal. Including these issues in the proposal will be effective in rebalancing the relationship between airlines and airports, and would enhance a competitive industry and develop a level playing field in the aviation industry. Therefore AEA strongly recommends that the following elements be included in the Directive.

The top priorities for the airlines are listed here under no. 0 - 4

0. ICAO's policies on charges for airports

AEA's position:

In the preamble no reference at all is made to the ICAO policies on charges for airports. These should apply to all airports within the EU and thus be explicitly mentioned and referred to.

1. An independent national regulatory body

AEA's position:

AEA especially welcomes the proposal for an independent regulator to be set up in each Member State. However, the success of an economic regulatory framework will largely depend on the design, the processes and the institutional setting of such a regulatory body. This is particularly important in Member States where airports are partly or wholly owned by public authorities.

In Article 10 para 4 the Commission's proposal does state that the decision of the national authority is binding, but to what degree and to what effect remains somewhat unclear.

One regulator should be established at national level, with clear objectives so as to ensure efficiency through its decisions. It should be provided with adequate resources to meet these principles and to oversee the economic, commercial and financial practices of airports.

An independent national arbitration authority should also be established to act as an appeal body in case of disputes between the parties during the regulation period or regulatory review.

2. Cost-efficiency

AEA's position:

Airports must be obliged to provide their services in the most cost-efficient manner. International experience shows that this can best be achieved through an incentive-based economic regulation. AEA therefore submits that the EU should develop a framework for a national regulation including a price cap. The method for deciding such a framework may be determined by the national regulator with the help of European benchmarks.

3. Single till practice

AEA's position:

The activities of airlines and airports are complementary in nature. They need one another to fulfil their function. Revenue gained from passengers brought to the airport by airlines must be factored into the equation and taken into account when airport charges are being set. This principle, usually achieved in practice via a single till, must be included in the regulation. This also provides strong incentives for efficiency and productivity improvements by the airport.

4. Modulation or differentiation of charges

AEA's position:

It should be clear that when Member States are allowed to take measures that allow airports to vary costs and scope this should not mean that airports would be able to charge more for the use of specific terminals, as this could encourage airports to introduce low-cost terminals. Non-discrimination should be ensured and charges should be based on a simple rate with equal pricing regardless of the terminal according to the one airport - one fee principle. Any differences in charging levels for low-cost terminals should be based on and limited to the true differences in costs and quality of the service provided. Differentiation of charges should not apply to general services such as safety, etc.

5. Pre-financing of capacity expansion

AEA's position:

Airports have traditionally pre-financed their investment projects by increasing aeronautical charges even before the facilities were operational. In some cases subsequent unplanned changes or delays to such projects have led to excessive profits and an unreasonably high rate of return. The model of pre-financing, which according to ICAO policies must be limited in time, is characteristic of a public sector and monopolistic accounting concept that is outdated and no longer applied in other industry sectors. More efficient financing for airports, applying normal business practices, should be the norm and must be prescribed by EU legislation.

2. ELEMENTS FROM ICAO POLICIES ON CHARGES FOR AIRPORTS

Furthermore, AEA has identified that a number of elements contained in the ICAO policies have not been sufficiently incorporated into the Commission's proposal. AEA therefore strongly recommends that the Commission should also take the following four elements into account.

1. Transparency

AEA's position:

Although the proposed Article 5 is extensive and seems sufficient, some questions still remain. Transparency should be in place at the level of all costs, revenues, and the methods of calculation and allocation. It should be achieved both for the process by which regulatory decisions are made and for the expenditure and investment plans of the airport. Transparency is also needed to identify and prevent financial flows within an airport system or within an airport network system, and thereby cross-subsidisation between them. As airport companies become global through mergers and consolidation, transparency will also be needed to identify the actual financial flows between different entities within a worldwide airport group.

2. Consultation

AEA's position:

Consultation, in the form of stakeholder involvement, should be established at all European airports before changes in charging systems or levels of charges are introduced. This means that airports must not only inform airline representatives of future changes, but must also seek and evaluate the views of the airline community, and then make sure that they are incorporated into the airport's plans. Airports will have to provide full justification for any failure to follow these procedures. The "institutionalisation" of such a process will establish high quality consultation to the benefit of all parties.

3. One airport – one account

AEA's position:

The principle of cost-relatedness also requires that each airport should be regarded as a financially separate entity. Passengers and airlines using one airport should not have to pay for the development of another airport. If, however, Member States allow for airport networks, any cross subsidization has to be transparent.

In general Infrastructure costs should be borne by all users equally according to the one-a/p one account principle, as not all users can freely choose the level of infrastructure quality they want to have.

4. Cost-relatedness

AEA's position:

Airport charges should be based on the costs of facilities and services provided by the airport. Cost-relatedness limits the monopolistic market power of airports and enhances their effectiveness. The basic principle of cost-relatedness is that charges have to be set based on a fair and transparent calculation and allocation of costs, assets and revenues. A fair allocation of revenues also requires the national regulator to take into account all revenues generated by the airport operator when setting the price cap.

3. OTHER ISSUES OF IMPORTANCE

AEA's "10 Golden Rules" have only slightly been addressed and incorporated in the Commission's proposal. AEA is concerned that these elements have been watered down and feels that these areas need further strengthening in order to be effective in rebalancing the relationship between airlines and airports. AEA therefore recommends that that following elements be taken into account as well.

1. Capital investments

AEA's position:

To meet future traffic volumes, airports will have to continue to increase capacity and adjust their investment plans according to demand and the users' willingness to pay. Thus adequate user involvement, including user agreement on both the need for and the financing of any investment, should be included in any EU legislation. This ensures that every investment is scrutinized and evaluated based on a clear and realistic business case.

2. Service level agreements

AEA's position:

To mitigate any unintended consequences of a price cap regulation, for example reductions in costs at the expense of service quality, the concept of Service Level Agreements (SLAs) should be integrated into the regulatory framework of airport charges. To give larger [to be defined] airports an incentive to provide services at the agreed level, the SLA ideally should include provisions for a rebate in cases where services are not fully provided. If airports and airlines cannot agree on an SLA, based on adequate user involvement, the national regulator should determine a minimum set of service standards.

3. Charges for "centralised infrastructures"

AEA's position:

The definition of airport charges should be broadened to include the fees for "centralised infrastructure" as defined in Art. 8 of EU Directive 96/67, as these infrastructures are essential facilities. These infrastructures are by definition monopoly infrastructures and therefore should be treated the same way as other airport infrastructure covered by "ordinary" airport charges

4. Security charges

AEA's position:

First of all it should be the obligation of Member States and their respective governments to fully or at least partially finance security measures which benefit not only passengers and airlines but also the general public.

Notwithstanding the above, if costs are to be borne by airlines, they must not be charged twice for security and the airports must not be allowed to make any profits in this respect. The proposed directive should adhere to the principle of Regulation 2320 that security charges should be borne by Member States. The Directive should also specify exactly what is covered by the term 'security charges'. If the airport levies a security charge other stakeholders, such as retailers, should also be required to pay their share.

Association of European Airlines

5. Benchmarking

AEA's position:

Various methods may be used to achieve cost effectiveness. One of the methods available to national regulators should be a comparison of best practices at airports and regular benchmarking of airports' Key Performance Indicators (KPIs) on service quality, costs, cost efficiency, productivity and charges. As such, a European forum should be available for best-practice benchmarking, both in terms of providing additional information to the regulator and for companies and users to assess the performance of their regulators.

DIRECTIVES

DIRECTIVE 2009/12/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL

of 11 March 2009

on airport charges

(Text with EEA relevance)

THE EUROPEAN PARLIAMENT AND THE COUNCIL OF THE EUROPEAN UNION,

Having regard to the Treaty establishing the European Community, and in particular Article 80(2) thereof,

Having regard to the proposal from the Commission,

Having regard to the opinion of the European Economic and Social Committee [1],

Having regard to the opinion of the Committee of the Regions [2],

Acting in accordance with the procedure laid down in Article 251 of the Treaty [3],

Whereas:

(1) The main task and commercial activity of airports is to ensure the handling of aircraft, from landing to take-off, and of passengers and cargo, so as to enable air carriers to provide air transport services. For this purpose, airports offer a number of facilities and services related to the operation of aircraft and the processing of passengers and cargo, the cost of which they generally recover through airport charges. Airport managing bodies providing facilities and services for which airport charges are levied should endeavour to operate on a cost-efficient basis.

(2) It is necessary to establish a common framework regulating the essential features of airport charges and the way they are set, as in the absence of such a framework, basic requirements in the relationship between airport managing bodies and airport users may not be met. Such a framework should be without prejudice to the possibility for a Member State to determine if and to what extent revenues from an airport's commercial activities may be taken into account in establishing airport charges.

(3) This Directive should apply to airports located in the Community that are above a minimum size as the management and the funding of small airports do not call for the application of a Community framework.

(4) In addition, in a Member State where no airport reaches the minimum size for the application of this Directive, the airport with the highest passenger movements enjoys such a privileged position as a point of entry to that Member State that it is necessary to apply this Directive to that airport in order to guarantee respect for certain basic principles in the relationship between the airport managing body and the airport users, in particular with regard to transparency of charges and non-discrimination among airport users.

(5) In order to promote territorial cohesion, Member States should have the possibility to apply a common charging system to cover an airport network. Economic transfers between airports in such networks should comply with Community law.

(6) For reasons of traffic distribution Member States should be able to allow an airport managing body for airports serving the same city or conurbation to apply a common and transparent charging system. Economic transfers between these airports should comply with relevant Community law.

(7) Incentives for starting up new routes, such as to promote, inter alia, the development of disadvantaged and outermost regions should only be granted in accordance with Community law.

[1] OJ C 10, 15.1.2008, p. 35.
[2] OJ C 305, 15.12.2007, p. 11.
[3] Opinion of the European Parliament of 15 January 2008 (not yet published in the Official Journal), Council Common Position of 23 June 2008 (OJ C 254 E, 7.10.2008, p. 18) and Position of the European Parliament of 23 October 2008 (not yet published in the Official Journal). Council Decision of 19 February 2009.

(8) The collection of charges with respect to the provision of air navigation services and groundhandling services has already been addressed by Commission Regulation (EC) No 1794/2006 of 6 December 2006 laying down a common charging scheme for air navigation services [1] and Council Directive 96/67/EC of 15 October 1996 on access to the groundhandling market at Community airports [2] respectively. The charges levied for the funding of assistance to disabled passengers and passengers with reduced mobility are governed by Regulation (EC) No 1107/2006 of the European Parliament and of the Council of 5 July 2006 concerning the rights of disabled persons and persons with reduced mobility when travelling by air [3].

(9) The Council of the International Civil Aviation Organisation (the ICAO Council) in 2004 adopted policies on airport charges that included, inter alia, the principles of cost-relatedness, non-discrimination and an independent mechanism for economic regulation of airports.

(10) The ICAO Council has considered that an airport charge is a levy that is designed and applied specifically to recover the cost of providing facilities and services for civil aviation, while a tax is a levy that is designed to raise national or local government revenues which are generally not applied to civil aviation in their entirety or on a cost-specific basis.

(11) Airport charges should be non-discriminatory. A compulsory procedure for regular consultation between airport managing bodies and airport users should be put in place with the possibility for either party to have recourse to an independent supervisory authority whenever a decision on airport charges or the modification of the charging system is contested by airport users.

(12) In order to ensure impartial decisions and the proper and effective application of this Directive, an independent supervisory authority should be established in every Member State. The authority should be in possession of all the necessary resources in terms of staffing, expertise, and financial means for the performance of its tasks.

(13) It is vital for airport users to obtain from the airport managing body, on a regular basis, information on how and on what basis airport charges are calculated. Such transparency would provide air carriers with an insight into the costs incurred by the airport and the productivity of an airport's investments. To allow an airport managing body to properly assess the requirements with regard to future investments, the airport users should be required to share all their operational forecasts, development projects and specific demands and suggestions with the airport managing body on a timely basis.

(14) Airport managing bodies should inform airport users about major infrastructure projects as these have a significant impact on the system or the level of airport charges. Such information should be provided in order to make monitoring of infrastructure costs possible and with a view to providing suitable and cost-effective facilities at the airport concerned.

(15) Airport managing bodies should be enabled to apply airport charges corresponding to the infrastructure and/or the level of service provided as air carriers have a legitimate interest to require services from an airport managing body that correspond to the price/quality ratio. However, access to a differentiated level of infrastructure or services should be open to all carriers that wish to avail of them on a non-discriminatory basis. If demand exceeds supply, access should be determined on the basis of objective and non-discriminatory criteria to be developed by an airport managing body. Any differentiation in airport charges should be transparent, objective and based on clear criteria.

(16) Airport users and the airport managing body should be able to conclude a service level agreement with regard to the quality of service provided in return for airport charges. Negotiations on the quality of service provided in return for airport charges could take place as part of the regular consultation.

(17) Different systems exist in different Member States concerning the pre-financing of airport investments. In Member States where pre-financing occurs, Member States or airport managing bodies should refer to ICAO policies and/or establish their own safeguards.

(18) This Directive should be without prejudice to the Treaty, in particular Articles 81 to 89 thereof.

(19) Since the objective of this Directive, namely to set common principles for the levying of airport charges at Community airports, cannot be sufficiently achieved by the Member States as systems of airport charges can not be put in place at national level in a uniform way throughout the Community and can therefore, by reason of its scale and effects, be better achieved at Community level, the Community may adopt measures, in accordance with the principle of subsidiarity as set out in Article 5 of the Treaty. In accordance with the principle of proportionality, as set out in that Article, this Directive does not go beyond what is necessary in order to achieve that objective,

[1] OJ L 341, 7.12.2006, p. 3.
[2] OJ L 272, 25.10.1996, p. 36.
[3] OJ L 204, 26.7.2006, p. 1.

HAVE ADOPTED THIS DIRECTIVE:

Article 1

Subject matter

1. This Directive sets common principles for the levying of airport charges at Community airports.

2. This Directive shall apply to any airport located in a territory subject to the Treaty and open to commercial traffic whose annual traffic is over five million passenger movements and to the airport with the highest passenger movement in each Member State.

3. Member States shall publish a list of the airports on their territory to which this Directive applies. This list shall be based on data from the Commission (Eurostat) and shall be updated annually.

4. This Directive shall not apply to the charges collected for the remuneration of en route and terminal air navigation services in accordance with Regulation (EC) No 1794/2006, or to the charges collected for the remuneration of ground-handling services referred to in the Annex to Directive 96/67/EC, or to the charges levied for the funding of assistance to disabled passengers and passengers with reduced mobility referred to in Regulation (EC) No 1107/2006.

5. This Directive shall be without prejudice to the right of each Member State to apply additional regulatory measures that are not incompatible with this Directive or other relevant provisions of Community law with regard to any airport managing body located in its territory. This may include economic oversight measures, such as the approval of charging systems and/or the level of charges, including incentive-based charging methods or price cap regulation.

Article 2

Definitions

For the purposes of this Directive:

1. 'airport' means any land area specifically adapted for the landing, taking-off and manoeuvring of aircraft, including the ancillary installations which these operations may involve for the requirements of aircraft traffic and services, including the installations needed to assist commercial air services;

2. 'airport managing body' means a body which, in conjunction with other activities or not as the case may be, has as its objective under national laws, regulations or contracts the administration and management of the airport or airport network infrastructures and the coordination and control of the activities of the different operators present in the airports or airport network concerned;

3. 'airport user' means any natural or legal person responsible for the carriage of passengers, mail and/or freight by air to or from the airport concerned;

4. 'airport charge' means a levy collected for the benefit of the airport managing body and paid by the airport users for the use of facilities and services, which are exclusively provided by the airport managing body and which are related to landing, take-off, lighting and parking of aircraft, and processing of passengers and freight;

5. 'airport network' means a group of airports duly designated as such by the Member State and operated by the same airport managing body.

Article 3

Non-discrimination

Member States shall ensure that airport charges do not discriminate among airport users, in accordance with Community law. This does not prevent the modulation of airport charges for issues of public and general interest, including environmental issues. The criteria used for such a modulation shall be relevant, objective and transparent.

Article 4

Airport network

Member States may allow the airport managing body of an airport network to introduce a common and transparent airport charging system to cover the airport network.

Article 5

Common charging systems

After having informed the Commission and in accordance with Community law, Member States may allow an airport managing body to apply a common and transparent charging system at airports serving the same city or conurbation, provided that each airport fully complies with the requirements on transparency set out in Article 7.

Article 6

Consultation and remedy

1. Member States shall ensure that a compulsory procedure for regular consultation between the airport managing body and airport users or the representatives or associations of airport users is established with respect to the operation of the system of airport charges, the level of airport charges and, as appropriate, the quality of service provided. Such consultation shall take place at least once a year, unless agreed otherwise in the latest consultation. Where a multi-annual agreement between the airport managing body and the airport users exists, the consultations shall take place as foreseen in such agreement. Member States shall retain the right to request more frequent consultations.

2. Member States shall ensure that, wherever possible, changes to the system or the level of airport charges are made in agreement between the airport managing body and the airport users. To that end, the airport managing body shall submit any proposal to modify the system or the level of airport charges to the airport users, together with the reasons for the proposed changes, no later than four months before they enter into force, unless there are exceptional circumstances which need to be justified to airport users. The airport managing body shall hold consultations on the proposed changes with the airport users and take their views into account before a decision is taken. The airport managing body shall normally publish its decision or recommendation no later than two months before its entry into force. The airport managing body shall justify its decision with regard to the views of the airport users in the event that no agreement on the proposed changes is reached between the airport managing body and the airport users.

3. Member States shall ensure that in the event of a disagreement over a decision on airport charges taken by the airport managing body, either party may seek the intervention of the independent supervisory authority referred to in Article 11 which shall examine the justifications for the modification of the system or the level of airport charges.

4. A modification of the system or the level of airport charges decided upon by the airport managing body shall, if brought before the independent supervisory authority, not take effect until that authority has examined the matter. The independent supervisory authority shall, within four weeks of the matter being brought before it, take an interim decision on the entry into force of the modification of airport charges, unless the final decision can be taken within the same deadline.

5. A Member State may decide not to apply paragraphs 3 and 4 in relation to changes to the level or the structure of the airport charges at those airports for which:

(a) there is a mandatory procedure under national law whereby airport charges, or their maximum level, shall be determined or approved by the independent supervisory authority; or

(b) there is a mandatory procedure under national law whereby the independent supervisory authority examines, on a regular basis or in response to requests from interested parties, whether such airports are subject to effective competition. Whenever warranted on the basis of such an examination, the Member State shall decide that the airport charges, or their maximum level, shall be determined or approved by the independent supervisory authority. This decision shall apply for as long as is necessary on the basis of the examination conducted by that authority.

The procedures, conditions and criteria applied for the purpose of this paragraph by the Member State shall be relevant, objective, non-discriminatory and transparent.

Article 7

Transparency

1. Member States shall ensure that the airport managing body provides each airport user, or the representatives or associations of airport users, every time consultations referred to in Article 6(1) are to be held with information on the components serving as a basis for determining the system or the level of all charges levied at each airport by the airport managing body. The information shall include at least:

(a) a list of the various services and infrastructure provided in return for the airport charge levied;

(b) the methodology used for setting airport charges;

(c) the overall cost structure with regard to the facilities and services which airport charges relate to;

(d) the revenue of the different charges and the total cost of the services covered by them;

(e) any financing from public authorities of the facilities and services which airport charges relate to;

(f) forecasts of the situation at the airport as regards the charges, traffic growth and proposed investments;

(g) the actual use of airport infrastructure and equipment over a given period; and

(h) the predicted outcome of any major proposed investments in terms of their effects on airport capacity.

2. Member States shall ensure that airport users submit information to the airport managing body before every consultation, as provided for in Article 6(1), concerning in particular:

(a) forecasts as regards traffic;

(b) forecasts as to the composition and envisaged use of their fleet;

(c) their development projects at the airport concerned; and

(d) their requirements at the airport concerned.

3. Subject to national legislation, the information provided on the basis of this Article shall be considered as confidential or economically sensitive and handled accordingly. In the case of airport managing bodies that are quoted on the stock exchange, stock exchange regulations in particular shall be complied with.

Article 8

New infrastructure

Member States shall ensure that the airport managing body consults with airport users before plans for new infrastructure projects are finalised.

Article 9

Quality standards

1. In order to ensure smooth and efficient operations at an airport, Member States shall take the necessary measures to allow the airport managing body and the representatives or associations of airport users at the airport to enter into negotiations with a view to concluding a service level agreement with regard to the quality of service provided at the airport. These negotiations on service quality may take place as part of the consultations referred to in Article 6(1).

2. Any such service level agreement shall determine the level of the service to be provided by the airport managing body which takes into account the actual system or the level of airport charges and the level of service to which airport users are entitled in return for airport charges.

Article 10

Differentiation of services

1. Member States shall take the necessary measures to allow the airport managing body to vary the quality and scope of particular airport services, terminals or parts of terminals, with the aim of providing tailored services or a dedicated terminal or part of a terminal. The level of airport charges may be differentiated according to the quality and scope of such services and their costs or any other objective and transparent justification. Without prejudice to Article 3, airport managing bodies shall remain free to set any such differentiated airport charges.

2. Member States shall take the necessary measures to allow any airport user wishing to use the tailored services or dedicated terminal or part of a terminal, to have access to these services and terminal or part of a terminal.

In the event that more airport users wish to have access to the tailored services and/or a dedicated terminal or part of a terminal than is possible due to capacity constraints, access shall be determined on the basis of relevant, objective, transparent and non-discriminatory criteria. These criteria may be set by the airport managing body and Member States may require these criteria to be endorsed by the independent supervisory authority.

Article 11

Independent supervisory authority

1. Member States shall nominate or establish an independent authority as their national independent supervisory authority in order to ensure the correct application of the measures taken to comply with this Directive and to assume, at least, the tasks assigned under Article 6. Such an authority may be the same as the entity entrusted by a Member State with the application of the additional regulatory measures referred to in Article 1(5), including with the approval of the charging system and/or the level of airport charges, provided that it meets the requirements of paragraph 3 of this Article.

2. In compliance with national law, this Directive shall not prevent the independent supervisory authority from delegating, under its supervision and full responsibility, the implementation of this Directive to other independent supervisory authorities, provided that implementation takes place in accordance with the same standards.

3. Member States shall guarantee the independence of the independent supervisory authority by ensuring that it is legally distinct from and functionally independent of any airport managing body and air carrier. Member States that retain ownership of airports, airport managing bodies or air carriers or control of airport managing bodies or air carriers shall ensure that the functions relating to such ownership or control are not vested in the independent supervisory authority. Member States shall ensure that the independent supervisory authority exercises its powers impartially and transparently.

4. Member States shall notify the Commission of the name and address of the independent supervisory authority, its assigned tasks and responsibilities, and of the measures taken to ensure compliance with paragraph 3.

5. Member States may establish a funding mechanism for the independent supervisory authority, which may include levying a charge on airport users and airport managing bodies.

6. Member States shall ensure, in respect of disagreements referred to in Article 6(3), that measures are taken to:

(a) establish a procedure for resolving disagreements between the airport managing body and the airport users;

(b) determine the conditions under which a disagreement may be brought to the independent supervisory authority. The authority shall, in particular, dismiss complaints which it deems are not properly justified or adequately documented; and

(c) determine the criteria against which disagreements will be assessed for resolution.

These procedures, conditions and criteria shall be non-discriminatory, transparent and objective.

7. When undertaking an investigation into the justification for the modification of the system or the level of airport charges as set out in Article 6, the independent supervisory authority shall have access to necessary information from the parties concerned and shall be required to consult the parties concerned in order to reach its decision. Without prejudice to Article 6(4), it shall issue a final decision as soon as possible, and in any case within four months of the matter being brought before it. This period may be extended by two months in exceptional and duly justified cases. The decisions of the independent supervisory authority shall have binding effect, without prejudice to parliamentary or judicial review, as applicable in the Member States.

8. The independent supervisory authority shall publish an annual report concerning its activities.

Article 12

Report and revision

1. The Commission shall submit to the European Parliament and the Council, by 15 March 2013, a report on the application of this Directive assessing progress made in attaining its objective as well as, where appropriate, any suitable proposal.

2. Member States and the Commission shall cooperate in the application of this Directive, particularly as regards the collection of information for the report referred to in paragraph 1.

Article 13

Transposition

1. Member States shall bring into force the laws, regulations and administrative provisions necessary to comply with this Directive by 15 March 2011. They shall forthwith inform the Commission thereof.

When Member States adopt those measures, they shall contain a reference to this Directive or shall be accompanied by such reference on the occasion of their official publication. The methods of making such reference shall be laid down by Member States.

2. Member States shall communicate to the Commission the text of the main provisions of national law which they adopt in the field covered by this Directive.

Article 14

Entry into force

This Directive shall enter into force on the day following its publication in the *Official Journal of the European Union*.

Article 15

Addressees

This Directive is addressed to the Member States.

Done at Strasbourg, 11 March 2009.

For the European Parliament	*For the Council*
The President	*The President*
H.-G. PÖTTERING	A. VONDRA

Impact of privatisation on the financial and economic performance of European airports

Dr H.-A. Vogel
Transport Studies Group
University of Westminster
London, UK

ABSTRACT

This paper assesses the financial performance of 35 European airports for the decade 1990 to 2000, comparing those subject to partial or full privatisation with those still in public ownership. In contrast to earlier research, the outcomes of partial factor productivity (PFP), financial ratio (FRA) and data envelopment analysis (DEA) are evaluated, in order to investigate differences attributable to the degree of privatisation. Changes in performance after a change in ownership structure are reviewed. The analysis of sample data reveals economically meaningful and statistically significant differences between publicly owned and privatised airports. The major differences lie in operating efficiency, capital productivity and capital structure. Although partially and fully privatised airports operate more efficiently, this does not translate into significantly higher returns on shareholders' funds. Due to their at least indirectly government-backed credit standing, publicly owned airport companies can assume more debt relative to their respective equity. This results in considerably higher gearing and financial leverage, which compensates for the comparatively low return rate on assets.

ABBREVIATIONS

ACI	Airports Council International
ADV	German Airports Association
ATM	air transport movements
ATRS	Air Transport Research Society
BCC	Banker-Charnes-Cooper
BOT	build, operate, and transfer
CAA	Civil Aviation Authority
Capex	capital expenditure
CCR	Charnes-Cooper-Rhodes
CF	cash flow
CRI	Centre for the Study of Regulated Industries
CRS	constant returns to scale
DEA	data envelopment analysis
DMU	decision-making unit
DRS	decreasing returns to scale
EBIT	earnings before interest and taxes
EBITDA	earnings before interest, taxes, depreciation and amortisation
ECU	European Currency Unit
EV	enterprise value
FRA	financial ratio analysis
FT	*Financial Times*
FTSE 100	*Financial Times* Stock Exchange Index
GARS	German Aviation Research Society
IRS	increasing returns to scale
mppa	million passengers per annum
MPSS	most productive scale size
PAX	terminal passenger
PFP	partial factor productivity
RAeS	Royal Aeronautical Society
RevEx	revenue/expenditure ratio

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ROA	return on assets
ROCE	return on capital employed
ROE	return on equity
ROS	return on sales (total revenue)
RTS	returns to scale
SARS	severe acute respiratory syndrome
S&P	Standard & Poor's
TAM	total aircraft movements
TFP	total factor productivity
TRL	Transport Research Laboratory
VFP	variable factor productivity
VRS	variable returns to scale
WACC	weighted average cost of capital
WLU	work load unit (one terminal passenger or 100kg of air cargo)

1.0 INTRODUCTION

Historically, airports have developed in response to the fast growth of the world's airline industry. Since the mid-1990s, they are no longer only regarded as modal interfaces but also as global gateways for tourism, commerce and industry as well as leisure attractions in their own right. The old public service concept of airports as government funded non-profit public utilities has increasingly been replaced by profit orientation, private finance, aggressive marketing and also acquisition strategies. Commercialisation and privatisation are ranked high on the industry's agenda, in order to provide funding for growth and to secure investments in infrastructure as well as to provide a reasonable return on assets to the shareholders. Europe, especially the United Kingdom, clearly appears to have been the trendsetter in this respect[1].

Although most airports worldwide are still owned and operated by the respective governmental units, a strong tendency to experiment with more private sector modes of management and operations has emerged during the last decade. The main objectives of this study are to examine the economic and financial performance of European commercial airports and to identify distinctive features typical for sample airports under different ownership over an extended period of time. The latter is an area which is relatively under-researched. Indicators of partial and total factor productivity and outcomes of financial ratio analysis for the decade 1990 to 2000 will be compared and tested statistically, in order to investigate characteristic differences attributable to the degree of privatisation. Furthermore, changes in performance after a change in ownership during this period will be reviewed. The results represent a genuine and valid contribution to the debate about the effect of ownership structure on airport performance.

Whilst other research producing PFP indicators usually includes a limited number of financial ratios, neither extensive in-depth financial ratio analyses have been carried out, nor have questions of capital structure or the financing of assets been addressed. The research undertaken by Parker[2] which investigated BAA before and after its privatisation found no significant differences in performance. Both the global analysis of the Air Transport Research Society (ATRS) as of 2002[3] and Holvad and Graham[4] in their research of UK airports tested for ownership, but this did not appear to affect the performance measures applied in these studies in a statistically significant manner. Vasigh and Haririan[5] who compared private and public airports using a sample of UK and US airports, did find significant differences but this may partly be due to other characteristics of UK and US airports, rather than ownership alone. Hanaoka and Phomma[6] compared airports under ownership of the Department of Civil Aviation and the more independent Airports of Thailand Public Company Limited, which was partially privatised in 2004. However, clear differences were not apparent.

Most of the other research, though, is only for a very limited time period, is not focused on financial performance but rather exclusively on efficiency and productivity analysis, and in some cases contains a much more diverse range of airports. The geographical scope of this study has been restricted to Europe, since all sample airports enjoy similar market as well as operational conditions and are subject to similar overall economic and derived traffic development. The period under consideration is limited to the ten years from 1990 to 1999 or Q1, 2000, respectively, where the reporting period is for the fiscal year ending 31 March. This is to ensure continuity within a comparatively stable framework presupposed by a longitudinal approach, in order to properly identify differences eventually caused by the ownership structure of sample airports rather than by external alterations. Consequently, the effects of the abolition of intra-EU duty free sales, the massive market penetration of low-cost carriers with its implications for airport operations and pricing, and the unprecedented crisis of the entire aviation industry in the aftermath of the terrorist attacks in the United States on 11 September 2001, are excluded to the greatest possible extent.

This paper focuses on the financial and economic performance of airports in public *versus* mixed public-private and fully private ownership. Since financial results reflect a company's achievements over a diverse array of activities, they are arguably by far the most important dimension of performance. Airport service quality, airports regulation and legal, social or other aspects of airport privatisation — which are clearly beyond the scope of this study — will not be considered. The structure is as follows: Section 2 introduces the sample European airports. Section 3 provides an overview of the research design and discusses methodological issues. Section 4 presents the main results of the performance assessment and examines certain factors which appear to have influenced the observed differences in airport performance. Section 5 contains a summary, while the final Section 6 puts airport privatisation into perspective.

2.0 SUBJECTS AND DATA

The 31 individual airports and four airport systems (Aeroports de Paris, Aer Rianta, BAA and Berlin Group) considered in this study are a disparate group in terms of traffic throughput and make-up, operational organisation, geographical location, regulatory regimes and ownership characteristics. The sample represents a cross-section, from Europe's leading London Heathrow to smaller ones like Basel and Cardiff. It includes privately owned airports like Glasgow, partially privatised airports such as Dusseldorf, publicly quoted companies like Copenhagen and Vienna, and publicly owned but organisationally independent airports such as Cologne and Geneva.

Principal sources of data are the respective reports and accounts, supplemented by financial data from the Companies House, London. Detailed traffic statistics were also obtained from the statistical airport series published by the Centre for the Study of Regulated Industries (CRI), Airports Council International (ACI), the UK's Civil Aviation Authority (CAA) and from the German Airports Association (ADV).

Although the sample airports are almost evenly distributed over the British Isles and mainland Europe, the number of partially and fully privatised airports is significantly higher in the British Isles. This is due to the fact that the UK historically paved the way for airport privatisation based on the Airports Act as of 1986[7,8]. Consequently, this is characteristic of the actual ownership structure of European commercial airports and reflected accordingly in the sample as listed in Table 1 below for the year 1999. While ownership changes towards increased participation of the private sector with 11 sample airports during the period under scrutiny, this may predominantly result in a separation of UK airports from their continental peers for some fiscal years with regard to the group of fully privatised companies (for details see Vogel[9]).

A simple view of privatisation is the change of ownership of the property and facilities, and specifically the transfer from a

Table 1
Total sample of European airports as of 1999

Code	Publicly Owned Airports	TAM[a]	Total PAX ('000)[b]	Total Air Cargo (t)
ADP	**Aeroports de Paris, France** (CDG - Charles de Gaulle, ORY - Orly, others)[c]	1,710,664	69,016	1,361,039
AMS	Amsterdam, Netherlands (AMS –Amsterdam, RTM – Rotterdam, others)	688,095	37,740	1,227,106
ARI	**Aer Rianta Group, Ireland** (DUB - Dublin, SNN - Shannon, ORK - Cork)[c, d]	264,948	16,488	158,561
BER	**Berlin Group, Germany** (TXL - Tegel, SXF Schoenefeld, THF - Tempelhof)[c]	217,643	12,379	41,653
BSL	Basel Mulhouse, Switzerland/France	124,956	3,572	72,932
CGN	Cologne, Germany	151,335	6,089	410,436
FRA	Frankfurt, Germany	439,093	45,839	1,538,822
GVA	Geneva, Switzerland	159,256	6,995	51,320
HAM	Hamburg, Germany	156,525	9,459	52,423
LBA	Leeds-Bradford, UK	63,954	1,463	236
MAN	Manchester, UK	185,041	17,760	112,229
MRS	Marseille, France	123,131	6,017	58,584
NCL	Newcastle, UK	79,289	3,022	4,239
ZRH	Zurich, Switzerland	306,182	20,925	378,449

Code	Partially Privatised Airports	TAM[a]	Total PAX ('000)[b]	Total Air Cargo (t)
ADR	Aeroporti di Roma, Italy (FCO - Fiumicino, CIA - Ciampino)	285,696	24,683	199,769
BHX	Birmingham (International), UK	118,368	7,027	30,304
BRS	Bristol, UK	61,723	2,016	8,265
CPH	Copenhagen, Denmark (CPH - Copenhagen, Roskilde)	394,747	17,502	315,348
DUS	Dusseldorf, Germany	194,065	15,926	61,541
HAJ	Hanover, Germany	94,711	5,085	14,671
NAP	Naples, Italy	56,895	3,660	4,956
VIE	Vienna, Austria	191,742	11,204	125,585

Code	Fully Privatised Airports	TAM[a]	Total PAX ('000)[b]	Total Air Cargo (t)
ABZ	Aberdeen, UK	103,985	2,470	5,933
BAA	**BAA Group, UK** (ABZ, EDI, GLA, LGW, LHR, SOU, STN)[c]	1,229,900	117,423	1,929,844
BFS	Belfast, UK	101,453	3,038	40,461
BRU	Brussels, Belgium	313,929	20,005	656,302
CWL	Cardiff, UK	65,293	1,334	2,854
EDI	Edinburgh, UK	101,192	5,114	48,176
EMA	East Midlands, UK	72,712	2,231	142,345
GLA	Glasgow, UK	101,339	6,810	12,026
LGW	London Gatwick, UK	255,569	30,559	313,627
LHR	London Heathrow, UK	458,270	62,263	1,355,417
LPL	Liverpool, UK	76,194	1,308	42,178
LTN	London Luton, UK	79,793	5,273	27,433
STN	London Stansted, UK	155,080	9,453	193,986

Source: Airports Council International[10]

[a] *Total aircraft movements (TAM) = air transport movements (ATM) + other movements*
[b] *Total PAX = terminal passengers + transit passengers;*
[c] *Airport systems = bold*
[d] *Dublin Airport Authority PLC since 1 October 2004*

government agency to private investors. This is misleading regarding airports, since most privatisations of major commercial airports did not involve the actual sale of the property, the privatisation of the former British Airports Authority being the most notable exception. Airport privatisation usually involves only the transfer of *some* ownership rights[11].

In this context, 'privatised' is defined as a long-term private risk investment in terms of an equity stake (in excess of 75% to qualify as 'fully privatised'), a long-term lease or concession agreement, or a 'build, operate and transfer' (BOT) franchise, as distinct from shorter-term management contracts without equity commitment. Where 'partial privatisation' is found, this requires a minimum private share of more than 20% or an adequate lease/concession agreement with regard to total equity, since without a substantial financial involvement and corresponding risk, investors will hardly be able to exercise effective management control.

3.0 METHODOLOGY

3.1 Comparability issues

For the time being, no accepted industry practice has been established for measuring and benchmarking airport performance on various aspects of operational efficiency and productivity as well as financial performance. Moreover, most of the existing research in the area is on selected aspects of airport performance rather than providing a truly comprehensive picture.

With nearly all inter-company performance comparisons there are several comparability issues and the airport industry is no exception. This is particularly the case, as there is no 'typical' airport when it comes to looking at the services and facilities which an airport provides. Beyond the basic operational functions, different airports have little in common, with some airport operators providing activities such as security, air traffic control, ground handling, car parking, duty-free shops, cleaning and heavy maintenance, while others will either contract these out or have no involvement. Moreover — although not entertained across the European Union — few airports may indirectly benefit from continued 'public subsidy' in terms of the provision of policing and other border agency services or supporting infrastructure. These particular effects are also different from one side of the English Channel to the other, i.e. mainland Europe. This will impact on both cost and revenue levels as well as the derived indicators and ratios.

It may be possible to compare an airport with other similar airports but this is not always the case. An alternative approach, which has been applied by Doganis *et al*[12] and the Transport Research Laboratory (TRL)[13], is to reduce these problems by adjusting the data to a 'normalised' set which represents a hypothetical airport which undertakes a standard set of activities. Such adjustments, however, may involve a considerable amount of subjectivity in the assumptions which are made in moving towards a standard airport, since there is no agreed standard for the application of data adjustments. Moreover, making such adjustments inevitably means a movement away from reality and may also ignore the complementarity of the different activities or the reasons which determine why an airport chooses to provide certain services. In the end, the most favourable approach will depend on the aim and focus of the performance assessment.

This study, with its financial emphasis, is concerned with the actual existing airport companies rather than conceptually normalised ones, as this is what is of interest to the financial sector. Adjusted data will not necessarily reveal all strengths/weaknesses and areas for further improvement — nor will it give a true and fair picture of the earning power as a basis for evaluation. For these reasons, the data has not been adjusted so as to avoid any distortion of the true circumstances.

Another key issue of comparability concerns the measurement of the capital input since there is no standardised accounting system for all airports. For this reason, some studies tend to focus much more on the other inputs. For example, in the 2003 ATRS study a variable factor productivity (VFP) index was constructed by aggregating the measures related to labour productivity and other operating costs. The rationale given was that in the short to medium term, airports make managerial and operational decisions within the given state of their capital infrastructure and that they may not always have total control over capital use[14]. However, from a purely financial viewpoint, capital is a crucial input for any airport business and so in the study it receives considerable attention.

An important part of any performance assessment, is not only to determine the relative efficiency levels but also to try to 'explain' the variations which have been observed with reference to certain characteristics of the airports. For example, these could relate to size and traffic characteristics, ownership structure, regulation and competition, service quality and the existence of congestion, airport location, and management strategies towards the development of non-aeronautical revenue or out-sourcing. Some studies divide these factors into two categories, namely those which are beyond or under managerial control. This enables the original or 'gross' measure of productivity to be adjusted to a residual 'net' measure which eliminates the effects which are beyond managerial control and determines the *true* scope for enhancing efficiency[14-16]. A popular method which has been used to identify the factors which influence performance is regression analysis[4,12,15]. In addition, the analysis of sample means (e.g. the t-test or Mann-Witney test) can be used to assess whether a certain airport characteristic can produce statistically significant different performance values[5,17-19]. For this research, both regression and t-tests have been used as described below (see Vogel[9] for more details).

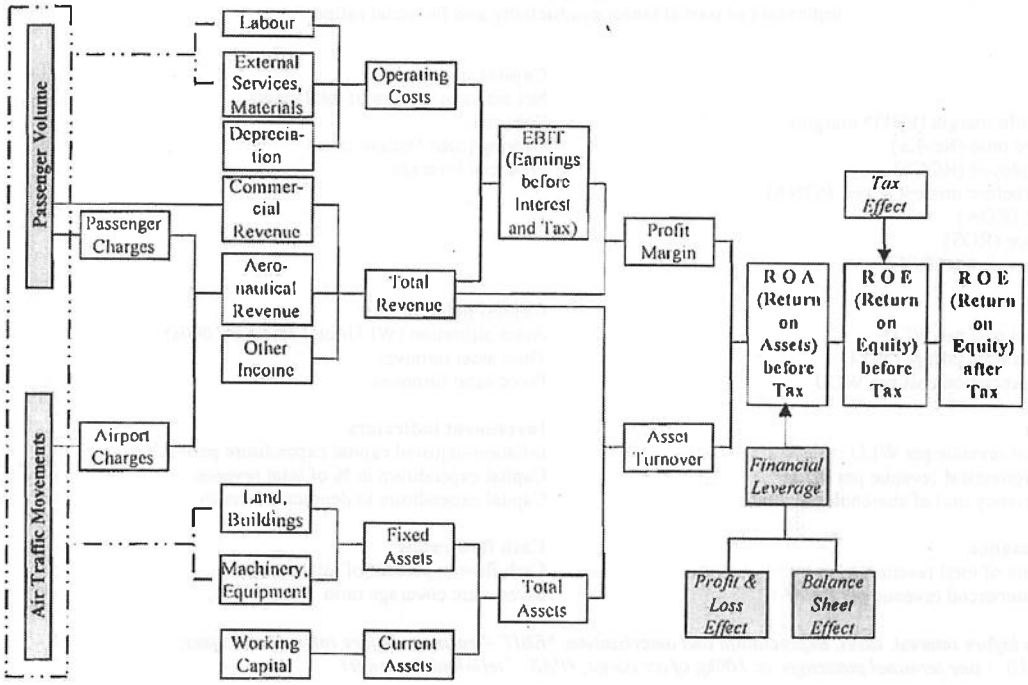
3.2 Research design and procedures

The rationale of the subsequent analysis of productive efficiency and financial performance is the framework provided by the Du Pont system, the most common use of which is to disaggregate return ratios in the profit margin and turnover elements. It summarises the relationships between return on investment (assets), asset turnover, the profit margin and financial leverage. The upper left branch in Fig. 1 develops the profit margin on sales (total revenue), the lower one the company's turnover of total assets. Financial leverage in using debt financing and taxes paid further affect a firm's return rate on equity (ROE). The 'airport value tree', as displayed below, is a refined application of this method of decomposing return ratios into components to the airport world.

The 'airport value tree' is rooted in traffic – aircraft movements and passengers. Airports create value by converting traffic into revenue through the provision of infrastructure and services. Both asset turnover and profit margin are driven by traffic volume, asset utilisation, and operating efficiency. The product of profit or operating margin and turnover of total assets results in the return generated by the airport's assets before taxes. The respective capital structure will exert a financial leverage and then result in return on equity. Finally, taxes will have to be paid.

Financial ratio analysis involves assessing a company's financial statements, providing information about a firm's position at a point of time as well as its operations over some past period. It is a commonly used technique for analysing the financial performance and underlying causal relationships of a firm. Ratios standardise numbers and facilitate comparisons. Therefore, ratio analysis is frequently employed for benchmarking companies, as well as across industry sectors. Still, it has not yet been extensively applied to airports[20].

The basic approaches of performance indicators are partial versus total measures. Partial or partial factor productivity (PFP) measures examine the relationship between one or more inputs and one or more outputs. Total factor productivity (TFP) and data envelopment



Source: Illustration adapted from the Du Pont chart and Morgan Stanley Dean Witter[21]

Figure 1. The airport value tree.

analysis (DEA) deal with multiple input and output activities, producing an overall measurement of the combined factor inputs in relation to the total output produced[20].

In general, financial metrics and productivity measures are the basic quantitative approaches to performance measurement. The first category emphasises profitability or return rates. The latter one refers to the relationship between inputs and outputs and the basic notion of supplying more outputs using fewer inputs[22]. Based on the concepts of performance indicators and financial ratio analysis, comparisons are made by working out indices and ratios representative of key areas of management as summarised in Table 2 (and defined in the Appendix) for the individual sample airports. Subsequently, mean values of the ten-year period under consideration are calculated for the sub groupings of publicly owned and privatised airports. This includes measures of aggregate and disaggregate cost and revenue, commercial performance, investment activities and cash flow, capital structure and productivity, and ultimately profitability. Descriptive measures constitute the context for these indicators, with 'ownership structure' as the decisive feature.

The analysis of more than 300 observations per constituent of any indicator or ratio results in a comprehensive survey on the financial performance of the sample airports. The arithmetic means of the descriptive statistics — representing the statistic for central tendency — are established next and grouped per ownership criteria, or publicly owned versus privatised (wholly and substantially privately owned) airports. The unweighted ten-year group means imply high validity and reliability, and also provide long-term trends, diminishing the potential influence of extraordinary events, as well as the airports' position in the investment cycle.

Monetary data for 1999 is in Euro for Euro zone airports, all other data was converted from local currency to ECUs for 1990-1998 and to Euro for 1999, respectively. Where monetary terms are adjusted for inflation, all data is indexed to the common base year; thus 1995 equals 100. Neither special drawing rights nor purchasing power parities exchange rates are applied in this entirely European setting. Ultimately, prevailing market conditions reflected by foreign exchange rates resulting in the total amount to be financed in a transaction is what really matters from the investor's perspective, rather than equalising the buying power of different currencies.

In order to test if the performance is significantly different for sample airports in public or private ownership, PFP and FRA outcomes were subjected to an independent and a related t-test. Their usage depends on whether the independent variable was manipulated using the same or different subjects.

The independent samples t-test is designed to test the null hypothesis that the population mean of a variable is the same for two groups of cases. In this between-group design, different subjects participate in each condition — in this context different ownership structures. If the null hypothesis is true, the samples have been drawn from the same population and ownership structure does not affect the financial performance in a statistically significant manner. In addition, the independent means t-test can accommodate different sample sizes.

The dependent-samples t-test, in contrast, tests the null hypothesis that the difference in means of two related variables is zero. This repeated measures design considers the same subjects in both conditions — in this instance, airport companies before and after partial or full privatisation. If there is no significant difference between the population means, then the null hypothesis is true and a change in ownership structure has no statistically significant effect on the performance of sample airports.

Table 2
Indicators of partial factor productivity and financial ratios

Profitability
EBITDA[a] margin
Operating margin, profit margin (EBIT[b] margin)
Revenue / expenditure ratio (RevEx)
Return on capital employed (ROCE)
Return on net assets (before interest & tax, RONA)
Return on total assets (ROA)
Return on total revenue (ROS)
Return on shareholders' funds (ROE)

Cost efficiency
Inflation-adjusted total cost per WLU[c]
Inflation-adjusted operating cost per WLU
Inflation-adjusted depreciation cost per WLU

Revenue generation
Inflation-adjusted total revenue per WLU
Inflation-adjusted aeronautical revenue per WLU
Total revenue per currency unit of shareholders' funds

Commercial performance
Non-aeronautical share of total revenue
Inflation-adjusted commercial revenue per PAX[d]

Capital structure
Net assets in percent of total assets
Debt ratio
Gearing (debt / equity ratio)
Financial leverage

Capital productivity
Asset utilisation (WLU/total assets in '000s)
Total asset turnover
Fixed asset turnover

Investment indicators
Inflation-adjusted capital expenditure per PAX
Capital expenditure in % of total revenue
Capital expenditure to depreciation ratio

Cash flow ratios
Cash flow in percent of total revenue
Investment coverage ratio

[a]EBITDA = earnings before interest, taxes, depreciation and amortisation; [b]EBIT = earnings before interest and taxes; [c]Work load unit (WLU) = one terminal passenger or 100kg of air cargo; [d]PAX = terminal passenger

The overall financial efficiency of publicly owned and privatised sample airports was compared by data envelopment analysis (DEA). DEA is a non-parametric method of measuring performance and quantifies a single unitless index of overall efficiency. It is based on a ranking concept of the relative efficiency of a set of decision-making units (DMUs) which are engaged in performing the same function. DEA only requires minimal assumptions about how the factors of production and the outcomes relate to each other and does not hypothesize a functional form between them. It also does not require to prescribe weights to be attached to each input and output as in the usual index number approaches. Therefore, DEA has become a popular alternative to total factor productivity (TFP) for establishing an overall measurement of the combined factor inputs in relation to the total output produced.

4.0 PRESENTATION AND DISCUSSION OF MAIN RESULTS

Correlational research included comparisons of the group means of the individual indices of partial factor productivity and financial ratios by the above-described t-tests. Data envelopment analysis was applied to assess differences in the overall factor productivity of publicly owned and privatised airports.

4.1 Correlational research

4.1.1 Independent samples

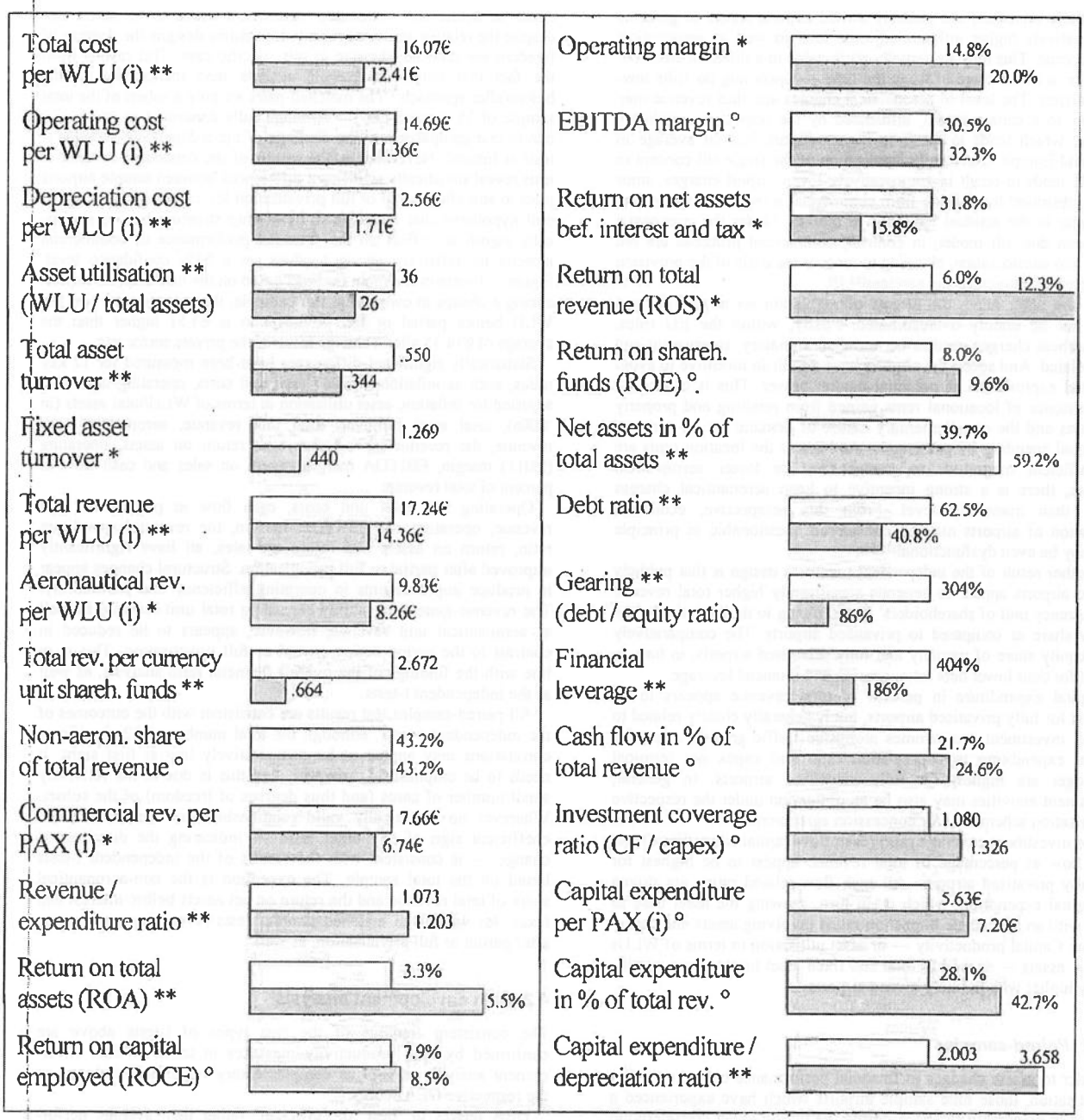
The results of the independent samples t-tests reveal statistically significant or even highly significant differences between privatised and publicly owned airports for 20 out of 28 ratios, rejecting the null hypothesis that the population mean of these variables is the same for both groups of cases on a 95% and 99% confidence level, respectively. Figure 2 illustrates the main findings. Average total cost per work load unit (WLU) of privatised airports, for example, is €3.66 lower than the €16.07 average of publicly owned airports. Average operating cost per WLU is €3.33 lower with privatised airports (€11.36), and so on.

As displayed in Fig. 2, the majority of 20 out of 28 performance indicators and financial ratios tested significantly or even highly significantly different for privatised versus publicly owned airports. No statistically significant difference has been found in respect of the non-aeronautical share of total revenue (commercial + other), return on capital employed, EBITDA margin, return on equity, cash flow in percent of total revenue, the investment coverage ratio (cash flow/capital expenditure), capital expenditure per terminal passenger, and capital expenditure in percent of total revenue.

Whereas partially and fully privatised airports show improved ratios in the majority of cases, it is worth noting that publicly owned companies are significantly more successful with regard to capital productivity or asset utilisation (WLU/total assets), fixed and total asset turnover, revenue generation (total as well as aeronautical unit revenues), commercial revenue per terminal passenger, return on net assets, total revenue per currency unit of shareholders' funds and the capital expenditure to depreciation ratio.

It needs to be pointed out that specifically when ratios involving balance sheet items are being considered, the test reveals distinct differences, indicating a different capital structure and capital productivity of sample airports, and a different way of financing the productive assets.

In this respect, the partially privatised airports assume an outstanding position within the group of wholly and substantially privately owned entities. Differentiating between partially and fully privatised businesses clearly shows that privatised airports do not constitute a homogeneous group but reveals distinct differences amongst them. This is most markedly regarding unit costs, revenue generation and total revenue per currency unit of shareholders' funds, total asset turnover, debt ratio, gearing and financial leverage, return on capital employed, net assets in percent of total assets, return on net assets (before interest and taxes), return on assets and return on equity.



Key: publicly owned airports privatised airports
* statistically significant ** highly significant ° not significant (95% / 99% level of confidence)
(i) inflation-adjusted = indexed to 1995

Note: Due to data incomparability, BER is included for 1994-1999 only; BRU 1990-1997; DUS 1990-1995; LTN 1990-1997; the BAA Group is excluded from sample averages to avoid double counting.

Figure 2. Results of independent samples t-tests.

Partially privatised and publicly owned airports appear to generate comparatively higher inflation-adjusted total as well as aeronautical unit revenue. This may be partially attributable to a different customer base, i.e. a lower share of — at the time — upcoming no frills low-cost carriers. The level of aeronautical charges and thus revenue may also be, to a certain extent, influenced by the respective regulatory regime, which tends to result in higher airport fees on average in mainland Europe. Conversely, application of the single-till concept in the UK tends to result in comparatively lower airport charges, since cross-subsidised by revenue from commercial activities. This method is similar to the residual approach in the US. Under the continental European dual till model, in contrast, commercial proceeds are not taken into consideration, allowing to recover the costs of the provision of airport infrastructure and services[23-27].

On the other hand, the effects of regulation on airport charges must not be unduly overestimated. Firstly, within the EU rules, aeronautical charges need to be non-discriminatory, transparent and cost-related. And secondly, airports have a built-in incentive to avoid eventual exploitation of potential market power. This is caused by the existence of locational rents gained from retailing and property activities and the complementary nature of demand for air services and retail spending by passengers. As long as the location rents are of sufficient magnitude to compensate for lower aeronautical charges, there is a strong incentive to keep aeronautical charges lower than monopoly level. From this perspective, economic regulation of airports may be considered questionable in principle and may be even dysfunctional[27-31].

Another result of the independent measures design is that publicly owned airports appear to generate significantly higher total revenue per currency unit of shareholders' funds, owing to their relatively low equity share as compared to privatised airports. The comparatively high equity share of partially and fully privatised airports, in turn, is causal for their lower debt ratio, gearing and financial leverage.

Capital expenditure in percent of total revenue appears to be highest for fully privatised airports, but is generally closely related to overall investment programmes alongside traffic growth. Also, the capital expenditure to depreciation ratio and capex per terminal passenger are highest for fully privatised airports. In general, investment activities may also be an obligation under the respective privatisation scheme and/or concession agreement.

The investment coverage ratio (cash flow/capital expenditure) and cash flow as percentage of total revenue appear to be highest for partially privatised airports. All cash flow-related ratios are driven by capital expenditure which is, in turn, growing the asset base as well, with an immediate impact on ratios involving assets and depreciation. Capital productivity — or asset utilisation in terms of WLUs to total assets — as well as total and fixed asset turnover are significantly higher with publicly owned airports.

4.1.2 *Paired-samples*

In order to assess changes in financial performance before and after privatisation, those nine sample airports which have experienced a change in ownership structure during the period under consideration have been subjected to matched-samples t-tests. These are Bristol, Copenhagen, Hanover, Naples, Rome and Vienna which have been partially privatised and fully privatised Belfast, Cardiff and East Midlands.

The tests comprise the identical 28 ratios as above and compare the respective means prior to and after partial or full privatisation. Average values in this before/after-design are weighted equally, regardless of the duration of the respective periods. While this within-group or related measures design reduces the error variance, making it easier to detect any systematic variance, it needs to be noted that despite the relative power of repeated measures designs the degrees of freedom are reduced likewise in this specific case. This results from the fact that only nine sample airports lend themselves to this before/after approach.[1] The matched-pairs are only a subset of the total sample of 35 airports and — although fully consistent in itself — a one-to-one comparison to the findings of the independent-samples t-tests is limited. Nevertheless, the results of the dependent-samples t-tests reveal statistically significant differences between sample airports prior to and after partial or full privatisation for 12 ratios, rejecting the null hypothesis that a change in ownership structure has no statistically significant effect on the financial performance of commercial airports by relatively strong t-values on a 95% confidence level. Figure 3 illustrates the main findings based on the nine airports experiencing a change in ownership. For example, the average total cost per WLU before partial or full privatisation is €3.51 higher than the average of €14.35 after a change towards the private sector, etc.

Statistically significant differences have been measured for 12 key ratios, such as inflation-adjusted total unit costs, operating unit costs adjusted for inflation, asset utilisation in terms of WLU/total assets (in '000s), total asset turnover, total unit revenue, aeronautical unit revenue, the revenue/expenditure ratio, return on assets, operating (EBIT) margin, EBITDA margin, return on sales and cash flow in percent of total revenue.

Operating and total unit costs, cash flow in percent of total revenue, operating and EBITDA margin, the revenue/expenditure ratio, return on assets and return on sales, all have significantly improved after partial or full privatisation. Structural changes appear to produce improvements in operating efficiency and profitability. The revenue-generating ability regarding total unit revenue as well as aeronautical unit revenue, however, appears to be reduced in contrast to the period before partial or full privatisation. This is in line with the findings of the overall financial ratio analysis, as well as the independent t-tests.

All paired-samples test results are consistent with the outcomes of the independent t-tests, although the total number of 12 significant correlations may appear to be comparatively low at first sight. It needs to be emphasized, however, that this is due to the relatively small number of cases (and thus degrees of freedom) of the subset. Wherever no statistically valid relationship has been found, the coefficient sign of any other ratio — indicating the direction of change — is consistent with the results of the independent t-tests based on the total sample. The exception is the non-aeronautical share of total revenue and the return on net assets before interest and taxes, for which the matched-samples tests reveal improved ratios after partial or full privatisation, as well.

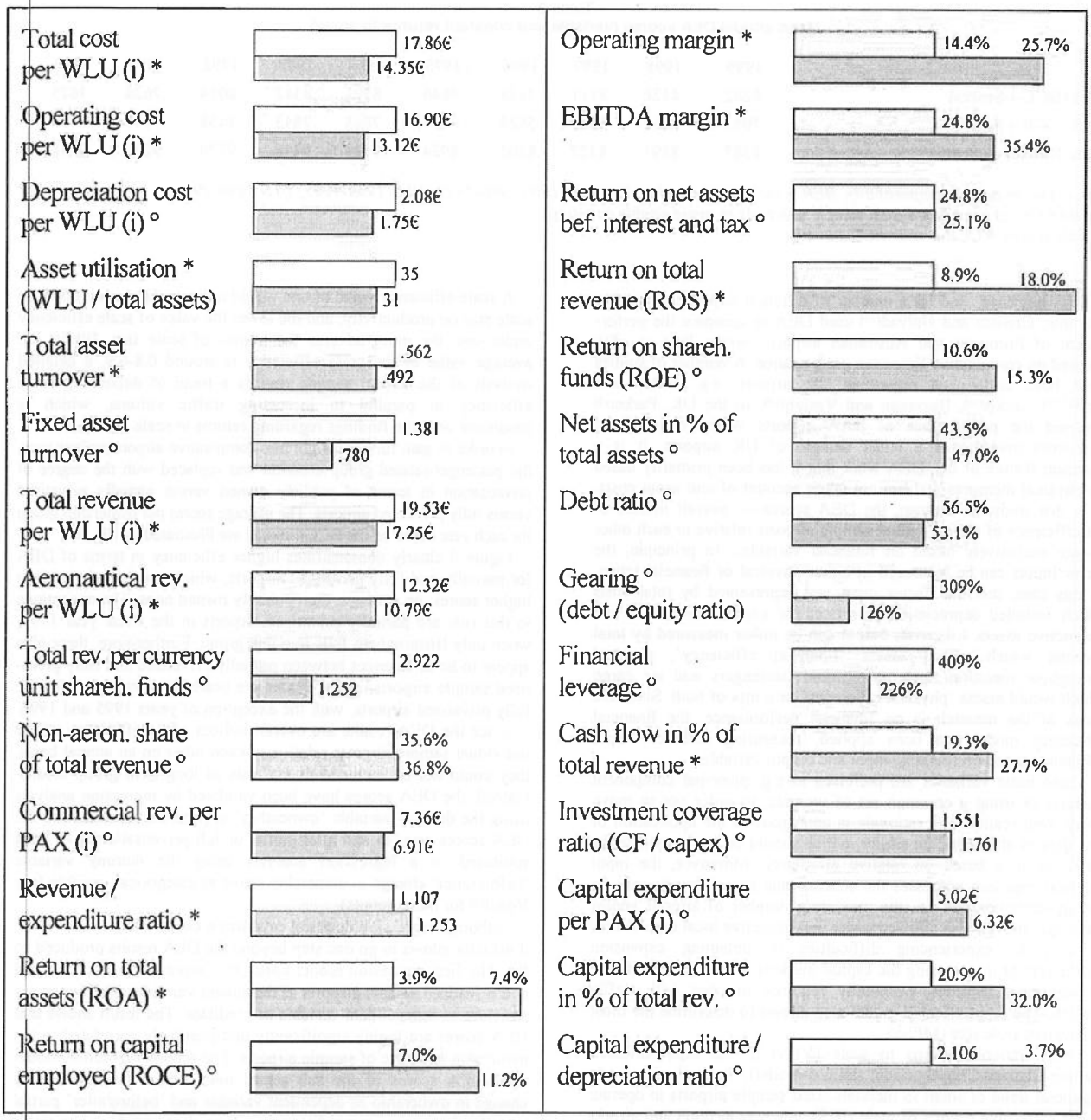
4.2 Data envelopment analysis

The consistent findings of the two types of t-tests above are confirmed by total productivity measures in terms of data envelopment analysis as well as complementary regression analyses on the respective DEA scores.

DEA relates to 'best' or 'efficient' rather than average performance. In carrying out so-called dominance comparisons of the production units' inputs and outputs, it applies a relative efficiency concept; efficiency is not measured in absolute terms but in relation to the sample. The essential idea of DEA is to evaluate, how efficiently each decision-making unit is handling the input/output transformation process when compared to other DMUs engaged in that same process[20].

A DMU is Pareto-efficient if it is not possible to lower any one of its input levels without increasing at least another one of its input

[1] *Due to its pseudo-partial privatisation under the Eurohub Ltd BOT-scheme, Birmingham is considered partially privatised for the full period. Likewise, Liverpool is accounted for as fully privatised for the entire period due to the private sector's share of 76%. Because of data incomparability, Dusseldorf and Luton are not included for the full period under scrutiny and thus not in the before/after design.*



Key: before privatisation after privatisation
* statistically significant ° not significant (95% level of confidence)
(i) inflation-adjusted = indexed to 1995

Figure 3. Results of paired-samples t-tests.

levels and/or without lowering at least one of its output levels. This means, a Pareto-efficient DMU will lie on the efficient frontier and its technical efficiency will be one whether it is measured in the input or in the output orientation. There are two basic models, the CCR (Charnes-Cooper-Rhodes) model which assumes constant returns to scale, and the BCC (Banker-Charnes-Cooper) model which is based on variable returns to scale. The latter one can therefore be used to measure scale effects[20].

Table 3
Mean annual DEA scores (variable and constant returns to scale)

	1999	1998	1997	1996	1995	1994	1993	1992	1991	1990
VRS (BCC-i-Scores)	.8262	.8128	.8111	.7228	.7646	.8391	.8342	.8084	.7624	.7675
CRS (CCR-i-Scores)	.7053	.6962	.6685	.5828	.6791	.7865	.7843	.7458	.7003	.6405
Scale Efficiency Scores*	.8587	.8591	.8327	.8205	.8924	.9423	.9448	.9279	.9249	.8418

Notes: Due to data incomparability, BER is included for 1994-1999 only; BRU 1990-1997; DUS 1990-1995; LTN 1990-1997; the BAA Group is excluded from sample averages to avoid double counting.
** Scale scores = CCR-i- over BCC-i-scores.*

DEA has been used for a number of different airport studies. For example, Graham and Holvad[19] used DEA to compare the performance of European and Australian airports, whilst Pels *et al*[32] focused on comparative European performance. A number of studies have been undertaken regarding US airports, e.g. Gillen and Lall[15,33], Sarkis[18], Bazargan and Vasigh[17]. In the UK, Parker[2] assessed the performance of BAA airports whilst Holvad and Graham[4] investigated a wider sample of UK airports. It is a common feature of this DEA work that it has been primarily based on physical measures and has not taken account of unit input costs.

In this study, in contrast, the DEA scores — overall indices of (in)efficiency of the individual sample airports relative to each other — are exclusively based on financial variables. In principle, the factor inputs can be measured in either physical or financial terms. In this case, the total factor input was represented by total costs which included depreciation to reflect the capital invested in the productive assets. Likewise, output can be either measured by total revenue which would assess 'financial efficiency', physical throughput measures such as terminal passengers and air cargo which would assess 'physical efficiency' or a mix of both. Since the focus of the research is on financial performance, the financial efficiency model has been applied, measuring technical input efficiency based on financial input and output variables.

These basic variables are preferred to e.g. principal component analysis or using a common set of weights, in order not to move away from reality. The rationale is analogous to the application of raw data as elaborated on earlier, which should be a prerequisite for DEA, as it is based on relative efficiency. Moreover, the input oriented approach addresses the concern that some airports may be facing restrictions on i.e. the maximum number of aircraft and/or passenger movements allowed under the respective local regulations, or may be experiencing difficulties in obtaining expansion permission or in accessing the capital markets to finance investment in additional facilities, eventually required to cope with traffic growth. The input oriented model also allows to determine the most productive scale size (MPSS).

Under variable returns to scale (VRS) of the input oriented Banker-Charnes-Cooper model (BCC-i-model), the analysis reveals a general trend of small to medium-sized sample airports to operate under increasing returns to scale (IRS), whereas airports and airport systems with a traffic volume in excess of approximately four million terminal passengers per annum (mppa) seem to operate under either constant (CRS) or decreasing returns to scale (DRS). Moreover, frequency statistics demonstrate that 59% of IRS versus 25% of DRS of the total sample are found with airports below four mppa. This indicates economies of scale regarding sample airports below roughly four mppa and diseconomics of scale beyond this threshold, where scale inefficiencies were identified due to failure in achieving the most productive scale size.

Table 3 displays the DEA 'financial efficiency' scores of the total sample under VRS (resulting from the BCC-i-model) and under CRS (resulting from the input oriented Charnes-Cooper-Rhodes or CCR-i-model) as well as the scale scores or scale efficiency calculated as CCR-i- over BCC-i-scores.

A scale efficiency value of one would indicate there is no effect of scale size on productivity, and the lower the value of scale efficiency under one, the more adverse the impact of scale size. Whilst the average value of the scale efficiency is around 0.8-0.9, a detailed analysis of the airport sample reveals a trend of decreasing scale efficiency in parallel to increasing traffic volume, which is consistent with the findings regarding returns to scale (RTS).

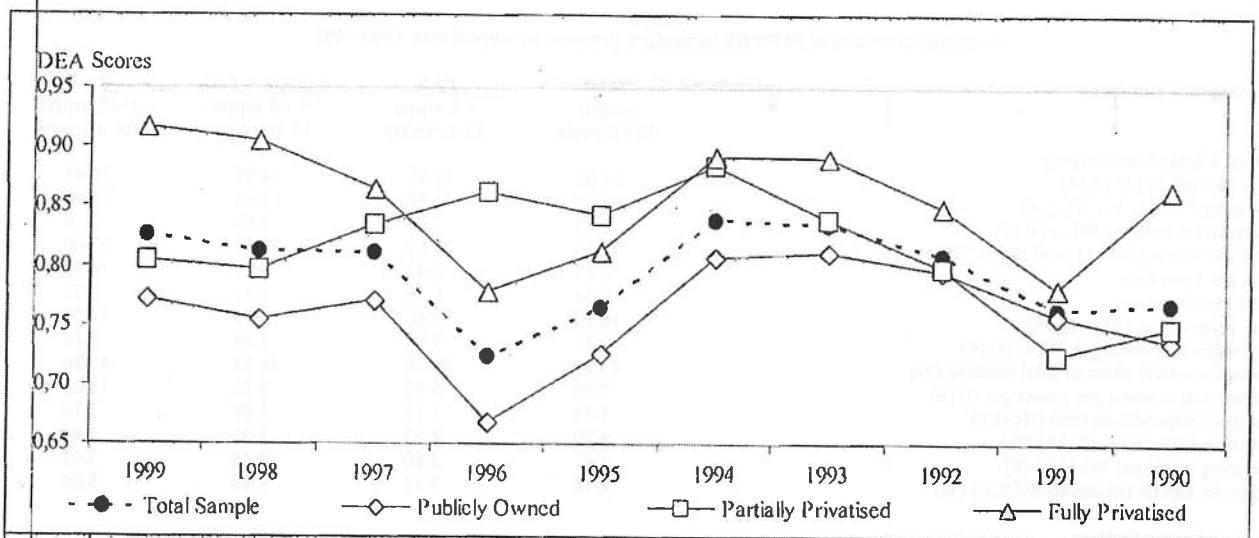
In order to gain further insight into comparative airport performance, the passenger-related group criterion was replaced with the degree of privatisation in terms of publicly owned versus partially privatised versus fully privatised airports. The average scores per ownership group for each year based on the BCC-i-model are illustrated by Fig. 4.

Figure 4 clearly demonstrates higher efficiency in terms of DEA for partially and fully privatised airports, which consistently achieve higher scores, on average, than publicly owned ones. The exceptions to this rule are partially privatised airports in the fiscal year 1991, when only Birmingham falls into this group. Furthermore, there also appear to be differences between partially privatised and fully privatised sample airports, as the scores are nearly always higher for the fully privatised airports, with the exception of years 1995 and 1996.

Since the DEA results are overall indices of (in)efficiency of the individual sample airports relative to each other on an annual basis, they could not be included in the tests of long-term group means. Instead, the DEA scores have been validated by regression analysis using the dummy variable 'ownership' as predictor. In addition, the DEA scores prior to and after partial or full privatisation have been subjected to a regression analysis using the dummy variable 'before/after' change in ownership status as categorical variable (see Vogel[9] for more details).

Although regression does not establish a cause-effect-relationship, it actually allows to go one step beyond the DEA results produced so far. The first regression model used DEA scores of publicly owned and privatised sample airports as dependent variables and ownership structure as independent variable or predictor. The result shows that DEA scores are highly significantly and positively correlated to the ownership structure of sample airports. The second regression model used DEA scores of the sub set of nine airports experiencing a change in ownership as dependent variable and 'before/after' partial or full privatisation as predictor or independent variable. The result of the second regression analysis reveals that DEA scores of sample airports experiencing a change in ownership structure are also significantly correlated with a change from public to private ownership. Improved DEA scores of 'financial efficiency' for the time after partial or full privatisation reconfirm a positive correlation between total factor productivity and ownership status.

This verifies the findings of the data analysis and hypotheses testing discussed above. DEA scores, of course, are merely indices of overall performance on a highly aggregated level, while PFP and FRA allow to isolate the factors which make up for the performance differences. The merit of DEA, in turn, is that it spares the difficult interpretation of a comprehensive set of indicators and ratios assessing individual areas of the business.



●	.8262	.8128	.8111	.7228	.7646	.8391	.8342	.8084	.7624	.7675
◇	.7716	.7543	.7700	.6686	.7265	.8074	.8107	.7952	.7577	.7360
□	.8043	.7969	.8342	.8620	.8431	.8848	.8384	.7979	.7248	.7486
△	.9178	.9059	.8642	.7784	.8124	.8918	.8907	.8493	.7812	.8645

Note: Due to data incomparability, BER is included for 1994-1999 only; BRU 1990-1997; DUS 1990-1995; LTN 1990-1997; the BAA Group is excluded from sample averages to avoid double counting.

Figure 4. Mean annual DEA scores per ownership group (variable returns to scale).

4.3 General findings

Based on the DEA findings and in addition to primarily focusing on ownership structure, sample airports have also been categorised by size in terms of the ten-year averages of terminal passengers, as displayed in Table 4. Furthermore, the four airport groupings/systems, being Aeroports de Paris, Aer Rianta (predecessor of the Dublin Airport Authority), BAA and the group of Berlin airports, have been compared versus single airports.

According to these results, airports below four mppa appear to enjoy scale effects in terms of comparative cost advantages. This supports the DEA findings regarding returns to scale (RTS). Revenue per WLU increases with size, which appears to be related to larger volumes of non-aeronautical revenue, as aeronautical revenue per WLU actually declines with size. The resulting operating profit or EBIT per WLU as well as EBITDA per WLU measures seem to be boosted by higher traffic volume, most notably beyond 20m terminal passengers. By contrast, the balance sheet ratios such as debt ratio, gearing, net assets as a percentage of total assets and financial leverage seem to reveal distinct differences and a wide spread in terms of percentage points amongst the individual size categories as well as in relation to the sample mean. This indicates different capital structures and approaches to financing productive assets amongst the sample airports.

In order to explore the effect of traffic volume and composition, additional regressions have been run to test for correlations between airport size in terms of total throughput or WLUs and the share of international terminal passengers as dependent variables, and 'ownership' as predictor. Since no statistically valid relationship was found on a 95% confidence level, it may be concluded that traffic throughput and traffic mix do not exert a crucial impact on the results of the t-tests discussed above. Furthermore, no consistent pattern has been detected in respect to airport systems, other than that the BAA Group appears to operate more cost-efficiently in comparison to ADP, ARI and especially BER[9].

In general, the data analysis reveals valid differences between publicly owned and privatised airports, independent of traffic volume and mix. Privatised airports do not form a homogeneous group but reflect structural differences between partially and fully privatised companies. Distinct differences become manifest in operating efficiency, investment activities and corresponding asset utilisation, as well as capital structure. Whereas privatised airports demonstrate higher cost efficiency, publicly owned airports generate comparatively higher unit revenue. In terms of operating margin and RevEx, however, the partially and fully privatised companies are ranked higher, on average. The value driver scorecard in Table 5 summarises the determinants of value creation of the 35 sample airports — strengths and weaknesses — grouped per ownership status.

The key drivers are, in turn, influenced by various factors, some of which are indicated in Table 5. As per the mechanics of the 'airport value tree', each of those has an immediate impact on the return rate generated by the airport's assets and ultimately on the profitability which may attract investors. Return on sales is primarily dependent on operating efficiency, which is driven by revenue generation and cost management and is also reflected by the EBITDA margin. Asset turnover is dependent on 'sweating' the assets in terms of high asset utilisation or faster growth in revenue than assets. The product of return on sales and asset turnover results in the return on assets. The return rate generated by the airport's assets multiplied by financial leverage, which is determined by

Table 4
Unweighted means of PFP/FRA indicators grouped by airport size 1990-1999

Performance Indicator	Total sample 34 airports	PAX < 4 mppa 13 airports	4 mppa < PAX < 20 mppa 15 airports	PAX > 20 mppa six airports
Partial Factor Productivity				
Total cost per WLU (i) (€)	14·62	13·85	14·95	15·48
Operating cost per WLU (i) (€)	13·37	12·80	13·66	13·93
Depreciation cost per WLU (i) (€)	2·23	1·85	2·60	2·16
Asset utilisation (WLU / total assets '000s)	32·00	29·00	37·00	27·00
Total asset turnover	0·47	0·42	0·51	0·47
Fixed asset turnover	0·94	0·79	1·17	0·73
Total revenue per WLU (i) (€)	16·10	15·60	15·93	17·55
Aeronautical revenue per WLU (i) (€)	9·21	9·97	8·94	8·18
Non-aeronautical share of total revenue (%)	43·21	35·10	45·22	55·80
Commercial revenue per passenger (i) (€)	7·30	5·93	7·25	10·36
Revenue / expenditure ratio (RevEx)	1·13	1·15	1·09	1·16
Return on total assets (ROA) (%)	4·20	4·33	3·95	4·49
Operating profit per WLU (i) (€)	2·81	2·80	2·48	3·61
Return on capital employed (ROCE) (%)	8·16	7·17	8·69	9·06
Financial ratios/indices				
Operating margin (%)	16·83	17·32	13·81	22·85
EBITDA margin (%)	31·22	28·94	31·54	35·34
EBITDA per WLU (i) (€)	5·00	4·65	4·99	5·77
Return on net assets (before interest & tax) (%)	25·21	14·50	33·61	27·25
Return on total revenue (ROS) (%)	8·47	10·77	4·61	12·60
Return on shareholders' funds (ROE) (%)	8·67	7·71	8·51	10·95
Net assets in percent of total assets (%)	47·79	60·12	37·72	46·36
Debt ratio (%)	53·83	44·58	62·55	53·64
Gearing (debt / equity ratio) (%)	214·00	109·00	282·00	268·00
Financial leverage (%)	314·00	209·00	382·00	368·00
Cash flow in percent of total revenue (%)	22·86	22·38	22·34	25·09
Investment coverage ratio (CF / capex)	1·18	1·35	1·09	1·00
Total revenue per currency unit of shareholders' funds	1·84	1·23	2·23	2·15
Capital expenditure per passenger (i) (€)	6·25	4·77	7·74	6·14
Capital expenditure in % of total revenue	33·88	27·50	42·15	29·42
Capital expenditure / depreciation ratio	2·66	2·75	2·57	2·63

Notes: Due to data incomparability, BER is included for 1994-1999 only; BRU 1990-1997; DUS 1990-1995; LTN 1990-1997. The BAA Group is excluded from sample averages to avoid double counting. CF = cash flow; capex = capital expenditure; (i) inflation-adjusted = indexed to 1995.

capital structure, finally results in the return on equity. Tax-deductible interest expense lowers net income, thus decreasing ROA. The use of debt, however, also decreases equity and as long as equity is lowered more than net profit, ROE will increase.

To summarise, the testing of hypotheses reveals economically meaningful and statistically significant differences between publicly owned and privatised airports. The latter group is not a homogeneous one but also shows structural differences between partially and fully privatised companies. Operating efficiency, asset utilisation or capital productivity, and capital structure are significantly different. Figure 5 illustrates the major characteristics of the 35 sample airports grouped per ownership criteria for the period 1990 through 1999 inclusive.

It visualises performance profiles based on a selection of key value drivers identified for the sample airports, grouped per ownership criteria. These profiles illustrate the marked differences between sample airports in terms of operating efficiency, as represented by return on total revenue (ROS) and EBITDA margins. The ratios of WLU to total assets and total asset turnover primarily stand for asset utilisation, while the latter one also gives an indication of the revenue-generating ability. Capital structure is reflected by the percentage of net assets to total assets and financial leverage.

An airport may want to increase aeronautical charges and retail penetration and/or decrease operating costs in order to improve its margin. At the same time, the growth in assets may be limited to stay behind increases in demand. And thirdly, the optimum gearing of the balance sheet may increase the return to common shareholders via financial leverage.

Regarding the capital structure and financing of their assets, respectively, publicly owned airports appear to have a significant advantage. Due to their government-backed credit standing, they appear to be in a position to assume more debt relative to their respective shareholders' funds. This results in considerably higher gearing and ultimately financial leverage, compensating for the comparatively low ROA. Financial leverage is the use of fixed financing costs (in terms of interest payments) by the company; it is acquired by choice and used as a means of increasing the return to common shareholders. Since the return on equity can be expressed as the product of return on assets times financial leverage, fully privatised airports cannot translate their improved operating efficiency into higher return rates on equity — which paradoxically are as attractive to the prospective investor as low debt and gearing.

In this respect, the 'hybrid' partially privatised airports appear to find themselves in an intermediate position, the most significant example for this being an outstanding 15·4% ROE p.a. — as opposed to average return rates on equity of 7·6% for fully privatised

Table 5
Value driver scorecard of sample airports (unweighted means 1990-1999)

Key value drivers/components	Total sample	Publicly owned	Partially privatised	Fully privatised
Operating Efficiency				
● Return on sales (ROS)	8·47%	5·96%	15·05%	11·32%
— Total revenue/WLU (i)	16·10 €	17·24 €	18·67 €	12·84 €
— EBITDA margin	31·22%	30·50%	35·36%	31·23%
— Cash flow/total revenue	22·86%	21·69%	28·17%	23·39%
Asset Utilisation				
● WLU/total assets	32	36	30	25
— Total asset turnover	0·468	0·550	0·494	0·291
— Capex/total revenue	33·88%	28·12%	33·25%	46·19%
— Capex/depreciation	2·656	2·003	2·848	3·957
Capital Structure				
● Financial leverage	314%	404%	228%	172%
— Net assets/total assets	47·79%	39·72%	51·03%	62·09%
— Gearing (debt/equity ratio)	214%	304%	128%	72%
— Debt ratio	53·83%	62·52%	48·97%	37·91%

Notes: Net assets/total assets and debt ratio of total sample and publicly owned airports do not add up to 100% due to different number of cases (since for some years total assets equal total liabilities with GVA and BSL); due to data incomparability, BER is included for 1994-1999 only; BRU 1990-1997; DUS 1990-1995; LTN 1990-1997; the BAA Group is excluded from sample averages to avoid double counting. (i) inflation-adjusted = indexed to 1995.

and 8·0% for publicly owned sample airports. An investment in FTSE 100 equities, by comparison, generated annual stock market returns of 11·8% during the same period.

Also in terms of cost efficiency, revenue generation and financing of their capital structure, airports in mixed public-private ownership appear to combine the best of both worlds. Capital structure is the mix or proportion of a company's permanent (long-term) financing represented by debt, preferred stock, and common stock equity. In view of the strong cash flows generated by steady growth in traffic volume, and the considerable fixed assets backing, airport companies would generally seem to be natural candidates for relatively high gearing[21,34]. Figure 6 compares the markedly different long-term balance sheet structure of wholly and substantially privately owned sample airports to the capital structure of publicly owned airports, as well as the total sample.

The extent of debt financing has important implications for the rate of return realised by stockholders. Firstly, the interest is tax deductible, and secondly the borrowing rate is usually different from the rate earned from the investment in productive assets. Generally, whenever ROA exceeds the cost of debt, leverage is favourable since it lowers the weighted average cost of capital (WACC), representing the opportunity cost of the financial assets employed. Creditors, however, will definitely look to equity, to provide a safety margin. The higher the leverage, as capital shifts from equity towards debt, the more they impose restrictions on the borrower, i.e. working capital uses, capital expenditures for fixed assets and equity revolvements. At the same time, debt is a lever that can magnify both profits and losses. And in a more volatile environment, as in the aftermath of the terrorist attacks in the US of 11 September 2001, it may increase the potential for financial distress and failure[35,36].

Furthermore, any change in ownership towards the private sector, or more aggressive financial structures via leveraged acquisition financing, is likely to create more credit rating volatility, and thus restrict the feasible capital structure. The credit quality of the controlling shareholders is of high importance for the rating of an airport. Therefore, the operating entity in a transaction is frequently ring-fenced from a weak controlling shareholder. Alternatively, support from government ownership will enhance an airport's credit standing. The analysis of the owners' creditworthiness in relation to the airport in question and their ability to back up the airport's credit strength is a standard procedure with financial institutions and rating agencies[37-39].

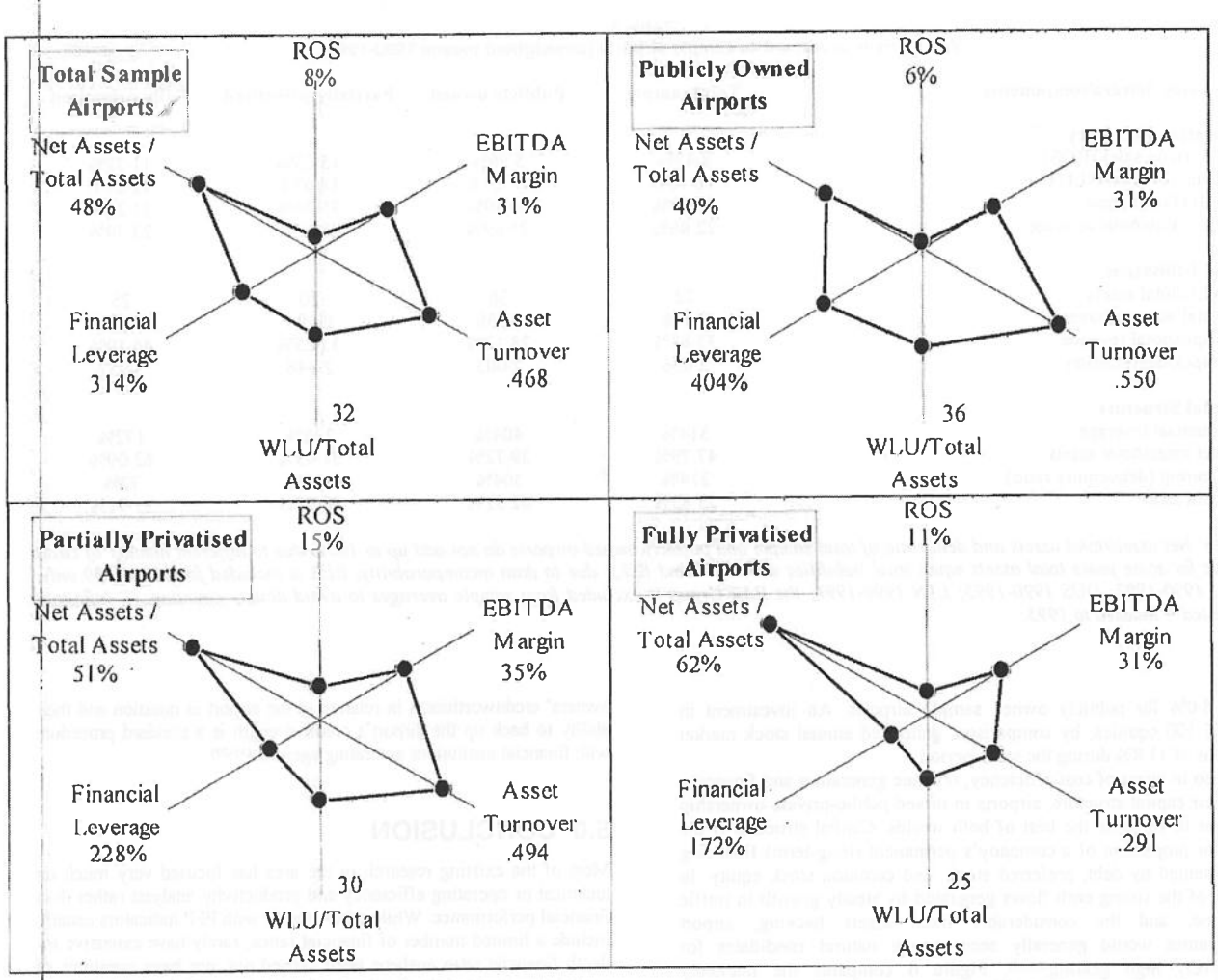
5.0 CONCLUSION

Most of the existing research in the area has focused very much on technical or operating efficiency and productivity analysis rather than financial performance. While other studies with PFP indicators usually include a limited number of financial ratios, rarely have extensive in-depth financial ratio analysis been carried out, nor have questions of capital structure and the financing of assets been involved. In addition, previous DEA research has almost exclusively been based on physical input rather than financial variables, as with this research.

This study's analysis of partial factor productivity and financial ratios results in a detailed understanding of the financial performance and the key success factors of the sample airports, as opposed to earlier studies focusing on production analysis based on physical inputs rather than on financial performance and profitability. In particular, this assessment reveals economically meaningful and statistically significant differences between publicly owned and privatised airports for more than 71% of the 28 indices and ratios tested. Furthermore, it shows that privatised airports do not form a homogeneous group but indicates evident structural differences between partially privatised and fully privatised companies.

The primary differences are reflected in the intensity and/or volume of the key value drivers identified for the business: operating efficiency, asset utilisation — in terms of phased investment, resulting in increased traffic throughput — and thus capital productivity, and capital structure. Regarding the capital structure and financing of productive assets, publicly owned airports appear to have a significant advantage. Due to their, at least indirectly government-backed credit standing, they appear to be in a position to assume more debt relative to their respective shareholders' funds. This results in considerably higher gearing and financial leverage, compensating for the comparatively low return rate on assets generated by the business.

The already high gearing level of publicly owned airports may, in turn, also be one of the reasons for airport privatisations. Under the



Note: Unweighted means; due to data incomparability, BER is included for 1994-1999 only; BRU 1990-1997; DUS 1990-1995; LTN 1990-1997; the BAA Group is excluded from sample averages to avoid double counting.

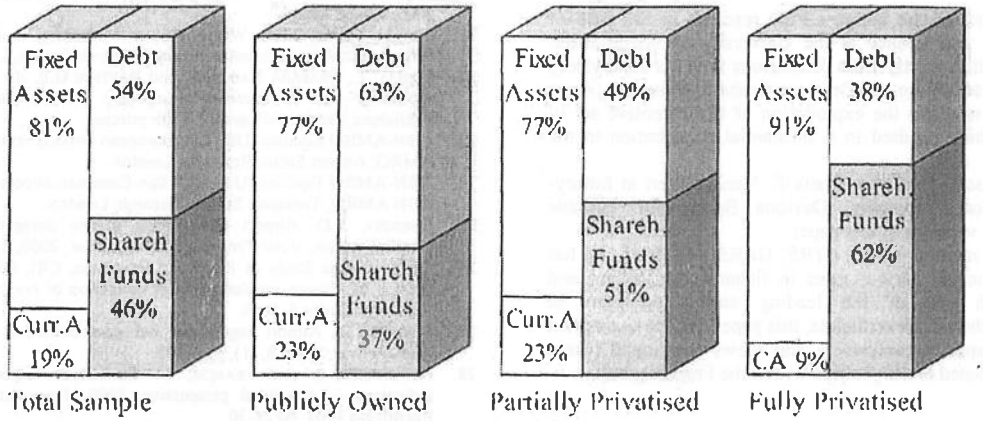
Figure 5. Performance profiles of sample airports.

Maastricht criteria of the European Stability Pact, governments cannot afford to put in additional funds to finance necessary capital investment to cope with medium to long-term traffic growth.

The increased operating efficiency of fully privatised airports does not result in higher returns on shareholders' funds. In this respect, airports in mixed public-private ownership appear to find themselves in an outstanding position, translating into rather competitive return rates on equity, as compared to alternative capital investments. In terms of cost efficiency, revenue generation, and financing of their capital structure, partially privatised airports appear to combine the best of both worlds. A comparison of sample airports prior to and after partial or full privatisation generally confirms the above results in terms of improved financial performance with privatised airports.

This analysis has focused specifically on the relations between airport privatisation and financial performance. Given its limitations, several areas had been explicitly excluded at the outset, which are of interest for future research. These include the impact of service level standards and economic regulation on e.g. operating costs and yield. Moreover, the above-described methodological limitations of airport benchmarking have to be borne in mind when interpreting the findings. Notwithstanding, the discussed PFP and FRA results, including the analysis of capital structures, present a sound analytical and decision-making basis for airport management to take advantage of strengths and correct weaknesses as regards operational efficiency and financial performance and to help make financing and investment evaluations. Furthermore, DEA scores based on financial measures can provide airport management with a useful tool to identify their relative position within their peer group. For the investor, whose primary consideration will be profitability and market value, PFP and FRA are useful techniques to provide indications of the relative attractiveness of an airport as a potential investment.

The asset-intensive nature of the airport business requires the constant ability to attract additional capital. In principle, commercial airports do have the potential to be run as profitable private companies. From the investor's perspective, however, most of them have a mixed track record in terms of return rates based on underlying profitability. What will ultimately determine successful management in this industry is the ability to phase capital allocation in such a way



Note: Unweighted means; due to data incomparability, BER is included for 1994-1999 only; BRU 1990-1997; DUS 1990-1995; LTN 1990-1997; the BAA Group is excluded from sample averages to avoid double counting.

Figure 6. Long-term balance sheet structure of sample airports 1990-1999.

that it generates a maximum return. This requires thorough phasing of major investment spending projects and an optimisation of the use of debt facilities and equity supply, in order to improve capital structure, capital productivity and ultimately shareholder value.

6.0 OUTLOOK

Continued long-term growth in air transport demand has out-stripped the public sector's ability to support and finance associated airport development during the last decade. Thus, high expectations have been placed on airport privatisation since the mid-1990s. In the meantime, it has actually taken various schemes and also attracted new, previously non-airport players to the market. These include contractors and construction companies as well as institutional investors and specialised equity funds. Several European hubs and also regional airports have been partially or even fully privatised in one way or another and some are listed on a stock exchange. The majority of cases have been trade sales at EV/EBITDA multiples of between 15 and 20 times, representing a significant premium to the listed sector. In agreement with the findings of this study, partial privatisation deals have also clearly demonstrated that synergies can be created between public and private airport ownership[40-42].

Even after more than a decade, airport privatisation continues to be an important issue. Europe is moving towards changing the ownership structure at individual phases in an evolution from state-owned and operated utilities to fully commercial private enterprises. The motives are diverse but usually include the objective of enhancing operating efficiency and financial performance and — to a minor extent — increasing consumer responsiveness. The steady pipeline of transactions, however, still has not yet materialised, although frequently announced over the last ten years. Estimates of future airport privatisation projects ranged well into the hundreds, but in the aftermath of global economic recession and external events like the terrorist attacks on 11 September 2001, the Iraq war and SARS epidemic in 2003, affecting the aviation industry as such, the momentum has slowed considerably. Ever since, no one is rushing into the marketplace as towards the end of the 1990s. Also, some previous deals have not turned out as advantageous to the various stakeholders as originally envisaged. There is still a high level of activity, but its nature has changed with, for example, more emphasis on secondary sales and public private partnerships. Frequently, the investors themselves are also quite different from earlier ones and so are their expectations. And although passenger figures rebounded strongly in 2004/05, the airport sector needs to prepare for one of the industry's biggest shake-ups: Analysts agree that future traffic growth is likely to focus on mega hubs handling the new super jumbo Airbus A380, leaving other operators behind. And even additional traffic generated by low-cost carriers can hardly compensate for that in terms of profitability, because of its narrow margins[43-46].

Whereas the trend of airport privatisation originating from Europe led the industry to considering a shift to private ownership on a worldwide basis during the second half of the '90s, recent international crises added to the temporary reservation of strategic investors caused by overheated markets and various difficulties due to the complexity of the subject matter. Still, alongside traffic figures there are indications that private finance may rebound and the sector could experience a new wave of privatisation. The intention of several governments to pursue privatisation of their assets in order to finance investment in additional infrastructure creates the appetite for new airport deals. Macquarie's acquisition of Brussels airport (BIAC) and the takeover of TBI plc by Abertis/Aena are prominent European examples and additional projects are under way or being considered in Cyprus, Hungary, France, Slovakia, Hong Kong, India and Mexico. Only recently, Australia's Macquarie Airports offered to buy Copenhagen Airports that values the Danish firm at $2-51bn, to boost its global reach in a fast-growing industry. And the private sector is likely to participate in financing airport infrastructure as long as returns are favourable in comparison to alternative investment opportunities. This, in turn, requires fundamentally attractive deals and requests governments and regulators to be commercially reasonable in setting encouraging regulatory and transaction structures[47,48].

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REFERENCES

1. VOGEL, H.-A. Privatisation and financial performance of European airports, 2005, Fourth Conference on Applied Infrastructure Research, October 2005, Berlin.
2. PARKER, D. The performance of BAA before and after privatisation: A DEA study, *J Transport Economics and Policy*, 1999, 33, (2), pp 133-146.
3. Air Transport Research Society, ATRS. Airport benchmarking report 2002 — Global standards for airport excellence, 2002, ATRS, Vancouver.
4. HOLVAD, T. and GRAHAM, A. Efficiency measurement for UK airports: An application of data envelopment analysis,, 2003, VIII European Workshop on Efficiency and Productivity, September 2003, Oviedo.
5. VASIGH, B. and HARIRIAN, M. An empirical investigation of financial and operational efficiency of private versus public airports, *J Air Transportation*, 2003, 8, (1), pp 91-110.
6. HANAOKA, S. and PHOMMA, S. Privatisation and productivity performance of Thai airports, 2004, Eighth Air Transport Research Society (ATRS) World Conference, Istanbul, July 2004.
7. CAVES, R.E. and GOSLING, G.D. *Strategic Airport Planning*, 1999, Pergamon, Oxford.
8. HUMPHREYS, I. Privatisation and commercialisation — Changes in UK airport ownership patterns, *J Transport Geography*, 1999, 7, pp 121-134.
9. VOGEL, H.-A. Airport Privatisation and Performance, PhD thesis, University of Westminster, London, 2004.
10. Airports Council International. ACI traffic data: World airports ranking by total passengers/cargo/movements — 1999 (Final), Online, 20 December 2000, available: http://www.airports.org/traffic/td_passengers_doc.html; ... _cargo_doc.html; ... _movements_doc.html.
11. DE NEUFVILLE, R. and ODONI, A. *Airport Systems: Planning, Design, and Management*, 2003, McGraw-Hill, New York.
12. DOGANIS, R., GRAHAM, A. and LOBBENBERG, A. The economic performance of European airports, 1995, Cranfield University, Department of Air Transport Research Report 3, Cranfield.
13. Transport Research Laboratory, TRL. *Airport Performance Indicators 2002*, 2002, TRL, Crowthorne.
14. OUM, T. and YU, C. Measuring airports' operating efficiency: A summary of the 2003 ATRS global airport benchmarking report, *Transportation Research*, 2004, 40E, pp 515-532.
15. GILLEN, D. and LALL, A. Developing measures of airport productivity and performance: An application of data envelopment analysis, *Transportation Research*, 1997, 33E, (4), pp 261-274.
16. HOOPER, P. and HENSHER, D. Measuring total factor productivity of airports — An index number approach, *Transportation Research*, 1997, 33E, (4), pp 249-259.
17. BAZARGAN, M. and VASIGH, B. Size versus efficiency: A case study of US commercial airports, *J Air Transport Management*, 2003, 9, (3), pp 187-193.
18. SARKIS, J. An analysis of the operational efficiency of major airports in the United States, *J Operations Management*, 2000, 18, pp 335-351.
19. GRAHAM, A. and HOLVAD, T. Efficiency variations for European and Australian Airports, 1997, EURO XV/INFORM Joint International Conference, July 1997, Barcelona.
20. VOGEL, H.-A. and GRAHAM, A. A comparison of alternative airport performance measurement techniques: A European case study, 2005, Ninth Air Transport Research Society (ATRS) World Conference, July 2005, Rio de Janeiro.
21. Morgan Stanley Dean Witter. Airports: Flocking to the super-hubs, 2000, MSDW Transportation/Equity Research Europe, London.
22. COELLI, T., PRASADA RAO, D.S. and BATTESE G.E. *An Introduction to Efficiency and Productivity Analysis*, 2001, Kluwer Academic Publishers, Dordrecht/Norwell, Fifth printing.
23. ABN-AMRO Equities (UK) Ltd. European airports review, 1998, ABN AMRO, Airport Sector Research, London.
24. ABN-AMRO Equities (UK) Ltd. Pan-European airports review, 2000, ABN AMRO, Transport Sector Research, London.
25. BARRETT, S.D. Airport competition in the deregulated European aviation market, *J Air Transport Management*, 2000, 6, (1), pp 13-27.
26. Centre for the Study of Regulated Industries, CRI, (Ed.). The development of airports regulation — A collection of reviews, 2004, CRI, Collection Series 5, Bath.
27. STARKIE, D. Airport regulation and competition, *J Air Transport Management*, 2002, 8, (1), pp 63-72.
28. HUMPHREYS, I. and FRANCIS, G. Traditional airport performance indicators — A critical perspective, 2000, Transportation Research Record No 1703, pp 24-30.
29. PILLING, M. Terms of engagement, *Airline Business*, 2003, 19, (12), pp 46-48.
30. Airports Council International. Airport charges in Europe, 2003, ACI Europe, Brussels.
31. FORSYTH, P., GILLEN, D.W., KNORR, A., MAYER, O.G., NIEMEIER, H.-M. and STARKIE, D. (EDS) *The Economic Regulation of Airports — Recent developments in Australasia, North America and Europe*, 2004, Ashgate, Aldershot.
32. PELS, E., NIJKAMP, P. and RIETVELD, P. Relative efficiency of European airports, *Transport Policy*, 2001, 8, pp 183-192.
33. GILLEN, D. AND LALL, A. Non-parametric measures of efficiency of US airports, *Int J Transport Economics*, 2001, 28, (3), pp 283-306.
34. Deutsche Bank. *Airports: Dawn of a New Era*, 2000, Deutsche Bank AG European Equity Research, London.
35. BLACK, A., WRIGHT, P. and BACHMAN, J.E. *In Search of Shareholder Value*, 1998, Financial Times/Pitman Publishing, London.
36. RAPPAPORT, A. *Creating Shareholder Value*, 1998, Second Edition, The Free Press, New York/London.
37. Standard & Poor's. *European Airport Review*, 2002, S&P European Project Finance & Transportation/Infrastructure Finance Ratings, London.
38. Standard & Poor's. *European Airport Review*, 2003, S&P European Transport and Project Finance/Infrastructure Finance Ratings, London.
39. Standard & Poor's. *European Airports Credit Survey*, 2004, S&P Project Finance & Transportation/Infrastructure & Leveraged Finance, London.
40. Aviation Strategy. Airports: Industry trends and key privatisation issues, *Aviation Strategy*, 2003, 7, (10), pp 6-10.
41. GEE, M. and STEPHANOU, A. Investors ride the storm, *Jane's Airport Review*, 2003, 15, (3), pp 6-7.
42. O'CONNOR, A. Cross equity deals win support, *Jane's Airport Review*, 2002, 14, (4), pp 8-10.
43. Aviation Strategy. The case for investing in airports, *Aviation Strategy*, 2004, 8, (12), pp 4-6.
44. BATES, J. Global airport developers: End of the gold rush?, *Airport World*, 2004, 9, (1), pp 14-16.
45. BENTLEY, D.J. World airport privatisation study: The financing and development of airports at the turn of the 21st century, *Euromoney Institutional Investor & Air Traffic Management*, 2002, Second edition, London.
46. Boston Consulting Group. *Airports — Dawn of a New Era: Preparing for one of the Industry's Biggest Shake-ups*, 2004, BCG Marketing & Communications/Legal, Munich.
47. DONE, K. Airports: A new wave of privatisation, *Financial Times*, 13 June 2005, FT Report Aerospace 2005.
48. O'CONNOR, A. Private finance rebounds, *Jane's Airport Review*, 2005, 17, (6), pp 13-14.

APPENDIX

Definitions of performance indicators and financial ratios

Performance indicators and financial ratios	Definition
Partial Factor Productivity	
Inflation-adjusted total cost per WLU[a]	Total cost divided by WLUs (i)
Inflation-adjusted operating cost per WLU	Operating cost divided by WLUs (i)
Inflation-adjusted depreciation cost per WLU	Depreciation cost divided by WLUs (i)
Asset utilisation (capital productivity)	Total WLUs divided by total assets in '000s
Total asset turnover	Total revenue divided by total assets
Fixed asset turnover	Total revenue divided by fixed assets
Inflation-adjusted total revenue per WLU	Total revenue divided by WLUs (i)
Inflation-adjusted aeronautical revenue per WLU	Aeronautical revenue divided by WLUs (i)
Non-aeronautical share of total revenue	Commercial + Other revenue divided by total revenue
Inflation-adjusted commercial revenue per PAX	Commercial revenue divided by PAX (i)
Revenue / expenditure ratio (RevEx)	Total revenue divided by total cost
Return on total assets (ROA)	Net income divided by total assets
Return on capital employed (ROCE)	Operating profit divided by total assets
Financial Ratios/Indices	
Operating margin, profit margin	EBIT[b] divided by total revenue
EBITDA[c] margin	EBITDA divided by total revenue
Return on net assets (before interest & tax, RONA)	EBIT divided by net assets
Return on total revenue (ROS)	Net income divided by total revenue
Return on shareholders' funds (ROE)	Net income divided by shareholders' funds
Net assets in percent of total assets	Net assets divided by total assets
Debt ratio	Total debt divided by total assets
Gearing (debt / equity ratio)	Total debt divided by shareholders' funds
Financial leverage	Total assets divided by shareholders' funds
Cash flow in percent of total revenue	Cash flow divided by total revenue
Investment coverage ratio	Cash flow divided by capital expenditure
Total revenue per currency unit of shareholders' funds	Total revenue divided by shareholders' funds
Inflation-adjusted capital expenditure per PAX	Investment divided by terminal PAX (i)
Capital expenditure in % of total revenue	Investment divided by total revenue
Capital expenditure to depreciation ratio	Investment divided by depreciation cost

[a]Work load unit (WLU) = one terminal passenger (PAX) or 100kg of air cargo; [b]EBIT = earnings before interest and taxes; [c]EBITDA = earnings before interest, taxes, depreciation and amortisation; (i) inflation-adjusted = indexed to 1995