

WHEN THE SHOE DOESN'T QUITE FIT: REGULATING LARGE COMMERCIAL AIRPORTS WITH EXPANDING ROLES

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Airports, whether publicly or privately owned or operated fill both public and private roles. They need to act as public infrastructure providers and as businesses which cover their operating costs. That leads to special governance concerns with respect to consumers and competitors which are only beginning to be addressed. These challenges are highlighted both by shifts in ownership status and by the expansion of roles performed by airports as passenger and cargo volumes continue to increase and as nearby urban areas expand outward towards airports. We survey five ways in which the regulatory shoe doesn't quite fit the needs. Our findings suggest that, while ad hoc measures limit political tension, new governance measures are needed.

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*WHEN THE SHOE DOESN'T QUITE FIT: REGULATING LARGE COMMERCIAL
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Driven by declining real prices and increasing incomes, air transport has become increasingly interwoven into contemporary patterns of work, leisure, and social interaction. The resulting rising air traffic levels at major airports have allowed a larger number of ancillary traveler and shipper needs to reach service threshold levels. At the same time, pressures on public finance have often provided a motivation for airports to augment their incomes by satisfying some of those needs. Consequently, airports are now complex, multi-product organizations seeking to optimize revenues from many different operations. The expansion of air traffic has therefore heightened awareness of many long-term airport governance issues while raising new ones.

Airports are central infrastructure nodes linking regional air and land connectivity. The central airport governance issue is maximizing regional economic and social welfare by optimizing the level and pattern of air service, recognizing that commercial aviation is a networked industry with a complex value chain and that the behavior of the direct service providers, airlines, is, in an era of private ownership and partial deregulation, beyond the direct control of communities, regions, and nations. The governance of air service, therefore, is in partnership with airlines and often works through the mechanisms of investment and pricing policy. Agreements to share investment risks with airlines and others are often part of airport regulation. The essential contribution of ground transport to air connectivity is less often appreciated and less well regulated.

The increasing level of airport activity means mounting demand for additional retail facilities, hotels, conference centers, and even office space not to mention cargo terminals, distribution centers, and warehouses. In addition, demands for a widening set of services to passengers, shippers, and others can be met. Many large airports have entered into new business activities and roles. Satisfying some of these demands may be part of the complex aviation value chain and therefore may require close coordination with aeronautical activities. Only some of the service provision and real estate development is closely tied to aviation, however. The operation of on-airport hotels, offices, and warehouse space, satisfying consumer needs, has also led, in some cases, to concerns about the uses of aeronautical funds, primarily low-cost capital, to subsidize risky non-aeronautical business operations, resulting in undue charges to travelers and unfair competition with competing local service providers. With increasing size and a widening set of activities, airport cities, which are based on a confluence of aviation and urban functions, have developed in some cases, heightening governance concerns.

The functional and organizational changes also lead to increasing concerns over managerialism and regulatory capture. That is, special interests not fully reflecting public interests, can gain control of airport regulatory institutions leading to either more or less service air service delivery than desired by externalizing costs or adjusting prices. Similar to private corporations which institute boards of directors, airport management could, by virtue of their more detailed knowledge about airport operations and through their influence on the selection of their boards, sway their overseers. Firms often attempt to control their environments by coopting them.

*WHEN THE SHOE DOESN'T QUITE FIT: REGULATING LARGE COMMERCIAL
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As airports experiment with new tasks, regions search among older and new models for an organizational form appropriate to their business activities. Ownership may be transferred from one government body to another. Public enterprises may be corporatized. Airport ownership and management may be privatized. Internal and external, operational and ideological factors play into the search for the best organizational vehicle for delivering aeronautical and non-aeronautical services. Airport corporatization and privatization promise to simplify public finance and may also improve service delivery. By enlisting the aid of capital markets, regions may be better able to govern airports and optimize airport service delivery.

Airports are land intensive. Jet aircraft engines necessitated a round of airport relocations and the increased traffic pushes airports to add runways, using more land. Not only are airports often large, but they affect the use of land for significant distances surrounding them. These externalities create significant governance challenges which have often been exacerbated by a cavalier attitude on the part of airport managers towards the concerns voiced. Relationships between airports and their neighbors are often made more tense than would the case in the presence of an appropriate regulatory mechanism. The search for such a framework is hindered by the standard public goods problem: people may be able to improve their positions by misrepresenting their true preferences.

These and similar concerns arose in connection with the Dutch parliamentary discussion on the future of Schiphol Airport but they are common to many airport regions.¹ In each case, the shoe of governance institutions doesn't quite fit the foot of the regulatory issue. In what follows, we begin with a brief overview of Schiphol and its position in the Dutch Randstad region and use the Dutch experience as an empirical anchor when considering several regulatory issues, specifically, 1) determining the optimal level of air service for a region, 2) coordinating the diverse tasks and activities surrounding airports, 3) dealing with managerialism and regulatory capture, 4) finding the appropriate regulatory framework for the airport sector, and 5) incorporating airport externalities into regional regulation. We will occasionally refer to selected experiences of airports world-wide.

Airports are investments on the part of regions and nations in their present and future prosperity. The organizations managing airports are therefore "agents" of regions in a complex principal-agent relationship. Those organizations are charged with implementing the preferences of their owners, which are frequently regional governments. All such relationships are problematic. We rely on the standard economic agency theory framework to understand air governance issues (Jensen, 1983; Levinthal, 1988; Moe, 1987). An agency relation is defined by "a contract under which one or more persons (the principal(s)) engage another person (the agent) to perform some service on their behalf which involves delegating some decision-making authority to the agent (Jensen and Meckling, 1976: 308)." The delegation of authority offers individuals the possibility to act opportunistically in their own, as opposed to collective, interest. The degree to which agents comply with the wishes

¹ In response to a request of the Dutch parliament, the Dutch Minister of Transport, Public Works and Water Management and the Minister of Housing, Spatial Planning and Environment established a group to study the role and position of airports (Schiphol and other Dutch airports) in the context of local land use, especially for non-aeronautical functions. The authors contributed to the resulting report (Commissie Ruimtelijke Ontwikkeling Luchthavens, 2009).

*WHEN THE SHOE DOESN'T QUITE FIT: REGULATING LARGE COMMERCIAL
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of the principals depends upon the relative resources of each including 1) the degree to which their interests coincide, 2) the agent's ability to strategically control the flow of relevant information to the principal, 3) the ability of the principal to control the agent's behavior, and 4) the capacity of agents to engage in collective action.

The overarching agency problem is between the public (with the regional government being the representative of their interests) and airport management. As co-providers of services the public demands, airport interests and public interests largely, but imperfectly, overlap (Point 1). There are also several "special interests," including airport management, those directly dependent upon air transportation, and nearby residents, who may work to have their interests disproportionately represented. The information needed to optimally manage the regional provision of air transportation is largely missing (Point 2). Airport managers are, however, the primary gatekeepers for the information which does exist. Asymmetric information may increase the power of airport managers to benefit from their positions. Managers pursue their own interests, which are not necessarily those of their employers (Berle, and Means, 1967 [1932]). On the other hand, government bureaucrats control critical resources and should thereby be able to compel airport managers to follow public interests very closely (Point 3). However, it might be possible that a lack of public funds can loosen the hold of representatives of the public interest over airport managers and for a coalition of interested parties to achieve disproportionate power, creating an asymmetric dependency. Asymmetric information and asymmetric dependency form the bases of two explanations for sub-optimal performance in organized economies: managerial control-loss (Williamson, 1970) and rent-seeking (Tullock, 1993), respectively. Finally, principal-agent situations allow for, possibly complex, forms of coalition and collective action in order to extract benefit (Point 4). Our central interest, however, is not in discussing the variety of agency issues which arise in airport management but in the adequacy of the institutional arrangements which are used to govern them.

Our orientation is towards agenda setting. Our focus is on the new business activities, the new roles, and the new organizational forms at and surrounding airports. As important as they are, we mention airline-airport relations and the regulation of aeronautical charges only in passing. A growing body of research considers that aspect of airport governance in detail. Our findings suggest that, while ad hoc measures limit political tension, new governance measures are needed.

OVERVIEW OF SCHIPHOL AND ITS GLOBAL CONTEXT

Amsterdam Schiphol is frequently cited as one of the premier commercial airports of the world and as a pioneer of the airport city model of development. This implies that its actions have pushed the boundaries of common practice. The Amsterdam Airport Area is therefore one the world's "shock cities" of airport growth and governance capability. Nevertheless, it shares many similarities with other large airports both in its activities and in the regulatory issues raised.

In partnership with KLM, which was an early European adopter of airline hubbing, Schiphol became the fourth-busiest passenger airport in Europe, only to be recently edged into fifth-

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AIRPORTS WITH EXPANDING ROLES
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place by increased traffic at Iberia's hub in Madrid. Schiphol served 47,794,994 passengers and processed 1,601,282 tons of cargo in 2007 when traffic reached a temporary peak. That successful partnership has given Amsterdam far greater air accessibility than would be expected on the basis of the characteristics of Schiphol's catchment area alone. Partially as a consequence of the air service concentrated at Schiphol, the Amsterdam region has prospered, creating a level of employment that exceeds the labor supply of the immediate Amsterdam area and of the Province of North Holland.

The high level of air service has made Schiphol itself a major employment center. Some 62,000 people are employed on Schiphol grounds daily. These employees tend to reside relatively close to Schiphol but their homes are sprinkled throughout much of the Netherlands. Most of these do not work for Schiphol itself but are employed by airlines (especially KLM), government agencies, aviation support firms, cargo handlers, and retailers serving the travelling public.

Schiphol's daily passenger flow of over 130,000 daily in 2007 provided the demographic market base for expansive, well-appointed shopping and entertainment arcades inside and, more notably, outside the security zone. By combining terminal design with mall design, Schiphol has tapped non-aviation revenue streams through concession rents and passenger purchases. Non-aeronautical development has not been restricted to the terminal building, but spreads out from the terminal to include two luxury hotels and the 370,000 sqm. World Trade Center with meeting and commercial facilities and regional headquarters of such firms as Thomson-CFS and Unilever. Microsoft has a facility within walking distance of the terminal.

Through the 1920s, 1930s, and 1940s, airports were important leisure destinations which were sometimes equipped with viewing stands and non-aviation attractions (Bednarek, 2001; Pascoe, 2001). Like other airports, partially to counter the conception of airports as "non-places," Schiphol is attempting to develop itself as a leisure destination for regional residents which is cross-subsidized by travelers. A 9,000 sqm. Multimedia aviation theme park (Dreamport Schiphol) was planned for the terraces of Schiphol terminal. Dreamport Schiphol was to be a cooperative venture between Schiphol, KLM, and Boeing reviving and updating the aviation museum which was previously on airport grounds and subsequently relocated as space could be used for activities which generated higher revenues.

Surrounding Schiphol (inside and outside the airport fence) large tracts of land are being developed for office, leisure, light industrial, and logistics purposes. These include Schiphol South-East and Schiphol Logistics Park for cargo distribution and 3PLs; Anthony Fokker Business Park and Schiphol Eindhoven with 130,000 sqm. and 165,000 sqm. of offices, respectively; Schiphol-Rijk for time-sensitive light industrial and the Schiphol Golf and Business Center for sports, golf and leisure activities that are to complement a corporate office campus on the site. Schiphol's real estate development arms, Schiphol Real Estate and Schiphol Area Development Corporation, have developed several of the business parks, logistics parks, high-tech industrial parks, distribution centers, information and telecommunication complexes, and wholesale merchandise marts, many of which house air-

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AIRPORTS WITH EXPANDING ROLES
APPOLD, Stephen; BAKER, Douglas*

intensive users. Ironically, logistics parks now often emphasize their accessibility to multiple airports.²

As Dutch economic policy has evolved over time to view Schiphol as an important component of its economic development strategy, the national government has invested heavily in linked ground transportation facilities. Appropriate ground transport eases air travel, extends airport catchment areas, and, therefore, increases the value of airport infrastructure. The main north-south highway in the Netherlands (A4) runs through the airport near the terminal while an east-west connector highway (A9) was routed adjacent to the airport on the north.

A modern train station, directly under the air terminal, efficiently connects travelers to the Amsterdam city center, the rest of the Netherlands, and much of Europe. The re-routing of the main trunk rail line between Amsterdam and Rotterdam in 1995 transformed Schiphol from a relatively inaccessible outpost to one of the most accessible points in the Dutch Randstad. At the same time, the accessibility of many Dutch cities to air travelers increased immensely. The rail connections bring a large portion of the Netherlands into the airport area.³

More recently, a €7 billion high-speed rail line between Amsterdam and the Belgium border completed the infrastructure needed for swift rail service to Paris, including Charles de Gaulle Airport, and beyond. Improved high-speed train connections to Germany, solidifying the hold of Schiphol over Ruhr region travellers, are planned.⁴ Both highway and rail investments have extended the catchment zone of the airport considerably while reducing the need for short-haul flights which place undue strain on airside infrastructure capacity.

Schiphol airport has become a center of real estate development but the air service is not the only, and perhaps not the major, factor drawing employment to the area. The airport is close to the city and the central part of the city is not well-suited for many types of employment. Perhaps more than other European cities of similar size, the center of Amsterdam has become increasingly museumized as its canals, historical buildings, and cultural resources attract growing numbers of tourists. Buildings which were once disused have been renovated and repurposed into components of the tourist-friendly environment. Distinctive architecture has been preserved and automobiles discouraged. At the same time, over the last several decades, many, especially families with children, have found it advantageous to move to sometimes distant suburbs. The result is that the center of the city is relatively inaccessible to the workforce while available center city buildings have floorplates which are not suited to contemporary work processes. As the economy has restructured towards producer services, an inverted city has evolved with many large firms

² See, for example, a presentation made by employees of a regional distribution center <http://www.nado.nl/NEDC%20v13.pdf>.

³ For example, one small conference venue, located on the far side of the Netherlands, included step-by-step instructions for attendees arriving by air which included one-seat express train service from inside the airport terminal to a train station situated a few hundred meters from the meeting site: <http://www.bwanet.org/media/documents/SE%20-%20AG%2009%20Airport%20-Train%20INFORMATION.pdf>.

⁴ Such connections now require a transfer in Utrecht and a journey at reduced speed as far as the German border.

*WHEN THE SHOE DOESN'T QUITE FIT: REGULATING LARGE COMMERCIAL
AIRPORTS WITH EXPANDING ROLES
APPOLD, Stephen; BAKER, Douglas*

satisfying their need for office space and accessibility in a ring around the central city which is well-served by highway and rail. Office clusters have sprung up surrounding several train stations and highway interchanges.

Amsterdam Zuidas is one of the largest and most prestigious of these clusters. Within the southern reaches of the city of Amsterdam, about six minutes by expressway or train to Schiphol's passenger terminal, Zuidas is often touted as an example of airport-region synergy. Zuidas is an "edge city" containing almost one million sqm. of class A office space and retail, along with a commuter rail station. This edge city is the home of the world headquarters of both ABN Amro and ING banks and numerous regional corporate headquarters. A "World Trade Center" provides office space to smaller organizations. The demand for Schiphol's terminal area office developments and of Zuidas can be seen in the relatively high office rents commanded by those properties – possibly the highest in the Netherlands. Schiphol area industrial rents also indicate a high desirability.⁵

The success of Schiphol area real estate investments, however, ultimately rests on the skilled labor force located in and near Randstad and on the region's central location in Europe. The highways and train lines that link Zuidas with the airport also connect with a labor shed that stretches to Almere and other distant residential growth centers in neighboring provinces. The central location near the European Union's economic centroid, along with the labor supply, helps make the region attractive to firms seeking to establish Europe-wide headquarters and distribution centers (whether air-based or not). With fast frequent train service to Germany, Paris, and other key European cities as well as Schiphol, which has excellent air service to London, Amsterdam has become a viable office location for European and globally-oriented businesses and organizations. The Amsterdam area may therefore be able to attract firms that might otherwise choose London or Paris except for the price. (Amsterdam ranked 41st in a recent comparison of global office market rents. London and Paris were both over twice as expensive [CB Richard Ellis, 2009].) The mix of regional resources and transportation infrastructure have helped make Amsterdam attractive to over 1,000 international companies choosing the Amsterdam region as a place to invest and create jobs.

THE SKY IS THE LIMIT: PROVIDING THE OPTIMAL LEVEL OF AIR SERVICE

Given an aviation-dependent economy, the central problem in airport governance is determining the optimal level of air service. The absence of a defensible measure of such an optimum allows the agency problems identified above to grow in scale and consequence. The Netherlands engages in a formalized, integrated planning procedure which begins with macroeconomic projections based on broad scenarios each with a specific constellation of trade and governance characteristics, and a consideration of how local social trends would

⁵ Quoted office rates need to be taken with a grain of salt. Rental contracts are sufficiently complex that knowledgeable real estate professionals often have difficulty comparing rents.

*WHEN THE SHOE DOESN'T QUITE FIT: REGULATING LARGE COMMERCIAL
AIRPORTS WITH EXPANDING ROLES
APPOLD, Stephen; BAKER, Douglas*

be affected under each of them.⁶ Each scenario implies different levels and patterns of demand and therefore different infrastructure and land use needs. These are sometimes used in capital expenditure planning but we found no explicit linkage between macroeconomic projections and air transport services. In this section, we outline a model of air transport's contribution to regional economic growth based on aviation's contribution to regional gains from trade and sketch out a model that could be used to measure the costs and benefits. Our aim is not to calculate estimates but to outline a comprehensive measurement framework.

Trade economists build on Paul Samuelson's "iceberg" analogy to capture the total effects of transportation and other logistics costs on generating regional welfare. Trade improves welfare but products and services being shipped are like icebergs that melt in transit, diminishing value and the benefits of trade. Ironically, aviation impact studies often count the metaphorical melting as a regional gain. The greater the melting – that is, the greater the loss of product value – the higher the measured economic impact in terms of airline and airport employees, payroll, consumer spending, and related measures.

On the contrary, the primary benefit of commercial aviation is the net gains from trade which are facilitated by aviation. The gains are connected to the products shipped by air, the products shipped by surface but coordinated, in part, via air, the services shipped by air, including tourism and many forms of business services, and possibly visits to friends and family. Unfortunately, these benefits are poorly measured. Often, they are not even discussed, greatly exacerbating the governance problem.

Air transport increases value by effectively bringing regions closer together. Building on the iceberg analogy, for some types of products, surface transportation entails a large loss of value because, while the per kilometer costs may be low, the travel and processing time can be slow resulting in high inventory costs and other types of wastage. These include decreased value during transit and missed sales opportunities caused by late arrival.

Analogous arguments apply to humans. Even though the large majority of personal travel, like cargo shipments, is via surface modes, under some circumstances, air travel is money saving, due to largely the time savings. The large advantage of aviation is that it saves on time, increasing trade.

Airport efficiency, local land use, and ground transportation arrangements can have a significant impact on overall transport costs because the journeys of goods and people rarely begin or end on the tarmac. Sometimes the costs are in the form of ticket price, sometimes in the form of frequency of service (and therefore waiting costs), and sometimes in the form of lengthy ground travel and congestion. For example, a trip from downtown Chicago to downtown New York entails more time on the ground than in the air. The highway and rail connections in Amsterdam, especially in places like Zuidas, give travelers and commuters quick access to and from Schiphol. It follows that efficient airport access allows greater gains from trade. Similarly, locating initial origins and final destinations closer to airports,

⁶ Most recently, "Strong Europe," "Globalizing Economy," "Trans-Atlantic Market," and "Regional Community."

WHEN THE SHOE DOESN'T QUITE FIT: REGULATING LARGE COMMERCIAL AIRPORTS WITH EXPANDING ROLES
APPOLD, Stephen; BAKER, Douglas

whether in the form of rapid ground transport or an airport city or in the form of more rapid on-airport processing, decreases overall costs and increases the potential gains from trade.

Reducing the overall costs of producing, transporting, and consuming, increases overall welfare because more needs can be satisfied. The value of aviation lies in reducing those costs by contributing to a system that decreases the overall door-to-door costs of transportation (reducing the melting) giving least-cost producers greater market access, thereby increasing the overall value of trade. Despite the large concentrations of employment at airports the economic advantage of aviation is in the money saved, not in the money spent.

The gains from trade are difficult to measure. A land use model can capture many of the regional gains from trade and the costs needed to obtain those gains. We are not interested in maximizing landlord benefit but use the model because land value taps social benefit, including that stemming from trade. Land at a particular location has value because people derive utility from its use and greater utility implies greater value. A stylized land use model of airport benefits and costs could begin with a core-periphery rent gradient with all the usual assumptions and caveats. A simple cone represents the value attached to land in specific locations which, in turn, reflects the utility derived from using those particular locations as in Figure 1. No city has ever conformed completely to such a model but many approximate it. As cities prosper, in part through trade, they expand outward and the land in the most desirable locations increases in value, enlarging the rent gradient cone.

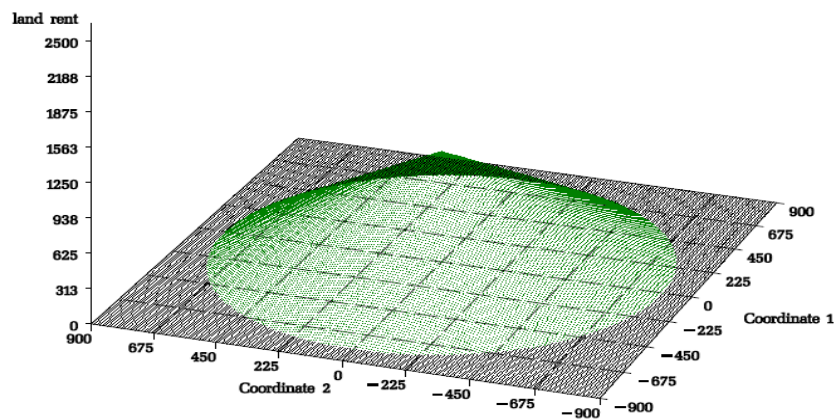


Figure 1 – Stereotypical model of urban land value

Airports tend to be located as close to the city center as possible while obtaining the size of tract needed at a price commensurate with the value of air connectivity. Thus, airports tend to be located beyond the development frontier of their owner cities at the time of the airport's establishment (Hubbard, McClintock, and Williams, 1930).⁷ Such a location is a trade-off between land costs, parcel availability, and access costs for passengers and cargo. Founded in 1916, Schiphol is relatively close, 9 kilometers, to the Amsterdam city center.

⁷ More recently, <http://people.hofstra.edu/geotrans/eng/ch4en/conc4en/airportlocation.html> provides a high level overview of airport location choice factors.

WHEN THE SHOE DOESN'T QUITE FIT: REGULATING LARGE COMMERCIAL AIRPORTS WITH EXPANDING ROLES
APPOLD, Stephen; BAKER, Douglas

As cities have grown, they expand outward, sometimes enveloping airports. At the same time, airports have generally become busier and noisier. Airport operations create a well-documented decrease in residential property values which is only partially counter-balanced by the benefits of proximity to airports. The decrease in utility can be represented by an inverted cone surrounding the airport super-imposed upon the urban-wide rent gradient as in Figure 2. Those reduced land values do not represent the entire cost of the noise disamenity. The costs of avoiding the disamenity, perhaps by increasing commuting distance, also need to be considered. In Schiphol's case, relatively few people are seriously affected by aircraft noise but large tracts of land remain undeveloped forcing a longer than otherwise needed work-home commute.

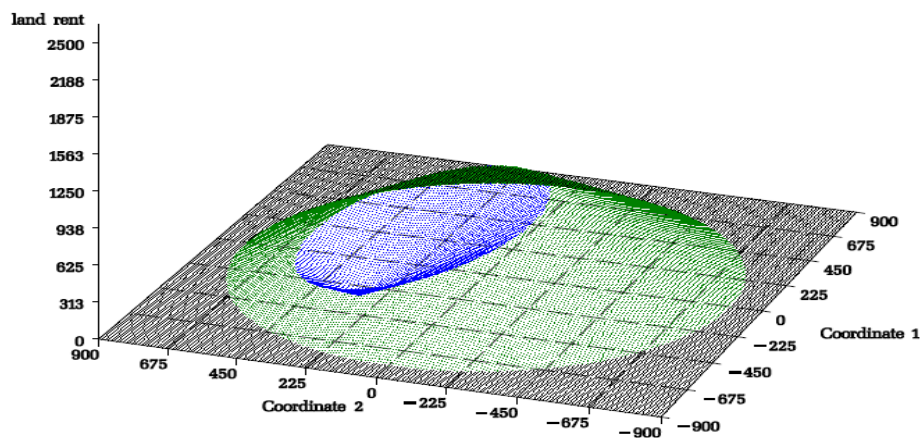


Figure 2 – Stereotypical model of urban land values incorporating aircraft noise disamenity

As cities expand, the opportunity cost of using land for aviation increases. As the value of airport land increases, so does the cost of not using the land for non-aviation uses. In extreme cases, aeronautical activities may cease altogether. For example, Roosevelt Field, the starting point of Charles Lindbergh's solo flight to Paris and once the busiest commercial aviation airport in the U.S., was closed in 1951 and subsequently was developed as a large high-end shopping mall. Similarly, nearby Mitchell Field was decommissioned in 1961 and is now used for other purposes. Many cities have needed to relocate airports because the noise disamenity of airports makes them too expensive to maintain when population pressure mounts.

Airport cities, such as that which has developed around Schiphol and several other airports, likely counter-balance the depressed real estate values surrounding airports as in Figure 3. That airport proximity effect can be represented by a small cone centered on the terminal area. Since the extent of that development is limited, the geographic scope of the increased real estate values may be largely restricted to easy walking distance from the terminal front door but extend further at reduced levels. While office rents immediately outside Schiphol's passenger terminal are among the highest in the Netherlands, at the back of the airport, they are reportedly half as high.

WHEN THE SHOE DOESN'T QUITE FIT: REGULATING LARGE COMMERCIAL AIRPORTS WITH EXPANDING ROLES
APPOLD, Stephen; BAKER, Douglas

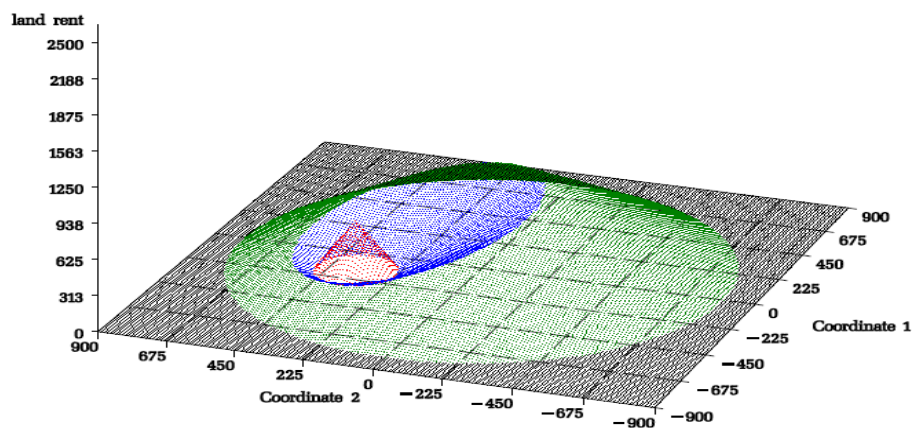


Figure 3 – Stereotypical model of urban land value incorporating positive and negative airport externalities

The broad airport metropolis governance problem is to expand air service to a point at which an airport region is in equilibrium, that is, where an additional dollar in revenue generated by trade facilitated by aviation is counterbalanced by a dollar in airport operating costs, noise disamenity, and similar expenditures. In terms of the stylized land use model, regional welfare is maximized when the volume of the complex “pyramid” is maximized. Each additional flight adds costs, including those in the form of decreased land value due to noise. Not all flights are equal in this regard. Night flights may be more disturbing than weekday flights while flights carrying vacationers or transfer passengers may deliver lower value to the region than those carrying passengers with newly-signed contracts generating employment for regional employees.

The social cost of air traffic at Heathrow, for example, have become so high that some have advocated de-hubbing the airport and spinning off many leisure flights to other airports in order to improve both air service for regional residents and reduce the local disamenity. In that view, the gains to the region in terms of overall enjoyment brought about by another flight to a resort area is more than offset by the noise, congestions, and other costs created. Under pressure of similar concerns, Schiphol is increasingly focusing on the quality of its air network, emphasizing business-oriented flights, and will likely spin off low-cost carrier leisure flights to smaller airports. In general, because some of the costs are externalized, airports have a diminished incentive to control them. Moreover, while the value of a given flight to the region may vary substantially, the fees collected by the airport for each flight do not necessarily vary in the same way, creating a second rift between regional interests and airport incentives.

Regions need to make decisions about air service needs and thus about land use and airport capacity but they do so with inadequate tools. Stronger tools would require that difficult valuation issues, outlined here, be addressed. In the absence of robust measures, spurious information is bandied about and air transportation decisions often made largely on the basis of the relative strength of political representation.

UNDER ONE ROOF: SCHIPHOL AS A NEW-STYLE PUBLIC CORPORATION

The very diverse aeronautical and non-aeronautical business activities undertaken at and surrounding the Amsterdam airport, including terminal retail, passenger services, and real estate development, are often conducted by the Schiphol organization. There are three main reasons for consolidating operational tasks under one organizational roof. First, doing so provides a mechanism for close coordination and efficiency. An ongoing reshuffling of tasks among airlines, airports, ground service providers, and others is likely resulting improved market segmentation and supplier operations. However, the proposal at one European airport to locate a privately-operated terminal on land adjacent to the airfield and allow airlines to choose whether to use the airport's terminal or the alternative suggests the degree of organizational unbundling which may be possible.

A second motivation for inclusion is financial. Assembling diverse activities under one organizational umbrella allows for multiproduct pricing policies. These, much as the classic "razors" and "blades" example, can be effective if consumers are more sensitive to some costs than others. Such policies can achieve a degree of lock in. Perhaps the most straightforward application of pricing policy at airports may be the potential for non-aeronautical revenues to subsidize landing fees at single till airports, thereby locking airlines in to a particular airport. Schiphol, and many other airports, operate under a dual till system which keeps aeronautical and non-aeronautical accounts separate. The potential for cross-subsidization still exist but are less direct.

Revenue diversification provides another potential motivation for activity bundling. Airports are capital-intensive and commercial aviation demand is cyclical, leading to an inherent tension between aeronautical revenue streams and financial obligations. Incomes which are unrelated to aviation have the potential to smooth the sometimes abrupt boom and bust cycles of aeronautical revenues.

The turbulent business environment in which airports need to operate produce a third motivation to bundle activities. The common management may help coordinate closely-related activities and may help fulfil financial goals but the expansive strategy also helps the Schiphol organization gain a measure of control over its operating environment. Therefore these actions need to be seen in the context of broad business strategy.

Schiphol's organizational development and strategy, like other airports in Europe, has followed a broader pattern common to many public enterprises in the expanding European Union and, to differing degrees, elsewhere. "In Europe, public enterprises have gone through a quick revolution which has made them regional and global players, particularly in infrastructure development and management (Lane, 2002)." Schiphol's strategy is partly a response to the internal "technology" of service delivery, partly to the operating environment, partly to cultural fashion, and possibly partly to internal entrepreneurship.

The prevalent strategies are typical market power seeking behaviors, horizontal and allowable vertical integration, in pursuit of additional revenue or, mainly, more stable revenue. For Schiphol, these strategies include vertical integration through investment in

*WHEN THE SHOE DOESN'T QUITE FIT: REGULATING LARGE COMMERCIAL
AIRPORTS WITH EXPANDING ROLES
APPOLD, Stephen; BAKER, Douglas*

services and on and off-airport real estate. Following a pattern seen among European utility providers, Schiphol has pursued horizontal integration by developed holdings in, if not outright ownership of related other airports, including nearby Rotterdam, Lelystad, and Eindhoven airports then cross-holdings with Aeroports de Paris following the KLM-Air France merger. Schiphol has also invested in feeder airports, such as in Terminal 4 at Kennedy airport (40 percent ownership). These investments allow partial leverage over regional competitor airports and over complementary airports. Schiphol also holds a 19 percent interest in Brisbane airport which is essentially a portfolio investment allowing it to earn a return on accumulated management expertise. Like other public enterprises cum public corporations, Schiphol, and many other airports, engages in aggressive advertising and branding campaigns to communicate a certain quality to preferred customer segments.

Other airport organizations follow similar strategies, including Fraport, BAA, and Macquarie. Schiphol's organizational strategy is also mirrored by that of the Dutch Railroad, which is a private firm whose shares are entirely owned by the national government. Similar to Schiphol Real Estate and Schiphol area Development Corporation, NS Poort, the railroad's real estate arm, also develops stations and buildings near railroad stations, including public transportation hubs, office buildings, and residences. NS Poort also develops and manages station terminal retail facilities in order to protect their core business by preventing blight which might discourage travellers and possibly attract end destinations to station areas, improving ridership. The railway also participates in the management of railways overseas.

The competitive strategies employed by European infrastructure providers have been facilitated by a conscious choice of governance mechanism: a joint-stock company of which government entities are key, in Schiphol's case only, equity owners. The Schiphol Group, the airport's parent, is owned by the Dutch Ministry of Finance (75.8 percent) and the municipalities of Amsterdam (21.8 percent) and Rotterdam (2.4 percent). The transformation of public enterprises into public corporations has many causes. From a legal point of view corporatization is more nimble because capital investment and operating decisions are internalized to a greater degree than is the case with "public enterprises" which often need political approval for even relatively minor decisions. This organizational form promises increased operational efficiency.

The shift has been also been facilitated by changes in European Union regulations promoting a "level playing field" for competition among European firms including, increasingly, infrastructure providers. As national and public enterprises were incorporated into a common European framework, the tendency has been to adopt a common legal and institutional form with pre-existing legal and cultural legitimacy. The "public corporation" variant of the joint-stock company has become almost universal among infrastructure providers in Western Europe. Aside from such considerations, that form has a clear mission: earning a financial return with an obligation to maintain capital which is generally audited annually.

Politics and public administration provided an additional impetus. Perhaps public finance concerns were chief among them, with relief for public borrowing. In addition, public enterprises are mixes between politics and business and the mix often led to a predominance of the former. Whether for employees or contractors, job creation and

WHEN THE SHOE DOESN'T QUITE FIT: REGULATING LARGE COMMERCIAL AIRPORTS WITH EXPANDING ROLES
APPOLD, Stephen; BAKER, Douglas

patronage are often intertwined. Like public employment or government contracts in many cases, at some airports (not necessarily Schiphol), jobs and contracts are regarded as political sinecures. As government resources became scarcer, the size of the public enterprises grew, and the political value of the coalitions supporting public enterprises decreased, the form of organization created was likely to change.

The effect of corporatization on service delivery across industries has been ambiguous. In some industries, such as telecommunications, most observers judge the shift from public enterprise to public corporation to be a success while, in other cases, such as postal delivery, the case is less clear. Deutsche Post is now a global delivery giant. That hasn't necessarily improved German mail delivery. The difference in the success of corporatization and other institutional changes in improving services to end consumers may hinge on the nature of technological change among industries. Telecommunications, where the institutional changes have been frequently judged to be successful, experienced the development of disruptive technologies resulting in dramatic shifts in service delivery and patterns of end consumer use. Mail delivery has experienced continual incremental process innovations but no significant technological disruptions. In those cases, the track record of institutional and organizational change has been more ambiguous. Airports may more closely approximate the latter in that technological change in the aviation sector tends to be incremental rather than disruptive.

The effect of activity bundling on financial performance has also been ambiguous. Traffic at Schiphol has declined significantly since 2007. In 2009, Schiphol handled 43.5 million passengers and 1.3 million tons of cargo. That was a decrease of almost nine percent and of almost 19 percent for passengers and cargo, respectively, from 2007 levels. Much of the decline is likely due to the state of the economy but part of the passenger decline may be attributed to a passenger tax (since rescinded) which sent some passengers scurrying to airports in nearby countries. One of the motivations for airports to engage in generating non-aeronautical revenues is to counter-balance downturns in revenues due to temporary traffic declines. Yet the opposite has occurred in the Schiphol case, non-aeronautical revenues declined by approximately 15 percent and profits fell even more in the first half of 2009 compared to the same period a year earlier while aeronautical revenues actually increased because of increased charges to airlines. Schiphol earned a profit in 2009 but property investments resulted in a €795,000 loss. The efficacy of airport revenue diversification strategies is unclear.

Regions need to coordinate diverse activities on and off airports. Market, hierarchy, and network forms can be observed across sectors under similar circumstances (Williamson, 2000). Opinions about which is most appropriate in particular circumstances may be determined by patterns of recent success, as can be seen in the evolving character of the automobile industry. The impact of recent organizational changes at European airports have had ambiguous impacts on service delivery and on financial performance. At the same time, the partial separation of government and airport through corporatization has loosened, for good and ill, the levers of governance control, which may be counteracted by a system of direct or indirect oversight.

MANAGERS GONE WILD: COUNTERACTING MANAGERIALISM AND REGULATORY CAPTURE

On June 27, 2006, the upper house of the Dutch parliament approved the Aviation Act which included the economic regulation necessary for a privatized Schiphol. Privatization plans had been active since at least late 2000 when the sale of the stock in Schiphol Airport was predicted to net more than \$2 billion. The lower parliamentary house had approved the needed legislation a year earlier. With final approval from the airport's major stockholder, the only remaining obstacle to privatization was the assent of a minority stockholder, the City of Amsterdam. Two days after the June 2006 action, Standard and Poors revised its credit rating for the Dutch airport downward, from AA- Stable to AA- Negative, citing concerns about management's aims for a "more aggressive" capital structure. In hindsight, we know that in general many of the highly leveraged investments of the time were unwise and have lost both lender and shareholder value, helping to bring about the current ongoing economic crisis. One of the regulatory attractions of privatization is that it should impose the discipline of the market on unruly managers. Yet the fear of the credit analysts was that it would do the opposite.

Institutional economists argue that, if complete contracts for performance could be written, the form of governance would not have an impact on performance. That is, if performance could be specified into identifiable quantitative metrics and all business and operating contingencies foreseen, organizational form and governance would not be a salient feature in performance. Such contracts cannot often be written. Moreover, the required conduct and desired performance frequently cannot be adequately measured. Managerialism arises when the rewards to key decision-makers are more closely tied to the size of their total budgets than to the efficiency with which their organizations perform their missions. It has its root in the measurement and control issues identified above. If regional benefits and costs were easily measured, managers would have little ability to misdirect funds and organizational efforts.

Managers are charged with protecting the interest of their stakeholders. That is, they are supposed to act in accordance with the wishes of the people they represent. The complexity of writing complete rules of behavior and the difficulty of observing the behavior, often termed monitoring costs, sometimes gives managers the opportunity to act independently of the public's wishes. In such cases, it doesn't matter whether the managers are overseeing a unit of government or a private firm performing a public function. Nor does it matter whether the managers are in charge of day-to-day operations or regulators responsible for broad strategic direction. The effect is the same; organizational slack is created.

Slack allows managers at all levels discretion in their actions. The amount of slack is determined by the difficulty in obtaining relevant information. For the most part, the costs outweigh the demand for information. Most managerial issues are complex and the perceived gains from involvement are often seen to be small. Only a few issues garner widespread attention, either internally or externally, by the public. The difficulty of monitoring and the differences in interest make it possible for special interests with direct interests in air

*WHEN THE SHOE DOESN'T QUITE FIT: REGULATING LARGE COMMERCIAL
AIRPORTS WITH EXPANDING ROLES
APPOLD, Stephen; BAKER, Douglas*

transportation to exert undue influence by forming an often unspoken coalition with airport overseers or managers.

Although not universal, managerialism and regulatory capture is sufficiently common that many economic theorists simply assume that it takes place (e.g., Downs, 1957). Correspondingly, privatization – a market-based form of organizational control – is often assumed to solve such governance issues but, as illustrated above, that is not necessarily so. Even in the cases where relevant information and effective levers of control are absent, managerialism and regulatory capture are only sometimes evident. Our puzzle is explaining why.

When public managers have discretion, they can act in one of two general ways ((Levine and Forence, 1990). They could act in accordance with what they believe is in the public interest. Such “other-regarding” actions may or may not actually be aligned with what the public would choose for itself if interests could be adequately communicated and aggregated. In the absence of adequate information about the public interest, such behavior is necessarily ideologically driven and may come about because the regulator is willing to forgo the possible benefits of behaving otherwise or as a form of political entrepreneurialism – an investment in the hope of an uncertain payoff. U.S. airline deregulation in the late 1970s is said to have resulted from a combination of these types of behavior. There was little public clamor for change.

Alternatively, managers, particularly upper management and external regulators, could allow themselves to be swayed by special interests. Such self-regarding behavior may result in increased income or greater longevity in office. As in private corporations, regulators, such as members of airport authorities, may owe their position to those being managed. Other managers hope for second careers after public service. Special interests are those with a vested interest in the outcomes of the regulatory process. In that case, the regulators have been “captured” by those being regulated.

Airport expansion projects and the contracting involved are said to not infrequently be sources of informal or indirect transfers to well-placed public employees. The same may hold for airport concession contracts. A “pay to play” arrangement is not unheard of in public contracting in general. Airports would not be excepted and the relationship between political power, patronage, and airport contracts has been documented for Denver and Atlanta (Dempsey, Goetz, and Szyliowicz, 1997).

To be sure, ascertaining the true public interest is an uncertain process. Regulators sometimes complain that “everyone that comes before them lays claim to the public interest, even though the positions are often diametrically opposed (Haar, 2008: 479).” A proliferation of interest groups may sometimes bring issues into sharper focus, as has happened with the debate surrounding Heathrow’s expansion, but increases the possibility that the quality of representation will unduly affect regulatory outcomes. In general, end consumers are often the least well-organized and least well-represented.

External special interests may find allies in a new generation of managers, oriented towards financial, rather than service, goals who see corporatization and privatization as a route to higher salaries and as a means to use infrastructure as a financial cash cow in order to

*WHEN THE SHOE DOESN'T QUITE FIT: REGULATING LARGE COMMERCIAL
AIRPORTS WITH EXPANDING ROLES
APPOLD, Stephen; BAKER, Douglas*

move into higher profit industries (Haar, 2008: 479). The development of Vivendi SA out of Compagnie Générale des Eaux, a French water company founded by the decree of Napoleon III in 1853, which expanded into other public services and then became a media conglomerate has provided a business template for public firms in the new environment. While a textbook case of successful public sector entrepreneurialism, the benefit of Vivendi's strategy to its original infrastructure customers has been questionable. The company spun off its original core infrastructure businesses in 2000. That sort of experience may encourage European regulators to discourage portfolio investments by infrastructure providers in the future.

There is no known solution to managerialism and regulatory capture. While some claim that a profit motive which can help organizations root out inefficiencies and perform better is an adequate response to the governance issues outlined above, others have claimed that efficiency gains are limited and as organizations approach a production "frontier," they will unavoidably look to gaining market power as a source of further advantage. Two suggestions address the problem of divergent public and manager interests through personnel selection. A variant of March and Olsen's "garbage can" model recommends alternating aggressive and conservative managers across layers of an organizational hierarchy in order to structure the conflicts among them to approximate the public interest (Padgett, 1980). Jameson Doig has suggested that large public infrastructure be managed by public corporations, which are sufficiently isolated from immediate political demands on operating decisions. Recognizing the inevitability of incomplete contracts, he also recommends that top managers be selected on technical competency but also on the basis of socialization into a strong spirit of public service (Doig, 2001). That is, he suggests selecting personnel for an ideology of public service. During a recent conversation about a U.S. airport, one informant impatiently exclaimed, "[Name of city] has a great airport because they have [name of airport manager]." That manager has a reputation for being both effective and independent from those who should be answered to. The informant's statement may be true but the personality of the manager is a thin defense of the public interest. This is another instance of where the regulatory shoe doesn't quite fit.

COMMAND AND CONTROL: PUBLIC LAW AND PRIVATE ENTERPRISES

Schiphol's flirtation with privatization highlights several legal aspects of governance issues. Privatization of infrastructure, such as airports, implies a reduced role for direct government control by fiat and an expanded role for indirect government regulation by rule of law. Two legal governance issues are central in privatized airports. First, the focus on protecting public interest expands to include an explicit recognition of protecting competing providers and regions from unfair competition. Airports hold partial spatial monopolies and, whether public or private, may enjoy regional subsidy. Schiphol's situation is complicated somewhat by the transition from national to European law. A related second concern is the need to clarify an ambiguous credit status. State-owned enterprises, infrastructure providers, and other firms with public missions, including several Asian state-owned enterprises and U.S. mortgage finance companies, sometimes enjoy an implicit government backing – even when

*WHEN THE SHOE DOESN'T QUITE FIT: REGULATING LARGE COMMERCIAL
AIRPORTS WITH EXPANDING ROLES
APPOLD, Stephen; BAKER, Douglas*

not explicitly stated – reducing capital costs which creates an unfair advantage over firms without such assumed backing. Both concerns center on the diminished capacity of markets to act as effective control mechanisms.

Commercial airports are often thought to need external regulation because they are in a subset of a general class of industries “where structural and operational characteristics give them the added heft of 1) significant economies of scale, scope, and joint production, 2) provision of services to readily differentiated markets exhibiting different elasticities of demand, 3) an imperative to operate at high load, diversity, and capacity factors, and 4) important common and joint costs (Bromley, 1995)” These characteristics may only apply to a portion of an industry, as in the case of electricity generation and distribution, cited above. Airports, like many other forms of infrastructure, require large capital investments. Despite some discussion about the limitations of economies of scale in airport operation, those characteristics fit airports quite well. The construction of runways, terminals, and other facilities incurs large debts which are best repaid by keeping usage high and steady, possibly by sharing costs among different types of users.⁸

Viewing airports as monopolies does not imply that there is no competition or that airports do not operate in environments which contain threats. Airports compete in three important ways. Airports sometimes compete for hub business as do, most famously, Singapore, Kuala Lumpur, and Bangkok airports. As suggested above, European hubs compete with each other for transfer passengers. Some airports need to compete for origin-destination traffic at the fringes of their catchment areas and when they are part of a multi-airport region as do, most noisily, Dallas-Fort Worth Airport and Love Field. As suggested above, Dutch travelers reacted quickly to a recent airport tax by patronizing other airports. In addition, airports are a key component of a value chain, aviation, which must compete with other modes of travel for a large portion of its business. Of course, potential travelers could also decide to stay at home – which is the classic reaction in monopoly markets – leading to the “market failure” of sub-optimal quantity and price of services, which is the primary governance issue. In addition, airports, as natural monopolies, as outlined above, sometimes seek to augment their market power. Moreover, they react strategically to the actions of specific actors including the airlines which may or may not serve them and other airports which could compete with or complement their services, rather than to a general market.

There are several legal/institutional responses to the market failures brought on by a natural monopoly which vary by sector, cross-nationally, and over time. Most broadly, the options are public ownership, price and quality regulation, the franchising of monopoly rights, and the injection of competition. In the U.S., regulated private enterprise is sometimes held to be the most common response while the public enterprise is said to have been more common in continental Western Europe (Lane, 2002). Historically, there has been a good deal of movement between both forms in both places over the past century with the public enterprise gaining greater acceptance for infrastructure provision in Europe after the Second

⁸ From the standpoint of efficient capital investment, an airline hub combined with a package express hub, such as that found at Memphis airport, is a nearly ideal combination. Passenger and belly freight service occupy the runways by day and evening while freighters and express flights use the same facilities by night

*WHEN THE SHOE DOESN'T QUITE FIT: REGULATING LARGE COMMERCIAL
AIRPORTS WITH EXPANDING ROLES
APPOLD, Stephen; BAKER, Douglas*

World War.⁹ Ironically, the “public enterprise” model of airports is most firmly entrenched in the U.S. So far, no major commercial airport has been successfully privatized in the U.S. despite a decade-old privatization effort led by the Federal Aviation Administration.¹⁰

Because public enterprises are charged with advancing public interest, as difficult as that may be to define in practice, they are sometimes subject to different legal constraints than private firms. Public enterprises often have some form of recognition in public law from “statutory corporatization” to the constitutional acknowledgement of “kommunale Daseinsvorsorge” in Germany where diverse infrastructural activities are sometimes combined under the management of a single organization. The concept of public interest is also codified in English common law and found in U.S. court decisions. In such cases, the judgment is that certain industries, because of their essential nature and the presence of market power should not be left to the unregulated market.

Public law differs from private law in that in the former, the state seeks to develop or encourage behavior which would not occur without its intervention. Public law therefore implies control by a superior, that is, a directive function. Public law is often enforced by the state, implying fines, rather than settlements. Finally, public law is, in principle, centralized. In contrast, private law has a facilitative function. It is a set of formalized arrangements (rules) to help individuals and groups pursue their own welfare goals. The constraints imposed are intended to protect partners in exchanges. As public enterprises are transformed into public corporations and as some public functions are privatized, that is, as private corporations take over the management and ownership of infrastructure, a legal grey area is often entered. This is another area in which the shoe of governance doesn't quite fit the institutions of service provision.

The process of shifting ownership and management is sometimes termed “deregulation” but that is a misnomer. A change in the organization of the management of infrastructure has implied a change in the instruments of regulation, sometimes for the better. Across countries, the privatization of the leading public utilities has resulted in the creation of new, sometimes elaborate, regulatory structures (Ogus, 1994). These regulatory governance structures can sometimes improve both governance and organizational performance because they specify, in greater detail than had been done in the past under the direct supervision of government by fiat, the public interest performance criteria, and the incentives and deterrents to particular behaviors.

The legal institutions governing privately owned airports are still in the process of evolution. Credible governance institutions are needed in order to provide confidence to the public, operators, and investors (through stockholdings in private firms operating airports or the purchase of public finance bonds backed by airport revenues) that commitments will be

⁹ With respect to public utilities the options for provision include self-provision (as in the case where households dispose of household waste on their own property), associational provision (as in the case where home owners band together to purchase waste removal), private provision of public utilities (as in the case where a unit of government hires a private firm to remove waste using publicly-collected funds) and public provision of public utilities (as in the case where a unit of government uses its own employees firm to remove waste using publicly-collected funds).

¹⁰ Much of U.S. airport service delivery is out-sourced to private firms, so that some argue that there is little left to privatize (de Neufville, 1999).

*WHEN THE SHOE DOESN'T QUITE FIT: REGULATING LARGE COMMERCIAL
AIRPORTS WITH EXPANDING ROLES
APPOLD, Stephen; BAKER, Douglas*

honored. Three main elements of legal-institutional design are 1) the regulatory mechanism, 2) the existence of an independent, economically autonomous, well-funded and technically qualified regulatory agency, and 3) accountability mechanisms to prevent favoritism. The two main issues in defining a transparent regulatory process are the institutions to which the regulator is accountable and the set of mechanisms through which accountability takes place (Public Utility Research Center, 2010).

Nations which have been or are in the process of privatizing their airports have had to design their regulatory institutions as the transition occurs. This process is continuing in Australia after a decade of experience. Tellingly, removing airports from direct government control and codifying regulatory procedures has arguably provided an increased level of protection to airport neighbors with respect to noise and airport expansion (Freestone, 2009). Political control of public airports is often uncodified and haphazard. Experience with the temporary privatization of airport management at Indianapolis Airport in the U.S. suggests that private operators can be more responsive than public managers to citizen concerns.

Despite the positive and negative assertions about privatization, airport privatization has had ambiguous impacts on service delivery. In some cases, privatization appears to have been very successful. In other cases, localities buy their airports back at great cost. In many, the changes experienced are nuanced. In the U.S., the great hopes for airport privatization have not been realized. Chicago Midway's privatization process fell through after being approved at a significantly lower price than advocates had predicted. The privatization of the management of the Indianapolis passenger terminal resulted in service improvements but insufficient rewards for the contractor, BAA.

The reasons for the lackluster performance of privatization in the U.S. are complex but two factors stand out. First, airports are "cleaned up" for sale. Excess employees are shed and contracts with service and goods providers renegotiated so that the airport would make an attractive investment. The public body generally absorbs the restructuring costs. Once that process is complete, there may be little room for improvement. Second, as in the case of Midway, airlines and labor unions need to approve of the privatization process. Such approval has included guarantees of rate and employment stability.

Geography is also an important factor affecting the performance of privatized airports. Privatization did little to increase traffic at Stewart Airport north of New York City. The airport's catchment area doesn't contain a sufficiently large market to attract more than marginal service. Airport management can't change that. Similarly, Alliance Texas has been a successful airport-linked real estate development. Alliance California is too remote to be attractive to shippers.

Whether Schiphol's business strategies will survive is unknown. Heathrow's owner, BAA which is in turn owned by Grupo Ferrovial a Spanish infrastructure firm, is in a continuing dispute about the need to divest Gatwick and Stansted airports, among others, with the UK Competition Commission. Schiphol Group and other airport owners could face similar orders diminishing horizontal integration in the future. As a form of vertical integration, the entry of the airport into retail and real estate development may also be subject to regulation and possibly breakup much as electricity generation has become increasingly decoupled from electricity distribution. The European Union has in fact been more aggressive at

*WHEN THE SHOE DOESN'T QUITE FIT: REGULATING LARGE COMMERCIAL
AIRPORTS WITH EXPANDING ROLES
APPOLD, Stephen; BAKER, Douglas*

preventing and disbanding vertical than horizontal integration. It would not be surprising if Schiphol and other airports came under pressure to divest themselves of real estate and retail activities in the future unless a clear case for operational synergies can be made.

After years of consideration, the Dutch decided that the promise of privatization wasn't worth the risk. Experience elsewhere suggests that the operational benefits of privatization may be equaled by corporatization and that the former is the product of a shifting political coalition as much as a search for efficiency. The primary governance benefit of airport privatization may be external. Privatization provides the need for codified regulation with enforcement incentives. In the absence of such incentives, publicly-owned airports may be no stronger at protecting the public than an unregulated private firm.

BEYOND THE FENCE: AIRPORT EXTERNALITIES FOR GOOD OR ILL

Airports generate both positive and negative economic externalities. These pose difficult governance issues in any case but privatization adds another degree of complexity because in collective goods production individual contribution is nearly impossible to determine and because private airports almost inevitably operate with a high degree of government protection. In addition, the struggle to claim positive externalities while taking distance from negative ones is heightened. We begin with a brief overview of the place of Schiphol within the Dutch spatial planning process before discussing governance issues surrounding positive and then negative externalities.

Dutch law requires that the national government be involved in spatial planning. National government involvement means that economic development, as well as amenity, considerations are given full hearing. Schiphol receives comprehensive consideration in Dutch national spatial policy (Nota Ruimte) and the National Spatial Framework (Nationale Ruimtelijke Hoofdstructuur) with a clear statement that Schiphol must be allowed to grow in its current location until at least 2030. In contrast to other situations, Dutch spatial policy is integrated with mobility policy (Nota Mobiliteit) and regional economic policy (Gebiedsgerichte Economische Perspectieven). The implication is that ground transportation can be effectively coordinated with airport capacity enhancement and with land use. Moreover, land use planning is integrated with economic policy. The latest spatial policy explicitly states that the national government should transform spatial planning into spatial development with the central aim of strengthening (or at least not harming) the international competitive position of the Netherlands. Consequently, Schiphol is accorded a key position in regional planning (e.g., Randstad 2040 – Startnotitie).

That level of coordination and the societal capacity for collective action likely made the Zuidas development on the south side of Amsterdam, discussed above, as successful as it has been. The office development was coordinated with new housing development, in the directly linked Almere residential growth center and elsewhere, and with the national rail and highway transportation network, allowing the total constellation of investments to compete with alternative sites in London, Paris, and Frankfurt. It is unlikely that a lower level of

*WHEN THE SHOE DOESN'T QUITE FIT: REGULATING LARGE COMMERCIAL
AIRPORTS WITH EXPANDING ROLES
APPOLD, Stephen; BAKER, Douglas*

government would be able to support such a far-ranging strategy or be able to bring the level of resources required for coordinated infrastructure investment to bear.

Despite the assessment of some Dutch policy observers that coordination in the Amsterdam airport region was as good as non-existent, a new crescent of employment centers between Hoofddorp to the southwest of the airport and continuing to encircle much of the Amsterdam inner city now exists, in large part due to government involvement and strict land use controls.

An on-going dispute between Schiphol and Chipsol, a private developer, highlights the inadequacy of land use regulations concerning the capture of positive external real estate value in the airport area (suggested in Figure 3). This dispute has reached the courts and the Dutch Parliament. Chipsol, which first planned an airport city for the Schiphol area during the 1980s and is most likely the originator of the idea in the Netherlands, has been a major developer of airport area real estate and, aside from Schiphol, the largest airport area land owner.¹¹ Schiphol, which helped form the Schiphol Area Development Corporation explicitly to participate in off-airport real estate ventures, is now considering developing the same area itself. Such conflicts between airports as developers and private developers are not uncommon around airports internationally. European Union policy stresses a need for “a level playing field” among firms but it is not clear whether existing land development governance institutions can guarantee that around airports, given that airports act as both public and private parties.

While the pattern of development surrounding Schiphol reveals that value has been created, it is unclear how much of that value can be directly attributed to the airport. Successful airport cities appear to be at least as dependent upon ground transportation, highways and especially trains, as they are upon airports. A metropolitan wide land value model will help reduce the bounds of uncertainty but given that most journeys neither begin nor end at airports and given that ground and air transportation are components of the same value chain, it may be impossible to separate out the unique contributions of each participant. It is therefore unclear how much of the value created ought to be captured by the airport – and how much by ground transportation infrastructure providers. When each provider is a branch of government, the issue of value allocation is less salient than when one or more provider is a private firm, in part, because the government can recoup part of the investment by taxing the resulting increased economic well-being.

The most commonly contested airport area negative externality is aircraft noise. The governance of airport noise differs from the regulation negative externalities of other types of infrastructure. Sewage treatment plants produce odors. Highways increase the amount of impervious surfaces, exacerbating runoff problems. Electricity generation often produces smoke and pollution. The regulation of these externalities is often firmly rooted in the best available, even if imperfect, expert scientific knowledge.

In contrast, the concepts of civic republicanism and citizen involvement appear to be firmly entrenched in Schiphol's myriad of airport regional councils which concern themselves most directly with aircraft noise. The *modus operandi* appears to be that the sharing of

¹¹ Then existing literature on the phenomenon included Conway (1980; 1993).

*WHEN THE SHOE DOESN'T QUITE FIT: REGULATING LARGE COMMERCIAL
AIRPORTS WITH EXPANDING ROLES
APPOLD, Stephen; BAKER, Douglas*

information about often unilaterally drawn up airport plans and discussion of views will lead to a compromise among interests, resolving all issues. These regulatory bodies operate on information without incentives. The operation of such councils is in stark contrast to the rate commissions and other bodies regulating other types of public infrastructure and their externalities which can often administer significant incentives. The regulation of airport noise also contrasts sharply with that of aeronautical charges at airports.

Not only Schiphol but many large airports, particularly in Germany, have institutionalized citizen discussion forums. In Schiphol's case, the Commission for Regional Discussion Schiphol (Commissie Regionaal Overleg Luchthaven Schiphol: CROS) which consists of representatives from the air transport sector, regional government, and citizens is one of the prime bodies. Schiphol Airport, the Dutch air traffic control organization and the three airlines, KLM, Transavia, and Martinair, represent the air transport industry. Three provinces, North Holland, South Holland, and Utrecht, and 26 municipalities send government representatives. There is also one citizen representative for each municipality. Because some of the municipalities are distant from Schiphol, the commission is sub-divided into nine geographic clusters. The commission provides an on-going forum to discuss safety, noise, pollution, and other issues but it also provides a framework for broader conversations about the development of the airport region. CROS, with no more than consultative powers, appears to operate as much as a mechanism by which Schiphol seeks to reach out and coopt its environment as an instrument of regulation in the public interest.

The unclear and evolving legal basis for possible intervention is a critical stumbling block to further strengthening of noise regulation. A common approach to airport noise is to assume that the airport interferes with residential enjoyment and that therefore noise needs to be limited. That approach is consonant with the "polluter pays" principle. However, as Coase (1960) pointed out in a, by now, classic example of a residence and a noxious factory, it is just as correct to claim that the residence interferes with the operation of the factory and that the factory performs a valued public service. In contrast, one strain of legal thought and case law, also used to protect farmers from encroaching suburbanization, claims that those who move towards nuisances, such as an airport, need to bear the burden of the annoyance they bring upon themselves. This governance rule makes intuitive sense yet that decision rule can lead to over-investment on the part of first movers to discourage second-movers and, therefore, inefficient land use (Pitchford and Snyder, 2003). One possible alternative is to favor those who *should have* come first (Wittman, 1980). That might imply that airports should have realized the desirability of land for residential development and need to bear the brunt of the burden. This is an evolving area of jurisprudence and governance institutions unavoidably don't quite fit.

The situation is different when airports attempt to expand. In the case of airport expansions, nearby residents are no longer coming to the nuisance but the nuisance is coming to them. Increased traffic works to decrease the value of residential property below what it would otherwise be even if a portion of that value is due to air connectivity. In that case, the governance decision rule can affect the possibility for airport expansion. With a Kaldor-Hicks based decision rule, if the benefits exceed the costs, which, as discussed above, are generally poorly measured, an expansion should go forward. That leaves open the messy decision about compensation because those directly affected by noise disamenity may not

*WHEN THE SHOE DOESN'T QUITE FIT: REGULATING LARGE COMMERCIAL
AIRPORTS WITH EXPANDING ROLES
APPOLD, Stephen; BAKER, Douglas*

be those who benefit most directly from improved air connectivity. This is the case for Heathrow where large numbers of people will be affected by additional traffic but others will directly benefit. With a Pareto based decision rule wherein no intervention is possible if anyone is made worse off, airport expansion becomes nearly impossible (Altshuler and Luberoff, 2003). The increased role of NIMBYism and of the prevalence Pareto based rules in public decision-making may be due to a lack of faith in adequate compensation for those bearing the burdens of collective improvements.

Schiphol's privatization plans of a few years ago heightened the tensions surrounding takings. A new runway was then, and now, under consideration. If approved, the government might have reserved land (barring owners from developing their property) for public use but allow a portion of the financial benefits there from go to a private firm. That would have placed the government in an ambiguous position which would have been ameliorated but not solved by careful specification of costs.

The governance of airport externalities could be placed on a firmer footing by improving the measurement of noise disamenity. Airport management has an incentive to interpret the costs of noise as being lower than they may be. On the other hand, some nearby land owners have an obvious incentive to overstate the case. This is the classic public goods problem identified by Paul Samuelson. Charles Tiebout suggested that, in local areas, people can "vote with their feet," thereby solving the problem of misrepresentation. That could be an effective strategy to addressing the problem if land markets were free and efficient – evidence suggests that they are not – and moving were costless – again, evidence suggests that it is not. A third factor also interferes with the usefulness of the Tiebout solution in airport expansions. All locations entail both advantages and disadvantages. Residents near existing airports will likely be disproportionately those who have a higher than average tolerance of airport noise. If that experience were applied to expansion areas, the costs imposed would be understated.

Despite the long history of aviation and airports in establishing key aspects of property law, Schiphol lacks a strong regulatory framework for dealing with the externalities of aircraft operations and of airport actions. In this regard almost all airports are similar to Schiphol. The most noteworthy aspect of Schiphol's external governance, and that of many other airports, is its informal and political nature. While, say, regulation of electricity generation or distribution almost certainly has elements of political participation, it is mainly a technical activity undertaken by experts. That is not the case with airports. While the environmental externalities generating by electricity generation plants are the subject of intense political discussion, the outcome of that discussion is codified into law and enforced by means of sometimes large incentives. In contrast, the incentives applied to Schiphol and other airports with respect to noise generation are cumbersome and not systematically applied across airports – even within a national jurisdiction.

Regulatory tools governing land use outside of safety and navigation zones are sometimes available but they are often too crude to fit needs. Airports frequently need local government acquiescence and permits for major capital investment programs, such as new runways and new terminals. These occasions arise infrequently but when they do "an all or nothing"

*WHEN THE SHOE DOESN'T QUITE FIT: REGULATING LARGE COMMERCIAL
AIRPORTS WITH EXPANDING ROLES
APPOLD, Stephen; BAKER, Douglas*

choice often emerges, leaving no one satisfied. At other times, the many regional councils established to handle noise complaints and other disputes have no meaningful power.

CONCLUSION

Air transportation is fundamental to regional welfare. Commercial aviation is important to the movement of goods, to leisure travel, and to the business travel which helps maximize regional income. In order to compete for jobs and regional economic benefit in the 21st century, regions need to coordinate air access, ground access, commercial land use, residential land use, recreational land use, and work force development.

Growing contemporary regions are often de facto alliances between an airline with a far-ranging network of flights, an airport that offers needed services at the best possible price, and a region with a highly-trained labor force. These regions often have developed economies based on producer services and the management of far-flung companies that are heavily reliant on passenger air travel for their operations. Serving as an airline hub generates a disproportionate passenger flow which, by assembling transfer traffic, supports additional flights and enhances a region's air accessibility. The passenger flows help airports generate non-aeronautical revenue through expanded retail operations and helps support on and, sometimes, off airport real estate development. Finally, these regions are making strides towards integrating air transport, ground transport, and land use. Air travel is fundamentally multi-modal and tied to land use decisions (Neutra, 1930).

Such coordination is becoming critical to holding and attracting firms. Because air access is critical or important to many contemporary corporate activities, the right facilities can attract firms that might otherwise locate elsewhere and hold those that would most prefer a particular region. The main advantages of a seamless system of air navigation, efficient airport, coordinated ground transportation and adapted land use are that regional firms receive an efficiency advantage and that advantage attracts the attention of firms searching for locations for new facilities.

Since the days of Le Corbusier, architects and planners have worked to adequately integrate air travel into urban planning. As airports take the lead in putting planning ideas into practice, serious governance shortcomings have become apparent. Airports, both the physical and organizational manifestations, are "agents" of regions in the struggle for competitiveness. As in all principal-agent relationships, the dangers of managerialism, including the development of airports for their own sake, are endemic. These are rooted in the absence of credible measures of air transportation's contribution to regional economies and to the loosening of the levers of control on behalf of the public interest and exacerbated by the inadequacy of existing legal and institutional structures to govern the divergence between public and private interests and to regulate positive and negative externalities. Therefore, addressing airport governance issues contributes to maximizing regional welfare.

*WHEN THE SHOE DOESN'T QUITE FIT: REGULATING LARGE COMMERCIAL
AIRPORTS WITH EXPANDING ROLES
APPOLD, Stephen; BAKER, Douglas*

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WHEN THE SHOE DOESN'T QUITE FIT: REGULATING LARGE COMMERCIAL AIRPORTS WITH EXPANDING ROLES
APPOLD, Stephen; BAKER, Douglas

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