Preliminary Version!

Do not quote!

.

AIRPORT PRIVATISATION — MITIGATING THE HOLD UP-PROBLEM

Hartmut Wolf

The Kiel Institute of World Economics

October 6th, 2003

Keywords: e.g. Privatisation; Regulation; Airports.

JEL-Classification: L 51, L 98, R 42

Contact Details:

Full affiliation	The Kiel Institute of World Economics
Address	Duesternbrooker Weg 120 24105 Kiel Germany
Tel:	+49 – (0)431 – 8814 403
Fax:	+49 – (0)431 – 8814 502
E-mail:	h.wolf@ifw.uni-kiel.de

AIRPORT PRIVATISATION — MITIGATING THE HOLD UP-PROBLEM

Abstract:

The paper evaluates the determinants of the design of airport privatization policies. It will be argued that complementarities exist between the choice of a particular form of privatization and the design of the accompanying institutional setting for the airport sector, et vice versa. Hence, policy makers must simultaneously decide on the form of privatization and on the institutional framework within which privatized airports will operate.

I Introduction

Airport privatisation has been — and still is — at the agenda of national air transport policies of many countries throughout the world. Privatisation may take many different avenues, ranging from only a minor divestiture of airport companies by public shareholders to a complete sell-off of (former) public airports to private investors. Privatisation can be restricted to the operation of public infrastructure facilities by a private firm, or it can also involve privatising the airport's infrastructure. As airports are usually regarded to be natural monopolies, privatisation is typically accompanied by some form of price regulation.[1] This regulation may be designed in a variety of forms as well, ranging from strict rate of return- to price cap-regulation (with various sliding scale mechanisms in between). Against this variety of institutional settings that govern the airport sector, the question arises what determines the form of privatisation and the form of price regulation.

This paper identifies important determinants of the design of ownership structures and regulatory regimes for the airport sector. The analysis is based on The New Institutional Economics. This paradigm focusses on asymetric information and incomplete contracts and the institutions that govern these contracts. Contracting parties are aware of the dangers of opportunism that might emerge because of informational asymetries and the incompleteness of contracts, and they design governance structures for contracts to protect their own quasi-rents against opportunism by their respective partners.[2]

The paper is organized as follows. The first step describes the choice of airport ownership structures and the design of airport regulation as a contract problem. The second part evaluates alternative governance structures for the airport sector and formulates hypotheses about the determinants of the optimal form of privatisation and the optimal design of regulation. The third part tests the hypotheses by looking at the

---

1 A noticeable exemption is New Zealand which privatised Auckland Airport without any accompanying price regulation.

2 For an overview on the New Institutional Economics see Richter et al. (1996).

design of privatisation policy as it can be observed in practice. The paper concludes by deriving recommendations about appropriate governance structures for the airport sector

II Airport Privatisation as a Contract Problem

Following Goldberg (1976), the distribution of ownership rights to airports and the design of price regulation can be analyzed as a contract problem. As he argued generally, regulation may be viewed as a transaction costs saving device for controlling the behavior of natural monopolies in cases where transaction-specific investments lead to uncontestabibility of monopoly markets while at the same time lock the seller's investments into that transaction.[3] Hence, it is not only the buyer of the natural monopolist's services that needs to be protected against opportunism by the seller (i.e. monopoly pricing), but also the seller needs security of expectations, otherwise she would not invest specifically in that transaction. Regulation as a governance structure has to protect both parties' reasonable interests, otherwise inefficient outcomes will occur.

As regards the airport sector, airport authorities have to invest large sums of capital in aprons, runways, and terminals, all representing investments which are sunk to a high degree and which are characterized by long working lifes. In addition, expanding infrastucture has to be done in large discrete steps. As a result, once these investments have been made, the future economic fate of airport operators whose behavior is subject to regulation is bound to future regulatory decisions by the regulator. On the other side, the social welfare effects of airport regulation depend on the willingness of airport authorities to invest in such facilities. Because airports are often natural monopolies in their location, the regulator (as an agent for the residents within the airport region) is typically tied within bilateral relationships with the airport authorities. Hence, both sides (i.e. airport authorities and the regulator) need to be protected against opportunism by the respective partner. Because indivisibilities in airport infrastructure investments prevent self-enforcement of regulatory contracts if no institutional safeguards against opportunism exist, appropriate governance structures have to be implemented.

---

[3] See also Williamson (1976).

Airport regulation means that the task of controlling the behavior of the airport company is not performed by the users of that airport, but by a regulator, who simultanously acts as a principal for the regulated airport and as an agent for the airport users. Asymetric information and bounded rationality prevent perfect regulatory outcomes. Instead dangers of opportunism might exist. In this respect, opportunism may come in three ways: First, infomational disadvantages of the regulator about the real conditions of production for the airport might lead to opportunistic behavior by the airport company. Second, transaction-specific investments create a lock-in effect for the airport company which might give the regulator ex post-opportunities to expropriate the firm's quasi-rents. And third, as the results of regulation are a public good, efforts of the airport's users to control the regulator might be socially suboptimal, which gives the regulator opportunities to behave opportunistically against the users' interests. To achive efficient outcomes of airport privatisation, the governance structure that defines the relationship between airport company, regulator, and airport users has to be designed carefully to protect the reasonable interests of airport companies and airport users. In this sense, the design of airport privatisation policy does not only mean a change in the ownership structures in the airport industry, but to design an efficient institutional framework for the airport sector, that guarantees the maximum of social welfare gains that can be realized by airport privatisation.

III Governance Structures in the Airport Sector

Williamson (1986 pp 112) generally identifies four types of governance structures, namely (1) market governance, (2) trilateral governance (neoclassical contracting), (3) transaction-specific governance (relational contracting), and (4) unified governance (internal organization). *Market governance* is the main governance structure for non-specific transactions of both occasional and recurrent contracting. Such transactions do not need institutional safeguards against opportunism, as all transacting parties have outside options for their investments and hence have the opportunity to end the transaction without incurring sunk costs. Buyers can easily turn to alternative sources, and suppliers can sell output intended for one order to other buyers without difficulty. These costless exit options prevent opportunism. A *trilateral governance structure* means that the contracting partners choose an independent institution as an arbitrator for conflict resolution, e.g. the legal system and its courts may act as an arbitrator. However, a

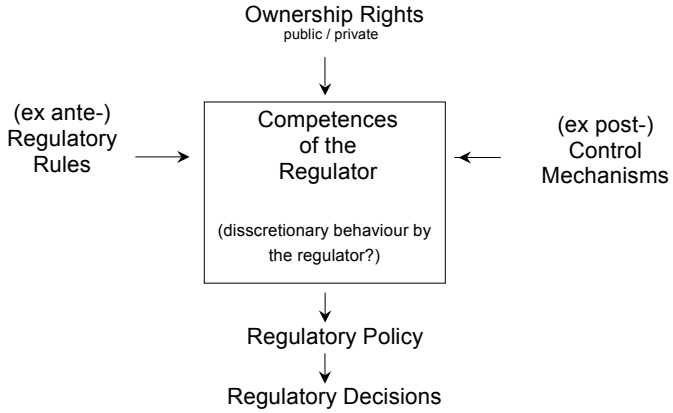
precondition for an effective trilateral governance structure, i.e. a governance structure that effectively protects the contractors' quasi-rents, is a regulatory contract that is either almost complete or entails unambigous conflict resolution mechanisms, so that the arbitrator is able to clearly detect contract breeching and to clearly identify the party that has breached the contract. *Transaction-specific governance* means that the contractors do not rely on conflict resolution by an independent arbitrator, but instead agree on self-enforcing contracts that protect each others quasi-rents. A contract is self-enforcing if the partners supply hostages to each other in order to commit to ongoing contractual relationship (Williamson 1983). Finally, a *unified governance structure* means vertical integration between the contractors. Vertical integration eliminates the danger of loosing quasi-rents as a result of opportunistic behavior by the partner. However, agency problems within the vertical governance structure might occur, as vertical integration eliminates the disciplinary exit option of market governance.

In the airport sector, and with respect to privatisation, leaving transactions solely to the *market* would mean total privatisation without regulation. This would avoid dangers of opportunistic behavior by the regulator and related underinvestment by the airports. However, in cases where airports are uncontestable natural monopolies, the regions which are served by these airports do not have an exit option. Instead they are bound to the behavior of the monopoly supplier of airport services. In such cases, political reliance on pure market mechanisms may generate high social costs, as airport operators may behave opportunistically by exercising monopoly power. In such cases it may be wise to install a regulatory regime to control the airports' behavior, which means installing another governance structure, i.e. either an internal, a trilateral, or a transaction-specific one.

Accordingly, airport regulation may come in three ways (figure 1): *First*, regulation may be performed by means of internal regulation, which means that the state as owner of an airport company exercises ownership rights to control the behavior of the company by internal command. With respect to airport privatisation, a precondition for internal regulation is only partial divestiture of airport companies by state authorities, i.e. the regulator and the regulated company remain to be vertically integrated. Vertical integration eliminates the regulatory risk of the airport company (because expropriation of the airports' quasi-rents by an opportunistic regulatory policy would harm the

regulator herself) and hence avoids related problems of underinvestment in specific airport facilities. However, public ownership probably leads to inefficient outcomes for political-economic reasons: The regulatory process is likely to be influenced by political considerations that might not be in the interest of airports users. Without going into political-economic details here why — and if always — public ownership is likely to generate considerable inefficiencies[4] it might be noticeable that airport privatisation is often justified as a means to improve the efficiency of airport services. Obviously, expectations about improved efficiencies of privatised airports must rest on the assumption that privatisation leads to a depoliticization of the regulatory process. That is only credible if state authorities cannot directly influence the airport's management decisions by internal regulation.

Figure 1: Structure of a Regulatory System



Second, to avoid opportunism by the regulator, regulatory decisions can be strictly bound to ex ante-specified rules which are enforceable before courts, thus leaving the regulator no regulatory discretion. This would effectively protect the airport company's

4 There exists a considerable body of literature on this subject that suggests that public ownership is not in and of itself going to generate inefficiencies but incentives and broader public mandates can explain some of the inefficiencies. Thus, giving the same incentives to public managers should lead to the same results as in the private sector. Fo an overview see e.g. Vickers et al. (1998 pp 11) and Brenck (1993 pp 56).

quasi-rents and thus would facilitate complete airport privatisation without inducing problems of underinvestment while at the same time ensuring a depoliticised regulatory process. However, while eliminating the dangers of opportunism by the regulator, such governance structure might lead to opportunism by the airport company, as such rules are unavoidable inflexible. E.g. the well known rate of return-regulatory mechanism, that guarantees the airport company a fair and reasonable rate of return on employed capital whatever its costs, represents such a rule, which eliminates the (otherwise existing) hold up-problem of the airport operator, but also gives the company incentives for over-capitalization (Averch and Johnson 1962). Furthermore, ex ante-rules make regulation heavy handed, because the rules must be tailored to control for all action parameters of the airports. E.g. a fixed price cap gives the airport incentives to lower the quality of its services in order to circumvent regulatory restrictions, unless rules are implemented, that explicitely control for service quality. A rate-of-return mechanism gives the airport incentives to set an inefficient structure of charges in order to create additional demand at peak times (which can be used to justify the building of additional airport capacity) unless the structure of charges becomes subject of regulatory control (Bailey et al. 1974). Taken together it is by far not clear if a fully privatised airport whose charges are regulated by an inflexible ex ante-rule will perform better than a public one.

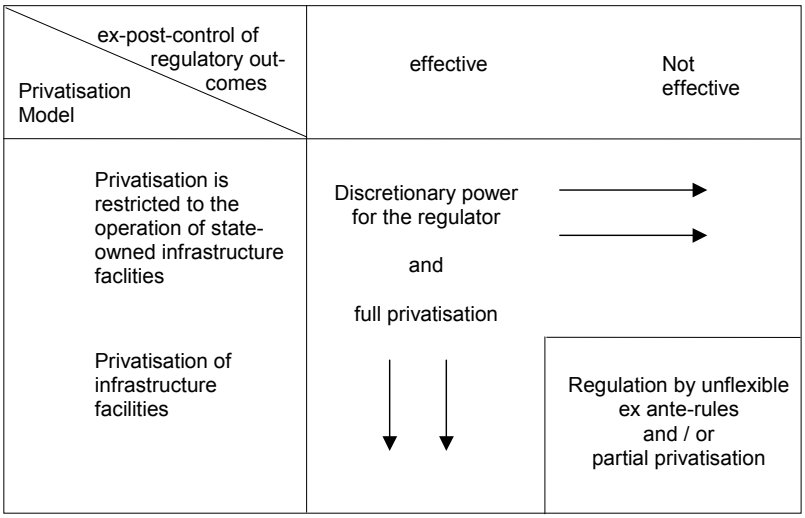
Third, the regulatory system can be based on effective ex post-control of regulatory outcomes. Such a system might give the regulator a great deal of discretion when formulating regulatory policy, but at the same time exerts a threat on the regulator of loosing regulatory competences if regulatory outcomes are socially inefficient. Effective ex post-control of regulatory policy may enhance the efficiency of regulation because it facilitates self-enforcement of the regulatory contract and may lead to a more light handed regulation than regulation by ex ante-rules: The threat of loosing her regulatory competences reduces incentives of the regulator to behave opportunistically against the airports and also against the airports' users, while regulatory discretion enables her to skim an airport's monopoly rents ex post, thus reducing incentives of the company to exploit informational advantages from the beginnning, which in turn reduces the need for continously ex ante-control of all action parameters of the company. E.g. regulatory discretion enables the regulator to skim monopoly rents ex post which result from quality dumping by the airport company, thus weakening the airport operator's

incentives to lower the quality of her services, and, hence, making ex ante quality controls avoidable.

How should ex post-control mechanisms be designed to make them effective? First, to make the threat of loosing regulatory competences credible, the regulator must be controlled by an independent institution. Hence, a precondition for enhancing the efficiency of regulation is the implementation of a regulatory system of checks and balances, where regulatory competences are distributed between various institutions. Second, as the efficiency of such a system depends on the ability of the institution that controls the regulator to detect a misuse of regulatory discretion, while at the same time regulatory misincentives as a result of the regulator's control risk must be avoided, regulatory policy should be obliged to ex ante specified regulatory goals, which, however, should not be formulated as detailled regulatory rules but only define some general obligations that are consistent with efficient regulatory outcomes and which allow for an assessment of actual outcomes.

Although the introduction of a regulatory system that heavily relies on ex post-control mechanisms may give the regulator and the airport company high-powered incentives to behave efficiently, policy makers who have to choose the appropriate governance structure for the airport sector of their country must also take into account the costs of operating the system. It may be expected that the costs will become smaller compared to the benefits of such a system the more airports will become subject to external regulation, as the regulatory system is likely to be characterized by economies of density. In contrast, it can be expected that the smaller the number of airports that will become totally privatised, the less attractive is the introduction of effective ex post-control mechanisms.

Figure 2: Governance Structures in a privatised Airport Industry: Complementarities



The discussion so far leads us to the following hypotheses: First, complementarities exist between the optimal choice of the form of privatisation and the design of the regulatory system. Full privatisation is only feasible if the institutional framework guarantees effective protection of the airports' quasi-rents either by refraining from regulation at all or by implementing institutional safeguards into the regulatory system or by restricting privatisation to the operation of infrastructure facilities which are still publicly owned (figure 2). Second, if the governance structure comprises mechanisms that ensure effective ex-post control of regulatory policy, inflexible ex-ante-regulatory rules can be avoided, and regulation should be more light handed than if it is based on such rules. Third, the existence of effective ex post control mechanisms leads to more efficient regulatory results. Finally and fourth, ex post control-mechanisms will only be observed in countries that had privatised (or plan to privatise) not only a single but a greater number of airports.

IV Case Studies

This section takes a look at the design of airport privatisation policy as it can be observed in practice. The aim is to verify the hypotheses that were developed in the last section. Unfortunately, given the large number of arport privatisations that occured in recent years and the ongoing dynamic trend of airport privatisations worldwide makes it impossible to analyze all airport privatisations in all countries. Furthermore, most of the

airport privatisations did occur as lease agreements[5], and the detailed contract clauses were in most cases not availabe for this study. Hence, the following analysis has to be restricted to a number of case studies covering several countries. The countries that will be studied were selected on the grounds on the quality of information available with respect to the institutional setting for the national airport sectors.

a) United Kingdom

The United Kingdom was the first country that totally privatised airports. Up to the mid-1980s most of the UK airports were wholly owned by local governments, whereas the British Airports Authority (BAA), which then operated seven airports in the UK, were wholly owned by the central government. In 1987 the BAA was privatised by a 100 per cent initial public offering. In preperation of the outright sale the British Government clearly stated that she would prefer to see also local authority airports to be totally privatised (Katz 1993). Since then, a number of other UK airports were bought by private investors, now holding all or at least the majority of shares in these companies. Today, 23 airports are privatised with private investors holding the majority of the companies' shares (Wolf 2003 p 399).

According to the complementarity hypothesis, total privatisation of an airport (or a number of airports) will only take place if either existing price regulation will be abandoned, or if the regulator's decisions are strictly bound to ex ante specified regulatory rules which are enforceable by courts, or if the regulator's behavior is disciplined by effective ex post-control-mechanisms. What governance structure did the UK choose?

Before 1987, airport regulation in the UK was executed by means of internal regulation. At the time of the privatisation of the BAA the British Government completly reformed the institutional setting for the UK airport sector by introducing a system of external regulation with the UK Civil Aviation Authority (CAA) taking over the responsibility for price regulation. Note that only the London airports of the BAA

---

5 This is particularly true for airport privatisations in South America. For details on airport privatisations worldwide see Kapur (1995) and Betancor et al. (1999).

and the still public Manchester Airport are subject to price regulation, whereas the behavior of other UK airports is only controlled by the CAA by means of a threat of regulation upon designation by the Secretary of State of Transport; i.e. the CAA has no duty to set price caps for undesignated airports, but these airports can be designated by the Secretary of State of Transport for price regulation upon request by the CAA.[6]

The CAA as regulator of the BAA and Manchester Airport is not bound to specific regulatory rules. Instead, she is only obliged to set price caps every five years for the regulated airport services, having a great deal of discretionary power when deciding on the price caps.

According to the complementarity scheme presented in section 3, total privatisation of a regulated airport in combination with discretionary power of the regulator requires effective ex post-control mechanisms that discipline the regulator's behavior. In the UK these control mechanisms take the form of an institutional setting that is based on a complex system of checks and balances including a division of powers between different institutions. Legally this system is based on the Airports Act 1996, which in section 39 (2) requires the CAA as airport regulator to act „...in the manner which it considers is best calculated:

(i) to further the reasonable interests of users of airports in the United Kingdom;

(ii) to promote the efficient, economic and profitable operation of such airports;

(iii) to encourage investment in new facilities at airports in time to satisfy anticipated demand by the users of such airports; and

(iv) to impose the minimum restrictions that are consistent with the performance by the CAA of its functions".[7]

---

6 For details on the threat of regulation in the UK airport sector see Wolf (1997 pp 140).

7 Quoted from Monopolies and Mergers Commission (1996 p 60).

Hence the regulator is obliged to pursue legally defined regulatory goals by her decisions. She is not only required to protect the interests of airport users, but also the reasonable interests of the regulated airports to earn a reasonable rate of return on employed capital. However, she is not obliged to guarantee profitability of designated airports which produce inefficiently.

In addition, the CAA as regulator is subject to control by the Competition Commission (CC) (formerly Monopolies and Mergers Commission/MMC) and also by the Secretary of State of Transport. In return, designation decisions of the latter are controlled by the CAA. The distribution of competences within this regulatory system is as follows[8]: The CC is obliged to evaluate the past behavior of designated airports and the results of regulation. She has to publish her findings. If she finds that a designated airport had pursued a course of conduct which had operated or might be expected to operate against the public interest, she can make recommendations to the CAA on how to act with regards to a regulatory response. The CAA is not obliged to follow these recommendations, however, she is automatically required to take action against the airport's misbehavior. The CC may also propose recommendations regarding setting the price caps, but again, the CAA is not obliged to follow these recommendations. However, not following the CC's proposals might create a need to justify ignoring these recommendations. Finally, the CC has the right to propose institutional changes to the regulatory system in general, and to the regulatory policy of the CAA in particular, if she finds that regulatory results are unsatisfactory or if better results might be expected by institutional change.

The Secretary of State of Transport decides on new designation of (currently unregulated) airports for regulation and on re-designation of currently regulated airports. However, she is only entitled to designate additional airports on request of the CAA. She is not entitled to directly decide issues of regulatory policy.

---

8 For a comprehensive overview on the UK system of airport regulation see Centre for the Study of Regulated Insutries (1996 pp 1), Wolf (1997 pp 140), and Starkie (1999).

This distribution of competences within the regulatory system protects the designated airports against opportunism by the regulator: The regulatory policy of the CAA is supervised by the CC, who herself has no right to intervene directly in the market. This supervison might help to detect regulatory failures that result from inadequate decisions by the CAA. As the CAA itself is subject to control by the Secretary of State of Transport, who might take recourse to the information provided by the CC, the airport users and other interested parties to judge the performance of the CAA, she faces a threat of loosing her regulatory competences if she behaves opportunistically against the airports or against the airports' users.

Note that the CAA has no obligation to directly regulate the quality of services of the designated airports. Instead, quality standards are the results of individual agreements between the airport companies and the airlines. However, the CAA could react to a detected dumping of the quality of airport services by lowering the price caps at the next regulatory review and hence could extract monopoly profits ex post.

What about the performance of the UK regulatory system? According to the regular reports of the CC the quality standards of the regulated BAA-London airports must be regarded to be high (Monopolies and Mergers Commisson 1991 and 1996). In its latest (interim) report the CAA stated that she could not detect underinvestment by the BAA (Civil Aviation Authority 2000). According to a study by Symon Travers Morgan (STM)[9] airport charges of the BAA London-airports decreased substantially since privatisation. The average annual decrease of the level of charges was 15 per cent between 1988 and 1998. STM reports that while in 1988 Heathrow airport was one of the most expensive airports in Europe for airlines, in 1998 charges had fallen to the lower middle of the control group in 1998. Furthermore also the threat of designation seems to have worked well. In 1993 some members of the Scottish parliament demanded the designation of the BAA Scottish-airports because they judged charges of these airports as being too high. As a response the CAA started talks with the airport companies. As a result, the companies commited to decrease their charges in the next three years for an annual average of 3 per cent (Starkie 1994 p 44). It should be stressed that the balance of powers within the regulatory framework for the UK airport sector is a

---

9 Quoted from Roland Berger & Partner (2000 p 59).

necessary prerequisite for an efficient threat of designation, as neither the CAA nor the Secretary of State of Transport are allowed to decide on designation alone. Would they be allowed to do so, security of expectations of currently undesignated airports would not exist, which easily could lead to problems of underinvestment.

Finally, the preference of the British Government to see also local authorities airports to be privatised is consistent with the hypothesis that the implementation of a governance structure that predominantely relies on ex post-control of regulatory outcomes will be seen if policy makers aim at privatising not a single or only a few, but a greater number of airports.

b) Australia

Total privatisation of airports occured also in Australia. Until the mid-1990s Australian airports were wholly owned by the federal and local governments. The Federal Government was owner of the Federal Airports Corporation (FAC), which then owned twenty-two airports; among them the major airports of Australia (Hooper 2000 pp 185). In 1997 the Federal Government leased the airports of Brisbane, Melbourne and Perth for 50 years to private investors, with an option of renewal of contracts for another 49 years. One year later thirteen additional airports were also leased to private investors for 50 years (also with an option of renewal of contracts for 49 years) (Australian National Audit Office 1999). The privatisation was accompanied by the implementation of an external regulatory regime, and the privatised airports were automatically declared as designated for price regulation. Which governance structure did Australia implement for external regulation?

As in the UK the Australian system of airport regulation is based on a complex structure of checks and balances.[10] Regulatory competences are divided between the Department of Transport and Regional Development (DTRG) and the Australian Competition and Consumer Commission (ACCC). At the time of privatisation the

[10] For comprehensive descriptions of the institutional framework for the Australian airport sector see Australian Competition and Consumer Commission (1997, 1998, 2000), Australian National Audit Office (1999), and Hooper et al. (2000),

DTRG decided on price caps for the regulated airport services. She had to review the regulatory outcomes after 5 years and then to decide on the continued existence or abolishment of price regulation. If necessary she would then have to decide on new price caps. By doing so she would have a great deal of discretionary power as ex ante-specified rules for defining the new price caps do not exist. Given the discretionary power of the DTRG at the time of review of regulatory outcomes the regulatory system should allow for explicit control of the outcomes of her policies.

The role of the ACCC was twofold[11]: First, she was obliged to continously control the behaviour of regulated airports, to publish its findings in the development of the airport sector, and — after four years — to comment on the necessitiy of continued regulation and, if necessary, to make proposals on future price caps. Second, she had the right to approve higher airport charges above the level of the price caps set by the DTRG before the five year regulatory review in cases were the airports and their users agree to such charge increases. Hence, in practice she could correct the policy of the DTRG if inefficient regulatory outcomes were likely to occur. The more such agreements would be reached between the airports and the airlines, the more would price regulation automatically become obsolete. The ACCC had no obligation to regulate the service quality of privatised airports, nor did the DTRG regulate quality levels. However, the ACCC was obliged to continously observe the development of the quality of airport services and to report the findings to the DTRG before the upcoming regulatory review.

The basis of airport price regulation in Australia is laid down in the Airports Act 1996, in the Pricing Policy Paper issued by the DTRD, the Trade Practices Act 1974 and the Price Surveillance Act 1983. While the first two represent sector-specific norms, the latter two originate in general competition law of Australia. The Airports Act 1996 as sector-specific law and the Pricing Policy Paper together define the institutional framework for airport regulation. The Trade Practices Act 1974 and the Price Surveillances Act 1983 form the legal basis for continuous supervision of the airport sector by the ACCC. Although a clear legal statement regarding the protection of the

---

11 In addition to the two functions of the ACCC mentioned in the text the ACCC also has the obligation to ensure equal access of airlines and ground handling service providers to essential facilities.

airports' quasi-rents does not exist, the Airports Act 1996 and the Pricing Policy Paper offer another source of protection for the airport companies: The Airports Act demands intrasectoral benchmarking with regards to the performances of the airports. The Pricing Policy Paper announces that the government intends to leave the setting of charges to agreements between airport companies and airlines. As a result, and taken together with the option of charge increases before the upcoming regulatory review, a continuation of regulation in the presence of voluntary charges agreements between airport operators and airlines would generate the need for the DTRG to justify a decision not to abolish airport regulation after the upcoming regulatory review.

Again, as in the UK, the introduction of the Australian system of checks and balances corresponded with plans to totally privatise a great number of airports. The regulation was designed to be light handed as the ACCC could approve charges above the price ceilings set by the DTRG if she would deem that appropriate. Furthermore, there was no explicit regulation of the quality of airports' services although quality of service monitoring was put in place.

How did the regulatory system perform? Soon after the airport privatisations took place it became apparent that a number of airports run into losses because it seems that the DTRG had originally set the price caps too restrictive to allow for profitable operation. The airports asked for approval by the ACCC to raise charges above the ceilings of the DTRG-price caps to finance new infrastructure investments. The ACCC run into very detailed assessments even for quite minor investments, which generated high compliance costs. Furthermore, following the September, 11th terrorist attack the airports had to face a sharp decline in demand for their services which further contributes to poor profitability. In the end, the government decided to replace actual price regulation by price monitoring and hence to refrain from setting ex ante price caps but instead to exert a threat of price regulation should regulatory outcomes prove to be inefficient. From June 2002 all price regulation was removed (Forsyth 2002).

c) Austria

Austria is served by seven airports. Up to the 1990s all airports were wholly owned by local authorities and regional governments with Vienna Airport being the only

exception that was wholly owned by the Federal State. In the early 1990s the Federal Government prepared the privatisation of Vienna Airport.

The structure of the regulatory system that was in force in the early 1990s was left unchanged during the privatisation process and is still in force. It is rather simple: All seven Austrian airports are subject to price regulation (section 74 of Austrian Air Transport Law). All regulatory competences lie by the federal Ministry of Transport (MOT), whose regulatory policy is not bound to any ex ante specified rules. The results of regulation are not subject to explicit ex post-control. Hence, the regulator has a great deal of discretionary power and the protection of the airport company's quasi-rents against opportunism by the regulator is rather weak. Under these conditions total privatisation of Austrian airports cannot be expected.

The Austrian Government privatised Vienna airport in three tranches, bringing sequentially 27 per cent (1992), 21 per cent (1996), and 2 per cent (2000) of the airport company's shares to the stock exchange. In addition, 10 per cents of the shares were transferred to an employees fund in 2000. Since that year the majority of shares are held by private investors, while the Länder (counties) of Niederösterreich and Wien still hold the remaining 40 per cent. As the Austrian Government did not choose to sell the company's shares to a strategic investor but instead brought the shares to the stock exchange, the 40 per cent share of Niederösterreich and Wien guarantees these Länder a considerable influence on the company's behaviour and hence allows for internal regulation that should avoid underinvestment by the airport company.

According to a study by Roland Berger & Partner (2000 p 79) Vienna Airport was the most expensive European airport for airlines in 1998. Compared to other major European airports charges have rose above average between 1991 and 1998.

d) Denmark

Denmark privatized its major airport Copenhagen in three steps, selling 25 per cent (1994), 24 per cent (1996), and 17 per cent (2000) of Copenhagen Airport A/S shares at the stock exchange. Today the state owns 34 per cent of the company while the remaining shares are held by private investors (Copenhagen Airport A/S a). However,

the maximum share that an individual investor is allowed to hold is restricted to 10 per cent, thus giving the state extraordinary power in controlling the behavior of the company.[12]

Airport charges are subject to economic regulation. The institutional structure of the regulatory system that was in place before 1994 remained unchanged during the privatization process. In general, the regulatory system mirrors the Austrian one: The Danish Transport Ministry is responsible for approving charges (Section 71 of the Danish Air Navigation Act). There are no legal rules about the criteria on which approval should be given and no explicit mechanisms exist for ex post-control of regulatory policy. However, at the time of the first step of privatisation the Transport Minister commited herself by means of an official statement to specific criteria that she would use when deciding on future approval of airport charges. According to this statement, cost increases will be included in the basis of calculation of charge adjustments as well as the level of charges of competing airports. Furthermore, she stated that efficiency gains as a result of streamlining and rationalisation measures by the airport company should contribute "… to the greatest possible extent" to improving the profitability of the firm (Copenhagen Airports A/S p. 55). All these measures limit discretion by the regulator. However, although these criteria gave the airport company some protection against expropriation of her quasi rents by the regulator in the short run, the commitment of the Transport Minister was conditioned to end at the end of 2003, hence providing no long run protection für the company.

These criteria were replaced in 2003 by a price cap-formula for Copenhagen Airport that binds the development of future charges to the Consumer Price Index, an x-factor for required productivity improvements, traffic growth and the level of charges at competing airports. The formula will last until the end of 2008 (Copenhagen Airport A/S b) which again raises the question of future regulatory decisions after 2008.

All in all the structure of the system of external airport regulation in Denmark does provide Copenhagen Airport with little protection against opportunistic regulatory decisions in the long run. Correspondingly, the state remains an important shareholder of Copenhagen airport. Given the restriction that no private investor is allowed to hold

---

[12] Until the year 2000 the maximum share of private investors was restricted to 5 per cent.

more than 10 per cent of the company's share the central government may influence the behavior of the airport by internal regulation thus avoiding underinvestment.

e) Greece

Greece is served by many airports, most of them located on Mediterranean islands and being rather small. Until the 1990s the most important airport of the country was Athens-Hellenikon, which was wholly owned by the Greece Government. The other airports were – and still are – owned by local government authorities. At the beginning of the 1990s the government decided to replace Hellenikon by a new airport Athens-Spata, which should be build and operated by a consortium of strategic private investors. In 1996 she signed a contract that obliged the winning consortium to build the new airport and granted the investors a long-term lease of the airport for 30 years (Hochtief AG 1996). To realize the project, the consortium found a new airport company „Athens Airport International" (AAI).

Hellenikon Airport was only subject to internal regulation by the Greece Government and no external regulatory system existed when AAI was found. The Greek government began talks with the private consortium about a regulatory contract that should suit the specific needs of the new project. Given that she intended to privatise only the new Athen Airport it should be expected that the institutional structure of the new regulatory system centers around the implementation of strict ex anrte-regulatory rules.

Indeed, at the heart of the contract that was later agreed and is still in force is a rate of return-regulatory rule that guarantees the airport company of Spata an annual 15 per cent rate of return on capital employed. Furthermore, the contract comprises numbers of additional clauses that aim at protecting the private investors against opportunism by the Greek state et vice versa. E.g. the Greek Government had to commit not to favour the national airline Olympic Airways with regards to slot allocation, and not to subsidize another airport which is located nearer than 100 km to Spata, and the new airport company is obliged to supply detailled service standards (Government Gazette of Greece 1995).

Originally it was agreed that the members of the consortium would hold 60 per cent of the shares of this company, while the State of Greece would hold the remaining 40 per cent. However, short before the contract was signed the government changed as a result of an election, and the new administration revised the plan for majority divestiture of public ownership rights. Instead, she restarted negotiations. As a result the private consortium was restricted to hold 45 per cent of shares of Athens Airport International, while the state remains as the holder of the majority of shares.[13] The new airport is scheduled to open in 2001.

f) Germany

Until recently most airports in Germany were wholly owned by the Länder (regional government authorities), whereas the Federal Government was co-owner of five airports.[14] However, in the last years a number of airport privatisations took place in Germany: 50 per cent of Düsseldorf Airport were sold to a strategic investor in 1997, 49 per cent of Hamburg Airport were also sold to a strategic investor in 2000, and 31 per cent of Frankfurt Airport were sold at the stock exchange in 2001.

All German airports are subject to price regulation. Traditionally the system of airport regulation in Germany is based on a combination of external and internal regulation. Legally the Federal Government is responsible for external regulation on the grounds of the Luftverkehrsgesetz and the Luftvekehrszulassungsordnung (German sector-specific aviation law). However, she had delegated the task of regulation to the Länder, which in fact now are sole regulators of the airports within their regions, controlling the behavior of the airports formally by means of the aviation law, and informally by means of executing public ownership rights.

The institutional setting for external regulation resembles the institutional framework in Austria, with the exception, however, that in Austria the Federal Ministry of Transport acts as regulator, while in Germany this task is performed by the Länder. The Länder as

---

13 Information was provided by Thomas Brehmer, who is one of the lead managers of the consortium that won the contract to build the airport at Spata.

14 The Federal government was then co-owner of the airports of Berlin, Cologne, Frankfurt, Hamburg, and Munich.

regulators are not bound to legally ex ante-specified regulatory rules nor are they explicitly controlled by ex post-mechanisms. However, the practice of executing German aviation law restricts the regulators to act only on request of the airports, i.e. they cannot change price caps unilaterally, but only if the airport companies agree.[15] Informally the Länder agreed on a legally not-binding code of conduct that guarantees the airports a rate of return that is comparable to the capital costs on the capital markets (Arbeitsgruppe Verwaltung und Recht 1980). Currently the incentives that would be generated for a totally privatised airport by this institutional setting are far from clear, as it is not known how the courts will decide in case of dispute between a regulator and an airport operator. If the airports could rely on the ongoing existence of rate of rate-regulation, than clearly a privatised company has little incentives to enhance productivity. If alternatively a privatised airport company will not trust on ongoing current practice, then she will have incentives to dump the quality of its services in order to circumvent regulatory restrictions and to avoid a hold up-situation. In any case, favourable outcomes cannot expected as long as this institutional setting is governing the airport sector. Hence full privatisation is not adequate for the Länder who belong to efficient air transport links.

To eliminate the misincentives that are generated by rate of return-regulation, and against the background of the then existing plans to privatise Hamburg Airport, the Free and Hanseatic City of Hamburg recently tried to improve regulation of the airport by introducing a price cap regime which obliges her to decide every five years on new price caps, while refraining from changing the regulatory restrictions between the regular regulatory reviews. The regime was put into effect in spring 2000. However, she did not employ a regulatory system of checks and balances, which — according to the fourth hypothesis that was developed in section 3 — may be explained by the fact that Hamburg Airport is the only airport within the region of the City of Hamburg. As a result, the regulatory system now lacks clear ex ante-specified regulatory rules beyond 2005 as well as effective ex post-control mechanisms, hence providing the airport company with virtually no protection against regulatory discretion. Against this background, and according to the complementarity hypothesis major divestiture of the airport by the public shareholders — the Federal Government, the Land of Schleswig-Holstein, and the City of Hamburg — could not be expected. In fact, while the Federal

---

15 An alteration of this situation is possible, but would necessiate contractural agreement between the Länder and the airports.

Government and the Land of Schleswig-Holstein sold their shares of the company to a private investor in July 2000, the City of Hamburg refrained from full privatisation and stills holds the majority of shares of the airport company.

Another privatisation project that was recently prepared was the privatisation of the three Berlin airports, which all belong to the Berlin-Brandenburg Flughafen-Holding (BBF). The Federal Government and the City of Berlin as shareholders planned an outright sale of the holding company to a private consortium. Although the sale did not take place as a result of legal problems with the tendering process it is remarkable that the public owners originally planned the full privatisation of the BBF. According to the complementarity hypothesis, and against the background of the currently poor protection of fully privatised airports against regulatory opportunism, total privatisation could only be expected after reform of the system of external airport regulation in Berlin. Indeed, the Land Berlin as regulator commited by contract to approve future airport charge increases on the basis of an ex ante rate-of-return-regulatory rule which would have guaranteed the BBF a 15 per cent annual return on its investments. In addition she committed to allow the future private airport operators to introduce a new passenger charge, which should be 15 DM (= 7,66 €) per passenger, and which should be allowed to be charged for 30 years. Hence, if the privatisation had taken place, price regulation would have been partly based on an ex ante-specified price cap, which would have made the Berlin airport system by far the most expensive airport in Germany (Touristik Aktuell 2001).

V Conclusions

The case studies support the hypothesis that complementarities exist between the form of privatisation and the accompanying regulatory regime. Full privatisation did only occur in those countries where the structure of the external regulatory system guarantees effective protection of the airports' quasi rents against expropriation of their investments by means of opportunistic regulatory decisions.

Furthermore, those countries that have installed a regulatory framework that is based on a system of checks of balances with regards to regulatory competences realized a light handed regulatory approach, whereas in the case of Greece, which originally also planned a total privatisation of Athens-Spata Airport supports the hypothesis, that ex

ante-specified rules necessitate a heavy handed approch to regulation. It is by far questionable, if privatisation of airports in the presence of a regulatory system, that heavily relies on ex ante-rules, will really enhance the efficiency of the airport sector. It seems that the then new elected Greece Government has realized this, and that this was a major motivation to restart negotiations with the consortium of private investors, which resulted in only minor divestiture of the Spata airport by the Greek state.

Although only little emprical evidence with regards to the performance of alternative institutional settings in general and of (totally or partially) privatized airports could be presented, the performance of the BAA-London airports compared to the performance of Vienna Airport seems to support the hypothesis that internal regulation of a partial privatized airport will be a serious barrier to realize the full potential of social welfare that could be reaped by full privatisation which is accompanied by a transaction-specific institutional setting.

What recommendations for policy makers can be extracted from these results? First, they must recognize that that complementarities exist between the choice of a particular privatisation model and the institutional setting for the airport sector. Hence, they must simultaneously decide on the privatisation model and on the institutional framework within which privatised airports will have to operate.

Second, in order to avoid the direct and indirect (incentive) costs of regulation, try to enhance competition between airports as much as possible thus making price regulation obsolete.

Third, if the social costs of abolishing price regulation seems to be too high build a system of external regulation that centres around ex post control of regulatory outcomes instead of strict ex ante regulatory rules and internal regulation by means of public ownership.

REFERENCES

ACCC (Australian Competition and Consumer Commission) (1997). *Administration of Airport Price Cap Arrangements*. Melbourne.

— (1998). *Economic Regulation of Airports. An Overview*. Melbourne.

— (2000). *Aviation*. Melbourne

Arbeitsgruppe Verwaltung und Recht (1980). *Niederschrift über die Sondersitzung der Arbeitsgruppe Verwaltung und Recht des Länderausschusses Luftfahrt am 4. Juli 1989 in Düsseldorf*. 11. Juli.

Australian National Audit Office (1999). *Phase 2 of the Sales of the Federal Airports. Audit Report No. 48, 1998-99. Performance Audit*. o. O.

Averch, H., und L.L. Johnson (1962). "Behavior of the Firm under Regulatory Constraint." *American Economic Review* 52 (5): 1052–1069.

Bailey, E.E., und L.J. White (1974). Reversals in Peak- and Off-Peak Prices. *Bell Journal of Economics* 5: 75–92.

Betancor, O., and Rendeiro, R. (1999). *Regulating Privatized Infrastructures and Airport Services*. Washington D.C.

Brenck, A. (1993). Privatisierungsmodelle für die Deutsche Bundesbahn. In W. Allemeyer, A. Brenck, P. Wittenbrinck und F. v. Stackelberg (Hrsg.), *Privatisierung des Schienenverkehrs*. Göttingen.

Centre for the Study of Regulated Industries (1996). *The UK Airports Industry. Airport Statistics 1994/95*. London

Civil Aviation Authority (2000). *BAA London Airports. A Regulatory Report*. London.

Copenhagen Airport A/S a. Facts about Copenhagen Airport A/S. http://www.trafikministeriet.dk/sw.553.asp

Copenhagen Airport A/S b. Model for Adjustment of Traffic Charges at Copenhagen Airport A/S (15 May 2000). http://www.cph.dk/CPH/UK/INVESTOR/traffic+statistics/model+for+adjustment+of+tr

Department for Transport and Regional Development (1996). *Pricing Policy Paper*. November. o.O.

Forsyth, P. (2002). Replacing Regulation: Airport Price Monitoring in Australia. Paper presented at the German Aviation Research Seminar, "The Economic Regulation of Airports: Recent Developments in Australia, North America and Europe", November 8-9,2002.

Goldberg, V.P. (1976). Regulation and Administered Contracts. *Bell Journal of Economics* 7 (2): 426–452.

Government Gazette of the Republic of Greece. Part One (1995). Ratification of the Airport Development Act of the New International Airport of Athens at Spata, Establishment of the Company „Athens International Airport S.A.", Approval of Environmental Conditions and Other Provisions. Law Number 2338. Issue Nr. 202. 14. September. o.O.

Hochtief AG (1996). Flughafen Athen International. Präsentation. August. unpublished.

Hooper, P., Caine, S, White (2000). The Privatization of Australia's Airports. *Transportation Research E* 36 (3): 181-204.

Humphreys, I. (1999). Privatisation and Commercialisation. Changes in UK Airports Ownership Patterns. *Journal of Transport Geography* 7 (2): 121 - 134.

Kapur. A. (1995). *Airport Infrastructure. The Emerging Role of the Private Sector*. Washington D.C.

Katz, R. (1993). Airports Forced to Study Privatization. *Airports International* April: 15–16.

Monopolies and Mergers Commission (1991). *MMC 2. BAA plc. A Report on the Economic Regulation of the South-East Airports Companies (Heathrow Airport Ltd., Gatwick Airport Ltd. and Stanstead Airport Ltd.)*. Juli. London.

— (1996). *BAA plc. A Report on the Economic Regulation of the London Airports Companies (Heathrow Airport Ltd., Gatwick Airport Ltd. and Stanstead Airport Ltd.* London.

Richter, R., und E. Furubotn (1996). *Neue Institutionenökonomik. Eine Einführung und kritische Würdigung*. Tübingen.

Roland Berger & Partner (2000). *Ableitung von Erfolgsfaktoren zur Privatisierung von Flughäfen in Deutschland (Eine Studie von Roland Berger & Partner im Auftrag der Lufthansa)*. Mimeo.

Starkie, D. (1994). Regulating Airports and Airlines. In M.E. Beesley (Hrsg.), *Regulating Utilities: The Way Forward*. London.

— (1999). The Framework of Regulation for UK Airport Privatisaton: Lessons for Germany? In *W. Pfähler, H.-M. Niemeier und O.G. Mayer (Hrsg.), Air Ports and Air Traffic. Regulation, Privatisation and Competition*. Frankfurt am Main.

Touristik Aktuell (2001). Urlaub muss bezahlbar bleiben: ADL und DRV wenden sich gegen Nachtflugverbote und Privatisierung der Flughäfen. July, 30th.

Vickers, J., und G. Yarrow (1988). *Privatization: An Economic Analysis*. Cambridge, Mass.

Williamson, O.E. (1976). Franchise Bidding for Natural Monopoly in General and with respect to CATV. *The Bell Journal of Economics* 7 (1): 73-104.

— (1983). Credible Commitments: Using Hostages to Support Exchange. *American Economic Review* 73 (4): 519-540.

— (1986). *Economic Organization. Firms, Markets and Policy Control*. Brighton.

Wolf, H. (1997). *Grundsatzfragen einer Flughafenprivatisierung in Deutschland. Studie im Auftrag des Bundesministeriums für Finanzen*. Kiel.

— (2003). Privatisierung im Fluighafensektor. Eine ordnungspolitische Analyse. Berlin, Heidelberg.