

THE RELATION BETWEEN AIR TRANSPORT AND SELECTED ASPECTS OF THE REGIONAL ECONOMY

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Abstract: *In articles already published in 2010 – 11, the authors clearly defined and specified the relationship between the existence of the airport in a particular region and the regional economy. This delineation was based primarily on studies conducted by professional groups of companies operating in the aviation industry and the leading associations.*

This article aims to expand on previous research and presents the results of empirical research, which confirms originally formulated relations.

With the aim of verifying the formulated hypotheses, diagnostic missions have been applied to the international airports in Brno, Bratislava and Karlovy Vary in order to obtain primary data. Subsequently, interviews with operational experts from the airport have been carried out. Furthermore, current evidence has been collected regarding the number of passengers who have checked in observed periods. The authors have also performed an analysis of the horizontal development of staff (internal and external³) and it is in relation to the number of checked in passengers at airports surveyed.

Keywords: *Air transport, Regional airport, Regional development, Regional economy, Socio-economic impact.*

JEL Classification: *R11, L93.*

Introduction

The air transport is an authentic reflection of the performance of the national economy, where changes in growth or decline in GDP are relatively quickly reflected in the performance of the air transport particularly in as far as changes of the number of passengers are concerned. The air transport is very sensitive to the various global crises and disasters (tsunamis, terrorist attacks, disease) and also to movements in oil prices on world markets [6], [10].

The region, which is appropriately connected to other parts of the country and abroad, has much fewer problems with the spatial movement of human resources (the workers can commute from other regions or, conversely, local residents without major difficulties, arising from the transport accessibility, can work in other regions). Good transport accessibility is also a factor which significantly influences the location and investment decisions of entrepreneurs. The region with good transport links is attractive for both, domestic and foreign investors. In the case of the transfer of

³ In this context, an airport employee is referred to as a subcontractor's employee, who is allowed, by means of the ID card, to access operational premises of the airport with the aim of carrying out some of service related activities, which are crucial for securing the operation of the airport.

modern technologies in the context of globalization, internationalization, and others, it can play a positive role in the air transport. The regional governments are aware of this fact in each region, as well as the European Union.

The air transport influences the spatial population movements, and has many side-effects, which are showed in a study presented by York Aviation and the Airports Council International, entitled "The Social and Economic Impact of Airports in Europe". This study also deals with the creation of jobs related to the air transport in the region equipped by airport [12].

The article describes the influence of the existence of the airport on the regional development and economic level. As evidenced by the study above, the airport can contribute significantly to the economic growth in the region. Estimates of the combined effect of direct, indirect and induced impacts vary between 1.4 - 2.5% of GDP (without tourism). This may substantiate the conclusions of other studies, namely the study by the organization ATAG [4] and IATA [9]. It states that the quality of the air service affects the company when deciding where to invest. According to the survey 52% of companies considered international (air) transport links as a fundamental factor in their location decision in Europe.

1 Statement of a problem

1.1 Airports - regional economic motors

Airports are a part of the indispensable infrastructure for a wide range of economic activities. This important economic role is known as the catalytic impact, arising from the effect that air service accessibility can have the positive influence on the region served by the airport. Access to markets and external and international transport links are regarded as absolutely essential to businesses making location decisions. The catalytic effect of an airport operates largely through the enhancing business efficiency and productivity by providing easy access to suppliers and customers, particularly over medium to long distances. Global accessibility is a key factor for the business location and success in all regions of Europe [12, p. 11].

Airports with available lands are developing business parks to capitalise on the attractiveness of the air service connectivity to businesses [8, p. 41]. These business parks are used frequently by firms with some connection to the airport or aerospace industries. Otherwise they are selected as locations for companies making an intensive use of the air transport. Cases in point include Cork, Hamburg, Nice etc.

Although airports are major generators of the economic prosperity through their direct and measurable economic contribution, as it is discussed in section 4, their most important function is the role they play in securing accessibility that allows other businesses to develop. Airports are an essential part of the regional economic infrastructure and it is important that the growth of airports is seen as an integral part of national and regional economic development strategies.

Airports facilitate the economic growth at regional and national levels, on the other hand they also act as magnets for a wide range of economic activities. This wider

economic role of airports is known as the catalytic impact, arising from the effect that air service accessibility can have on the region served by the airport. The mechanisms through which it operates relate largely to enhancing the business efficiency and productivity by providing easy access to suppliers and customers [14, p. 18]. The effects are observed through the role of the airport in:

- Influencing the company location decisions and competitiveness.

The presence of an international airport can be a critical factor in:

- Attracting new inward investments from outside the area, and especially companies from overseas;
- Retaining existing companies in the area, whether they had previously been inward investors or indigenous operations;
- Securing the expansion of existing companies in the face of competition with other areas;
- Promoting the export success of companies located in the area by the provision of passenger and freight links to key markets;
- Enhancing the competitiveness of the economy, and the companies in it, through the provision of fast and efficient passenger and freight services;
- And adding to the quality of the life of citizens by enabling travel, notwithstanding local environmental implications.

1.2 The measurable impact of airport activities

The air transport contributes to sustainable developments. By facilitating tourism and trade, it generates the economic growth, provides jobs, improves living standards and increases revenues from taxes. Increasing cross-border travel is a reflection of the closer relationships developing between countries, both from an individual perspective and at a country level [12]. Air services are particularly important in situations where physical access is problematic.

- **Social benefits**

The air transport contributes to a sustainable generation through purchases of goods and services from companies in its supply chain. The air transport invests substantially in vital infrastructure. Unlike other transport modes, the air transport industry pays for a vast majority of its own infrastructure costs (runways, airport terminals, air traffic control), rather than being financed through taxation and public investment or subsidy (as is typically the case for road and railways).

- **Providing jobs**

In 2030, forecasts suggest that there will be nearly 6 billion passengers and aviation will support nearly 82 million jobs and \$6.9 trillion in the economic activity. However, if the growth were to slow by just 1%, the total number of jobs supported by the air transport sector (including air transport supported tourism) would be over 14 million lower than the base forecasts and the contribution of the air transport sector to the

world GDP would be \$646 billion (2010 prices) lower, with an additional \$542 billion lost through the lower tourism activity [3].

1.2.1 Direct impacts

The aviation industry itself is a major direct generator of employment and economic activities, in airline and airport operations, aircraft maintenance, air traffic management, head offices and activities, which directly serve air passengers, such as check-in, baggage handling, on-site retail and catering facilities. Direct impacts also include the activities of aerospace manufacturers selling aircraft and components to airlines and related businesses.

The air transport also has an important ‘multiplier’ effect, which means that its overall contribution to the global employment and GDP is much larger than its direct impact alone [14, p. 6].

1.2.2 Indirect impacts

These include employment and activities of suppliers to the air transport industry - for instance, aviation fuel suppliers; construction companies that build airport facilities; suppliers of sub-components used in aircraft; manufacturers of goods sold in airport retail outlets; and a wide variety of activities in the business services sector (such as call centres, information technology and accountancy).

1.2.3 Induced impacts

The spending of those directly or indirectly employed in the air transport sector supports jobs in industries such as retail outlets, companies producing consumer goods and a range of service industries (such as banks and restaurants) [6].

1.2.4 Other (catalytic) impacts

One of the other impacts is the fact that the air transport stimulates tourism. Tourism makes a major contribution to the global economy. By 2021, the World Travel & Tourism Council (WTTC) expects the direct employment in the tourism industry to be more than 120 million people globally. Aviation plays a central role in supporting tourism. Over 51% of international tourists now travel by air. Tourism is particularly important in many developing countries, where it is a key part of economic development strategies. This includes jobs in industries such as hotels, restaurants, visitor attractions, local transports and car rentals, but it does not include air transport industry jobs [14, p. 7].

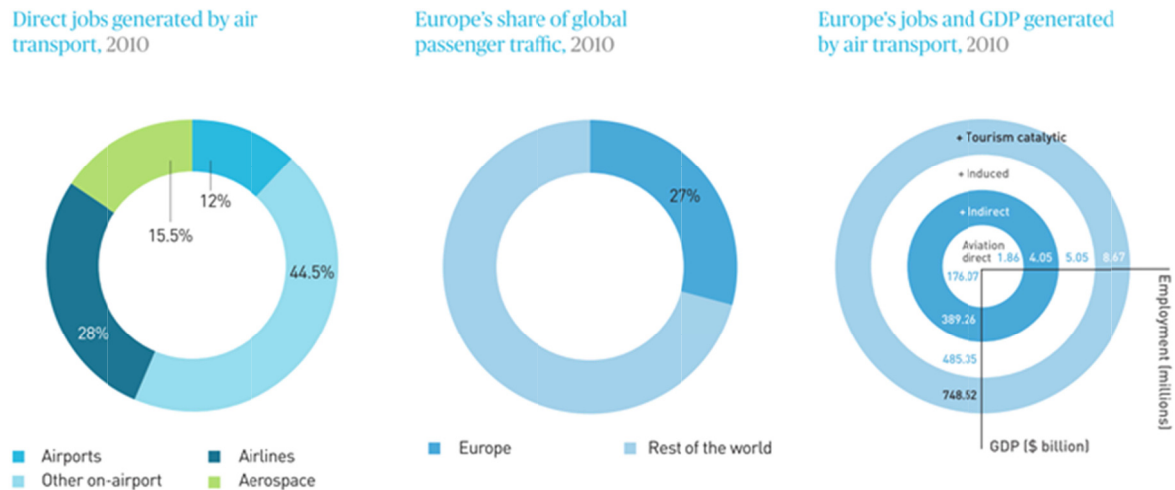
1.3 The influence of Air transport on Labour market in Europe

Below are listed the basic facts about the air transport in Europe [2].

- 605,803,813 passengers;
- 7,860,000 flights;
- 701 commercial airports;
- Air transport supports 8.7 million jobs;

- Generating \$749 billion in GDP in Europe;
- 448 airlines;
- 6,585 aircraft in service;
- 45 air navigation service providers.

Fig. 1: Summary of the air transport economical influence



Source: [3]

The number of jobs created directly by the air transport industry is estimated to have reached 1.9 million in 2010.

- 519,000 people (28% of the total) work for airlines or handling agents (e.g. as flight crew, check-in staff, maintenance crew, reservations and head office staff);
- 220,000 people (12%) work directly for airport operators (e.g. in airport management, maintenance, security, operations), while 827,000 (44.5%) work on-site at airports for government agencies such as customs and security, or provides services in retail outlets, restaurants, hotels, etc.;
- 290,000 people (15.5%) are employed in the civil aerospace sector (manufacture of aircraft systems, components, airframes and engines).

In total (direct, indirect and inducted impacts), the air transport supports 5.1 million jobs and contributes with over \$485 billion to GDP in Europe [2].

In addition, there are over 3.6 million jobs supported through the catalytic impacts of travel and tourism.

Nearly two-thirds (64%) of employment comes from airlines, handling agents and aircraft maintenance, with the remainder split between airport operators (14%), in-flight catering, restaurants and bars and retailing (12%), air traffic control and control

agencies (6%), freight (1%) and other activities such as fuel companies and ground transport operators (3%).

In 1998 according to the York Aviation study the European airports created on average 1000 on-site jobs per million handled passengers per year [12]. This number was reduced to approximately 950 on-site jobs per million passengers per annum in 2003. The reason for this lower number was caused by reducing costs and increasing productivity. Other factors i.e. the development of low cost carriers, also supports these trends. [14, p. 23].

The study also estimates that, on average, for every 1,000 on-site jobs supported by European airports there are around 2,100 indirect/induced jobs supported nationally, 1,100 indirect/induced jobs supported regionally, or 500 indirect/induced jobs supported sub-regionally. Given that there are 950 on-site jobs created per million passengers, European airports support around:

- 2,950 jobs nationally;
- 2,000 jobs regionally;
- or 1,425 jobs sub-regionally.

Tourism is the second main element of the catalytic impact. For the EU as a whole, tourism accounts for 5% of the total employment and of GDP, and as much as 30% of the total external trade in services.

2 Methods

For the purpose of creating the article the method of the literature search and expert articles have been applied, further, we have analyzed the expert studies. In order to confirm the hypothesis, diagnostic mission methods (The diagnostic mission included the secondary data collection, airport traffic observation and the interview with airport experts) have been used along with the horizontal and vertical analysis of selected indicators, as well as methods of expert estimations. With the aim of creating the final part of the article, synthetic and deductive procedures have been applied too.

Especially, the method of regression analysis - this method was used to confirm the dependence between the number of passengers and number of jobs generated by the airport. More specifically, regression analysis [11, p. 238] helps to understand how the typical value of the dependent variable changes when any one of the independent variables is varied, while the other independent variables are held fixed. Most commonly, regression analysis estimates the conditional expectation of the dependent variable given the independent variables - that is, the average value of the dependent variable when the independent variables are fixed.

3 Problem solving

The authors of the article have researched the effect of the number of employees at selected airports in relation to the number of passengers handled per year. They also have taken into account the diversity of the structure of traffic at the airports. Bratislava and Brno airports are used by low-cost carriers and charter carriers. There is the presumption of a lower cost for the check-in operation (due to the check-in computerisation and less willingness of passengers to spend money) with fewer staff

required. On the other hand there are almost 100% of customers travelling on regular flights at the Karlovy Vary airport, with a large number of Russian clients who require increased care and travel with more luggage.

Tab. 1: The result of diagnostic mission

Airport	Criterion	Year				
		2007	2008	2009	2010	2011
Bratislava	INTERNAL	673	695	630	601	600
	EXTERNAL	2327	2035	2370	1899	2044
	TOTAL	3000	3000	3000	2500	2644
	PASSENGERS	2 024 142	2 218 545	1710018	1665704	1 585 064
	ER	1 482	1 352	1 754	1 501	1 668
Brno	INTERNAL	119	120	126	133	136
	EXTERNAL	240	250	260	262	303
	TOTAL	359	370	386	395	439
	PASSENGERS	415276	506174	440850	396589	557952
	ER	864	731	876	996	787
Karlovy Vary	INTERNAL	38	46	51	56	57
	EXTERNAL	n/a	80	100	108	118
	TOTAL	n/a	126	151	164	175
	PASSENGERS	64641	81720	68369	70903	99014
	ER	n/a	1542	2209	2313	1767

Notes

- INTERNAL..... Employees of the airport company
- EXTERNAL..... Employees of the others subjects i.e. police, suppliers etc. with approved access to the airport
- TOTAL..... Total internal and external employees
- PASSENGERS..... Passengers handled per year
- ER..... Employee ratio = TOTAL/PASSENGERS*1000000

Source: [authors]

The figures regarding developments at the Bratislava Airport in years confirms partly the conclusions of the mentioned studies [12], [3], [2]. The number of employees is affected by the fact that at the airport, national organisations and entities such as the Civil Aviation Authority and Air Traffic Control operate. An interesting element was the operation of the low-cost airline Sky Europe, which had a base at the airport in 2004-2009. The termination of its activities significantly affected the number of passengers and employees.

Data from the Brno Airport confirmed the conclusions of the studies [12], [3], [2]. It is likely to monitor the increasing of number of passengers with the beginning of the operation of low-cost carriers and the gradual increasing number of the airport staff (internal and external). The number of passengers was about 560 000 in 2011. This

corresponds to about 790 employees. The real number of employees was 436 due to the significant share of passengers of low-cost carriers. This confirms a less labour intensity and higher efficiency of the check-in associated with the computerization of the operation [13].

Data from the Karlovy Vary airport maps the situation of a small regional airport, where the number of employees in relation to handled passengers is higher than at the other airports. This difference is caused due to the fact that despite the lower traffic at the airport, it is necessary to employ workers in the jobs related to the operation in terms of safety (fire and security control) and the staff ensuring air traffic control.

4 Discussion

Regional aviation, like other modes of transport, is a key enabler in citizens mobility, whereas improved connectivity and efficient inter-modal mobility can contribute considerably to better access to the regions, to business, tourism and the development of related services, and to the spread of economic prosperity [13].

The unequal material status of citizens, and the different levels of infrastructure development, result in disparities in the opportunity to use regional flight connections in the regions. The adequate development of regional airports contributes to parallel development of the tourist system, which is a vitally important area for many European regions.

According to a study of York Aviation in 1998, the average number of jobs created was 1000 per million of checked in passengers [1]. According to the report of York Aviation 2004, the average number of jobs created fell to 950 per million of checked in passengers. The authors have investigated the influence of the smaller regional airports. In 2012, at the airport in Bratislava the number of direct created jobs per million passengers amounted to 1668. If we miscalculated (extrapolated) the number of direct employees per million at Brno Airport, then we can come to 790 of checked in passengers.

Karlovy Vary Airport is not included in the discussion. As a result of its low number of passengers and their specific needs it would not have the sufficient force of expression.

With the increasing number of passengers at the airport, the number of direct jobs created per million passengers is further reducing. For example in the calendar year for 2012 the Luton airport is expecting to handle 10.2 million passengers. Meanwhile, it is estimated that Luton will drive an additional 440 direct on-site jobs for every extra million passengers that pass through the airport, and as a result, an estimated additional 1,750 indirect jobs [11]. This confirms that the relationship between the number of passengers and number of jobs generated by the airport is not linear and is also affected by local conditions and traffic structure. It was (among others) confirmed by regression analysis. It can be inferred that the addition of new jobs created due to an increasing the number of passengers will be less progressive at the airport with significant volume of handled passengers.

With the development of new technologies and business models (especially LCC – Low-cost carriers) the reduction of direct job opportunities for one million checked in

passengers is taking place. However, this decrease is compensated by the increasing the number of passengers, and thus the absolute number of jobs at the airport. Airports therefore remain an important driver for the development of the regional economy.

Some regional airports are operational only during mass tourism seasons, which often poses an added problem of organisation, involves higher unit costs, etc.

Certain practices of low-cost airlines, which often operate from regional airports can cause economic problems for regional airports. The present aggressive business practice of some low-cost airlines operating from regional airports to take advantage of their dominant position, and given that commercial activities are a major source of income for regional airports (for example landing fees). Number of passengers should not be the only indicator for the evaluation of airport.

Regional airports should not be tools for increasing public deficits and should generally be economically sustainable in the mid term [13].

The role of regional airports in acting as a mainspring for the development of innovation clusters by diminishing location costs for start-ups, especially in geographically remote regions.

Conclusion

The European regional airports and air services need to be considered as key elements in creating an efficient and well functioning EU transport network that facilitates trade and ensures mobility for a greater number of people. Regional aviation can play a vital role in ensuring that free movement in the EU is a reality not only for people living in major capital cities but also for EU citizens living outside of these areas, ensuring that these cities and regions enjoy not only the benefits brought about by greater mobility but also by generating tourism, providing access to new markets and by attracting greater inward economic investment.

Worldwide, the European region represents 15% of the total jobs and 34% of the GDP generated by the air transport industry, including the catalytic impacts. Moreover, forecasts indicate that this impact is set to grow rapidly over the next 20 years. Passenger numbers are expected to almost double from 605.8 million in 2010 to nearly 1.2 billion in 2030; such an expansion in activity should generate significant economic returns. Oxford Economists forecast that aviation's direct contribution to GDP will increase by 4.4% per annum in real terms over the next 20 years helping to create an additional 841,000 jobs across the region by 2030. Meanwhile, when accounting for catalytic effects in terms of increased tourism receipts, the real GDP growth is also projected at 4.4% per annum with the implied job creation of 1.6 million. The sector is also a prime target for taxation [3].

The results of research (in Bratislava) confirm partly the conclusions of the mentioned studies [12], [3], [2]. The number of employees is affected by the fact that national organisations and entities such as the Civil Aviation Authority and Air Traffic Control are operating at the airport.

An interesting element was the operation of the low-cost airline Sky Europe, which had a base at the airport in 2004 - 2009. The termination of its activities significantly affected the number of passengers and employees.

These results show a positive impact on the airport, if there is based an airline. They also show the consequences of its leaving the airport. Although the results of air transport worldwide were affected by the economic crisis, which affected the operation of the Bratislava airport, it is possible to monitor air traffic impact on job creation in the segment of airports handling more than 1 million passengers annually. The results of the mission also allow to observe how the number of employees responded to significant decreases of the airport's performance.

The results of Brno Airport basically confirmed the conclusions of these studies. This confirms less labour intensity and higher efficiency of the check-in associated with the computerization of the operation [13].

There is a possibility to monitor the increase in the number of passengers with the beginning of the operation of low-cost carriers and the gradual increasing number of the airport staff (internal and external).

Brno Airport is one of the airports which handled less than one million passengers a year. The results show that the number of employees does not fully reflect the increase quantity of passengers. It is obvious that the airport has to secure its basic functions, such as technical support of the airport (i.e. maintenance, fire safety). Airport needs to ensure these activities, even if minimal traffic and there is no direct dependence on the volume of traffic. Number of employees is influenced by seasonal traffic, where a significant volume of the summer operation of the airport are charter flights.

Selection of the airports allowed to monitor the situation at rather smaller airports and to check the validity of the conclusions of previous studies that have examined primarily large European international airports handled often more than 10 million passengers a year.

Air transport connections are important for developing the local economy and tourism, attracting investors and ensuring the rapid transportation of passengers and goods [5]; recognises the importance of regional airports in improving mobility and interregional connectivity, and in helping to make regions more attractive; notes that tourism is demonstrating its resilience to the economic crisis, and that special attention must be paid to any economic policy aspect or decision likely to support or advance tourism, such as air transport and airport infrastructure projects.

The economic importance of regional airports for regional economic growth and job creation, particularly in less developed or disadvantaged regions; stresses, in that connection, the need to exploit the potential for green jobs more effectively; regrets, however, the high number of insecure jobs in the sector, and maintains that staff working at the airports proper or for companies providing services there or for airlines operating there must enjoy the necessary decent contractual terms and pay rates, and that the working conditions of airport.

References

- [1] AIRPORTS COUNCIL INTERNATIONAL (ACI). *Creating Employment and Prosperity in Europe. (study)*. Brussels: ACI, 1998. [cit. 2012-4-18]. Available at WWW:
<[http://www3.cfac.unisg.ch/org/idt/cfac_ui.nsf/338a93192a5036c7c12568ff0040fed0/C569909391AADB9EC12572050032EF19/\\$FILE/08+Creating+Employment+and+Proseperity.pdf](http://www3.cfac.unisg.ch/org/idt/cfac_ui.nsf/338a93192a5036c7c12568ff0040fed0/C569909391AADB9EC12572050032EF19/$FILE/08+Creating+Employment+and+Proseperity.pdf)>.
- [2] AIRPORTS COUNCIL INTERNATIONAL (ACI). *European passenger traffic up 4.2% during 2010 (report)*. Brussels: ACI, 2011. [cit. 2012-4-25]. Available at WWW:
<<http://www.aci-europe.org/component/downloads/downloads/2641.html>>.
- [3] ATAG. *Aviation/Benefits Beyond Borders*. Geneva: ATAG, 2012. [cit. 2012-4-26]. Available at WWW:
<<http://www.aviationbenefitsbeyondborders.org/sites/default/files/pdfs/aviation-benefits-beyond-borders.pdf>>.
- [4] ATAG. *The economic and social benefits of air transport 2008*. Geneva: ATAG, 2008. ATAG. [cit. 2012-4-22]. Available at WWW:
<http://files.aea.be/Downloads/Eco_Socia_Bene_Tran_08.pdf>.
- [5] BRADBOURN, F. *Report on the future of regional airports and air services in the EU*. Brussel: European Parliament, 2012.
- [6] ČERVINKA, M. - TYKVA, T. Marketing Approach Of Air Operator Reflecting The Turbulent Changes In The Global Economy. In *Conditions of the foreign tourism developement in central and eastern Europe*. Wroclaw: University of Wroclaw, 2010. ISBN 978-83-928193-9-4.
- [7] ČERVINKA, M. Vliv online odbavení na zvýšení kvality a efektivnosti odbavení cestujících. In *Increasing Safety and Quality in Civil and Military Air Transport: Mezinárodní vědecká konference, Žilina, duben 2012*. ISBN 978-80-554-519-3. p. 43 - 49.
- [8] DOGANIS, R. *The airport business*. Oxon: Roudledge - Taylor and Francis group, 2005. ISBN 0-415-07877-6.
- [9] IATA. *World Air Transport Statistics*. Montreal: IATA, 2011. [cit. 2012-4-23]. Available at WWW: <<http://www.iata.org>>.
- [10] POLÁCH, J. - VIRGLEROVÁ, Z. Oil prices and dependence on oil reserves. In *Scientific Paper of the University of Pardubice, Series, D, XI* 2011-12-05.
- [11] SEGER, J. – HINDLS, R. – HRONOVÁ, S. *Statistika v hospodářství*. Praha: ETC Publishing, 1998. ISBN 80-86006-56-5.
- [12] *The social and economic impact of airports in Europe*. Study of York Aviation and Airports Council International. 2004. [cit. 2012-4-26]. Available at WWW:
<<http://temis.documentation.equipement.gouv.fr/documents/Temis/0017/Temis-0017789/12209.pdf>>.

- [13] WELLING, D. Luton airport to expand to 18mppa. In *Aiport World*. Middlesex, 2012. Volume 16, Issue 5. ISSN 1360-4341.
- [14] WILDING, J. *Airport Economic Impact Methods and Models*. Washington, D.C.: ACRvP, 2008.

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