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Ground handling in a changing market

The case of Brussels Airport

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1. Introduction

Recent decisions on the organisation of ground handling at European airports have been driven to a large extent by the European Union Directive 97/67/EC, the complexity of the ground handling sector, and the search for economies of scale and scope by the ground handling service providers.

In October 1996, the European Union issued Directive 96/67/EC on access to the ground handling market at Community airports. The objective was to enhance competition with a view to achieving improved efficiency, lower average operating costs, better quality of service and greater choice of supplier for airlines. The EU Member States have since transposed this Directive into their national legislations. In so doing, some have provided unrestricted access to their ground handling markets, while others have retained a system of licensing for some or all categories of ground handling. One of the critical issues in this process of liberalisation is the determination of the optimal number of ground handlers that can operate profitably at a given airport. Factors that come into play here are the level of demand for ground handling activities, the complexity of the ground handling sector, and the presence or absence of economies of scale and scope.

This paper provides a theoretical analysis of the issues at stake and illustrates them by means of the evolution in the implementation of the EU Directive in Belgium and its consequences for ground handling at Brussels Airport. It begins by examining the principal framework set by the EU Directive. Subsequently, the paper considers the basic characteristics of the airport ground handling market. It is crucially important to obtain insight into the cost curve of ground handling services and the current position of active third-party handlers and self-handlers in this respect. Further on, an application is made to the Brussels Airport case. Testing of the economies of scale hypothesis is done with the help of analysis of labour costs, depreciation rates, staff turnover rates and international airport throughput comparison. The paper concludes by showing which external factors pressurize the sector, and how this will impact on the sector's future power position and airport presence.

2. The context: Ground handling services and Directive 96/67/EC

In October 1996, the European Union issued Directive 96/67/EC, with the intention of liberalising the ground handling market at EU airports and enhancing competition. The Annex to the Directive provides a list of eleven categories of ground handling activities, namely ground administration and supervision (cat.1), passenger handling (cat.2), baggage handling (cat.3), freight and mail handling (cat.4), ramp handling (cat.5), aircraft services (cat.6), fuel and oil handling (cat.7), aircraft maintenance (cat.8), flight and crew administration (cat.9), surface transport (cat.10), and catering services (cat.11). Between an aircraft's arrival at and departure from any given airport, it typically relies on different types of ground handling services, as summarised in Figure 1. The ground handling market is quite heterogeneous, with players ranging from airport ground handling services to self-handling airlines, to independent ground handlers, to airlines undertaking ground handling for third parties. An airline may be involved in the ground handling process in different ways: as a customer, as a self-handler, or as a third-party handler. In the latter case, the company strives to make optimum use of opportunities for economies of scope by extending its self-handling activities to ground handling on behalf of other airlines. This process may be further enhanced by closer cooperation within the context of strategic alliances, on the basis of reciprocity or otherwise.

In Council Directive 96/67/EC it is mentioned in articles 6 and 7 that for 4 categories of ground handling services, the member states may limit the number of suppliers (but not fewer than two for each category). These categories are baggage handling, ramp handling, fuel and oil handling, and freight and mail handling. Consequently, the focus in this paper is on these 4 categories.

The EU Member States have implemented this Directive in different ways. Some have provided unrestricted access, while others have retained a system of licensing for some or all categories of ground handling, especially those at the "airside", such as baggage handling, freight and mail handling, ramp handling, and fuel and oil handling. Licences can be awarded for periods of up to seven years.

Another point of debate is whether or not goods handlers can make use of a centralised infrastructure, including for baggage sorting, de-icing, fuel distribution etc. Potential bottlenecks may arise in relation to access to installations, available capacity and space, the quality of facilities, and the costs and charges associated with the use of such infrastructure. Other relevant issues are the tender procedure, the approach taken to subcontracting, and evolutions in the fields of employment and safety.

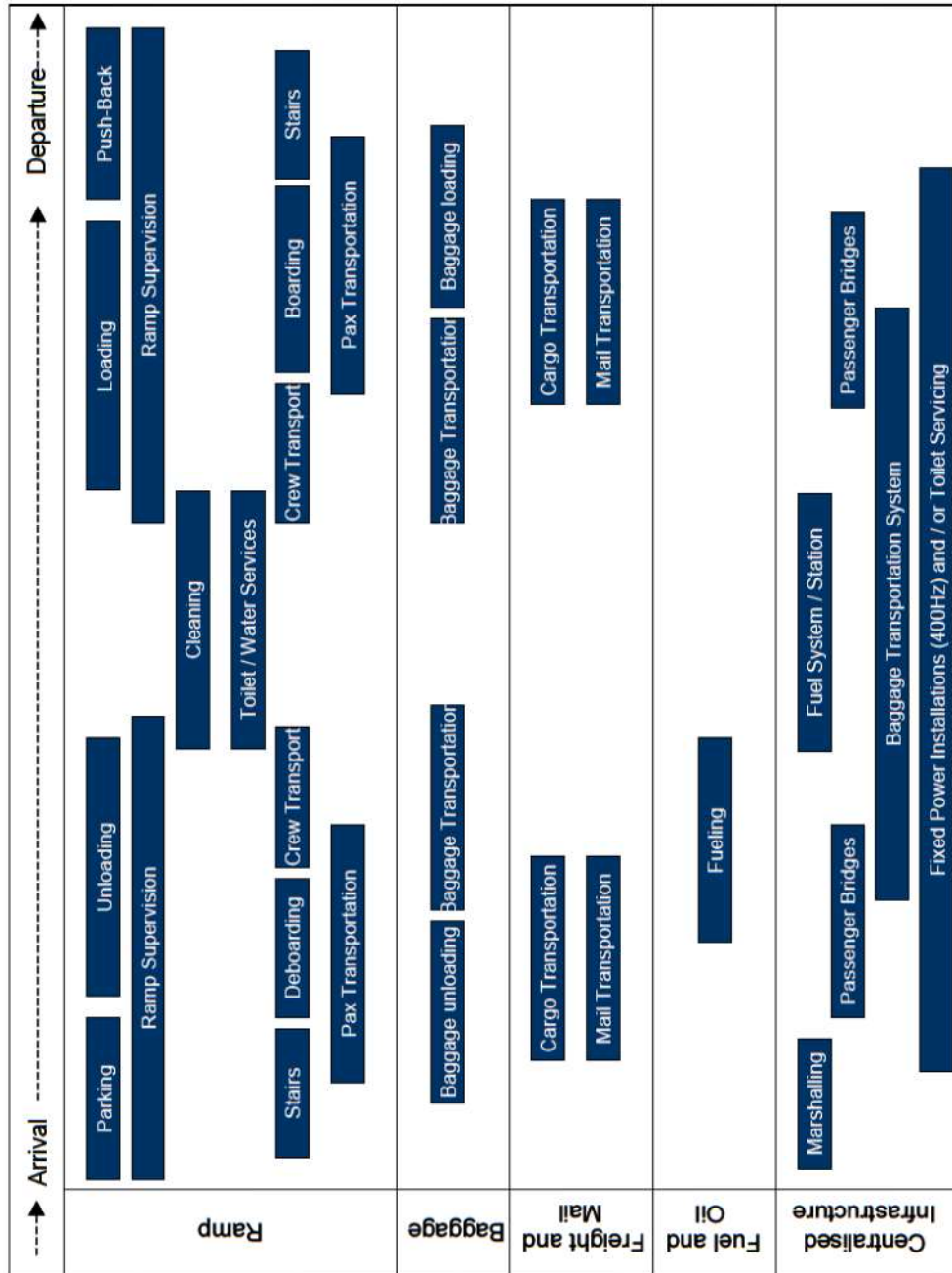
Since the introduction of the EU Directive, the number of self-handlers and third-party handlers has increased. However, there are striking differences to be observed between airports (Airport Research Center, 2009, p. 17 ff.). At airports where previously a ground handling monopoly was in place, the number of third-party handlers has increased more rapidly than at airports where ground handling had already been liberalised prior to the introduction of the Directive. An analysis of the various ground handling categories indicates that a parallel evolution has taken place in terms of the number of ground

handling companies belonging to categories 3 to 5: whereas the number of self-handling airlines has either remained the same or increased slightly, there has been quite a significant increase in the number of third-party handlers. In fuel handling, the number of providers has remained fairly stable.

In terms of market share, the most striking evolution is observed at airports where ground handling was previously a monopoly activity (Airport Research Center, 2009, p. 17 ff.). At most such airports, the market share of independent ground handlers has grown, while that of subsidiaries of airport authorities and airline companies engaging in self-handling has shrunk. The most significant shifts in market share occurred between 1996 and 2002 (Airport Research Center, 2009, p. 17).

The opening of the ground handling market ought also to have affected price. On the whole, ground handling charges have indeed dropped across Europe, in consequence of increased competition after the coming into effect of the Directive. Again, the observed impact is the greatest at airports previously characterised by the presence of a monopoly (Airport Research Center, 2009, p. 17 ff.).

Figure 1: Overview of ground handling services



Source: Airport Research Center (2009)

3. The structure of the ground handling market and the optimal number of ground handling providers at an airport¹

One of the main questions facing airport authorities when implementing Directive 96/67/EC is how many ground handling service providers to allow to operate at the airport. Among the various factors affecting this decision, the most important are: the level of demand for ground handling services, the cost level of providing these services at the given setting, and whether or not there are economies of scale and scope in ground handling at the airport concerned.

Basically, the optimal number of ground handling service providers at an airport is determined by the long-run average cost curve and the market size. The long-run average total cost curve envelopes the set of U-shaped short-run average total cost curves corresponding to different sizes of ground handling stations. In the long run, an airport can select the optimal station size for the quantity it wishes to produce. Ideally this should be the size that gives the lowest average total cost.

The output level at which economies of scale cease to exist is called the minimum efficient scale, MES. From this level on there are no longer extra returns to gain from increasing the size of the station. It is the MES in combination with the demand for ground handling services that determines the number of stations. For example, if the demand for ground handling services is 1000 units and the MES is 200 units, there is room for 5 competing stations. At industry level, the MES determines the structure of the market. The closer the MES is to the units demanded, the closer the industry structure approximates to monopoly.

The above observations may be translated as follows:

- the fact that an industry has no or few opportunities for economies of scale is an incentive to increase the number of providers;
- the fact that an industry has economies of scale is an incentive to either leave unchanged or reduce the number of providers.

Ground handling services encompass a large number of different activities, each of which can be provided by different companies. However, situations may arise where unit cost can be reduced by having one company produce different services. This is the case if there are economies of scope to be had. Economies of scope are in many ways similar to economies of scale, and they are achieved when a company is able to reduce average total costs by producing two or more different services, such as luggage handling and freight handling.

Table 1 provides a general overview of the structure of ground handling services and the major infrastructure and equipment cost categories involved. At most airports, it is obvious that luggage handling and ramp services may be effectively combined. This is mainly due to the fact that most airports focus dominantly on passenger transport. Cargo handling follows a different pattern, indicating that here there are little economies of scope to be gained. Hence cargo handling, including the aspect of licensing, may be separated from the other types of services.

¹ Part of this chapter is based on Besanko et al. (2007).

Economies of scale and scope can be achieved at every level of the production process. The crucial issue is, therefore, the determination of where exactly this may be the case in practice. In the ground handling market, there are two possible sources: the so-called “indivisibilities” and spreading of fixed cost on the one hand and rising productivity of variable input factors on the other. The latter is usually a consequence of far-reaching specialisation.² In the literature, other possible sources are suggested, including a reduction of joint stocks and engineering principles associated with the so-called “cube-square rule”. In addition there are also examples of companies realising economies of scale and scope through joint purchases, marketing and R&D. These variables will be left aside in the present paper. However, the most common source of economies of scale is the spreading of substantial fixed costs over an increasingly large output volume. These fixed costs are linked to large investments in mostly indivisible infrastructure or production capacity. Indivisibility implies that, even for very low output levels, a specific input level cannot be brought below a certain minimum. The existence of large sunk costs related to indivisibilities can also have an impact on the rate of return and the payback time of the investments in infrastructure.

Table 1: Structure of handling activities and type of cost

Type of activity	Detailing of activity	Material (cf. costs)
<i>Luggage handling</i>	Luggage sorting	Leasing of system
<i>Cargo and mail</i>	Cargo and mail sorting	Leasing of systems
<i>Ramp</i>	Crew transport	Buses
	Pick-up, delivery and stowage of luggage	Baggage carts, loading platforms
	Pick-up, delivery and stowage of cargo and mail	Cargo trolleys, loading platforms
	Redcap: supervision/coordination loadsheets	Walkie-talkie, PC, documents...
	Aircraft handling: chocking	Chocks
	Push-back	Push-back tug or tanna-push; headsets
<i>Fuel</i>	Aircraft handling (ground power unit, airco,...)	Ground power unit
	Provisioning by truck	Trucks or fixed connection
<i>Other activities</i>	Check-in	Leasing of desks, computer terminals...
	Boarding	Leasing of gate
	Special assistance	Wheelchairs
	Catering	
	Cleaning	
	Sales assistance and ticketing	
	Water supply	

Source: Own composition based on interviews of pilots, ground handlers and airport operators

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In the literature, reference is also commonly made to the existence of a so-called learning or experience curve. This curve represents the benefits stemming from the acquisition of experience and know-how as more and more services are produced. It would seem worthwhile also to explore to what extent there is evidence of such a learning curve in ground handling.

The shape and size of the long-run average cost curves for ground handling activities at an airport will not only depend on the characteristics of the specific airport, but also on the characteristics of the service providers, their position in the air transport and logistics chain, their global market share, and their competitive power. It is therefore paramount that one should study ground handling not only at the local station level, but also within the context of factors that determine the position of ground handling service providers in the global market of air transport services.³ A number of ground handlers are multi product multi plant firms that can negotiate packages of airports to airlines. It is well known that then for the leasing prices paid to providers it would be difficult to allocate common costs to different plants.

An unmistakable evolution in the sector has unfolded towards a limited number of large players, such as Menzies, FCC, Globeground, WFS, Groundforce, Aviapartner, ... This concentration trend cannot be explained merely in terms of significant network effects in, for example, the purchase of important handling equipment, if only because this equipment is increasingly leased.⁴ It does however enable ground handlers, in their negotiations with the principal customer airlines, to offer package deals covering services in a number of airports, even though in practice some airlines select stations from the packages offered, thereby avoiding committing themselves to a single ground handling company.⁵

Although significant network effects cannot be detected in relation to visible assets, there is an important element that reinforces the trend to development of global players - trusting partnership. The trust phenomenon lies on the ground handling knowledge about airline procedures allowing the airline to drastically reduce its own staff (and respective costs) in airports where trusting partnership can be established with ground handling. Note that although almost invisible in the past this trust phenomenon has been the trigger for the emergence of service companies like SERVISAIR and others in the period that preceded the end of flag carriers, as a main elements for cost reductions (mostly through reduction of airline staff). It is also clear by now that third-party handlers tend to assess each station separately on the basis of revenue. Aviapartner, for example, closed a number of Scandinavian stations because of growing losses.

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Sectors affected by mergers and takeovers tend to have potential for benefits of scope and scale. Such economies affect not only company size, market structure and product diversification, but also most strategic corporate decisions. They impact on pricing strategies and market entry and exit decisions. Ground handling at airports has certainly witnessed such an upscaling trend, but the question is whether it was driven by the search for economies of scale and/or scope. Alternatively, it may have been attributable to the urge to acquire greater market share, e.g. in order to be able to offer carriers more substantial contracts by covering multiple airports. Mergers and takeovers could even be inspired by the wish to prevent competitors from acquiring a monopoly position.

In order to gain insight into the potential for economies of scale and scope and the optimal number of ground handling service providers at a given airport, a detailed analysis is required of the cost structure of ground handling operations. Theoretically, one needs to know the exact shape and size of the long-run average cost curve, but in practice it is virtually impossible to acquire sufficiently detailed information in order to arrive at a reliable approximation of this curve. Therefore, one commonly relies on a number of alternative indicators for the existence or absence of economies of scale and scope in specific settings. In what follows we illustrate this approach for the case of Brussels Airport.

4. The optimal number of ground handling providers: the case of Brussels Airport⁶

Originally, Council Directive 96/67/EC of 15 October 1996 was transposed into Belgian law as the Royal Decree of 12 November 1998 concerning access to the ground handling market of Brussels National Airport. Article 5, § 2 of this Royal Decree restricted the number of service providers intended in Article 6, § 2 of the said European Directive to two. Article 6, § 2 of that same Royal Decree gave the airport authority the option of restricting to two users the self-handling activity intended in Article 7, § 2 of the said Directive. The airport authority made use of this option.⁷ Article 9, § 1 of the Royal Decree of 12 November 1998 stipulates that, in the case of a restriction of the number of service providers, the airport authority shall be responsible for the selection of service providers to be granted a licence. The licence period was set at seven years⁸ and was the result of negotiations at political level. A new selection procedure is to be established before the start of the next licence period in 2011.. In consequence of this Royal Decree, there were now two independent ground handlers operating at Brussels Airport, namely Flightcare and Aviapartner, but no self-handling airlines.

It is clear that the ground handling industry is experiencing a considerable amount of pressure. This is primarily due to the fact that it occupies a relatively weak position within the transport chain. Ground handlers must contend first and foremost with pressure from airport authorities, who strive to maximise their own profit through, among other things, income from ground handling concessions. In some instances airports even act as direct competitors, operating their own ground handling services. There is furthermore the cut-throat competition between airlines, which compels them to try to minimise any externally imposed costs, including those for ground handling services.

In practice, however, airlines sometimes feel they are unable to attain their goal, particularly at airports with just two different ground handling service providers. In such situations, there is inevitably concern over the existence of an effective duopoly, as was the case at Brussels Airport. The Belgian Government shared this concern and wanted an answer to the following questions:

- 1. Is the market of Brussels Airport sufficiently large for an increase to three third-party handlers and three self-handlers to be economically viable, given the existing market structure, the stability of the market and the cost structure of those handlers?*
- 2. Is a licence period of seven years optimal in the context of a sustainable development of the airport? If not, then what is the optimal licence period? Should additional options be provided for in relation to, for example, price and quality indicators?*

⁶ This part borrows from an earlier empirical study concerning ground handling at Brussels Airport by the same authors (Meersman et al., 2010b).

⁷ The ground handling service of “catering transport” was added to Articles 5, § 2 and 6, § 2 by means of the amended Royal Decree of 31 October 2001.

⁸ The choice of seven years was the result of negotiations at political level. A new selection procedure is to be established before the start of the next licence period in 2011.

Central to the answer to both questions is the existence or absence of economies of scale and/or scope in combination with large sunk costs. As no specific figures on the long run average costs of ground handling services at Brussels Airport are available, some indicators were calculated.

As the presence of substantial indivisible fixed costs is a potentially important source of economies of scale and/or scope, one can say in very general terms that economies of scale and/or scope occur more readily in capital-intensive production processes than in labour-intensive or material-intensive production processes. The former can spread the costs either over larger production volumes of one type of ground handling service or over a number of different types of ground handling services. The following two relationships apply:

- industries with high capital intensity or high capital/labour ratio tend to have economies of scale and/or scope
- industries with low capital intensity or low capital/labour ratio tend to have no or modest economies of scale and/of scope.

Any economies of scale that are associated with marketing expenses, R&D and purchasing policy are left aside.⁹ It emerged unequivocally from the many conversations with ‘captains of industry’ that these aspects have hitherto yielded no economies of scale. Obviously this situation may change in the future, e.g. in consequence of further market concentration and the growing market power that it entails.

Using data provided by Bel-First¹⁰, one can approximate the capital/labour ratio of Aviapartner and Flightcare, the two handling companies operating at Brussels Airport, by the ratio between depreciation and labour costs (Table 2). The available data indicate an average capital/labour ratio of 0.08 for Aviapartner and 0.15 for Flightcare. Sectors with typically high capital/labour ratios are the chemical industry and the power supply industry. This is illustrated in Table 2 by the high values for BASF Antwerp (0.79) and Luminus (1.88).

On the basis of the aforementioned observations and the capital/labour ratios of a number of other companies listed in Table 2, one can conclude that both Aviapartner and Flightcare have a very low capital/labour ratio, which suggests that there is little potential for economies of scale. This is confirmed by the small share of depreciations in operating costs (Table 3) and the large share of labour costs (Table 4). These shares are not likely to change in the future, as the ground handling market is characterised by an evolution towards more leasing of equipment.¹¹ For example, TCR is increasingly manifesting itself as a large leasing company. At the present moment, third-party handlers are making relatively little capital investments. The trend towards capital goods leasing is clearly leading to a variabilisation of previously fixed costs. Equally important in this context is the share of personnel expenses in operating costs (Table 4). Over the 2000-2008 period, it averaged at 63% in the case of Aviapartner and 54% in the case of Flightcare.¹² There are clearly observable peaks in the deployment of labour and equipment, i.e. a morning, afternoon and evening peak. Moreover, there is a shift

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¹⁰ Bel-First is an electronic database containing Belgian and Luxembourg financial company information and business intelligence from Bureau Van Dijk Electronic Publishing (belfirst.bvdep.com).

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Table 2: Capital / Labour ratio (depreciation/labour costs)

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	Average	1999	2000	2001	2002	2003	2004	2005
Aviapartner Belgium	0.08	0.13	0.10	0.09	0.11	0.08	0.06	0.05
Flightcare Belgium	0.15	NA	NA	NA	NA	0.15	0.19	0.19
Arcelor Mittal Belgium	0.25	0.23	0.22	0.26	0.27	0.26	0.30	0.26
BASF Antwerpen	0.79	1.00	1.05	1.14	0.99	0.66	0.49	0.47

Source: Own calculations based on data from Bel-First

Table 3: Depreciation / Operating costs

	Average	1999	2000	2001	2002	2003	2004	2005
Coca-cola enterprises Belgium	0.44	0.47	0.50	0.52	0.54	0.49	0.45	
Cordeel Temse	0.15	0.18	0.17	0.15	0.21	0.15	0.14	

Source: Own calculations based on data from Bel-First

Table 4: Labour costs / Operating costs

	Average	2000	2001	2002	2003	2004	2005
Aviapartner Belgium	0.05	0.07	0.06	0.07	0.05	0.04	0.03
Flightcare Belgium	0.08	NA	NA	NA	0.09	0.10	0.10

Source: Own composition based on data from Bel-First

Table 5 provides an overview of the staff turnover rates for Aviapartner and Flightcare. The staff turnover rate is calculated by dividing the number of terminations in a given financial year by the average number of employees expressed in full time equivalents (FTE). Staff turnover at the two companies appears to be higher than the Belgian average. SD Worx (2008) has calculated that the average staff turnover rate in Belgium amounts to 0.17. Among companies employing at least a thousand people, the rate is just 0.13. In other words, Aviapartner and Flightcare have higher than average staff turnover rates. This might be an indication that new staff are able to familiarise themselves quickly with the materials and equipment used, i.e. that the latter are not high-tech. This again suggests that there are few if any economies of scale to be benefited from.

The question arises whether this relatively substantial staff turnover among third-party handlers impacts on the learning curve. This turns out not to be the case in view of the structural characteristics of this turnover: the rotation manifests itself primarily among non-skilled employees, occupying subordinate positions within the companies concerned. Among middle management staff, i.e. the category with the greatest impact on the learning curve, turnover is far slower.

Table 5: Staff turnover based on FTEs (excluding temps)

	Average	2000	2001	2002	2003	2004	2005
Aviapartner Belgium	0.63	0.64	0.65	0.62	0.61	0.61	0.61
Flightcare Belgium	0.54	NA	NA	NA	0.57	0.57	0.57

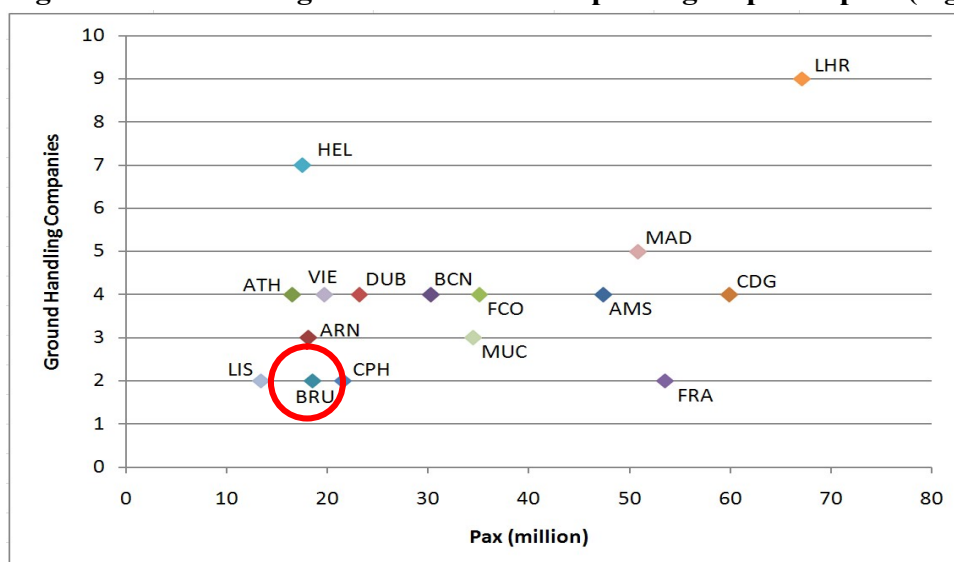
Source: Own calculations based on data from Bel-First

From the indicators in Tables 2 – 5, it is clear that there is little potential for economies of scope and scale in ground handling activities at Brussels Airport. Consequently, from this perspective, there is no scientific reason to limit the number of active market players. Nor is there any indication of a natural monopoly, whereby the market, from a purely economic perspective and ignoring regulation, evolves automatically to a single supplier.

Remains still the question: what is the minimum level of activity whereby operations can remain profitable? As no separate analysis has been made of the total cost structure of individual ground handlers, it is not possible to put forward detailed statements based on calculations¹³. However, there are notable differences in the number of third-party ground handlers between like-sized airports.

By way of illustration Figures 2-5 provide an overview of the number of ground handling service providers for different categories and different airports. Council Directive 96/67/EC distinguishes 4 categories of ground handling: baggage handling, ramp handling, fuel and oil handling, freight and mail handling. For each category a separate analysis has been made in Figure 2 (baggage handling), Figure 3 (freight and mail handling), Figure 4 (ramp handling) and Figure 5 (Fuel and oil handling). The vertical axis represents the number of ground handlers for the respective category. The horizontal axis represents the number of passengers (PAX) at the airport or the tonnage handled at the airport (Tonnage). As such it is possible to assign each airport to each figure by making the combination of the vertical and horizontal axis.

Figure 2: Number of ground handlers and passengers per airport (luggage)¹⁴

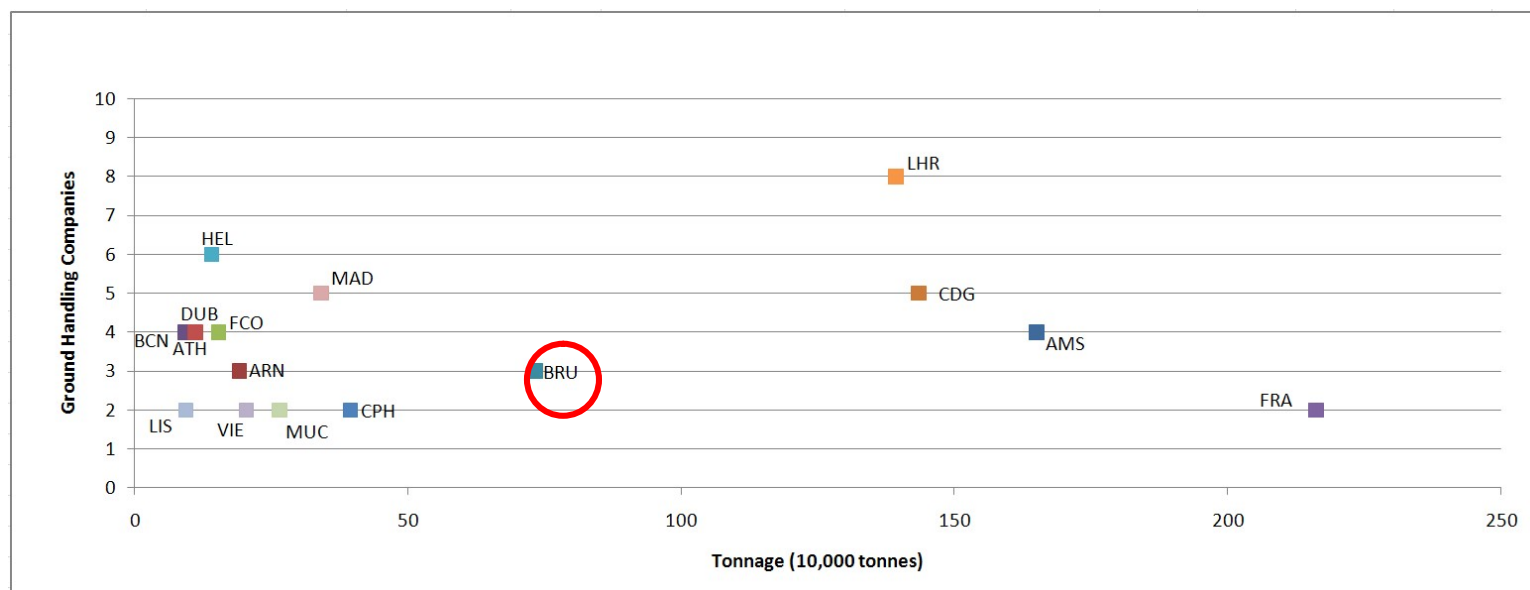


Source: Own processing of data from airport authorities and IATA (1970-2009).

¹³ By way of illustration, we cite a rule of thumb that is commonly used in practice. A ground handling firm at Brussels Airport may be assumed to operate profitably from the moment it handles at least twenty-five narrow-body aircraft per day.

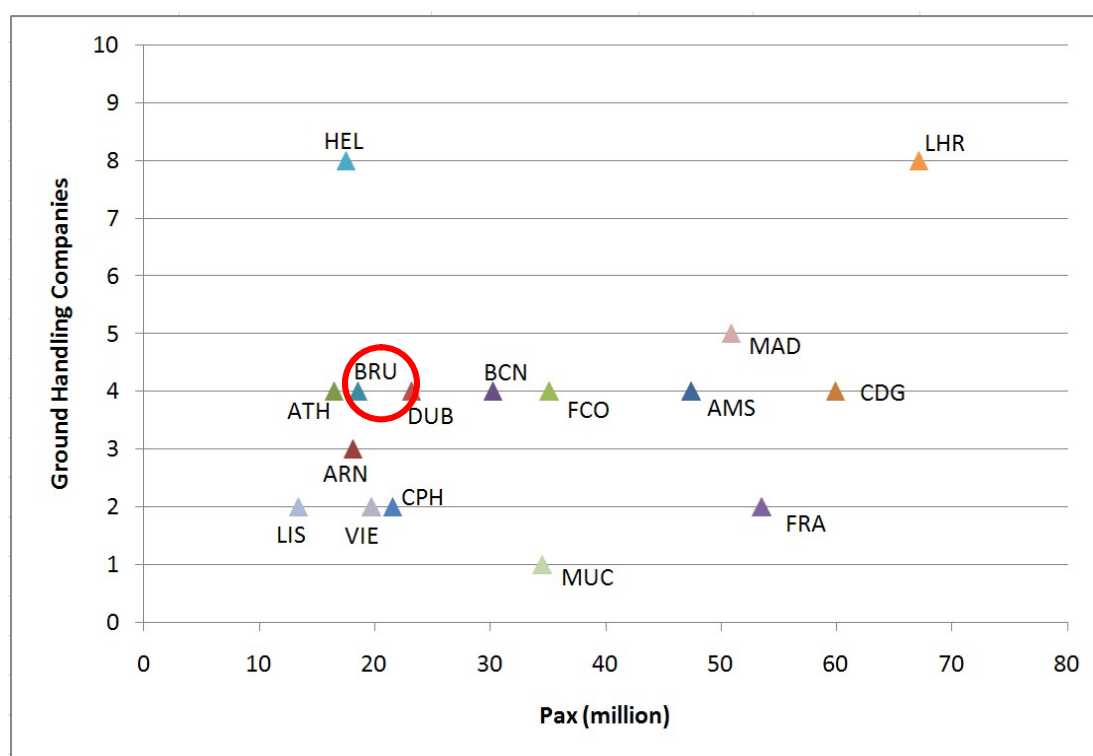
¹⁴ In Figure 2 the data for MAD are incomplete.

Figure 3: Number of ground handlers and tonnage per airport (freight)



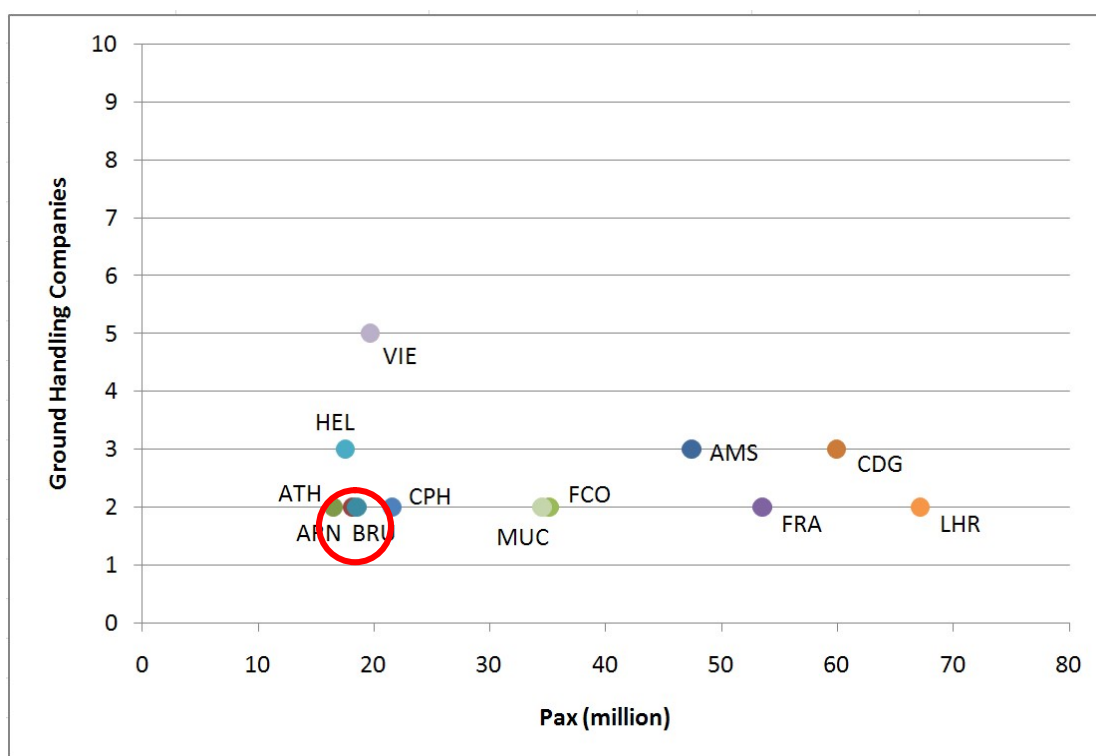
Source: Own processing of data from airport authorities and IATA (1970-2009).

Figure 4: Number of ground handlers and passengers per airport (ramp)



Source: Own processing of data from airport authorities and IATA (1970-2009).

Figure 5: Number of ground handlers and passengers per airport (fuel)



Source: Own processing of data from airport authorities and IATA (1970-2009).

- ***Increase of the number of third-party handlers to three***

From an industrial and economic perspective, there is no reason whatsoever to restrict the number of third-party handlers to two. There are, within the group of smaller European airports, no indications of economies of scale. What is more, foreign experience suggests that a market the size of Brussels Airport can cope with such an increase.

From an economic perspective, there are moreover sufficiently convincing arguments in favour of an increase to three licensed third-party handlers, such as a greater freedom of choice for customer airlines, increased competition at the supply side, and a better price to quality ratio.

Nor are there insurmountable physical obstacles to such an increase. Certain adaptations would need to be made at Brussels Airport, but none are prohibitive. Each handler would require a certain volume of storage facilities for equipment, but available space at the airport is adequate to meet this requirement.

- ***Maintenance of the number of self-handlers at two***

In the past years, the available licences for self-handling of passengers have not been taken up fully. This will most probably continue to be the case in the coming period. Self-handling implies that the two companies concerned have the same parent company. In other words, it must concern passenger handling by own personnel, i.e. personnel on the company's own payroll.

- ***Maintenance of the number of fuel handlers at two***

It is after all not clear whether an increase to three would yield any benefit. For that matter, there have never been any queries or complaints about the number of fuel handlers.

- ***Separation of pax luggage handling and cargo handling***

In view of the absence of scope effects, it should be possible to award licences for different activities and categories to different companies. Hence, it should also be possible for a third-party handling company specialising in cargo to vie for a cargo handling licence only without compromising its chances of success.

- ***Maintenance of the licence duration at seven years***

The licence period is presently seven years. This is generally regarded as a rather short period, including in the literature on investment analysis. Seven years is, for example, insufficiently long to write off equipment, even though in practice this potential complication is often avoided in the ground handling market through leasing. A seven-year licence is moreover incompatible with current building leases. Clearly, then, the present licence period has a number of drawbacks.

Yet there is insufficient scientific evidence to substantiate the argument that licence periods should be adapted. Increased leasing activity is indicative of a far-reaching variabilisation of fixed cost, which cancels out an important argument for longer licences. Hence there are no compelling reasons at the present time to adjust the licence period.

- ***Due attention for mergers and takeovers***

If three licences are awarded, there is a potential danger that one of the three companies concerned will, after a certain period of time, take over or assume partial control of one of the other licence holders. This would in effect reduce the number of handlers to two. Clearly if such a situation were to arise, a new tender should be launched with a view to awarding a third licence.

5. External factors that may/will affect the market

The air transport industry is an environment marked by fast technological and organisational evolutions. All kinds of industrial and economic developments can be observed among carriers as well as companies supplying derived services. The market typically sees many entries, but also frequent exits through mergers, takeovers and bankruptcies. Airports are moreover increasingly confronted with ecological and capacity restrictions. In sum: this is a highly dynamic sector that is subject to constant processes of change.

It remains to be seen how the ground handling industry will evolve in the short to medium term. Given the highly dependent nature of ground handling, it seems reasonable to focus on the evolution of the air transport sector and all its different actors in general, and to infer on this basis the possible consequences for ground handling services. The starting point is a study of the air transport sector after 2010 (Meersman et al., 2010a, p. 17-25), which explores in

detail how the industry is likely to evolve. The study takes into account the present situation, recent trends and a set of endogenous and heterogeneous variables. Other relevant studies are Macário (2009) and Macário et al. (2007, 2009).

Global network carriers will continue to consolidate through so-called strategic alliances. This will result in a limited number of directly competing networks, in both the passenger and the cargo markets. The purpose of forming alliances is clear to see: through technological cooperation and the tool-sharing that it implies (code sharing, interlining, ...), potential customers are offered a network that covers the greatest possible number of major destinations, and at the same time profitability is assured and even enhanced. Nonetheless, there continues to be pressure on profitability. The main source of uncertainty is whether further concentration movements will involve the incorporation of new partners, the integration of present partners, or a combination of the two.

The era of an air transport industry dominated by so-called flag carriers is over. Those companies have been transformed through a wave of partial or complete privatisations. Newcomers are almost invariably financed through private equity. A similar evolution is discernible in the airport industry. Carriers and derived service providers will, in the future, be increasingly confronted with privately run airports. Unlike in the days of publicly owned airports, the primary goal is now profit maximisation.

Low-cost airlines will continue to see their market share grow. The low-cost model is based on strict adherence to a number of principles: short-haul, point-to-point, dense routes only, maximisation of flying hours, use of secondary airports, high frequency of service, no delays. It strives to combine low costs, low fares and high demand and capacity utilisation. The growth rate may be negatively affected by certain inputs becoming more expensive.¹⁵

After the transformation process of the flag carriers, the airline business was confronted with the unthinkable: a wave of bankruptcies. Strikingly, the affected companies have often been medium-sized international airlines. Doganis (2001, 2006) asserts that these airlines are “too small to be global players, too big to be a niche player”. Their mission is unclear, they usually find it hard to take optimal strategic decisions and, in most cases, they are undercapitalised. This trend may persist in the future. Carriers that do not belong to strategic alliances will then become likely victims of bankruptcy and prime targets for takeovers and mergers.

There is also a danger of increasingly aggressive market behaviour. The air transport sector provides a good example of the potential response to new market entries in an industrial economy. Consider the hypothetical case of a new entrant in the marketplace launching a service on a particular route. The carriers already operating on that route will almost always respond with sharp price cuts, combined with increased capacity. As soon as the new carrier retreats, capacity is decreased again and prices are increased. Alternatively in such a situation, flag carriers might purchase or launch an in-house low-cost carrier. This form of aggressive behaviour will continue to manifest itself in the future.

The influence of the public authorities is waning. In many cases, they have sold all or part of their stakes in carriers and service providers. Deregulation is gaining momentum, and the

¹⁵ It is well known that low-cost carriers are increasing their market shares in Europe and most of them want to operate their own ground handling services.

influence of the national authorities is now restricted mainly to two areas.¹⁶ First and foremost, the public sector will most likely continue to provide the basic airport infrastructure. Second, they are still generally expected to act against any abuse of monopoly status in relation to pricing, landing slot allocation and access to terminals. The (supra)national authorities for their part may be expected to assume a more prominent role in the environmental field.

Traditionally, air cargo used to be approached as a by-product of passenger transport, but this trend has changed. Air freight will continue to expand more rapidly than passenger transport in the coming years. As long as it can contribute to profit maximisation and growing market share, carriers will want to operate in this growth market, be it as a by-product of air passenger flows or in a full-freighter configuration.

Due account must also be taken of the growing share of debt capital in the capital structure. In the case of some airlines, and indeed airports, a three-step movement has been observed. First, there was the disintegration phase, with companies refocusing on the core business. In the second step, such non-core activities as catering, handling and maintenance were sold off. Finally, in the third phase, this evolution is commonly combined with the entry of external capital. Increasingly, it appears to be private equity that enters the sector. The question that arises is whether the entry of private equity capital in the airline industry is not at odds with companies' long term interests. Private equity groups tend to sell relatively quickly, i.e. within a period of three to five years.

So what are the implications of these possible future evolutions in the air transport industry? Certainly the ongoing trend towards ever larger airlines, be it through further integration among alliances or otherwise, is momentous. At the same time, there is an evolution towards more privatisation and a retrenchment of public sector involvement, albeit in unison with forms of supranational control. One observes various types of capital entry – including private equity – and increasingly aggressive market behaviour, a considerable number of bankruptcies and a broadening of the product range (incl. in the freight market).

If one combines these expected evolutions with the previously discussed industrial and economic structure of the ground handling market, the following developments may be expected to unfold.

Ground handlers will be confronted with increasingly powerful customers. Airlines, united in alliances, will use their market power in negotiations with ground handlers. This may find expression in a variety of ways, including global contracts and volume discounts at group level. This evolution may compel ground handlers to cut rates and to improve service conditions to customers. If their own cost structure does not decline to the same extent, then there are negative impacts to be expected in terms of profitability.

Ground handlers may respond with a far-reaching integration into a limited number of groups. This evolution would be similar to that observed in cargo handling in the port industry¹⁷. In the global port industry, most stevedores have been incorporated into a limited number of

¹⁶ In addition, the public authorities will continue to be involved in the funding of aircraft construction, especially in the fields of research, design and the launch of new aircraft types.

¹⁷ In the global port industry, most stevedores have been incorporated into a limited number of large Terminal Operating Companies (TOCs). The three largest such groups are PSA, Hutchinson Whampoa and Dubai Port World.

large Terminal Operating Companies (TOCs). The three largest such groups are PSA, Hutchinson Whampoa and Dubai Port World. The consequence of this evolution on the market structure is clear to see: ground handling contracts will be negotiated under a bilateral oligopoly. It speaks for itself that this will go hand in hand with closer supranational control.

While this potential scenario should clearly not be ignored, variations are conceivable. Hence it is necessary that the ground handling industry should make ex-ante assessments of the consequences of each aspect of such future evolutions. Additionally, it is crucially important that insight be acquired into who takes which decisions and how future efficiency gains and costs should be divided between the various actors.

6. Conclusion

Knowledge of the own market is crucial with a view to appropriate decision-making. In the dynamic and quickly evolving air transport market, entrepreneurial instinct often no longer suffices. Hence it is important also to analyse the industry from a distance: what does it look like from the outside in?

This paper analyses a number of important aspects of the ground handling market from an industrial and economic perspective. Empirical research focusing on the situation at Brussels Airport indicates that there is no great potential in ground handling services for economies of scale and scope. Nor is there evidence of any natural monopoly. These observations have important implications within the context of a possible restriction of the number of market players.

A methodology has been presented to assess the number of ground handlers at an airport. This methodology can be used by airport authorities and regulatory authorities. First part of the methodology is based on a graphical analysis of the relation between the number of ground handlers and the number of passengers at an airport. Second part of the methodology is based on the concept of economies of scale, leading to the hypothesis that the fact that an industry has no or few opportunities for economies of scale is an incentive to increase the number of providers of ground handling services. On the basis of public accounting information, it was possible to test this hypothesis, using a capital intensity ratio. It turned out that the hypothesis is confirmed at Brussels Airport. Future research will be based on exploring the method to other ground handlers at other airports and on linking this research with airport competition.

The ground handling industry is experiencing significant pressures in consequence of its relatively weak position within the transport chain. These pressures come from all sides and may continue to increase due to a variety of external factors. The customer airlines will become fewer in number but larger in size, which will further compromise the negotiating position of the ground handling companies. They may respond by further integration into a limited number of large groups, which would ultimately imply an evolution of the ground handling market towards a bilateral oligopoly.

One thing is very clear to see though. A dynamic market, where numerous evolutions in terms of the size of the main actors impacts on their respective negotiating power, necessitates in-depth knowledge and insight. And in this case acquiring knowledge also requires a tool for

ex-ante analyses of all possible strategic evolutions. Otherwise, one risks losing the market game.

References

- Airport Research Center (2009). *Study on the Impact of Directive 96/67/EC on Ground Handling Services 1996-2007*. ARC, Aachen.
- Besanko, D., Dranove, D., Shanley, M and Schaefer, S. (2007). *Economics of Strategy* (Fourth Revised Edition), John Wiley & Sons, Hoboken, NJ.
- Doganis, R. (2001). *The airline business in the twenty-first century*. Routledge, London.
- Doganis, R. (2006). *The Airline Business*. Routledge, London.
- IATA (1970-2009). World Air Transport Statistics. Montreal.
- Macário R. (2009), Airports of the Future: Essentials for a Renewed Business Model, *European Journal of Transport and Infrastructure Research*, vol. 8, no. 2, p. 165-182.
- Macário R., Reis V., Marques C. (2009), *Scenarios for Air Transport*, AirNets, MIT Portugal program.
- Macário, R., Mackenzie-Williams, P., Meersman, H., Monteiro, F., Reis, V., Schmidt, H., Van de Voorde, E. and Vanelslander, T. (2007). *The consequences of the growing European low-cost airline sector*. European Parliament, Brussels.
- Meersman, H., Van de Voorde, E. and Vanelslander, T (2010a), The Air Transport Sector after 2010: A Modified Market and Ownership Structure, in: Macário, R. and E. Van de Voorde, *Critical Issues in Air Transport Economics and Business*, Routledge, Abingdon, p. 10-28.
- Meersman, H., Pauwels, T., Struyf, E. Van de Voorde, E. and Vanelslander, T (2010b), Studie betreffende het aantal derdenafhandelaars en zelfafhandelaars op de luchthaven van Brussel, Report for the Secretary of State in charge of Mobility and Infrastructure, 37 p.