

DOI: 10.17951/b.2019.74.0.79-91

ANNALES
UNIVERSITATIS MARIAE CURIE-SKŁODOWSKA
LUBLIN – POLONIA

VOL. LXXIV

SECTIO B

2019

ANDRZEJ TUCKI

ORCID ID: 0000-002-6062-0004

Maria Curie-Skłodowska University
Faculty of Earth Sciences and Spatial Management
Department of Regional Geography and Tourism
andrzej.tucki@umcs.pl

RYSZARD DĘBICKI

ORCID ID: 0000-0003-0024-0816

Maria Curie-Skłodowska University
Faculty of Earth Sciences and Spatial Management
Department of Geocology and Soil Science
ryszard.debicki@umcs.pl

VIKTORIA PANTYLEY

ORCID ID: 0000-002-7340-292X

Maria Curie-Skłodowska University
Faculty of Earth Sciences and Spatial Management
Department of Social and Economic Geography
viktoria.pantyley@umcs.pl

ALEXANDRA VIEGA

Lusofona University, Lisbon, Portugal

alexandrav@gmail.com

Problems and Perspectives of LCC in Europe. Case Study: Poland and Portugal

Bariery i możliwości rozwoju tanich linii lotniczych w Europie.
Studium przypadku Polski i Portugalii

Abstrakt: W ciągu ostatniego dziesięciolecia nastąpił wyraźny wzrost częstotliwości korzystania z transportu lotniczego w Europie. Było to związane z pojawieniem się nowego segmentu działającego w sektorze linii lotniczych, czyli przewoźników niskokosztowych. W artykule dokonano analizy wpływu dostępności infrastruktury regionalnych portów lotniczych na kontynuowanie występującej tendencji na przykładzie dwóch peryferyjnie położonych europejskich destynacji – Polski (do 2004 r. obszar stosunkowo „odizolowany” od mobilności typowej dla Europy Zachodniej) i Portugalii. Jak pokazują przeprowadzone analizy, udział tanich linii w analizowanych rynkach jest duży i wykazuje tendencję wzrostową. W 2016 r. lotniska w Portugalii obsłużyły 40,9 mln pasażerów zagranicznych, z czego około 47% przypadło na tanie linie. Na rynku polskim natomiast w 2017 r. udział ten oszacowano na poziomie prawie 60%.

Słowa kluczowe: transport lotniczy; tanie linie lotnicze; Europa; Polska; Portugalia

Abstract: Travelling by air transport surpasses all other existing means of transportation. According to the UNWTO data, in 2014, more than half of all tourists travelled to their destinations by air. This success is expressed, among other things, in the rapid expansion of routes and strong growth in demand. With low-cost carriers (LCC) it has become an essential form of air transport

to peripheral regions such as Portugal or “new” destinations in CEE countries, e.g. Poland. In 2016, Portuguese airports handled 40.9 million passengers on international flights, of whom about 47% travelled using LCC flights, whereas in Poland, in 2017, Polish airports handled nearly 5 million passengers with 57.3% share of LCC. The purpose of this article is to analyze some of the factors that influenced the success of LCCs in the two countries, and their strengthened role in the aviation market.

Keywords: air transport; low-cost carriers (LCCs); Europe; Poland; Portugal

INTRODUCTION

In the context of the intensification of the globalization processes, the demand for air transportation has increased rapidly due to the growing importance of commercial, industrial and tourist activities. Graham *et al.* (2008) showed that aviation is an increasingly important method of transportation for tourism markets and it provides a vital link between the areas with touristic relevance and the destinations. Over the past century, air transportation has become one of the fastest growing sectors of the economy. On the other hand, the evolution of civil air transport changed significantly in the last 30 years in terms of supply and distribution, safety, performance, environment and cost efficiency. Travelling by air transport surpasses all other existing means of transportation. According to the United Nations World Tourism Organization (UNWTO), in 2014, more than half of all tourists travelled to their destination by air, while the rest used surface transport (by road – 39%, rail – 2%, water – 5%). In the middle of the 20th century, only the higher social class, with good financial resources, could use this type of transportation, but nowadays with the advances on technology, new management models and business, comes a major international phenomenon for tourism, defined as low-cost airlines (LCA). This new phenomenon of reduced cost, allowed all social classes the facility of travelling to different destinations around the world with different services. The price is the most important factor that motivates the consumer to use the product and to feel satisfied about it. With low-cost carriers (LCC), also known as “no frills”, it has become an essential form of air transport.

The LCA phenomenon firstly started in the United States with Southwest Airlines in 1971 and it is characterized by significant diversification of business models. Some of the characteristics of these business models are as follows: high aircraft utilization; Internet booking; use of secondary airports; minimum cabin crew; lower wage scales; lower rates of unionization among employees; one class of seating; short ground turnaround times; no cargo carried; very simple fare structures and price strategies; adoption of strict yield management techniques; e-ticketing; often no seat allocation (for faster boarding); no frills;

no connections; point-to-point services (Macário *et al.* 2007). Low-cost carriers have unit costs up to 60% lower than a traditional network carrier (Graham and Shaw 2008) due to some standardized operating practices. The success of LCCs started during the 1990s, and nowadays it has been an increasingly important air service surpassing year after year the traditional airline companies.

The purpose of this paper is the comparative analysis of LCCs in two European Union countries with different socio-economic situation, but peripheral location. In our paper, we have focused on the analysis of LCC market in central-eastern (Poland) and southern (Portugal) countries. The both destinations were rather new for the LCC market, as low-cost airlines started operation in 1995 (Portugal) and 2004¹ – Poland (Carballo-Cruz and Costa 2014; Mills 2016).

LCC IN EUROPE: AN OUTLINE OF HISTORY AND CURRENT STATE OF AFFAIRS

Low-cost companies have an incredible influence on how people travel, the geography of air services and competition between airlines and between cities and regions (Dobruszkes 2013). Moreover, as Casey suggested: “the current revolution that the advent of LCC has ushered in (...) is one of the biggest revolutions in tourism and travel since the package holiday’s arrival half a century earlier” (2010, p. 176).

In the early 1990s, it was spread to Europe and subsequently to the rest of the world. In Europe, the trend started in 1991, when an Irish company Ryanair transformed into the LCC. Its first flights were based in the United Kingdom and Ireland, but then they were opened to all western Europe. According to the CAPA (*Europe’s Top 20 airline...* 2018), in 2016, Ryanair carried more passengers than any other airline group in Europe with 117 million passengers.

In Europe, the development of LCC companies contributed to unexpected benefits (e.g. a significant increase in traffic; improvement of local and regional economies concerning airports infrastructure) (Rosa *et al.* 2017). In particular, the number of regular air links between European countries increased by around 75%, flights increased by around 88% and the number of seats offered almost doubled (Richman and Lyle 2005). Research of Dunn and Clark (2016) shows that almost 139,000 flights on the five main LCCs in Europe (such as EasyJet, Norwegian, Ryanair, Vueling and Wizz Air) scheduled to operate nowadays in Europe. Around 21% of them were in competition with each other. Nevertheless,

¹ Wizz Air’s first flight in 2004 was from Katowice to Luton, <https://wizzair.com/en-gb/information-and-services/about-us/news/2016/09/08/wizz-air-expands-in-katowice#/> (access: 1.09.2018).

if we look at the two biggest LLCs in Europe – Ryanair and EasyJet – the overlap routes between these airlines are only 49, representing 2.7% of all routes operated by both companies (Rosa *et al.* 2017).

Among the reasons for increasing popularity of LCC in Europe one should admit economic and demographic ones. At the very beginning of LCC in Europe, they were focused only on more economically developed western part of Europe. In autumn 2008, Ryanair inaugurated a new base at Birmingham airport and launched several flights to Eastern European countries (Katowice and Kraków in Poland and Kaunas in Lithuania). Between 2006 and 2008, EasyJet opened up 8 routes between Kraków and Western Europe, mainly to Great Britain. These events proved geographical diversification in favour of west-east links between Western and Central-Eastern Europe. Enlargement of the European Union has meant an expansion of the single market as well as the liberalised European space. In a demographic perspective, massive migratory outflow from Eastern to the Western and Northern part of Europe also contributed to the increasing role of LCC in the aviation market in that part of the world. The introduction of LCC in Europe also represented a stimulus to an independent travel without using a travel agency, and it has considerably changed the mentality and the way that Europeans travel. During this period, the LCC had a significant impact on tourism and economy sectors. It means several new trends, such as opening up new west-east routes, the penetration of the western aviation market by eastern LCCs, and conversely, the penetration of the eastern market by western LCCs (Dobruszkes 2013).

As can be seen from Fig. 1, in 2017, LCCs account for six of Europe's top 11 airline groups, while leisure groups account for a further two of the top 14. Of LCCs, the biggest players are Ryanair and EasyJet, with over 120 and around 80 million of passengers, respectively. Ryanair remained the biggest individual airline brand by passenger numbers in 2017. In 2017, Ryanair carried 47.2 million more passengers than second-ranked EasyJet (more than the total number of passengers carried by sixth-ranked British Airways). Of LCCs, Norwegian ranked third (35 million passengers), and Vueling is fourth (31 million passengers) (Fig. 1).

EasyJet, a British company, which is the second largest group of low-cost carriers in Europe, has expanded its network to east in recent years, mostly to eastern part of central Europe, and as opposed to Ryanair, is one of the companies that is known for operating from its country of origin. The main strategy of this company is to connect networks between British cities with the cities from Eastern Europe. Thus, the other LCC companies such as Eurowings, Vueling, Wizz Air, Jet2.com, Transavia, etc. had later contributed increasingly to the

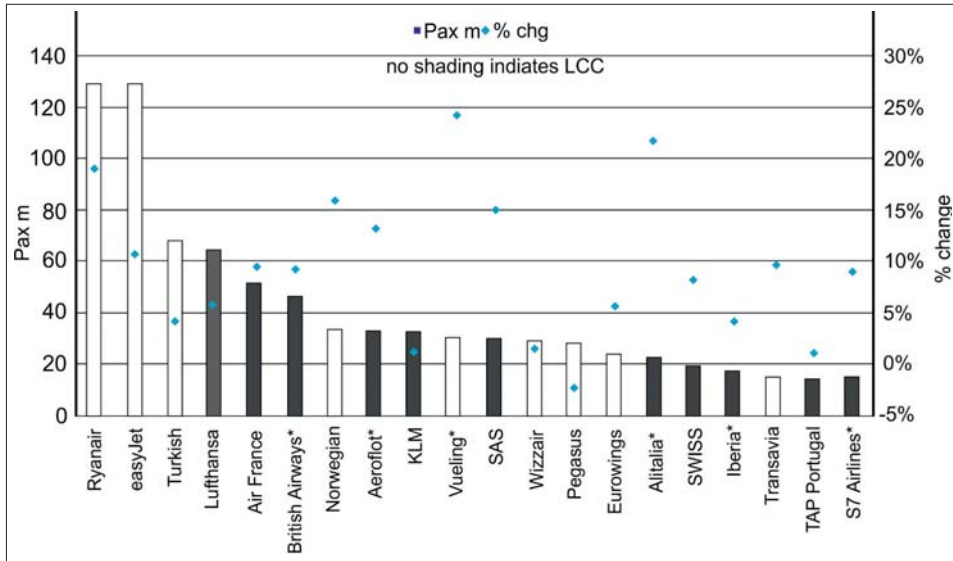


Fig. 1. Top 20 European individual airlines by passenger numbers (2017)

Source: *Europe's Top 20 airline...* (2018).

diversification of many cities from east to west, and conversely, from west to east of Europe.

LCC will continue to grow and it will continue to have the powerful influence not only on the aviation market, but also on other sectors of the economy. There are also clearly positive effects of European LCC on tourism and regional development. According to Macário *et al.* (2007), lower travel cost contributes to the development of the weekend rental market (e.g. houses) in a country different from the country of residence of the traveller. Moreover, LCCs play an important role in stimulating technological and operational improvements of air transport business.

THE CASE OF PORTUGAL

Portugal, similar to Poland, has a peripheral geographical position in Europe. The Portuguese airport system consists of 5 main airports, located in Lisbon, Oporto, Faro, Funchal and Ponta Delgada, with a total volume of traffic of more than 31 million passengers (Costa and Almeida 2015). Lisbon Airport is located in Lisbon, and in 2013 represented about 50% of the total air traffic in Portugal with over 16 million passengers, Oporto Airport, in the north of the country, received about 20% (almost 6 million passengers), and Faro Airport – about 20% (6 million passengers). The role of Funchal and Ponta Delgada

airports is smaller, they represented together almost 11% of the national traffic. In Portugal, air transport generates a number of economic benefits, representing 1.4% of the Portuguese GDP. In addition, an effect of EUR 3.3 billion is estimated in the tourism sector and the air transport sector employs about 59,000 workers in Portugal (Costa and Almeida 2015). Despite the economic crisis experienced in recent years, the Portuguese air traffic market has shown a strong capacity for recovery. From 2005 to 2012, the number of passengers carried grew by about 50%. In 2012, Portuguese airports received almost 13 million passengers on international flights, mainly from the UK, France, Spain, Germany and Brazil (64% being international passengers), of whom about 37% travelled using LCC flights.

LCC began operating in Portugal in 1995 with non-regular business operators Air Berlin and Ryanair from Algarve Airport, then Lisbon Airport, most recently Oporto, and, finally, Funchal. From 2003 to 2012, these airlines included about 25% of the regular market and about 33% of the non-regular segment. Portugal has traditionally been served by the national airline, named “TAP Portugal” (Fig. 2).

According to Campilho (2014, p. 31), “the two largest European LCC airlines operating in Portugal are Ryanair and EasyJet, that occupy the second and third position representing 13 percent in the Portuguese air market”. These LCC airlines operate in Portugal in five cities: Lisbon, Funchal (Madeira), Ponta Delgada (Azores), Faro (Algarve) and Porto. The airport of Lisbon receives the most passengers per year. The Faro and Porto airports are the only airports

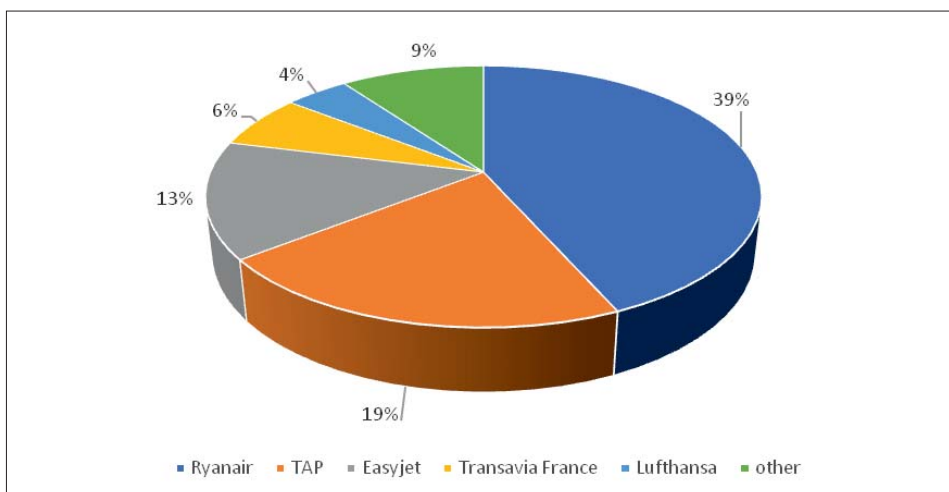


Fig. 2. Distribution of aviation market in Portugal (2016)

Source: Authors' own elaboration based on INAC (2017).

that are dominated by LCC airlines with a presence exceeding 50%. The most important LCC in Portugal are Ryanair and EasyJet.

Ryanair started its regular business in Portugal in March 2003, with two weekly flights between Dublin and Faro. However, the real expansion of this company in Portugal began with the opening of the London Stansted–Porto route, with two daily frequencies, at the Porto Airport on 19 January 2005. In October of the same year, this airline company, inaugurated the Frankfurt–Hahn route and created several other routes to the Porto Airport.

EasyJet started operations on the Portuguese market on 28 March 1999 with the London Stansted–Faro route. In October 2005, it started flying for the first time to the airport in Lisbon, with the route Geneva–Lisbon. Also in October 2008, some additional routes in Porto were introduced. The same year, EasyJet began scheduled flights to Madeira, with routes Bristol–Funchal and London Stansted–Funchal. The low-cost carriers have become important participants in Portuguese air transport. According to De Neufville (2008, p. 60), EasyJet “is competing vigorously with TAP at its hub in Lisbon and Ryanair is undermining the position of TAP at Porto. Both airlines provide frequent direct service to the popular Portuguese tourist destination of Faro in the Algarve – which TAP mostly serves with indirect flights via Lisbon. The outcome of this competitive struggle is not clear. From experience elsewhere, it is possible that the low-cost carriers may come to dominate intra-European air traffic for Portugal”. In these cases, the competition between the main LCC operating to Lisbon and Oporto are below 2%, confirming “that it seems to exist a non-aggression pact between these airlines, avoiding to compete directly one against the other” (Abrantes 2017, p. 25). But while analysing some financial indicators for TAP Portugal and main LCC for Portugal, one can assume that low-cost airlines continue to pursue competitive pressure on a weaker traditional TAP Portugal airline (Tab. 1).

Tab. 1. Dynamics of net profit/loss of some Portuguese airlines in 2010–2015

Net profit/loss	2010	2011	2012	2013	2014	2015
TAP Portugal	-52.9	-72.2	-25.5	-5.9	-85.1	-156.0
Ryanair	305.3	374.6	560.4	569.3	522.8	866.7
EasyJet	141.8	263.7	298.9	466.5	527.5	642.4

Source: Abrantes (2017).

The competition is likely to continue in the future both with EasyJet and Ryanair². The national airline TAP is now in a difficult financial situation, and

² Although EasyJet has not announced any new route in 2017, Ryanair will operate 6 new routes from Lisbon (Bologna, Wrocław, Glasgow, Luxemburg, Naples and Toulouse) and 4 from

may not be able to afford expensive new facilities. Therefore, it seems that LCCs are going to increase their presence in the main Portuguese airports. According to De Neufville (2008), they might also be responsible for bankruptcy of TAP and become the dominant European carriers for the country. To sum up, LCCs in Portugal play a key role in regional economic development and tourism.

THE CASE OF POLAND

The Polish air transport market has been changing since 1990, but most significant changes began with the EU accession on 1 May 2004 and earlier as the EU legislation had come into force. However, the market was assessed as a market with high growth potential, resulting from the increase in the affluence of Poles and economic growth in Poland and Europe (Kubicka 2009).

The dynamic growth of air traffic in Poland was influenced not only by relatively low fares and growth in the number of routes, but primarily by the increased transport needs of Poles in connection with the opening up of labor markets in the UK, Ireland and later in Scandinavian countries. Half of the passengers departing Poland on regular traffic go to the UK (27%), Germany (16%) and Norway (7%) (Tłoczyński 2014). Great Britain and Norway attract migrant workers primarily, while the German airports in Frankfurt and Munich are gaining in importance as transfer hubs for Poles in the context of the declining number of flights provided by LOT Polish Airlines from Warsaw. Thus, the low-cost network is dominated by routes to the United Kingdom and Ireland and to Scandinavian countries.

According to the *Eastern Europe – low cost and loving it* report, growth in Eastern European LCCs is continuing to surge, with Poland's LCCs generating a third of all seats in the region. Poland is said to be the largest of the Eastern European air transport markets with the main LCCs players.

With the emergence of LCCs in the aviation market in Poland, air traffic began to grow rapidly, with an average annual growth rate in the period 2004–2008 of 24% (Huderek-Glaska and Nowak 2016), whereas in the years 2009–2017 – of 33%. According to the Polish Civil Aviation Authority data, the air traffic in Poland measured by total passenger number (regular and non-regular) was 39.2 million in 2017.

In the year 2009, LCCs' share of air traffic in Poland represented between 47 and 60%. In 2009, low-cost airlines accounted for 14% of the total number of

Oporto (Birmingham, Edinburg, Kraków and Nuremberg). According to the data of Abrantes (2017), in Lisbon, three of the routes will be in direct competition with TAP Portugal.

Tab. 2. LCCs development in the air transport market of Poland (top 9 airlines in Poland, passengers carried in regular traffic, 2009–2017)

Year/ airline	Ryanair	Wizz Air	LOT + EuroLOT	Lufthansa	EasyJet	Norwegian	KLM	SAS	Air France	Total	All LCCs
2009	Pc	750,868	822,391	1,112,793	255,802	108,253	44,780	53,726	64,397	3,828,831	1,892,510
	%	19.6	21.5	29.0	6.7	2.8	1.2	1.4	1.7	100.0	49.4
2010	Pc	894,254	856,496	1,292,974	313,546	77,179	48,164	53,105	69,713	41,388,741	1,977,059
	%	21.6	20.7	31.2	7.6	1.9	1.2	1.3	1.7	100.0	47.8
2011	Pc	931,958	940,179	1,326,756	333,822	84,080	55,980	77,902	79,854	4,424,039	2,093,123
	%	21.0	21.3	30.0	7.6	1.9	1.3	1.6	1.8	100.0	47.3
2012	Pc	1,317,028	887,952	1,384,381	354,318	89,015	54,386	80,915	84,821	4,820,840	2,459,919
	%	27.3	18.4	28.7	7.4	1.9	1.1	1.7	1.8	100.0	51.0
2013	Pc	6,585,046	4,057,531	5,857,808	1,514,527	422,505	240,173	336,949	335,062	21,983,803	11,901,474
	%	30.0	18.5	26.7	6.9	1.9	1	1.5	1.5	100.0	54.1
2014	Pc	6,527,831	4,499,521	5,794,358	1,796,653	590,364	240,049	372,531	327,575	23,373,833	12,681,378
	%	28.0	19.3	24.8	7.7	2.1	1.0	1.6	1.4	100.0	54.3
2015	Pc	8,211,090	5,821,836	5,518,503	1,958,442	791,205	277,987	358,704	350,734	26,716,326	16,031,650
	%	30.7	21.8	20.7	7.3	2	1	1.3	1.3	100.0	60.0
2016	Pc	2,404,877	1,554,965	1,692,876	451,659	186,325	90,031	111,220	86,302	7,546,087	4,483,257
	%	31.9	20.6	22.4	6.0	2.5	1.2	1.5	1.1	100.0	59.4
2017	Pc	2,659,033	1,896,826	2,233,193	489,271	172,231	116,342	99,973	90,397	8,846,772	5,066,872
	%	30.0	21.4	25.2	5.5	2.5	1.3	1.1	1	100.0	57.3

Source: Authors' own elaboration based on ULC data; Pc – passengers carried.

passengers using scheduled connections, in 2005 – 31.37%, in 2006 – 46.20%, and in 2007 their share exceeded 50% (Pijet-Migoń 2012). In the years 2009–2017, the number fluctuated around 50% with the highest share in 2015 – 60% (Tab. 2). Over the analyzed years, Ryanair has become the leader among the LCCs, which, in 2017, transported over 2,659,033 passengers from Polish airports, becoming the first line for the fifth time in the Polish market after LOT Polish Airlines and Wizz Air in terms of the number of passengers handled (Tab. 2). In 2013, the low-cost airline Ryanair for the first time dethroned the national carrier LOT Polish Airlines, becoming the market leader in terms of passengers carried. In the same year, all regular airlines in Poland sold tickets to nearly 22 million passengers. Of this, 54% were low-cost customers. In 2016, Ryanair's share was the largest in history and amounted to almost 32% (Tab. 2). At the same time, Ryanair, being first and foremost an international carrier, also began offering domestic connections between regional airports in Poland.

The position of Wizz Air strengthened quickly in the analyzed years on the Polish market too. In 2005, the first year of operation in Poland, 261,000 passengers used their services, and in the next year – 1 million 545 thousand (Pijet-Migoń 2012). In the subsequent analyzed years (2009–2017), this airline took the third position (after Ryanair and LOT Polish Airlines) with the exception of 2015, when Wizz Air ranked second (5,821,836 passengers) in the country in terms of the number of passengers served (Tab. 2).

Currently, the leading representatives of this group include: Wizz Air, Ryanair, EasyJet and Norwegian Air Shuttle, currently gathering around 96% of the low-cost transport market (www.ulc.gov.pl). A part of this group of carriers adjusted transport to the tourist traffic in particular areas of the European continent to a large extent. This is evidenced by the size of the services offered on the routes characterized by the highest number of connections from Polish airports in the summer season, in a large part carried out for tourism purposes. According to Hawlena (2012), in 2011, in connections with Dublin, LCC flights accounted for 100%. Regarding the LCC market in Poland, the most significant changes were noticed at regional airports, which experienced a very high dynamics of passenger number increase. This, in turn, translated into a drop in the participation of Chopin Airport in Warsaw – from 67.9% in 2004 to 36.8% in 2015. According to Olipra (2011), the Warsaw Airport had the smallest (23.81% in 2009) share of the LCCs in the total number of passengers. In most of regional airports in 2009, this share was more than 60% of passengers, and in the case of Katowice, Łódź and Bydgoszcz, even more than 90%. From the more detailed analysis conducted by Olipra (2011) there can be drawn a conclusion that LCCs are the main “engine” of the regional airports development. The development of

regional airports is closely related to the presence of LCCs. Among all Polish regional airports, only in Kraków the other carriers have a relatively large share of the total destinations. In other cases, Ryanair and Wizz Air operated the vast majority of flights (www.ulc.gov.pl).

CONCLUSIONS

The emergence of LCC is one of the events that has revolutionized the aviation industry. Firstly, LCCs operated in the USA, then they were adopted in Europe in the late 1990s and contributed to the development of new routes within a more dynamic network spread all over the continent, including peripheral regions and “new” destination like Central and Eastern Europe.

In both analyzed countries, the top players are Ryanair, Wizz Air and EasyJet airlines, sharing majority of aviation market. It was observed that in the case of Portugal, the development of LCCs’ operation was associated with leisure and cultural travels (leisure and sightseeing), whereas in Poland, their dynamic development was caused by the foreign labor market open after 2004 (Western Europe) and work travels.

Regarding Portugal, the two largest LCCs are Ryanair and EasyJet that occupy the second and third positions representing 13% in the air market. These LCC airlines operate in Portugal in all five city airports but the Faro and Porto airports are the only ones that are dominated by LCC airlines with a presence exceeding 50%. Furthermore, the LCCs are going to increase their presence in the main Portuguese airports.

The network of connections from Poland after accession to the EU has undergone tremendous changes. The network of connections from regional airports has been expanded, mainly due to LCCs. Low-cost airlines, among which the largest players are Ryanair, Wizz Air and EasyJet, serve thirteen out of all fifteen Polish airports, from which regular international passenger connections take place. Without the LCCs, regional airports in both countries may become unprofitable and lose their importance. Therefore, this phenomenon needs further studies.

Authors’ contribution: Andrzej Tucki – 40%, Viktoria Pantyley – 30%, Ryszard Dębicki – 20%, Alexandra Viega – 10%.

REFERENCES

- Abrantes J. 2017: *Low cost-carriers and full service carriers: Evidence (or not) of competition in Lisbon and Oporto cities*. Tourism Spectrum. A-Bi annual International Refereed Journal, 3(1), 20–28.
- Campilho P. 2014: *O impacto das companhias aéreas Low Cost na dinâmica económica do turismo regional*. Online: https://sigarra.up.pt/flup/pt/pub_geral.pub_view?pi_pub_base_id=33525 (access: 1.09.2018).
- Carballo-Cruz F., Costa V. 2014: *Success factors of regional airports: The case of Oporto airport*. Tourism & Management Studies, 10(1), 36–44.
- Casey M. 2010: *Low-cost air travel: Welcome abroad?* Tourism Studies, 10(2), 175–191.
- Costa V., Almeida K. 2015: *Low-cost carriers, local economy and tourism development at four Portuguese airports. A model of cost-benefit analysis*. Journal of Spatial and Organizational Dynamics, 3(4), 245–261.
- De Neufville R. 2008: *Low-cost airports for low-cost airlines: Flexible design to manage the risks*. Transportation Planning and Technology, 31(1), 35–68.
- Dobruszkes F. 2013: *The geography of European low-cost airline networks: A contemporary analysis*. Journal of Transport Geography, 28, 75–88.
- Dunn G., Clark O. 2016: *Battle grounds*. Airline Business, 32(6), 26–29.
- Eastern Europe – low cost and loving it* report. Online: <https://www.oag.com/eastern-europe-0> (access: 1.09.2018).
- Europe's Top 20 airline groups by passengers 2017; Lufthansa wrests top spot from Ryanair*. CAPA. Online: <https://centreforaviation.com/analysis/reports/europes-top-20-airline-groups-by-passengers-2017-lufthansa-wrests-top-spot-from-ryanair-394211> (access: 1.09.2018).
- Graham A., Papatheodorou A., Forsyth P. 2008: *Aviation and Tourism: Implications for Leisure Travel*. Aldershot: Ashgate.
- Graham B., Shaw J. 2008: *Low-cost airlines in Europe: Reconciling liberalization and sustainability*. Geoforum, 30, 1439–1451.
- Hawlina J. 2012: *Znaczenie lotniczych przewoźników niskokosztowych w procesie rozwoju turystyki kontynentalnej na przykładzie Europy*. Logistyka, 3, 750–759.
- Huderek-Gląpska S., Nowak A. 2016: *Airport and low-cost carrier business relationship management as a key factor for airport continuity: The evidence from Poland*. Research in Transportation Business & Management, 21, 44–53.
- INAC. 2017: Instituto Nacional de Aviação Civil, Lisboa.
- Kubicka J. 2009: *Funkcjonowanie i rozwój korporacji wielonarodowych w wybranych sektorach usługowych i produkcyjnych*. Dąbrowa Górnicza: Wydawnictwo Wyższej Szkoły Biznesu.
- Macário R., Viegas J.M., Reis V. 2007: *Impact of low cost operation in the development of airports and local economies*. Workshop APDR – O Impacto dos Aeroportos no Desenvolvimento Regional.
- Mills G. 2016: *The Airline Revolution: Economic Analysis of Airline Performance and Public Policy*. Abingdon–New York: Routledge.
- Olipra Ł. 2011: *Tanie linie lotnicze – nowa „jakość” w przewozach lotniczych w Unii Europejskiej*. Prace Naukowe Uniwersytetu Ekonomicznego we Wrocławiu. Ekonomia, 4(16), 368–389.

- Pijet-Migoń E. 2012: *Zmiany rynku lotniczych przewozów pasażerskich w Polsce po akcesji do Unii Europejskiej*. Rozprawy naukowe Instytutu Geografii i Rozwoju Regionalnego Uniwersytetu Wrocławskiego, 25.
- Richman A., Lyle C. 2005: *The Economic Benefits of Liberalising Regional Air Transport: A Review of Global Experience*, Johannesburg: ComMark Trust.
- Rosa T., Baltazar M.E., Silva J. 2017: *Low-cost carriers socio-economic impact in tourism development: The case of Faro's Airport Hinterland*. Tourism Spectrum. A-Bi annual International Refereed Journal, 3(1), 29–40.
- Tłoczyński D. 2014: *Przemiany na polskim rynku usług transportu lotniczego. Bilans 10 lat w unii europejskiej*. Zeszyty Naukowe Uniwersytetu Szczecińskiego nr 843. Problemy Transportu i Logistyki, 28, 247–261.

INTERNET SOURCES

- <http://www.lifeasabutterfly.com/wp-content/uploads/2015/07/766-1042-1-PB-1.pdf> (access: 1.09.2018).
- <http://www.ulc.gov.pl/en/publications/statistics-and-analysis-of-air-transport-market/3975-statistics-by-carriers> (access: 1.09.2018).
- <https://www.mitportugal.org/about/documents/transportation-systems-1/related-literature/284-impact-of-low-cost-operation-in-the-development-of-airports-and-local-economies/file> (access: 1.09.2018).
- <https://centreforaviation.com/insights/analysis/europes-top-20-airline-groups-by-passengers-2017-lufthansa-wrests-top-spot-from-ryanair-394211> (access: 1.09.2018).
- https://sigarra.up.pt/flup/pt/pub_geral.pub_view?pi_pub_base_id=33525 (access: 1.09.2018).
- https://www.anac.pt/SiteCollectionDocuments/Publicacoes/BET/BET_37_1TRIM_17.pdf (access: 1.09.2018).
- [https://wizzair.com/en-gb/information-and-services/about-us/news/2016/09/08/wizz-air-expands-in-katowice#/#/](https://wizzair.com/en-gb/information-and-services/about-us/news/2016/09/08/wizz-air-expands-in-katowice#/) (access: 1.09.2018).