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Economic Regulation of Airports: The case of Brussels Airport Company

Franziska Kupfer (corresponding author), Hilde Meersman, Tom Pauwels, Els Struyf, Eddy Van de Voorde and Thierry Vanellander

*Department of Transport and Regional Economics (TPR)
University of Antwerp
Prinsstraat 13
2000 Antwerp
Belgium*

E-mail of corresponding author: Franziska.kupfer@ua.ac.be

Tel. of corresponding author: +32 3 265 4187

Abstract

This paper considers the economic regulation of airports, with particular focus on the case of Brussels Airport Company (BAC). The foundation of the existing regulatory framework for BAC is called into question. At no point is BAC able to exert the kind market power normally associated with a 'natural monopoly'. As a matter of fact, there are no indications whatsoever that the company holds a natural monopoly. It is nonetheless argued that supervision of BAC is necessary, albeit under a revised regulation.

Highlights

- *The paper considers the economic regulation of airports, focusing on Brussels Airport Company.*
- *The foundation of the existing regulatory framework is called into question.*
- *There are no indications that Brussels Airport Company holds a natural monopoly.*
- *It is argued that supervision of BAC is necessary, albeit under a revised regulation.*

Keywords

Economic regulation, airports

1. Introduction

Introducing government regulation is economically legitimate if one or several instances of market failure are resulting in allocative inefficiency, inadequate cost control and bad investment decisions. Possible causes of market failure include excessive market power, the existence of asymmetric information, externalities¹ and public goods². From a technical perspective, however, regulation is approached differently. Lypczynski et al. [1] assert that government regulates “*particularly in cases where average costs tend to fall over the entire range of industry output; in other words, when the industry operates under cost conditions that give rise to a natural monopoly*”.³

Production by a single firm, without any competition, can result in lower unit costs than would be the case with production by several companies. This is the case when there are economies of scale and/or scope. In such situations, production by a single company is not only potentially cost efficient, it is also the only sustainable industrial structure.⁴

Often, a market with perfect competition is put forward as the ideal situation. Under such circumstances, firms will be stimulated to work cost efficiently, prices will be kept in check and output will increase. A company without competitors, by contrast, may be inclined to restrict output and to increase prices in order to realise a much larger profit than one might reasonably expect as a ‘normal’ return on capital. The purpose of regulation is to prevent such situations from occurring.

Insofar as government is concerned, it is a matter of minimising the likelihood of abuse of market power.⁵ When a natural monopoly does result in abuse of market power, several causes of action may be considered:

- proceeding to public ownership, which implies the granting of statutory rights to a single company;
- opening up of the affected market to competitors;
- the granting of a temporary monopoly through *franchising* following a bidding procedure.

Regulation is *de facto* intended to induce the natural monopolist to be cost efficient and to increase output to a level that maximises economic prosperity.

The key challenge in regulating is to incorporate a coherent set of incentives. If the regulator has complete knowledge of the economic parameters of the undertaking concerned, then he could demand that a specific output level is achieved. This output level would then be linked to a specific set of inputs, while the output would have to be sold at a fixed price. In reality, however, this knowledge is often lacking. In most cases, the regulator possesses partial knowledge at best. Therefore, a set of incentives may be devised to nudge the regulated company towards a socially optimal output level.

It follows that regulation should always be considered in its proper context. Hence it makes no sense to generalise. Starkie [2, p.64] puts it as follows: “*It is only when the market does not work well, when there is a clear case of natural monopoly and when regulation can reasonably be expected to improve matters that the regulatory option is worthwhile. Market imperfections alone are not a sufficient justification for intervention*”.⁶

This contribution deals with a possible adjustment to existing economic regulation in the airport industry, with focus on the case of the *Brussels Airport Company* (BAC). More specifically, it consid-

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¹ One speaks of externalities when a transaction generates benefits or costs for parties other than those who buy or sell, without forms of compensation.

² In the case of public goods, one cannot, for example, exclude anyone from using a given service, nor is there, in principle, any competition for the volume of services provided.

³ A natural monopoly implies that production can only proceed at the lowest possible average long-term cost if a single firm accounts for total industrial output. In such cases, the minimal efficient scale (MES) is equal to (or larger than) the total market size.

⁴ The railway industry is a case in point.

⁵ Market power as such is obviously not illegal. It is *abuse* of a dominant position that is contrary to antitrust regulation.

⁶ In this paper we follow the approach taken by Starkie [2]. As the purpose is to report on a case study, we do not contrast the views of different authors. Nonetheless, such a comparison would make for interesting future research.

ers the following aspects: the length of the regulation period; (adjusted) single till versus dual till; tuning of tariffs to those applied at a set of reference airports versus the use of a financial model; the distinction between regulated and non-regulated activities (i.e. the level of economic regulation) and the role of the economic regulator. The purpose is to investigate which type of regulation is most appropriate for *Brussels Airport Company*, taking into account the concepts of natural monopoly and market power.

Section 2 provides an overview of the various types of regulation. Section 3 illustrates and qualifies the notion of ‘market power’, and Section 4 conceptually defines the optimal level of regulation. In Section 5, the conceptual findings are applied to the case of BAC, and the aforementioned characteristics of the optimal level of regulation are determined. Section 6 concludes.

2. Types of regulation, pricing policy and unwanted side effects

Broadly speaking, there are two basic types of regulation: structural regulation and conduct regulation. Structural regulation focuses on the market structure, for example by splitting companies into complementary activities. Conduct regulation is designed to impact on the conduct of enterprises through measures such as price control. Additionally, a distinction can be made between ex-ante regulation, where the regulator takes the initiative with a view to preventing problems, and ex-post regulation, which comes into play after the filing of complaints and/or the occurrence of abuse.

All types of economic regulation are prone to specific distortions and undesired costs. Regulated companies may, for example, succeed in exerting influence on the regulator, a situation known as *regulatory capture*. The likelihood of regulatory capture can be minimised by making the regulatory framework sufficiently clear, consistent and transparent [1, p.638].

In practice, the following types of conduct regulation may be discerned:

- *Rate-of-return* regulation (cost-based regulation);
- *Price-cap* regulation (incentive regulation);
- *Revenue-sharing agreements*;
- *Monitoring*.

In what follows, each of these forms of regulation and their possible undesired or even perverse side effects are briefly considered.

Rate-of-return regulation. With rate-of-return regulation, the regulator allows the firm to set a price that covers the cost and a mark-up in order to achieve a profit. The inherent dangers of this system are clear to see. The regulated firm has few if any incentives to cut production costs, given that the rate of return is guaranteed and that any cost increase may be passed on to the consumers. The system also holds a danger of regulatory capture.

If the allowable rate of return is set inappropriately, over or underinvestment may ensue, a mechanism known as the Averch-Johnson Effect (see [3]): an excessively high rate of return will result in overinvestment, while an excessively low rate of return will induce underinvestment and cost saving, to the detriment of quality for example. Rate-of-return regulation is often perceived as highly problematic, as is it hard for the regulator to gauge the business capital and relevant costs. The question arises, for example, whether capital should be valued on a historical basis or on the basis of replacement value?

Price-cap regulation.⁷ Price-cap regulation imposes an upper limit on prices that firms may charge, with a correction for productivity gains. Cost savings must be passed on to the consumer in the shape of lower prices. Often a distinction is made between ‘pure’ and ‘hybrid’ price caps. ‘Pure’ price caps are set through benchmarking (i.e. based on what reference airports charge), while ‘hybrid’ price caps are based partially on the costs incurred by the regulated firm itself.

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⁷ For one of the first publications on price-cap regulation, see Littlechild [4].

In the short run, there is an incentive for the regulated firm to minimise cost. After all, it may be possible to increase profit through savings not anticipated by the regulator at the time of the most recent price adjustment. In the long term, the regulator will however be able to incorporate the cost-savings into the price, so that the regulated firm derives no benefit. This can, under particular circumstances, present a disincentive, as in the case of long-term investment in cost-saving technologies.⁸ Lypczynski [1, p. 640] among others refers in this context to the fact that, in some countries, price-cap regulation has resulted in long-term underinvestment in the infrastructure of network industries, such as railways, water supply and power generation.

Another possible perverse effect follows from the high capital costs involved in some types of infrastructure, which certainly holds for airports. A regulator will after all also want to ensure that an investment achieves a sufficiently high return, e.g. in order to convince investors to continue to finance the regulatory asset base. Furthermore, a private operator must be guaranteed a return that is high enough for that operator not only to exploit the existing infrastructure but also to invest in new capital projects.

This is where the notion of *weighted average cost of capital* (WACC) comes in. The WACC is calculated on the basis of debt and capital. A common danger is that the WACC is set either too high to ensure funding of the regulatory asset base or too low for the funding of other activities. The result is clear to see: excessive profits on the ownership of assets and an incentive to underinvest. As the WACC is set well above the cost of the debt, it is after all possible for investors to acquire firms and to subsequently replace assets with debt.

Revenue-sharing agreement. Under a revenue-sharing agreement, rates are allowed to evolve in accordance with passenger growth over a given period. The benefit of this system is that it guarantees stability under changing demand. The drawbacks are the limited incentives for cost reduction, the fact that revenues remain unchanged irrespective of output, and the system's tendency to lead to an inefficient price structure [6].

Monitoring. Under a monitoring system, the regulatory agency supervises, with the possibility of imposing punitive measures in the event of abuse of market power (e.g. excessively high tariffs). In this sense, monitoring facilitates the system of regulation. The actions of airports are watched closely. No tariffs are imposed, but the threat of sanctions must be credible. The independent regulator must have access to sufficient information and institutional backing. Also, the tasks of the regulator must be clearly defined [7].

As pointed out in the above analysis, regulation can sometimes generate unwanted or even perverse side-effects. Ultimately, one must weigh up imperfect competition against imperfect regulation [2, p.63]. As the balance between these two imperfect situations may shift, it is necessary to make regular assessments of the required degree of regulation.

In addition to the type of regulation applied, one also needs to consider the prevailing tariff policy. In this respect, a distinction can be made between the *dual till* and the *single till* approach. In the *single till* approach, revenues from commercial activities and concessions incorporated into total airport revenues, which provides insight in the residual revenue requirements. On this basis, one calculates the aeronautical charges. This approach introduces potential distortions: it affects the balance in investment incentives between commercial (i.e. non-aeronautical) and purely aeronautical activities and induces perverse price signals on congested airports. Alternatively, in the *dual till* approach, aeronautical charges are determined on the basis of the costs incurred in aeronautical activities. Again, there is a potential for distortion. How, for example, should one treat costs that are shared between commercial and airport-related activities? Which facilities may be deemed essential for providing aeronautical services?

Table 1 provides an overview of the types of regulation and pricing policy applied in selected airports within the European Union. There are some differences to be discerned, both in terms of the degree of independence of the regulator, the type of regulation applied and the underlying pricing princi-

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⁸ See among others Poort and Tieben [5].

ples. Most countries have no independent regulator. Moreover, the type of regulation applied is very diverse. Likewise, with regard to the pricing approach, there is a broad range of systems: from no specification to single till and dual till, with a variety of hybrid forms. The validity period of tariffs for regulated activities varies from country to country: five years in Belgium, France and the United Kingdom, four in Italy and one year in the Netherlands [8].

Table 1: Overview of regulation in EU Member States

<i>Country</i>	<i>Airport</i>	<i>Independent regulator</i>	<i>Type of regulation</i>	<i>Till type</i>
Austria	Vienna	Yes	Price cap with sliding scale	Dual till
Belgium	Brussels	No	Rate of return with yardstick elements	Single till, gradually introducing dual till
Czech Republic	Prague	No	Charges set by airport	<i>(Not defined)</i>
Estonia	Tallinn Ulemiste	No	Cost regulated	<i>(Not defined)</i>
Denmark	Copenhagen	No	Price cap	Dual till
Finland	Helsinki	No	No regulation, charges based on cost recovery	<i>(n.a.)</i>
France	Paris	Yes	Price cap	Adjusted single till
Germany	International airports	No	Price cap with sliding scale (HAM), revenue sharing (FRA, DUS) All other airports are cost plus regulated	Dual till in HAM and FRA All other single till
Greece	Athens	No	Airport sets own charges	Dual till
Hungary	Budapest, Ferihegy	Yes	Price cap	Dual till
Ireland	Dublin	Yes	Price cap revenue based	Single till
Italy	Rome	No	Airports set own charges	Dual till
Latvia	Riga	No	Set by government	<i>(Not defined)</i>
Lithuania	Vilnius	No	Set by government	<i>(Not defined)</i>
Malta	Malta International	No	Price cap	Dual till
The Netherlands	Amsterdam	Yes	Rate of return with weighted average cost of capital as asset base	Dual till
Norway	Oslo	No	Cost based	Single till
Poland	International airports	No	Set by government	<i>(Not defined)</i>
Portugal	ANA	Yes	Revenue based	Single till
Slovak Republic	Bratislava	No	Set by government	<i>(Not defined)</i>
Slovenia	Ljubljana	No	Set by government	<i>(Not defined)</i>
Spain	AENA	No	Cost based	Single till
Sweden	Stockholm	No	Price cap	Single till
Switzerland	Zürich, Geneva	No	No regulation	<i>(n.a.)</i>
United Kingdom	BAA	Yes	Price cap	Single till

Source: adapted from Gillen and Niemeier [9] and Australian Government Productivity Commission [10].

3. Qualification of the notion of ‘market power’

IATA asserts that most European airports are natural monopolies and associates this with inefficient service delivery [11]. ACI, on the other hand, argues that airports operate in a competitive marketplace that requires no regulation whatsoever [7].

The question arises whether, in the case of BAC, one can speak of market imperfections and/or a natural monopoly. And if not, then can one reasonably expect a regulator to be able to adjust or improve a free-market situation?

In what follows, we first consider whether BAC holds any form of monopoly. Different aspects come into play here. The geographical location of *Brussels Airport* is already suggestive of serious competitive pressure: it lies on the traffic axis between two other major airports, namely *Charles de Gaulle* (Paris) and *Schiphol* (Amsterdam), both of which are connected to, among other traffic infrastructure, a high-speed rail network.⁹ This rail network not only transports air passengers to and from the airports concerned, but it also increasingly offers modal competition to air travel, as it continues to expand across Europe and to develop into an increasingly efficient service. Additionally, *Brussels Airport* lies in a rectangle formed by the two aforementioned foreign airports and *Frankfurt* and *London Heathrow*, all four of which are important intercontinental hubs. Also, there is evidence of a concentration movement towards alliances among some of the airport customers, including Brussels Airlines, the principal home carrier. These alliances are focusing more and more strongly on connecting their services by means of hub airports, which is resulting in fierce competition between airports, lower fares and a relatively greater share of airport-related costs in the cost of the chain.¹⁰ Finally, there are the growing pressures of the further commercialisation of the airline industry.

Meanwhile, there has been growing evidence that airports provide a good example of the law of diminishing returns to scale, with the inputs of centrally located land serving as a fixed factor. Pels [12] found that a number of large European airports (Rome Fiumicino, Frankfurt, Munich and Zurich) all operated under diminishing returns to scale, while others (Amsterdam, Brussels, Manchester, Paris Orly and Stockholm) showed partial evidence that this was the case.¹¹

This has consequences for attempts at regulation. Tariffs above average costs need not be undesirable, even in cases where there is no evidence of runway or terminal congestion. Moreover, basing regulated prices on normal or acceptable rates of return on capital could lead to inefficiently low prices.

The above observations raise questions about the conventional view that the airport industry is an example of a natural monopoly, a sector that is incapable of sustaining competition and that must therefore be regulated. This perception is based on the conviction that growing airport capacity will result in declining long-term average costs. The empirical evidence suggests otherwise.

But even in the assumption of some market power, it is not self-evident that this power could be abused, raising concerns about dominance. For one thing, the market power of an airport is in any case restricted if the principal customer or alliance of customers controls a large share of traffic at that airport, especially in cases where that customer is able to easily transfer traffic to other, competing airports. Furthermore, potential transit passengers, who use Brussels Airport as a connection with other hub airports, tend to be very sensitive to different price-frequency combinations, as are provided by the various hub airports and the carriers operating there. Finally, it should be noted that airports com-

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⁹ Travel times between the city of Brussels and Schiphol vary between 2h10 by car and 1h32 by train (Thalys - from 29 euro one way) [13, 14]. The journey to Charles de Gaulle takes about 2h40 by car, while by train it takes between 1h15 (TGV - from 39 euro one way) and approximately 2h20 (Thalys - from 29 euro one way) [14, 15].

¹⁰ In this context, reference is often made to another form of market power, namely agglomeration benefits coupled with network externalities. Individual carriers are inextricably linked to a hub airport, so that it becomes harder for competing airports to attract carriers and passengers through price competition.

¹¹ Starkie [2, p.65] writes the following on this matter: “If there are diseconomies of scale in the airport business and the incumbent airport is large and operating at or near to capacity, there should be no barriers to prevent competitive entry. There must be barriers other than returns to scale that prevent, or make, entry difficult”.

pete strongly to attract low-cost and freight carriers, either as a departure or as a destination airport, or as an operational base.

In sum, BAC does not display the characteristics of a natural monopolist; in fact, there is sufficient competition in the market to conclude unequivocally that BAC does *not* hold a monopoly position¹². On this basis, there would appear to be no danger of market failure and hence there is no need for a regulator.

Moreover, there are important reasons to assume that, even if BAC were to possess market power, it would be unable to abuse it. Airports increasingly combine the exploitation of runways and terminals with an extensive commercial zone for retailing and with a concessions policy. This means that growing air traffic generates significant additional revenue and can thus boost overall profitability, on condition, that is, that the non-aeronautical revenues are sufficiently complementary with the aeronautical revenues.¹³ In other words, there is an incentive to bring revenues on the aeronautical side to a level where the marginal revenue of aeronautical pricing covers the marginal cost on the aeronautical side. Those prices will undoubtedly be lower than were the airport to exploit only runways and terminals.

So airports have good reason not to abuse their supposed market power, particularly under the following two conditions. Airport management must be motivated by the objectives of maximising profit, revenue and output. Moreover, the so-called location rents must be sufficiently high to justify the reduction in aeronautical revenue. All this will depend on a combination of factors, such as price elasticity, traveller expenditure on commercial purchases, and the operational margins in retailing at the airport. One may reasonably assume that the higher elasticity is, the greater the likelihood that an airport will reduce its tariffs with a view to boosting retail sales and ensuing profits.

4. What kind of regulation?

The traditional argument in favour of economic regulation of airports, i.e. that the airport industry is an example of a natural monopoly, is untenable. Indeed, it is no longer apparent that airports are an industry with declining costs.

So what other arguments might justify economic regulation in this field? The customary answer, as mentioned before, is the occurrence of market failure. A regulatory intervention for the purpose of introducing a correction is generally regarded as efficient, in the sense that the costs of intervening will be lower than the cost incurred through market failure. Possible forms of market failure are inadequate cost control, allocative inefficiency and over or underinvestment.

Again, though, no generalisation is possible. The market power of an airport will, for example, vary according to the market segment. Larger airports, such as hubs, may be expected to have some market power over so-called networked airlines, which aim expressly at achieving maximal benefits of scale and scope. BAC certainly does not belong to this category. There is minimal or even no market power vis-à-vis low-cost airlines, companies specialising in point-to-point services, and charter companies. Invariably, though, the market power of an airport will be largely determined by the presence of nearby competing airports. The likelihood of substitution is crucial, so that a case-by-case assessment is called for, including for BAC.

Authors such as Lypczynski [1, p.651] consider the notions of market failure and efficiency improvement as excessively normative. Starkie [2, p.68] argues that airports should be analysed in a more appropriate contextual framework, i.e. as an industry that is subject to imperfect and monopolistic competition in a spatial environment.

In the absence of market power and a natural monopoly, regulation would appear unnecessary. Yet there can be no doubt that some *monitoring* of BAC remains necessary in order to safeguard the ‘gen-

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¹² In relation to the notion of captive demand due to the presence of EU institutions in Brussels, it should be noted that only a relatively small proportion of travel via Brussels Airport is associated with those European institutions. Moreover, like other travellers, these individuals have the option to travel by alternative modes (e.g. rail) or via other airports.

¹³ For further clarification and argumentation see Kratzsch and Sieg [16].

eral good'.¹⁴ For that matter, European Directive 2009/12/EC on airport charges (which entered into force on 15 March 2009) explicitly prescribes that there should be an independent supervisory authority to safeguard the principles underlying the airport charging system (Article 11) and, more generally, to supervise the airports concerned (Article 12). This supervisory authority need not be sector-specific, and could also be a generic competition authority.

The question then becomes: what kind of supervision or regulation should one strive for? Is ex-ante regulation of BAC required or does it suffice to hold open the option of ex-post regulation combined with the possibility of ensuing intervention? There is an important consideration to be made here between the economic consequences of a degree of market power, insofar as present, and the potential distortions that a specific ex-ante regulation might entail. These distortions will depend on the type of regulation introduced. A classic example in this respect is the discussion regarding *single till* versus *dual till*.

Ex-ante economic regulation is quite complex and expensive. Moreover, it also presupposes that the negative economic consequences of abuse of market power are significant and sufficiently large to exceed the cost associated with possible distortions and of the regulation itself. This would appear to be out of the question in the case of BAC.

In this sense, we concur with Starkie [2, p.72], who asserts the following: “... *I would suggest that it is appropriate to start from the presumption that the airport monopoly can be handled satisfactorily within the context of ex-post regulation of conduct provided for by normal competition law; ex-ante economic regulation is probably unnecessary*”.

An important question in this context is whether airport competition can replace regulation. If competition between airports is not severe enough, a form of regulation is required. Here we concur with Niemeier [7, p.5]: “*Regulate less, but more effectively, with fair and democratic processes and institutions. Use a credible threat of regulation. Second, regulate and increase competitive forces. Implement simple price caps with strong incentives for cost savings and efficient pricing and investment.*”

5. Regulation of *Brussels Airport Company*¹⁵

Starting from the previously outlined theoretical framework of economic regulation, and taking due account of information obtained through in-depth interviewing of a number of relevant actors¹⁶, let us now consider in greater detail the desired duration of the regulated period, the transition to dual till, the determination of the tariff formula, the level of regulation, and the role of the economic regulator.

We also expressly take into account the European context, where an attempt has been made to draw up uniform EU-wide rules on airport charges coupled with a system of economic regulation. European Directive 2009/12/EC on airport charges came into effect on 15 March 2009. Its transposition into national law was to be concluded by 15 March 2011. The main requirements imposed by this Directive may be summarised as follows: regular consultation¹⁷ on airport charges between airport operators and airport user, transparency, non-discrimination, differentiation and independent supervision by a regulator.

In the Belgian context, there is an element of tension between the regulator and the other parties involved concerning the appropriate degree of regulation and the associated influence and market power: from a minimal level of regulation, i.e. a regulator who intervenes only in case of disagreement between airport operator and airlines, to a regulatory framework whereby the regulatory agency may intervene as it sees fit, at any given time.

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¹⁴ Niemeier [7] makes the following assertion: “The intensity of competition even in Europe is not strong enough to make regulation completely redundant. However, it is necessary to assess the forces of competition on a case-by-case basis.”

¹⁵ For some descriptive details of Brussels Airport, see Appendix.

¹⁶ The functionally competent cabinet of the State Secretary for Mobility, the Directorate-General for Air Transport, the Regulation Service, the management of BAC and a number of airline companies and ground-handlers.

¹⁷ The Directive mentions that “*Such consultation shall take place at least once a year, unless agreed otherwise in the latest consultation*”. In the Belgian case, this means once a year.

5.1 Duration of the regulated period

Under the present regulatory framework for BAC, charges are, as a rule, fixed for periods of five years. The question arises whether it is worthwhile to abandon this system in favour of a regulated period of one year, with charges that are fixed annually after consultation of the users and subject to approval by the economic regulator.¹⁸

Europe prescribes regular consultation on airport charges, whereby the regulator is supposed to monitor the price setting process. However, now the impression is created that the regulator acts on behalf of the market players, particularly the airlines.

As all parties stand to benefit from stability, a ‘graduated’ system is proposed. The starting-point consists of charges that are fixed for a five-year period, following negotiations between BAC and the airlines. Subsequently, annual consultation rounds of these parties are held. Previously agreed charges may be adjusted if there are clear divergences between the traffic forecasts prior to the setting of the charges and actual traffic. Adjustments may be made in both directions, i.e. in the case of both underestimation and overestimation of traffic levels, provided that a previously agreed threshold is exceeded (e.g. 10% more or less traffic than forecast). The regulatory agency’s role is to monitor the consultations and to provide supervision, and it may also intervene at the request of the market players involved. In addition, annual consultations are held on other aspects of airport operations, such as quality management and infrastructure investment.

Such a system would meet the requirement of regular consultation as laid down in the European Directive, it would allow the players to take action in the case of erroneous traffic forecasting, it would prevent excessive (annual) volatility, and it would avoid a situation where too much time and effort is spent on possibly unproductive annual negotiations.

The proposed system of price setting and yearly consultation holds no specific risks for the airport operator and users. The only conceivable exception is the occurrence of external shocks (such on 9/11/2001). However, exceptional circumstances call for exceptional measures, to be implemented by the competent authorities as they see fit.

5.2 (Adjusted) single or dual till

Another issue is the possible transition to a dual till system, which would exclude the possibility of cross-subsidising of regulated activities with revenues from subsidised activities (non-regulated activities)¹⁹. In the dual till approach, the airport operator receives an equitable profit margin on the regulated activities as a remuneration for capital invested. Under a single till system, an equitable profit margin is guaranteed to the airport operator by means of subsidisation with revenues from non-regulated activities. In an adjusted single till approach, as in the case under consideration, there is only partial subsidisation through non-regulated activities.

In the case of BAC, the present approach may be described as an adjusted single till that is being faded out, where revenues from commercial activities may be partially used to fund regulated activities. The regulator has argued that this system should be replaced with a dual till approach in which there is no cross-subsidisation of regulated activities by commercial ones.

BAC being a private company, it is in its interest to maximise the number of passengers. This will have a direct positive impact on revenues generated through the aeronautical activities, but the principle of ‘derived demand’ also predicts a positive influence on takings from the commercial activities. In the fiercely competitive environment where BAC operates, the company also needs to keep charges as low as possible, albeit with the caveat that shareholders must receive a sufficiently high return on capital (ROC), if only to help secure future investment. The principal activity of the airport is to attract and retain customers, and in this respect the price variable is crucial.

Government must ensure that BAC receives the right incentives in this respect. Also, it must avoid that the issue of adjusted single till versus dual till gets bogged down in ideological debate. It should

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¹⁸ The reduction of the regulated period follows from European Directive 2009/12/EC of the European Parliament and of the Council of 11 March 2009 on airport charges, which imposes regular consultation on airport charges. In Belgium, such consultation takes place once a year.

¹⁹ Under the present system of economic regulation, an adjusted single till approach is to be applied in fixing the charges for the regulated activity for a predetermined period if the charges at Brussels Airport are higher than the average charges of the four most expensive reference airports. Conversely, adjusted single till is not applied if that condition is not met.

also be noted here that the existing regulation of BAC requires a transition from adjusted single till to dual till by 2026. The regulator further observes that, at present, there is no evidence of cross-subsidisation measured as income from commercial to non-commercial activities. Moreover, BAC has opted to gradually bring ROC in line with its WACC, which may take a few more years.

It is therefore proposed that the system of adjusted single till be retained within the prevailing regulatory framework, i.e. with a transition to dual till within the originally envisaged timeframe. In response to the regulator's argument that the system is 'too vague', it is expressly proposed that BAC should, on an annual basis, report sufficiently detailed figures to allow insight into the degree of (implicit) cross-subsidisation as well as the progress made in the transition to dual till.

Furthermore, the conditions for applying the adjusted single till approach may be reviewed. After all, it is in consequence of the present circumstances that the principle is not applied.

5.3 Adjustment of charges to charging by reference airports or application of a financial model?

The present tariff formula provides that charges must be set in such a way that there is an equitable profit margin on invested capital and that they are in line with charges at the reference airports.²⁰ However, consideration is being given to scrapping the second criterion. Instead, charges could be tested by means of a financial model that indicates unequivocally what is an equitable profit margin on regulated activities (*Regulatory Assets Base*). The method of the weighted average cost of capital (WACC)²¹ is proposed and its components (such as the risk-free interest rate, the ratio between debt and assets, the equity risk premium and *equity beta*) determined.²²

The issue at hand is twofold, in the sense that under the present system tariffs must be fixed in such a way that an equitable profit margin is generated as a remuneration for capital invested, while they must also be in line with charging practice at the reference airports.

As regards the existing system of reference airports, one can only benchmark correctly if all parameters of the reference airports are identical, which is presently not the case. There are differences between airports in terms of which services are or are not part of the regulated activities. As a result, any comparison of tariffs inevitably lacks objective controllability.

Any benchmarking exercise may give rise to debate over which airports should or should not be included in the reference groups. Even the inclusion of airports in the immediate vicinity (e.g. Schiphol and Charles de Gaulle) may result in distortions, if only because of the hub function of those airports. After all, a different function inevitably implies divergent investment requirements (e.g. infrastructure that is capable of accommodating the A380), which may in turn result in skewed comparison.

Consequently, bringing charges in line with those at airports possessing suitable infrastructure for accommodating A380 aircraft can provide inappropriate incentives. Brussels Airport is, for the time being, not equipped to handle A380 aircraft. Hence it is very important that it should be compared only with similar airports. In this context, two further benchmarking complications should be mentioned: heterogeneity of the airports and the collection of cost data.

Nonetheless, benchmarking is still useful, not least because it yields information on the relative position of an airport. Broadening the range of reference airports and a different use of results may provide a solution here. The results represent a reference level for tariffs charged by BAC. In order to obtain an accurate benchmark, use needs to be made of airports serving similar markets as Brussels Airport, i.e. 'true' peers.

Of greater significance, however, is the specification of the financial model applied. There can be no doubt whatsoever that it must be based on objective, transparent, consistent and controllable pa-

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²⁰ Comparison of charges at Brussels Airport to charges at reference airports is used as an indicator for the application or not of adjusted *single till*. A similar approach is taken in aligning Brussels Airport with the reference airports in various 'key performance areas', such as cost efficiency, environmental performance, quality of services to users, passengers, ground handling, etc.

²¹ $WACC = (Re \times (1-g) + Rd \times g)$ where $E(Re) = RFR + \beta \times E(ERP)$; $E(Rd) = RFR + DP$. Met $E(Re)$ = expected return on equity, $E(Rd)$ = expected return on debt, RFR = risk-free rate and g = net debt/enterprise value.

²² This method is to replace the present approach outlined in Article 50, § 1, of the aforementioned Royal Decree of 21 June 2004.

rameters. But the question remains whether such a financial model should be imposed by the regulator. Perhaps it is equally acceptable here to take a step-by-step approach, as outlined below.

- BAC applies *Activity-Based Costing* (ABC). These costs constitute the starting point for tariff negotiations with the airlines. The regulator monitors the consultations, supervises and intervenes if the market players so request.
- Tariffs are benchmark-tested by BAC, by applying a weighted average of the tariffs charged by other airports to the traffic mix of BAC. The best approach is to rely on a broad range of airports, as argued above.
- The regulator may apply an own model to test charges negotiated by BAC and the airlines. This approach may rely on a financial model that provides a clear indication of what is an equitable profit margin on regulated activities (*Regulatory Assets Base*). One possible method is that involving the weighted average cost of capital (WACC). Some of the components used, like risk-free interest rates, the ratio between debt and shares, and the *equity* risk premium and the *equity beta*, are set consultatively by the regulatory agency and BAC. This model is not imposed, but applied merely as a test. The required input to the regulator is provided by BAC.
- If there is too great a divergence between the negotiated rates on the one hand and the results of the benchmarking exercise and of the output of the model applied by the regulator on the other, then provisions are made for consultation of the competent authority. This course of action may also be taken after complaints from an airline.

It should once again be noted that BAC has all to gain from competitive tariffs that consequently generate enough traffic, revenue and profit. The role of the regulator need not consist in setting charges; it may also consist in ensuring that there is no evidence of possible abuse of a possibly dominant position.

5.4 The role of the economic regulator

A final question to arise concerns the required degree of independence of the economic regulator from the exploitation of BAC. This question is related with the previous research question regarding the required level of regulation. An additional element here is the relationship between the regulator and the other actors (BAC, airlines, government) and the natural tendency of any regulator to delimit and expand its own playing field.

As mentioned previously, there can be no doubt whatsoever that *monitoring* of BAC remains indispensable. After all, European Directive 2009/12/EC regarding airport charges, which took effect on 15 March 2009, expressly prescribes that there must be an independent supervisory authority to safeguard the principles underlying the airport charging system (Article 11) and, more generally, to supervise the airports concerned (Article 12).

On the other hand, in the case of BAC, there is no question of a dominant market position, let alone any abuse of market power to the detriment of the public good (users, passengers, airport development, etc.).

This is where the issue arises of which type of supervision or regulation is required. Is it necessary to maintain the present system of ex-ante regulation of BAC or might the threat ex-post regulation suffice if combined with ensuing intervention? There is an important consideration to be made between the economic consequences of market power, insofar as it is present, and the potential distortions that certain forms of ex-ante regulation may entail. These distortions will depend on the type of regulation introduced. A typical example in this respect is the choice between the single till approach and the dual till approach.

Ex-ante economic regulation is relatively complex and expensive. Moreover, ex-ante regulation only makes sense if the negative economic consequences of the abuse of market power are sufficiently significant and substantial to outweigh the costs associated with potential distortions and with the actual regulation itself. This would appear not to be so in the case of BAC.

The best way of approaching the case of BAC is through ex-post regulation of the company's operations, within the framework of prevailing competition law. Ex-ante regulation would appear not to be necessary. This requires a different position on the part of the regulator vis-à-vis BAC, the airlines

and the public authorities. At the present moment, the regulator has adopted an intermediary position between BAC and the airlines. This, too, would seem unnecessary. The regulator ought to place himself above negotiations between the market players, to intervene only in the case of complaints or instances of abuse, and to report to the authorities.

Figure 1 Relationship between BAC, customers of BAC and the regulator

More specifically, this implies that the competence of the regulator need not be expanded. Interventionist action by the regulator should be restricted to cases where the users and the airport fail to reach agreement and where one of the parties involved has filed a legitimate complaint. Intervention by the economic regulator should also be limited to strictly economic issues (such as the setting of charges, tariff controls, handling of complaints about charges). The regulator's scope for intervention should not be broadened to other aspects of economic regulation such as quality of service, to the extent that there is no demonstrable connection with tariff setting.

6. Conclusions

This contribution has provided a conceptual overview of possible approaches to regulation. It has also considered the notion of market power, which is usually put forward as one of the conditions for regulation, contextualised for the case of Brussels Airport Company. On this basis, it has tried to deduce which type of regulation is most suitable for BAC.

Our own analysis combined with information gathered from the scientific literature and from practice has indicated that the cornerstone on which the present regulation of BAC is based is unsound. It has transpired that the traditional argument to justify airport regulation, namely that the airport industry has all the features of a natural monopoly, is untenable in the case of BAC. Indeed, airports are no longer characterised by declining average costs.

In a subsequent step, the necessity of economic regulation may be justified on the basis of observable instances of market failure. Abuse of a dominant position is one such possible failure. Again, though, our analysis has indicated that no such abuse has materialised in the case of BAC. Compared to low-cost airlines, carriers specialising in *point-to-point* services, and charter companies, BAC has the least, if any, market power. Moreover, with the presence of nearby competing airports, the likelihood of substitution is prominently present.

These findings obviously entirely re-contextualise the notion of 'regulation'. There can be no doubt that some form of monitoring of BAC remains necessary. After all, European Directive 2009/12/EC regarding airport charges (in effect since 15 March 2009) does prescribe explicitly that there should be an independent supervisory authority that safeguards the principles underlying the setting of airport charges (Article 11) and, more generally, to supervise the airports concerned (Article 12).

However, the notion of regulation can also be understood differently. According to this view, the competence of the regulator should not be extended. Any possibility for the regulator to intervene should be restricted to cases where the airport users and airport operator fail to reach agreement and where one of the parties concerned has filed a legitimate complaint.

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Royal Decree of 21 June 2004 concerning the granting of an operating licence for Brussels International National Airport to the public limited company of B.I.A.C.

European Directive 2009/12/EC of the European Parliament and the Council of 11 March 2009 regarding airport charges.

Appendix

Brussels Airport is an airport situated in the centre of Belgium. It is managed by the Brussels Airport Company, which is controlled for 75% by a consortium of private investors and for 25% by the Belgian State. [17]

In 2012, Brussels Airport handled approximately 220,000 movements. Having served almost 19 million travellers, it ranked about 20th in Europe as a passenger airport. In addition in 2012, Brussels Airport handled around 460,000 tonnes of cargo. [18] Table 2 compares the size and performance of Brussels Airport with those of Europe's four major hubs.

Table 2: Traffic and physical facilities at Brussels Airport and Europe's four major hubs (2012)

	Traffic			Physical facilities	
	Movements	Cargo (tons)	Passengers	Number of gates	Number of runways
BRU	223,431	459,265	18,971,332	118	3
LHR	475,176	1,464,390	70,037,417	161	2
CDG	497,763	1,949,660	61,556,202	242	4
FRA	482,242	2,100,747	57,527,851	189	4
AMS	423,407	1,483,448	51,035,590	165	6

Source: Airport authorities

In 2012, total revenues of Brussels Airport Company were generated for 66% through aeronautical activities, while 13% came from retailing, 10% from real estate, 6% from car parking and 5% from other sources. In 2011, the airport was served by 82 passenger airlines and 16 cargo airlines. [19]