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Economic importance of air transport and airport activities in Belgium – Report 2015

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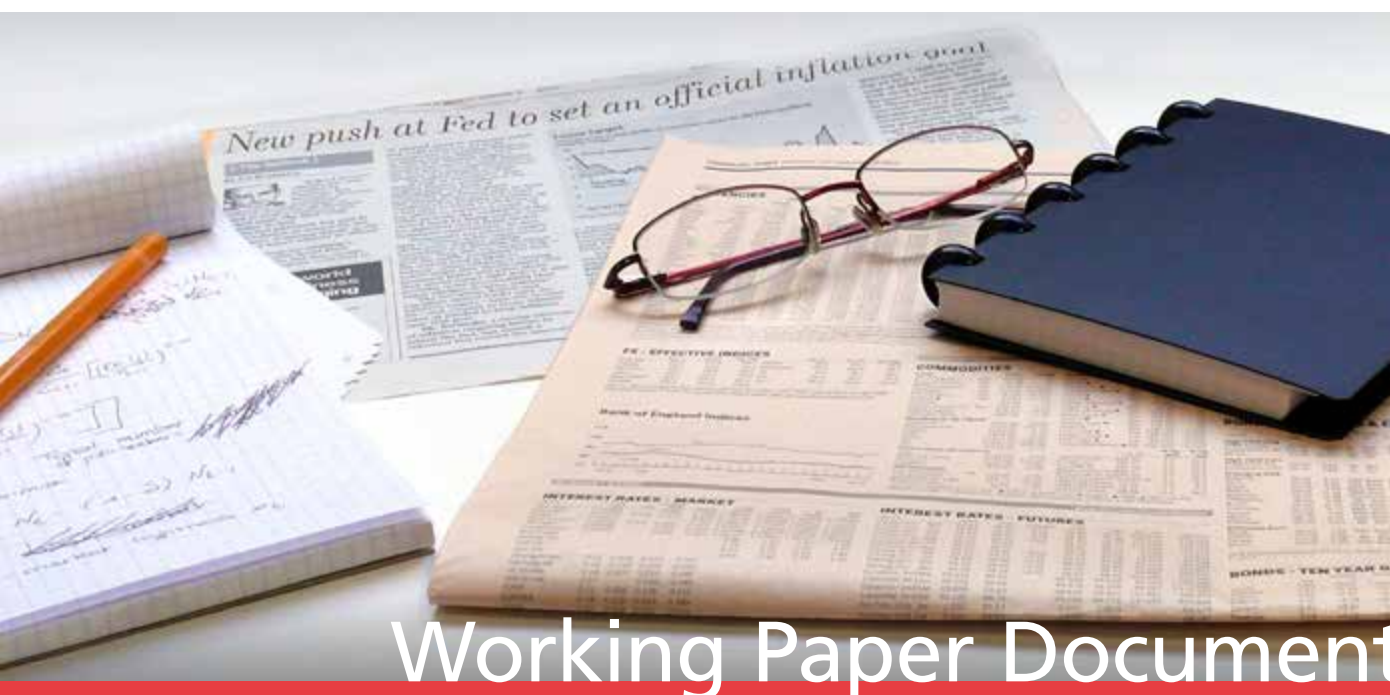
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Economic importance of air transport and airport activities in Belgium – Report 2015



Working Paper Document

by Saskia Vennix

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ABSTRACT

This study assesses the economic importance of air transport and airport activities in Belgium in terms of value added, employment and investment over the 2013-2015 period¹. The sector considered embraces not only the activities directly connected with air transport, but also all those that take place on site at the six Belgian airports (Antwerp, Brussels, Charleroi, Kortrijk, Liège and Ostend). The study reviews the direct and indirect effects of the sector on the basis of microeconomic data (mainly obtained from the Central Balance Sheet Office) and mesoeconomic data (from the National Accounts Institute). It also includes a social balance sheet analysis and an indication of credit risk using statistical models from the NBB's In-house Credit Assessment System (ICAS).

In 2015, air transport and airport activities generated € 6 billion in direct and indirect value added (i.e. 1.5 % of Belgian GDP) and employed around 62 500 people in full-time equivalents (FTEs) either directly or indirectly (1.5 % of domestic employment including the self-employed).

Brussels and Liège Airport remain the country's biggest airports, respectively in terms of passenger and cargo traffic. In the aftermath of the terrorist attacks in March 2016, the regional airports received part of Brussels' passenger traffic. All in all, Brussels recovered fairly quickly, especially freight traffic, but also passenger traffic resumed gradually to tie in with growth again since November 2016. Brussels and Liège are the fastest growing airports during the 2013-2015 period, respectively in terms of value added and employment. At Ostend Airport, these economic variables slumped in line with the evolution of freight traffic volumes. Antwerp's growth rates went into the red as well, mainly under the influence of the difficulties faced by VLM Airlines. At Charleroi and Liège, the trend of value added is downward, while that is not the case for employment. The smallest changes are recorded in Kortrijk.

JEL classification: C67, D40, J21, L93, R15, R34 and R41.

Keywords: air transport, airport activities, sector analysis, indirect effects, employment, value added, investment

¹ This is an update of the study conducted on the basis of 2012 data by F. Van Nieuwenhove (2014), *Economic Importance of Air Transport and Airport Activities in Belgium*, NBB, Working Paper No. 273 (Document series), Brussels.

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Research results and conclusions expressed are those of the author and do not necessarily reflect the views of the National Bank of Belgium or any other institution to which the author is affiliated. All remaining errors are ours.

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FOREWORD

In March 2009, the National Bank of Belgium (NBB) first published an extensive study of the economic importance of air transport and airport activities in Belgium. The publication¹ was welcomed by both industry stakeholders and the competent authorities. In December 2011 and November 2014, updates² were released, presenting the findings for the 2007-2009 period and the 2009-2012 period respectively. In 2015, the NBB was asked to update its analysis again to cover the years up to and including 2015³.

This report reviews the 2013-2015 period. It starts off by analysing the direct effects of the sector's economic impact and covers aviation-related activities on Belgian soil and airport-related activities in the different airport zones. It also focuses on indirect value added and employment as generated by Belgium-based suppliers and their contractors, as well as by the suppliers of these contractors, etc. Besides a change in the estimation of indirect effects as explained in the introduction, the methodology has remained unchanged: the selection of companies featuring in the study and their analysis draw on the same methods as used in the three previous studies⁴.

The report's introductory section takes a global view of passenger and cargo transport by air. Its actual analysis first reviews briefly Belgian air traffic, to move on to value added, employment and investment in the sector, while also touching upon social impact and credit risk. The second part is a detailed analysis of the latest developments and economic performances of each of the country's six airports (Antwerp, Brussels, Charleroi, Kortrijk, Liège and Ostend).

Data-gathering was completed at the end of March 2017 and this study does not take into account any information published after this date.

¹ Kupfer and Lagneaux (2009). This study is available at <http://www.nbb.be> > Publications and research > Economic and financial publications > Working papers > 2009 – nr. 158.

² Deville and Vennix (2011). This study is available at <http://www.nbb.be> > Publications and research > Economic and financial publications > Working papers > 2011 – nr. 218.

Van Nieuwenhove (2014). This study is available at <http://www.nbb.be> > Publications and research > Economic and financial publications > Working papers > 2014 – nr. 273.

³ Figures are based on annual accounts the companies filed with the NBB's Central Balance Sheet Office, which causes an important time lag, as 2016 data will not be available until the autumn of 2017.

⁴ For all details of the methodology, see Part 1 of Kupfer and Lagneaux (2009).

INTRODUCTION

AIM AND GENERAL METHODOLOGY OF THE STUDY

This Working Paper examines two categories of economic activity. The first comprises those segments which come under the heading of air transport (the air transport cluster, both inside and outside airports). The second encompasses companies from other segments which have some connection with air transport as a result of their geographical location, more particularly within the airport zone (other airport-related activities)⁵. It is important to mention that the distinction between activities inside and outside airports is based on the breakdown of employment between companies' operating establishments⁶. The breakdown of value added between business inside and outside airports is therefore an estimate which has to be interpreted with caution, just like value added in the cluster comprising other airport-related activities. The airport authorities, which were able to provide the necessary information, were used as the source for all activities (both air transport and other) within their airport zone.

Attention focuses first on the actual activities of the companies in the population, or in other words the direct effects. The following economic variables are calculated here:

- Value added at current prices⁷: the value which a firm adds to its inputs via the production process during the financial year. A company's value added indicates its contribution to the prosperity of the country or region (as a % of GDP). In accounting terms, this is calculated as the sum of the staff costs (code 62 in the annual accounts), depreciation and value adjustments (codes 630 and 631/4), provisions for liabilities and charges (code 635/7), other operating expenses (code 640/8) and the operating profit or loss (code 9901), less operating costs capitalised as restructuring expenses (code 649). Since value added is created only by reference to unbiased market transactions, operating subsidies (code 740) must also be eliminated. According to the reference methodology for compiling the Belgian national accounts as from September 2014⁸ (ESA 2010), it is only non-product-related subsidies that can be deducted. These include subsidies to support employment or to cover annual losses. Conversely, product-related subsidies are not deducted when calculating value added. Such subsidies are paid in order to reduce the market price of the products. In the ESA methodology, the operating grants which the airport operators receive are regarded as product-related subsidies. They are therefore not deducted when calculating the value added of the six airport operators reviewed in this study.
- Employment in full-time equivalents (FTEs): the average workforce during the financial year. Direct employment mainly concerns employees on the payroll of the companies considered. The figures for the six airports nevertheless include some self-employed workers (e.g. instructors or pilots), since use is made here of data supplied by the airport authorities or the companies themselves.
- Investment at current prices⁹: these correspond to the tangible fixed assets acquired during the financial year, including capitalised production costs.

Next, attention focuses on the indirect effects. The indirect value added and employment are the value added and employment generated 'top-down' – i.e. on the supply side of the companies in question. That is not confined to the first level of suppliers and subcontractors but goes deeper, to an 'infinite' number of levels.

⁵ See Annex.

⁶ A distribution key based on the number of employees was applied to companies operating both inside and outside airports and/or operating at various airports. This information was derived from the airport authorities or the companies themselves wherever possible, or else collected from National Accounts databases.

⁷ Unless otherwise stated, the value added figures in the text are always stated at current prices.

⁸ For more information on this methodology, see the National Accounts website: <http://www.nbb.be> > Statistics > National/regional accounts > Methodology.

⁹ Unless otherwise indicated, investments are always stated at current prices.

The indirect effects¹⁰ are calculated on the basis of the following data:

- the share of the population examined in each SUT¹¹ branch at national level;
- the links between the branches as derived from the SUT and/or indicated in the IOT¹²;
- national figures for value added and employment per SUT branch.

In December 2013, the National Accounts Institute published an input-output table for 2010. In December 2015, this input-output table for 2010 was updated with the new accounting rules of the ESA 2010 standard¹³ and the harmonised NACE codes¹⁴. The latest supply and use table relates to the year 2013.

All data series come from the National Accounts Institute (NAI)¹⁵. In previous versions of this study, the national data on value added and employment per SUT branch came from the Central Balance Sheet Office¹⁶, obtained by aggregating the data provided in the annual accounts of companies. To increase accuracy and consistency in data use, this paper only uses NAI data to calculate indirect effects. This implies that foreign companies, self-employed operators and public entities and authorities are no longer disregarded in the calculation of the indirect effects. The impact is only minor though. However, the level of indirect effects is obviously significantly lower than in previous versions of the study. The reason is that the use of new NAI figures for value added and employment per SUT branch results in more accurate shares of the population examined in each SUT branch. Notwithstanding the break in this part of the methodology, in our opinion, this correction was necessary to obtain a more accurate approximation of the true indirect effects. The reader must keep in mind that indirect effects need to be interpreted with caution, and should be regarded more as an indicator of the importance of air transport and airport activities for the national and local economy rather than as an absolute value.

It is also important to note that the indirect effects per airport must be interpreted with caution as well since the calculations are based on certain assumptions (e.g. that the national technical coefficients are also valid at regional level). Also, the sum of the indirect effects per airport and those generated by aviation companies located outside the airport zones does not correspond to the total indirect effects calculated directly for the sector as a whole. The reason is that, since the companies have mutual economic links, some of the indirect effects calculated per airport are eliminated when the calculations are done at a more aggregate level, i.e. for the sector as a whole.

Apart from this purely economic angle, the analysis of the companies in question also takes a social perspective, considering employment and the social balance sheet. That section deals in particular with working time, labour costs, the degree to which external staff are used, the workforce structure, staff turnover and training.

Credit risk is the third aspect of this study and reflects the probability of a company not being able to pay its debts within the next twelve months. Based on statistical models, each company is categorised in one of fourteen credit risk classes. The relative frequency distribution of the

¹⁰ The theory of the indirect effects is explained in Annex 2 by Kupfer and Lagneaux (2009).

¹¹ Supply and use table.

¹² Input-output table.

¹³ Eurostat has designed the European System of National and Regional Accounts (ESA) to provide a systematically detailed description of the EU economies, their components and relations with the other economies. The ESA is therefore used as the central reference point for the economic and social statistics for the EU and its Member States. The international systems of national accounts are revised from time to time to cater for new statistical requirements called for in response to changes in the contemporary economies and reflecting methodological developments.

¹⁴ See <http://www.plan.be> > Publications > Themes > Input-output tables and <http://www.nbb.be> > Statistics > Publications > National accounts > Supply and use tables.

¹⁵ The National Accounts Institute (NAI), established by the Law dated 21 December 1994, combines three institutions: the National Statistical Institute (NSI, now FPS Economy, SMEs, Self-employed and Energy – Directorate General Statistics), the National Bank of Belgium and the Federal Planning Bureau.

¹⁶ A division forming part of the National Bank's Microeconomic Information Department. See <http://www.nbb.be> > Central Balance Sheet Office.

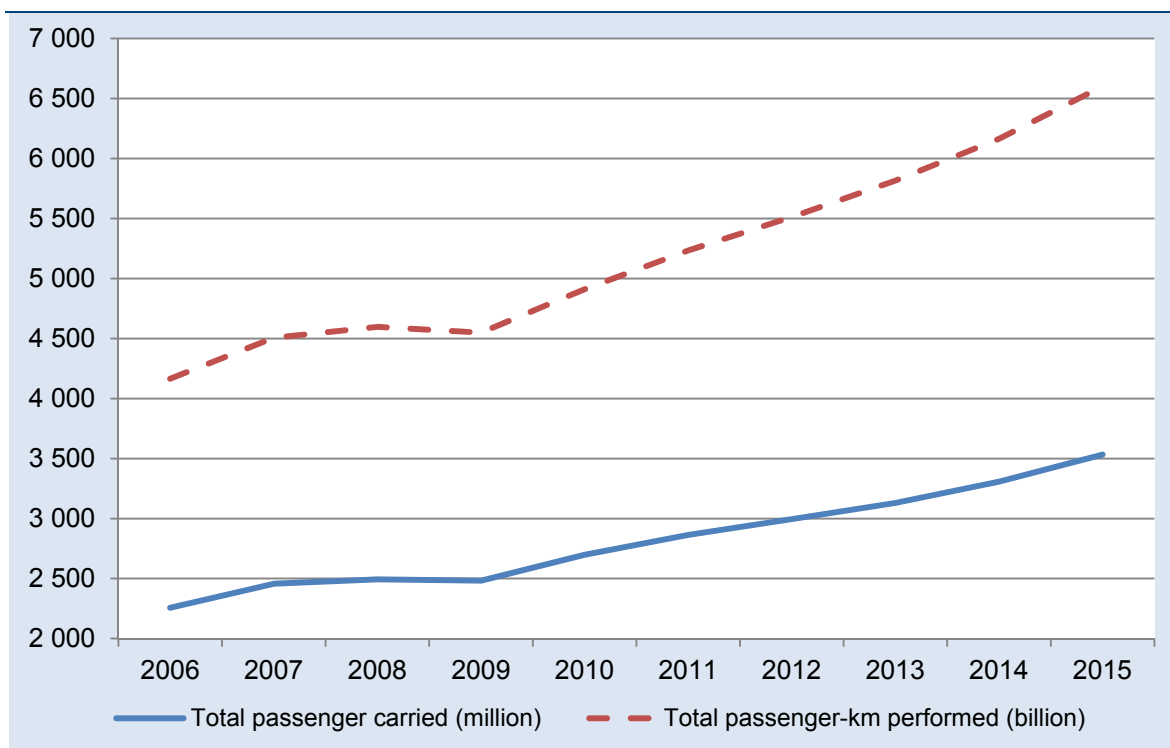
companies under review according to their rating class is then compared with the situation in Belgium's logistics sector and that of the national economy as a whole.

This study is split into two parts. The first part focuses on the Belgian air transport sector as a whole. It considers both the air transport cluster and other airport-related activities from the three angles explained above. The second part examines the impact – in terms of value added and employment – of the six airports individually. The microeconomic data are derived from the annual accounts submitted to the Central Balance Sheet Office, from the airport authorities or from the companies themselves. The latest annual accounts for the year 2015 included in this study were submitted to the Central Balance Sheet Office before April 2017¹⁷.

INTERNATIONAL ECONOMIC AND SECTORAL CONTEXT

Since the advent of commercial air transport, overall air traffic has shown continuous growth. Even the worldwide impact of such events as the Gulf War in 1991 and the 11 September 2001 terrorist attacks only depressed air traffic growth for a few months. In 2009, the global economy suffered its biggest post-war recession. The aviation industry was no exception: 2009 was its worst year since the Second World War. Since 2010, passenger traffic has risen continuously again, in all regions. Low-cost carriers seem to be able to benefit more from average passenger growth rates than traditional carriers. By making flight ticket prices more affordable, they enlarge the market and gain market share. As a result, low-cost airline companies force traditional airlines to reconsider their business model. Since the crisis, airlines have in general become increasingly successful in optimising their available capacity.

CHART 1 WORLD AIR PASSENGER TRAFFIC 2006 - 2015

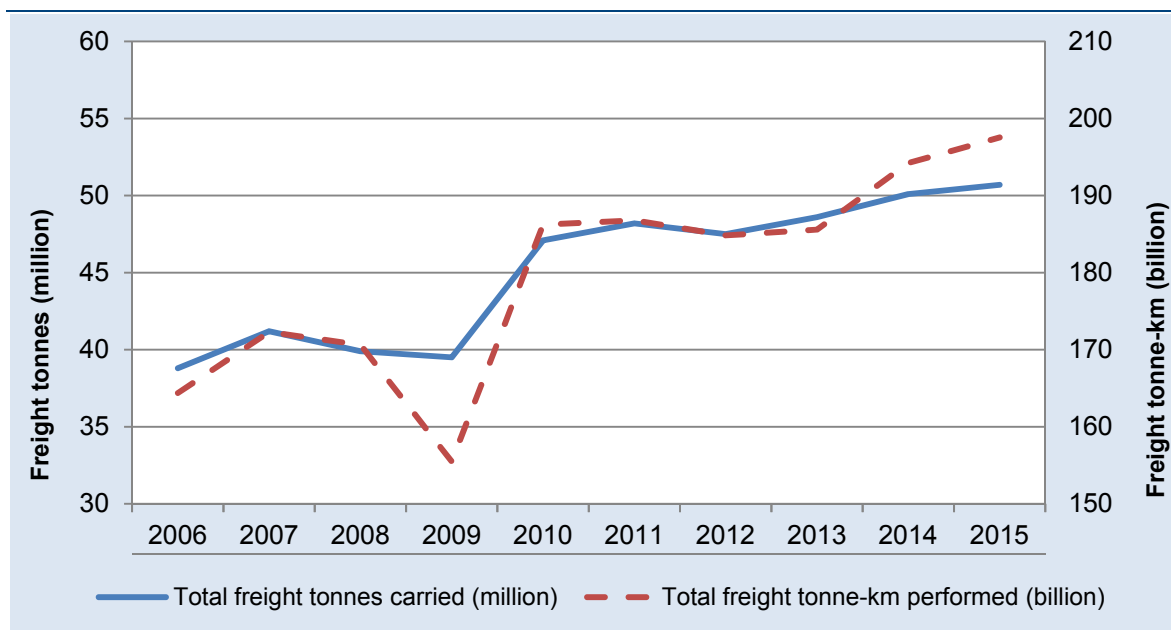


Source: ICAO.

¹⁷ Belgian companies have to submit their annual accounts to the Central Balance Sheet Office no later than seven months after the end of the financial year. On that date, there are some companies – mainly the smallest ones or those in difficulty – which have not yet fulfilled that obligation. In April 2017, the number was negligible and the impact of missing data was immaterial as statistical techniques have been used to estimate the missing figures as accurately as possible.

Chart 1 shows the development of world air passenger traffic over the 2006-2015 period¹⁸. The number of passengers transported rose by an annual average of 5.1 %, while passenger kilometres¹⁹ grew at virtually the same pace (+5.3 %). In 2008, both passenger numbers and passenger kilometres suffered from the ailing global economy, resulting in negative growth the year after (at -0.4 % and -1.1 % respectively). By 2010, growth again exceeded 8 % and continued its upward trend in the years thereafter, though at a lower pace. Despite overall economic weakness and slowing growth, passenger traffic grew by 6.8 % in 2015, supported by historically low jet fuel prices and new direct routes and additional frequencies between the United States and the United Arab Emirates, China and the United States, and intra-Asia routes. According to preliminary figures published by the International Civil Aviation Organization (ICAO)²⁰, the total number of passengers carried on scheduled services and passenger kilometres rose by 6 % and 6.3 % respectively in 2016, despite the continued weak economic conditions and thanks to lower air fares (owing to the fall in oil prices).

CHART 2 WORLD AIR CARGO TRAFFIC 2006 - 2015



Source: ICAO.

Chart 2 shows the development of world air cargo traffic over the 2006-2015 period²¹. Overall, the tonnage transported rose by an average 3.0 % per annum while freight tonne-kilometres²² were up by 2.1 % on average. These figures conceal varying trends from one year to another, though. The fall in the number of freight tonne-kilometres in 2008 (-1.0 %) and particularly in 2009 (-8.9 %) was followed by a surge in 2010 (+19.8 %). After the status quo during the 2011-2013 period, 2014 and 2015 showed renewed growth, supported by developments in the Middle East and the Asia-Pacific region. In 2015, the expansion was more limited due to a combination of slowing demand and competition from other transport modes. Following preliminary figures published by the ICAO, the number of freight tonne-kilometres increased by 2.6 % in 2016.

¹⁸ Accurate figures for 2016 were not available at the time this report was completed.

¹⁹ Passenger kilometres are widely used as a unit of measurement for traffic volumes. They are calculated by taking the distance of the flight multiplied by the number of passengers on board. For example, 250 passengers flying a distance of 1 000 kilometres give a total of 250 000 passenger kilometres.

²⁰ The ICAO is a specialised United Nations agency that works with the signatory states and global industry and aviation organisations to develop international standards and recommended practices.

²¹ Accurate figures for 2016 were not available at the time this report was finalised.

²² Freight tonne-kilometres are similar to passenger kilometres (see footnote 19).

It was not only American or Asian airports that took advantage of passenger traffic growth: in 2016, traffic at Europe's top 20 airports enjoyed a rise of 14.7 % in the number of passengers in comparison to 2013²³. Not all airports benefited to the same extent, though. Lisbon recorded an impressive growth of 40.2 % over the three-year period, but remains just outside the top 20. Since the privatisation of the airport operator ANA in 2013, traffic has reached record levels year on year. The airport operator managed to attract new airlines and new routes and to reach more destinations while, at the same time, invested in improvements to customer service. To support traffic growth even further, the Portuguese government and ANA signed an agreement on the expansion of Lisbon airport's capacity. Dublin posted remarkable results as well: the airport has climbed from 19th place in 2013 to 12th. Dublin Airport has launched new routes and capacity was increased on existing services, thus strengthening the airport's position as a gateway between Europe and North America. London Stansted has re-entered the top 20 European passenger airports in 18th position. Since the sale of the airport to Manchester Airports Group (MAG) in 2013, the trend in passenger numbers is on the right track again. Brussels Airport dropped one place in comparison to 2013. This is obviously related to the terrorist attacks in March 2016. After the attacks, no passenger flights were possible at Brussels Airport for 12 days. Flights were gradually resumed from early April to reach full capacity again in June. Notwithstanding, Brussels Airport recorded a 14 % passenger growth rate between 2013 and 2016, while at Berlin Tegel, growth was limited to 8.5 % resulting in a drop out of the ranking. Despite outstanding results from several airports, the top two remain unchanged. Amsterdam and Frankfurt switched places in the ranking.

TABLE 1 TOP 20 EUROPEAN PASSENGER AIRPORTS IN 2016
(in million passengers)

Rank	Airport	Number of passengers
1	London Heathrow	75.7
2	Paris Charles de Gaulle	65.9
3	Amsterdam	63.6
4	Frankfurt	60.8
5	Madrid	50.4
6	Barcelona	44.2
7	London Gatwick.....	43.1
8	Munich.....	42.3
9	Rome Fiumicino (Leonardo da Vinci).....	41.7
10	Paris Orly.....	31.2
11	Copenhagen	29.0
12	Dublin	27.9
13	Zurich	27.7
14	Palma de Mallorca	26.3
15	Oslo	25.8
16	Manchester.....	25.6
17	Stockholm Arlanda	24.7
18	London Stansted	24.3
19	Düsseldorf	23.5
20	Vienna	23.4
21	Lisbon.....	22.4
22	Brussels	21.8

Source: Anna Aero.

Like the development of world air cargo, tonnes of freight handled at Europe's top 20 cargo airports experienced a slightly more modest rise of 9.8 % in comparison with 2013²⁴. Two airports

²³ Van Nieuwenhove (2014).

²⁴ Van Nieuwenhove (2014).

nevertheless faced a downturn in terms of cargo traffic. Freight traffic at Helsinki Airport dropped by 7.7 % between 2013 and 2016. At Frankfurt-Hahn Airport, the situation was even worse as cargo activities halved in the space of three years. The airport consequently disappeared from the ranking. From 2013 to 2016, several cargo airlines relocated or ceased their cargo operations at Frankfurt-Hahn, among them Etihad Cargo, Qatar Airways, Aeroflot and Yangtze River Express. The airport got into financial difficulties and is now looking for a buyer. The biggest progress was recorded by Milan Malpensa: +27.4 %, resulting in a gain of one position in the ranking. The airport strengthened its role as a hub for exporting companies from the Northwest. In 2015, DHL inaugurated a first hub at Milan, introducing new links with Europe, the United States and Hong Kong. One year later, DHL announced the development of a new hub within the new Cargo City at Milan Malpensa airport. At the same time, FedEx is also building a new hub that triples the size of the previous FedEx base. As a result of these developments at Milan Malpensa, Brussels Airport fell back to 10th position in the top 20 European cargo airports. The first Belgian cargo airport, Liège Airport, on the other hand, stood at 8th. Like Milan Malpensa, Munich Airport can present strong growth figures in terms of cargo traffic. As an international hub in passenger traffic, Munich is becoming more and more important as a cargo hub. The key to the strong freight growth in the last few years was above all the arrival of new cargo carriers. The top 5 European cargo airports remained unchanged from 2013. They all handle over 1 million tonnes of freight.

TABLE 2 TOP 20 EUROPEAN CARGO AIRPORTS IN 2016
(in thousands of metric tonnes)

Rank	Airport	Tonnage
1	Frankfurt	2 067.3
2	Paris Charles de Gaulle	1 952.9
3	Amsterdam	1 662.3
4	London Heathrow	1 541.2
5	Leipzig	1 052.4
6	Luxembourg	801.8
7	Cologne Bonn.....	786.0
8	Liège	660.6
9	Milan Malpensa	536.9
10	Brussels	494.6
11	Copenhagen.....	423.0
12	Madrid	415.8
13	Munich.....	356.0
14	Zurich	313.1
15	East Midlands.....	300.1
16	Vienna	282.7
17	London Stansted	252.6
18	Helsinki	167.0
19	Rome Fiumicino (Leonardo da Vinci)	155.0
20	Dublin	134.2

Source: Airport operators and authorities.

1 ECONOMIC IMPORTANCE OF BELGIAN AIR TRANSPORT AND AIRPORT ACTIVITIES AS A WHOLE

1.1 PASSENGER AND FREIGHT TRAFFIC

Between 2009 and 2016, passengers travelled through one of the six Belgian airports grew by 39.9 % to 30.4 million. The 2009 downturn in the wake of the economic crisis was followed by a continuous upward trend until 2015. The aggregate growth in the six Belgian airports kept pace with the growth of world air passenger traffic (chart 3). In 2016, fate struck Brussels Airport hard. The terrorist attacks on 22 March paralysed all air traffic activity there for twelve days. It took a few months before Brussels was 100 % operational again. Some flights were diverted to Belgian regional airports, others to foreign airports such as Lille, and others were cancelled. On aggregate, air passenger traffic in Belgium shrank by 2.9 % in 2016, mainly driven by the 7 % decline at Brussels Airport. Since November 2016, Brussels Airport records growth again. The airport operator is continuously looking for opportunities to expand its network. In 2017, Brussels Airport, in collaboration with 66 airlines, is connected to 208 passenger destinations around the world.

TABLE 3 PASSENGER TRAFFIC VIA BELGIAN AIRPORTS FROM 2009 TO 2016

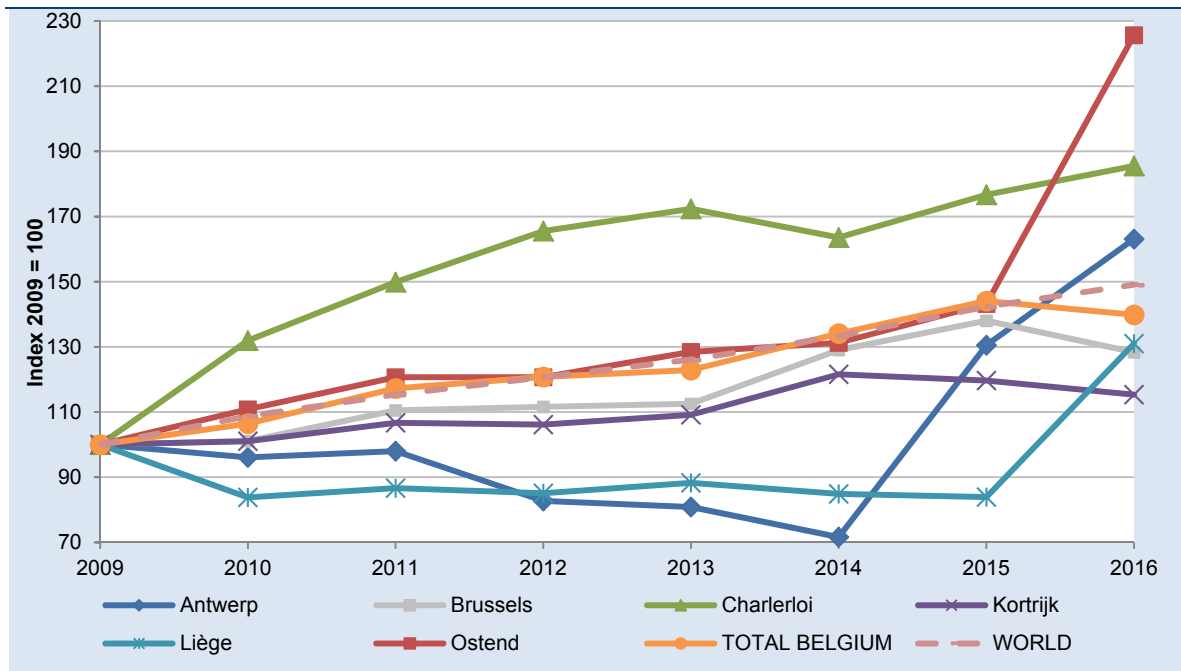
(x 1000 pax)	2009	2010	2011	2012	2013	2014	2015	2016	Change from 2015 to 2016 (in %)	Annual average growth (in %)
Antwerp.....	169	163	166	140	137	121	221	276	24.9	7.2
Brussels.....	16 999	17 181	18 786	18 971	19 133	21 933	23 460	21 818	-7.0	3.6
Charleroi.....	3 937	5 195	5 901	6 516	6 786	6 440	6 956	7 304	5.0	9.2
Kortrijk.....	65	66	70	69	71	79	78	75	-3.6	2.1
Liège.....	357	299	309	303	315	303	299	467	56.2	3.9
Ostend.....	193	214	233	233	248	253	276	435	57.6	12.3
TOTAL.....	21 720	23 118	25 465	26 233	26 690	29 130	31 291	30 376	-2.9	4.9

Source: Airport operators; Economic Survey Department Flemish Government.

The boom at Brussels South Charleroi Airport came to an end in 2014, the year that Ryanair started flying from and to Brussels Airport as well. The resulting loss of passengers was partly compensated by other airlines that started up or intensified their activities. Thus, the overall decline at Charleroi was limited to 5 %. 2015 and 2016 showed a positive evolution again. Charleroi's annual average growth rate of 9.2 % is obviously influenced by the flights diverted from Brussels Airport in the aftermath of the attacks. Following the events in 2014, Charleroi's airport operator increased efforts to reduce its heavy reliance on a single carrier, namely Ryanair. Therefore, Ryanair's market share at Charleroi slightly fell back to 79.2 % in 2015. During that year, Wizz Air became the second largest carrier (9.5 %) at the airport, at the expense of TUI Airlines (9.3 %).

In 2016, a surge in air passenger traffic was not only noted in Charleroi, but also in Liège, Ostend and Antwerp. Relatively speaking, the expansion of activity at Ostend and Liège was most remarkable, up by 57.6 % and 56.2 % respectively on a year-on-year basis. For Liège, this meant a break in a period of overall stagnation. For Ostend, it has boosted the upward trend since 2009 significantly, resulting in an annual average growth rate of 12.3 %. At Antwerp Airport, the activity increase in March and April 2016 masked the loss of flights due to the bankruptcy of VLM Airlines. The smallest of the six airports, Kortrijk, recorded the most modest rise over the 2009-2016 period: its annual average growth rate amounted to just 2.1 %. The airport largely accommodates business and training flights. The 3.6 % drop in 2016 was a direct consequence of several governmental measures.

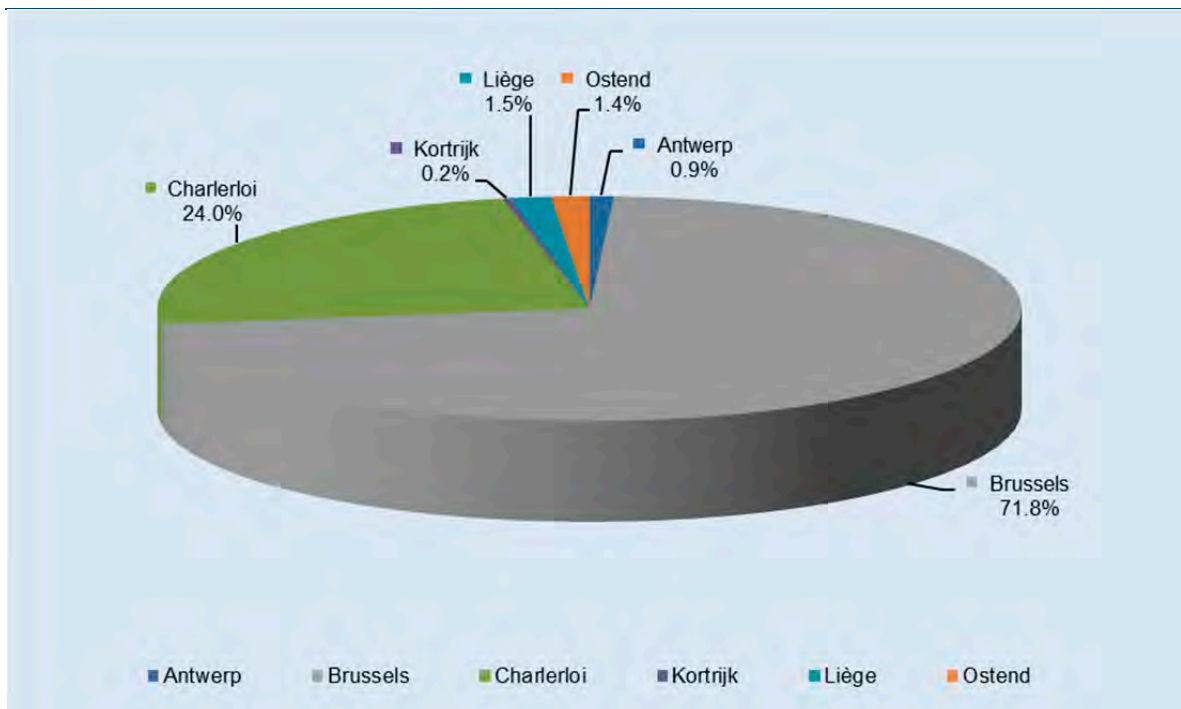
CHART 3 PASSENGER TRAFFIC VIA BELGIAN AIRPORTS FROM 2009 TO 2016



Source: Airport operators; Economic Survey Department Flemish Government; ICAO.

Compared to 2013, the share of Brussels Airport in terms of passenger traffic remained largely unchanged (chart 4). The shift in passenger traffic in 2016 only had an impact on the shares of the regional airports. Ostend, Antwerp and Liège respectively gained 0.5, 0.4 and 0.3 of a percentage point, mainly at the expense of Charleroi Airport (-1.4 percentage points). Brussels and Charleroi together account for nearly 96 % of passenger traffic through Belgian airports.

CHART 4 SHARE OF BELGIAN AIRPORTS IN TERMS OF PASSENGER TRAFFIC IN 2016



Source: Airport operators; Economic Survey Department Flemish Government.

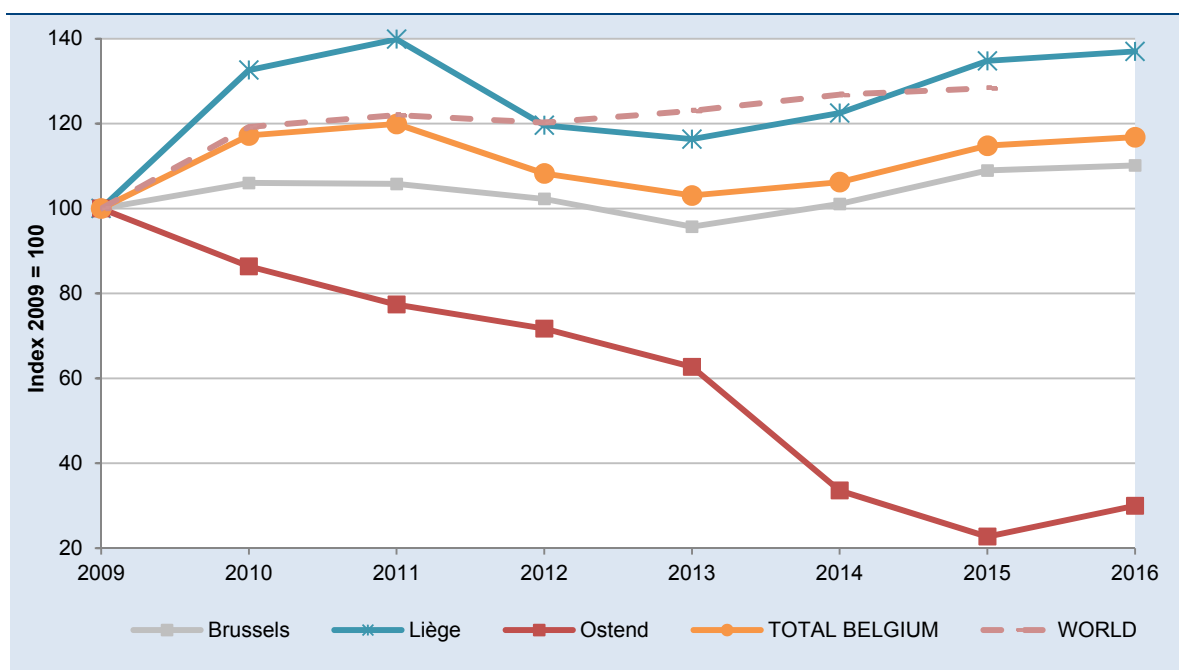
Cargo traffic to and from Belgium's airports is a different story. In 2009, Brussels and Liège Airport suffered losses in the wake of the recession, but Brussels was hit particularly hard by DHL moving its intercontinental hub to Leipzig in Germany (although it retained a regional hub in Brussels). After recovering slightly in 2010 and 2011 more or less in line with world air cargo traffic (chart 5), volumes fell back again in the years that followed, pushing the national performance significantly below that at world level. The fresh upturn that started in 2014 has not come to an end so far. Over the 2009-2015²⁵ period, the annual average growth rate of world air cargo traffic reached 3 %, while this rate at national level was limited to 2.3 %. In 2016, cargo traffic at Brussels Airport was hit by the attacks in March and the departure of Jet Airways (negative impact on belly freight). Cargo traffic recovered much faster than passenger traffic though. Supported by a remarkable rise in the full freighter segment and a more moderate increase in the express market, Brussels Airport was able to report a 1.1 % growth.

TABLE 4 CARGO TRAFFIC VIA BELGIAN AIRPORTS FROM 2009 TO 2016

(x 1000 tonnes)	2009	2010	2011	2012	2013	2014	2015	2016	Change from 2015 to 2016 (in %)	Annual average growth (in %)
Antwerp.....	4.6	4.2	4.2	4.3	3.6	3.4	3.4	2.2	-36.6	-10.1
Brussels.....	449.1	476.1	475.1	459.3	429.9	454.0	489.3	494.6	1.1	1.4
Charleroi.....	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	n.	n.
Kortrijk.....	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	n.	n.
Liège.....	482.1	639.4	674.5	576.7	561.0	590.6	649.8	660.6	1.7	4.6
Ostend.....	74.1	64.0	57.4	53.2	46.5	24.9	16.8	22.2	32.0	-15.8
TOTAL.....	1 010.0	1 183.8	1 211.2	1 093.4	1 041.0	1 072.8	1 159.4	1 179.6	1.7	2.2

Source: Airport operators; Economic Survey Department Flemish Government.

CHART 5 CARGO TRAFFIC VIA BELGIAN AIRPORTS FROM 2009 TO 2016



Source: Airport operators; Economic Survey Department Flemish Government; ICAO.

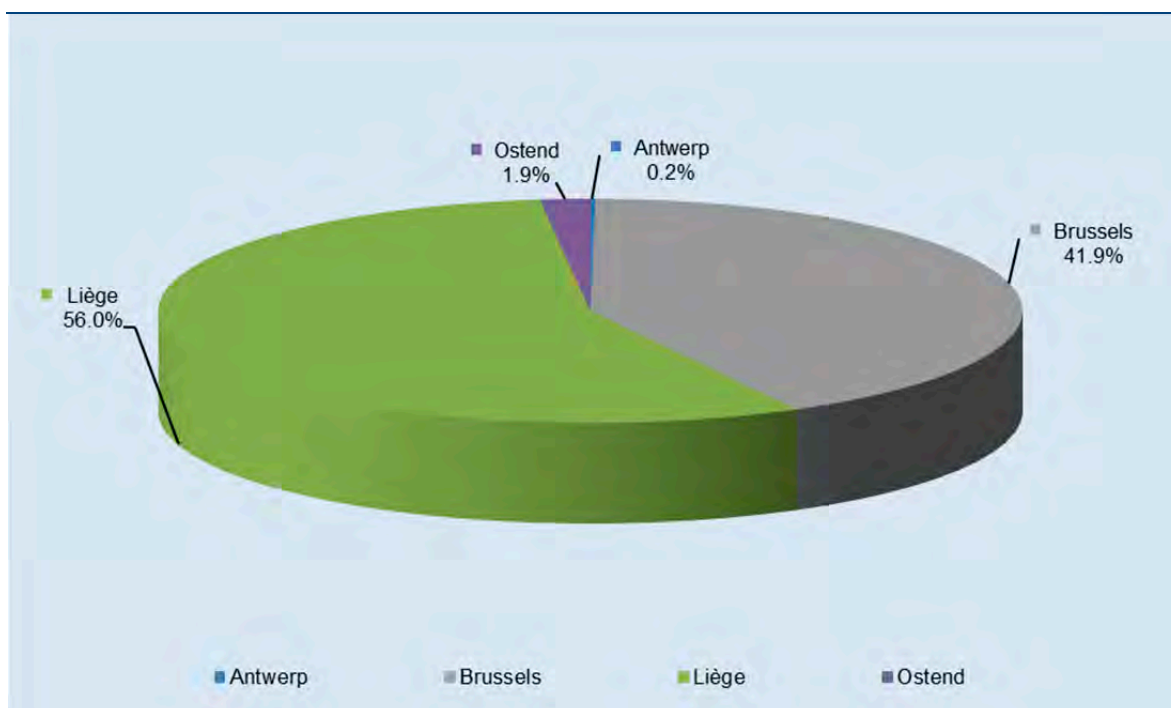
²⁵ World air cargo volumes in 2016 were not available at the time this report was completed.

Liège Airport remains the leading Belgian cargo airport and the only one able to keep pace with the growth of world air cargo traffic between 2009 and 2015. In 2016, the 1.7 % growth originated from all existing customers. Some carriers opened new destinations, others grew within their existing connections. Liège is the European hub for courier service TNT Express Worldwide, its biggest customer. Following the acquisition of TNT Express by FedEx, Liège Airport will be integrated into the FedEx-network in the future. According to the airport's website, approximately 56 % of the volumes is classic cargo, 25 % express cargo and 17 % perishable goods. Liège Airport makes a point of highlighting its competitive advantages, one of them being its direct airside access and aircraft parking spaces right next to the cargo halls which reduce transfer time to a minimum.

At Ostend Airport, cargo volumes slumped from 74 100 tonnes in 2009 to barely 16 800 tonnes in 2015, followed by a slight recovery to 22 200 tonnes in 2016. In the recent past, several carriers disappeared from Ostend. More recently, ANA Aviation - representing 50 % of Ostend's cargo traffic - relocated its operations to Liège.

The plunge in cargo traffic volumes at Ostend resulted in a reduction of Ostend Airport's share in the Belgian air cargo market from 4.5 % in 2013 to 1.9 % in 2016. Liège benefited the most from the malaise at Ostend. The Walloon airport now accounts for 56 % of Belgian cargo traffic, compared to 53.9 % three years earlier. Brussels Airport gained 0.6 percentage points, while Antwerp's cargo volumes remain negligible.

CHART 6 SHARE OF BELGIAN AIRPORTS IN TERMS OF CARGO TRAFFIC IN 2016



Source: Airport operators; Economic Survey Department Flemish Government

1.2 VALUE ADDED

Table 5 presents the direct and indirect value added created by the air transport cluster and airport activities in Belgium. The air transport cluster comprises activities linked to air transport both inside and outside the airports. The other cluster comprises all other activities conducted within the airports. In 2015, air transport and airport activities in Belgium generated total (direct and indirect²⁶) value added of more than € 6 billion. During the 2013-2015 period, total value added enjoyed annual average growth of 7.4 %. Both direct and indirect effects evolved at a comparable pace, which is far above the growth rate of GDP during this period. The air transport cluster and airport activities in Belgium account for 1.5 % of national GDP²⁷.

TABLE 5 AIR TRANSPORT CLUSTER AND AIRPORT ACTIVITIES: VALUE ADDED FROM 2013 TO 2015
(in € million – current prices)

Cluster and sector	2013	2014	2015	Share in 2015 (in %)	Change from 2014 to 2015 (in %)	Change from 2013 to 2015 (in %)	Annual average change from 2013 to 2015 (in %)
Air Transport Cluster	2 127.9	2 271.0	2 489.9	75.1	9.6	17.0	8.2
Air transport	442.1	461.6	538.7	16.2	16.7	21.9	10.4
Travel agencies and tour operators	330.7	338.4	323.8	9.8	-4.3	-2.1	-1.1
Airport operator*	388.9	417.4	445.3	13.4	6.7	14.5	7.0
Airport handling	110.4	108.7	113.2	3.4	4.2	2.6	1.3
Building and repairing of aircraft	652.1	738.0	843.6	25.4	14.3	29.4	13.7
Other air transport supporting activities	203.7	207.0	225.3	6.8	8.9	10.6	5.2
Other airport-related activities	751.5	779.2	827.4	24.9	6.2	10.1	4.9
Passenger transport over land	20.0	18.6	19.5	0.6	4.9	-2.9	-1.4
Freight transport over land	13.4	11.6	12.4	0.4	7.0	-7.5	-3.8
Cargo handling and storage	156.0	175.9	190.4	5.7	8.2	22.1	10.5
Courier and post activities	207.0	221.2	230.5	7.0	4.2	11.3	5.5
Security and industrial cleaning	66.0	70.6	76.3	2.3	8.0	15.6	7.5
Trade	49.5	48.7	50.2	1.5	3.2	1.6	0.8
Hotels, restaurants and catering	69.9	62.6	66.1	2.0	5.7	-5.3	-2.7
Other services	44.3	45.0	47.5	1.4	5.6	7.1	3.5
Other industries	18.4	18.3	19.9	0.6	8.8	8.3	4.1
Public services	107.0	106.7	114.6	3.5	7.4	7.1	3.5
Direct Effects	2 879.4	3 050.2	3 317.3	100.0	8.8	15.2	7.3
Indirect Effects	2 328.9	2 423.9	2 693.9	(81.2)	11.1	15.7	7.6
Total	5 208.3	5 474.0	6 011.3	(181.2)	9.8	15.4	7.4

Source: NAI; NBB (Central Balance Sheet Office, own calculations).

* It should be noted that the direct value added generated by all airport operators except the figure for Kortrijk Airport includes operating subsidies and compensation paid by public authorities.

Focusing on the trend in direct value added, the main driver behind the strong performance is the air transport cluster, which accounts for three-quarters of direct value added generated. Within this

²⁶ As mentioned in the methodological section, the indirect effects are an estimate that should be interpreted with caution.

²⁷ Source: NBB.Stat.

cluster, building and repairing of aircraft²⁸ has enlarged its share to more than one-third, thanks to an impressive € 192 million jump in value added in two years time. Nearly two-thirds of this boost can be explained by Safran Aero Boosters²⁹, a firm that designs, develops and produces modules and equipment for aerospace engines. In 2014, its operating profit improved by € 48 million, supported by a favourable €/€ exchange rate, higher volumes, a better product mix and increased productivity. Depreciation charges on fixed assets were also up, following numerous developments relating to new engine programmes during the last couple of years. Lastly, in 2013, provisions were reversed, resulting in a negative impact on value added during that year. In 2015, operating profit contracted slightly, but this was largely offset by higher employee expenses, depreciation and provisions. These increased expenses can be traced back to the new programmes that the company is involved in. The other two largest players in the sector, Société Nationale de Construction Aérospatiale (SONACA) and Asco Industries³⁰, also performed better in terms of value added (Asco only in 2015). Improved operating results played a key role, but in the case of SONACA, higher employee expenses (2014) and depreciation charges (2015) gave a boost too.

The air transport sector contributed to the positive developments in the first cluster as well. To a large extent, this was down to Brussels Airlines. This Belgian airline, which is now entirely under Lufthansa's control, nearly doubled its value added in two years (see 2.2.2.2). The positive effects of performance by Brussels Airlines and, to a lesser extent, TUI Airlines Belgium have been slightly neutralised by the reduced value added figure for ASL Airlines Belgium³¹ (see 2.2.5.2).

Value added generated by the airport operators also increased annually, by 7 % on average, resulting in a share of 13.4 % in 2015. Value added at Brussels Airport Company climbed from € 310 million in 2013 to € 376 million in 2015. The contribution of the other airport operators to growth was only minor or even negative.

Within the air transport cluster, travel agencies and tour operators are the only sector showing a negative trend over the period under review. Tour operator TUI Belgium³² adversely influenced the 2015 figures, as its operating profit shrank significantly. Two airport handlers also posted a decline in value added: AviaPartner Belgium and AviaPartner Ostend. By the end of 2014, the cargo division of AviaPartner Belgium was split off and transferred to a new company AviaPartner Cargo, resulting in a positive impact on the figures for cargo handling and storage. In 2015, the impact of this was entirely offset by Swissport.

Like the air transport cluster, other airport-related activities grew between 2013 and 2015, albeit at a slower pace. The biggest increase was noted in cargo handling and storage. The creation of AviaPartner Cargo had a small positive impact in 2014 and a larger (full-year effect) positive impact in 2015. In addition, 2014 value added was favourably influenced by Swissport Cargo Services Belgium (higher employee expenses and smaller operating loss), Worldwide Flight Services, Nippon Express Belgium, Expeditors International, Liège Air Cargo Handling Services (LACHS), etc.

Among the other airport-related activities, courier and post activities have the largest share. Their value added was up from € 207 million in 2013 to € 231 million in 2015. DHL Aviation and Federal Express Corporation were the main drivers in 2014, while DHL Aviation and TNT Express Worldwide (Euro Hub) explain the increase in 2015.

Table 6 shows that 65.2 % of direct value added is generated by the 20 largest (in terms of value added) companies or organisations included in the study. Brussels Airport Company is taking the

²⁸ For companies in the aerospace sector, the figures only take account of the part of their activities relating to air transport.

The same goes for the activities of travel agencies and tour operators.

²⁹ Formerly Techspace Aero, located outside airports.

³⁰ Both located outside airports.

³¹ Formerly TNT Airways.

³² Formerly Jetair.

lead in the ranking, but is not the only airport operator: Brussels South Charleroi Airport (BSCA) claims the 16th position. Taking into account the relative importance of the building and repairing of aircraft sector, it is obvious that several companies from this sector appear in the top 20, Safran Aero Boosters being the most important in the second place, followed by SONACA (5th), Asco Industries (6th) and Société anonyme belge de Constructions aéronautiques (SABCA³³) (10th). The third and ninth places are reserved for respectively Brussels Airlines and TUI Airlines Belgium, while ASL Airlines Belgium just falls outside the top 10. Air traffic control company Belgocontrol held out in fourth position. The last sector that is represented in the top 10 is courier and post activities. The seventh and eighth places are occupied by TNT Express and DHL Aviation respectively. Compared to the previous version of the study, Thomas Cook Airlines Belgium has disappeared from the list, while G4S Aviation Security has entered the ranking in 15th position.

TABLE 6 AIR TRANSPORT CLUSTER AND AIRPORT ACTIVITIES: DIRECT VALUE ADDED TOP 20 IN 2015

	Name	Sector	Airport
1	Brussels Airport Company	Airport operator	Brussels
2	Safran Aero Boosters	Building and repairing of aircraft	Outside
3	Brussels Airlines	Air transport	Brussels
4	Belgocontrol	Other air transport supporting activities	Outside-Brussels-Antwerp-Liège-Charleroi-Ostend
5	Société Nationale de Construction Aérospatiale (SONACA)	Building and repairing of aircraft	Outside
6	Asco Industries	Building and repairing of aircraft	Outside
7	TNT Express Worldwide (Euro Hub)	Courier and post activities	Liège
8	DHL Aviation	Courier and post activities	Brussels
9	TUI Airlines Belgium	Air transport	Brussels-Antwerp-Liège-Charleroi-Ostend
10	Société Anonyme Belge de Constructions Aéronautiques (SABCA)	Building and repairing of aircraft	Outside-Charleroi
11	ASL Airlines Belgium	Air transport	Liège
12	Swissport Belgium	Airport handling	Brussels-Liège-Ostend
13	Belgian Air Force	Public services	Brussels
14	TUI Belgium	Travel agencies and tour operators	Brussels-Outside
15	G4S Aviation Security	Security and industrial cleaning	Brussels-Charleroi
16	Brussels South Charleroi Airport	Airport operator	Charleroi
17	Federal Police	Public services	Brussels-Antwerp-Liège-Charleroi-Ostend-Kortrijk
18	AviaPartner Belgium	Airport handling	Brussels-Antwerp
19	International Duty Free Belgium	Trade	Brussels-Charleroi
20	Thomas Cook Retail Belgium	Travel agencies and tour operators	Brussels-Outside
	Total (€ million)		2 161.8
	Share in total		65.2 %

Source: NBB (Central Balance Sheet Office, own calculations).

³³ SABCA is only partially included in this study as it has considerable space activities that are out of the scope of this paper.

1.3 EMPLOYMENT

The number of full-time equivalents (FTEs) employed directly by the air transport cluster and airport activities in Belgium stood at 31 961 in 2013. Over the next two years, this number grew by 1 218 to 33 179 FTEs. Indirect employment increased even more, by 1 716 to 29 349 FTEs. The employment multiplier equals 1.89 which is slightly above the level of the value added multiplier (1.81). This means that one euro of value added or one FTE created directly by companies operating in air transport or airport activities ultimately generate approximately € 1.81 of total value added or 1.89 FTEs of employment via the intersectoral links between these companies, their suppliers, the companies supplying the latter, etc. In total, employment amounted to 62 528 FTEs in 2015 or 1.5 % of domestic employment³⁴ (including the self-employed). The annual average growth rate reached 2.4 % during the 2013-2015 period. This is more than three times as high as the annual average growth rate of domestic employment (including the self-employed) during the same period.

TABLE 7 AIR TRANSPORT CLUSTER AND AIRPORT ACTIVITIES: EMPLOYMENT FROM 2013 TO 2015 (in FTEs)

Cluster and sector	2013	2014	2015	Share in 2015 (in %)	Change from 2014 to 2015 (in %)	Change from 2013 to 2015 (in %)	Annual average change from 2013 to 2015 (in %)
Air Transport Cluster	20 445	20 503	20 704	62.4	1.0	1.3	0.6
Air transport	5 037	4 967	5 183	15.6	4.4	2.9	1.4
Travel agencies and tour operators	4 530	4 521	4 470	13.5	-1.1	-1.3	-0.7
Airport operator	1 577	1 566	1 591	4.8	1.6	0.9	0.4
Airport handling	2 212	2 264	2 108	6.4	-6.9	-4.7	-2.4
Building and repairing of aircraft	5 855	6 006	6 173	18.6	2.8	5.4	2.7
Other air transport supporting activities	1 235	1 178	1 179	3.6	0.1	-4.5	-2.3
Other airport-related activities	11 516	11 967	12 475	37.6	4.3	8.3	4.1
Passenger transport over land	407	418	434	1.3	3.8	6.6	3.3
Freight transport over land	226	218	220	0.7	0.9	-2.7	-1.3
Cargo handling and storage	2 041	2 252	2 471	7.5	9.7	21.1	10.0
Courier and post activities	2 988	3 045	3 097	9.3	1.7	3.7	1.8
Security and industrial cleaning	1 538	1 617	1 782	5.4	10.2	15.9	7.6
Trade	596	619	640	1.9	3.4	7.4	3.6
Hotels, restaurants and catering	1 362	1 388	1 363	4.1	-1.8	0.1	0.0
Other services	385	417	435	1.3	4.3	13.0	6.3
Other industries	233	234	271	0.8	15.8	16.3	7.9
Public services	1 739	1 760	1 764	5.3	0.2	1.4	0.7
Direct Effects	31 961	32 469	33 179	100.0	2.2	3.8	1.9
Indirect Effects*	27 633	28 251	29 349	(88.5)	3.9	6.2	3.1
Total	59 594	60 720	62 528	(188.5)	3.0	4.9	2.4

Source: NAI; NBB (Central Balance Sheet Office, own calculations).

* Indirect employment includes employees and self-employed persons, while direct employment mainly relates to employees.

The air transport cluster (both inside and outside airports) was only marginally involved in the upward trend during 2013 and 2015. Its annual average growth rate was limited to 0.6 %. But its

³⁴ Source: NBB.Stat.

main sector, building and repairing of aircraft, showed highly positive results. During the period under review, Safran Aero Boosters hired 240 FTEs, while only 123 FTEs left the company. SONACA, that mainly produces wing skins and moveables, raised its workforce as well, especially in 2014, while Asco Industries shows a more steady upward development.

It was mainly the airport handlers (in nominal terms) that curbed the growth in the air transport cluster. As already mentioned, at the end of 2015, AviaPartner Belgium created a separate entity for its cargo division, named AviaPartner Cargo. This reorganisation resulted in a shift of employees from the airport handling sector to cargo handling and storage. The impact in 2015 was larger due to the full-year effect. In addition, in 2014, this shift of AviaPartner personnel was offset by the fact that Swissport Belgium recruited 167 additional FTEs (net of those that left the company). Furthermore, AviaPartner Ostend slimmed down in 2015 (see 2.2.6.3).

Other air transport supporting activities contributed to the downturn as well. Their employment declined by 4.5 % in two years. In the past, Belgocontrol decided that employees leaving the company would not be replaced and new recruitments would be limited to the very minimum. In absolute terms, the staff cuts among travel agencies and tour operators were slightly bigger. In 2015, Intertravel Corporation, Voyage Deltasoleil and Echo Reizen were declared bankrupt, resulting in a loss of approximately 40 FTEs. Additionally, CWT Belgium and BCD Travel Belgium recorded a notable reduction in jobs.

In 2015, the air transport sector not only benefited from the expansion of business at TUI Airlines Belgium, but also at Noordzee Helikopters Vlaanderen (NHV). At the end of 2014, NHV acquired its peer from Norway, Blueway.

Other airport-related activities showed an impressive rise in employment between 2013 and 2015, posting an annual average of +4.1 %. Courier and post activities noted more modest growth, but remain the biggest sector within this cluster. The highest increase in FTEs was recorded in cargo handling and storage. Not only the creation of AviaPartner Cargo played a significant role, but also the growth at Liège Air Cargo Handling Services (LACHS) and Worldwide Flight Services Belgium, as well as the increased presence at the airports of DHL Global Forwarding Belgium and Nippon Express Belgium.

Security and industrial cleaning posted 244 additional jobs compared to 2013. This sector was characterised by the enlargement of G4S Aviation Security at Brussels Airport and the transfer of the security contract at Charleroi Airport from Securitas Transport Aviation Security Wallonia to G4S Aviation Security.

In 2015, the 20 largest employers in the air transport and airport activities in Belgium together employed 17 855 FTEs, which represents 53.8 % of direct employment in the sector as a whole. Brussels Airlines can be found at the head of the ranking. Two other carriers are displayed: TUI Airlines Belgium in 9th position and ASL Airlines Belgium in 20th position. Not only in terms of value added, but also in terms of employment, building and repairing of aircraft is the largest sector. As a result, this sector has the most companies in the top 20: SONACA (2nd), Safran Aero Boosters (3rd), Asco Industries (7th) and SABCA (13th). The largest other airport-related sector, courier and post activities, is represented by three companies: TNT Express Worldwide (4th), DHL Aviation (8th) and TNT Express Belgium (19th). The top 10 is completed by G4S Aviation Security (5th), airport handler Swissport Belgium (6th) and the Belgian Air Force (10th). In comparison with the previous version of this study, Securitas Transport Aviation Security Wallonia and Sabena Aerospace Engineering³⁵ are no longer included in the list. LSG Sky Chefs Belgium and BSCA on the other hand, appear in the ranking for the first time, respectively at the 15th and 16th place.

³⁵ Formerly Sabena Technics BRU.

TABLE 8 AIR TRANSPORT CLUSTER AND AIRPORT ACTIVITIES: DIRECT EMPLOYMENT TOP 20 IN 2015

	Name	Sector	Airport
1	Brussels Airlines	Air transport	Brussels
2	Société Nationale de Construction Aérospatiale (SONACA)	Building and repairing of aircraft	Outside
3	Safran Aero Boosters	Building and repairing of aircraft	Outside
4	TNT Express Worldwide (Euro Hub)	Courier and post activities	Liège
5	G4S Aviation Security	Security and industrial cleaning	Brussels-Charleroi
6	Swissport Belgium	Airport handling	Brussels-Liège-Ostend
7	Asco Industries	Building and repairing of aircraft	Outside
8	DHL Aviation	Courier and post activities	Brussels
9	TUI Airlines Belgium	Air transport	Brussels-Antwerp-Liège- Charleroi-Ostend
10	Belgian Air Force	Public services	Brussels
11	Brussels Airport Company	Airport operator	Brussels
12	Belgocontrol	Other air transport supporting activities	Outside-Brussels-Antwerp- Liège-Charleroi-Ostend
13	Société Anonyme Belge de Constructions Aéronautiques (SABCA)	Building and repairing of aircraft	Outside-Charleroi
14	AviaPartner Belgium	Airport handling	Brussels-Antwerp
15	LSG Sky Chefs Belgium	Hotels, restaurants and catering	Brussels
16	Brussels South Charleroi Airport	Airport operator	Charleroi
17	Federal Police	Public services	Brussels-Antwerp-Liège- Charleroi-Ostend-Kortrijk
18	Thomas Cook Retail Belgium	Travel agencies and tour operators	Brussels-Outside
19	TNT Express (Belgium)	Courier and post activities	Brussels
20	ASL Airlines Belgium	Air transport	Liège
	Total (FTEs)		17 855
	Share in total		53.8 %

Source: NBB (Central Balance Sheet Office, own calculations).

1.4 INVESTMENT

Investments in tangible fixed assets enjoyed a distinct upward trend between 2013 and 2015. In 2015, direct investment, standing at € 456 million, remained below the record levels of 2007 and 2008 though. On average, tangible fixed asset formation grew yearly by 14.4 %. The increase was particularly marked in other airport-related activities, where investment nearly doubled in two years. As a result, other airport-related activities raised its relative weight from 22.8 % in 2013 to 30.7 % in 2015. However, the majority of capital expenditure is still spent in the air transport cluster, with a slightly more modest annual average growth rate of 8.5 %. Compared to total Belgian investment, these figures are striking, as Belgian investment climbed by an annual average of 4.2 % during the 2013-2015 period³⁶.

TABLE 9 AIR TRANSPORT CLUSTER AND AIRPORT ACTIVITIES: DIRECT INVESTMENT FROM 2013 TO 2015
(in € million – current prices)

Cluster and sector	2013	2014	2015	Share in 2015 (in %)	Change from 2014 to 2015 (in %)	Change from 2013 to 2015 (in %)	Annual average change from 2013 to 2015 (in %)
Air Transport Cluster	268.4	278.4	315.7	69.3	13.4	17.7	8.5
Air transport	38.6	33.8	49.6	10.9	47.0	28.4	13.3
Travel agencies and tour operators	51.1	34.6	27.6	6.1	-20.3	-46.0	-26.5
Airport operator	87.3	98.6	131.0	28.8	32.9	50.1	22.5
Airport handling	1.9	2.6	3.5	0.8	35.6	84.7	35.9
Building and repairing of aircraft	63.2	88.7	79.7	17.5	-10.2	26.1	12.3
Other air transport supporting activities	26.3	20.3	24.3	5.3	20.2	-7.3	-3.7
Other airport-related activities	79.4	84.6	139.7	30.7	65.3	75.9	32.6
Passenger transport over land	2.2	2.4	2.4	0.5	0.0	7.3	3.6
Freight transport over land	0.5	0.3	0.5	0.1	41.6	-8.0	-4.1
Cargo handling and storage	8.5	8.4	7.3	1.6	-13.1	-14.4	-7.5
Courier and post activities	10.7	5.6	37.1	8.2	559.7	247.7	86.5
Security and industrial cleaning	1.6	0.9	1.3	0.3	49.6	-17.3	-9.1
Trade	4.1	6.4	8.3	1.8	28.7	103.1	42.5
Hotels, restaurants and catering	5.4	5.7	3.8	0.8	-33.0	-29.7	-16.2
Other services	46.1	54.7	78.9	17.3	44.3	71.2	30.9
Other industries	0.5	0.2	0.3	0.1	36.6	-29.8	-16.2
Direct Effects	347.8	363.0	455.5	100.0	25.5	31.0	14.4

Source: NBB (Central Balance Sheet Office, own calculations).

The airport operators are the biggest investors: they accounted for more than one-quarter of total investment in 2015. Nearly 93 % of their capital expenditure can be attributed to Brussels Airport Company, as a result of which this company is clearly leading the ranking of largest investors (table 10). For more details about Brussels Airport Company's efforts to renew and improve its infrastructure is referred to section 2.2.2.4. The efforts of the Walloon airports' operators should not be underestimated though. Both airport operators appear in the investors ranking as well, at 17th (Liège Airport) and 19th position (BSCA). Over the three-year period, Liège Airport and BSCA together spent a total amount of nearly € 20 million on property, plant and equipment. The main

³⁶ Source: NBB.Stat.

infrastructure investment at the Walloon airports, however, are carried out by Société Wallonne des Aéroports (Sowaer), which is included in other air transport supporting activities. In this sector, not only Sowaer, but also Belgocontrol spend significant amounts on tangible fixed assets every year. During the period under review, these amounts did not cover the depreciation charges of the company though, implying that not all property, plant and equipment will be sufficiently replaced and improved in the long run. Indeed, following European cost efficiency goals and the financial difficulties that Belgocontrol has faced, investment over the last couple of years has been strictly limited to maintenance of critical systems, prolongation of the life of assets and replacement at life-end. In 2015, Belgocontrol started preparations for some significant investment projects to be carried out in subsequent years. As a result, it is expected that Belgocontrol's investment activity has increased from 2016 onwards.

TABLE 10 AIR TRANSPORT CLUSTER AND AIRPORT ACTIVITIES: DIRECT INVESTMENT TOP 20 IN 2015

	Name	Sector	Airport
1	Brussels Airport Company	Airport operator	Brussels
2	DHL Aviation	Courier and post activities	Brussels
3	Société Nationale de Construction Aérospatiale (SONACA)	Building and repairing of aircraft	Outside
4	Safran Aero Boosters	Building and repairing of aircraft	Outside
5	Hertz Belgium*	Other services	Brussels-Charleroi
6	Noordzee Helikopters Vlaanderen	Air transport	Outside
7	Sixt Belgium*	Other services	Brussels-Antwerp-Charleroi
8	Avis Belgium*	Other services	Brussels-Charleroi
9	Liège Airport Business Park	Other services	Liège
10	Brussels Airlines	Air transport	Brussels
11	Societe Wallonne des Aeroports (Sowaer)	Other air transport supporting activities	Liège-Outside-Charleroi
12	Asco Industries	Building and repairing of aircraft	Outside
13	General Lease*	Other services	Brussels
14	International Duty Free Belgium	Trade	Brussels-Charleroi
15	Belgocontrol	Other air transport supporting activities	Outside-Brussels-Antwerp-Liège-Charleroi-Ostend
16	International Flight Referral	Air transport	Outside
17	Liège Airport	Airport operator	Liège
18	TUI Airlines Belgium	Air transport	Brussels-Antwerp-Liège-Charleroi-Ostend
19	Brussels South Charleroi Airport	Airport operator	Charleroi
20	Société Anonyme Belge de Constructions Aéronautiques (SABCA)*	Building and repairing of aircraft	Outside-Charleroi
	Total (€ million)		369.5
	Share in total		81.1

Source: NBB (Central Balance Sheet Office, own calculations).

* Firms with significant activities outside airports unconnected with air transport. The percentage of investment recorded inside airports or the air transport cluster does not necessarily reflect reality since the allocation is based on employment.

Building and repairing of aircraft is the second biggest sectoral-investor, followed by other services. As a result, several companies from these two sectors have made it to the investors ranking. The main investors in other services include car rental companies³⁷ Hertz Belgium, Sixt Belgium, Avis

³⁷ As already mentioned, the distinction between inside and outside airports is based on the breakdown of employment between the operating establishments of companies. A firm may therefore be present both inside and outside an airport. Among the big investors, only a few companies are in that situation. Examples include Hertz, Avis, Sixt and General

Belgium and General Lease, as well as Liège Airport Business Park, which manages the airport's real estate projects. The third place in the ranking is reserved for SONACA. During the 2013-2015 period, SONACA invested millions of euros, mainly to optimise production means. Investment at Safran Aero Boosters (4th place) over this three-year period did not reach the same level, but still amounted to over € 40 million. Capitalised research and development expenditure is of more importance in this company, but this type of investment costs is not taken into account in this analysis. Asco Industries (12th) and SABCA (20th) complete the list of aircraft building and repairing companies in the investors ranking.

The importance of the air transport sector in terms of investment should not be underestimated either. Four companies are included in the ranking. In 2015, Noordzee Helikopters Vlaanderen, specialised in business-to-business helicopter services both offshore & onshore, not only invested extensively in new helicopters, but also in land and buildings. Brussels Airlines and TUI Airlines Belgium mainly invest in their fleet. International Flight Referral made an exceptional investment in a Cessna aircraft.

Finally, the 2015 investment figures for courier and post activities should be highlighted. Compared to 2014, DHL Aviation multiplied its capital expenditure by almost ten (see 2.2.2.4).

Lease in the other airport-related activities cluster. For those companies, the investment counted inside airports may in fact be located outside airports, and thus out of the scope of this study, and vice versa. Their figures are therefore given purely as a guide.

1.5 SOCIAL BALANCE SHEET³⁸

The social balance sheet contains a cohesive set of data on various aspects of employment in companies: workforce structure, staff turnover, type of employment contract, standard of education, working time, labour costs and training. The findings set out below for direct employment in the Belgian air transport sector as a whole are not exhaustive. The figures were calculated on the basis of a constant sample³⁹ for the 2013–2015 period. In view of the small size of the constant sample, the fact that it includes only large companies and the low quality in reporting for some parts of the social balance sheet⁴⁰, these results are just a guide and should certainly not be taken as generally valid.

1.5.1 Working time and labour costs

TABLE 11 HOURS WORKED AND COST OF OWN STAFF

	2013	2014	2015
Change in the average number of employees on the staff register (%)		0.8	1.7
Change in the number of hours actually worked (%)		0.8	2.2
Change in staff costs (%)		1.6	2.5
Average number of hours worked per annum per full-time equivalent.....	1 490	1 490	1 498
<i>Males</i>	1 504	1 509	1 516
<i>Females</i>	1 458	1 451	1 459
Average annual staff costs per full-time equivalent (€)	67 575	68 168	68 725
<i>Males</i> (€)	71 696	72 034	72 671
<i>Females</i> (€)	58 287	58 907	57 709
Average staff costs per hour worked (€)	45	46	46
<i>Males</i> (€)	48	48	48
<i>Females</i> (€)	40	41	40

Source: NBB (full-format only)

Average employment in the constant sample of companies operating in the Belgian air transport and airport industry shows an upward trend between 2013 and 2015 (table 11). At sector level⁴¹, however, decreases in average employment are observed as well. The airport handlers experienced a reduction in their workforce. As mentioned before, AviaPartner Belgium moved its cargo division to a separate, new legal entity AviaPartner Cargo. This company is not included in the constant sample as its first accounting period ends on 31 December 2015. The slimming-down of AviaPartner Ostend has an impact on the sector's figures as well. Figures for other air transport supporting activities are largely influenced by Belgocontrol which decided to limit replacement of people leaving the company to a strict minimum. Travel agencies and tour operators also recorded

³⁸ Unless otherwise stated, the national data cited here come from P. Heuse (2016) and relate to the year 2014. More up-to-date figures will not be published before the end of 2017. The comparisons are purely a guide, since this national study only includes companies with a social balance sheet covering a 12-month financial year ending on 31 December. In other words, this is a small analysis population.

³⁹ The constant sample was determined on the basis of companies included in this study which – for the three years 2013, 2014 and 2015 – submitted annual accounts in the full format for a 12-month financial year and in each year employed at least one full-time equivalent in the air transport sector as a whole. The same formulas are applied to the social balance sheet as for calculating other parameters (see footnote 6). The constant sample comprises 185 companies, which represents an average 9.6 % of the number of companies, institutions and associations included in this study and 75.8 % of related direct employment.

⁴⁰ Heuse (2016).

⁴¹ It should be kept in mind that these figures reflect a limited number of companies.

job losses in both 2014 and 2015. These negative developments were largely compensated by staff expansion at several big companies, such as TUI Airlines Belgium, Noordzee Helikopters Vlaanderen, Safran Aero Boosters, SABCA, Liège Air Cargo Handling Services, DHL Aviation and G4S Aviation Security.

In 2015, the number of hours worked grew at a faster pace than average employment, resulting in a slightly higher average number of hours per FTE, although still just below the 2014 national average⁴². In freight transport over land (1 642 hours) and other services (1 589 hours), employees perform on average the most hours per year, whereas in security and industrial cleaning (1 424 hours) and trade (1 438 hours), the average workload in terms of working hours is the lowest. The breakdown by gender reveals that men work on average more hours per year than women. This should not be attributed to the fact that a larger share of women work part-time, as FTE figures have been used in the calculation.

Total staff costs have risen even faster than the number of hours worked. Therefore, the average cost per FTE in particular shows a rising trend. Both average cost per FTE and average cost per hour are well above the 2014 national level⁴³. The fact that big companies are over-represented in the sample is most likely to be an important reason. The averages mask major differences among sectors. Other air transport supporting activities – strongly influenced by Belgocontrol – report the highest average staff cost per FTE (€ 116 984) and per hour (€ 80). In passenger transport over land and security and industrial cleaning, labour seems to be the cheapest, both per FTE (€ 38 994 and € 40 421 respectively) and per hour (€ 24 and € 28 respectively). Detailed figures by gender highlight that men are on average considerably better paid than women. This observation is not necessarily a sign of different treatment between men and women. Heuse (2016) remarks that it may simply reflect the fact that male and female staff are not on the same seniority or education scales or do not do the same jobs.

1.5.2 Structure of the workforce

The bulk of employment at the companies under review consists of white-collar jobs (table 12). The percentage remains below the level in the previous study⁴⁴ though. At national level, blue-collar staff represents 41 % of the workforce. Within this study, blue-collar employment is especially important in hotels, restaurants and catering (65.5 %), passenger transport over land (89.6 %) and security and industrial cleaning (92.5 %). Autogrill Belgium, Airhotel Belgium, Taxis Autolux, Leonard Travel International, G4S Aviation Security and Securitas Transport Aviation Security Wallonia among others support these figures. Blue-collar jobs hardly exist in air transport (0.7 %), trade (2.2 %) and travel agencies and tour operators (2.1 %).

Women are not so well represented as at national level: 33 % of the staff is female, a percentage that remained stable between 2013 and 2015. The national figure rose slightly from 43.5 % in 2010 to 45.2 % in 2014. The lower share of women in the study is largely explained by the building and repairing of aircraft (11 % women in 2015), other industries (10.4 %) and passenger transport over land (11.5 %) sectors. The situation is totally different in trade and travel agencies and tour operators where most of the workforce is female.

Unsurprisingly, women tend to do more part-time work than men. In 2015, 38.5 % of the women in the constant sample worked part-time, compared to only 19.4 % of the men. These figures do not change much over time. Part-time work is especially popular in airport handling and hotels, restaurants and catering. In the former, nearly half of the men and more than three-quarters of the women surveyed have a reduced time schedule. In building and repairing of aircraft, other air

⁴² Average number of hours worked per FTE in Belgium amounted to 1 504 in 2014.

⁴³ Average staff costs per FTE in Belgium amounted to € 57 378 in 2014 and to € 38 per hour worked.

⁴⁴ Van Nieuwenhove (2014).

transport supporting activities and other industries, only 12 % or even less of the workforce has a part-time job.

TABLE 12 INTERNAL WORKFORCE AT THE END OF THE FINANCIAL YEAR

	2013	2014	2015
By professional category			
<i>White-collar staff (%)</i>	67.6	67.3	67.0
<i>Blue-collar staff (%)</i>	31.1	31.5	31.8
<i>Other staff (%)</i>	1.3	1.2	1.2
By sex			
<i>Males (%)</i>	67.2	67.1	67.3
<i>Females (%)</i>	32.8	32.9	32.7
By working time			
<i>Males</i>			
<i>Full-time (%)</i>	80.6	80.1	80.6
<i>Part-time (%)</i>	19.4	19.9	19.4
<i>Females</i>			
<i>Full-time (%)</i>	62.3	61.9	61.5
<i>Part-time (%)</i>	37.7	38.1	38.5
By educational level			
<i>Males</i>			
<i>Primary education (%)</i>	6.7	5.8	4.8
<i>Secondary education (%)</i>	60.9	62.1	62.8
<i>Higher non-university education (%)</i>	22.1	21.7	21.4
<i>University education (%)</i>	10.2	10.5	11.0
<i>Females</i>			
<i>Primary education (%)</i>	5.2	4.3	3.8
<i>Secondary education (%)</i>	47.5	47.9	48.5
<i>Higher non-university education (%)</i>	37.6	38.5	37.8
<i>University education (%)</i>	9.7	9.3	9.9

Source: NBB (full-format only).

Table 12 reveals that 32.4 % of men and 47.7 % of women have completed either a higher non-university or a university education. As a result, the level of qualification is on average higher than at national level⁴⁵. The weight of people that only completed primary education is clearly declining over time. The share of higher-skilled staff is the highest in travel agencies and tour operators (65.3 % in 2015) and air transport (57.9 %). On the contrary, security and industrial cleaning (8.2 %), airport handlers (17.2 %) and courier and post activities (18.9 %) employ the least highly qualified people.

1.5.3 External staff

In 2015, 66 % of the companies in the constant sample used externally hired staff to a greater or lesser degree (agency staff and seconded workers). In proportion to total employment, external staff represents 5.3 % (table 13), a figure that hardly changed during the 2013-2015 period and that exceeds the share of external personnel at national level (4.4 %). In hotels, restaurants and

⁴⁵ At national level, 26.3 % of men and 34.6 % of women have completed either a higher non-university or a university education.

catering (18.1 % in 2015) and courier and post activities (12.8 %), external employment is more common, whereas security and industrial cleaning (0.3 %), passenger transport over land (0.8 %) and other air transport supporting activities (0.6 %) hardly make use of external workforce. Companies that have the largest weight in the figures below are AviaPartner Belgium, SABCA, TNT Express Belgium, Autogrill Belgium, DHL Aviation, SABCA Limburg, Asco Industries and TNT Express Worldwide.

TABLE 13 HIRED TEMPORARY STAFF AND STAFF SECONDED TO FIRMS

	2013	2014	2015
Share of external staff in total employment (on the basis of the number of hours actually worked) (%).....	5.0	5.2	5.3
Change in the number of hours actually worked (%)		5.5	3.9
Change in costs (%).....		0.6	-0.2

Source: NBB (full-format only).

In 2014, the number of hours worked grew faster than the share of external staff. This resulted in a higher average number of hours per FTE. With 1 893 hours per year, external staff members clearly work more hours than companies' own employees. In 2015, the average number of hours fell back to 1 869. Charges for external employment do not increase at the same pace as the external staff number or the number of hours worked. In 2015, the total cost even declined, despite a rise in both the number of people and the number of hours involved. Therefore, the average cost per hour dropped from € 32 in 2013 to € 30 in 2015, which is well below the average hourly cost of companies' own staff.

1.5.4 Staff turnover

TABLE 14 STAFF TURNOVER

	2013	2014	2015
Net number of staff hired during the year.....	175	119	345
Staff leaving, by reason for termination of contract			
<i>Retirement (%)</i>	2.9	3.0	2.9
<i>Early retirement (%)</i>	1.2	1.2	1.4
<i>Dismissal (%)</i>	14.2	7.7	10.0
<i>Other reasons (%)</i>	81.7	88.0	85.6

Source: NBB (full-format only).

During the entire period under review, the net balance of staff recruitment was positive (table 14). In 2015, only three sectors experienced net job losses: travel agencies and tour operators, passenger transport over land and freight transport over land. At company level, net job losses were highest at SONACA, CWT Belgium and Thomas Cook Airlines Belgium. At SONACA, in 2015, the average number of FTEs increased, despite the net number of people leaving the company. This obviously depends on the timing of the new and ended contracts. Net growth in number of employees was the largest at TUI Airlines Belgium, Brussels Airlines, Safran Aero Boosters and Autogrill Belgium.

The majority of employees leaving their company do so for a reason other than (early) retirement or dismissal. They might have quit the company because their temporary contract came to an end, or

because they found a job elsewhere. The share of (early) retirements remained largely stable during the 2013-2015 period. The weight of dismissals, on the other hand, halved in 2014, a pattern that is not observed at national level. In 2015, the percentage of contract terminations due to dismissal was back up to 10 %. People that retired (early) were mainly employees of Brussels Airlines, Brussels Airport Company, SABCA, Belgium Engine Center, SONACA and bpost.

1.5.5 Training

TABLE 15 EFFORTS DEVOTED TO TRAINING

	2013	2014	2015
% of firms reporting training on the social balance sheet.....			
% of firms reporting formal training on the social balance sheet.....	64.3	64.9	63.8
% of firms reporting informal training on the social balance sheet.....	41.1	38.4	38.4
% of firms reporting initial training on the social balance sheet.....	11.9	13.0	14.6
Participation rate (formal training only).....	67.0	67.4	72.0
Males (%).....	66.5	67.7	72.6
Females (%).....	67.9	66.8	70.7
Number of hours' formal training per person.....	39	35	36
Males.....	41	35	37
Females.....	35	35	35
Training costs per hour (formal training only).....	63.8	64.9	63.8
Males (€).....	68.5	69.9	69.5
Females (€).....	52.7	54.6	51.3
% of the number of hours worked devoted to any kind of training.....	2.6	2.4	2.5
Training costs as a percentage of total staff costs (%).....	3.2	2.9	3.0

Source: NBB (full-format only).

Training initiatives reported in the social balance sheet are divided into three categories: formal training (courses and training programmes provided by instructors), less formal/informal training (including training on the shop floor) and initial vocational training (training programmes involving alternating periods of study and practical experience). This section focuses mainly on formal training.

Over 60 % of the companies featuring in the constant sample said they had arranged formal training for one or more of their employees (table 15), while approximately 38 % of employers offer informal training. Initial training is not so commonplace, but the share of firms that report such initiatives has increased from 11.9 % in 2013 to 14.6 % in 2015. At national level⁴⁶, the percentage of companies making efforts devoted to training is much lower, varying from 12 % in the case of formal training to 7 % for informal training and only 5 % for initial training. The difference can be explained by the fact that the constant sample only includes large entities. In general, large companies traditionally invest more in training their staff.

As far as formal training is concerned, the participation rate improved compared to 2013, standing at 72 % for men and women together. In 2015, the rate was especially low in trade companies

⁴⁶ The source of the 2014 national data given here is the table with indicators relating to the continuing on-the-job training, published by the Central Balance Sheet Office. This table can be found at: <http://www.nbb.be> > Central Balance Sheet Office > Analysis > Statistics from annual accounts > Indicators relating to continuing on-the-job training.

(8.5 %), passenger transport over land (12.9 %), other services (19.5 %) and freight transport over land (19.8 %). In the trade sector, however, the situation differs significantly from one year to another: in 2014, 57 % of the employees received formal training, supported by data from International Duty Free Belgium.

Employees who participated in formal training in 2015, spent on average 36 hours on this activity. Men enjoyed slightly more hours than women, but the difference is not so significant and not persistent over time. At national level⁴⁷, the difference between men and women in terms of time spent is more obvious, and here too, the numbers are well below the results observed in this study. The difference between men and women is more pronounced in the case of training costs per hour. The spread in average annual staff costs per FTE between male and female workers might have something to do with this.

In total, 2.5 % of all hours worked was spent on either formal, informal or initial training. 3 % of total staff costs was invested in these training activities. The figures are mainly boosted by companies from the air transport cluster. Other airport-related activities clearly invest less in training their employees, except for security and industrial cleaning.

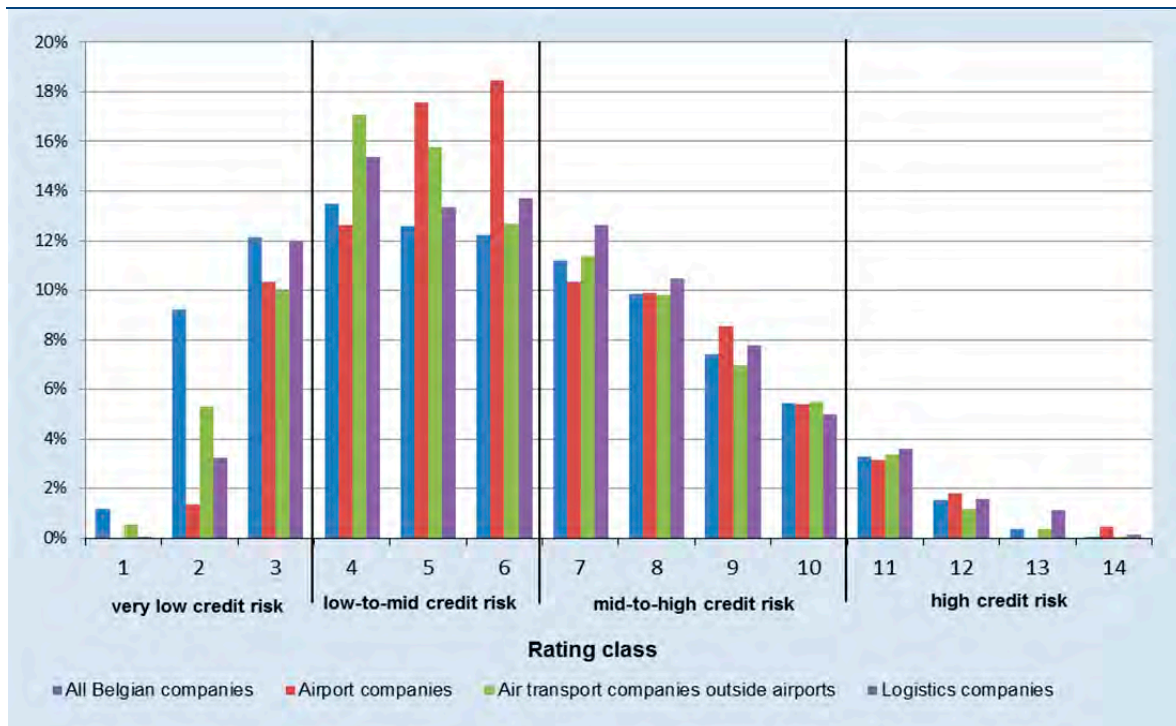
⁴⁷ At national level, employees spent on average 28 hours on formal training.

1.6 CREDIT RISK

Under the Eurosystem’s decentralised monetary policy framework, national central banks (NCBs) grant liquidity-providing refinancing and intraday credit to resident credit institutions. Sufficient eligible assets must be submitted as collateral for all Eurosystem lending operations. In order to protect the Eurosystem from financial risk, this collateral has to meet high credit quality standards. Eligible collateral for refinancing includes not only securities but also credit claims against non-financial corporations. To assess the credit quality of these credit claims, the Eurosystem takes into account rating information from credit assessment systems belonging to one of four sources, one of them being NCBs’ in-house credit assessment systems (ICASs). In 2015, the European Central Bank (ECB) approved the NBB’s ICAS⁴⁸. As a result, the NBB can use its ICAS to assess the credit quality of Belgian non-financial non-public-sector companies within the framework of the Eurosystem’s monetary policy.

Credit quality is measured as a probability of occurrence of a credit default (PD) within a time horizon of one year. A default not only includes bankruptcy and judicial reorganisation procedures. It also comprises the fact that the company is marked as “unlikely to repay all its debt”, as well as payments incidents involving more than ninety days’ arrears on any material credit obligation. Therefore, NBB’s ICAS can assess, for each Belgian non-financial non-public-sector company, the probability that any of these events will occur in the next twelve months. Here, this probability of default (PD) is estimated using statistical models. These ratio-based models have been developed on the basis of the individual annual accounts and data from the Central Corporate Credit Register. A prerequisite for the combination of ratios is that these should cover various independent aspects, e.g. capital structure, profitability, cash flow. Following their specific characteristics, seven sectors have been selected, for which a separate model has been developed. The outcome of the statistical models is a score, which is mapped to a set of discrete “credit risk classes”. For the purpose of this study, these credit risk classes have been assigned a number ranging from 1 to 14, where 1 represents the group of companies with the lowest PDs and 14 represents the class of entities with the highest PDs.

CHART 7 RELATIVE FREQUENCY DISTRIBUTION OF 2015 CREDIT RISK CLASSES



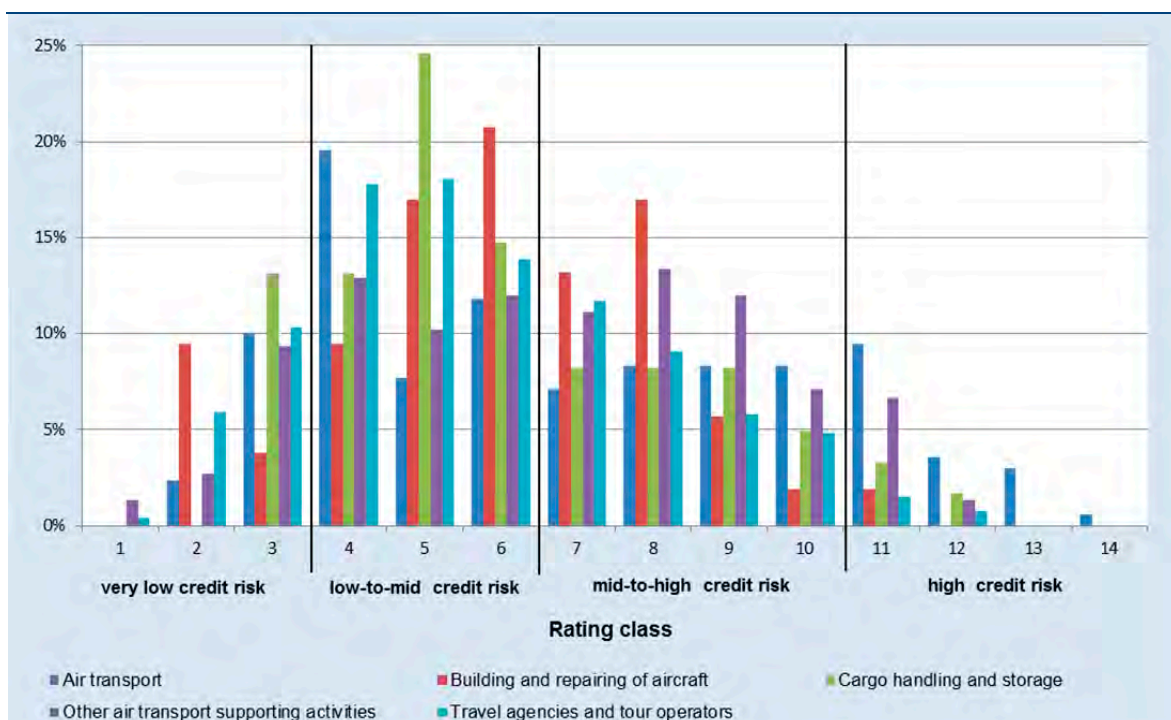
Source: NBB (ICAS, own calculations).

⁴⁸ See <https://www.ecb.europa.eu/paym/coll/risk/ecaf/html/index.en.html>

Chart 7 shows the relative frequency distribution of the 2015 credit risk classes for four sets of companies. The red graph takes into account 222 companies, for which at least half of the data are included in the figures for one or more airports. The green graph displays the situation of 1 294 companies from the air transport cluster, for which at least half of the data are included in the outside airport figures. The 2015 credit risk classes are based on the financial statements that ended in 2015. For comparison purposes, the same graph is added for the entire population of companies filing individual annual accounts at the NBB (blue graph), as well as for all logistics companies⁴⁹ (purple graph).

Chart 7 reveals that the air transport sector as a whole includes relatively few very low credit risk companies. 22.5 % of all Belgian companies obtained credit risk class 3 or better. Focusing on outside airports air transport companies, the share of very low credit risk entities is limited to 15.8 % which is in line with the situation of logistics companies (15.2 %), whereas airport companies categorised in credit risk class 3 or better only account for 11.7 % of all airport companies. More in-depth analysis reveals that the population of companies within the scope of this study comprises relatively less firms with a very high liquidity, solvency, and/or a very low net current indebtedness. Indeed, compared to the total population of Belgian non-financial companies⁵⁰, the third quartiles for the related ratios (first quartile in the case of net current indebtedness ratio) are significantly lower for companies from the air transport business. On the other hand, low-to-mid credit risk companies are more common in the air transport business. 48.6 % of the airport companies and 45.5 % of the outside airports air transport companies have been assigned credit risk class 4, 5 or 6. In logistics and at national level, low-to-mid credit risk companies account for 42.4 % and 38.4 % of the respective populations. The shares of mid-to-high credit risk and high credit risk companies are fairly similar in the four sets of entities.

CHART 8 RELATIVE FREQUENCY DISTRIBUTION OF 2015 CREDIT RISK CLASSES IN AIR TRANSPORT PER SECTOR



Source: NBB (ICAS, own calculations).

The presence of relatively more low-mid credit risk companies in the air transport business can be traced back to the overrepresentation of this type of entity in specific sectors (both inside and

⁴⁹ De Doncker (2017).

⁵⁰ National data was obtained from Rubbrecht and Vivet (2016).

outside airports). Chart 8 shows the relative frequency distribution of 2015 credit risk classes for companies included in this study, by sector of activity. Only five sectors are visualised as the others comprise less than 50 entities which is deemed too few to build a meaningful graph. It is clear that the over-representation of low-to-mid credit risk companies is mainly explained by cargo handling and storage (risk class 5), building and repairing of aircraft (risk class 5 and 6), air transport (risk class 4) and travel agencies and tour operators (risk class 4 and 5). Relatively more high credit risk companies can be found in air transport. The air transport sector includes relatively more companies with very low liquidity, very low solvency and/or very high net current indebtedness. Building and repairing of aircraft comprises the smallest share of high credit risk companies. The 25 % worst-performing companies in this sector have a relatively good profitability, liquidity and/or relatively low net current indebtedness.

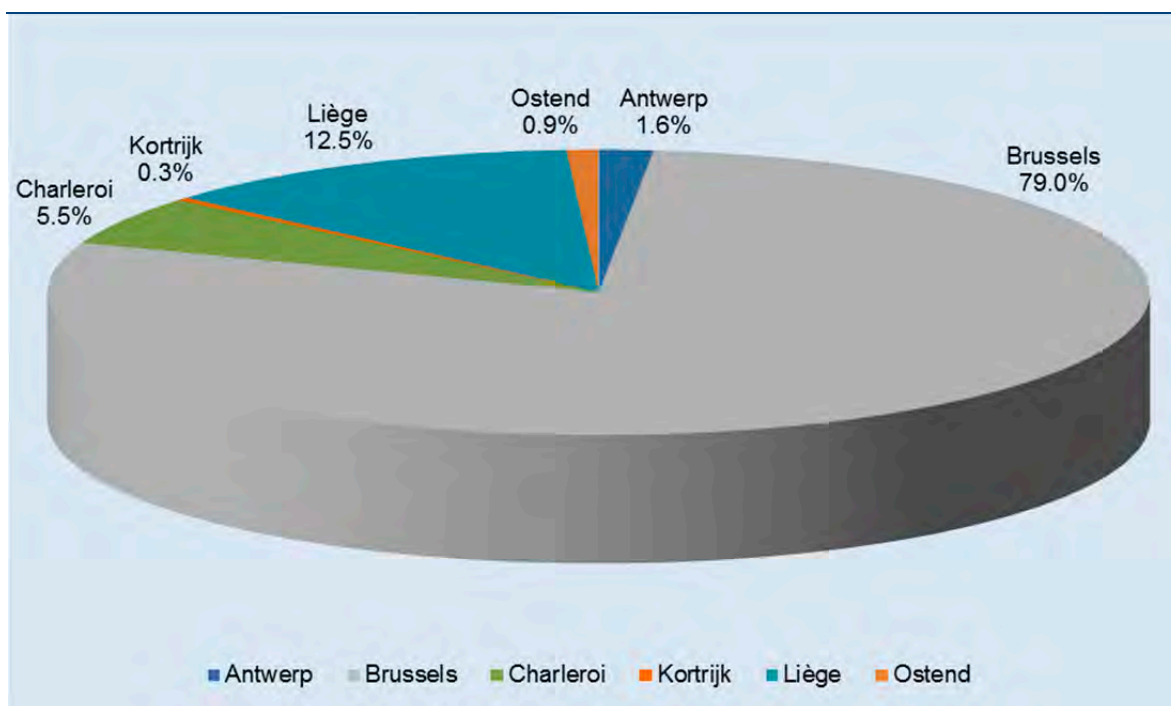
2 ECONOMIC IMPORTANCE OF AIRPORT ACTIVITIES IN BELGIUM

2.1 OVERVIEW

2.1.1 Value added

Direct value added at the six Belgian airports under review improved on aggregate by 14.1 % between 2013 and 2015, but not all airports can boast growth figures. In fact, it was mainly Brussels driving up the aggregate figures, while Kortrijk shows progress as well. The other four airports faced a decline in value added compared to 2013, varying from 2.8 % in Liège to 14.8 % in Ostend. In Charleroi and Liège, the fall can be traced back to the year 2014 as 2015 brought a minor recovery. These trends result in slightly changed airport shares in aggregate value added, comparing 2015 with 2013. While Brussels Airport expanded its share in overall value added by all Belgian airports from 74.8 % in 2013 to 79 % in 2015 (chart 9), all other airports lost a few percentage points. Liège and Charleroi together still account for 86.3 % of the regional airports' direct value added. The share of the three Flemish regional airports – Antwerp, Kortrijk and Ostend – remains limited to 2.9 %.

CHART 9 DIRECT VALUE ADDED IN AIRPORTS IN 2015: BREAKDOWN BY AIRPORT



Source: NBB (Central Balance Sheet Office, own calculations).

The air transport cluster accounts for 62.5 % of the value added in the total airports figure. Compared to 2013, this share is shrinking in all individual Belgian airports except Antwerp and Brussels (table 16). In Antwerp Airport, the share remained relatively stable and in Brussels Airport, the air transport cluster grew more quickly than other airport-related activities in terms of value added. The figures show a remarkable evolution for Liège Airport. Since 2014, other airport-related activities have more weight than the air transport cluster, whose share further dropped to 43.8 % in 2015. This clearly marks Liège's efforts to highlight and reinforce its asset as main European cargo airport, resulting in a larger volume of logistics services. Kortrijk and Antwerp on the other hand, have the highest share in the air transport cluster (87.8 % and 79.6 % respectively).

TABLE 16 DIRECT VALUE ADDED BY AIRPORT FROM 2013 TO 2015
(in € million – current prices)

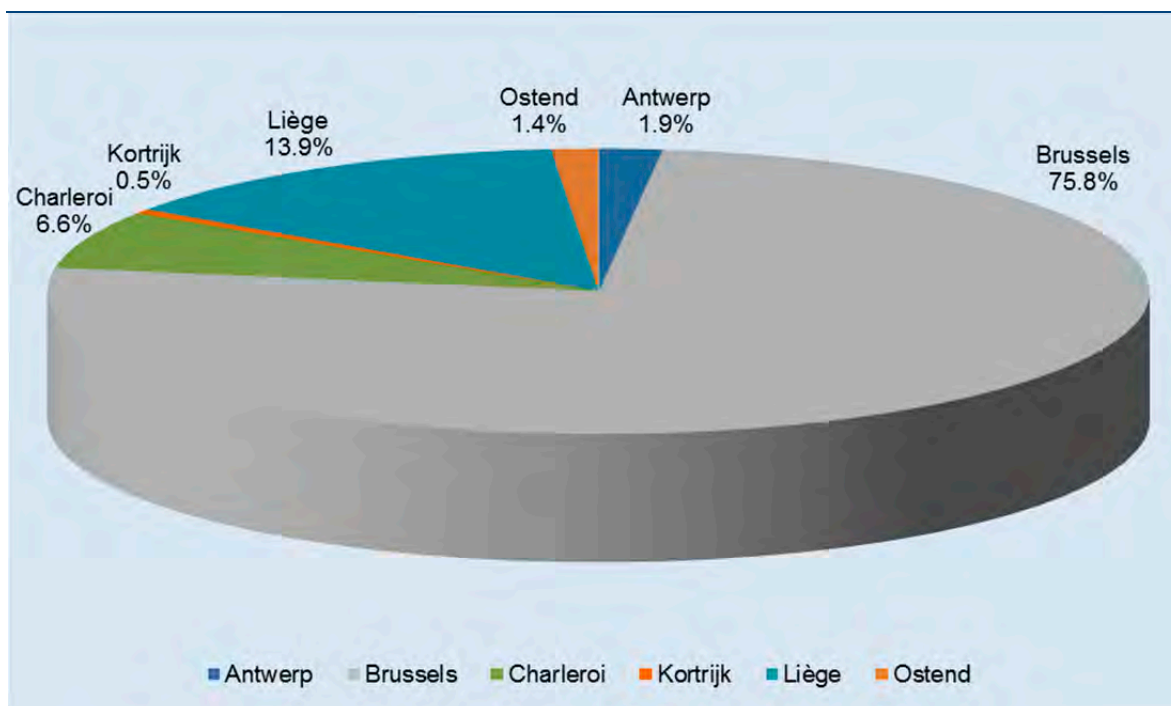
Airport and cluster	2013	2014	2015	Share in 2015 (in %)	Change from 2014 to 2015 (in %)	Change from 2013 to 2015 (in %)	Annual average change from 2013 to 2015 (in %)
Antwerp	37.8	36.1	35.1	100.0	-2.8	-7.1	-3.6
Air Transport Cluster	30.1	28.6	28.0	79.8	-2.1	-7.0	-3.6
Other airport-related activities	7.7	7.4	7.2	20.5	-2.7	-6.5	-3.3
Brussels	1 445.8	1 576.6	1 743.9	100.0	10.6	20.6	9.8
Air Transport Cluster	890.1	997.0	1 129.8	64.8	13.3	26.9	12.7
Other airport-related activities	555.8	579.6	614.1	35.2	6.0	10.5	5.1
Charleroi	133.0	119.2	122.4	100.0	2.7	-8.0	-4.1
Air Transport Cluster	90.9	75.6	78.6	64.2	4.0	-13.5	-7.0
Other airport-related activities	42.2	43.6	43.7	35.7	0.2	3.6	1.8
Kortrijk	7.2	7.4	7.7	100.0	4.1	6.9	3.4
Air Transport Cluster	6.5	6.8	6.7	87.0	-1.5	3.1	1.5
Other airport-related activities	0.7	0.6	0.9	11.7	50.0	28.6	13.4
Liège	284.8	266.9	276.7	100.0	3.7	-2.8	-1.4
Air Transport Cluster	145.6	125.7	121.2	43.8	-3.6	-16.8	-8.8
Other airport-related activities	139.3	141.1	155.5	56.2	10.2	11.6	5.7
Ostend	24.5	21.3	20.8	100.0	-2.4	-15.1	-7.9
Air Transport Cluster	18.5	14.6	14.9	71.6	2.1	-19.5	-10.3
Other airport-related activities	6.0	6.8	6.0	28.9	-11.8	0.0	0.0
TOTAL	1 933.1	2 027.5	2 206.6		8.8	14.1	6.8

Source: NBB (Central Balance Sheet Office, own calculations).

All in all, in the 2013-2015 period, the Belgian airports' total direct value added rose by an average 6.8 % per year, to € 2 206.6 million. The air transport cluster and other airport-related activities recorded average annual growth of respectively 8 % and 4.9 %. In general, the two clusters move in the same direction, except in Charleroi and Liège, where the rise in other airport-related activities was not sufficient to offset the losses in the air transport cluster, and in Ostend, where other airport-related activities fell back to exactly the 2013 level.

2.1.2 Employment

In terms of employment, the dominance of Brussels Airport is slightly less pronounced. Brussels accounts for approximately three-quarters of all full-time equivalents employed at the six airports under review (chart 10). The aggregate direct employment increased by 4.7 % in two years. Most airports experienced a positive evolution. Ostend and Antwerp, however, lost respectively 18.4 % and 3.4 % of employment during the 2013-2015 period. Liège attracted 5 % additional FTEs on its airport premises, resulting in a confirmation of its second position by accounting for 13.9 % of employment on Belgian airport sites in 2015.

CHART 10 DIRECT EMPLOYMENT IN AIRPORTS IN 2015: BREAKDOWN BY AIRPORT

Source: NBB (Central Balance Sheet Office, own calculations).

TABLE 17 DIRECT EMPLOYMENT BY AIRPORT FROM 2013 TO 2015
(in FTEs)

Airport and cluster	2013	2014	2015	Share in 2015 (in %)	Change from 2014 to 2015 (in %)	Change from 2013 to 2015 (in %)	Annual average change from 2013 to 2015 (in %)
Antwerp	450	438	435	100.0	-0.8	-3.4	-1.7
Air Transport Cluster	338	329	335	76.9	1.7	-1.0	-0.5
Other airport-related activities	112	110	100	23.1	-8.5	-10.5	-5.4
Brussels	16 797	17 337	17 767	100.0	2.5	5.8	2.8
Air Transport Cluster	8 329	8 453	8 488	47.8	0.4	1.9	1.0
Other airport-related activities	8 468	8 884	9 279	52.2	4.5	9.6	4.7
Charleroi	1 538	1 532	1 543	100.0	0.7	0.3	0.2
Air Transport Cluster	817	802	808	52.4	0.7	-1.1	-0.5
Other airport-related activities	721	730	735	47.6	0.7	1.9	1.0
Kortrijk	114	115	119	100.0	3.2	3.6	1.8
Air Transport Cluster	99	101	101	85.5	0.3	2.6	1.3
Other airport-related activities	16	14	17	14.5	24.6	9.6	4.7
Liège	3 104	3 128	3 260	100.0	4.2	5.0	2.5
Air Transport Cluster	997	997	1 007	30.9	0.9	0.9	0.5
Other airport-related activities	2 107	2 130	2 253	69.1	5.8	6.9	3.4
Ostend	399	362	326	100.0	-10.1	-18.4	-9.7
Air Transport Cluster	307	263	235	72.0	-10.8	-23.6	-12.6
Other airport-related activities	92	99	91	28.0	-8.2	-1.0	-0.5
TOTAL	22 402	22 912	23 450		2.3	4.7	2.3

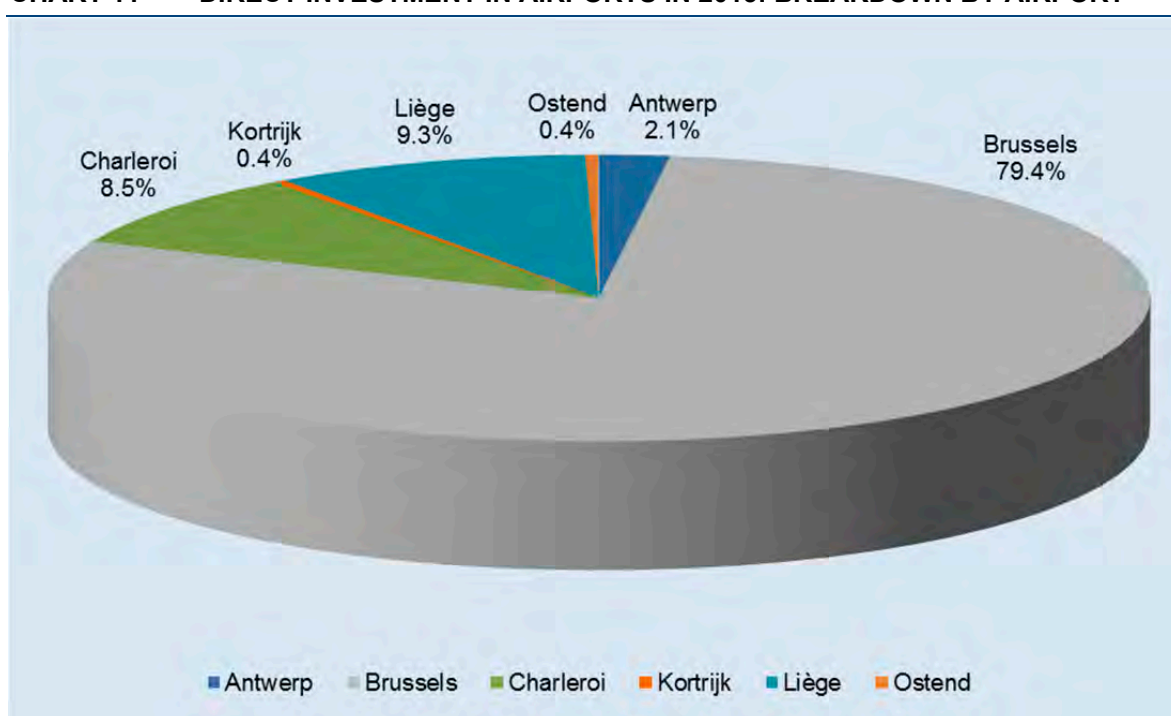
Source: NBB (Central Balance Sheet Office, own calculations).

Contrary to the value added situation, the bulk of employment (53.2 %) is in other airport-related activities. At airport level, however, this is only true for Liège (69.1 %) and Brussels (52.2 %) (table 17). At Kortrijk Airport, other airport-related activities have the lowest share (14.5 %). In Ostend, the fall in employment is mainly due to the air transport cluster, whereas in Antwerp, it can be traced back to other airport-related activities. Brussels, Liège and Kortrijk are the only airports that show growth rates in both clusters.

Overall, direct employment at the six airports together rose by an average 2.3 % yearly between 2013 and 2015. Both clusters evolved positively, but other airport-related activities in Brussels and Liège were the main driver.

2.1.3 Investment

CHART 11 DIRECT INVESTMENT IN AIRPORTS IN 2015: BREAKDOWN BY AIRPORT



Source: NBB (Central Balance Sheet Office, own calculations).

Compared to value added and employment, investment in tangible fixed assets is much more volatile from one year to another. In 2015, companies at one of the six airports under review spent a total amount of € 324.3 million on tangible fixed assets. Brussels Airport accounted for 79.4 % of the total (chart 11), the Walloon regional airports for approximately 9 % each. Compared to 2013, Brussels, Liège, Kortrijk and Antwerp increased their shares in total investment, whereas Charleroi and Ostend faced a slump in the weight of their investment.

At aggregate level, the air transport cluster takes the biggest share (56.9 %) in investment activities (table 18). Other airport-related activities, however, have been catching up quickly recently. At Charleroi and Liège, investment projects in other airport-related activities have even overtaken those of the air transport cluster. In the Flemish airports, despite huge differences among them, the majority of investment projects remains related to the air transport cluster.

During the 2013-2015 period, resources spent to replace or improve property, plant and equipment have risen yearly by 17.2 % on average. In nominal terms, Brussels shows the biggest rise, whereas in relative terms, Kortrijk records the highest number. In Antwerp, investment activity

jumped up in 2014, to fall back in 2015. Charleroi, Liège and Ostend faced an opposite trend: after a dip in 2014, investment recovered in 2015, but only to a limited extent in the case of Charleroi and Ostend.

TABLE 18 DIRECT INVESTMENT BY AIRPORT FROM 2013 TO 2015
(in € million – current prices)

Airport and cluster	2013	2014	2015	Share in 2015 (in %)	Change from 2014 to 2015 (in %)	Change from 2013 to 2015 (in %)	Annual average change from 2013 to 2015 (in %)
Antwerp	4.8	10.4	6.7	100.0	-35.6	38.8	17.8
Air Transport Cluster	2.8	8.7	4.9	73.5	-43.4	74.4	32.1
Other airport-related activities	2.0	1.7	1.8	26.5	3.5	-11.4	-5.9
Brussels	179.7	213.5	257.4	100.0	20.6	43.2	19.7
Air Transport Cluster	126.7	151.3	155.9	60.6	3.0	23.0	10.9
Other airport-related activities	53.0	62.1	101.5	39.4	63.4	91.4	38.3
Charleroi	31.0	25.2	27.6	100.0	9.3	-11.0	-5.7
Air Transport Cluster	16.4	8.2	8.0	29.1	-1.9	-51.1	-30.1
Other airport-related activities	14.6	17.0	19.5	70.9	14.6	34.2	15.8
Kortrijk	0.4	0.4	1.2	100.0	184.8	165.4	62.9
Air Transport Cluster	0.4	0.4	1.0	87.6	163.6	175.7	66.0
Other airport-related activities	0.1	0.0	0.1	12.4	559.1	110.1	45.0
Liège	16.7	11.5	30.1	100.0	162.6	80.1	34.2
Air Transport Cluster	7.3	8.0	13.4	44.5	68.7	83.7	35.6
Other airport-related activities	9.4	3.5	16.7	55.5	374.2	77.2	33.1
Ostend	3.5	0.7	1.3	100.0	83.2	-64.1	-40.1
Air Transport Cluster	3.2	0.6	1.2	96.1	110.1	-62.1	-38.4
Other airport-related activities	0.3	0.1	0.0	3.9	-55.9	-84.4	-60.6
TOTAL	236.1	261.7	324.3		23.9	37.4	17.2

Source: NBB (Central Balance Sheet Office, own calculations).

2.2 DETAIL BY AIRPORT

2.2.1 Antwerp Airport

2.2.1.1 Recent developments⁵¹

In 2016, Antwerp Airport enjoyed a record year in terms of passenger traffic. The number of passengers using it, 276 311 in 2016, more than doubled in two years. The previous record, 273 208 passengers, dates from 2001. During March and April especially, additional passengers were welcomed after the terrorist attacks at Brussels Airport caused numerous flight diversions to other international airports. But the total number of flights in 2016 actually fell. This decline was due to the bankruptcy of VLM Airlines in June 2016, fewer training flights and an increased occupancy load factor. The VLM bankruptcy resulted in the cancellation of all flights to Hamburg and Southampton. Flights to London City were taken over by VLM's parent CityJet. Currently, CityJet operates four daily direct flights to London City Airport, while TUI Airlines extended its operations in Antwerp to 21 flights per week. TUI Airlines offers destinations like Palma de Mallorca, Alicante, Malaga, Barcelona, Ibiza and Split.

In the mean-time, the bankrupt VLM Airlines has been acquired by SHS Antwerp Aviation NV, a wholly-owned Belgian subsidiary of SHS Aviation from The Netherlands, itself partly owned by Dutch investors and partly by Canadian investors based in Hong Kong. The new Dutch owner is currently working on re-launching the airline. This might take some time, as a request for a new AOC (Airline Operator Certificate) had to be filed.

In December 2015, the construction of a tunnel under the Krijgsbaan was finalised. This € 54 million project got underway in 2013 and enables the use of Antwerp Airport runway's full length. However, this does not mean that investment ground to a halt in Antwerp. In 2016, aircraft parking facilities were enlarged, especially for the benefit of TUI Airlines' Embraers. Renovation of the airside building was due to be completed in March 2017. Departing passengers will in future be able to enjoy catering and shopping facilities after the security checks. In addition, a brand new VIP lounge will be inaugurated. Finally, the construction of a new taxiway is planned, parallel to the runway in order to facilitate all take-off and landing operations.

2.2.1.2 Value added

In contrast to passenger traffic, Antwerp Airport's total direct value added did not reach record heights in 2015. On the contrary, it shrank by 7.1 % in the space of two years, a trend that is evident in both clusters. The change in indirect value added was even more pronounced: -8.9 % compared to 2013.

Antwerp has the highest multiplier of all six airports. This is explained by the relative importance of the air transport sector, resulting from the presence of VLM Airlines. This sector generates much more indirect value added than other sectors. The air transport sector notably creates indirect effects in warehousing and support activities for transportation, repair and installation of machinery and equipment, rental and leasing, restaurants and catering, refined petroleum products, management and financial services. In 2015, direct and indirect value added at Antwerp Airport totalled € 85.2 million.

The air transport cluster accounts for 79.6 % of direct value added, more than half of which is attributable to the air transport sector. This sector explains the best part of the downward trend in the air transport cluster. VLM Airlines faced a decline in value added until it was declared bankrupt in 2016. In 2015, this was compensated by a growth of Flying Service's value added. Despite the registration of significant impairment losses on inventories and trade receivables, Flying Service

⁵¹ Sources include: www.antwerp-airport.be and miscellaneous press articles.

managed to turn an operating loss into an operating profit. The same year, Air Service Liège faced the opposite trend in its operating result though, with a negative impact on the sector's value added.

10.9 % of direct value added is down to the airport operator. Until the end of October 2014, the Flemish government was in charge of all airport operations. France's Egis then took over via its subsidiary LEM⁵² Antwerp. The Flemish government is still included in Antwerp's figures though, as several of its staff members are seconded to LEM Antwerp.

Other air transport supporting activities are largely made up of Belgocontrol and Ben-Air Flight Academy.

TABLE 19 ANTWERP AIRPORT: VALUE ADDED FROM 2013 TO 2015
(in € million – current prices)

Cluster and sector	2013	2014	2015	Share in 2015 (in %)	Change from 2014 to 2015 (in %)	Change from 2013 to 2015 (in %)	Annual average change from 2013 to 2015 (in %)
Air Transport Cluster	30.1	28.6	28.0	79.6	-2.4	-7.1	-3.6
of which:							
Air transport	21.8	19.7	18.5	52.7	-6.1	-15.2	-7.9
Airport operator*	3.3	3.6	3.8	10.9	6.8	14.6	7.0
Other air transport supporting activities	4.3	4.8	4.9	13.8	1.0	13.3	6.5
Other airport-related activities	7.7	7.4	7.2	20.4	-3.4	-7.1	-3.6
of which:							
Passenger transport over land	0.2	0.1	0.1	0.4	39.0	-24.9	-13.3
Cargo handling and storage	1.1	1.4	1.9	5.3	32.0	71.5	31.0
Trade	0.1	0.1	0.1	0.2	-15.4	11.9	5.8
Hotels, restaurants and catering	0.6	0.7	0.6	1.7	-9.8	8.8	4.3
Other services	3.4	2.6	2.6	7.3	-2.9	-25.1	-13.5
Public services	1.0	1.1	1.4	4.0	28.4	38.2	17.6
Direct Effects	37.8	36.1	35.1	100.0	-2.6	-7.1	-3.6
Indirect Effects	54.9	50.4	50.0	(142.5)	-0.7	-8.9	-4.5
Total	92.7	86.4	85.2	(242.5)	-1.5	-8.2	-4.2

Source: NAI; NBB (Central Balance Sheet Office, own calculations).

Sectors that could reveal confidential information are not presented separately.

* It should be noted that the direct value added generated by the airport operator includes operating subsidies and compensation paid by public authorities, totalling around € 3.6 million in 2015.

Other airport-related activities are rather fragmented. The drop in value added in 2015 is due to Bpost (courier and post activities). During that year, Bpost ceased its activities at Antwerp Airport, resulting in a contraction of value added by € 0.9 million.

The main sector in the airport-related cluster is other services. The level of value added in this sector is lower than in previous studies. The reason is that Aerodata International Surveys no longer falls within the scope of this study, as the location of its headquarters is no longer part of the Antwerp Airport zone. The fall in value added in 2014 is attributable to Flying Group Holding, parent

⁵² Airport operating company.

company of Flying Service. Flying Group Holding's operating profit dried up nearly entirely and, on top of that, personnel costs contracted.

Air broker The Aviation Factory is responsible for the increase in value added of cargo handling and storage. This Antwerp-based company rents and leases aircraft capacity for business travellers, exhibition visits, seminars, holidays, etc. Its customer base includes Members of the European Parliament and supporters of the Belgian national football team. The activity expansion resulted in a triple operating profit and increased employee expenses. Finally, Belair Deurne is the only restaurant company at Antwerp Airport.

2.2.1.3 Employment

TABLE 20 ANTWERP AIRPORT: EMPLOYMENT FROM 2013 TO 2015
(in FTEs)

Cluster and sector	2013	2014	2015	Share in 2015 (in %)	Change from 2014 to 2015 (in %)	Change from 2013 to 2015 (in %)	Annual average change from 2013 to 2015 (in %)
Air Transport Cluster	338	329	335	76.9	1.7	-1.0	-0.5
of which:							
Air transport	225	212	211	48.6	-0.5	-6.1	-3.1
Airport operator	68	68	70	16.0	2.5	2.5	1.2
Other air transport supporting activities	32	30	29	6.6	-5.3	-10.3	-5.3
Other airport-related activities	112	110	100	23.1	-8.5	-10.5	-5.4
of which:							
Passenger transport over land	6	7	7	1.7	7.4	19.7	9.4
Cargo handling and storage	13	12	17	3.8	37.5	24.1	11.4
Trade	1	1	1	0.2	0.0	0.0	0.0
Hotels, restaurants and catering	18	16	14	3.1	-14.5	-24.9	-13.3
Other services	35	33	33	7.6	-0.6	-6.2	-3.2
Public services	17	18	20	4.7	9.8	21.0	10.0
Direct Effects	450	438	435	100.0	-0.8	-3.4	-1.7
Indirect Effects	658	639	655	(150.6)	2.5	-0.5	-0.3
Total	1 108	1 077	1 090	(250.6)	1.2	-1.7	-0.8

Source: NAI; NBB (Central Balance Sheet Office, own calculations).

Sectors that could reveal confidential information are not presented separately.

In 2015, Antwerp Airport employed a total of 1 090 direct and indirect full-time equivalents. Like value added, direct employment declined, by an average 1.7 % a year. Compared to value added, the share of the air transport cluster is somewhat lower. This cluster showed a minor recovery in 2015 as AviaPartner Belgium resumed business at Antwerp Airport in April 2015. The airport operator, LEM Antwerp, also hired a few additional staff members during the year.

The largest sector, air transport, faced the biggest loss in employment during 2014 (-13 FTEs). In the second half of 2013, VLM Airlines implemented the single cabin crew project. This means that Fokker 50 aircraft only have one flight attendant during their flights. This cost-reducing measure had an impact on both 2013 and 2014 figures. At Flying Service, average staff numbers fell in 2014 as well. The start-up of Winters Aviation Technics' operations (building and repairing of aircraft) in

2014 compensated slightly for the losses in other sectors. Winters Aviation Technics provides maintenance for business aircraft such as the Cessna 300 and 400 series.

In other airport-related activities, the decline in employment was most pronounced in 2015, due to developments at the airport's Bpost office. Bpost ceased its activities at Antwerp Airport during 2015. The personnel was reallocated to other Bpost offices. Restaurant Belair Deurne has also reported a reduction in staff numbers over time. Cargo handling and storage, on the other hand, recorded additional employment in 2015. During that year, Antwerp Airport signed an agreement with Besix Park for the provision of parking facilities, that came into force in July 2015. Additional parking facilities have been built in the mean-time. Following the agreement with Besix Park, parking is no longer free of charge. Personnel in other services mainly includes the Flying Holding and Finserve Rent (car rentals for Hertz) workforce, as well as employees of Finserve Finance (aviation insurance). Finally, customs officers and airport police registered an expansion of employment in public services.

2.2.2 Brussels Airport

2.2.2.1 Recent developments⁵³

In 2016, Brussels Airport welcomed 21.8 million passengers, which is 7 % below the level of record year 2015. The decrease is the direct result of the attacks on the airport on 22 March 2016, after which no passenger flights in or out were possible for 12 days. Flights were gradually resumed from early April to reach full capacity again in June. Additionally, the continuing terror threat in our country and in Europe discouraged some passengers from travelling by air. In November and December 2016, growth figures were recorded again. However, it should be noted that 2015 year-end passenger numbers were influenced by the heightened security level following the attacks in Paris and the lock-down of Brussels. The strongest growth was recorded by Brussels Airlines, Ryanair and other European scheduled flights. Especially since Ryanair started operations at Brussels Airport, low-cost carriers were engaged in some cut-throat competition. Excessive supply of services for several popular city trip destinations resulted in a price war and unprofitable flights. Therefore, several low-cost carriers ended up by cutting back frequencies or even stopping certain services. The airport operator is doing what it takes though to replace the services that have been stopped with new ones with a higher seat load factor. In the course of 2017 as well, Brussels Airport will welcome new routes.

Despite the March 2016 attacks and the departure of Jet Airways, cargo traffic grew by 1.1 % to nearly half a million tonnes. Especially the transport of pharmaceutical products and perishable goods boosted traffic figures. In 2016, Brussels Airport established a non-profit association, joining all companies and organisations that are active in air cargo transport. The new association, called Air Cargo Belgium, is the official representative of the cargo community at Brussels Airport. Air Cargo Belgium is supposed to boost deliberation and collaboration among companies and stakeholders in order to safeguard Brussels Airport's competitiveness in terms of cargo traffic and to gain market share in the future.

In recent months, Brussels Airport has been a hot news item. The noise standards set by the Brussels government have caused a stir. In 1999, the Brussels government introduced new, more rigorous noise standards for aircraft flying over the Brussels Capital Region. Aircraft taking off or landing at Brussels Airport that do not meet these standards risk heavy fines. But the Brussels government had fixed a tolerance level which it later decided to remove from 1 January 2017, as a result of which airlines risk being fined more often. Now, both supporters and opponents of the noise standards have joined in the debate. On the one hand, these standards support the quality of life and sleep for Brussels' inhabitants. On the other hand, they jeopardise the future development of the country's main airport, which is a major economic driver. At the end of April 2017, the Brussels government decided to postpone the actual collection of the fines by two years. This period of two years is supposed to provide the authorities the necessary time span to come up with a solution that is accepted by all parties. For airlines operating from Brussels Airport, however, it creates a period of uncertainty. Because of the deadlock in the negotiations, Yangtze River Express already left Brussels in February 2017. Three months later, Air Cargo Global as well cited the legal insecurity and financial risks for its decision to move its operations to Amsterdam and Prague. If no solution is reached within the next few weeks, it is feared that more freight carriers will follow the example of Yangtze River Express and Air Cargo Global.

Despite this discussion that the airport would put a greater burden on the environment and the quality of life of people living in the neighbourhood, Brussels Airport is willing to move forward in order to stimulate the future development of the airport. In November 2016, the airport operator presented its "Strategic Vision 2040". By 2040, Brussels Airport plans to double both passenger and cargo traffic. To that aim, capacity needs to be expanded in the long run by either extending the taxiway to the full length of the current runway 25L, or by extending runway 25L, as well as by building two new piers. The operator also foresees to further develop the business park in the area

⁵³ Sources include: www.brusselsairport.be, www.brusselsairport2040.be and miscellaneous press articles.

in front of the terminal, and to develop a direct access to the E40 motorway between Leuven and Brussels. As an expansion of activity at the country's busiest airport is traditionally a sensitive topic that has an impact on many stakeholders, Brussels Airport launched "Forum 2040", a dialogue platform representing neighbourhoods, municipalities, civil society organisations, enterprises and experts. It is supposed to limit resistance to the airport's expansion by giving the stakeholders a medium to be heard and to find solutions that meet all needs and concerns, in a constructive way.

2.2.2.2 Value added

Over the 2013-2015 period, direct value added at Brussels Airport moved in line with traffic volumes, showing a clearly upward annual trend of an average 9.8 %. Direct value added stood at € 1.7 billion in 2015. Including indirect effects, the overall figure for 2015 was over € 3.4 billion, i.e. 1.4 % of Flemish GDP⁵⁴.

The positive trend is mainly attributable to the air transport cluster, which pushed its share up to 64.8 % in 2015. The most remarkable jump was noted in the air transport sector, as a result of which this sector became the most important one in Brussels in terms of value added. Brussels Airlines nearly doubled its value added in the space of two years. The airline succeeded in turning a substantial operating loss in 2013 into a significant operating profit in 2015, thanks to an increased number of passengers and seat load factor, continued focus on cost-cutting measures and a decline in fuel prices. Additionally, the company raised its provisions for maintenance and retirement payments, mainly in 2014. In the same year, TUI Airlines Belgium also boosted its value added by more than 30 % on the back of higher staff expenses, impairment and additions to provisions.

Brussels Airport Company, the airport operator, is the second largest sector, accounting for more than one-fifth of the total and is therefore also at the top of the company ranking. Its value added has been rising continuously, thanks to excellent operating results and higher depreciation charges resulting from ongoing investment programmes and the divestment of property, plant and equipment (such as airside infrastructure and real estate) in 2014.

Value added of other air transport supporting activities ended 2015 as much as 15.2 % above the 2013 level. In 2015, air traffic controller Belgocontrol recorded outstanding operating results, having turned an operating loss into an operating profit.

Remarkable progress is noted for the travel agencies and tour operators. In 2014, value added was largely multiplied by ten. Both TUI Belgium and TUI Belgium Retail inaugurated their new offices at Brussels Airport. As a result, since then, a part of TUI Belgium's and TUI Belgium Retail's value added is taken into account in Brussels' figures.

Positive results are observed in other airport-related activities as well, but they are less pronounced, as a result of which the relative importance of this cluster fell back to 35.2 % in 2015. Cargo handling and storage, the largest sector within other airport-related activities, reported yearly growth in value added of an average 10 %. Better operating results and higher staff expenses pushed up value added figures for Worldwide Flight Services, Nippon Express Belgium and Expeditors International. The relocation of Nippon Express Belgium to another building at Brucargo was also accompanied by greater presence of the company at its airport establishment. Expeditors International raised its presence at Brussels Airport as well. At the end of 2014, airport handler AviaPartner Belgium split off its cargo division into a new entity AviaPartner Cargo, with a positive impact on the figures for cargo handling and storage, mainly in 2015.

⁵⁴ Source: NBB.Stat.

The second driver of the steady growth in other airport-related activities is courier and post activities. On the one hand, DHL Aviation's value added was boosted by higher staff expenses and operating profits. On the other hand, Federal Express Corporation managed to wipe out a significant operating loss in 2014, thanks to a change in transfer pricing policy for intragroup expenses.

TABLE 21 BRUSSELS AIRPORT: VALUE ADDED FROM 2013 TO 2015
(in € million – current prices)

Cluster and sector	2013	2014	2015	Share in 2015 (in %)	Change from 2014 to 2015 (in %)	Change from 2013 to 2015 (in %)	Annual average change from 2013 to 2015 (in %)
Air Transport Cluster	890.1	997.0	1,129.8	64.8	13.3	26.9	12.7
Air transport	275.4	329.5	409.2	23.5	24.2	48.6	21.9
Travel agencies and tour operators	1.1	14.1	13.3	0.8	-6.2	1,139.3	252.0
Airport operator*	310.1	351.6	376.5	21.6	7.1	21.4	10.2
Airport handling	99.4	98.7	102.5	5.9	3.8	3.1	1.6
Building and repairing of aircraft	61.8	55.9	64.5	3.7	15.5	4.4	2.2
Other air transport supporting activities	142.2	147.0	163.8	9.4	11.4	15.2	7.3
Other airport-related activities	555.8	579.6	614.1	35.2	6.0	10.5	5.1
Passenger transport over land	13.3	13.0	14.0	0.8	7.7	5.4	2.7
Freight transport over land	12.3	10.4	11.3	0.7	9.2	-7.5	-3.8
Cargo handling and storage	135.5	150.6	163.8	9.4	8.8	20.9	10.0
Courier and post activities	123.1	138.6	141.2	8.1	1.8	14.7	7.1
Security and industrial cleaning	41.8	45.8	50.7	2.9	10.7	21.3	10.2
Trade	40.8	38.7	39.3	2.3	1.5	-3.9	-1.9
Hotels, restaurants and catering	63.0	55.5	58.7	3.4	5.8	-6.8	-3.5
Other services	30.4	30.4	31.8	1.8	4.7	4.7	2.3
Other industries	10.9	11.0	11.7	0.7	5.6	7.0	3.4
Public services	84.8	85.6	91.7	5.3	7.1	8.1	4.0
Direct Effects	1 445.8	1 576.6	1 743.9	100.0	10.6	20.6	9.8
Indirect Effects	1 268.6	1 431.2	1 672.8	(95.9)	16.9	31.9	14.8
Total	2 714.5	3 007.7	3 416.7	(195.9)	13,6	25,9	12,2

Source: NAI; NBB (Central Balance Sheet Office, own calculations).

* It should be noted that the direct value added generated by the airport operator includes operating subsidies and compensation paid by public authorities, totalling around € 0.1 million in 2015.

A fall in value added in other airport-related activities was observed in freight transport over land, trade and hotels, restaurants and catering in 2014. During that year, Sabena Aerospace⁵⁵ sold its "power-by-the-hour" air transport maintenance activities, including most of the company's rotating inventories. As a result, impairment losses on inventories shrunk considerably and were only partly compensated by a better operating performance. In April 2014, LSG Sky Chefs Brussels International⁵⁶ stopped all its operational activities. All assets and customer contracts were taken over by its main shareholder LSG Sky Chefs Belgium. Despite the transfer of a major part of the personnel, the loss in value added was not offset by a rise at LSG Sky Chefs Belgium, due to a significant operating loss. The award of the second catering handling licence to Newrest Servair

⁵⁵ Trade; formerly Sabena Technics Rotables.

⁵⁶ Hotels, restaurants and catering; formerly Gate Gourmet Belgium.

Belgium⁵⁷ contributed to this loss. Several former customers of LSG Sky Chefs Brussels International became customers of this new competitor.

In addition to Brussels Airport Company, the top ten companies and institutions with the highest value added in 2015 included two airlines (Brussels Airlines and TUI Airlines Belgium), two ground handlers (Swissport Belgium and AviaPartner Belgium), air traffic control company Belgocontrol, courier company DHL Aviation, the Belgian Air Force's 15th Wing Air Transport, G4S Aviation Security and International Duty Free Belgium. The top ten accounts for 65 % of the total value added generated by Brussels Airport.

2.2.2.3 Employment

TABLE 22 BRUSSELS AIRPORT: EMPLOYMENT FROM 2013 TO 2015
(in FTEs)

Cluster and sector	2013	2014	2015	Share in 2015 (in %)	Change from 2014 to 2015 (in %)	Change from 2013 to 2015 (in %)	Annual average change from 2013 to 2015 (in %)
Air Transport Cluster	8 329	8 453	8 488	47.8	0.4	1.9	1.0
Air transport	3 851	3 823	3 974	22.4	4.0	3.2	1.6
Travel agencies and tour operators	16	160	155	0.9	-3.1	868.8	211.3
Airport operator	742	746	771	4.3	3.4	3.9	1.9
Airport handling	1 995	2 060	1 920	10.8	-6.8	-3.8	-1.9
Building and repairing of aircraft	857	839	841	4.7	0.2	-1.9	-0.9
Other air transport supporting activities	868	825	828	4.7	0.4	-4.6	-2.3
Other airport-related activities	8 468	8 884	9 279	52.2	4.5	9.6	4.7
Passenger transport over land	315	308	318	1.8	3.3	1.0	0.5
Freight transport over land	204	190	200	1.1	5.3	-2.0	-1.0
Cargo handling and storage	1 740	1 914	2 091	11.8	9.3	20.2	9.6
Courier and post activities	1 766	1 840	1 864	10.5	1.3	5.6	2.7
Security and industrial cleaning	955	1 052	1 205	6.8	14.5	26.2	12.3
Trade	519	522	532	3.0	1.9	2.5	1.2
Hotels, restaurants and catering	1 202	1 234	1 205	6.8	-2.4	0.3	0.1
Other services	252	278	299	1.7	7.6	18.7	8.9
Other industries	140	144	157	0.9	9.0	12.1	5.9
Public services	1 375	1 402	1 408	7.9	0.4	2.4	1.2
Direct Effects	16 797	17 337	17 767	100.0	2.5	5.8	2.8
Indirect Effects	15 854	16 551	17 314	(97.5)	4.6	9.2	4.5
Total	32 651	33 889	35 081	(197.5)	3.5	7.4	3.7

Source: NAI; NBB (Central Balance Sheet Office, own calculations).

Between 2013 and 2015, direct employment at Brussels Airport grew by 2.8 % on an annual average basis. The 2013 figure lies well below the 2012 level in the previous study though. On the one hand, the Belgian Air Force provided more accurate information. On the other hand, the sale of Swissport Belgium's cargo division to Swissport Cargo Services Belgium on 1 November 2012

⁵⁷ This company is not included in any of the airports' figures as it is not located in any of the airport zones.

resulted in overestimated average employment figures in the latter's 2012 social balance sheet. Direct employment stands at 17 767 FTEs in 2015. In the last two years, other airport-related activities have gained more importance. Indirect employment grew faster than direct employment, as a result of which the indirect employment multiplier went up from 0.94 in 2013 to 0.98 in 2015. The reason is that some sectors which generate relatively high indirect employment, such as cargo handling and storage and other services, have gained more weight in the last two years. Directly and indirectly, Brussels Airport accounts for 35 081 jobs (FTEs), or 1.5 % of total employment (including the self-employed) in Flanders⁵⁸.

The overall increase in direct employment seems to a large extent attributable to cargo handling and storage (+20.2 % compared to 2013), the largest other airport-related activity. Worldwide Flight Services Belgium was established on 31 March 2014 and took over all activities of Worldwide Flight Services Inc's Belgian branch. This reorganisation was accompanied by extra staff. During that year, DHL Global Forwarding Belgium, Nippon Express Belgium and Expeditors International together created approximately 65 additional jobs at the airport. In December 2014, airport handler AviaPartner Belgium split off its cargo division into a new entity AviaPartner Cargo. This resulted in a shift of staff from the airport handling sector to cargo handling and storage, mainly in 2015.

Security and industrial cleaning also posted a significant rise in employment during the 2013-2015 period (+ 26.2 %). G4S Aviation Security and Securitas Transport Aviation Security recruited a record number of staff members to keep up with the expansion and the continuous growth of Brussels Airport. In 2015, G4S Aviation Security hired additional manpower to execute extensive maintenance of one of the runways.

Courier and post companies raised their workforces as well, albeit to a lesser extent (+ 5.6% compared to 2013). This tendency can be traced back mainly to DHL Aviation. As a result of the growing success of e-commerce, the overall express market is booming. To handle the increasing volumes, DHL Aviation expanded its staff by approximately 200 FTEs, mainly in 2014. This was partially offset by job cuts at Bpost and TNT Express Belgium.

In terms of employment, the most important sector at Brussels Airport is air transport. It accounts for 22.4 % of direct employment at the airport, owing to a 4 % growth in 2015. TUI Airlines Belgium needed additional personnel to serve new destinations and to increase the frequency for some existing destinations.

Remarkable progress is noted for travel agencies and tour operators. In 2014, their employment increased tenfold. The TUI Group inaugurated its new offices at Brussels Airport. As a result, more than 130 FTEs, which is only a part of TUI Belgium's and TUI Belgium Retail's staff, moved their workspace from Brussels city centre and Mechelen respectively to Brussels Airport.

The ten largest employers at Brussels Airport together have 9 473 FTEs on their payrolls, accounting for 53 % of total direct employment. After largest employer Brussels Airlines and number two Swissport Belgium, third and fourth place go to DHL Aviation and G4S Aviation Security. The top 10 is completed by TUI Airlines Belgium, the Belgian Air Force, Brussels Airport Company, the second handler AviaPartner Belgium, Belgocontrol and LSG Sky Chefs Belgium, all of which have over 500 FTEs on site at the airport.

⁵⁸ Source: NBB.Stat.

2.2.2.4 Investment⁵⁹

During the 2013-2015 period, investment in tangible fixed assets evolved in tandem with strong traffic volumes, at an annual average growth rate of 19.7 %. This led to record investment of € 257.4 million in 2015. The air transport cluster contributed more than half of this amount.

The airport operator is the main investor at Brussels Airport, accounting for 47.1 % of the total in 2015. € 291.6 million was invested in property, plant and equipment over the three-year period, including in long-term projects such as the construction of the Connector between the airport terminal and Pier A, the redevelopment of the landside shopping zone at Pier A and the expansion of Brucargo, as well as recurrent or short-term projects such as the renovation of runways and taxiways, replacement of the seating infrastructure at Pier A, a new Protocol building and new snowploughs.

Brussels Airlines and TUI Airlines Belgium are also important investors in the air transport cluster. Brussels Airlines is constantly overhauling and upgrading its fleet.

TABLE 23 BRUSSELS AIRPORT: DIRECT INVESTMENT FROM 2013 TO 2015
(in € million – current prices)

Cluster and sector	2013	2014	2015	Share in 2015 (in %)	Change from 2014 to 2015 (in %)	Change from 2013 to 2015 (in %)	Annual average change from 2013 to 2015 (in %)
Air Transport Cluster	126.7	151.3	155.9	60.6	3.0	23.0	10.9
Air transport	21.1	16.2	20.8	8.1	28.8	-1.3	-0.6
Travel agencies and tour operators	19.1	7.5	1.0	0.4	-86.9	-94.9	-77.4
Airport operator	77.2	93.1	121.3	47.1	30.3	57.1	25.3
Airport handling	1.8	2.6	3.5	1.3	34.4	87.3	36.9
Building and repairing of aircraft	1.9	24.2	3.3	1.3	-86.6	70.3	30.5
Other air transport supporting activities	5.6	7.8	6.1	2.4	-22.5	9.1	4.5
Other airport-related activities	53.0	62.1	101.5	39.4	63.4	91.4	38.3
Passenger transport over land	1.0	1.1	0.7	0.3	-37.9	-31.2	-17.0
Freight transport over land	0.5	0.3	0.5	0.2	45.0	-6.8	-3.5
Cargo handling and storage	7.5	6.9	5.5	2.1	-19.8	-26.8	-14.5
Courier and post activities	5.5	5.6	37.1	14.4	561.9	570.8	159.0
Security and industrial cleaning	1.0	0.5	0.5	0.2	-12.6	-52.1	-30.8
Trade	2.9	4.5	6.7	2.6	47.1	129.5	51.5
Hotels, restaurants and catering	4.8	5.4	3.3	1.3	-39.5	-32.0	-17.5
Other services	29.6	37.7	47.2	18.4	25.2	59.4	26.3
Other industries	0.2	0.1	0.1	0.1	121.5	-28.7	-15.6
Direct Effects	179.7	213.5	257.4	100.0	20.6	43.2	19.7

Source: NBB (Central Balance Sheet Office, own calculations).

In the air transport cluster, some significant amounts pop up for previous years. In building and repairing of aircraft, investment peaked at € 24.2 million in 2014. During that year, Tec4Jets moved to a new hangar in Zaventem. This state-of-the-art hangar was acquired by means of a finance

⁵⁹ Since the other airports are much smaller and therefore have only a relatively small number of companies investing, this aspect is only discussed separately for Brussels.

lease. In addition, Safran Aircraft Engine Services Brussels⁶⁰ invested heavily in industrial installations and equipment, mainly to modernise the test bench to be able to test the new Leap aircraft engine.

Travel agencies and tour operators show unusual amounts as well, both in 2013 and 2014. During 2013 and 2014, Jetair Real Estate continued construction work on new premises for the various business units that make up the TUI group, which offer office space, aircraft hangars and maintenance facilities. In 2014, the work was completed and the new facilities inaugurated.

In other airport-related activities, other services invest the most. These figures are almost entirely made up by car rental companies such as Hertz Belgium, Sixt Belgium, Avis Belgium and General Lease⁶¹. The significant growth during the period under review is, on the one hand, attributable to a higher pace of investment at Hertz Belgium. On the other hand, General Lease opened an establishment at Brussels Airport in 2014.

Courier and post activities also boosted investment in 2015. In 2014, DHL Aviation decided to build a new ultra-modern hub at Brussels Airport. This project includes the creation of a new sorting centre and office buildings and should result in a tripling of shipment capacity.

2.2.2.5 The impact of the March 2016 terrorist attacks

On 22 March 2016, Brussels Airport and the Maelbeek metro station downtown were hit by major bomb blasts. Thirty-two people were killed, and another 340 injured. For nearly two weeks, all traffic at Brussels Airport was interrupted and resumed only gradually afterwards. These tragic events obviously had an impact on the domestic economy. According to an impact study⁶² by the Federal Public Service Economy, SMEs, Self-Employed and Energy, especially the hotel and catering industry, the tourist sector, trade and leisure were hit. It goes without saying that the Brussels airport economy was hit badly too. A future update of this report will reveal to what extent value added and employment have been affected. In order to provide a first glimpse of the economic consequences at the main Belgian airport, aggregate data from VAT declarations have been used, and more specifically monthly turnover figures. A constant sample of 140 companies was compiled. These 140 companies all have more than 50 % of their activity⁶³ located at Brussels Airport for three consecutive years (2013-2015). They represented 79 % of the airport's direct value added in 2015 and 75 % of the airport's direct employment in 2015. For multi-regional companies, the assumption of an unchanged share of activity at Brussels Airport, compared to 2015, has been applied. Therefore, the results below might underestimate the impact of the attacks as multi-regional companies might (temporarily) have relocated part of their activities and employees.

Chart 12 shows the relative level of aggregate turnover (as reported via VAT declarations) on a monthly basis for the year 2016. For comparison purposes, 2014 and 2015 have been considered as well. Aggregate turnover in January 2015 is used as comparison base and has been set at 100. The graph clearly highlights a fall in turnover in March 2016, whereas March recorded growth in the previous two years. Compared to the previous month, the decline in March 2016 amounted to 8.3 %, resulting from the interruption of all air traffic at Brussels Airport. During the next month, traffic resumed but only gradually, leading to a slight recovery of aggregate turnover by merely 1.7 %. From May to August 2016, aggregate turnover remained significantly below 2015 levels. Finally, the growth figure for September 2016, 18.6 % on a month-to-month basis, is a sign of full

⁶⁰ Formerly Snecma Services Brussels.

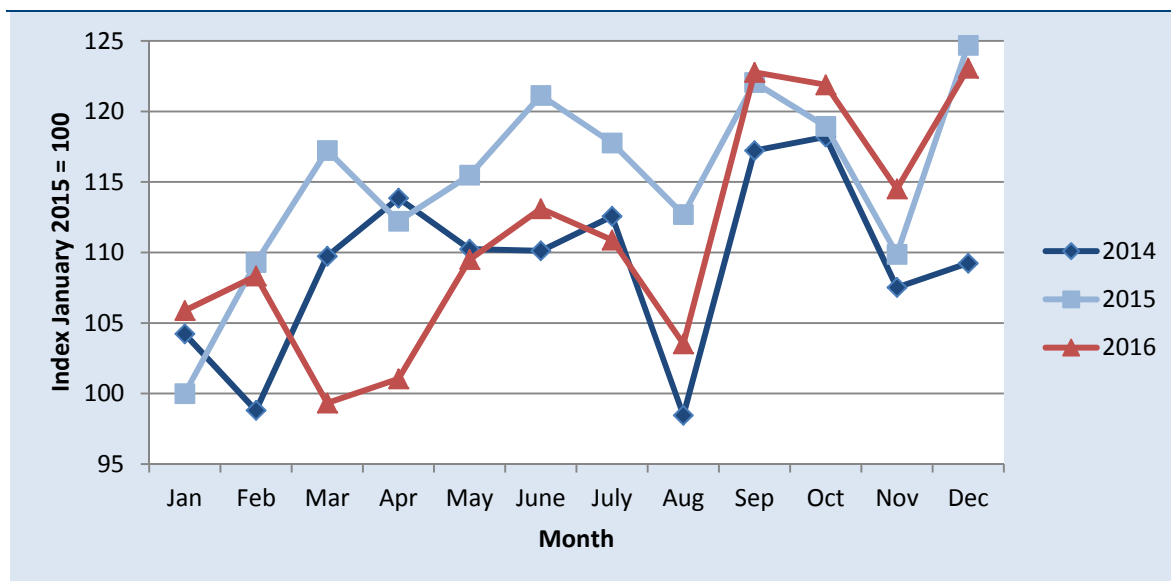
⁶¹ As already mentioned, the distinction between inside and outside airports is based on the breakdown of employment between the operating establishments of companies. A company may therefore be present both inside and outside an airport. Car rental companies are among the big investors in that situation. For them, the investment counted outside airports may in fact be located inside airports, and vice versa. These figures are therefore given purely as a guide.

⁶² Federal Public Service Economy, SMEs, Self-Employed and Energy (2016).

⁶³ Based on employment figures.

recovery. For the entire January to December period, aggregate turnover in 2016 was 3.4 % below the 2015 comparative figure, but 1.8 % above the 2014 comparative figure.

CHART 12 CHANGE IN AGGREGATE TURNOVER FROM JANUARY TO DECEMBER FOR A SAMPLE OF COMPANIES AT BRUSSELS AIRPORT



Source: NAI (own calculations).

Repeating the same exercise using aggregate value added reported via VAT declarations instead of aggregate turnover reveals a comparable overall trend, despite the more irregular pattern of aggregate value added on a monthly basis. For the entire year, aggregate value added was still 2.8 % below the corresponding 2015 level, but 10.9 % above that for 2014, though.

For the regional airports, no meaningful developments can be shown as the number of observations (based on a constant sample) in each of these airports is too small.

2.2.3 Charleroi Airport⁶⁴

2.2.3.1 Recent developments

Following Ryanair's announcement in November 2013 that it would fly from and to Brussels Airport as well, the airport operator BSCA feared it would lose 900 000 passengers in 2014. Finally, the loss was limited to nearly 350 000 passengers. The reduction in Ryanair's passengers was to a large extent offset by the expansion of Wizz Air's activities at Charleroi Airport and the start of Pegasus (daily flight to Istanbul) and Thomas Cook/Tailwind (flights to Antalya during July and August). The following two years, the number of passengers grew again, exceeding 7.3 million in 2016. The 2016 record is partly a consequence of the terrorist attacks at Brussels Airport. 2017 kicked off with several announcements that should have a further positive impact on traffic figures. First of all, Ryanair reopened the route to Barcelona–El Prat. Secondly, TUI Airlines decided to park a fifth plane at Charleroi. This will enable the company to expand its activities at Charleroi: for five existing destinations, the frequency will be stepped up, and six new routes will be introduced. Thirdly, Air Corsica started two new services to Corsica in March 2017. Finally, since the end of April 2017, the Belarusian airline Belavia has been offering flights to Minsk three times a week.

In the past couple of years, efforts to improve Charleroi Airport's infrastructure have continued. In 2013, the commercial zone underwent a thorough overhaul and was expanded from 1 100 to 1 500 m². In 2015, an additional boarding hall for non-Schengen passengers opened. In order to increase capacity in the luggage sorting zone, a system has been installed that allows registration the evening before departure. In addition, certain IT hardware has been replaced. Following the terrorist attacks in March 2016, security measures at the airport have been adapted. A new pre-checking zone has been installed before entry to the terminal. On 30 January 2017, BSCA officially opened a new terminal T2 for Schengen passengers. The second terminal raises the airport's capacity to 10 million passengers. It offers eight check-in desks, three gates, two conveyor belts for arrivals as well as shopping and restaurant facilities. It is a smaller version of the terminal that was originally planned. The construction of a terminal for 15 to 20 million passengers has been stopped, as BSCA feared the European Commission would raise the fees to Sowaer again (see 2.2.3.2). In the future, it is planned to extend the runway from 2 550 metres to 3 200 metres, thus facilitating transatlantic flights.

2.2.3.2 Value added

Both direct and indirect value added at Charleroi Airport saw a dip in 2014. Following a minor recovery the year after, total amount ended at € 202.2 million in 2015. Regarding indirect effects, Charleroi has the lowest multiplier of all airports under review, despite a slight increase to 0.65 in 2015. Sectors that generally tend to generate the most indirect value added, air transport⁶⁵ and travel agencies and tour operators, are badly represented in Charleroi. On the other hand, building and repairing of aircraft and security and industrial cleaning, are quite well represented, but they generate relatively little indirect value added.

Over half of value added in the air transport cluster is generated by airport operator BSCA⁶⁶ which is mainly responsible for the fall in value added in 2014. Its operating profit tumbled from € 14.7 million in 2013 to € 1.8 million in 2014. BSCA compensates Sowaer for use of the airport infrastructure. The European Commission decided that this fee was too low, however, and consequently demanded an additional payment of more than € 9 million, compressing the

⁶⁴ Sources include: www.charleroi-airport.com, BSCA and Sowaer annual reports and miscellaneous press articles.

⁶⁵ Ryanair's value added and employment were not taken into account in this study because the data were not available. Consequently, air transport's share is very small.

⁶⁶ It should be noted that the direct value added generated by BSCA includes operating subsidies and compensatory amounts paid by public authorities, totalling around € 25.9 million in 2015.

operating result. Furthermore, revenue declined in line with passenger traffic. In 2015, revenue showed some growth again, resulting in a higher operating profit and value added.

To a lesser extent, the building and repairing of aircraft sector reveals a downward trend as well. SABCA accounts for the biggest part of this sector and even claims second place after BSCA in Charleroi's company ranking. Besides operations at Charleroi Airport, SABCA has its headquarters in Haren (Brussels). In 2014, SABCA faced development and production difficulties, as well as internal and external supply problems, resulting in operating losses and onerous contracts. Provisions have been recorded to cover future operating losses, which reduced the impact on value added. Value added did not recover the year after, as a result of which a plan to cut operating expenses was prepared.

TABLE 24 CHARLEROI AIRPORT: VALUE ADDED FROM 2013 TO 2015
(in € million – current prices)

Cluster and sector	2013	2014	2015	Share in 2015 (in %)	Change from 2014 to 2015 (in %)	Change from 2013 to 2015 (in %)	Annual average change from 2013 to 2015 (in %)
Air Transport Cluster	90.9	75.6	78.6	64.3	4.0	-13.5	-7.0
of which:							
Airport operator*	51.3	37.0	40.1	32.7	8.2	-22.0	-11.7
Building and repairing of aircraft	28.3	27.5	27.4	22.4	-0.5	-3.5	-1.8
Other air transport supporting activities	10.1	9.7	9.7	8.0	0.4	-3.1	-1.6
Other airport-related activities	42.2	43.6	43.7	35.7	0.2	3.7	1.8
of which:							
Passenger transport over land	5.1	5.6	5.2	4.3	-7.2	2.6	1.3
Security and industrial cleaning	13.6	13.1	12.7	10.4	-3.3	-7.0	-3.5
Trade	5.8	6.3	6.3	5.2	-0.3	9.2	4.5
Hotels, restaurants and catering	3.0	3.0	3.2	2.6	5.4	3.5	1.7
Other services	5.0	6.0	6.1	5.0	0.3	21.4	10.2
Public services	6.3	6.5	7.7	6.3	18.5	22.5	10.7
Direct Effects	133.0	119.2	122.4	100.0	2.6	-8.0	-4.1
Indirect Effects	86.1	76.7	79.8	(65.2)	4.1	-7.3	-3.7
Total	219.1	195.9	202.2	(165.2)	3.2	-7.7	-3.9

Source: NAI; NBB (Central Balance Sheet Office, own calculations).

Sectors that could reveal confidential information are not presented separately.

* It should be noted that the direct value added generated by the airport operator includes operating subsidies and compensation paid by public authorities, totalling around € 25.9 million in 2015.

At other air transport supporting activities, more than half of value added is generated by Belgocontrol. Sowaer also belongs to this sector.

Under other airport-related activities, security and industrial cleaning claims the sectoral lead, despite a fall in value added of 7 % compared to 2013. Activities include cleaning and maintenance company Gom and airport security, the latter being the responsibility of Brussels South Charleroi Airport Security, which outsources its duties. In October 2013, Securitas Transport Aviation Security Wallonia lost the contract to G4S Aviation Security.

Trade accounts for 14 % of Charleroi's direct value added. At the airport exit, there is a Q8 petrol station with a car wash and a shop. Therefore, Kuwait Petroleum accounts for a large share of the value added from trade, together with International Duty Free Belgium⁶⁷.

Passenger transport over land consists of Leonard Travel International and Flib Travel International. Together, they operate regular coach services between Charleroi Airport on the one hand, and the Brussels Midi train station, Lille, Luxembourg and Metz on the other hand. Since June 2014, a shuttle service has connected the airport to Ghent and Bruges as well, with a frequency of nine busses per day.

Other key sectors in this cluster include public services (customs, federal police and Service Public de Wallonie) and other services covering mainly car rental companies, but also the currency exchange offices and JCDecaux Airport Belgium. Since 2014, the latter has managed the exclusive contract for advertising services at Charleroi Airport. Until then, this company was only active at Brussels Airport. This explains the rise in value added between 2013 and 2014.

2.2.3.3 Employment

Direct employment at Charleroi Airport fluctuated around 1 540 FTEs between 2013 and 2015. The change was limited to +0.3 % over two years. Indirect employment showed better progress of + 2.5 % between 2013 and 2015. This resulted in a minor improvement of the multiplier to 0.77 in 2015. Like the value added multiplier, the employment multiplier is nevertheless still the lowest of all airports under review. The reason is the low share of air transport and other services⁶⁸ on the one hand, and the relatively high share of security and industrial cleaning and public services⁶⁹, on the other hand. Total employment amounted to 2 728 FTEs in 2015.

The air transport cluster is entirely responsible for the minor drop in direct employment in 2014 (-15 FTEs). Most of the loss can be traced back to Charleroi's largest employer, airport operator BSCA, which accounts for 30 % of direct employment at the airport. Building and repairing of aircraft takes up a large share as well (18.1 %). SABCA's workforce has expanded slightly in the last two years. Other air transport supporting activities mainly cover Belgocontrol and Sowaer.

As for other airport-related activities, a steady rise is noted, despite developments in the largest sector, security and industrial cleaning. In October 2013, G4S Aviation Security took over the security contract from Securitas Transport Aviation Security Wallonia. The former fulfills its duties using fewer staff than its predecessor, but still earned the position of Charleroi's second largest employer.

In comparison to other sectors at Charleroi Airport, passenger transport over land shows the largest increase in employment: +24.2 % between 2013 and 2015. Leonard Travel International and Flib Travel International jointly operate regular coach services to and from Charleroi Airport. Therefore, both travel agencies have been reallocated to passenger transport over land, taking into account their specific activity at Charleroi Airport. The staff increase in 2014 marks the start of an additional shuttle service during that year. Public services show a modest personnel expansion over time as well, which can be attributed to customs.

Employment in hotels, restaurants and catering remains fairly stable over the period under review. Most of these people are employed by Elier Charleroi. This company manages most restaurant activities at the airport. In the trade sector, the main employers are International Duty Free Belgium and Kuwait Petroleum's filling station. Finally, other services largely comprise car rental companies Avis, Europcar, Hertz and Sixt. Altogether, they employ 22 people at Charleroi Airport.

⁶⁷ Formerly Belgian Sky Shops.

⁶⁸ Two sectors with the highest employment multipliers.

⁶⁹ Two sectors with the lowest employment multipliers.

The three largest employers – BSCA, G4S Aviation Security and SABCA – between them employed 991 FTEs in 2015, i.e. 64 % of the airport total.

TABLE 25 CHARLEROI AIRPORT: EMPLOYMENT FROM 2013 TO 2015
(in FTEs)

Cluster and sector	2013	2014	2015	Share in 2015 (in %)	Change from 2014 to 2015 (in %)	Change from 2013 to 2015 (in %)	Annual average change from 2013 to 2015 (in %)
Air Transport Cluster	817	802	808	52.4	0.7	-1.1	-0.5
of which:							
Airport operator	471	461	463	30.0	0.4	-1.8	-0.9
Building and repairing of aircraft	271	272	279	18.1	2.7	3.0	1.5
Other air transport supporting activities	62	57	52	3.4	-8.6	-15.4	-8.0
Other airport-related activities	721	730	735	47.6	0.7	1.9	1.0
of which:							
Passenger transport over land	83	101	103	6.7	2.6	24.2	11.4
Security and industrial cleaning	333	312	314	20.4	0.7	-5.9	-3.0
Trade	56	60	60	3.9	-1.2	5.7	2.8
Hotels, restaurants and catering	76	74	74	4.8	0.1	-2.0	-1.0
Other services	36	41	41	2.6	-0.7	14.7	7.1
Public services	107	112	114	7.4	2.3	7.1	3.5
Direct Effects	1 538	1 532	1 543	100.0	0.7	0.3	0.2
Indirect Effects	1 157	1 166	1 185	(76.8)	1.7	2.5	1.2
Total	2 694	2 698	2 728	(176.8)	1.1	1.2	0.6

Source: NAI; NBB (Central Balance Sheet Office, own calculations).

Sectors that could reveal confidential information are not presented separately.

2.2.4 Kortrijk Airport

2.2.4.1 Recent developments⁷⁰

Kortrijk, the smallest of Belgium's six international airports, offers business and private air travel (19 % of traffic), as well as training flights (81 % of traffic). 2016 traffic figures were negatively influenced by several measures related to flight procedures, airspace, traffic and weather information, imposed by the Federal Public Service Mobility. More specifically, Kortrijk Airport's ground equipment was rejected so several aircraft types are no longer allowed to land there. The airport operator plans to meet the new requirements as soon as possible, with the help of Belgocontrol. However, in order to operate the new equipment, Kortrijk Airport will need Belgocontrol's services which implies additional charges of € 0.3 million to € 0.5 million on an annual basis.

Kortrijk Airport is currently operated by West Flanders Intermunicipal Airport of Wevelgem-Bissegem. On 1 July 2015, a new limited company - International Airport Kortrijk-Wevelgem - was established. Its shareholders are Provinciale Ontwikkelingsmaatschappij West-Vlaanderen (57 %), the Flemish Region (33 %) and the Intermunicipal Leiedal (10 %). International Airport Kortrijk-Wevelgem will be in charge of the airport's sustainable development and management and maintenance of the airport infrastructure. To that end, all assets, liabilities, rights and obligations of West Flanders Intermunicipal Airport of Wevelgem-Bissegem will be transferred to International Airport Kortrijk-Wevelgem. As soon as this process is completed, West Flanders Intermunicipal Airport of Wevelgem-Bissegem will be dissolved. According to the airport operator, this restructuring process is deemed necessary in order to renovate the airport infrastructure thoroughly. The reduced number of shareholders should make it easier to manage important decisions in the future. The new structure is planned to remain operational for ten years. By then, a LOM-LEM⁷¹ structure should be set up, similar to those in place at Antwerp and Ostend. Currently, the main objective is to develop a new taxiway, sufficient aircraft parking facilities and a car service road separated from the taxiway.

2.2.4.2 Value added

Kortrijk Airport shows a positive trend in terms of direct value added, ending up at € 7.7 million in 2015, which means a rise by 6.6 % since 2013. The indirect value added also rose by 3.3 % in two years, and these figures totalled € 16.5 million in 2015 when taken together. Kortrijk reports the largest relative contribution to value added of the air transport cluster (87.8 % of the total).

Direct value added in the air transport cluster slightly moved upwards. The airport operator's value added, however, declined as its operating loss doubled in 2015. Complications with the "Vliegveld"⁷² road resulted in increased charges for temporary risk-mitigating measures. The air transport sector, which accounts for nearly half of the air transport cluster, largely comprises Abelag Aviation (operating as Luxaviation Belgium since 2016). Business air traveller Abelag Aviation has operating bases in Kortrijk and Brussels, in addition to activities in the Netherlands and France. The 2014 dip in Abelag Aviation's value added was partially compensated by a halving of the operating loss of Helipad.be. One year later, Abelag Aviation's operating profit had almost doubled again, which was to a limited extent offset by the declining value added of STB Copter. The latter resulted from a lower operating profit and, on top of that, less depreciation and provisions in 2015.

Kortrijk Airport boasts a compact but – given the small size of the airport – well-developed aircraft repair sector, which generates 21.3 % of direct value added. Abelag Group not only has business

⁷⁰ Sources include: www.kortrijkairport.be, annual reports and miscellaneous press articles.

⁷¹ LOM = airport development company; LEM = airport operating company.

⁷² The airport operator would like to turn it into an airside area to ease the use as access route for aircraft.

air travel activities at Kortrijk Airport, but also maintenance and repair service facilities under the name Abelag Technics (operating as ExecuJet since 2016). Gill Aviation has a workplace for ten aircraft and offers services ranging from standard-routine maintenance to more intensive repairs. Air Technology Belgium specialises in helicopter maintenance and Lambert Aircraft Engineering manufactures a range of light aircraft primarily intended for flight training and recreational flying.

Other air transport supporting activities is a relatively small sector in the air transport cluster. But it has just about compensated for the dip of the airport operator's value added in 2015. Besides mainly flight schools and independent flight instructors, the sector also comprises Flanders International Airport (FIA), a private company running the airport buildings (i.e. baggage handling, catering, fuel supply and car parking). Flight school and aircraft rental company Propeller has managed to get out of the red: in contrast to previous years, it made an operating profit.

TABLE 26 KORTRIJK AIRPORT: VALUE ADDED FROM 2013 TO 2015
(in € million – current prices)

Cluster and sector	2013	2014	2015	Share in 2015 (in %)	Change from 2014 to 2015 (in %)	Change from 2013 to 2015 (in %)	Annual average change from 2013 to 2015 (in %)
Air Transport Cluster	6.5	6.8	6.7	87.8	-0.9	3.1	1.6
Air transport	2.9	2.8	2.9	38.0	4.9	-1.0	-0.5
Airport operator	1.1	1.2	1.0	13.0	-15.8	-11.2	-5.7
Building and repairing of aircraft	1.6	1.8	1.6	21.3	-7.5	3.1	1.5
Other air transport supporting activities	0.9	1.1	1.2	15.4	11.6	35.2	16.3
Other airport-related activities	0.7	0.6	0.9	12.2	48.1	40.8	18.7
Cargo handling and storage	0.0	0.0	0.0	0.2	200.0	-1 000.0	n.
Hotels, restaurants and catering	0.3	0.3	0.5	6.1	39.2	51.3	23.0
Other services	0.0	0.0	0.1	0.8	-520.0	28.6	13.4
Public services	0.3	0.3	0.4	5.1	26.7	25.5	12.0
Direct Effects	7.2	7.4	7.7	100.0	3.3	6.6	3.3
Indirect Effects	8.5	8.4	8.8	(115.0)	5.3	3.3	1.6
Total	15.7	15.8	16.5	(215.0)	4.4	4.8	2.4

Source: NAI; NBB (Central Balance Sheet Office, own calculations).

In other airport-related activities, hotels, restaurants and catering raised value added by 51 % in the space of two years. In November 2014, B.B. (restaurant Biggles) filed for bankruptcy. In early 2015, the restaurant business was taken over by a new company called Airpero. The activities of Café Passé also moved from one company (Aan De Leie) to another (Bistro Café Passé).

2.2.4.3 Employment

Like the trend in value added, Kortrijk Airport's direct employment is also moving up at a very smooth pace: from 114 FTEs in 2013 to 119 in 2015. The slight progress is visible in both clusters. Indirect employment remains more or less at a comparable level. Total employment came in at 235 FTEs in 2015.

In Kortrijk, Abelag Aviation is the largest employer. The airport operator, whose workforce remains very stable over time, is the second largest. Not only in terms of value added but also when it

comes to the number of staff, building and repairing of aircraft is the second largest sector. Abelag Technics, Air Technology Belgium, Gill Aviation and Lambert Aircraft Engineering contribute mainly to the share of 23.2 %. The biggest sector is other air transport supporting activities. Flight instructors make up the largest part of this group.

TABLE 27 KORTRIJK AIRPORT: EMPLOYMENT FROM 2013 TO 2015
(in FTEs)

Cluster and sector	2013	2014	2015	Share in 2015 (in %)	Change from 2014 to 2015 (in %)	Change from 2013 to 2015 (in %)	Annual average change from 2013 to 2015 (in %)
Air Transport Cluster	99	101	101	85.5	0.3	2.6	1.3
Air transport	27	28	25	20.9	-11.4	-8.8	-4.5
Airport operator	16	16	16	13.4	0.6	0.6	0.3
Building and repairing of aircraft	26	27	28	23.2	1.1	7.4	3.6
Other air transport supporting activities	30	30	33	27.9	10.3	10.0	4.9
Other airport-related activities	16	14	17	14.5	24.6	9.6	4.7
Cargo handling and storage	1	1	1	0.8	0.0	0.0	0.0
Hotels, restaurants and catering	8	6	10	8.0	58.3	20.3	9.7
Other services	2	2	2	1.3	0.0	0.0	0.0
Public services	5	5	5	4.4	0.0	0.0	0.0
Direct Effects	114	115	119	100.0	3.2	3.6	1.8
Indirect Effects	115	120	116	(97.8)	-3.0	0.8	0.4
Total	229	234	235	(197.9)	0.1	2.2	1.1

Source: NAI; NBB (Central Balance Sheet Office, own calculations).

In other airport-related activities, hotels, restaurants and catering showed growth of 20.3 % compared to 2013. As already mentioned, B.B. (restaurant Biggles) went bankrupt in November 2014, explaining the minor dip in employment in 2014. At the beginning of 2015, its restaurant business was continued by the new company, Airpero, which employs slightly more people than the former B.B.

2.2.5 Liège Airport

2.2.5.1 Recent developments⁷³

In 2016, Liège Airport reinforced its position as leading cargo airport in Belgium. Volumes went up by 1.7 %, driven by the Israeli airlines CAL and El Al, and Qatar Airways especially. TNT Airways, which recently changed its name to ASL Airlines Belgium, remains the main cargo airline at Liège Airport. One of the airport's assets as cargo platform is its 24/7 availability: the airport is open all hours, nights included. It is specialised in general cargo express parcels, perishable products, racehorses, as well as biologicistics (transport of medicines, transfer of organs or any biological item such as stem cells, etc.). Being an important cargo player at European level too, the airport does not rest on its laurels though. Expansion and improvement projects are continuously envisaged. In 2016, a specialised facility for horse logistics called "Horse Inn" was inaugurated. At the end of 2015, the Executive Board of Liège Airport approved an investment programme worth approximately € 100 million. This money will be used to develop infrastructure, commercial operations and real estate projects. More specifically, the airport is aiming to build additional aircraft parking spaces and warehouses in the northern zone and to develop a business aviation hub in the southern zone. Following the acquisition of TNT Express by FedEx, the Walloon government will finance some airside investment required to integrate Liège Airport into the FedEx-network.

In the light of the terrorist attacks at Brussels Airport, passenger traffic at Liège showed a 27.6 % surge in 2016, ending just below the 2008 record figure. Currently, passenger traffic consists almost completely of charter flights operated by TUI Airlines. 2015 started out as promising as Liège Airport managed to attract new players. BMI launched a service to Munich. Due to an unsatisfactory seat load factor, this service was stopped after just eight months. The new operations of VLM Airlines at Liège, offering scheduled services to Nice, Avignon, Venice and Bologna, were even more short-lived. Starting in April 2015, the Chinese tour operator U-Tour organised charter flights to offer Chinese tourists trips around Europe. The flights were operated by the Russian airline I-Fly. The formula got off to a flying start, resulting in an increase in the number of flights from three to six per week. In September 2016, however, U-Tour's Liège Airport operations were suspended, as the partnership between the tour operator and I-Fly was terminated. In January 2017, however, the airport announced that U-Tour would resume its operations. Its new partner is the Russian airline Vim Airlines. Eight weekly flights have been scheduled. This news is very welcome as the airport has also lost Air Corsica and Thomas Cook Airlines in the mean-time.

In 2015, Sowaer, owner of land around the airport, and Liège Airport decided to collaborate to create synergies between the airport development and the development of the areas surrounding it. This partnership has been formalised in the "Land in Liège" management structure. In the northern zone of the airport, a state-of-the-art logistics park called Flexport City is being established for activities dedicated to air freight and logistics. In the southern zone, an office park called Airport City is being developed for projects related to offices and passenger activities such as hotels, business park services, local retail stores, etc. In a first phase, several hectares of land have already been opened up in both Flexport City and Airport City.

2.2.5.2 Value added

Since 2014, other airport-related activities in Liège have become more important than the air transport cluster itself. They have shown a continuous upward trend since 2010, to reach a share of 56.2 % in 2015. The air transport cluster, on the other hand, revealed an opposite trend between 2013 and 2015. As this cluster generates relatively more indirect effects, indirect value added was

⁷³ Sources include: www.liegeairport.com, landinliege.com, annual reports and miscellaneous press articles.

hit by the 2014 drop as well. The multiplier fell from 1.02 in 2013 to 0.92 in 2015, resulting in total value added of € 530.9 million in 2015, a 3.2 % improvement on the year before though.

TABLE 28 LIÈGE AIRPORT: VALUE ADDED FROM 2013 TO 2015
(in € million – current prices)

Cluster and sector	2013	2014	2015	Share in 2015 (in %)	Change from 2014 to 2015 (in %)	Change from 2013 to 2015 (in %)	Annual average change from 2013 to 2015 (in %)
Air Transport Cluster	145.6	125.7	121.2	43.8	-3.6	-16.7	-8.7
of which:							
Air transport	89.3	65.3	62.4	22.6	-4.5	-30.1	-16.4
Airport operator*	17.4	19.2	18.9	6.8	-1.7	8.6	4.2
Building and repairing of aircraft	12.1	14.8	12.5	4.5	-15.8	3.3	1.6
Other air transport supporting activities	19.6	18.5	18.7	6.7	0.8	-5.0	-2.5
Other airport-related activities	139.3	141.1	155.5	56.2	10.2	11.7	5.7
of which:							
Cargo handling and storage	15.7	19.8	21.5	7.8	8.8	36.5	16.8
Courier and post activities	82.9	81.4	89.1	32.2	9.4	7.5	3.7
Security and industrial cleaning	10.5	11.6	12.8	4.6	10.4	22.3	10.6
Trade	2.6	3.4	4.4	1.6	29.3	68.3	29.7
Hotels, restaurants and catering	1.5	1.8	1.9	0.7	6.7	27.6	13.0
Other services	5.5	5.9	6.9	2.5	18.5	26.9	12.7
Other industries	6.2	6.0	7.0	2.5	17.5	13.7	6.6
Public services	12.2	10.7	11.0	4.0	3.5	-9.3	-4.8
Direct Effects	284.8	266.9	276.7	100.0	3.7	-2.8	-1.4
Indirect Effects	289.7	247.5	254.2	(91.9)	2.7	-12.3	-6.3
Total	574.5	514.4	530.9	(191.9)	3.2	-7.6	-3.9

Source: NAI; NBB (Central Balance Sheet Office, own calculations).

Sectors that could reveal confidential information are not presented separately.

* It should be noted that the direct value added generated by the Liège Airport operator includes operating subsidies and compensation paid by public authorities, totalling 23.8 million in 2015.

The air transport sector can be held responsible for the lower figures in 2014. ASL Airlines Belgium lost € 23.9 million in value added as operating profit shrank from € 27.1 million in 2013 to € 3.7 million. The operating result was affected by expenses related to the US dollar hedging of operating lease contracts for two Boeing B747 planes. These hedging operations even resulted in an operating loss in 2015. Following the acquisition of TNT Express by FedEx, the former TNT Airways was put up for sale and, in May 2016, acquired by ASL, which is 51 % owned by CMB (shipping group of the Savaer family) and 49 % owned by 3P Air Freighters (a private equity fund of Petercam). As a result of this deal, the name of TNT Airways was changed to ASL Airlines Belgium.

Value added of other air transport supporting activities has demonstrated a negative trend as well: -5 % compared to 2013. This sector is largely made up of Sowaer and Belgocontrol. In 2014, the Sowaer's value added fell as a result of additional government grants received for opening new sites within the scope of the Flexport City and Airport City projects. One year later, the operating loss pushed value added down even further. Agusta Aerospace Services explains the modest peak in building and repairing of aircraft's value added in 2014, influenced by its excellent operating profit.

More than half of other airport-related activities' value added is generated by TNT Express Worldwide (Euro Hub). As a result, this courier leads Liège's value added ranking. The sector's boost in value added by 9.4 % in 2015 is mainly explained by TNT Express' rise in employee expenses. Cargo handling and storage contribute to the increased importance of other airport-related activities as well: +36.5 % in two years. Liège Air Cargo Handling Services (LACHS) expanded its activities considerably. Therefore, additional staff was hired, pushing up employee expenses. The second important cargo handler Swissport Cargo Services Belgium also raised its value added in 2014.

Other important creators of value added at Liège Airport are Securitas Transport Aviation Security Wallonia (security and industrial cleaning), AviaPartner Liège (airport handling) and customs (public services). At Charleroi Airport, Securitas Transport Aviation Security Wallonia lost the security contract to G4S Aviation Security in October 2013. Therefore, Securitas Transport Aviation Security Wallonia is fully assigned to Liège as from 2014.

Since June 2014, the trade sector has a new company that was established at Liège Airport's premises: Neobulles. This company belonging to the Stassen family took over three brands (among which Kidibul) from Heineken International. These brands are marketed and distributed in Belgium and abroad. Less recently, in June 2012, CFE Bâtiments Brabant Wallonie (other industries) started an establishment at Liège Airport, under the name BPC Liège, that has grown very quickly.

2.2.5.3 Employment

Unlike value added, the trend in direct employment at Liège Airport has been positive since 2009, growth that is most notable in the other airport-related activities, as a result of which the share of this cluster in terms of direct employment grew from 56.1 % in 2009⁷⁴ to 69.1 % in 2015. Between 2013 and 2015, Liège's direct employment rose by an annual average of 2.5 %. Indirect effects even reached an annual average increase of 5.9 %. This is mainly due to the excellent growth rates in the relatively important sectors of cargo handling and storage and other industries. These sectors generate relatively more indirect employment. In 2015, total employment at Liège Airport stood at 5 968 FTEs.

Direct employment in the air transport cluster changed barely, ending 2015 at 1 007 FTEs. Its main sector is the air transport sector, which includes the second largest employer of Liège Airport: ASL Airlines Belgium, where the workforce remained fairly stable between 2013 and 2015. The same is true for other large employers like the airport operator, airport handler AviaPartner Liège and maintenance company X-Airservices.

The expansion seen in other airport-related activities is attributable to several sectors, but cargo handling and storage contribute the most. Liège Air Cargo Handling Services (LACHS) considerably expanded its activities during 2014 and 2015. In 2014, the cargo handler hired 31 additional people and, another 27 extra employees joined the company in 2015 (not taking into account staff replacing those having left the company).

More than half of the jobs in other airport-related activities can be found in courier and post activities. TNT Express Worldwide (Euro Hub) is the largest employer at Liège Airport. Despite a minor dip in 2014, modest growth was noted between 2013 and 2015. Trade and other industries show expansion as well. The newly established company Neobulles (see 2.2.5.2) accounted for 19 FTEs in 2015. In other industries, growth rates are a reflection of the expansion of BPC Liège, a unit of CFE Bâtiments Brabant Wallonie. Other services comprise mainly employees of the local Chamber of Commerce, law firm Baudinet, Bottin, Rigo, Van Cutsem & Associates, Logistics in Wallonia, Liège Airport Business Park and business intelligence services provider Chiveo.

⁷⁴ Van Nieuwenhove (2014).

Customs reduced its staff numbers at Liège Airport compared to 2013, resulting in an 8.1 % decline in public services in two years.

TABLE 29 LIÈGE AIRPORT: EMPLOYMENT FROM 2013 TO 2015
(in FTEs)

Cluster and sector	2013	2014	2015	Share in 2015 (in %)	Change from 2014 to 2015 (in %)	Change from 2013 to 2015 (in %)	Annual average change from 2013 to 2015 (in %)
Air Transport Cluster	997	997	1 007	30.9	0.9	0.9	0.5
of which:							
Air transport	470	460	467	14.3	1.4	-0.6	-0.3
Airport operator	157	160	162	5.0	1.2	2.7	1.3
Building and repairing of aircraft	137	139	139	4.3	-0.2	1.3	0.7
Other air transport supporting activities	94	95	97	3.0	2.3	3.1	1.5
Other airport-related activities	2 107	2 130	2 253	69.1	5.8	6.9	3.4
of which:							
Cargo handling and storage	258	293	333	10.2	13.4	29.1	13.6
Courier and post activities	1 207	1 189	1 230	37.7	3.5	1.9	1.0
Security and industrial cleaning	248	251	262	8.0	4.4	5.6	2.8
Trade	18	34	46	1.4	34.1	153.3	59.2
Hotels, restaurants and catering	28	25	28	0.9	11.1	-0.7	-0.4
Other services	59	62	60	1.8	-4.3	0.5	0.3
Other industries	77	74	98	3.0	32.3	27.5	12.9
Public services	195	180	180	5.5	-0.2	-8.1	-4.1
Direct Effects	3 104	3 128	3 260	100.0	4.2	5.0	2.5
Indirect Effects	2 413	2 513	2 708	(83.1)	7.8	12.2	5.9
Total	5 518	5 641	5 968	(183.1)	5.8	8.2	4.0

Source: NAI; NBB (Central Balance Sheet Office, own calculations).

Sectors that could reveal confidential information are not presented separately.

2.2.6 Ostend Airport

2.2.6.1 Recent developments⁷⁵

Like Antwerp Airport, Ostend Airport enjoyed a record year in terms of passenger traffic in 2016. Passenger numbers were up by 57.6 % to the previous year. Nearly every month, an increase in passengers was noted. March and April, however, showed a peak as a consequence of the terrorist attacks at Brussels Airport. Currently, TUI Airlines offers six destinations in Spain and Turkey during the winter season and 20 destinations are scheduled for the summer season.

Cargo traffic shows a completely different picture. Cargo volumes slumped from 74 100 tonnes in 2009 to barely 16 800 tonnes in 2015. In 2016, cargo recovered slightly to 22 200 tonnes. In the recent past, several carriers have disappeared from Ostend. More recently, ANA Aviation has dealt Ostend a heavy blow as its cargo accounted for 50 % of cargo traffic. Attracted by the lower fuel charges at Liège Airport, ANA Aviation moved its operations there. In Liège, jet-fuel is pumped through the former NATO-pipeline, whereas Ostend is supplied by means of tanker lorries from Antwerp. Additionally, both the Flemish government and the former fuel supplier Skytanking Ostend charged a profit margin. Like a boomerang, the fuel price issue struck back at the fuel supplier as its turnover dropped by more than one-third resulting from ANA's departure. Skytanking Ostend argued that its financial health was affected and that further measures were necessary to protect the company's future. Therefore, it raised fuel charges further. However, this measure was blocked by airport operator LEM Ostend-Bruges. At the end of 2015, Skytanking Ostend went into receivership and was dissolved in March 2016. The fuel supply business and assets of Skytanking Ostend have been taken over by TNA-Services, a subsidiary of Tatneft Oil. Tatneft is one of the largest Russian oil companies and has a large network of filling stations in Russia and Ukraine. Time will tell whether TNA-Services is able to attract new cargo airlines in Ostend by setting more competitive fuel prices.

2.2.6.2 Value added

For several years now, Ostend Airport's total value added has been on a mainly downward trend. In the last two years, the annual average decline was 8.4 %, leaving total value added at € 37.1 million in 2015. Given the losses in cargo traffic in the last couple of years, it is not surprising that the air transport cluster was hit the hardest. This not only had an impact on direct value added, but also – and even more so – on indirect value added, as the air transport sector generates relatively more indirect effects than other sectors. As a result, Ostend Airport's multiplier for value added declined slightly from 0.81 in 2013 to 0.78 in 2015.

Since 2015, airport handler Swissport Belgium has no longer operated at Ostend Airport. The remaining airport handler AviaPartner Ostend suffered badly ANA Aviation's move from Ostend to Liège in 2014. As ANA represented 65 % of AviaPartner Ostend's turnover, its move to Liège resulted in a major operating loss. In order to survive, a restructuring plan had to be set up. Twenty-six people were laid off or left the company for another reason, which pushed staff costs down.

In 2014, the air transport sector was hit by World Airways and Nordic Global Airlines discontinuing operations at Ostend Airport. Their aircraft used to be used by ANA Aviation for its cargo flights. World Airways' parent company Global Aviation Holdings filed for Chapter 11 bankruptcy protection in 2012 and ceased operations in the spring of 2014.

The airport operator accounts for 24 % of direct value added. As in Antwerp, the Flemish government was in charge of all airport operations until the end of October 2014, when France's Egis took over by means of its subsidiary LEM Ostend-Bruges. The Flemish government is still

⁷⁵ Sources include: www.ost.aero, annual reports and miscellaneous press articles.

included in Ostend's figures though, as it seconds several of its staff members to LEM Ostend-Bruges. LEM too was affected negatively by the move of ANA Aviation in 2014, resulting in downward pressure on value added.

At Ostend Airport, most value added is generated by Belgocontrol. As a result, other air transport supporting activities make up the largest sector. This sector contains another top ten company in terms of value added: fuel supplier Skytanking Ostend.

TABLE 30 OSTEND AIRPORT: VALUE ADDED FROM 2013 TO 2015
(in € million – current prices)

Cluster and sector	2013	2014	2015	Share in 2015 (in %)	Change from 2014 to 2015 (in %)	Change from 2013 to 2015 (in %)	Annual average change from 2013 to 2015 (in %)
Air Transport Cluster	18.5	14.6	14.9	71.3	2.0	-19.7	-10.4
of which:							
Air transport	1.8	0.7	0.6	2.7	-23.2	-68.5	-43.8
Airport operator*	5.6	4.7	5.0	24.0	6.7	-11.2	-5.8
Other air transport supporting activities	6.8	6.6	7.2	34.5	8.9	5.8	2.9
Other airport-related activities	6.0	6.8	6.0	28.7	-11.7	0.4	0.2
of which:							
Cargo handling and storage	1.8	2.7	2.1	9.9	-22.3	12.2	5.9
Trade	0.1	0.1	0.1	0.6	1.6	10.3	5.0
Hotels, restaurants and catering	1.5	1.3	1.3	6.2	-2.6	-11.6	-6.0
Public services	2.5	2.6	2.4	11.6	-6.5	-1.9	-0.9
Direct Effects	24.5	21.3	20.8	100.0	-2.4	-14.8	-7.7
Indirect Effects	19.8	16.4	16.3	(78.1)	-0.8	-17.7	-9.3
Total	44.2	37.8	37.1	(178.1)	-1.7	-16.1	-8.4

Source: NAI; NBB (Central Balance Sheet Office, own calculations).

Sectors that could reveal confidential information are not presented separately.

* It should be noted that the direct value added generated by the airport operator includes operating subsidies and compensation paid by public authorities, totalling around € 6.2 million in 2015.

Other airport-related activities show a peak in value added in 2014. This can be traced back to cargo handling and storage. Air broker Chapman Freeborn Airchartering posted a record operating profit thanks to growth of its business. The company arranges all kinds of air charter operations, from emergency relief airlifts to corporate roadshows. The 2015 figure further suffered from ANA Aviation's⁷⁶ move to Liège. The catering sector comprises two restaurants: Belair and Charles Lindbergh. The latter's concession ended in January 2016, as a result of which the restaurant closed. Currently, the site and building are being renovated and expanded. The airport operator is planning to open a new restaurant by the end of 2017.

2.2.6.3 Employment

The negative trend in employment has been even more pronounced than that for value added. Between 2013 and 2015, Ostend Airport lost 73 direct FTEs and 76 indirect FTEs, a drop of 18.4 %

⁷⁶ ANA Aviation does not have a branch of its own in Belgium. It operates in Belgium through its subsidiary Network Airline Services.

and 19.6 % respectively. The multiplier for indirect employment (0.94 in 2015) nevertheless remains above that for the air transport and airport sector as a whole.

Like value added, direct employment in the air transport cluster was hit the hardest. It lost nearly one-quarter of jobs in two years. As already mentioned, airport handler AviaPartner Ostend had to implement a restructuring plan which resulted in twenty-six people quitting the company, some of them being laid off. Despite this slimming-down, Aviapartner Ostend remains one of Ostend Airport's top 10 employers. Moreover, AviaPartner became the only airport handler at Ostend in 2015, following the departure of Swissport Belgium.

TABLE 31 OSTEND AIRPORT: EMPLOYMENT FROM 2013 TO 2015
(in FTEs)

Cluster and sector	2013	2014	2015	Share in 2015 (in %)	Change from 2014 to 2015 (in %)	Change from 2013 to 2015 (in %)	Annual average change from 2013 to 2015 (in %)
Air Transport Cluster	307	263	235	72.0	-10.8	-23.6	-12.6
of which:							
Air transport	24	8	6	1.7	-30.4	-77.3	-52.3
Airport operator	122	115	110	33.9	-4.0	-9.5	-4.8
Other air transport supporting activities	75	73	73	22.5	0.1	-2.8	-1.4
Other airport-related activities	92	99	91	28.0	-8.2	-1.0	-0.5
of which:							
Cargo handling and storage	19	21	20	6.0	-7.6	2.1	1.0
Trade	2	2	2	0.6	0.0	0.0	0.0
Hotels, restaurants and catering	31	33	33	10.0	0.0	6.5	3.2
Public services	40	43	36	11.1	-15.2	-8.6	-4.4
Direct Effects	399	362	326	100.0	-10.1	-18.4	-9.7
Indirect Effects	383	336	307	(94.4)	-8.5	-19.6	-10.4
Total	782	698	633	(194.4)	-9.3	-19.0	-10.0

Source: NAI; NBB (Central Balance Sheet Office, own calculations).

Sectors that could reveal confidential information are not presented separately.

Furthermore, the share of the air transport sector shrank to only 1.7 % in 2015 due to the discontinued operations of both World Airways and Nordic Global Airlines. The airport operator cut its workforce as well, albeit to a limited extent. Firms operating in other air transport supporting activities managed to keep their staff numbers at a fairly steady level. Besides Belgocontrol, this sector mainly comprises Ostend Air College and Skytanking Ostend.

Despite the peak in 2014, the absolute contribution of other airport-related activities to Ostend's employment remains modest and fell back just below the 2013 level. Restaurants Belair and Charles Lindbergh, as well as customs and federal police, are some of the main employers in this cluster.

3 SUMMARY

During the 2013-2015 period, the aggregate passenger traffic growth in the six Belgian airports reviewed kept pace with the growth at world level. All airports contributed to the overall passenger increase except Liège. In 2016, the terrorist attacks at Brussels Airport considerably affected the operational performance of the different airports. In the aftermath of these events, Brussels lost passenger volume, some of which was absorbed by the regional airports (except Kortrijk). Cargo traffic recovered more quickly than passenger traffic. The aggregate freight traffic growth in the Belgian airports remained below the increase at world level though. Both Liège and Brussels have performed well, while Ostend mainly suffered from the departure of ANA Aviation.

The upward trend in Belgian traffic volumes is reflected in a rise in value added of the air transport business as a whole. Both direct and indirect effects grew at a rate between 15 and 16 % in the space of two years, leading to total value added of € 6 billion in 2015 which represents 1.5 % of Belgium's GDP. The direct effects are mainly boosted by the air transport cluster that generates 75 % of direct value added. The three largest sectors in this cluster, building and repairing of aircraft, air transport and the airport operators, contributed the most to the growth, thus reinforcing their importance. In other airport-related activities, the trend is favourable as well, albeit at a more modest level. Here too, the major sectors, cargo handling and storage and courier and post activities, have the biggest contribution.

The economic importance of the air transport business has not only increased in terms of value added, but also in terms of employment. Total employment stood at 62 528 FTEs in 2015, i.e. 1.5 % of Belgian domestic employment. Unlike value added, the biggest progress in direct employment was made in other airport-related activities. In cargo handling and storage and security and industrial cleaning, the most additional jobs were created. The expansion of the former sector was favourably influenced by the reorganisation at AviaPartner where the cargo division was moved to a separate entity, thus resulting in a shift of personnel from the air transport cluster to other airport-related activities. This fact as well as the job losses in travel agencies and tour operators and other air transport supporting activities were entirely offset by new recruitments in building and repairing of aircraft and the air transport sector.

Direct investment by the companies within the scope of this study moved closer to the record levels of 2007 and 2008, to reach € 456 million in 2015. Despite the fact that the air transport cluster accounts for the biggest share in investment activities, other airport-related activities caught up well between 2013 and 2015. Over the three year period, the airport operators spent the most on new and updated infrastructure, nearly 93 % of which is down to Brussels Airport Company. Other key sectors in terms of capital expenditure are building and repairing of aircraft (SONACA, Safran Aero Boosters, Asco Industries), other services (car rental companies, Liège Airport Business Park) and air transport (Brussels Airlines, Noordzee Helikopters Vlaanderen).

Our analysis of the social balance sheets of a constant sample of companies accounting for 76 % of employment reveals that the number of hours worked per FTE is close to the national average, but average staff costs per FTE and per hour worked significantly exceed the national figures⁷⁷. As at national level, women tend to work fewer hours and are on average less well paid. This is, however, not necessarily a sign of unequal treatment. The workforce in the constant sample shows a lower-than-average share of blue-collar workers, women and part-time employees, as well as relatively more highly educated staff than found on average in Belgian companies. Over 60 % of the sample's companies offer formal training to their staff, who typically show an increasing degree of participation, although the number of hours spent in training per employee does not reflect a similar rise. In terms of participation rates and number of hours' training per person, no clear and persistent difference can be observed between men and women, whereas in terms of training costs per hour, the distinction is clearly marked.

⁷⁷ The fact that the constant sample comprises large companies only may explain the high averages.

Analysis of the financial health of companies within the scope of this study is based on statistical models to assess their creditworthiness. The outcome of the statistical model is a classification in a set of credit risk classes. The relative frequency distribution of 2015 credit risk classes reveals that the air transport sector as a whole includes relatively few very low credit risk companies, especially inside airports, in comparison with the situation of the national economy. Low-to-mid credit risk companies, on the other hand, are over-represented which is mainly explained by cargo handling and storage, building and repairing of aircraft, air transport and travel agencies and tour operators. Relatively more high-credit-risk companies can be found in air transport, whereas building and repairing of aircraft comprises the smallest share of high-credit-risk companies.

The six Belgian airports under review in this study are very divergent both operationally and economically. In terms of passenger traffic, Brussels remains by far the most important player. However, the dramatic events of March 2016 resulted in the loss of one place in the European passenger airports ranking. Cargo traffic at Brussels Airport recovered more quickly, but was not able to avoid a one position loss in the European ranking either. Belgian cargo traffic remains dominated by Liège and Brussels. The former consolidated its 8th position in the European cargo airports ranking.

In terms of total value added, only two airports succeeded in posting an increase between 2013 and 2015: Brussels and Kortrijk. In Brussels, mainly air transport companies and the airport operator boosted direct value added. In Kortrijk, progress was more modest, taking into account the small size of the airport. Ostend suffered the largest deterioration. The move of ANA Aviation to Liège led to the slimming-down of AviaPartner Ostend and the discontinuation of the activities of World Airways and Nordic Global Airlines. In Antwerp, VLM Airlines' value added slumped until it filed for bankruptcy in 2016. The Walloon airports recorded a minor recovery in 2015. The 2014 dip in Charleroi reflects the European Commission's decision regarding the compensation paid by the airport operator to Sowaer, while Liège's figures highlight the impact of hedging operations at ASL Airlines Belgium.

In comparison with value added, more airports showed progress in terms of employment. Only Ostend's and Antwerp's growth rates went into the red. The move of ANA Aviation not only affected Ostend's value added but also its employment. In Antwerp, different events contributed to the dip: the single cabin crew project at VLM Airlines, the closure of the bpost office, etc. Liège and Brussels record the best performance. Both airports considerably expanded employment in other airport-related activities. In Charleroi and Kortrijk, progress was rather modest.

In this report, the six main Belgian airports have been analysed. They all have a significant impact on the country's economy, some only at a more local level. They are all trying to raise their standing, thus resulting in competition among some of them. In order to be able to hold their ground in this competitive market, Antwerp and Ostend Airport's operational activities have been privatised in the mean-time. Kortrijk should follow this example in the long run. All the airports are aiming to expand at different levels. The events of March 2016 definitely had an impact on most of them. As both passenger and cargo traffic has fully recovered in the mean-time, it is hoped that any negative impact on value added and employment is only temporary.

ANNEX: DEFINITION OF THE CLUSTERS

	NACE-BEL 2008	NACE-BEL Definition	Geographical criterion	
<i>Air transport cluster</i>				
1	Air transport	51100	Passenger air transport	All Belgian territory
		51210	Freight air transport	All Belgian territory
2	Travel agencies and tour operators	79110 ⁽¹⁾	Travel agency activities	All Belgian territory
		79120 ⁽¹⁾	Tour operator activities	All Belgian territory
3	Airport operator	52230 (where applicable)	Service activities incidental to air transportation	Inside airports
4	Airport handling	52230 (where applicable)	Service activities incidental to air transportation	Inside airports
5	Building and repairing of aircraft	30300 ⁽¹⁾	Manufacture of air and spacecraft and related machinery	All Belgian territory
		33160 ⁽¹⁾	Repair and maintenance of aircraft and spacecraft	All Belgian territory
6	Other air transport supporting activities	52230 (other than sectors 3 and 4)	Service activities incidental to air transportation	All Belgian territory
		71209 ⁽¹⁾	Technical testing and analysis	All Belgian territory
		77350	Renting and leasing of air transport equipment	All Belgian territory
		85532 ⁽¹⁾	Driving school activities of planes and boats	All Belgian territory
		85592 ⁽¹⁾	Professional training	All Belgian territory
<i>Other airport-related activities</i>				
7	Passenger transport over land	49100	Passenger rail transport, interurban	Inside airports
		49310-49320-49390	Other passenger land transport	Inside airports
8	Freight transport over land	49200	Freight rail transport	Inside airports
		49410-49420	Freight transport by road and removal services	Inside airports
9	Cargo handling and storage	52100	Warehousing and storage	Inside airports
		52210	Service activities incidental to land transportation	Inside airports
		52249	Cargo handling except sea ports	Inside airports
		52290	Other transportation support activities	Inside airports
10	Courier and post activities	53100-53200	Postal and courier activities	Inside airports
11	Security and industrial cleaning	80100	Private security activities	Inside airports
		80200	Security systems services activities	Inside airports
		81210-81220-81290	Cleaning activities	Inside airports
12	Trade	45***	Wholesale and retail trade and repair of motor vehicles and motorcycles	Inside airports
		46***	Wholesale trade, except of motor vehicles and motorcycles	Inside airports
		47***	Retail trade, except of motor vehicles and motorcycles	Inside airports
13	Hotels, restaurants and catering	55***	Accommodation	Inside airports
		56***	Food and beverage service activities	Inside airports
14	Other services	Other 5**** to 9****	Other services	Inside airports
15	Other industries	Other 1**** to 43****	Other industries	Inside airports
16	Public services	N/A		Inside airports

⁽¹⁾ Only activities relating to air transport

BIBLIOGRAPHY

Air Cargo News: <http://www.aircargonews.net>

Air Transport and Airport Companies: miscellaneous websites and annual reports

Anna Aero – Airline Network News and Analysis: <http://www.anna.aero>

Antwerp Airport: <http://www.antwerp-airport.be>

Brussels Airport: <http://www.brusselsairport.be>

Brussels Airport: <http://www.brusselsairport2040.be>

Charleroi Airport: <http://www.charleroi-airport.com>

De Doncker H. (2017), *The Economic Importance of the Logistics Sector in Belgium*, NBB, Working Paper (Document Series), to be published in July 2017, Brussels

De Standaard, miscellaneous press articles from 2013 to 2017, Groot-Bijgaarden

De Tijd, miscellaneous press articles from 2013 to 2017, Brussels

Deutsche Bundesbank, *The Common Credit Assessment System for assessing the eligibility of enterprises*, BBk, Monthly report, January 2015, Frankfurt am Main

Deville X. and S. Vennix (2011), *Economic Importance of Air Transport and Airport Activities in Belgium*, NBB, Working Paper No. 218 (Document series), December 2011, Brussels

Dublin Airport : <https://www.dublinairport.com>

Federal Government - Federal Public Service Economy, SMEs, Self-employed and Energy (2016), *Impactstudie terroristische aanslagen in België*, June 2016, Brussels

Flemish Government – Economic Survey Department:
<http://www4.vlaanderen.be/sites/svr/Cijfers/Pages/Excel.aspx>

Flows, miscellaneous press articles 2016-2017, Antwerp

Heuse P. (2016), *The 2014 social balance sheet*, NBB, Economic Review, June 2016, Brussels

IATA, *Air Transport Market Analysis – 2013 to 2016*

IATA, *Air Freight Market Analysis – 2016-2017*

IATA, *Air Passenger Market Analysis – 2016-2017*

ICAO (2016), *Annual Report of the Council - 2015*, Montréal, Canada

ICAO (2017), *Traffic growth and airline profitability were highlights of air transport in 2016*, January 2017, Montréal, Canada

Kortrijk – Wevelgem International Airport: <http://www.kortrijkairport.be>

Kupfer F. and F. Lagneaux (2009), *Economic Importance of Air Transport and Airport Activities in Belgium*, NBB, Working Paper No. 158 (Document series), March 2009, Brussels

L'Echo, miscellaneous press articles from 2009 to 2014, Brussels

Liège Airport: <http://www.liegeairport.com>

Liège Airport / Sowaer: <http://landinliege.com>

Munich Airport: <https://www.munich-airport.de>

National Accounts Institute, Input-Output Tables 2010, Federal Planning Bureau, December 2015, Brussels

National Accounts Institute, *National accounts: Supply and use tables 2013*, Brussels

NBB, Central Balance Sheet Office, Annual accounts submitted to the Central Balance Sheet Office (accounting years 2013 to 2015), Brussels

NBB, Central Balance Sheet Office, *Statistics, Indicators relating to the continuing on-the-job training*, Brussels

NBB, General Statistics Department, *NBB.stat - Online Database*, Brussels

Ostend-Bruges International Airport: <http://www.ost.aero>

Porto Airport: <https://www.aeroportoporto.pt/en/corporate/press/2017/02/15/2016-best-growth-ever-for-portuguese-airports>

Rubbrecht I. and D. Vivet (2016), *Results and financial situation of firms in 2015*, NBB, Economic Review, December 2016, Brussels

Van Nieuwenhove F. (2014), *Economic Importance of Air Transport and Airport Activities in Belgium*, NBB, Working Paper No. 273 (Document series), November 2014, Brussels

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