

Deville, Xavier; Vennix, Saskia

Working Paper

Economic Importance of Air Transport and Airport Activities in Belgium – Report 2009

NBB Working Paper, No. 218

Provided in Cooperation with:

National Bank of Belgium, Brussels

Suggested Citation: Deville, Xavier; Vennix, Saskia (2011) : Economic Importance of Air Transport and Airport Activities in Belgium – Report 2009, NBB Working Paper, No. 218, National Bank of Belgium, Brussels

This Version is available at:

<https://hdl.handle.net/10419/144430>

Standard-Nutzungsbedingungen:

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

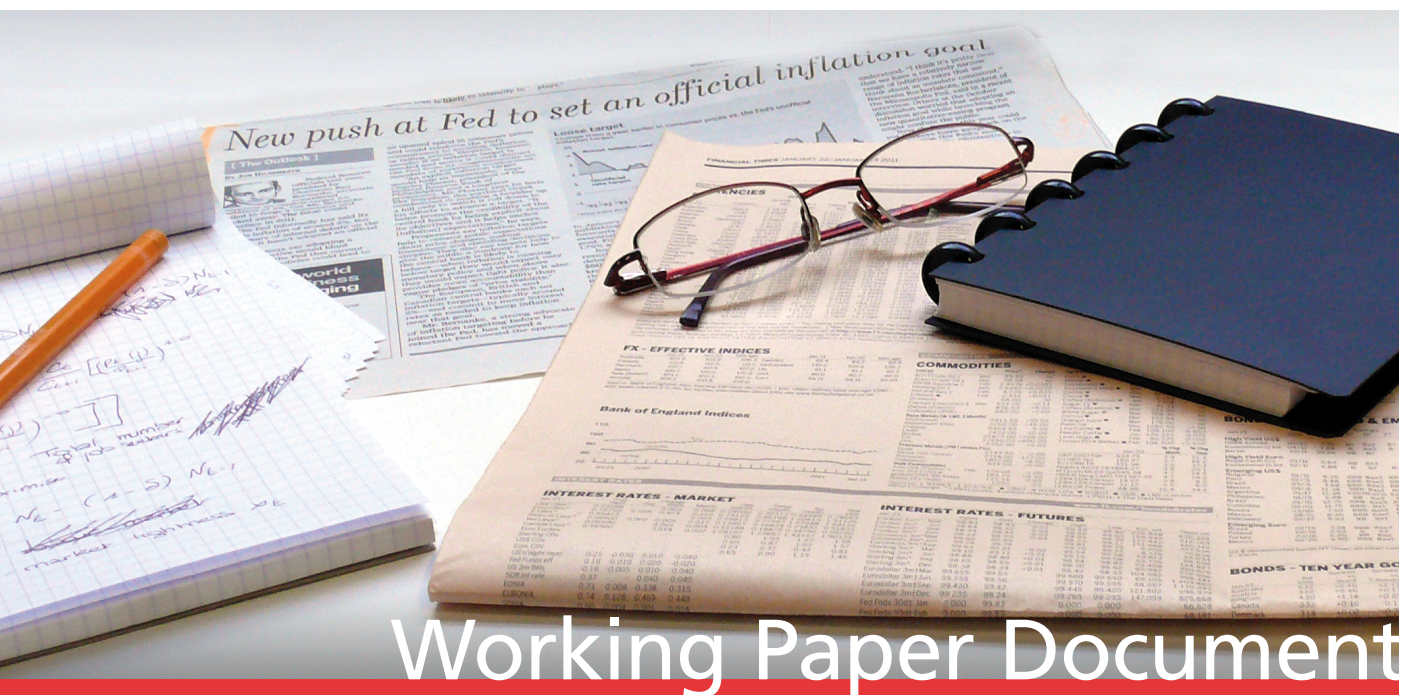
Terms of use:

Documents in EconStor may be saved and copied for your personal and scholarly purposes.

You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.

If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.

Economic Importance of Air Transport and Airport Activities in Belgium – Report 2009



Working Paper Document

by Xavier Deville and Saskia Vennix

December 2011 No 218

Editorial Director

Jan Smets, Member of the Board of Directors of the National Bank of Belgium

Statement of purpose:

The purpose of these working papers is to promote the circulation of research results (Research Series) and analytical studies (Documents Series) made within the National Bank of Belgium or presented by external economists in seminars, conferences and conventions organised by the Bank. The aim is therefore to provide a platform for discussion. The opinions expressed are strictly those of the authors and do not necessarily reflect the views of the National Bank of Belgium.

Orders

For orders and information on subscriptions and reductions: National Bank of Belgium,
Documentation - Publications service, boulevard de Berlaimont 14, 1000 Brussels

Tel +32 2 221 20 33 - Fax +32 2 21 30 42

The Working Papers are available on the website of the Bank: <http://www.nbb.be>

© National Bank of Belgium, Brussels

All rights reserved.

Reproduction for educational and non-commercial purposes is permitted provided that the source is acknowledged.

ISSN: 1375-680X (print)

ISSN: 1784-2476 (online)

ABSTRACT

This study assesses the economic importance of air transport and airport activities in Belgium in terms of employment, value added and investment over the period 2007 - 2009¹. The sector considered embraces not only the activities directly connected with air transport, but also all the activities which take place on site at the six Belgian airports (Antwerp, Brussels, Charleroi, Kortrijk, Liège, Ostend). The direct and indirect effects of the sector are estimated respectively on the basis of microeconomic data (mainly obtained from the Central Balance Sheet Office) and macroeconomic data (from the National Accounts Institute). The study also includes an analysis of the social balance sheet and certain ratios on the basis of Central Balance Sheet Office data.

In 2009, the air transport sector thus defined generated over € 6.1 billion in direct and indirect value added (or 1.8 % of Belgium's GDP), and provided direct or indirect employment for 80,300 people in full-time equivalents (or 2 % of domestic employment in FTE).

Brussels Airport was the one most affected by the decline in global traffic in 2009, as a result of the economic crisis: in that year it ceased to be Belgium's principal cargo airport, ceding that position to Liège Airport. However, the national airport still ranks first in the passenger market, accounting for almost three-quarters of traffic in 2010, despite the exponential growth of traffic at Charleroi Airport. Together, these two airports represented almost 97 % of passenger traffic passing through Belgium in 2010.

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

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

¹ This is an update of the study conducted on the basis of 2006 data by Kupfer F. and F. Lagneaux (2009), *Economic Importance of Air Transport and Airport Activities in Belgium*, NBB, Working Paper No. 158 (Document series), Brussels.

Corresponding authors:

NBB, Microeconomic Information department, e-mail: xavier.deville@nbb.be and saskia.vennix@nbb.be

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

The authors would like to thank their colleagues from the Microeconomic Information department, Marc De Geyter from the NBB Antwerp branch, the airport operating companies and all the companies who responded to the survey. Special thanks go to Messrs Luc Dufresne, secretary general at the NBB, Philippe Quintin, head of department at the NBB, and George van Gastel, head of service at the NBB for their support and their comments on this paper. The advice given unstintingly by the Research, National Accounts and Statistics departments was also greatly appreciated.

CONTENTS

FOREWORD	1
INTRODUCTION	2
AIM AND GENERAL METHODOLOGY OF THE STUDY	2
INTERNATIONAL ECONOMIC AND SECTORAL CONTEXT	3
1 ECONOMIC IMPORTANCE OF THE BELGIAN AIR TRANSPORT SECTOR AS A WHOLE	7
1.1 PASSENGER AND FREIGHT TRAFFIC.....	7
1.1.1 <i>Passengers: Recent Developments</i>	7
1.1.2 <i>Cargo: Recent Developments</i>	10
1.2 VALUE ADDED	13
1.3 EMPLOYMENT.....	16
1.4 INVESTMENT	19
1.5 SOCIAL BALANCE SHEET.....	22
1.5.1 <i>Working Time and Labour Costs</i>	22
1.5.2 <i>Structure of the Workforce</i>	23
1.5.3 <i>External Staff</i>	24
1.5.4 <i>Staff Turnover</i>	24
1.5.5 <i>Training</i>	25
1.6 FINANCIAL RATIOS.....	27
2 ECONOMIC IMPORTANCE OF AIRPORT ACTIVITIES IN BELGIUM	30
2.1 OVERVIEW	30
2.1.1 <i>Value Added</i>	30
2.1.2 <i>Employment</i>	32
2.2 DETAIL BY AIRPORT.....	36
2.2.1 <i>Antwerp Airport</i>	36
2.2.2 <i>Brussels Airport</i>	41
2.2.3 <i>Charleroi Airport</i>	49
2.2.4 <i>Kortrijk Airport</i>	54
2.2.5 <i>Liège Airport</i>	59
2.2.6 <i>Ostend Airport</i>	64
3 SUMMARY	69
BIBLIOGRAPHY	72
ANNEX 1: DEFINITION OF THE FINANCIAL RATIOS USED IN THIS STUDY	74
NATIONAL BANK OF BELGIUM WORKING PAPERS SERIES.....	75

LIST OF TABLES

TABLE 1	TOP 20 EUROPEAN PASSENGER AIRPORTS IN 2009	4
TABLE 2	TOP 20 EUROPEAN CARGO AIRPORTS IN 2009	5
TABLE 3	PASSENGER TRAFFIC VIA BELGIAN AIRPORTS FROM 2003 TO 2010	9
TABLE 4	CARGO TRAFFIC VIA BELGIAN AIRPORTS FROM 2003 TO 2010	11
TABLE 5	AIR TRANSPORT CLUSTER AND AIRPORT ACTIVITIES: VALUE ADDED FROM 2007 TO 2009	13
TABLE 6	AIR TRANSPORT CLUSTER AND AIRPORT ACTIVITIES: DIRECT VALUE ADDED TOP 20 IN 2009	15
TABLE 7	AIR TRANSPORT CLUSTER AND AIRPORT ACTIVITIES: EMPLOYMENT FROM 2007 TO 2009	16
TABLE 8	AIR TRANSPORT CLUSTER AND AIRPORT ACTIVITIES: DIRECT EMPLOYMENT TOP 20 IN 2009	17
TABLE 9	AIR TRANSPORT CLUSTER AND AIRPORT ACTIVITIES: DIRECT INVESTMENT FROM 2007 TO 2009	19
TABLE 10	AIR TRANSPORT CLUSTER AND AIRPORT ACTIVITIES: DIRECT INVESTMENT TOP 10 IN 2009	20
TABLE 11	HOURS WORKED AND COST OF OWN STAFF	22
TABLE 12	INTERNAL WORKFORCE AT THE END OF THE FINANCIAL YEAR	23
TABLE 13	HIRED TEMPORARY STAFF AND STAFF PLACED AT THE ENTERPRISE'S DISPOSAL	24
TABLE 14	STAFF TURNOVER	25
TABLE 15	EFFORTS DEVOTED TO FORMAL TRAINING	26
TABLE 16	AIR TRANSPORT SECTOR AND AIRPORT ACTIVITIES: FINANCIAL RATIOS FROM 2007 TO 2009	29
TABLE 17	DIRECT VALUE ADDED BY AIRPORT FROM 2007 TO 2009	31
TABLE 18	INDIRECT VALUE ADDED BY AIRPORT FROM 2007 TO 2009	32
TABLE 19	DIRECT EMPLOYMENT BY AIRPORT FROM 2007 TO 2009	33
TABLE 20	INDIRECT EMPLOYMENT BY AIRPORT FROM 2007 TO 2009	34
TABLE 21	DIRECT LABOUR INTENSITY BY AIRPORT FROM 2007 TO 2009	35
TABLE 22	ANTWERP AIRPORT: VALUE ADDED FROM 2007 TO 2009	37
TABLE 23	ANTWERP AIRPORT: DIRECT VALUE ADDED TOP 10 IN 2009	38
TABLE 24	ANTWERP AIRPORT: EMPLOYMENT FROM 2007 TO 2009	39
TABLE 25	ANTWERP AIRPORT: DIRECT EMPLOYMENT TOP 10 IN 2009	40
TABLE 26	BRUSSELS AIRPORT: VALUE ADDED FROM 2007 TO 2009	42
TABLE 27	BRUSSELS AIRPORT: DIRECT VALUE ADDED TOP 10 IN 2009	44
TABLE 28	BRUSSELS AIRPORT: EMPLOYMENT FROM 2007 TO 2009	45
TABLE 29	BRUSSELS AIRPORT: DIRECT EMPLOYMENT TOP 10 IN 2009	46
TABLE 30	BRUSSELS AIRPORT: DIRECT INVESTMENT FROM 2007 TO 2009	47
TABLE 31	CHARLEROI AIRPORT: VALUE ADDED FROM 2007 TO 2009	50
TABLE 32	CHARLEROI AIRPORT: DIRECT VALUE ADDED TOP 10 IN 2009	51
TABLE 33	CHARLEROI AIRPORT: EMPLOYMENT FROM 2007 TO 2009	52
TABLE 34	CHARLEROI AIRPORT: DIRECT EMPLOYMENT TOP 10 IN 2009	53
TABLE 35	KORTRIJK AIRPORT: VALUE ADDED FROM 2007 TO 2009	55
TABLE 36	KORTRIJK AIRPORT: DIRECT VALUE ADDED TOP 10 IN 2009	56
TABLE 37	KORTRIJK AIRPORT: EMPLOYMENT FROM 2007 TO 2009	57
TABLE 38	KORTRIJK AIRPORT: DIRECT EMPLOYMENT TOP 10 IN 2009	58
TABLE 39	LIÈGE AIRPORT: VALUE ADDED FROM 2007 TO 2009	60
TABLE 40	LIÈGE AIRPORT: DIRECT VALUE ADDED TOP 10 IN 2009	61
TABLE 41	LIÈGE AIRPORT: EMPLOYMENT FROM 2007 TO 2009	62
TABLE 42	LIÈGE AIRPORT: DIRECT EMPLOYMENT TOP 10 IN 2009	63
TABLE 43	OSTEND AIRPORT: VALUE ADDED FROM 2007 TO 2009	65
TABLE 44	OSTEND AIRPORT: DIRECT VALUE ADDED TOP 10 IN 2009	66
TABLE 45	OSTEND AIRPORT: EMPLOYMENT FROM 2007 TO 2009	67
TABLE 46	OSTEND AIRPORT: DIRECT EMPLOYMENT TOP 10 IN 2009	68

LIST OF CHARTS

CHART 1	WORLD AIR PASSENGER TRAFFIC 2000 - 2010	7
CHART 2	SHARE OF BELGIAN AIRPORTS IN TERMS OF PASSENGER TRAFFIC IN 2010.....	8
CHART 3	PASSENGER TRAFFIC VIA BELGIAN AIRPORTS FROM 2003 TO 2010	9
CHART 4	WORLD AIR CARGO TRAFFIC 2000 - 2010	10
CHART 5	SHARE OF BELGIAN AIRPORTS IN TERMS OF CARGO TRAFFIC IN 2010.....	11
CHART 6	CARGO TRAFFIC VIA BELGIAN AIRPORTS FROM 2003 TO 2010	12
CHART 7	DIRECT VALUE ADDED IN AIRPORTS IN 2009: BREAKDOWN BY AIRPORT.....	30
CHART 8	DIRECT EMPLOYMENT IN AIRPORTS IN 2009: BREAKDOWN BY AIRPORT	33
CHART 9	EVOLUTION OF DIRECT AND INDIRECT VALUE ADDED IN THE SIX BELGIAN AIRPORTS.....	70
CHART 10	EVOLUTION OF DIRECT AND INDIRECT EMPLOYMENT IN THE SIX BELGIAN AIRPORTS.....	71

FOREWORD

In 2009 the National Bank of Belgium published an extensive study on the economic importance of air transport and airport activities in Belgium. That publication¹ was well received both by interested parties in the sector and by the public authorities concerned. Almost three years later it therefore became necessary to update the analysis, which was based mainly on 2006 data.

This report examines not one but three successive years, namely the period from 2007 to 2009. Two aspects of the sector's economic impact receive special attention: the direct effects and the indirect effects. The former refer to the presence of either aviation-related activities in Belgium, or airport-related activities within the airport zone. In contrast, the latter concern the value added and employment generated by suppliers and their subcontractors based in Belgium. This is not confined to the first tier of suppliers and subcontractors, but goes deeper, to an infinite number of levels. The methodology was unchanged: the method of selecting firms in the study and the analysis are the same as in the previous edition².

After a brief introduction, the analysis is divided into two sections. The first is devoted to the Belgian air transport sector as a whole, i.e. including the activities at the six airports: Antwerp, Brussels, Charleroi, Kortrijk, Liège and Ostend. The study looks at air transport for both freight and passengers, considering not only value added and employment, but also social impact and financial health. The second section contains an analysis of the latest developments at each of the six airports viewed individually.

The data gathering was completed in August 2011. This means that the study takes no account of figures published after that date.

¹ Kupfer and Lagneaux (2009). This study is available at <http://www.nbb.be/doc/ts/publications/wp/wp158En.pdf>.

² 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 the branches which come under the heading of air transport (air transport cluster). The second encompasses firms from other branches which are linked to air transport as a result of their geographical location, more particularly within the airport zone (other airport-related activities). The airport authorities, who were able to provide the necessary information, were used as the source for this category.

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

- value added at current prices³: the value which a firm adds to its inputs via the production process during the financial year. A firm's value added indicates its contribution to the prosperity of the country or region (in % 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 market satisfaction, operating subsidies (code 740) must also be eliminated⁴. According to the reference methodology for compiling the Belgian national accounts⁵ (ESA 1995), it is only non-product-related subsidies that can be deducted. These are subsidies granted, for example, 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 included in this study.
- employment in full-time equivalents (FTE): the average workforce during the financial year. Direct employment mainly concerns employees on the payroll of the firms considered. The figures for the six airports do, however, include some self-employed workers (e.g. self-employed instructors or pilots), since use is made here of data supplied by the airport authorities or the firms themselves.
- investments at current prices⁶: these correspond to the tangible fixed assets acquired during the financial year, including capitalised production costs.

Next, attention also 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 firms in question. That is not confined to the first level of suppliers and subcontractors but goes deeper, to an infinite number of levels.

The indirect effects⁷ are calculated on the basis of the following data:

- the share of the population examined in each SUT⁸ branch at national level
- the links between the branches as derived from the SUT and/or indicated in the IOT⁹
- the national figures for value added and employment per SUT branch.

The first two data series come from the National Accounts Institute (NAI¹⁰) while the national data on value added and employment per SUT branch come from the Central Balance Sheet Office¹¹.

³ Unless otherwise stated, the value added figures in the text are always stated at current prices.

⁴ Cf. Ooghe and Van Wymeersch (2006).

⁵ For more information on this methodology, see the National accounts website: <http://www.nbb.be> > Statistics > National/regional accounts > Methodology.

⁶ Unless otherwise stated, investments are always stated at current prices.

⁷ The theory of the indirect effects is explained in Annex 2 by Kupfer and Lagneaux (2009).

⁸ Supply Use Table.

⁹ Input Output Table.

The latter data are obtained by aggregating the data present in the annual accounts of firms. Consequently, firms which do not file annual accounts in Belgium are disregarded in the calculation of the indirect effects. In this study, that essentially concerns foreign firms and a few self-employed operators. However, these firms only represent 3 % of the direct employment and value added taken into account in this study. It is likely that the indirect effects of the activities of foreign firms are less significant than the effects of local firms more closely connected with the Belgian economy. It is therefore possible to assume that these foreign firms represent less than 3 % of indirect value added and employment. In addition, there are the public enterprises and authorities which, for the same reasons, are also excluded from the calculation of the indirect effects. If these are taken into account, the proportion of direct employment and value added of undertakings disregarded in calculating the indirect effects is less than 10%.

The indirect effects thus calculated are therefore a minimum estimate of the true indirect effects. It is also important to note that the indirect effects per airport must be interpreted with caution 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 does not correspond to the total indirect effects calculated directly for all the airports. The reason is that, since the airports 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 a group of airports¹².

Apart from this purely economic angle, the analysis of the firms in question also adopts 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 and the workforce structure, staff turnover and training.

The financial analysis is the third aspect of the study. It is based on the study of three financial ratios: return on equity after tax, liquidity in the broad sense and solvency. The first ratio concerns the firm's ability to generate profits and indicates the return which the firm achieves for its shareholders, after tax. The second ratio concerns the firm's ability to mobilise the liquid resources which it needs to meet its short-term liabilities on time. Finally, the third ratio indicates the firm's ability to meet its financial liabilities in the short and long term.

This study is in 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 micro-economic data used come from the annual accounts submitted to the Central Balance Sheet Office, from the airport authorities or from the firms themselves. The latest annual accounts for the year 2009 included in this study were submitted to the Central Balance Sheet Office in June 2011¹³.

INTERNATIONAL ECONOMIC AND SECTORAL CONTEXT

In 2009, as a result of the spreading financial crisis and the slump in output and world trade, the global economy suffered the deepest recession since the Second World War. The year 2009 was

¹⁰ 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 – General Directorate of Statistics and Economic Information), the National Bank of Belgium and the Federal Planning Bureau.

¹¹ A service forming part of the National Bank's Microeconomic Information Department. See <http://www.nbb.be> > Central Balance Sheet Office.

¹² This reasoning is the same as in the port studies. See Mathys (2009, p. 3).

¹³ Belgian firms 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 firms – mainly the smallest ones or those in difficulty – which have not yet fulfilled that obligation. In June 2011 the number was negligible and the impact of the missing data was immaterial.

divided into two phases: after reaching its lowest point in the first half of the year, activity gradually picked up in the second half of the year, supported by large-scale policy measures on the part of monetary and fiscal authorities. Japan and Europe were hardest hit by the crisis. In contrast, despite a slight slowdown in growth, China and India succeeded in almost maintaining the level of global GDP. In the euro area, economic activity contracted by 4 %¹⁴. There were particularly steep reductions in imports and exports and business investments, but investment in housing also suffered a very serious decline in some countries. The contraction of the Belgian economy was limited to 2.9 %¹⁵.

The air transport sector suffered the effects of the crisis in the same way as the global economy as a whole. However, the revival during the second half of 2009 was not enough to reverse the negative growth figures. The volume loss was more marked in freight than in passenger traffic, because the shift from premium seats to cheaper seats tempered the decline in the latter case, though that did have a significant impact on airline revenues, especially for long haul flights. The Middle East was the only region where the recession did not seem to bite, ending the year with notable volume increases in both domestic and foreign flights. South America also did better than the average. However, the growth figures were depressed by the H1N1 flu virus. The European and, to a lesser extent, North American markets remained fragile since the economic recovery in those regions was weaker than in Asia, for example.

TABLE 1 TOP 20 EUROPEAN PASSENGER AIRPORTS IN 2009
(in million passengers)

Rank	Airport	Number of passengers
1	London Heathrow.....	66.0
2	Charles de Gaulle	57.9
3	Frankfurt	50.9
4	Madrid Barajas.....	48.3
5	Amsterdam Schiphol	43.6
6	Rome Leonardo da Vinci Fiumicino.....	33.7
7	Munich	32.7
8	London Gatwick	32.4
9	Barcelona	27.3
10	Paris Orly.....	25.1
11	Zurich	21.9
12	Palma de Mallorca	21.2
13	Dublin	20.5
14	London Stansted	19.9
15	Copenhagen	19.7
16	Manchester	18.8
17	Vienna	18.1
18	Oslo	18.1
19	Düsseldorf	17.8
20	Milan Malpensa.....	17.3
21	Brussels	17.0

Source: Airport operators and authorities; Air Transport World (2010).

Crude oil prices doubled in 2009. In the last decade, fuel costs have been the airlines' principal expenditure item. Prices were still considerably below the 2008 record, but equalled the level of 2006 - 2007, when the economic climate permitted higher returns to offset the higher costs. The sector responded to the crisis with drastic cuts in capacity, resulting in higher seat occupancy.

¹⁴ With the exception of Cyprus, Malta and Slovenia.

¹⁵ For more details see NBB (2010), *Report 2009 – Economic and financial developments*.

Combined with the economic recovery, this measure produced results, as revenues gradually improved. However, the higher seat occupancy was not accompanied by better use of the assets. since it was achieved partly by having aircraft spend longer on the ground owing to the reduced number of flights. This less intensive use of the assets in turn led to higher unit costs, and hence lower profitability.

Despite the turbulent crisis year, London Heathrow is still the leading passenger airport for the European continent (Table 1). There are still no Belgian airports in the top 20. Brussels remained stuck in 21st position. In comparison with 2006¹⁶, Zurich performed best. Thanks to a 14 % increase in the number of passengers, this airport moved up from 17th to 11th position. There was particularly strong growth in the number of transfer passengers, so that Zurich strengthened its position as a hub. Rome Leonardo da Vinci Fiumicino also managed to attract 12 % more passengers compared to 2006, thus moving up two places. At the start of the 2008 summer season, Alitalia reorganised its operational network by making Rome Fiumicino its main hub. Consequently, many international flights were switched from Milan to Rome, so that Milan Malpensa went down six places in the top 20. In the course of three years, this airport lost almost 20 % of its passengers. Manchester was also hard hit, with almost 4 million passengers fewer than in 2006. Other British regional airports tried to confront the crisis by cutting fares, enabling them to poach quite a number of customers.

TABLE 2 TOP 20 EUROPEAN CARGO AIRPORTS IN 2009
(in thousands of metric tonnes)

Rank	Airport	Tonnage
1	Charles de Gaulle	1,785.4
2	Frankfurt	1,757.5
3	Amsterdam Schiphol.....	1,286.4
4	London Heathrow	1,277.4
5	Luxembourg-Findel	628.5
6	Cologne Bonn	536.9
7	Liège	482.1
8	Leipzig	454.8
9	Brussels	449.1
10	Milan Malpensa	332.4
11	Copenhagen	312.2
12	Madrid Barajas	249.6
13	Zurich	244.0
14	East Midlands Nottingham Leicester Derby.....	213.3
15	Munich	189.0
16	Vienna	184.9
17	London Stansted	181.4
18	Rome Leonardo Da Vinci-Fiumicino.....	121.0
19	Helsinki.....	110.4
20	Frankfurt-Hahn.....	107.3

Source: Airline Cargo Management (2010); Copenhagen airport website.

As already stated, the financial and economic crisis had a greater impact on freight than on passenger traffic. That therefore meant some reshuffling of the top 20 European freight airports (Table 2) compared to 2006¹⁷. The biggest European freight airport is now Paris Charles de Gaulle, not Frankfurt. In contrast to the passenger segment, both Liège and Brussels are in the top 10 for freight. Liège's strategy of presenting itself as a cargo airport has yielded results. The airport

¹⁶ See Kupfer and Lagneaux (2009).

¹⁷ See Kupfer and Lagneaux (2009).

has overtaken Brussels, rising from 8th position in 2006 to 7th position in 2009. Brussels Airport lost a great deal of freight traffic as a result of the DHL courier service transferring its European hub from Zaventem to Leipzig, in Germany. This caused the airport to drop three places in the ranking.

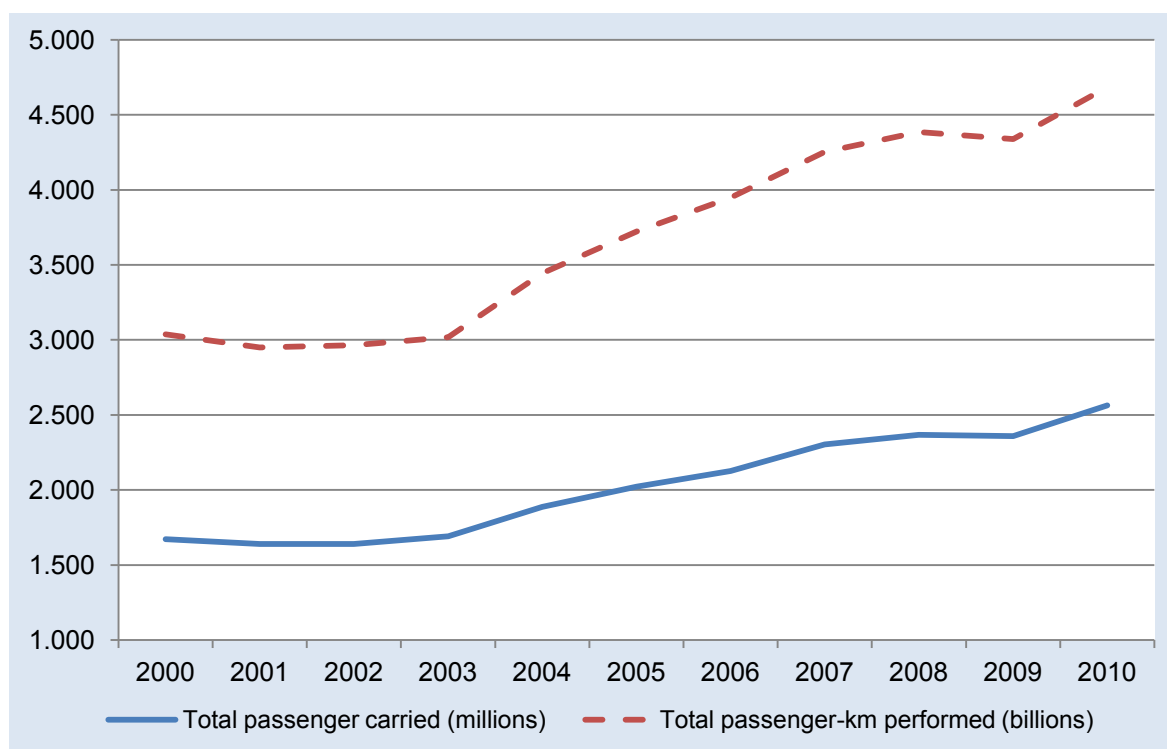
1 ECONOMIC IMPORTANCE OF THE BELGIAN AIR TRANSPORT SECTOR AS A WHOLE

1.1 PASSENGER AND FREIGHT TRAFFIC

1.1.1 Passengers: Recent Developments

1.1.1.1 World Level

CHART 1 WORLD AIR PASSENGER TRAFFIC 2000 - 2010



Source: ICAO (2011).

Chart 1 shows the trend in air passengers worldwide from 2000 to 2010. During that period, the number of passengers carried increased by an average of 4.4 % per annum. The number of passenger kilometres¹⁸ increased at the same rate (+4.4 %). The same average annual rise in the number of passengers and the number of passenger kilometres means that the average distance flown per passenger has remained the same.

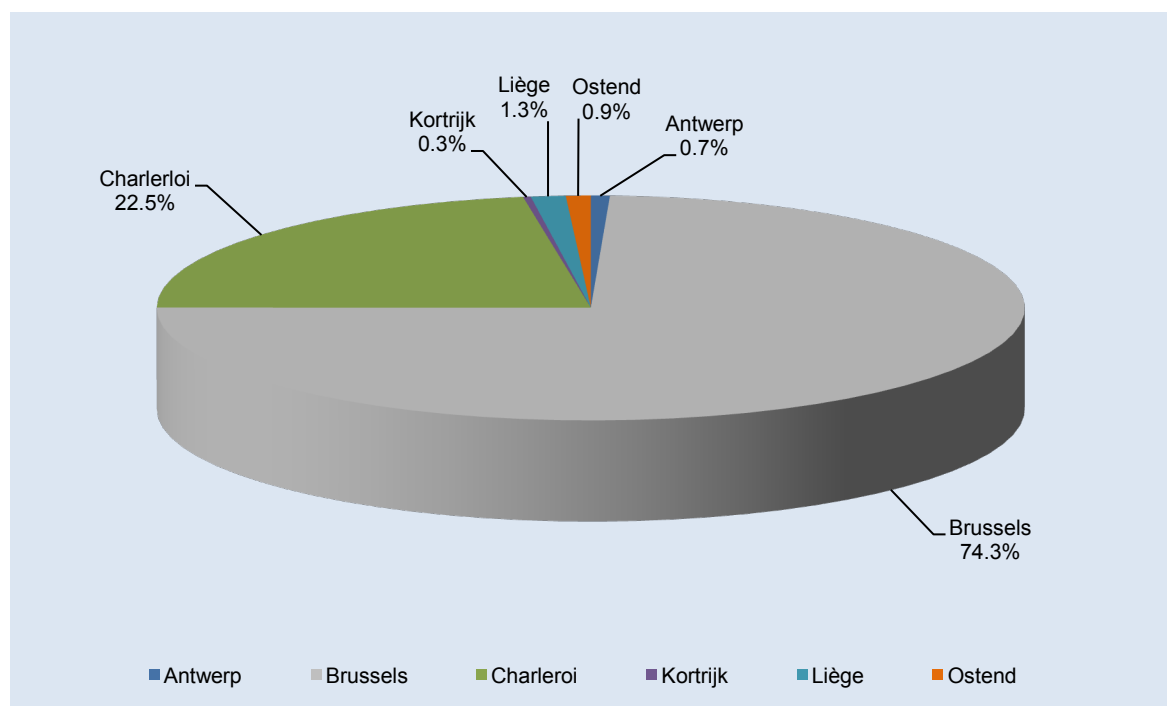
In 2008, traffic growth was less marked than in the preceding years but still remained positive. In contrast, in 2009 the effects of the economic crisis made themselves felt. Passenger traffic declined slightly (-0.4 %), for the first time since the shock suffered by the sector as a result of the terrorist attacks of 11 September 2001. The number of passenger kilometres recorded a larger fall of 1.1 %. The only geographical region to escape the crisis was the Middle East, where both domestic and foreign flights recorded strong growth. During the second half of 2009, a gradual recovery was already setting in. It persisted in 2010, restoring traffic growth to its pre-crisis level, namely an 8.7 % increase in the number of passengers and 8 % growth in the number of passenger kilometres compared to 2009.

¹⁸ 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 gives a total of 250,000 passenger kilometres.

1.1.1.2 Situation in the Belgian Airports

In Belgium, though Brussels Airport is still the biggest in terms of passengers, it has lost ground in recent years in favour of Charleroi, and to a lesser extent Ostend. In comparison with 2006¹⁹, Brussels Airport's share of passenger traffic has fallen from 85.5 % to 74.3 % in 2010 (Chart 2). Charleroi has confirmed its position in 2nd place with a 22.5% share. Since 2007, Ostend has been in 4th place, ousting Antwerp which is down to 5th position.

CHART 2 SHARE OF BELGIAN AIRPORTS IN TERMS OF PASSENGER TRAFFIC IN 2010



Source: Airport operators.

In 2010 the total number of passengers travelling via one of the six Belgian airports came to 23.1 million (Table 3). After 2002, the Belgian market recovered very gradually from the effects of the terrorist attacks on 11 September 2001 and the significant restructurings in the air transport sector. In 2008 it approximately regained the record level of the year 2000, but not for long. The following year brought a 2.7 % decline, while at global level the fall was only 0.7 %. All Belgian airports except Charleroi felt the impact of the financial and economic crisis.

Despite some notable setbacks, the year 2010 nevertheless ended with positive figures. In April, especially, the number of passengers was down considerably against the previous year. The Icelandic volcano Eyjafjallajökull was discharging soot for a number of days: since ash clouds can damage aircraft, all flights were cancelled for days on end in large parts of Europe. At the end of September flights were again disrupted by a strike by the air traffic controllers. Finally, in December the weather caused problems for flights: the exceptional snowfall brought chaos to many European airports.

Brussels Airport, the biggest passenger airport in Belgium, ended the year with a good 1 % increase in the number of passengers. That growth was due to the strong performance by the long-haul segment. Thanks to Brussels Airlines, Africa still heads the ranking in this segment, while Asia, the Pacific and the Middle East produced the strongest growth.

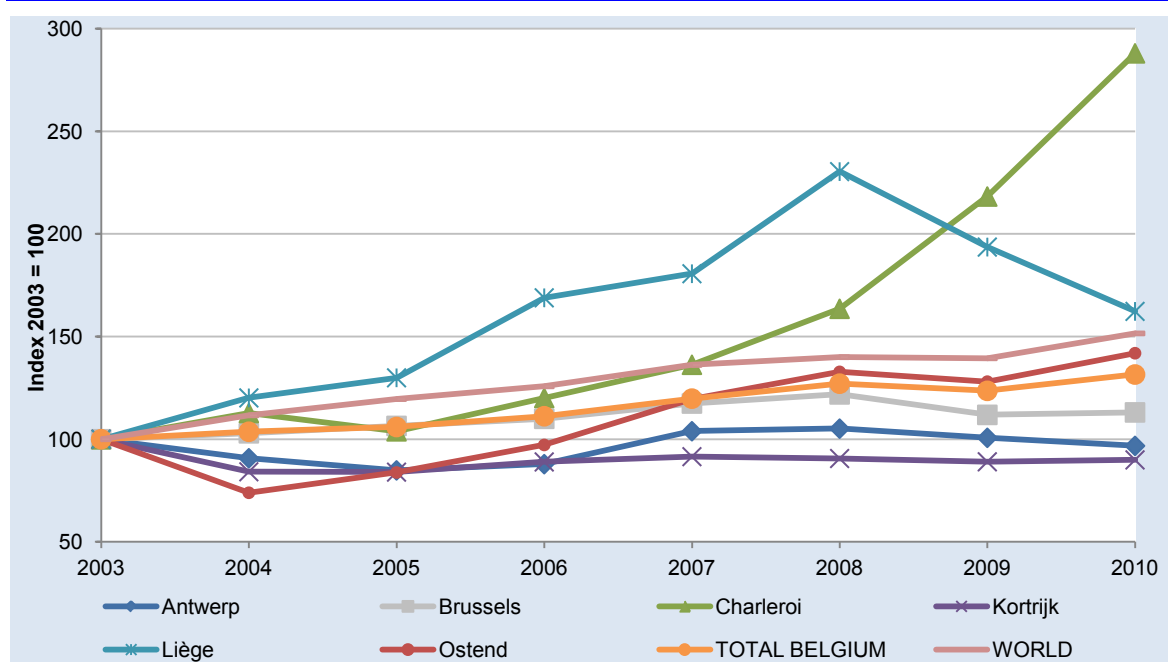
¹⁹ See Kupfer and Lagneaux (2009).

TABLE 3 PASSENGER TRAFFIC VIA BELGIAN AIRPORTS FROM 2003 TO 2010

(x 1000 pax)	2003	2004	2005	2006	2007	2008	2009	2010	Change from 2009 to 2010 (in %)	Annual average growth (in %)
Antwerp	168	153	143	148	175	177	169	163	-3.9	-0.5
Brussels	15,194	15,635	16,180	16,708	17,839	18,516	16,999	17,181	+1.1	+1.8
Charleroi	1,804	2,034	1,873	2,166	2,458	2,950	3,937	5,195	+32.0	+16.3
Kortrijk	73	62	62	65	67	66	65	66	+1.0	-1.5
Liège	184	221	239	311	333	425	357	299	-16.2	+7.2
Ostend	151	111	126	146	180	200	193	214	+10.8	+5.1
TOTAL	17,574	18,216	18,623	19,545	21,052	22,334	21,720	23,118	+6.4	+4.0

Source: Airport operators.

In the past eight years Charleroi Airport has recorded a steep rise in the number of passengers (Chart 3). In 2001, Ryanair chose this Walloon airport as its first base on the European continent. The success of Ryanair then attracted other low-cost airlines such as Wizzair and Jetairfly. As a result of the dramatic rise in passenger traffic, it was essential for a new terminal to be brought into service in 2008. The financial and economic crisis seems to have had no impact on Charleroi. In 2010 the number of passengers again increased by more than 30 % to pass the 5 million mark for the first time. Twenty-two new destinations were added to the available range, thanks to the launch of new routes by Ryanair and Jetairfly.

CHART 3 PASSENGER TRAFFIC VIA BELGIAN AIRPORTS FROM 2003 TO 2010

Source: Airport operators; ICAO (2011).

Liège also enjoyed a positive trend up to 2008. Liège benefited from links with tour operators such as Jetair and Thomas Cook, and in 2007 also welcomed Signature – a major player in business aviation. In 2009 it was the charter segment that was most affected by the crisis. Tourist traffic declined further in 2010 as a result of the cancellation of many flights by Thomas Cook and the problems with traffic rights facing the Albanian low-cost airline Belle Air. Liège and Charleroi are

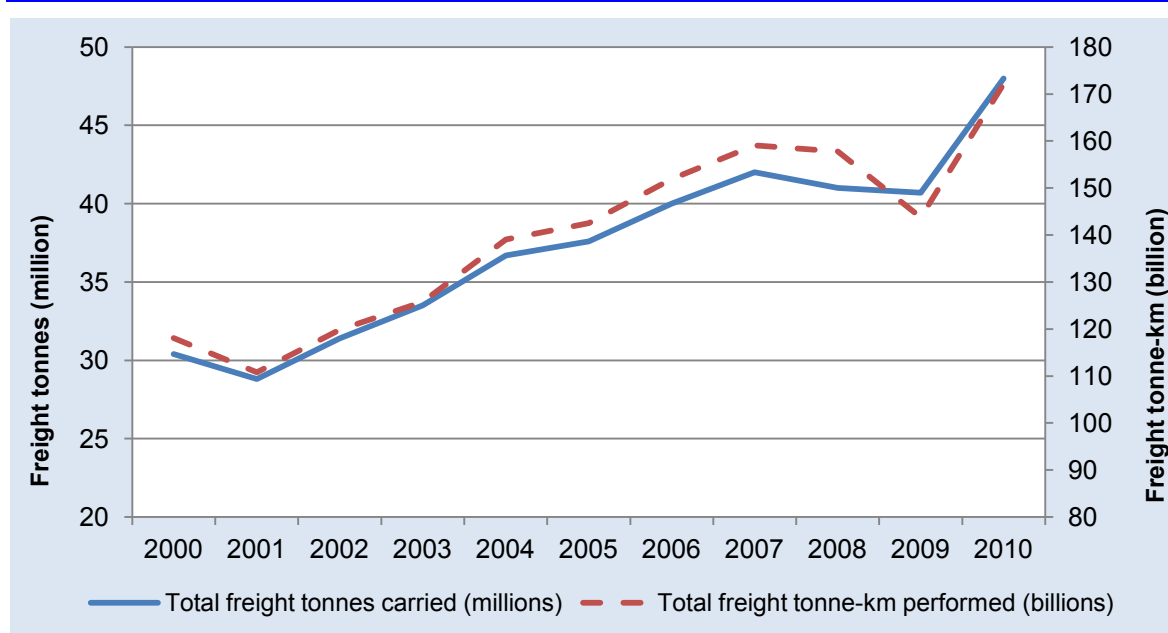
the only Belgian airports to see passenger traffic outstrip the global air passenger growth rate in the period 2003 - 2010.

Following years of investment and hard work, Ostend also benefited from an excellent alliance with the tour operators Jetair and Thomas Cook/Neckermann. In 2010, Jetairfly launched a new service from Ostend to Malaga. Just before Christmas in that year, Ostend Airport had to handle an exceptionally large number of passengers because flights were diverted to Ostend from Brussels, Charleroi and Liège airports on account of the heavy snowfall.

1.1.2 Cargo: Recent Developments

1.1.2.1 World Level

CHART 4 WORLD AIR CARGO TRAFFIC 2000 - 2010



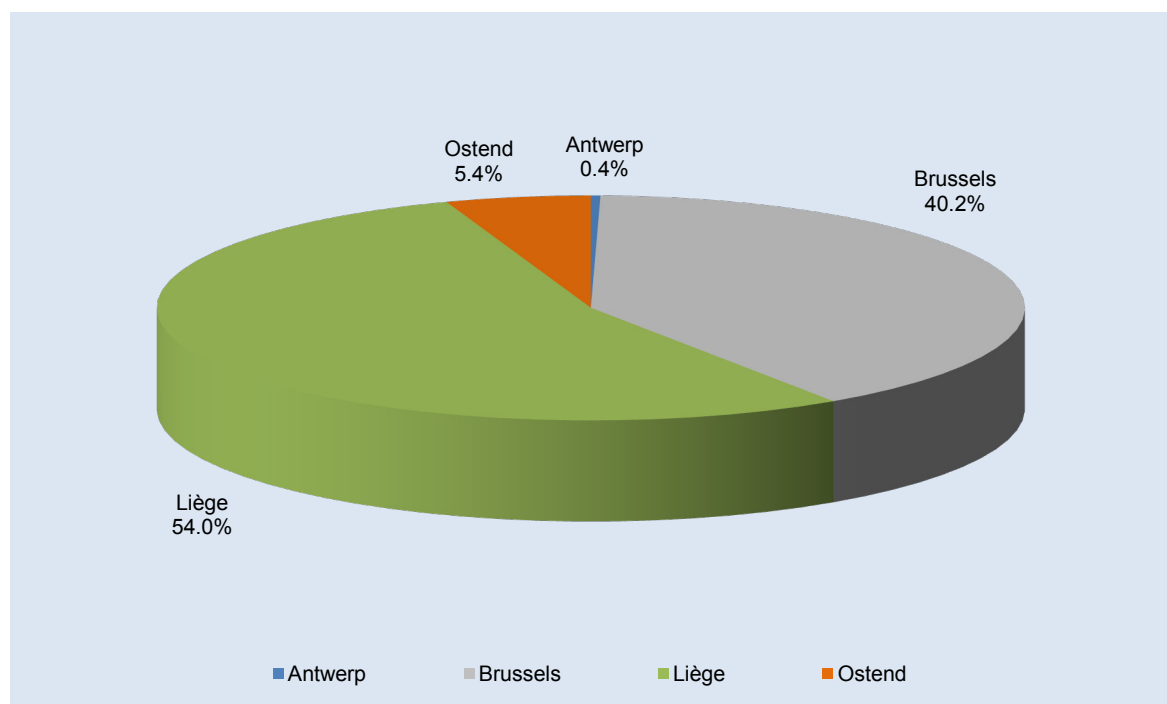
Source: ICAO (2011).

The global trend in air freight over the past ten years is shown in Chart 4. The economic downturn and the terrorist attacks of 9/11 clearly had a greater impact on freight than on passenger traffic in 2001. Since then, however, air freight has grown steadily. Expressed in the number of tonnes, the increase over the period as a whole averaged 4.7 % per annum, with growth averaging 3.8 % per annum in the number of tonne kilometres. In contrast to passenger traffic, the proportion of inter-continental flights has risen. In both the South American and the African economy, air freight plays a key role owing to the considerable distances and the inadequate road and rail infrastructure.

However, in 2008 and especially in 2009, freight traffic suffered severe setbacks. In 2009 there was a 0.7 % fall in the tonnage carried, while the number of tonne kilometres actually declined by 8.9 %. The financial and economic crisis caused a bigger than expected fall in consumption. Businesses responded by cutting their stocks. Moreover, the air freight sector lost some of its business to the sea transport sector. The pressure on prices prompted many producers, including manufacturers of high-tech goods, to review their logistics chain.

1.1.2.2 Situation in the Belgian Airports

CHART 5 SHARE OF BELGIAN AIRPORTS IN TERMS OF CARGO TRAFFIC IN 2010



Source: Airport operators.

In air freight, the Belgian market has only three significant players: Liège, Brussels and Ostend (Chart 5). Since 2009 Liège has taken over the lead from Brussels Airport. Freight traffic at Antwerp is negligible, consisting mainly of road freight under an air consignment bill. This is freight loaded onto palettes at the airport and taken by lorry from there, either to another international airport or to its final destination.

TABLE 4 CARGO TRAFFIC VIA BELGIAN AIRPORTS FROM 2003 TO 2010

(x 1000 tonnes)	2003	2004	2005	2006	2007	2008	2009	2010	Change from 2009 to 2010 (in %)	Annual average growth (in %)
Antwerp	5	4	5	7	5	6	5	4	-8.3	-2.1
Brussels	604	664	703	720	784	661	449	476	+6.0	-3.3
Charleroi	0	0	0	0	0	0	0	0	n.	n.
Kortrijk	0	0	0	0	1	0	0	0	n.	n.
Liège	375	383	330	407	490	519	482	639	+32.6	+7.9
Ostend	78	98	108	99	109	83	74	64	-13.6	-2.8
TOTAL	1,061	1,150	1,145	1,232	1,389	1,268	1,010	1,184	+17.2	+1.6

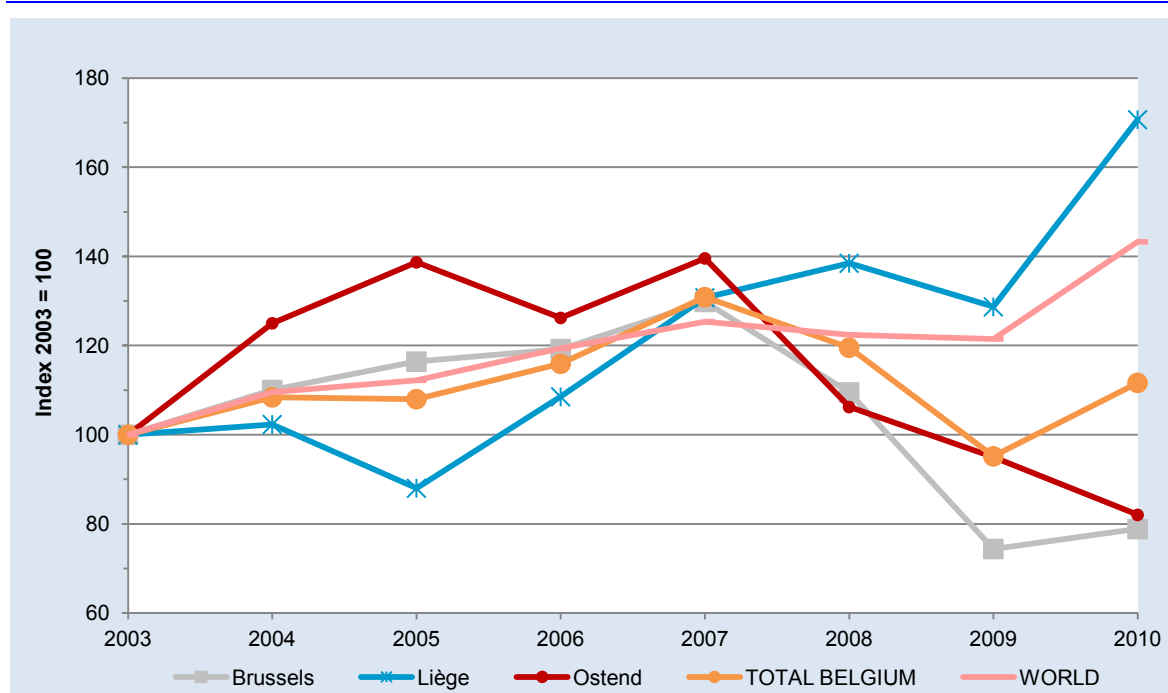
Source: Airport operators.

Over the past eight years the pattern of air freight via the Belgian airports (Table 4) has mirrored the global trend. However, the adverse impact on the Belgian market – in common with Europe as a whole – was more serious than on the other continents: in 2009 traffic declined by 20.4 % whereas at global level the decrease came to 0.7 %. The tonnage slumped below the 2003 level. The market picked up in 2010, though that was due largely to Liège Airport. Brussels Airport

performed worst with annual growth averaging -3.3 %. As well as coping with the crisis, Brussels also had to contend with the impact of DHL's departure to Leipzig in April 2008.

Liège is the only airport where the average annual growth of freight traffic over the last eight years has outstripped global growth of air freight during that period. That positive trend is also clearly depicted in Chart 6. For more than 15 years now, Liège has focused its development strategy on freight traffic, and that decision has clearly produced results. In 2009 the decline was small in comparison with the other Belgian airports. The decline in traffic for traditional operators such as TNT and the smaller number of technical stops were partly offset by the expansion of operations by Ethiopian Airlines and El Al, and the two newcomers ABX Air and Avient. In September 2009, Avient relocated its European operating base from Vantry in France to Liège. During 2010, Liège left the crisis far behind and achieved an all-time record thanks to growth of 32.6 %. The increase in transport of live animals and fresh products was particularly striking.

CHART 6 CARGO TRAFFIC VIA BELGIAN AIRPORTS FROM 2003 TO 2010



Source: Airport operators; ICAO (2011).

1.2 VALUE ADDED

TABLE 5 AIR TRANSPORT CLUSTER AND AIRPORT ACTIVITIES: VALUE ADDED FROM 2007 TO 2009
(in € million – current prices)

Cluster and sector	2007	2008	2009	Share in 2009 (in %)	Change from 2008 to 2009 (in %)	Annual average change from 2007 to 2009 (in %)
1. DIRECT EFFECTS.....	2,777.3	2,763.1	2,658.1	100.0	-3.8	-2.2
Air transport cluster outside airports..	740.3	657.7	672.4	25.3	+2.2	-4.7
Air transport.....	55.4	32.7	30.8	1.2	-5.7	-25.4
Travel agencies and tour operators	263.0	253.0	265.6	10.0	+5.0	+0.5
Building and repairing of aircraft	390.9	344.5	347.6	13.1	+0.9	-5.7
Other air transport supporting activities...	30.9	27.6	28.4	1.1	+2.8	-4.3
Inside airports.....	2,037.0	2,105.3	1,985.7	74.7	-5.7	-1.3
<i>Air transport cluster</i>	<i>1,272.5</i>	<i>1,326.3</i>	<i>1,256.5</i>	<i>47.3</i>	<i>-5.3</i>	<i>-0.6</i>
Air transport.....	448.6	497.0	441.3	16.6	-11.2	-0.8
Travel agencies and tour operators	4.2	4.6	2.8	0.1	-38.8	-17.7
Forwarding offices	100.2	108.3	93.7	3.5	-13.5	-3.3
Airport operator	303.3	298.9	313.5	11.8	+4.9	+1.7
Airport handling	143.4	151.7	141.4	5.3	-6.8	-0.7
Building and repairing of aircraft	99.2	98.7	96.6	3.6	-2.1	-1.3
Other air transport supporting activities...	173.7	167.1	167.1	6.3	+0.0	-1.9
<i>Other airport-related activities.....</i>	<i>764.5</i>	<i>779.0</i>	<i>729.2</i>	<i>27.4</i>	<i>-6.4</i>	<i>-2.3</i>
Passenger land transport.....	27.8	29.2	26.4	1.0	-9.7	-2.6
Cargo handling and storage	36.1	37.0	33.2	1.2	-10.4	-4.1
Freight transport by road	21.3	20.2	17.0	0.6	-15.9	-10.8
Courier and post activities	267.5	263.3	271.7	10.2	+3.2	+0.8
Public services	216.3	217.6	174.2	6.6	-20.0	-10.3
Security and industrial cleaning	49.6	61.4	65.5	2.5	+6.7	+14.9
Trade.....	44.9	42.8	40.7	1.5	-5.0	-4.8
Hotels, restaurants and catering	56.9	62.6	62.5	2.4	-0.2	+4.9
Other services	30.5	31.0	23.0	0.9	-25.8	-13.3
Other industries	13.6	13.9	15.1	0.6	+8.7	+5.4
2. INDIRECT EFFECTS*	3,268.1	3,627.0	3,457.9	-	-4.2	+3.1
Air transport cluster outside airports..	1,249.7	1,937.2	1,771.7	-	-8.3	+19.1
Inside airports.....	2,308.0	2,087.3	2,035.4	-	-2.5	-6.1
TOTAL	6,045.4	6,390.1	6,134.0	-	-4.0	+0.7

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

* The indirect effects calculated at an aggregate level are less than the sum of the indirect effects calculated separately owing to the economic links between the aggregated elements already counted in the direct effects and therefore excluded from the indirect effects. In other words, the addition of the indirect effects calculated individually for each element contains double counting which is corrected when the indirect effects are calculated directly at aggregate level.

Table 5 presents the direct and indirect value added created by the air transport cluster and the airport activities in Belgium. It is divided into two categories: one comprising activities linked to air transport outside the airports, and the other comprising all the activities conducted within the airports. The second category encompasses activities relating to air transport and other activities relating to airports. It is important to mention that the distinction between activities inside and outside airports is based on the breakdown of employment between the operating establishments of firms. The breakdown of value added between inside and outside airports is therefore an estimate which has to be interpreted with caution, in the same way as value added in the cluster comprising other airport-related activities.

In 2009, the direct value added of the sector came to over € 2.6 billion, 75 % of it created inside the airports. It declined by an average of 2.2 % per annum from 2007 to 2009, and that fall applied both inside and outside airports. This decline contrasts with the 0.8 % per annum increase in gross value added at current prices for the economy as a whole in Belgium over the same period.

Air transport is the sector which generates the most value added at € 30 million in 2009 outside airports and € 440 million inside airports, or 18 % of total direct value added. In 2008, there was an increase in the value added of the air transport sector inside airports and a decline in the value added of this sector outside airports. This was due to the takeover of Brussels Airlines Fly²⁰ (which was recorded outside airports) by Delta Air Transport in June 2008²¹ – after which the company's name was changed to Brussels Airlines (based at Brussels Airport).

Next comes the building and repairing of aircraft sector with a total of € 444 million in direct value added generated mostly outside the airports. That is due essentially to the presence of three major construction firms outside the airports (Techspace Aero, ASCO Industries and SONACA) which together generated value added amounting to over € 250 million in 2009, putting them among the top 20 in terms of value added (Table 6)²². In 2008 this sector recorded a sharp fall (-12 %) in its value added outside the airports, due mainly to Techspace Aero (contraction of the operating profit owing to the movement in the euro-dollar parity) and SONACA (operating loss mainly due to an increase in raw materials, consumables and goods for resale and the expansion of subcontracting which inflates the item covering services and other goods).

Next come the 6 airport operators which created direct value added totalling almost € 315 million in 2009, 80 % of which was generated by The Brussels Airport Company which heads the top 20 for value added (Table 6).

Courier and post activities are in 4th position with direct value added amounting to € 272 million in 2009, the impetus coming from DHL Aviation and TNT Express Worldwide, companies based at Brussels and Liège airports respectively. Travel agencies and tour operators²³ complete the list of the top 5 sectors generating the most value added in 2009. These five sectors accounted for 67 % of the direct value added of the air transport and airport activities sector in 2009.

In 2009, indirect value added²⁴ came to almost € 3.5 billion so that the total (direct and indirect) value added generated by the air transport cluster and airport activities came to € 6.1 billion. That represented 1.8 % of national GDP and 2.0 % of gross value added at basic prices for the national economy as a whole²⁵.

²⁰ Brussels Airlines Fly was the temporary name of Virgin Express, pending the final merger with Delta Air Transport.

²¹ From 2002, Delta Air Transport and Virgin Express were already selling flights in the joint name of SN Brussels Airlines, which became Brussels Airlines in 2007.

²² For firms in the aerospace sector, the figures only take account of the part of their activities relating to air transport.

²³ Only the part of the activities of travel agencies and tour operators relating to air transport is taken into account.

²⁴ As mentioned in the methodological section, the indirect effects are an estimate needing to be interpreted with caution.

²⁵ Source: Belgostat.

TABLE 6 AIR TRANSPORT CLUSTER AND AIRPORT ACTIVITIES: DIRECT VALUE ADDED TOP 20 IN 2009

	Name of company or organisation	Sector	Recorded in airports
1	The Brussels Airport Company	Airport operator	BRU
2	Belgocontrol	Other air transport supporting activities	ANT, BRU, CHA, LIE, OST
3	DHL Aviation	Courier and post activities	BRU
4	European Air Transport	Air transport	BRU
5	Techspace Aero	Building and repairing of aircraft	no
6	Brussels Airlines	Air transport	BRU
7	TNT Airways	Air transport	BRU, LIE
8	Belgian Air Force 15° Wing Luchttransport	Public services	BRU
9	Flightcare Belgium	Airport handling	BRU, LIE, OST
10	ASCO Industries	Building and repairing of aircraft	no
11	Société anonyme belge de Constructions aéronautiques (SABCA)	Building and repairing of aircraft	CHA
12	Société nationale de Construction aérospatiale (SONACA)	Building and repairing of aircraft	no
13	TNT Express Worldwide	Courier and post activities	LIE
14	Aviapartner Belgium	Airport handling	BRU, OST
15	Securitas Transport Aviation Security	Security and industrial cleaning	ANT, BRU, CHA, LIE
16	Federal Police*	Public services	All six airports
17	TUI Airlines Belgium	Air transport	BRU, CHA, LIE, OST
18	Jetair	Travel agencies and tour operators	no
19	Sabena Technics Brussels	Building and repairing of aircraft	BRU, CHA
20	Douanes / Customs**	Public services	ANT, BRU, CHA, LIE, OST
TOTAL			1,717.0
Share in total			64.6 %

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

* Includes Customs in Kortrijk Airport.

** Customs in Kortrijk Airport are counted together with the Federal Police.

1.3 EMPLOYMENT

TABLE 7 AIR TRANSPORT CLUSTER AND AIRPORT ACTIVITIES: EMPLOYMENT FROM 2007 TO 2009
(FTE)

Cluster and sector	2007	2008	2009	Share in 2009 (in %)	Change from 2008 to 2009 (in %)	Annual average change from 2007 to 2009 (in %)
1. DIRECT EFFECTS.....	32,019	32,517	31,637	100.0	-2.7	-0.6
Air transport cluster outside airports..	9,411	9,161	8,869	28.0	-3.2	-2.9
Air transport.....	625	250	270	0.9	+7.7	-34.3
Travel agencies and tour operators	4,094	4,087	3,991	12.6	-2.4	-1.3
Building and repairing of aircraft	4,500	4,638	4,420	14.0	-4.7	-0.9
Other air transport supporting activities...	193	186	188	0.6	+1.4	-1.0
Inside airports.....	22,608	23,356	22,768	72.0	-2.5	+0.4
<i>Air transport cluster</i>	<i>12,352</i>	<i>13,322</i>	<i>13,058</i>	<i>41.3</i>	<i>-2.0</i>	<i>+2.8</i>
Air transport.....	4,068	4,570	4,722	14.9	+3.3	+7.7
Travel agencies and tour operators	52	55	40	0.1	-27.1	-11.5
Forwarding offices	1,405	1,514	1,401	4.4	-7.4	-0.1
Airport operator	1,395	1,447	1,469	4.6	+1.5	+2.6
Airport handling	2,457	2,714	2,493	7.9	-8.2	+0.7
Building and repairing of aircraft	1,729	1,780	1,712	5.4	-3.8	-0.5
Other air transport supporting activities...	1,247	1,242	1,221	3.9	-1.7	-1.0
<i>Other airport-related activities.....</i>	<i>10,256</i>	<i>10,035</i>	<i>9,710</i>	<i>30.7</i>	<i>-3.2</i>	<i>-2.7</i>
Passenger land transport.....	364	381	368	1.2	-3.4	+0.6
Cargo handling and storage	401	435	417	1.3	-4.0	+2.0
Freight transport by road	322	331	312	1.0	-5.9	-1.6
Courier and post activities	3,708	3,157	2,887	9.1	-8.6	-11.8
Public services	1,998	1,907	1,856	5.9	-2.7	-3.6
Security and industrial cleaning	1,164	1,404	1,499	4.7	+6.7	+13.5
Trade.....	589	595	587	1.9	-1.3	-0.2
Hotels, restaurants and catering	1,241	1,348	1,308	4.1	-3.0	+2.7
Other services	256	272	260	0.8	-4.4	+0.8
Other industries	214	205	217	0.7	+6.0	+0.7
2. INDIRECT EFFECTS*	40,538	52,673	48,645	-	-7.6	+9.5
Air transport cluster outside airports..	18,099	30,464	28,192	-	-7.5	+24.8
Inside airports.....	25,783	27,482	25,459	-	-7.4	-0.6
TOTAL	72,557	85,190	80,281	-	-5.8	+5.2

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

* The indirect effects calculated at an aggregate level are less than the sum of the indirect effects calculated separately owing to the economic links between the aggregated elements already counted in the direct effects and therefore excluded from the indirect effects. In other words, the addition of the indirect effects calculated individually for each element contains double counting which is corrected when the indirect effects are calculated directly at aggregate level.

Overall, direct employment in the air transport cluster and airport activities represented 31,600 FTE in 2009, 2.7 % down against the previous year and representing an annual average decline of 0.6 % since 2007 (Table 7). These figures contrast with the trend in employment in Belgium which, taking all sectors together, grew by 0.7 % per annum, on average, over the same period. 28 % of jobs are located outside the airports. These are essentially jobs in the travel agency and tour operator sector, and jobs in building and repairing of aircraft. These two sectors, with fairly different demographic characteristics, together represent almost 8,500 of the 8,900 jobs outside airports. While employment in the travel agency and tour operator sector is spread across several hundred firms, it is far more concentrated in the building and repairing of aircraft, doubtless because of the economies of scale in that sector. This difference is apparent in the top 20 biggest employers in the air transport cluster and airport activities (Table 8). This ranking, which includes firms both outside and inside the airports, does not contain a single travel agency or tour operator, but no fewer than five aircraft construction and repair firms. Among these, SONACA and Techspace Aero employ over 1,000 FTE, putting them in 2nd and 5th place respectively.

TABLE 8 AIR TRANSPORT CLUSTER AND AIRPORT ACTIVITIES: DIRECT EMPLOYMENT TOP 20 IN 2009

	Name of company or organisation	Sector	Recorded in airports
1	Brussels Airlines	Air transport	BRU
2	Société nationale de Construction aéronautique (SONACA)	Building and repairing of aircraft	no
3	Securitas Transport Aviation Security	Security and industrial cleaning	ANT, BRU, CHA, LIE
4	Flightcare Belgium	Airport handling	BRU, LIE, OST
5	Techspace Aero	Building and repairing of aircraft	no
6	Aviapartner Belgium	Airport handling	BRU, OST
7	Belgocontrol	Other air transport supporting activities	ANT, BRU, CHA, LIE, OST
8	TNT Express Worldwide	Courier and post activities	LIE
9	Sabena Technics Brussels	Building and repairing of aircraft	BRU, CHA
10	DHL Aviation	Courier and post activities	BRU
11	Société anonyme belge de Constructions aéronautiques (SABCA)	Building and repairing of aircraft	CHA
12	Belgian Air Force 15° Wing Luchttransport	Public services	BRU
13	The Brussels Airport Company	Airport operator	BRU
14	ASCO Industries	Building and repairing of aircraft	no
15	TNT Airways	Air transport	BRU, LIE
16	Federal Police*	Public services	All six airports
17	TUI Airlines Belgium	Air transport	BRU, CHA, LIE, OST
18	European Air Transport	Air Transport	BRU
19	TNT Express Belgium	Courier and post activities	BRU
20	Autogrill Belux	Hotels, restaurants and catering	BRU
TOTAL			18,403
Share in total			58.2 %

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

* Includes Customs in Kortrijk Airport.

At the airport sites, it is the air transport sector that employs the largest number of staff. In 2009, the top 20 employers included four airlines: Brussels Airlines, TNT Airways, TUI Airlines Belgium and European Air Transport. Brussels Airlines is well in the lead with 2,164 FTE in 2009. That number increased by almost 400 FTE in 2008 following the acquisition of Brussels Airlines Fly. In consequence, a number of jobs were transferred in 2008 from the air transport outside airports

sector to the same sector inside the airports, in this case Brussels Airport. Securitas and the two handling companies, Flightcare and Aviapartner, complete the list of firms employing over 1,000 FTE in 2009.

In 2009, air transport and airport activities accounted for a total of 48,600 indirect jobs (in FTE)²⁶. These activities therefore provided direct or indirect employment for almost 80,300 FTE in 2009, representing 2.0 % of Belgian domestic employment in FTE²⁷.

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

²⁷ Sources: Belgostat and own calculations.

1.4 INVESTMENT

TABLE 9 AIR TRANSPORT CLUSTER AND AIRPORT ACTIVITIES: DIRECT INVESTMENT FROM 2007 TO 2009
(in € million – current prices)

Cluster and sector	2007	2008	2009	Share in 2009 (in %)	Change from 2008 to 2009 (in %)	Annual average change from 2007 to 2009 (in %)
Air transport cluster outside airports..	110.6	123.7	128.7	34.1	+4.0	+7.8
Air transport.....	12.1	23.5	39.5	10.5	+68.1	+80.5
Travel agencies and tour operators	19.5	20.2	20.6	5.5	+1.8	+2.7
Building and repairing of aircraft	36.1	48.3	32.6	8.6	-32.5	-4.9
Other air transport supporting activities...	43.0	31.7	36.0	9.5	+13.6	-8.4
Inside airports.....	407.6	368.7	248.9	65.9	-32.5	-21.9
<i>Air transport cluster</i>	<i>299.1</i>	<i>273.8</i>	<i>189.3</i>	<i>50.1</i>	<i>-30.9</i>	<i>-20.4</i>
Air transport.....	123.9	79.8	39.9	10.6	-50.0	-43.2
Travel agencies and tour operators	0.1	0.1	0.0	0.0	-16.6	-12.8
Forwarding offices	5.0	6.4	2.4	0.6	-62.9	-30.9
Airport operator	49.3	105.8	75.5	20.0	-28.7	+23.7
Airport handling	9.0	12.1	3.4	0.9	-72.0	-38.6
Building and repairing of aircraft	8.1	5.7	7.7	2.0	+34.7	-3.0
Other air transport supporting activities...	103.7	63.9	60.4	16.0	-5.5	-23.7
<i>Other airport-related activities.....</i>	<i>108.5</i>	<i>94.9</i>	<i>59.6</i>	<i>15.8</i>	<i>-37.2</i>	<i>-25.9</i>
Passenger land transport.....	5.1	8.5	8.7	2.3	+2.3	+30.4
Cargo handling and storage	0.9	1.4	1.2	0.3	-18.5	+12.2
Freight transport by road	2.1	1.2	1.5	0.4	+24.5	-15.8
Courier and post activities	31.5	22.8	12.9	3.4	-43.7	-36.1
Security and industrial cleaning	1.3	1.7	2.4	0.6	+37.8	+36.2
Trade.....	2.6	5.4	1.0	0.3	-81.4	-38.0
Hotels, restaurants and catering	9.2	6.2	1.2	0.3	-81.0	-64.3
Other services	53.6	47.1	30.2	8.0	-35.8	-24.9
Other industries	2.1	0.6	0.6	0.2	+2.7	-45.4
TOTAL	518.3	492.5	377.6	100.0	-23.3	-14.6

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

Investment in the air transport cluster and airport activities came to almost € 380 million in 2009, against 520 million in 2007 and 490 million in 2008, an average annual decline of 15 % (Table 9), exceeding the reduction for the Belgian economy as a whole, where investment was down by an average of 0.5 % per annum from 2007 to 2009. Investment within airports declined by 22 % per annum, whereas it expanded by 8 % per annum in the air transport cluster outside airports

between 2007 and 2009²⁸. This growth is due to the departure of the helicopter transport company Noordzee Helikopters Vlaanderen from Ostend Airport in 2008. The relocation of this firm, which ranked 3rd in the top 10 biggest investors in 2009 (Table 10), led to a shift in investment from the air transport cluster inside airports to the same cluster outside airports in 2008. Apart from this specific case, investment in the air transport cluster outside airports remained broadly stable during the period under review.

TABLE 10 AIR TRANSPORT CLUSTER AND AIRPORT ACTIVITIES: DIRECT INVESTMENT TOP 10 IN 2009

	Name of company or organisation	Sector	Recorded in airports
1	The Brussels Airport Company	Airport operator	BRU
2	Société wallonne des Aéroports (SOWAER)	Other air transport supporting activities	CHA, LIE
3	Noordzee Helikopters Vlaanderen	Air transport	no
4	European Air Transport	Air transport	BRU
5	Belgocontrol	Other air transport supporting activities	ANT, BRU, CHA, LIE, OST
6	Hertz Belgium*	Other services	BRU, CHA
7	Société nationale de Construction aéronautique (SONACA)	Building and repairing of aircraft	no
8	Amerborgh Aviation	Other air transport supporting activities	no
9	Techspace Aero	Building and repairing of aircraft	no
10	Avis Belgium*	Other services	BRU, CHA
TOTAL			246.6
Share in total			65.3 %

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

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

The sector which invested the most in 2009 was other air transport supporting activities, with almost € 100 million of investment, mostly (66 %) attributable to SOWAER and Belgocontrol, as indicated by their respective positions in the top 10. SOWAER, the Walloon Airport Authority, is responsible for managing and developing the infrastructures of Liège and Charleroi airports. The firm is thus constantly engaged in current infrastructure projects requiring substantial investment. As stated in Table 9, there was particularly heavy investment in the sector in 2007, a year in which SOWAER invested over € 100 million. Major projects completed in that year included the upgrading of the North freight zone (phase 1) at Liège Airport and construction of a new terminal at Charleroi Airport. In 2008 and 2009, investment was lower, with SOWAER mainly involved in putting the finishing touches to new infrastructures. However, 2008 saw the completion of work on two projects at Charleroi Airport: a maintenance building for runway equipment and the installation of facilities for the instrument landing system (ILS) category III, permitting landing in poor visibility.

During the period under review, Belgocontrol, the other big investor in the other air transport supporting activities sector, invested around € 60 million²⁹ in the new air navigation system,

²⁸ As already mentioned, the distinction between inside and outside airports is based on the breakdown of employment between the operating establishments of firms. A firm may therefore be present both inside and outside an airport. Among the big investors, only a few firms are in that situation. Examples include SOWAER and Belgocontrol in the air transport cluster, and Hertz and Avis in the other airport-related activities cluster. For those firms, the investment counted outside airports may in fact be located inside airports, and vice-versa. These figures are therefore given purely as a guide.

²⁹ Belgocontrol (2010), "CANAC 2 : an asset for the future of Belgocontrol", press release, 10 February.

CANAC 2, which entered service at the end of 2009 after 2 years' work. In 2009 the firm invested mainly in new weather forecasting systems (METAFOR) and automated aeronautical communications systems (ISAAC). Still with reference to the other air transport supporting activities sector, a new firm – Amerborgh Aviation – came on the scene in 2009. This company, a wholly owned subsidiary of the investment holding company Amerborgh N.V., ranks 8th in the top 10 investors in 2009 (Table 10).

Air transport is the second biggest sector in terms of investment, with € 80 million in 2009. Two firms in this sector are ranked 3rd and 4th respectively in the top 10: Noordzee Helikopters Vlaanderen, present outside the airports, and European Air Transport, based at Brussels Airport (and at Madrid and Athens). In 2009, European Air Transport added two Airbus A380s to its fleet.

In third place is the airport operators sector. Far in the lead is The Brussels Airport Company which alone accounted for over 80 % of investment in the sector in 2009 (completion of the first logistics building at Brucargo West, start of the refurbishment of the check-in area in the old terminal, renovation work to Apron 3³⁰, etc.). The firm also heads the top 10 biggest investors in 2009, taking all sectors together, with investment totalling € 61 million. Liège Airport S.A. is in second place among the airport operators with almost € 6 million investments in 2009 (extension of the freight hall in the north zone). Each of the other airport operators invested between € 2 and 3 million in 2009, except for Kortrijk Airport (investments totalling € 72,000).

Finally, mention should also be made of the building and repairing of aircraft sector in which € 40 million was invested in 2009, with 13 million invested by SONACA (including industrial investments to improve the reliability of production facilities) and 8 million by Techspace Aero (acquisition of new means of production). In contrast to the increased investment by SONACA, investment by Techspace Aero was down sharply (-66 %) against 2008 because it was confined to replacements. These two companies also appear in the top 10 biggest investors in 2009, in 7th and 9th place respectively.

³⁰ The apron is the platform where aircraft are refuelled, parked, loaded or unloaded, and where people board the aircraft.

1.5 SOCIAL BALANCE SHEET³¹

The social balance sheet contains a cohesive set of data on various aspects of employment in firms: workforce structure, staff turnover, type of employment contracts, standard of education, working time, labour costs and training. The results set out below on direct employment in the Belgian air transport sector as a whole are not exhaustive. The figures were calculated on the basis of a constant sample³² for the period 2007 - 2009. In view of the small size of the constant sample and the fact that it includes only large firms, the results below are only a guide and should certainly not be taken as generally valid.

1.5.1 Working Time and Labour Costs

Employment in the Belgian air transport sector as a whole expanded by 2.1 % in 2008, whereas in 2009 it contracted by 3.4 % (Table 11). That picture was already reflected in Table 7. The workforce of firms active in one or more Belgian airports expanded more strongly in 2008 and recorded a smaller decline in 2009.

In 2009 the decline in the number of hours worked exceeded the fall in the average number of workers. Consequently, the average working time per worker dropped by 3.2 %. In response to the economic and financial crisis, a number of firms adjusted their production capacity by cutting the number of overtime hours and/or altering the working arrangements of some employees. In addition, some sectors resorted to the system of temporary lay-offs on economic grounds.

For three successive years, the average working time was significantly below the national average, which stood at 1,499 hours in 2009. In fact, the average working time in 2009 was relatively low in a number of very large firms, including Brussels Airlines (1,219 hours), Techspace Aero (1,351 hours) and Securitas Transport Aviation Security (1,379 hours).

TABLE 11 HOURS WORKED AND COST OF OWN STAFF

	2007	2008	2009
Change in the average number of employees on the staff register (%)		+2.1	-3.4
Change in the number of hours actually worked (%)		+1.5	-6.5
Change in staff costs (%).....		+9.6	-1.3
Average number of hours worked per annum per full-time equivalent.....	1,518	1,509	1,461
Average annual staff costs per full-time equivalent (euros).....	57,410	61,606	62,931
Average staff costs per hour worked (euros).....	39	41	42

Source: NBB (full-format only)

Both the average labour costs per FTE and the average labour costs per hour continued to rise, and are well above the national averages³³. The over-representation of large firms in the constant

³¹ The national data cited here come from Heuse and Zimmer (2010). The comparisons are purely a guide, since this national study only included firms with a social balance sheet covering a 12-month financial year ending on 31 December. In other words, this is a small population.

³² The constant sample was determined on the basis of firms included in this study at a rate of at least 50 % (averaged over three years) which – for the three years 2007, 2008 and 2009 – submitted annual accounts in the full format for a 12-month financial year and in each year employed at least one full-time equivalent. The constant sample contains 111 firms and 22,057 FTE, or 6 % of the firms considered in 2009 and 70 % of the direct employment calculated in this study.

³³ For Belgium, the cost per employee came to € 52,075 in 2009, and the cost per hour was € 34.7.

sample leads to above-average costs owing to differences in the relative power of employers and employees.

In 2009, European Air Transport recorded the highest average hourly pay, at € 129. DHL's transfer to Leipzig obliged European Air Transport to restructure. During 2009, 103 employees were made redundant and a further eight took early retirement. Owing to the redundancy payments, the costs were considerably higher than normal. Other firms with hourly pay averaging more than € 50 include Belgocontrol, TNT Airways, Brussels Airlines and Techspace Aero.

1.5.2 Structure of the Workforce

TABLE 12 INTERNAL WORKFORCE AT THE END OF THE FINANCIAL YEAR

	2007	2008	2009
By professional category			
<i>White-collar (%)</i>	64.1	65.3	65.2
<i>Blue-collar (%)</i>	34.1	33.1	33.5
<i>Other staff (%)</i>	1.8	1.6	1.3
By sex			
<i>Males (%)</i>	72.2	71.4	71.4
<i>Females (%)</i>	27.8	28.6	28.6
By working time			
<i>Full-time (%)</i>	75.2	77.4	74.3
<i>Part-time (%)</i>	24.8	22.6	25.7
By educational level			
<i>University education (%)</i>			8.9
<i>Higher non-university education (%)</i>			25.7
<i>Secondary education (%)</i>			58.1
<i>Primary education (%)</i>			7.3

Source: NBB (full-format only)

The proportion of blue-collar workers in the workforce is stable, hovering around 34 % (Table 12). At Securitas Transport Aviation Security and Taxis Autolux, almost all (95 %) of the employees are blue-collar workers. However, 48 % of the firms in the constant sample – including Brussels Airlines, Belgocontrol and The Brussels Airport Company – employ no blue-collar workers.

The percentage of male employees in the constant sample is higher than the national average, as 25 % of the staff in the constant sample work for an employer in the building and repairing of aircraft sector. That sector employs many engineers and technicians, in what are traditionally male occupations. Indeed, at SONACA, Techspace Aero, SABCA, Sabena Technics BRU and Asco Industries at least 88 % of the staff are men.

Owing to the crisis, the number of full-time workers declined in 2009, while the number of part-time workers increased by 8.4 %. Among female employees, 38.8 % worked part time, while the figure for men was only 20.2 %. This working arrangement is particularly popular with airport handlers (49.6 % of part-time workers) and with courier and post firms (45.2 %).

At the end of 2008 changes were made to the models of the annual accounts, and more specifically the part relating to the social balance sheet. Among other things, the changes concerned the breakdown of the workforce by standard of education. That breakdown was

previously requested at the level of recruitment and departures. For financial years ending from 1 December 2008 onwards, this breakdown is included under the structure of the workforce at the end of the financial year. This means that for this section of Table 12 it is not possible to offer any comparative figures for 2007. Moreover, the analysis showed that a number of firms – including some large ones – placed all employees in one particular category in 2008, presumably because their IT system was not yet adjusted to the new model of the annual accounts. Consequently, the table only contains figures for 2009. This indicates that the proportion of staff with higher education qualifications or university degrees was 34.6 %. In travel agencies and tour operators and in the air transport sector, the proportion of employees completing higher education or university courses was actually over 55 %. Conversely, in the freight transport by road sector only 2.4 % of staff attended higher education.

1.5.3 External Staff

TABLE 13 HIRED TEMPORARY STAFF AND STAFF PLACED AT THE ENTERPRISE'S DISPOSAL

	2007	2008	2009
Share of external staff in total employment (on the basis of the number of hours actually worked) (%).....	4.7	5.0	3.6
Change in the number of hours actually worked (%)		+8.6	-34.8
Change in costs (%)		+11.8	-32.3

Source: NBB (full-format only)

As at national level, the relative proportion of external staff declined between 2008 and 2009 (Table 13). In 2009, 57.7 % of firms in the constant sample used external staff. These consisted mainly of agency workers. Firms in the constant sample which, in terms of the number of hours, made the most use of agency workers and staff placed at the enterprise's disposal are TNT Express Belgium, LSG Sky Chefs Belgium, Flightcare Belgium and Asco Industries.

Although costs rose faster in 2008 and declined less steeply in 2009 than the number of hours worked, these data showed that external staff were still considerably cheaper than in-house employees. The average costs per hour came to € 28.6 in 2009. In the air transport cluster (€ 29.7) this average cost was a little higher than in the other airport related activities (€ 26.5).

1.5.4 Staff Turnover

Whereas in 2007 the number of full-time equivalents recruited was still significantly higher than the number leaving, in 2009 the exact opposite situation applied (Table 14). As a result of the economic and financial crisis, the net number of staff recruited has fallen to the point where staff leaving a firm in 2009 exceeded the number of newcomers. The relatively significant number of net departures is attributable mainly to the air transport cluster. Firms in the constant sample with the highest net departures are Sabena Technics BRU, CWT Belgium, AviaPartner Belgium and European Air Transport. As a result of the reduced activities, these firms had to cut their workforce. In only 27.9 % of firms did the number of staff recruited exceed the number leaving.

The figures concerning the reason for termination of the employment contract show that the proportion of redundancies virtually doubled in the space of two years. More than one in five employees leaving the firm was made redundant. In the air transport cluster the figure was actually

more than one in four. In contrast, there was a decline in the proportion taking early retirement or leaving for other reasons.

TABLE 14 STAFF TURNOVER

	2007	2008	2009
Net number of staff hired during the year.....	1,928	605	-1,189
Staff leaving, by reason for termination of contract			
<i>Retirement (%)</i>	1.8	1.6	2.1
<i>Early retirement (%)</i>	3.0	2.3	2.2
<i>Dismissal (%)</i>	11.3	18.7	22.0
<i>Other reason (%)</i>	84.0	77.5	73.7

Source: NBB (full-format only)

1.5.5 Training

As already explained in the section on the workforce structure, the design of the social balance sheet was radically changed at the end of 2008. Thus, the table relating to training was considerably enlarged. Previously, only formal training was covered by the social balance sheet. For financial years ending from 1 December 2008 onwards, the training initiatives are divided into three categories³⁴: formal training (courses and training programmes devised 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).

Table 15 shows the effort devoted to formal training. The percentage of firms reporting this type of training in the social balance sheet has increased considerably from 33.3 % in 2007 to 46.8 % in 2009. That is thanks to the publicising of the said changes to the social balance sheet, and the efforts of the professional and sectoral organisations and the social partners. Nationally, the percentage of firms arranging formal training doubled to 12 %³⁵ although that is still well below the figure for the constant sample. Just as in the case of staff expenses, the reason is the over-representation of large firms, since the constant sample only includes full-format accounts. Traditionally, large firms invest relatively more in training schemes for their staff.

On average, roughly one in two employees have access to formal training. In 2007 women still had noticeably fewer training opportunities than men. Two years later the difference has almost halved. In the air transport cluster the rate of participation was somewhat higher than in other airport-related activities.

The percentage of staff attending one or more formal training schemes may well have risen in 2009, but the total number of training hours declined significantly, so that the average number of hours' training per person dropped to 39 hours. Presumably the crisis prompted firms to economise on their training budget. Thus, the percentage of staff expenses represented by training also

³⁴ For more information on the various types of training, see the document produced jointly by the Central Balance Sheet Office, the Central Economic Council and the National Labour Council: "Toelichtingsnota met betrekking tot de opleidingsactiviteiten opgenomen in de sociale balans", available, only in Dutch and French, at: <http://www.nbb.be> > Central Balance Sheet Office > Models of annual accounts > Social balance sheet > Explanatory memo (bottom of the page).

³⁵ The source of the 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 > Products of the CBSO > Indicators relating to the continuing on-the-job training.

declined. However, the quantity of training varied greatly between 4.5 (passenger land transport) and 114 hours (other air transport supporting activities) per person.

TABLE 15 EFFORTS DEVOTED TO FORMAL TRAINING

	2007	2008	2009
% of firms reporting training on the social balance sheet	33.3	40.5	46.8
Participation rate (%)	49.5	49.6	52.4
<i>Males (%)</i>	51.9	52.0	53.8
<i>Females (%)</i>	43.3	44.0	49.2
Number of hours' training per person	38.5	46.5	39.4
<i>Males</i>	40.3	47.2	39.7
<i>Females</i>	33.1	44.4	38.6
Training costs per hour	55.8	65.6	66.6
<i>Males</i>	57.8	68.4	72.5
<i>Females</i>	48.3	57.2	50.9
% of the number of hours worked devoted to training	1.4	1.6	1.5
Training costs as a percentage of total staff costs	2.1	2.6	2.3

Source: NBB (full-format only)

During the period 2007 - 2009 training costs per hour increased by an average of 9.3 % per annum, while the average hourly wage costs of in-house staff went up by an average of 6.8 % per annum. There was a particularly noticeable increase in the cost of training for men. Average hourly training costs were highest at Belgocontrol, Noordzee Helikopters Vlaanderen, European Air Transport and Flying Service, all firms in the air transport cluster.

In 2009 only 30 of the 111 firms provided less formal/informal vocational training. Initial vocational training was actually only recorded in eleven sets of annual accounts. These figures are too limited to form the basis for meaningful analysis. Consequently, no detailed statistics were compiled for these types of training.

1.6 FINANCIAL RATIOS

Table 16 presents the financial situation of the sectors studied on the basis of three ratios: return on equity after taxes, liquidity in the broad sense (or current ratio) and solvency (also known as the degree of financial independence³⁶). These ratios are defined in Annex 1. They are calculated for each sector by aggregating the individual ratios of the constituent firms. However, it was not possible to include all firms in the calculations. Besides certain constraints relating to the calculation of the ratios (see Annex 1), it was necessary, for consistency, to restrict the selection to a constant sample of firms. For that reason, the only firms taken into account were those which filed annual accounts for a 12-month period every year from 2007 to 2009. In addition, firms were eliminated if their link to the air transport cluster or airport activities was too tenuous³⁷. Altogether, 54 % of the firms considered in this study (totalling 61 % of direct value added) met all these conditions and were therefore included in the constant sample used as the basis for calculating the financial ratios presented in Table 16. That point should be borne in mind when reading the analysis which follows.

The **return on equity after taxes** is the ratio between the financial year's net income and the shareholder assets. In the air transport cluster and airport activities, that ratio declined in 2008 and increased slightly in 2009, in line with the national average. At the level of the clusters, profitability is much higher in other airport-related activities than in the air transport cluster, the latter being more profitable outside the airports. This last cluster recorded improved profitability in 2009, boosted by the building and repairing of aircraft sector, the only sector outside the airports to see an improvement in profits. That was due to the dramatic improvement in the results of Dassault Belgium Aviation in 2009, following a loss in 2008 caused by amounts written off financial fixed assets.

Conversely, in the air transport cluster inside airports, most sectors recorded losses in 2009 and two sectors actually recorded negative profitability every year. Among those, the building and repairing of aircraft sector recorded a significant fall in profitability between 2007 and 2009. That was due mainly to Sabena Technics BRU, whose results were down in 2008 following a decline in the operating result (losses on some customer contracts and lower insurance indemnities combined with higher operating expenses), then fell further in 2009 owing to provisions for exceptional restructuring and early retirement costs.

The air transport sector inside airports, which dominates the cluster of the same name, also recorded a marked decline in profitability, which became negative in 2009. It is mainly influenced by Brussels Airlines, whose operating result fell in 2009 owing to a decline in revenues (due mainly to the reduction in traffic and ticket prices).

In the other airport-related activities cluster, only two sectors recorded negative profitability in 2009. Hotels, restaurants and catering form the sector with the weakest profitability among all the sectors in the constant sample. In 2009, all firms in the sector made a loss. This is in line with the results for non-financial corporations in Belgium as a whole, where the hotels, restaurants and catering sector is the one with the proportionately largest number of firms recording negative profitability³⁸. In contrast, other sectors seem particularly profitable, led by security and industrial cleaning and courier and post activities. The former is heavily influenced by Securitas Transport Aviation Security which posts strong profits every year. The latter is led by DHL Aviation which saw a considerable increase in profits in 2009, significant factors being the reduction in its operating costs and the increase in certain financial income.

³⁶ See Vivet (2010).

³⁷ The limit was fixed arbitrarily at 50%. For example, a firm from the other airport-related activities cluster employing 100 workers of whom only 20 work on an airport site is recorded at 20% in the study but is not included in the constant sample used to calculate the financial ratios. The same applies to a firm in the aerospace sector with only 10% of its turnover linked to the aviation sector and 90% to the space sector.

³⁸ See Deville and Verduyn (2010).

Liquidity in the broad sense (current ratio) represents the degree to which the current liabilities are covered by the current assets, or in other words a firm's ability to meet its short-term liabilities³⁹. It is greater (less) than one if the current assets are greater (less) than the current liabilities. This ratio is also an alternative measure of the net working capital which expresses the difference between the current assets and the current liabilities.

Liquidity in the air transport cluster and the other airport-related activities exceeds the liquidity of non-financial corporations taken as a whole. This ratio is particularly high in the air transport cluster outside airports. In the sector of the same name, the current assets in 2009 were almost 6 times the current liabilities, which means that firms in this sector have, on average, 6 times the liquidity needed to pay their short-term debts. This sector is greatly influenced by SN Airholding, whose current liabilities were halved in 2009 while its current assets expanded following the increase in current investments.

Inside the airports, most sectors also have a liquidity ratio greater than one. In the air transport cluster, the airport handling sector (Flightcare) and the airport operator sector deviate from that rule, recording negative working capital each year. The latter sector is headed by The Brussels Airport Company, whose net working capital is declining steeply year by year. In fact, both its current assets and its current liabilities showed a marked fall between 2007 and 2009, though the latter still exceed the former. In the other airport-related activities cluster, it is the hotels, restaurants and catering sector that has the lowest liquidity, followed by cargo handling and storage. Both these sectors have a liquidity ratio of less than 1. LSG Sky Chefs and Liège Hôtel (Park Inn) have a decisive impact on the liquidity of the hotels, restaurants and catering sector. The ratio of LSG Sky Chefs, just under 1 in 2007, was halved in 2008 as a result of a fall in short-term receivables combined with a rise in accounts payable, then stabilised in 2009. Liège Hôtel recorded a fall in its short-term receivables in 2009 while its short-term debts, which remained stable in 2009, had risen sharply in 2008. The low liquidity ratio of the cargo handling and storage sector is due to Hydrant Refuelling System and Liège Air Cargo Handling Services (LACHS) whose working capital is negative each year.

The **solvency** ratio measures a firm's degree of financial independence by comparing its equity capital to its total liabilities. Overall, this ratio is lower in the air transport cluster and airport activities than for non-financial corporations as a whole. This holds true both inside and outside airports. In 2009 the solvency of firms outside airports was not significantly different from that of firms located on airport sites. Outside airports, the degree of financial independence is particularly high in the other air transport supporting activities sector. This sector is dominated by Belgocontrol, which has by far the largest equity capital and balance sheet total, and whose solvency ratio stood at 73 % in 2009. The next two biggest in terms of balance sheet total, Mass Invest and Simubel, have a solvency ratio close to 100 %, which means that they have virtually no debts. The first obtains most of its funding from profits brought forward and the second, a wholly owned subsidiary of the Canadian firm CAE Inc., is financed by subscribed capital. These three firms, with a combined balance sheet total amounting to over 75 % of the balance sheet total of the sector in the constant sample, recorded a relatively stable degree of financial independence during the three years under review.

Inside the airports, the land passenger transport and trade sectors, both belonging to the other airport-related activities cluster, are the ones with the highest solvency ratios, exceeding 50 % in 2009. The solvency of the road freight transport sector increased significantly between 2007 and 2009, under the impetus of Tas Express Europe. It became the third sector inside the airports with equity capital greater than its borrowings. In contrast, the security and industrial cleaning sector saw a decline in solvency, due essentially to Securitas Transport Aviation Security, the reason being its increased debts in 2008 (higher taxes, wages and social security contributions payable as a result of the expansion of activity and increase in accruals and deferred income). Other services form the other sector with the lowest degree of financial independence. The sector is greatly

³⁹ See Ooghe and Van Wymeersch (2006).

influenced by Flying Group whose solvency ratio, relatively stable during the three years under review, stood at 7 % in 2009.

TABLE 16 AIR TRANSPORT SECTOR AND AIRPORT ACTIVITIES: FINANCIAL RATIOS FROM 2007 TO 2009

Sectors	Return on equity after taxes (in %)			Liquidity in the broad sense			Solvency (in %)		
	2007	2008	2009	2007	2008	2009	2007	2008	2009
Air transport cluster outside airports.....	12.4	1.9	5.6	1.77	1.78	1.87	43.0	39.1	39.3
Air transport.....	7.5	23.4	1.3	4.01	3.62	5.86	34.2	38.6	41.7
Travel agencies and tour operators.....	14.5	10.9	3.1	1.20	1.23	1.24	25.1	26.9	28.0
Building and repairing of aircraft.....	5.7	-2.6	13.1	2.27	2.19	2.27	46.1	36.6	36.5
Other air transport supporting activities.....	28.0	-4.3	-6.3	1.78	1.74	1.65	58.8	61.8	62.5
Inside airports.....	10.6	7.6	5.8	1.13	1.26	1.25	29.4	37.7	39.7
<i>Air transport cluster.....</i>	<i>9.3</i>	<i>7.1</i>	<i>0.6</i>	<i>1.09</i>	<i>1.29</i>	<i>1.07</i>	<i>29.2</i>	<i>38.3</i>	<i>38.7</i>
Air transport.....	23.3	5.9	-1.1	1.11	1.54	1.23	18.5	47.5	43.9
Forwarding offices.....	19.5	16.2	-3.9	1.54	1.52	1.63	39.0	37.4	39.9
Airport operator.....	8.2	12.9	5.1	0.95	0.81	0.68	29.4	30.3	34.5
Airport handling.....	43.3	41.1	28.4	0.81	0.73	0.88	32.2	35.9	34.2
Building and repairing of aircraft.....	-3.3	-30.2	-46.9	1.24	1.09	1.05	31.0	27.3	29.0
Other air transport supporting activities.....	-3.1	-3.4	-2.2	1.25	1.47	0.71	50.3	45.7	43.4
<i>Other airport-related activities.</i>	<i>17.6</i>	<i>11.5</i>	<i>31.2</i>	<i>1.26</i>	<i>1.18</i>	<i>1.84</i>	<i>30.4</i>	<i>34.1</i>	<i>45.3</i>
Passenger land transport.....	18.4	20.0	11.2	1.99	2.03	2.42	62.0	63.7	68.3
Cargo handling and storage ...	16.7	13.9	5.6	0.86	0.93	0.81	19.4	18.7	23.3
Freight transport by road.....	57.8	36.5	21.4	1.32	1.78	2.03	34.2	48.8	53.6
Courier and post activities.....	22.2	17.6	43.6	1.18	1.10	2.18	25.0	32.8	49.2
Security and industrial cleaning	73.4	33.5	46.2	1.05	1.19	1.15	20.3	17.9	16.2
Trade.....	10.5	9.5	4.0	2.07	1.86	1.87	51.1	50.6	57.3
Hotels, restaurants and catering.....	5.8	-43.8	-48.4	0.80	0.59	0.59	42.5	31.1	24.8
Other services.....	5.1	-9.3	1.9	1.19	1.20	1.13	16.0	18.3	17.9
Other industries.....	-6.2	-14.9	-16.4	1.59	1.07	0.92	35.5	21.1	21.4
WEIGHTED AVERAGE.....	11.4	5.5	5.7	1.36	1.46	1.51	34.6	38.2	39.6
NON FINANCIAL CORPORATIONS.....	9.9	5.9	6.3	1.32	1.27	1.37	45.3	46.7	48.2

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

2 ECONOMIC IMPORTANCE OF AIRPORT ACTIVITIES IN BELGIUM

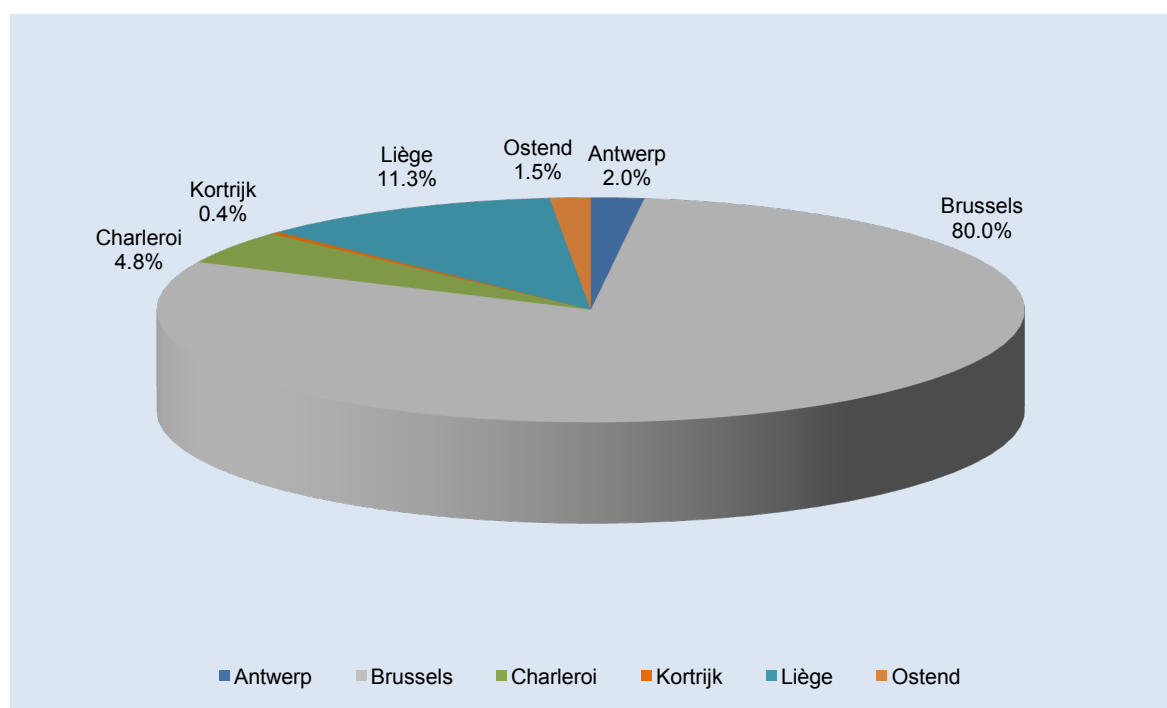
2.1 OVERVIEW

2.1.1 Value Added

In 2009, Brussels Airport generated on its site 80 % of the direct value added created in Belgian airports (Chart 7). This impressive percentage is slightly greater than the airport's market share in terms of passenger traffic (78 % in 2009). Liège Airport ranks second with 11 % of value added, well ahead of the other regional airports.

In total, the activities conducted on site at the six Belgian airports generated € 1.99 billion in direct value added in 2009, 5.7 % down against the previous year and declining by 1.3 % per annum since 2007 (Table 17). Besides Brussels Airport, Liège and Charleroi airports do well as the only two to record an increase in their value added over the period of the study. Charleroi and Liège saw the value added created on their sites increase by an annual average of 12 and 7 % respectively from 2007 to 2009 (Table 17). Since 2009, the air transport activities at Liège Airport generate more value added than the other airport activities. The main reason is the increase in value added created by TNT Airways in 2009 and the launch of X-Airservices in that same year (cf. above). In general, it appears that all the airports tend to be dependent on aviation activities for generating value added, since 63 % of the value added created on the airport sites comes from that type of activities. The percentage would probably be even higher if the value added generated by the Ryanair airline at Charleroi Airport were taken into account in the figures, which was not possible because the data were not available.

CHART 7 DIRECT VALUE ADDED IN AIRPORTS IN 2009: BREAKDOWN BY AIRPORT



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

Indirect value added generated by firms located on the sites of Belgian airports exceeded € 2 billion in 2009 (Table 18)⁴⁰. The corresponding multiplier is slightly greater than 2, which means that one euro of value added created directly by firms present on the airport sites ultimately generates 2 euros of total value added via the intersectoral links between these firms, their suppliers, the firms supplying the latter, etc. The multipliers vary for each airport according to the relative importance of the various sectors of activity represented there, as some sectors generate more indirect effects than others⁴¹.

TABLE 17 DIRECT VALUE ADDED BY AIRPORT FROM 2007 TO 2009
(in € million – current prices)

Airport and cluster	2007	2008	2009	Share of clusters in 2009 (in %)	Change from 2008 to 2009 (in %)	Annual average change from 2007 to 2009 (in %)
Antwerp	47.9	38.4	39.3	100.0	+2.2	-9.5
<i>Air transport cluster</i>	36.3	27.4	26.9	68.6	-1.8	-13.8
<i>Other airport-related activities</i>	11.6	11.0	12.3	31.4	+12.2	+3.0
Brussels	1,672.1	1,743.5	1,588.6	100.0	-8.9	-2.5
<i>Air transport cluster</i>	1,056.4	1,120.0	1,013.0	63.8	-9.6	-2.1
<i>Other airport-related activities</i>	615.7	623.6	575.6	36.2	-7.7	-3.3
Charleroi	76.0	86.2	96.1	100.0	+11.4	+12.4
<i>Air transport cluster</i>	47.2	52.5	60.8	63.3	+15.9	+13.5
<i>Other airport-related activities</i>	28.8	33.8	35.3	36.7	+4.4	+10.6
Kortrijk	9.4	7.9	7.0	100.0	-10.7	-13.4
<i>Air transport cluster</i>	7.7	6.1	5.4	77.4	-11.0	-16.2
<i>Other airport-related activities</i>	1.6	1.8	1.6	22.6	-9.4	-1.0
Liège	196.2	197.9	224.4	100.0	+13.4	+6.9
<i>Air transport cluster</i>	97.1	96.8	127.1	56.7	+31.3	+14.4
<i>Other airport-related activities</i>	99.1	101.1	97.2	43.3	-3.8	-0.9
Ostend	35.5	31.4	30.3	100.0	-3.3	-7.5
<i>Air transport cluster</i>	27.8	23.6	23.2	76.6	-1.5	-8.6
<i>Other airport-related activities</i>	7.7	7.8	7.1	23.4	-8.7	-3.9
TOTAL	2,037.0	2,105.3	1,985.7		-5.7	-1.3

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

In total, the direct and indirect value added created in 2009 by firms located in the Belgian airports came to around € 4 billion, or 1.2 % of Belgium's GDP⁴². At regional level, the indirect value added generated in 2009 by the four Flemish airports (including Brussels Airport which is located in Flemish Brabant) came to € 1.77 billion. Firms located in the two Walloon airports generated indirect value added totalling € 337 million in that same year. Total value added (direct and indirect) amounted to € 3.4 billions for the Flemish airports and € 657 million for the Walloon airports in 2009. These amounts respectively represent 1.8 % of Flemish GDP and 0.8 % of Walloon GDP, or 2.0 and 0.9 % of the gross value added of those Regions in 2009⁴³. It should be noted that the

⁴⁰ Remember that the indirect effects generated by the activities of all the airports together are less than the sum of the indirect effects calculated individually for each airport (see methodological section). In addition, as already mentioned, the indirect effects are an estimate which must be interpreted with caution.

⁴¹ See Kupfer and Lagneaux (2009).

⁴² Source: Belgostat.

⁴³ Source: Belgostat.

proportion of value added generated by airport activities in the total value added of the respective Regions declined slightly in Flanders (it was 2.2 % in 2007) and increased slightly in Wallonia (0.8 % in 2007).

TABLE 18 **INDIRECT VALUE ADDED BY AIRPORT FROM 2007 TO 2009**
(in € million – current prices)

Airport	2007	2008	2009	Multiplier in 2009	Change from 2008 to 2009 (in %)	Annual average change from 2007 to 2009 (in %)
Antwerp	72.6	50.2	47.7	2.21	-4.9	-18.9
Brussels	1,978.0	1,804.1	1,703.7	2.07	-5.6	-7.2
Charleroi.....	84.0	85.4	101.7	2.06	+19.1	+10.1
Kortrijk.....	11.4	7.9	6.7	1.96	-14.4	-23.3
Liège	222.8	193.7	236.5	2.05	+22.1	+3.0
Ostend	33.5	19.7	20.5	1.68	+4.1	-21.8
All six airports*	2,308.0	2,087.3	2,035.4	2.03	-2.5	-6.1

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

* The indirect effects calculated at an aggregate level are less than the sum of the indirect effects calculated separately owing to the economic links between the aggregated elements already counted in the direct effects and therefore excluded from the indirect effects. In other words, the addition of the indirect effects calculated individually for each element contains double counting which is corrected when the indirect effects are calculated directly at aggregate level.

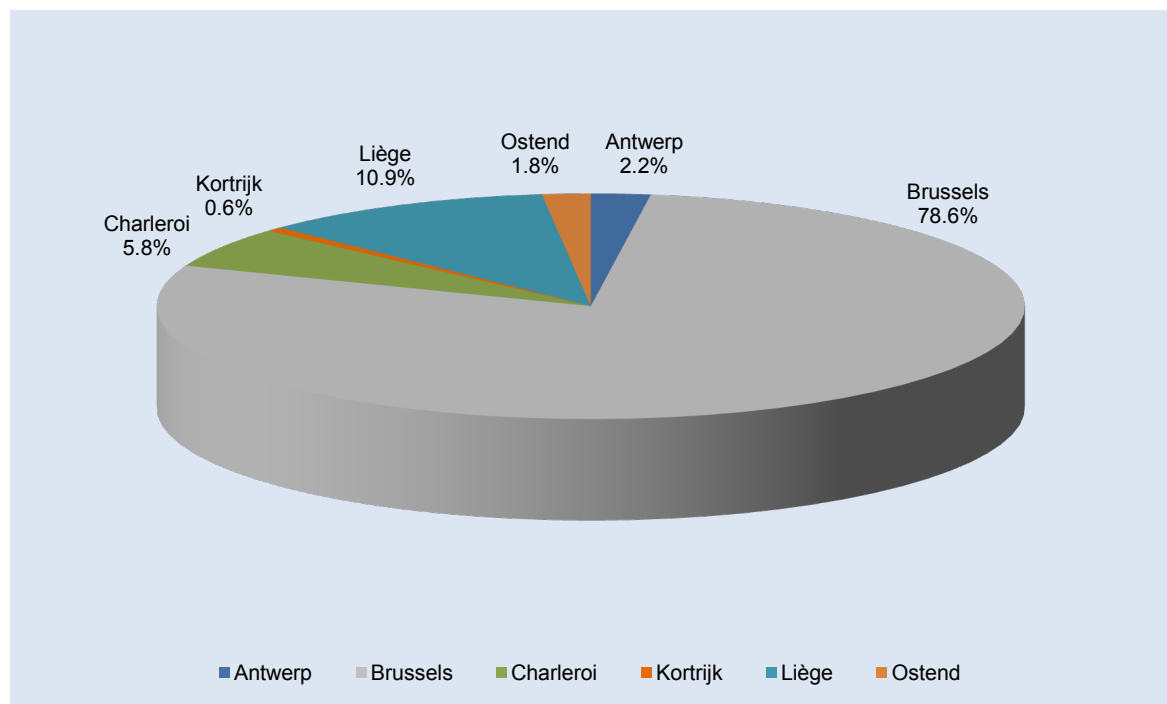
2.1.2 Employment

The breakdown of direct employment per airport (Chart 8) is fairly similar to the breakdown of value added. Brussels is far in the lead, with 78 % of employment recorded on Belgian airport sites in 2009, followed by Liège with 11 % and then the other regional airports in the same order as for value added.

Direct employment on the Belgian airport sites came to nearly 22,800 full-time equivalents in 2009, 2.5 % down against 2008 but increasing by an average of 0.4 % per annum since 2007 (Table 19). Between 2007 and 2009, employment increased in all the airports except Brussels and Ostend. Brussels Airport on its own represented almost 18,000 FTE in 2009, of which 59 % was in the air transport cluster. Charleroi and Liège are the other two airports with over 1,000 staff employed on the site. Liège Airport is an exception, being the only airport with more jobs in airport activities than in the air transport cluster. This unique position owes much to the presence on the site of TNT Express Worldwide, classified in the courier and post activities sector.

Indirect employment, i.e. workers employed by suppliers of firms located on the airport sites and by firms supplying those suppliers and so on totalled almost 25,500 FTE in 2009 (Table 20)⁴⁴. The average multiplier effect for all the airports is 2.12, which means that one job created directly in a firm based on an airport site ultimately generates 2.12 jobs.

⁴⁴ As mentioned in the methodological section, the indirect effects are an estimate which must be interpreted with caution.

CHART 8 DIRECT EMPLOYMENT IN AIRPORTS IN 2009: BREAKDOWN BY AIRPORT

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

TABLE 19 DIRECT EMPLOYMENT BY AIRPORT FROM 2007 TO 2009
(in FTE)

Airport and cluster	2007	2008	2009	Share of clusters in 2009 (in %)	Change from 2008 to 2009 (in %)	Annual average change from 2007 to 2009 (in %)
Antwerp	478	499	504	100.0	+1.0	+2.7
<i>Air transport cluster</i>	356	379	377	74.8	-0.5	+2.9
<i>Other airport-related activities</i>	122	120	127	25.2	+5.8	+1.9
Brussels	18,291	18,621	17,903	100.0	-3.9	-1.1
<i>Air transport cluster</i>	10,139	10,857	10,522	58.8	-3.1	+1.9
<i>Other airport-related activities</i>	8,152	7,765	7,381	41.2	-4.9	-4.8
Charleroi	1,008	1,230	1,323	100.0	+7.6	+14.6
<i>Air transport cluster</i>	591	680	732	55.3	+7.7	+11.3
<i>Other airport-related activities</i>	416	550	591	44.7	+7.5	+19.2
Kortrijk	124	139	144	100.0	+3.2	+7.8
<i>Air transport cluster</i>	101	114	117	81.3	+2.5	+7.6
<i>Other airport-related activities</i>	23	25	27	18.7	+6.7	+8.9
Liège	2,232	2,434	2,483	100.0	+2.0	+5.5
<i>Air transport cluster</i>	791	955	987	39.8	+3.4	+11.8
<i>Other airport-related activities</i>	1,442	1,479	1,495	60.2	+1.1	+1.8
Ostend	476	433	412	100.0	-5.0	-7.0
<i>Air transport cluster</i>	374	338	323	78.3	-4.5	-7.2
<i>Other airport-related activities</i>	101	95	89	21.7	-6.5	-6.2
TOTAL	22,608	23,356	22,768		-2.5	+0.4

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

In total, the activities conducted in the airports in 2009 provided direct and indirect employment for over 48,000 FTE, corresponding to 1.2 % of Belgian domestic employment (in FTE)⁴⁵. In 2009 the four Flemish airports accounted for almost 41,200 direct and indirect jobs (in FTE), or 1.8 % of total employment in Flanders (in FTE). In Wallonia, direct and indirect employment generated by activities on the sites of the two regional airports totalled almost 7,900 FTE in 2009, representing 0.7 % of total employment in the Walloon Region (in FTE)⁴⁶. In both Flanders and Wallonia, the proportion of direct and indirect employment generated by airport activities in total employment of the respective Regions remained stable between 2007 and 2009.

TABLE 20 **INDIRECT EMPLOYMENT BY AIRPORT FROM 2007 TO 2009**
(in FTE)

Airport	2007	2008	2009	Multiplier in 2009	Change from 2008 to 2009 (in %)	Annual average change from 2007 to 2009 (in %)
Antwerp	774	891	853	2.69	-4.2	+5.0
Brussels	21,826	23,046	21,157	2.18	-8.2	-1.5
Charleroi.....	1,251	1,530	1,525	2.15	-0.3	+10.4
Kortrijk.....	163	186	184	2.28	-0.9	+6.4
Liège	2,279	2,685	2,565	2.03	-4.5	+6.1
Ostend	443	353	311	1.76	-11.7	-16.2
All six airports*	25,783	27,482	25,459	2.12	-7.4	-0.6

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

* The indirect effects calculated at an aggregate level are less than the sum of the indirect effects calculated separately owing to the economic links between the aggregated elements already counted in the direct effects and therefore excluded from the indirect effects. In other words, the addition of the indirect effects calculated individually for each element contains double counting which is corrected when the indirect effects are calculated directly at aggregate level.

In order to place these employment figures in perspective, it is useful to link them to the number of aircraft movements (landings and take-offs) recorded at the airports. This ratio between the number of direct jobs and the number of movements (in thousands), which we shall call direct labour intensity, is presented in Table 21. Brussels Airport heads this ranking with 77 jobs per 1,000 movements in 2009 or 45 per 1,000 if jobs relating to the air transport cluster alone are considered. Liège is in 2nd place with 53 jobs per 1,000 movements. Liège Airport actually ranks first if the ratio is confined to jobs in the other airport-related activities cluster, with 32 jobs per 1,000 movements, just ahead of Brussels Airport. Also, the difference between these two airports is smaller in terms of labour intensity than in the number of jobs. Thus, while Brussels Airport had 7 times as many jobs on the site as Liège Airport in 2009, its labour intensity was only 1.4 times greater. This indicates that Liège Airport, heavily concentrated on cargo, has a fairly high labour intensity, exceeding in particular the labour intensity of an airport focusing 100 % on passengers, such as Charleroi. The rest of the ranking is the same as that according to the number of jobs, except for the reversal of the positions of Ostend and Antwerp airports, the former being more labour-intensive than the latter, although the latter has more jobs on its site.

⁴⁵ Sources: Belgostat and own calculations.

⁴⁶ Sources: Belgostat and own calculations.

TABLE 21 DIRECT LABOUR INTENSITY BY AIRPORT FROM 2007 TO 2009
(Direct employment / 1000 movements)

Airport and cluster	2007	2008	2009	Change from 2008 to 2009 (in %)	Annual average change from 2007 to 2009 (in %)
Antwerp	9.3	8.9	8.4	-6.0	-5.0
<i>Air transport cluster</i>	6.9	6.8	6.3	-7.4	-4.8
<i>Other airport-related activities</i>	2.4	2.1	2.1	-1.6	-5.7
Brussels	69.2	72.0	77.3	+7.4	+5.7
<i>Air transport cluster</i>	38.4	42.0	45.4	+8.3	+8.8
<i>Other airport-related activities</i>	30.8	30.0	31.9	+6.2	+1.7
Charleroi	14.2	15.6	16.2	+3.9	+6.6
<i>Air transport cluster</i>	8.4	8.6	9.0	+4.0	+3.5
<i>Other airport-related activities</i>	5.9	7.0	7.2	+3.8	+10.9
Kortrijk	4.0	4.3	5.1	+17.4	+13.0
<i>Air transport cluster</i>	3.3	3.6	4.1	+16.5	+12.7
<i>Other airport-related activities</i>	0.7	0.8	1.0	+21.4	+14.1
Liège	48.3	52.7	53.4	+1.3	+5.1
<i>Air transport cluster</i>	17.1	20.7	21.2	+2.7	+11.4
<i>Other airport-related activities</i>	31.2	32.0	32.1	+0.4	+1.5
Ostend	17.2	13.0	11.0	-15.3	-20.0
<i>Air transport cluster</i>	13.5	10.1	8.6	-14.9	-20.2
<i>Other airport-related activities</i>	3.7	2.9	2.4	-16.6	-19.3
WEIGHTED AVERAGE	46.0	46.2	46.9	+1.4	+1.0

Source: NBB (Central Balance Sheet Office, own calculations), Vlaamse luchthavencommissie, Airport operators.

2.2 DETAIL BY AIRPORT

2.2.1 Antwerp Airport

2.2.1.1 Recent Developments⁴⁷

In 2010 the number of passengers using Antwerp Airport decreased by 3.9 %. This decline is attributable mainly to local flights and training flights. Under the airport's environmental permit, training flights have to be limited to 12,000 from 2014, and cut to 8,000 from 2023. By 2014 it will therefore be necessary to find an alternative method of providing basic training for pilots. Conversely, the number of scheduled and charter flights increased, and the seat occupancy on those flights was better on average. In May 2009, CityJet launched a new service between Antwerp and Frankfurt. However, it was terminated after just three months because it was not profitable. This was partly because insufficient effort was devoted to publicising the new service. Nevertheless, the airport itself is doing all it can to extend its small range of services.

The international aviation organisation ICAO is requiring Antwerp Airport to construct a safety area between the Krijgsbaan and the start of the runway. For the time being, it is not possible to make full use of the runway because it is too close to the Krijgsbaan. Plans were therefore devised to divert the Krijgsbaan and to excavate a cutting, but in the end it was decided to construct a tunnel, because the environmental impact report showed this to be the best option. The airport has until February 2013 to complete the safety area. The Flemish government's Roads and Transport Agency is responsible for executing the project, scheduled to start at the beginning of 2012. While work is in progress, the Krijgsbaan will be temporarily diverted. Once the work is completed, the traffic lights adjacent to the runway will be removed, improving the traffic flow.

In the future, there are also plans to build a new Business Aviation Terminal. This terminal will operate as a waiting and transit area between the land side and the air side for business and private flights. In addition, this new building will provide temporary accommodation for foreign nationals refused entry, and classrooms will be installed for the Lyceum.

As in the case of Kortrijk and Ostend airports, a new management system was also designed for Antwerp. The procedures for selecting a suitable private investor for the Airport Operating Company (LEM) are now well under way. The French firm, Egis, is the only candidate to come forward for Antwerp Airport so far. This private investor may also submit proposals for the development of a new business park. However, before work can start on that project, it is necessary to provide a solution for the associated traffic problems.

2.2.1.2 Value Added

In 2009, total value added fell by 1.8 % (Table 22). Direct value added increased by 2.2 %, while indirect value added declined by almost 5 %. Total value added came to € 87 million and represented 0.04 % of Flemish GDP.

Direct value added at Antwerp Airport is heavily influenced by the air transport cluster, more particularly the air transport sector. In 2009 that sector's share was 44.4 %. Two years earlier the figure was still as high as 57 %. VLM Airlines focuses mainly on the financial market segment, which was precisely the one to suffer most from the economic and financial crisis in 2008 and 2009. Consequently, passenger numbers fell sharply. The new route between Antwerp and Frankfurt was unsuccessful and was scrapped after just three months. However, the loss incurred was not due solely to a significant drop in sales but also to a rise in fuel costs. In mid-2008 the price of kerosene reached a record level. In response to the losses, a number of routes were taken

⁴⁷ Sources include: Annual Report 2009, Annual Report 2010, Statistical Yearbook 2010, interview with W. Verbist and K. Pitteviels, and miscellaneous press articles.

over by CityJet in the second half of 2009. VLM Airlines is still operating the flights, but on behalf of CityJet. As a result, it is CityJet, and no longer VLM Airlines, that bears the economic and financial consequences of these routes.

TABLE 22 ANTWERP AIRPORT: VALUE ADDED FROM 2007 TO 2009
(in € million – current prices)

Cluster and sector	2007	2008	2009	Share in 2009 (in %)	Change from 2008 to 2009 (in %)	Annual average change from 2007 to 2009 (in %)
1. DIRECT EFFECTS.....	47.9	38.4	39.3	100.0	+2.2	-9.5
Air transport cluster.....	36.3	27.4	26.9	68.6	-1.8	-13.8
Air transport.....	27.3	18.5	17.4	44.4	-5.6	-20.1
Travel agencies and tour operators	0.3	0.4	0.2	0.5	-58.7	-23.7
Forwarding offices	0.5	0.7	0.6	1.5	-13.3	+7.5
Airport operator*	3.3	3.3	3.3	8.4	-0.6	+0.2
Airport handling	0.4	0.0	0.0	0.0	n.	-100.0
Other air transport supporting activities...	4.0	4.0	5.0	12.7	+24.7	+12.0
Building and repairing of aircraft	0.5	0.5	0.4	1.1	-14.9	-2.7
Other airport-related activities.....	11.6	11.0	12.3	31.4	+12.2	+3.0
Passenger land transport.....	0.1	0.1	0.1	0.2	-41.2	-15.9
Cargo handling and storage	0.0	0.0	0.0	0.0	n.	n.
Freight transport by road	0.2	0.2	0.2	0.5	-8.8	-7.1
Courier and post activities	0.9	1.0	1.2	3.1	+22.0	+13.6
Public services	2.6	2.7	2.2	5.7	-18.2	-7.0
Security and industrial cleaning	0.4	0.6	0.5	1.2	-16.2	+6.2
Trade.....	1.0	1.2	0.9	2.3	-23.6	-2.7
Hotels, restaurants and catering	0.4	0.3	0.3	0.7	-17.0	-14.4
Other services	6.0	4.8	7.0	17.7	+43.6	+7.5
Other industries	0.0	0.0	0.0	0.0	n.	n.
2. INDIRECT EFFECTS	72.6	50.2	47.7	-	-4.9	-18.9
TOTAL	120.5	88.6	87.0	-	-1.8	-15.0

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 compensatory amounts paid by public authorities, totalling around € 1.9 million in 2007 and € 2.3 million per year in 2008 and 2009.

In 2008 the lower value added of VLM Airlines was offset to a small degree by Flying Service. Flying Service, active in the business aviation segment, recorded significantly higher staff expenses in that year, as this firm invested heavily in staff to gain recognition as a Cessna Citation Service Centre. It now has the necessary trained staff to carry out both routine maintenance⁴⁸ and major maintenance for various types of Citation aircraft. In addition, despite the crisis, Flying Service made a good operating profit. Conversely, however, in 2009 turnover was depressed, and - partly as a result of the fixed overheads – this led to an operating loss and hence lower value added.

⁴⁸ Routine maintenance is generally minor maintenance carried out at the gate, between two flights. Conversely, major maintenance entails taking the aircraft temporarily out of service and removing it to a workshop designed for the purpose.

The only aviation sector to record an increase in value added in 2009 was the other air transport supporting activities sector. The flying school, Ben - Air Flight Academy (BAFA), invested in building additional classrooms in 2008. That investment bore fruit, since the operating loss was converted to a profit. Winters Aviation achieved an increased operating profit, and recorded higher staff expenses and amounts written off stocks and/or trade debtors. Flying Partners also made a positive contribution. This company acts as the operating entity for the joint owners of the aircraft that it manages and operates. Payment for these services is passed on in full to other firms in the Flying group, so that Flying Partners generates little if any profit or loss. In 2009 the company nevertheless recorded a small operating profit which was needed to cover the costs of its debts.

In 2008, AviaPartner Belgium subcontracted its handling activities at Antwerp Airport to Flying Service and Swissport Cargo Services Belgium. However, the processing of passengers or goods is not the main activity for either of these firms. The value added⁴⁹ in question is therefore recorded in the air transport sector (Flying Service) and in forwarding offices (Swissport Cargo Services Belgium).

Despite the importance of the air transport cluster, the increase in direct value added at Antwerp Airport is attributable to the other airport-related activities, more particularly other services. The value added of Aerodata International Surveys, specialising in spatial data on the earth's surface and processing of the data into geographical information products, was up by € 1.1 million. That increase is due to additional recruitment and new investments, bringing higher staff expenses and higher depreciation respectively. Flying Holding and Flying Group made an operating profit instead of a loss. Flying Holding also recorded higher staff expenses.

TABLE 23 ANTWERP AIRPORT: DIRECT VALUE ADDED TOP 10 IN 2009

	Name of company or organisation	Sector
1	VLM Airlines	Air transport
2	Flying Service	Air transport
3	Aerodata International Surveys	Other services
4	Flemish Government	Airport operator
5	Belgocontrol	Other air transport supporting activities
6	Flying Group	Other services
7	Bpost	Courier and post activities
8	Federal Police	Public services
9	Customs	Public services
10	Air Service Liege	Air transport
TOTAL		32.13 million euro
Share in total Antwerp Airport		81.8 %

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

The value added top ten accounted for almost 82 % of direct value added at Antwerp Airport in 2009 (Table 23). VLM Airlines made the biggest contribution. Flying Service and Aerodata International Surveys were in 2nd and 3rd place respectively as a result of the developments mentioned above.

⁴⁹ This also applies to the number of full-time equivalents involved (Table 24).

2.2.1.3 Employment

Like direct value added, direct employment also increased at Antwerp Airport, albeit to a lesser extent (Table 24). Conversely, the decline in indirect employment reached 4.2 %. Total employment came to 1,357 full-time equivalents, thus accounting for 0.06 % of employment in the Flemish Region.

TABLE 24 ANTWERP AIRPORT: EMPLOYMENT FROM 2007 TO 2009
(FTE)

Cluster and sector	2007	2008	2009	Share in 2009 (in %)	Change from 2008 to 2009 (in %)	Annual average change from 2007 to 2009 (in %)
1. DIRECT EFFECTS	478	499	504	100.0	+1.0	+2.7
Air transport cluster	356	379	377	74.8	-0.5	+2.9
Air transport.....	227	253	253	50.3	+0.2	+5.6
Travel agencies and tour operators	3	4	3	0.6	-26.4	-2.0
Forwarding offices	8	11	10	1.9	-10.4	+7.5
Airport operator	69	70	69	13.8	-0.3	+0.2
Airport handling	8	0	0	0.0	n.	-100.0
Other air transport supporting activities...	34	36	36	7.2	+0.5	+3.6
Building and repairing of aircraft	6	5	5	1.0	-4.7	-11.0
Other airport-related activities.....	122	120	127	25.2	+5.8	+1.9
Passenger land transport.....	5	4	4	0.7	-18.2	-12.5
Cargo handling and storage	0	0	0	0.0	n.	n.
Freight transport by road	4	4	4	0.7	-0.9	-0.6
Courier and post activities	19	19	22	4.3	+13.5	+5.8
Public services	24	24	24	4.7	-0.5	-0.1
Security and industrial cleaning	8	7	7	1.4	-0.1	-5.9
Trade.....	8	9	7	1.5	-15.9	-5.4
Hotels, restaurants and catering	12	9	8	1.5	-15.8	-18.8
Other services	43	44	52	10.4	+18.6	+10.5
Other industries	0	0	0	0.0	n.	n.
2. INDIRECT EFFECTS	774	891	853	-	-4.2	+5.0
TOTAL	1,252	1,389	1,357	-	-2.4	+4.1

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

The air transport cluster made no contribution at all to the expansion of direct employment in 2009, as this sector recorded two fewer full-time equivalents. Thus, Airpartners (forwarding offices) applied for bankruptcy in 2009. In the other air transport supporting activities, the increase at Winters Aviation was negated by the decline at Belgocontrol.

The section on value added has already mentioned that Flying Service invested heavily in skilled staff in 2008, to attain recognition as a Cessna Citation Service Centre. It recruited no fewer than

45 employees, while only some left the company. This accounts for the significant rise in employment in the air transport sector in 2008.

The smaller airport-related activities cluster gained importance in 2009 thanks to a 5.8 % increase in employment. This is largely due to other services. Aerodata International Surveys expanded its workforce by adding five new employees. Flying Holding took on two new employees.

The biggest employer at Antwerp Airport is still VLM Airlines (Table 25). Thanks to the efforts made to gain recognition as a Cessna Citation Service Centre, Flying Service has held second place since 2008. In 2009 the Flemish government – which operates Antwerp Airport – employed 69 full-time equivalents. These staff deal with the airport's infrastructure, security and promotion.

TABLE 25 ANTWERP AIRPORT: DIRECT EMPLOYMENT TOP 10 IN 2009

	Name of company or organisation	Sector
1	VLM Airlines	Air transport
2	Flying Service	Air transport
3	Flemish Government	Airport operator
4	Aerodata International Surveys	Other services
5	Bpost	Courier and post activities
6	Belgocontrol	Other air transport supporting activities
7	Federal Police	Public services
8	Customs	Public services
9	Flying Holding	Other services
10	Winters Aviation	Other air transport supporting activities
TOTAL		424 FTE
Share in total Antwerp Airport		84.1 %

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

2.2.2 Brussels Airport

2.2.2.1 Recent Developments⁵⁰

After a difficult year, Brussels Airport gained some respite in 2010, achieving growth in both passenger and freight traffic. Long-haul flights did particularly well thanks to good seat occupancy and expansion of the range of services. The accession of Brussels Airlines – one of Brussels Airport's biggest customers – to the Star Alliance network at the end of 2009 certainly did the airport no harm. Moreover, Brussels Airlines is concentrating on Africa, launching four new African destinations during 2010. Other additions to the range available included Montréal (Air Canada), Chicago (United Airlines) and Shanghai (Hainan Airlines), while AeroLogic inaugurated a freight service from Leipzig to Bahrain, via Brussels. New future destinations are also already being announced. They are more than welcome, since Jetairways – another leading customer – may be forced to leave Brussels if it joins one of the three big aviation alliances⁵¹.

The market in ground handling services at Brussels Airport was liberalised, in principle, by the publication of the Royal Decree of 6 November 2010⁵². In principle, because the decree lays down conditions for both passengers and freight which must be met before a third party can be licensed to provide handling services. Those conditions consist of thresholds which must be achieved or exceeded in two successive years. Thus, the passenger threshold is set at 24 million and the cargo threshold is 650,000 tonnes. It will therefore take quite a while before there is more competition between handling firms.

With a view to the future, various projects were launched to ensure that the airport can strengthen its economic attractiveness. However, Brussels is not only focusing on passenger traffic. The freight strategy has also been assigned its own position within the organisation with the aim of putting the airport on the map as a freight hub. Thus, a new business entity was set up to support the development of Brucargo and thus boost freight traffic. The infrastructure of Brucargo West was expanded by a built area of 120 hectares. That should give the airport the chance to increase the number of hangars and warehouses available so that new freight markets can be tapped. The first 30 hectare building is already in full use. The airport is planning to build two new large distribution centres as well, and it is also working on a direct link between Brucargo and the exit from the E19 motorway, namely the "fly-over". This is expected to be ready for use at the end of 2011.

In February 2011 the Flemish Institute of Logistics (VIL) presented a report containing recommendations on expanding Brucargo and positioning it as a "Secured Gateway", set to become the most efficient cargo zone in Europe, partly as a result of phased securing of the air freight zone, improvements to the air freight delivery process, simplified customs procedures, etc. All parties involved must now join forces to implement these recommendations with maximum speed and efficiency; that should not only lead to higher employment and value added, but should also produce significant cost savings for the whole Brucargo community.

Another prestige venture is the Diabolo project. This is to provide a direct link between the airport's underground train station and the Mechelen-Antwerp axis from 2012. This entails major infrastructure work, such as the boring of two tunnels under the runway.

Conversely, plans for construction of a new low-cost terminal were dropped. The traditional airlines were against the project since they themselves would have been unable to use the cheaper terminal, as it was to be reserved for the low-cost airlines. The latter are not a priority for Brussels Airport at present. However, Brussels Airport does see some opportunities in destinations in which

⁵⁰ Sources include: www.brusselsairport.be, interview with E. Van de Steen (The Brussels Airport Company) and miscellaneous press articles.

⁵¹ i.e. Star Alliance, Oneworld and Skyteam.

⁵² Royal Decree of 6 November 2010 (MB 17/11/2010) on access to the ground handling market at Brussels National Airport.

it is currently still under-represented, particularly Latin America and Asia. The Brussels Airport Company therefore aims to continue expanding the long-haul flight segment, both hub activities and flights with Brussels as the final destination. For that reason there are plans to extend pier A in a westerly direction by 2015. That will create extra gates. In addition, there is to be a "connector" between pier A and pier B – in the form of an airy link building – to reduce walking distances. Work on this project is to start within two years, because the number of passengers is expected to increase, primarily as a result of the hub activities. The challenge is to have sufficient infrastructure to cater for peak periods.

2.2.2.2 Value Added

TABLE 26 BRUSSELS AIRPORT: VALUE ADDED FROM 2007 TO 2009
(in € million – current prices)

Cluster and sector	2007	2008	2009	Share in 2009 (in %)	Change from 2008 to 2009 (in %)	Annual average change from 2007 to 2009 (in %)
1. DIRECT EFFECTS.....	1,672.1	1,743.5	1,588.6	100.0	-8.9	-2.5
Air transport cluster.....	1,056.4	1,120.0	1,013.0	63.8	-9.6	-2.1
Air transport.....	352.5	413.3	333.6	21.0	-19.3	-2.7
Travel agencies and tour operators	2.9	3.3	1.9	0.1	-42.1	-19.7
Forwarding offices	95.6	103.4	88.8	5.6	-14.1	-3.6
Airport operator*.....	262.6	250.6	256.8	16.2	+2.5	-1.1
Airport handling	135.5	144.1	131.6	8.3	-8.7	-1.5
Other air transport supporting activities...	135.5	137.0	136.6	8.6	-0.3	+0.4
Building and repairing of aircraft	71.7	68.3	63.6	4.0	-6.9	-5.8
Other airport-related activities.....	615.7	623.6	575.6	36.2	-7.7	-3.3
Passenger land transport.....	23.7	24.8	21.7	1.4	-12.5	-4.3
Cargo handling and storage	28.5	29.6	26.1	1.6	-11.7	-4.3
Freight transport by road	20.2	18.9	15.5	1.0	-17.8	-12.4
Courier and post activities	202.8	196.4	208.8	13.1	+6.3	+1.5
Public services	175.5	183.1	143.1	9.0	-21.8	-9.7
Security and industrial cleaning	34.2	39.1	41.4	2.6	+5.9	+10.0
Trade.....	41.5	38.8	36.5	2.3	-6.0	-6.3
Hotels, restaurants and catering	54.6	59.0	58.0	3.7	-1.7	+3.1
Other services	22.0	21.4	11.9	0.8	-44.1	-26.3
Other industries	12.6	12.6	12.7	0.8	+0.4	+0.2
2. INDIRECT EFFECTS	1,978.0	1,804.1	1,703.7	-	-5.6	-7.2
TOTAL	3,650.0	3,547.6	3,292.3	-	-7.2	-5.0

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 compensatory amounts paid by public authorities, totalling around € 0.8 million in 2007, € 1.2 million in 2008 and € 0.2 million in 2009.

As could already be deduced from the traffic figures, 2009 was a low point for Brussels Airport. Direct and indirect value added declined respectively by as much as 8.9 and 5.6 % (Table 26). This

caused total value added to fall to € 3,292 million, putting the share of Flemish GDP at 1.7 %. The air transport cluster was particularly hard hit. The air transport sector – at 21 % the most important sector in Brussels – suffered the most, with a decline of 19.3 %. The biggest culprit was Brussels Airlines. Value added slumped from € 171 to 99 million. In 2009 Brussels Airlines made an operating loss of € 73 million as a result of the decline in passenger traffic and a lower average ticket price, combined with the loss of the proceeds from the ACMI⁵³ wet lease⁵⁴ with Brussels Airlines Fly. Before the absorption of Brussels Airlines Fly by Delta Air Transport in June 2008 – after which the name of the merged company was changed to Brussels Airlines – the two parties concluded a wet lease so that Brussels Airlines Fly, under the joint name of "Brussels Airlines", could operate flights as a subcontractor for Delta Air Transport.

The decline in tourist traffic also caused problems for Thomas Cook Airlines Belgium, so that the operating profit contracted by two-thirds.

One of the few "positive" notes in the air transport sector was Cargo B Airlines, though it had little impact on the total. On 6 July 2009 Cargo B Airlines went into liquidation at the request of the shareholders. The leasing contracts were then terminated so that the company could no longer continue its commercial activities. In 2008 those activities had generated an operating loss of € 29 million. In 2009 that loss was limited to € 10 million, which had a positive effect on value added.

The forwarding offices suffered in 2009 as a result of a massive 14.1 % decline. Thus, DHL Global Forwarding felt the impact of the financial and economic crisis. Owing to the dependence on a few multinationals, the drop in turnover came to 40 %, adversely affecting the operating profit and hence value added. Nippon Express Belgium did not escape the crisis either: turnover dropped by half. As a result, the workforce was slimmed down, partly by not renewing temporary contracts, and partly by making some people redundant. This reduced the staff expenses and thus also value added.

The airport handlers Flightcare Belgium and AviaPartner Belgium also generated significantly less value added than in 2008. At Flightcare Belgium the operating profit was depressed by a reduction in activities and the negotiation of contracts with members of Star Alliance. In addition, the number of employees declined, thus also reducing the staff expenses. At AviaPartner Belgium the average workforce contracted so that staff expenses were considerably lower.

In 2009, other airport-related activities represented over 36 % of the direct value added of Brussels Airport, but in this cluster, too, that variable was down by 7.7 %. This is attributable largely to the public services. At 15° Wing Air Transport, part of the Belgian Air Force, the number of staff fell by 66 full-time equivalents, depressing value added. The value added of the federal police and customs also declined.

In other services, the fall in value added came to 44.1 %, mainly owing to the closure of the National Car Rental branch. Vanguard Car Rental EMEA – the holding company operating the National Car Rental brand in Europe, the Middle East and Africa – was taken over by Europcar in 2007. The Europcar office at the airport now also serves National Car customers. At Hertz Belgium, there was a decline in both the number of vehicles hired and the number of days invoiced, so that turnover was down. As a result, both the operating profit and the value added were lower than in 2008.

Finally, courier and post is one of the few sectors to record an increase in value added. At DHL Aviation, value added in 2009 was up by € 21 million against the previous year thanks to a dramatic increase in the operating profit. However, the effect was weakened by the reduction in staff expenses, depreciation and value adjustments.

⁵³ Aircraft, complete Crew, Maintenance, and Insurance.

⁵⁴ A wet lease is a leasing agreement between two airlines whereby one airline makes available an aircraft, crew, maintenance and insurance to the other, which pays by the hour.

TABLE 27 BRUSSELS AIRPORT: DIRECT VALUE ADDED TOP 10 IN 2009

	Name of company or organisation	Sector
1	The Brussels Airport Company	Airport operator
2	DHL Aviation	Courier and post activities
3	European Air Transport	Air transport
4	Belgocontrol	Other air transport supporting activities
5	Brussels Airlines	Air transport
6	Belgian Air Force 15° Wing Air Transport	Public services
7	Flightcare Belgium	Airport handling
8	AviaPartner Belgium	Airport handling
9	TUI Airlines Belgium	Air transport
10	Sabena Technics BRU	Building and repairing of aircrafts
TOTAL		1,025.0 million euro
Share in total Brussels Airport		64.5 %

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

Federal Express Europe and TNT Express Belgium significantly curbed the upward trend. Federal Express Europe recorded an operating loss in 2009 instead of a profit. The activities contracted slightly as a result of the economic crisis. Though measures were taken to cut costs, their impact will not be felt until the longer term. The results of TNT Express Belgium were also hit by the crisis. Nevertheless, the company still managed to make a profit, thanks to strict cost control.

Table 27 shows the ten firms with the highest value added at Brussels Airport during 2009. Compared to the situation in 2006⁵⁵, Brussels Airlines dropped from 2nd to 5th place as a result of the dramatic decline in value added already explained above. In contrast, European Air Transport and Belgian Air Force 15° Wing Air Transport moved up two places. TUI Airlines Belgium appears for the first time in 9th place. This airline was assigned to the airport(s) instead of being included outside airports.

2.2.2.3 Employment

The figures for employment at Brussels Airport are also down, albeit to a lesser extent than value added: total job losses came to 6.3 % (Table 28). Total employment amounted to 39,060 full-time equivalents, or 1.7 % of employment in the Flemish Region.

In the air transport cluster, 335 full-time equivalents were cut, most of them in the airport handling sector. At both Flightcare Belgium and AviaPartner Belgium the changes in the workforce mirror the trend in passenger traffic at Brussels Airport: an increase in 2008 was followed by a sharp fall in 2009. At Flightcare Belgium non-renewal of temporary contracts was the main way of reducing the number of employees.

In the forwarding offices, employment dropped to the 2007 level. The reduced economic activity led to staff cuts in a number of firms. For instance, at the end of 2008 Schenker carried out a restructuring plan which cost a number of employees their jobs. DHL Global Forwarding and Swissport Cargo Services Belgium also had to dismiss staff as a result of the crisis. At Nippon Express Belgium the number of redundancies was limited by non-renewal of some temporary contracts.

⁵⁵ See Kupfer and Lagneaux (2009).

In view of the decline in activity, Sabena Technics BRU (building and repairing of aircraft) implemented a recovery plan during 2009 which included a gradual reduction in the number of staff. A significant number of redundancies were phased over 2009 and 2010. This was offset to a small degree by the development of the activities of Tec4Jets in Zaventem. This firm is in charge of maintaining the Boeing fleet owned by TUI Airlines Belgium⁵⁶.

TABLE 28 BRUSSELS AIRPORT: EMPLOYMENT FROM 2007 TO 2009
(FTE)

Cluster and sector	2007	2008	2009	Share in 2009 (in %)	Change from 2008 to 2009 (in %)	Annual average change from 2007 to 2009 (in %)
1. DIRECT EFFECTS.....	18,291	18,621	17,903	100.0	-3.9	-1.1
Air transport cluster.....	10,139	10,857	10,522	58.8	-3.1	+1.9
Air transport.....	3,311	3,701	3,848	21.5	+4.0	+7.8
Travel agencies and tour operators	37	39	26	0.1	-33.3	-15.7
Forwarding offices	1,318	1,416	1,319	7.4	-6.9	+0.0
Airport operator	785	778	759	4.2	-2.5	-1.6
Airport handling	2,327	2,564	2,311	12.9	-9.9	-0.4
Other air transport supporting activities...	1,011	989	964	5.4	-2.5	-2.3
Building and repairing of aircraft	1,351	1,368	1,294	7.2	-5.4	-2.1
Other airport-related activities.....	8,152	7,765	7,381	41.2	-4.9	-4.8
Passenger land transport.....	319	336	326	1.8	-3.2	+1.1
Cargo handling and storage	286	304	290	1.6	-4.4	+0.8
Freight transport by road	298	307	285	1.6	-6.9	-2.2
Courier and post activities	2,733	2,160	1,922	10.7	-11.0	-16.1
Public services	1,622	1,604	1,525	8.5	-4.9	-3.0
Security and industrial cleaning	803	908	965	5.4	+6.3	+9.6
Trade.....	541	541	532	3.0	-1.6	-0.8
Hotels, restaurants and catering	1,164	1,228	1,188	6.6	-3.3	+1.0
Other services	188	189	163	0.9	-13.7	-6.8
Other industries	199	187	184	1.0	-1.9	-4.0
2. INDIRECT EFFECTS	21,826	23,046	21,157	-	-8.2	-1.5
TOTAL	40,116	41,667	39,060	-	-6.3	-1.3

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

An entirely different picture emerged in the air transport sector, with 147 full-time equivalents being added in 2009. Brussels Airlines employed on average 139 more people in 2009 than in 2008. Nonetheless, the workforce was smaller at the end of the year than it had been a year previously, as a result of reduced capacity and a recruitment freeze under a cost control plan. In 2008 a very large number of staff were transferred from Brussels Airlines Fly. In view of its location, the latter is recorded outside the airports. Since the staff transfer only took place during the second quarter of 2008, the average number of employees was still higher in 2009 than in 2008, despite the slight fall at the end of the year.

⁵⁶ TUI Airlines Belgium operates under the name of Jetairfly.

At TUI Airlines Belgium and the branch of Thomas Cook Airlines Belgium in Zaventem, the workforce expanded. TUI Airlines Belgium augmented its fleet and consequently its human capital, so that the vertical integration with the tour operator Jetair could be developed further. However, the effect was totally negated by European Air Transport. This freight airline mainly provides express services for DHL. Owing to DHL's move to Leipzig, European Air Transport was forced to restructure.

In the other airport-related activities, there were greater job losses amounting to 4.9 %. The transfer of DHL's European hub from Brussels to Leipzig in 2008 is immediately obvious in the courier and post sector. At Brussels Airport, hundreds of jobs were lost at DHL Aviation. This event had an impact not only on the 2008 figures but also on those for 2009, since the average number of full-time equivalents is stated for a full year, and the relocation took place in April 2008. A further 92 people were made redundant during 2009.

As already stated, the number of employees at 15° Wing Air Transport (Belgian Air Force, public services) was down by 66 full-time equivalents.

At LSG Sky Chefs Belgium (hotels, restaurants and catering) a number of jobs were also cut. As a result of the reduced activity and the loss of Thomas Cook as a customer, certain restructuring measures were taken. For instance, a number of fixed-term contracts were not renewed.

Finally, security and industrial cleaning recorded the biggest increase at 6.3 %. That is entirely attributable to Securitas Transport Aviation Security.

The top ten firms with the largest average number of employees in 2009 represent almost 56 % of direct employment at Brussels Airport (Table 29). The move to Leipzig caused DHL Aviation to drop three places compared to 2006⁵⁷. In contrast, Securitas Transport Aviation Security⁵⁸ moved up two places as a result of increased activities. The allocation of TUI Airlines Belgium to the airports immediately puts that company in tenth position.

TABLE 29 BRUSSELS AIRPORT: DIRECT EMPLOYMENT TOP 10 IN 2009

	Name of company or organisation	Sector
1	Brussels Airlines	Air transport
2	Flightcare Belgium	Airport handling
3	AviaPartner Belgium	Airport handling
4	Sabena Technics BRU	Building and repairing of aircrafts
5	DHL Aviation	Courier and post activities
6	Belgian Air Force 15° Wing Air Transport	Public services
7	Securitas Transport Aviation Security	Security and industrial cleaning
8	The Brussels Airport Company	Airport operator
9	Belgocontrol	Other air transport supporting activities
10	TUI Airlines Belgium	Air transport
TOTAL		10,008 FTE
Share in total Brussels Airport		55.9 %

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

⁵⁷ See Kupfer and Lagneaux (2009).

⁵⁸ Formerly Securair.

2.2.2.4 Investment⁵⁹

Investment at Brussels Airport in 2009 was 33.2 % below the 2008 figure (Table 30). For many years now, the air transport cluster has accounted for the major part of the investment. The air transport sector had always represented the largest share, but in 2009 there was a 48.4 % decline. Both European Air Transport and Brussels Airlines made drastic cuts in their acquisitions of tangible fixed assets.

TABLE 30 BRUSSELS AIRPORT: DIRECT INVESTMENT FROM 2007 TO 2009
(in € million – current prices)

Cluster and sector	2007	2008	2009	Share in 2009 (in %)	Change from 2008 to 2009 (in %)	Annual average change from 2007 to 2009 (in %)
Air transport cluster	159.59	194.88	133.22	78.6	-31.6	-8.6
Air transport.....	81.35	71.06	36.65	21.6	-48.4	-32.9
Travel agencies and tour operators	0.05	0.04	0.03	0.0	-37.2	-23.5
Forwarding offices	4.72	6.28	2.24	1.3	-64.3	-31.1
Airport operator	38.43	78.97	61.32	36.2	-22.4	+26.3
Airport handling	8.50	10.88	3.04	1.8	-72.0	-40.2
Other air transport supporting activities...	20.80	24.23	28.05	16.5	+15.8	+16.1
Building and repairing of aircraft	5.75	3.41	1.89	1.1	-44.7	-42.7
Other airport-related activities.....	61.78	59.12	36.37	21.4	-38.5	-23.3
Passenger land transport.....	2.48	4.57	3.71	2.2	-18.8	+22.2
Cargo handling and storage	0.59	0.29	0.54	0.3	+86.5	-4.4
Freight transport by road	2.11	1.20	1.50	0.9	+25.7	-15.5
Courier and post activities	10.84	13.12	8.58	5.1	-34.6	-11.1
Public services	0.00	0.00	0.00	0.0	n.	n.
Security and industrial cleaning	0.73	0.80	0.81	0.5	+0.5	+5.3
Trade.....	2.31	5.06	0.85	0.5	-83.2	-39.2
Hotels, restaurants and catering	3.58	3.76	1.06	0.6	-71.8	-45.5
Other services	37.04	29.74	18.72	11.0	-37.0	-28.9
Other industries	2.10	0.59	0.59	0.3	+1.0	-46.8
TOTAL	221.36	254.00	169.59	100.0	-33.2	-12.5

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

The amount invested by The Brussels Airport Company (airport operator) reached an all-time record in 2008 as a result of the many long-term projects. These included the first logistics building at Brucargo West, renovation of the Satellite building which now houses non-operational services, renovation of the departure zone, etc. Expenditure in 2009 was 22.4 % lower and concerned among other things the completion of the first logistics building at Brucargo West, the start of the refurbishment of the check-in zone in the old terminal, renovation work on Apron⁶⁰ 3 (air side), etc.

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

⁶⁰ The apron is the platform where aircraft are refuelled, parked, loaded or unloaded and where people board the aircraft.

In both 2008 and 2009, money was also spent in connection with a low-cost terminal, but that project has since been scrapped.

Other airport-related activities also recorded a considerable cut in investment in 2009. In the other services sector investment was down by 37 %. Hertz Belgium bought significantly less rolling stock. Avis Belgium was still investing heavily in its stock of IT equipment and vehicles in 2008. In 2009 its fleet made greater use of operational leasing.

In 2008 DHL Aviation (courier and post activities) acquired tangible fixed assets to the value of € 10.5 million. In 2009 the figure was down to € 6.6 million.

Finally, the decline in investment in trade is due largely to Belgian Sky Shops.

2.2.3 Charleroi Airport⁶¹

2.2.3.1 Recent Developments

2010 was a record year for Charleroi Airport, which had never handled so many passengers before. With traffic totalling almost 5.2 million passengers, the airport recorded growth of 31.9 % against 2009 and passed the 5 million passenger mark for the first time in 2010. This growth was due to the opening of 22 new routes in 2010, 8 for Jetairfly and 14 for Ryanair. Ryanair also decided to base four additional aircraft at Charleroi in 2010, while Jetairfly has had a third aircraft based at the site since the summer of 2011. The 2010 figures confirm the upward trend in the number of passengers handled at BSCA, a trend which has only faltered once (in 2005) since 1998. However, BSCA would like to diversify its clientele, because the airport is still dependent on Ryanair, which accounts for over 80 % of the number of passengers handled, even though that percentage is declining.

As a result of this steady rise in the number of passengers using the airport, the new terminal, in operation since January 2008, reached saturation point. In order not to hamper the airport's expansion, the terminal was extended at a cost of € 4 million, financed entirely by the airport. As a result of this extension, the new terminal now has 4 extra boarding gates (16 in total) and an enlarged floor area of 2,300 m². The new boarding gates came into service at the end of June 2011. A new control tower and runway extension (the runway is currently 2550 metres long) are also under consideration. The extension, initially planned at 3,300 m then cut to 2,950 m, would enable the airport to take large aircraft on intercontinental flights. However, the adjustment to the new length made it necessary to initiate a new procedure to obtain permission.

These infrastructure projects are additional to projects already carried out in recent years, such as the entry into service in January 2009 of the instrument landing system (ILS) category 3, which enables the airport to land aircraft in practically all atmospheric conditions. Since the summer of 2010 the airport has also had a new taxiway in the north zone, enhancing safety and speed of operation by avoiding having aircraft crossing on the ground.

Charleroi Airport has also seen changes in its shareholders. At the end of 2009, after several months of negotiation, the "Belgian Airports" consortium formed by the Italian group Save (already operating Venice and Treviso airports) and the Holding communal (in a ratio of 65/35 % respectively) acquired a 27.66 % stake in the capital of BSCA. Under the agreements concluded, this stake should increase to 48.33 % at the beginning of 2012⁶². The procedure for the liquidation of the Holding communal, which should start in 2012, should result in the latter selling off its stake in Belgian Airports⁶³. Save⁶⁴ and the Walloon Region⁶⁵ have both expressed interest.

Since 2008, airport safety has been the responsibility of Brussels South Charleroi Airport-Security, a new company formed on the basis of a decree by the Walloon Government⁶⁶. This limited company of public law is 49 % owned by BSCA and 51 % by the Walloon Region. The safety work concerns all the measures and human resources deployed to protect civil aviation against unlawful interference. That includes, in particular, the inspection and screening of airport staff, passengers, baggage and vehicles, and site security.

⁶¹ Sources include: www.charleroi-airport.com, SOWAER annual reports, interview with BSCA officials and press articles.

⁶² Source: Leblud, H (2011), "Save veut augmenter son poids dans BSCA", L'Echo, 29 September.

⁶³ Source: L'Echo (2011), "Le Holding communal sera mis en liquidation", 23 October.

⁶⁴ Source: Leblud, H (2011), "Save veut augmenter son poids dans BSCA", L'Echo, 29 September.

⁶⁵ Source: La Libre.be (2011), "BSCA: la Région wallonne cherchera à acquérir les actions du Holding communal", 26 October.

⁶⁶ Decree of 19 December 2007 (MB 31/12/2007) amending the decree of 23 June 1994 on the creation and operation of airports and airfields under the aegis of the Walloon Region.

2.2.3.2 Value Added

TABLE 31 CHARLEROI AIRPORT: VALUE ADDED FROM 2007 TO 2009
(in € million – current prices)

Cluster and sector	2007	2008	2009	Share in 2009 (in %)	Change from 2008 to 2009 (in %)	Annual average change from 2007 to 2009 (in %)
1. DIRECT EFFECTS.....	76.0	86.2	96.1	100.0	+11.4	+12.4
Air transport cluster.....	47.2	52.5	60.8	63.3	+15.9	+13.5
Air transport.....	0.0	0.0	0.2	0.2	n.	n.
Travel agencies and tour operators	0.4	0.4	0.3	0.4	-11.6	-9.3
Forwarding offices	0.0	0.0	0.0	0.0	n.	n.
Airport operator*	16.0	21.0	29.4	30.6	+40.3	-35.6
Airport handling	0.0	0.0	0.0	0.0	n.	n.
Other air transport supporting activities...	8.6	6.2	6.5	6.8	+4.7	-13.0
Building and repairing of aircraft	22.2	24.9	24.4	25.4	-2.2	+4.9
Other airport-related activities.....	28.8	33.8	35.3	36.7	+4.4	+10.6
Passenger land transport.....	2.4	2.4	2.8	2.9	+14.0	+7.4
Cargo handling and storage	0.0	0.0	0.0	0.0	+11.3	-10.2
Freight transport by road	0.3	0.3	0.3	0.3	-8.0	-6.5
Courier and post activities	0.0	0.0	0.0	0.0	n.	n.
Public services	13.1	9.6	9.7	10.1	+1.3	-14.1
Trade.....	0.8	1.1	1.4	1.4	+31.4	+35.1
Other services**	11.2	19.3	19.5	20.3	+1.1	+32.0
Other industries	1.0	1.1	1.6	1.7	+46.5	+27.7
2. INDIRECT EFFECTS	84.0	85.4	101.7	-	+19.1	+10.1
TOTAL	160.0	171.6	197.8	-	+15.2	+11.2

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

* It should be noted that the direct value added generated by BSCA includes operating subsidies and compensatory amounts paid by public authorities, totalling around € 16 million in 2007, € 26 million in 2008 and € 30 million in 2009.

** Including the sectors "Hotels, restaurants and catering" and "security and industrial cleaning".

The value added created at Charleroi Airport, like the traffic, is constantly increasing⁶⁷ (Table 31). In 2009, the direct value added generated on the airport site came to over € 96 million, an 11 % rise against 2008. The airport operator BSCA generated direct value added amounting to almost € 30 million in 2009⁶⁸. Next comes the building and repairing of aircraft sector which, at € 24 million, represents just over a quarter of the value added produced at the airport. That is due to the presence of SABCA, which is the second biggest firm at the airport in terms of value added after BSCA (Table 32).

⁶⁷ Ryanair's value added and employment were not taken into account in this study because the data were not available.

⁶⁸ It should be noted that the direct value added generated by BSCA includes operating subsidies and compensatory amounts paid by public authorities, totalling around € 16 million in 2007, € 26 million in 2008 and € 30 million in 2009.

Another major sector at the airport comprises other services with almost € 20 million of direct value added in 2009. This sector, which includes industrial cleaning and hotels, restaurants and catering, is headed by the security firm, Securitas Transport Aviation Security, which ranks third in the top 10. Since 2008, the safety services previously provided by the Walloon Public Service (SPW) have been the responsibility of BSCA-Security (cf. above) which delegates this work to Securitas. That explains why, from that year onwards, there has been an increase in value added in the other services sector and a reduction in public services. The growth of the other services sector is also due to the development of a new passenger terminal since 2008, which has a positive impact on the hotels, restaurants and catering sector in particular.

TABLE 32 CHARLEROI AIRPORT: DIRECT VALUE ADDED TOP 10 IN 2009

Name of company or organisation	Sector
1 Brussels South Charleroi Airport (BSCA)	Airport operator
2 Société anonyme belge de Constructions aéronautiques (SABCA)	Building and repairing of aircraft
3 Securitas Transport Aviation Security	Security and industrial cleaning
4 Federal Police	Public services
5 Belgocontrol	Other air transport supporting activities
6 Douanes / Customs	Public services
7 Société wallonne des Aéroports (SOWAER)	Other air transport supporting activities
8 Service public de Wallonie (SPW)	Public services
9 Eliance Belgium	Hotels, restaurants and catering
10 Cofely Services	Other industries
TOTAL	84.9 million euro
Share in total Charleroi Airport	88,4 %

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

Public services still generate a significant proportion of the airport's value added. This sector comprises the Federal Police and the Customs Authority, responsible for border controls, and the Walloon Public Service (SPW)⁶⁹. One of the latter's tasks is to monitor, at the request of the Walloon Government, the operational duties assigned to BSCA and the airport safety service entrusted to BSCA-Security. In 2009, public services generated almost € 10 million in direct value added at Charleroi Airport. The three public sector entities are among the value added top 10.

The other air transport supporting activities sector, headed by SOWAER and Belgocontrol, created direct value added totalling € 6.5 million in 2009, putting it in 5th place among the sectors contributing to the airport's value added.

It is also worth mentioning that handling services within the airport are provided directly by BSCA (cf. below). The value added and employment created by this sector therefore do not appear separately in the figures.

In 2009, the indirect value added generated by firms located on the Charleroi Airport site exceeded € 100 million. Consequently, the total value added created by activities at the airport and firms upstream was almost € 200 million in 2009, or 0.2 % of Wallonia's GDP and 0.3 % of its value added⁷⁰.

⁶⁹ This concerns more specifically the SPW Directorate General of Mobility and Waterways, or DGO2. The DGO2 is itself subdivided into various departments, including the Transport Operations department, which includes the three authorities concerned with Wallonia's airports: the Airport Operations Authority (DO232), the Charleroi Airport Authority (DO233) and the Liège Airport Authority (DO234). The last two authorities are based at their respective airports, while DO232 is based at the SPW's administrative centre in Namur and is therefore excluded from the study.

⁷⁰ Source: Belgostat.

2.2.3.3 Employment

Like value added, direct employment at Charleroi Airport is rising rapidly (Table 33). From jobs totalling around 1,000 full-time equivalents in 2007, the number of workers at the airport site had risen to over 1,300 in 2009, representing annual average growth of 14.6 %, compared to 26.6 % for traffic over the same period. Employment in airport-related activities grew by more than in the aviation sector, although the latter still accounts for the major share with 55.1 % of employment within the airport.

TABLE 33 CHARLEROI AIRPORT: EMPLOYMENT FROM 2007 TO 2009
(FTE)

Cluster and sector	2007	2008	2009	Share in 2009 (in %)	Change from 2008 to 2009 (in %)	Annual average change from 2007 to 2009 (in %)
1. DIRECT EFFECTS	1,008	1,230	1,323	100.0	+7.6	+14.6
Air transport cluster	591	680	732	55.3	+7.7	+11.3
Air transport	0	0	2	0.1	n.	n.
Travel agencies and tour operators	4	5	5	0.4	+2.7	+10.0
Forwarding offices	0	0	0	0.0	n.	n.
Airport operator	266	316	357	27.0	+12.8	+15.9
Airport handling	0	0	0	0.0	n.	n.
Other air transport supporting activities...	37	41	44	3.3	+7.4	+8.7
Building and repairing of aircraft	284	318	325	24.5	+2.1	+6.8
Other airport-related activities	416	550	591	44.7	+7.5	+19.2
Passenger land transport	23	23	23	1.8	+0.0	+0.0
Cargo handling and storage	1	1	1	0.1	+0.0	+0.0
Freight transport by road	5	5	5	0.4	+0.0	+0.0
Courier and post activities	0	0	0	0.0	n.	n.
Public services	121	84	103	7.8	+23.2	-7.7
Trade	10	15	22	1.7	+45.8	+48.2
Other services*	241	407	415	31.4	+2.1	+31.2
Other industries	14	15	21	1.6	+38.5	+21.7
2. INDIRECT EFFECTS	1,251	1,530	1,525	-	-0.3	+10.4
TOTAL	2,258	2,760	2,849	-	+3.2	+12.3

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

* Including the sectors "Hotels, restaurants and catering" and "security and industrial cleaning".

The airport operator employs the largest number of workers, with 360 FTE in 2009. That figure is rising because of the growth of traffic, particularly the rise in the number of aircraft based at the airport, necessitating the expansion of handling activities, among other things. Handling, which accounts for around 60 % of employment at BSCA⁷¹, is soon to be transferred to a subsidiary in order to comply with EU legislation⁷² which requires the sector to be opened up to competition. In

⁷¹ Source: Lawson, P. (2008), "Cinq candidats pour le 'handling' à Charleroi", La Libre.be, 16 May.

⁷² Directive 96/67/EC of 15 October 1996.

the Walloon Region, that legislation was recently transposed by a decree by the Walloon Government published in June 2011⁷³ concerning Liège and Charleroi airports. Subject to certain conditions (sound financial position, adequate insurance cover, security, environmental protection, compliance with social legislation, etc.), the market is now open to all interested companies. Nevertheless, for the time being BSCA is still the only company involved in handling at its site.

Next come the sectors comprising other services (including hotels, restaurants and catering and security and industrial cleaning), building and repairing of aircraft and, a little farther behind, public services. These four main sectors represent over 90 % of employment at the airport. Between 2007 and 2008 there was a change in the number of jobs in the other services and public services sectors mirrored by a change in value added for the reasons explained earlier. Employment in the other services sector is also growing as a result of the advent of new car hire firms in 2008 and development of the new terminal. There has also been a big change in employment in the building and repairing of aircraft sector, up by 12 % in 2008. That rise is due to large numbers of staff recruited by SABCA in connection with contracts for the modernisation of military aircraft for export.

Table 34 confirms the leading position of the airport operator in terms of the number of workers, and the importance of SABCA which ranks 2nd. Public services are all in the top 10 which includes the Federal Police in 5th place as well as the Customs Authority and the Walloon Public Service (SPW), in 8th and 9th position respectively. The 10 biggest employers account for over 90 % of employment, indicating that employment is fairly concentrated.

TABLE 34 CHARLEROI AIRPORT: DIRECT EMPLOYMENT TOP 10 IN 2009

Name of company or organisation	Sector
1 BSCA	Airport operator
2 Société anonyme belge de Constructions aéronautiques (SABCA)	Building and repairing of aircraft
3 Securitas Transport Aviation Security	Security and industrial cleaning
4 Eliance Belgium	Hotels, restaurants and catering
5 Federal Police	Public services
6 Laurenty	Security and industrial cleaning
7 Belgocontrol	Other air transport supporting activities
8 Douanes / Customs	Public services
9 Service public de Wallonie (SPW)	Public services
10 Cofely Services	Other industries
TOTAL	1,199 FTE
Share in total Charleroi Airport	90.6 %

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

In 2009, indirect employment amounted to 1,525 FTE so that the total employment (direct and indirect) connected with the airport was estimated at 2,849 FTE, or 0.3 % of employment in Wallonia in FTE⁷⁴.

⁷³ Walloon government decree of 9 June 2011 (MB 24/06/2011) amending the Walloon Government decree of 24 March 2000 regulating access to the market in ground handling services at airports in the Walloon Region.

⁷⁴ Source: Belgostat.

2.2.4 Kortrijk Airport

2.2.4.1 Recent Developments⁷⁵

Despite the harsh winter and the volcanic ash cloud, the number of passengers was 1 % up in 2010. Nevertheless, the airport recorded fewer aircraft movements. The increase was therefore due to better seat occupancy, for both business flights and other flights. The latter consist mainly of professional training.

Kortrijk Airport has a whole series of projects in the pipeline which must be carried out at specific times if the airport wants to retain its international aviation certificate⁷⁶. These projects mainly concern infrastructure work, including the renewal of the taxiway and the aircraft parking area, and construction of aircraft hangars and an airport fire station. At present, however, the investments are confined to the preparations since the necessary financial resources will not be available until the planned privatisation of the airport is completed. The Flemish government will not put any capital into the Air Transport Development Company (LOM) until a private investor has been found for the Airport Operating Company (LEM). Two candidates have already expressed interest. Next they must submit a business plan to the Flemish government.

2.2.4.2 Value Added

Between 2007 and 2009, Kortrijk Airport saw the steepest decline in both direct and indirect value added. On average the respective figures were down by 13.4 and 23.3 % per annum (Table 35). Total value added fell below € 14 million, representing a share of 0.007 % in the Flemish Region's GDP.

The air transport cluster was particularly affected. In the building and repairing of aircraft sector, value added recorded an annual average decline amounting to all of 36.2 %. Aircraft Power Maintenance recorded negative value added in both 2008 and 2009. In 2008 this firm had to cover an operating loss of almost € 1 million, while in the following year a substantial provision for liabilities and charges was used, and as well as that, staff expenses were substantially reduced.

The declines in the air transport sector are due almost entirely to Sky Service, a member of the Abelag group. In 2008, the value added of Sky Service was down by € 0.7 million owing to a dramatic fall in the operating profit. The main factor here was the sharp fall in aircraft sales, and to a lesser extent a decline in flying activities during the last four months of the year. Nevertheless, during 2008 the firm invested in acquiring more staff and equipment. Partial cutbacks were subsequently made where possible. In 2009 there was a further decline in the operating profit of Sky Service, and hence also its value added. Flying activities were greatly reduced, as were sales of aircraft.

Other airport-related activities still held up well in 2008, but in 2009 there was nevertheless a 9.4 % fall in value added. The operating loss of Bistro Biggles⁷⁷ (hotels, restaurants and catering) increased and lower staff expenses were also recorded. In the case of other services, the operating result of Lambert Aircraft Engineering sank further into the red.

⁷⁵ Sources include: www.kortrijkairport.be and miscellaneous press articles.

⁷⁶ ICAO – Aerodrome Certificate.

⁷⁷ The official name of the company is B.B.

TABLE 35 KORTRIJK AIRPORT: VALUE ADDED FROM 2007 TO 2009
(in € million – current prices)

Cluster and sector	2007	2008	2009	Share in 2009 (in %)	Change from 2008 to 2009 (in %)	Annual average change from 2007 to 2009 (in %)
1. DIRECT EFFECTS.....	9.36	7.86	7.02	100.0	-10.7	-13.4
Air transport cluster.....	7.74	6.11	5.44	77.4	-11.0	-16.2
Air transport.....	3.53	2.89	2.63	37.5	-8.9	-13.6
Travel agencies and tour operators	0.00	0.00	0.00	0.0	n.	n.
Forwarding offices	0.00	0.00	0.00	0.0	n.	n.
Airport operator	1.16	1.13	1.12	16.0	-0.7	-1.8
Airport handling	0.00	0.00	0.00	0.0	n.	n.
Other air transport supporting activities...	0.92	0.92	0.82	11.6	-11.4	-6.0
Building and repairing of aircraft	2.13	1.17	0.87	12.3	-26.2	-36.2
Other airport-related activities.....	1.62	1.75	1.59	22.6	-9.4	-1.0
Passenger land transport.....	0.00	0.00	0.00	0.0	n.	n.
Cargo handling and storage	0.03	0.02	0.02	0.2	-31.5	-26.5
Freight transport by road	0.00	0.00	0.00	0.0	n.	n.
Courier and post activities	0.00	0.00	0.00	0.0	n.	n.
Public services	0.87	1.14	1.13	16.0	-1.3	+14.0
Security and industrial cleaning	0.05	0.05	0.03	0.5	-31.4	-16.7
Trade.....	0.38	0.25	0.27	3.8	+9.7	-15.8
Hotels, restaurants and catering	0.20	0.18	0.10	1.4	-45.6	-29.9
Other services	0.09	0.11	0.04	0.6	-61.4	-32.5
Other industries	0.00	0.00	0.00	0.0	n.	n.
2. INDIRECT EFFECTS	11.42	7.85	6.72	-	-14.4	-23.3
TOTAL	20.78	15.71	13.74	-	-12.5	-18.7

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

Since there are only a few firms at Kortrijk Airport, the ten with the most value added in 2009 accounted for 84.2 % of direct value added (Table 36). Sky Service is well ahead of the firm ranked 2nd, Westvlaamse Intercommunale Vliegveld Wevelgem-Bissegem which runs the airport. Aircraft Power Maintenance is no longer on the list since it has generated negative value added both in 2008 and 2009.

TABLE 36 KORTRIJK AIRPORT: DIRECT VALUE ADDED TOP 10 IN 2009

	Name of company or organisation	Sector
1	Sky Service	Air transport
2	Westvlaamse Intercommunale Vliegveld Wevelgem-Bissegem	Airport operator
3	Federal Police and Customs	Public services
4	Abelag Technics	Building and repairing of aircraft
5	Flemish Government	Public services
6	Air Technology Belgium	Building and repairing of aircraft
7	Gill Aviation	Trade
8	Capital Aircraft Group	Air transport
9	Propeller	Other air transport supporting activities
10	Flanders International Airport	Other air transport supporting activities
TOTAL		5.92 million euro
Share in total Kortrijk Airport		84.2 %

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

2.2.4.3 Employment

In contrast to value added, both direct and indirect employment at Kortrijk Airport increased between 2007 and 2009 by an annual average of 7.8 and 6.4 % respectively (Table 37). This brought total employment to 328 full-time equivalents, corresponding to 0.01 % of employment in the Flemish Region.

In the air transport cluster, 16 full-time equivalents were added during 2007 - 2009. This increase is due entirely to the air transport sector and other air transport supporting activities. In 2007, Capital Aircraft Group (air transport sector) decided to obtain its own operating licence and then rapidly expanded its fleet and its workforce. However, most of the workers (pilots) are self-employed. During 2008 Sky Service also invested in additional staff, but in view of the disappointing results it did not continue to do so in 2009.

In the other air transport supporting activities, the progress in 2008 is due to Alfako. This flying school was set up in September 2007. The size of the workforce grew rapidly with self-employed instructors.

The share of other airport-related activities in direct employment is fairly small at Kortrijk Airport. In public services, two extra jobs were created in both 2008 and 2009. In contrast, in the hotels, restaurants and catering sector the average number of full-time equivalents declined at Bistro Biggles, and in March 2009 Café Passé opened bankruptcy proceedings.

The ten firms with the most employees at Kortrijk Airport together employ 101 full-time equivalents (Table 38). The expansion of Capital Aircraft Group puts the airline in third place. Alfako also succeeded in rapidly expanding its activities, securing 6th position.

TABLE 37 KORTRIJK AIRPORT: EMPLOYMENT FROM 2007 TO 2009
(FTE)

Cluster and sector	2007	2008	2009	Share in 2009 (in %)	Change from 2008 to 2009 (in %)	Annual average change from 2007 to 2009 (in %)
1. DIRECT EFFECTS.....	124	139	144	100.0	+3.2	+7.8
Air transport cluster.....	101	114	117	81.3	+2.5	+7.6
Air transport.....	26	36	41	28.7	+14.7	+26.2
Travel agencies and tour operators	0	0	0	0.0	n.	n.
Forwarding offices	0	0	0	0.0	n.	n.
Airport operator	18	16	16	10.8	-2.5	-8.2
Airport handling	0	0	0	0.0	n.	n.
Other air transport supporting activities...	18	26	26	17.9	+0.8	+18.2
Building and repairing of aircraft	38	37	34	24.0	-6.2	-5.2
Other airport-related activities.....	23	25	27	18.7	+6.7	+8.9
Passenger land transport.....	0	0	0	0.0	n.	n.
Cargo handling and storage	1	1	1	0.7	+0.0	+0.0
Freight transport by road	0	0	0	0.0	n.	n.
Courier and post activities	0	0	0	0.0	n.	n.
Public services	8	10	12	8.3	+20.0	+22.5
Security and industrial cleaning	1	1	1	0.7	+0.0	+0.0
Trade.....	4	5	6	3.8	+3.8	+13.1
Hotels, restaurants and catering	5	5	3	2.4	-30.6	-20.7
Other services	3	3	4	2.8	+33.3	+15.5
Other industries	0	0	0	0.0	n.	n.
2. INDIRECT EFFECTS	163	186	184	-	-0.9	+6.4
TOTAL	286	325	328	-	+0.9	+7.0

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

TABLE 38 KORTRIJK AIRPORT: DIRECT EMPLOYMENT TOP 10 IN 2009

	Name of company or organisation	Sector
1	Sky Service	Air transport
2	Westvlaamse Intercommunale Vliegveld Wevelgem-Bissegem	Airport operator
3	Capital Aircraft Group	Air transport
4	Aircraft Power Maintenance	Building and repairing of aircraft
5	Federal Police and Customs	Public services
6	Alfako	Other air transport supporting activities
7	Abelag Technics	Building and repairing of aircraft
8	Air Technology Belgium	Building and repairing of aircraft
9	Gill Aviation	Trade
10	Lambert Aircraft Engineering	Other services
TOTAL		101 FTE
Share in total Kortrijk Airport		70.3 %

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

2.2.5 Liège Airport

2.2.5.1 Recent Developments⁷⁸

In 2010, Liège Airport reinforced its position as Belgium's leading cargo airport in terms of the volumes handled. Cargo traffic exceeded 639 thousand tonnes, an increase of over 32 % against 2009, a year in which volumes had declined slightly. Most cargo carriers at the airport recorded an increase in business, with Avient and Southern Air more than doubling the tonnage handled. One special feature of the freight handled by the airport is the transportation of animals and fresh products. In particular, in 2010 Liège Airport handled 1,237 horses, 2,758 tonnes of fish and 983 tonnes of lobster. In July 2011, aiming to consolidate its growth in this segment, the airport opened a new perishable goods handling and warehousing complex with an area of more than 800 m², thus doubling the space devoted to this type of products at the airport.

The volume of passenger traffic was smaller in 2009 and 2010 compared to 2008 which was a record year. In 2010, the number of passengers came to 299,043, compared to 356,782 the year before, a decline of 16 %. The airport gives the reason as the cancellation by Thomas Cook of many of its flights, and problems concerning traffic rights for the Albanian low-cost airline Belle Air.

Regarding infrastructures, work on a 400 m extension to the main runway was completed in September 2010 (giving a runway length of 3,700 m), enabling large carriers to operate intercontinental flights without intermediate refuelling. TNT is therefore to use a number of Boeing 777-200s at Liège from 2011 for flights to Asia. In July 2011, TNT Airways also took delivery of a first Boeing 777 which will be used for its flights to China⁷⁹. The airline is to get two more in late 2011 or early 2012.

The north zone development and extension work (freight hangars, aircraft parking space, offices, etc.) is continuing, initially at the civil sites pending conclusion of the agreement with the national Ministry of Defence concerning the relocation of the military base. The work is two years behind schedule owing to the decline in traffic in 2009 and administrative holdups in 2010 (problems with building permits).

There have also been various developments in the organisational structure of the airport. In March 2010, Liège Airport and Meusinvest (with an 80 % stake in the capital for Liège Airport S.A. and 20 % for Invest Services S.A., a subsidiary of Meusinvest) set up a joint subsidiary, Liège Airport Business Park, to manage the property at the airport site. With the formation of this subsidiary, Liège Airport aims to separate its real estate activities from its aviation activities, as is done at other airports. All the buildings used for warehousing and offices, recorded on the assets side of the Liège Airport balance sheet, are placed with this subsidiary which should also provide the finance for a number of construction projects between now and 2015 (freight halls and business centres). However, Liège Airport Business Park has nothing to do with the passenger terminal and the oil depot, which are still managed directly by Liège Airport.

Another development concerns the creation in 2008 of Liège Airport-Security, responsible for safety within the airport in the same way as BSCA-Security at Charleroi (cf. above).

2.2.5.2 Value Added

In 2009, activities at the Liège Airport site generated almost € 225 million in direct value added, of which 57 % came from the air transport cluster (Table 39). The airport's undisputed driving force is TNT, whose activities in air transport (TNT Airways) and courier and postal services (TNT Express Worldwide) generated € 145 million in value added in 2009, far ahead of the other businesses at

⁷⁸ Sources include: www.liegeairport.com, interviews with airport officials, SOWAER annual reports and press articles.

⁷⁹ De Lloyd (2011), "TNT neemt eerste 'triple seven' in ontvangst op Liège Airport", 26 July.

the site (Table 40). In 2009 the value added of the air transport sector grew by 43 % as a result of the increase in operating profits at TNT Airways (growth in services invoiced to the parent company in the Netherlands), while the value added of courier and post activities remained relatively stable.

TABLE 39 LIÈGE AIRPORT: VALUE ADDED FROM 2007 TO 2009
(in € million – current prices)

Cluster and sector	2007	2008	2009	Share in 2009 (in %)	Change from 2008 to 2009 (in %)	Annual average change from 2007 to 2009 (in %)
1. DIRECT EFFECTS.....	196.2	197.9	224.4	100.0	+13.4	+6.9
Air transport cluster.....	97.1	96.8	127.1	56.7	+31.3	+14.4
Air transport.....	56.4	58.4	83.5	37.2	+43.0	+21.6
Travel agencies and tour operators	0.3	0.3	0.3	0.1	-2.2	-0.1
Forwarding offices	3.7	3.9	4.0	1.8	+1.6	+3.0
Airport operator*	13.1	15.4	15.1	6.7	-2.2	-7.2
Airport handling	1.8	2.5	4.9	2.2	+94.3	+64.0
Other air transport supporting activities...	19.8	13.5	12.2	5.4	-9.4	-21.5
Building and repairing of aircraft	1.9	2.8	7.3	3.2	+156.0	+94.9
Other airport-related activities.....	99.1	101.1	97.2	43.3	-3.8	-0.9
Passenger land transport.....	1.3	1.5	1.6	0.7	+6.4	+11.2
Cargo handling and storage	6.8	6.9	6.5	2.9	-4.7	-1.6
Freight transport by road	0.6	0.8	1.0	0.4	+25.0	+31.5
Courier and post activities	63.8	65.9	61.7	27.5	-6.3	-1.6
Public services	19.7	16.4	13.9	6.2	-15.0	-15.8
Trade.....	0.1	0.1	0.1	0.1	-5.5	+5.3
Other services**	6.9	9.4	11.5	5.1	+22.6	+28.9
Other industries	0.0	0.2	0.8	0.4	+341.4	n.
2. INDIRECT EFFECTS	222.8	193.7	236.5	-	+22.1	+3.0
TOTAL	419.0	391.7	460.9	-	+17.7	+4.9

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

* It should be noted that the direct value added generated by the Liège Airport operator includes operating subsidies and compensatory amounts paid by public authorities, totalling around € 17 million in 2007, € 25 million in 2008 and € 26 million in 2009.

** Including the sectors "Hotels, restaurants and catering" and "security and industrial cleaning".

The Liège Airport operator is in 3rd place among the sectors generating the most value added, with € 15 million in 2009⁸⁰. It is followed by public services which comprise the same bodies as Charleroi Airport (cf. above) plus the Federal Agency for the Safety of the Food Chain (FASFC) responsible for monitoring animals, vegetables and plants imported via the airport. In 2009 the customs authority generated € 10 million in value added, putting it in 4th place among the top 10. Just as at Charleroi Airport, there is a decline in the value added of public services and an increase in that of other services (which include security) following the establishment of Liège Airport-

⁸⁰ It should be noted that the direct value added generated by the Liège Airport operator includes operating subsidies and compensatory amounts paid by public authorities, totalling around € 17 million in 2007, € 25 million in 2008 and € 26 million in 2009.

Security in 2008, which has taken over some of the duties of the SPW (cf. above). Here, too, Liège-Airport Security delegates operational safety activities to Securitas. The increase in value added in the other services sector continued in 2009, owing to the development of the airport and particularly the north zone. Securitas ranks 5th in the list of firms generating the most value added at the airport.

TABLE 40 LIÈGE AIRPORT: DIRECT VALUE ADDED TOP 10 IN 2009

Name of company or organisation	Sector
1 TNT Airways	Air transport
2 TNT Express Worldwide	Courier and post activities
3 Liège Airport	Airport operator
4 Inspection des Douanes	Public services
5 Securitas Transport Aviation Security	Security and industrial cleaning
6 Liège Air Cargo Handling Services	Cargo handling and storage
7 Belgocontrol	Other air transport supporting activities
8 Sowaer	Other air transport supporting activities
9 X-Airservices	Building and repairing of aircraft
10 Aviapartner Liège	Airport handling
TOTAL	200.9 million euro
Share in total Liège Airport	89.5 %

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

The expansion of activity at the airport is also evident in the airport handling sector, where value added recorded average annual growth of 64 % between 2007 and 2009. This rise is due mainly to the creation of Aviapartner Cargo Liège in 2008 (a subsidiary of Aviapartner Liège specialising in handling services for cargo flights⁸¹), which generated over € 1 million in value added in 2009, and by the increase in value added at Aviapartner Liège (higher staff expenses).

There was also very strong growth (+156 %) in value added in the building and repairing of aircraft sector in 2009, owing to the creation of X-Airservices. This joint venture in which TNT Airways and Sabena Technics own equal shares generated around € 5 million in value added in 2009, placing it directly in the top 10, in 9th position.

The decline in value added in other air transport supporting activities in 2009 is due mainly to the fall in the value added created by SOWAER, a key factor being a change in the method of depreciation.

In 2009, indirect value added was in the region of € 240 million. Taken together with the direct value added, it gives a total of over € 460 million in value added created at Liège Airport, equivalent to 0.6 % of Wallonia's GDP and 0.6 % of its value added⁸².

2.2.5.3 Employment

In 2009, Liège Airport had a total of almost 2,500 FTE working at its site, the majority (57 %) in the airport cluster (Table 41). Since 2007, the number of workers at the site has grown by an annual average of 5.5 %, with considerably stronger growth in the air transport cluster (+12 %) than in the other airport activities cluster (+2 %).

⁸¹ In 2010, Aviapartner Cargo Liège was taken over by Aviapartner Liège.

⁸² Source: Belgostat.

At sectoral level, air transport and courier and postal services stand out clearly on account of the large number of jobs. These sectors are headed by two TNT companies which, as one would expect, occupied the first two places in the employment top 10 in 2009 (Table 42). There are also large numbers of people (119 FTE in 2009) employed in the cargo handling and storage sector, the biggest in terms of job numbers being Liège Air Cargo Handling Services (LACHS), the 5th largest employer at the airport. The marked rise (+14 %) in employment in this sector in 2008 is due to the expansion of LACHS's activities, necessitating additional staff following the large-scale restructuring undertaken in 2004 and 2005.

In 2008, the transfer of some of SPW's employees to the new Liège Airport-Security company and the reallocation of work between players (cf. above) led to a fall in the number of workers in the public services sector and an increase in other services (including security) which became the 3rd largest sector in terms of jobs in 2009.

TABLE 41 LIÈGE AIRPORT: EMPLOYMENT FROM 2007 TO 2009
(FTE)

Cluster and sector	2007	2008	2009	Share in 2009 (in %)	Change from 2008 to 2009 (in %)	Annual average change from 2007 to 2009 (in %)
1. DIRECT EFFECTS.....	2,232	2,434	2,483	100.0	+2.0	+5.5
Air transport cluster.....	791	955	987	39.8	+3.4	+11.8
Air transport.....	439	545	540	21.7	-1.0	+10.9
Travel agencies and tour operators	6	5	5	0.2	+0.2	-1.7
Forwarding offices	75	82	68	2.7	-17.2	-4.9
Airport operator	127	140	143	5.8	+1.7	+6.0
Airport handling	22	54	91	3.7	+70.0	+105.6
Other air transport supporting activities...	87	91	88	3.6	-2.7	+0.6
Building and repairing of aircraft	35	38	52	2.1	+38.3	+21.6
Other airport-related activities.....	1,442	1,479	1,495	60.2	+1.1	+1.8
Passenger land transport.....	15	15	13	0.5	-13.6	-7.0
Cargo handling and storage	106	121	119	4.8	-1.9	+5.9
Freight transport by road	15	16	18	0.7	+11.3	+8.9
Courier and post activities	956	978	943	38.0	-3.6	-0.7
Public services	182	144	149	6.0	+3.4	-9.6
Trade.....	2	2	2	0.1	-2.2	-1.4
Other services*.....	166	202	241	9.7	+19.4	+20.3
Other industries.....	0	2	12	0.5	+500.0	n.
2. INDIRECT EFFECTS	2,279	2,685	2,565	-	-4.5	+6.1
TOTAL	4,512	5,119	5,048	-	-1.4	+5.8

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

* Including the sectors "Hotels, restaurants and catering" and "security and industrial cleaning".

The airport handling sector has also recorded a big increase in employment, in line with the growth of its value added. Aviapartner Liège and Aviapartner Cargo Liège expanded their workforce as a

result of the activity growth generated by contracts with new customers (Ethiopian Airlines and EI AI in 2008, Avient in 2009).

In 2009, the firms located at Liège Airport generated indirect employment for almost 2,600 FTE. In total, more than 5,000 direct and indirect jobs (in FTE) are therefore linked to the activities taking place at the airport site, representing 0.5 % of Walloon domestic employment⁸³.

TABLE 42 LIÈGE AIRPORT: DIRECT EMPLOYMENT TOP 10 IN 2009

Name of company or organisation	Sector
1 TNT Express Worldwide	Courier and post activities
2 TNT Airways	Air transport
3 Securitas Transport Aviation Security	Security and industrial cleaning
4 Liège Airport	Airport operator
5 Liège Air Cargo Handling Services	Cargo handling and storage
6 Inspection des Douanes	Public services
7 Aviapartner Liège	Airport handling
8 Belgocontrol	Other air transport supporting activities
9 Agusta	Building and repairing of aircraft
10 Liège Airport-Security	Security and industrial cleaning
TOTAL	2,158 FTE
Share in total Liège Airport	86.9 %

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

⁸³ Source: Belgostat.

2.2.6 Ostend Airport

2.2.6.1 Recent Developments⁸⁴

2010 was a two-speed year for Ostend Airport. The number of passengers increased by almost 11 %, whereas freight traffic was hard hit by the loss of MK Airlines, a British airline which had located its operating base in Ostend. In June 2008, financial problems forced the company to suspend its operations. During 2010 the financial problems finally put MK Airlines out of business. In the past, this airline had accounted for 90 % of the airport's freight traffic. ANA Aviation has since become the new number one.

Ostend used to focus mainly on freight traffic, but today it is also presenting itself as the leading Flemish regional passenger airport. At the same time, the marketing approach to freight operators has been redesigned. The airport wants to put more emphasis on its experience in ad-hoc and point-to-point⁸⁵ flights.

The airport authority is not planning any new investments at present in its Industry & Business Park. However, it is hoping for a number of stores and a building for maintenance work, though private investors will have to provide the necessary finance.

2011 was probably the last year in which the airport remained entirely under public control. Under the present constraints, only limited growth is possible, so that Ostend Airport is busy preparing for the impending privatisation. In the long run that should result in a better regional economy and more employment. The Zeebrugge and Ostend port authorities have already expressed interest in managing the airport jointly with other partners. The Flemish government is currently considering the proposals. Negotiations will begin later.

2.2.6.2 Value Added

Direct value added at Ostend Airport came to € 30.3 million in 2009, 3.3 % less than in the previous year (Table 43). Conversely, indirect value added grew by 4.1 % so that total value added was only € 0.2 million down at € 50.8 million. The share in Flemish GDP came to 0.03 %.

The air transport cluster accounted for 76.6 % of direct value added in 2009. Lufthansa Technik Brussels has no longer been active at Ostend Airport since 2009, so that the building and repairing of aircraft sector lost a good 90.8 % of its value added. Conversely, in other air transport supporting activities, value added grew by € 0.4 million. In 2009 Belgocontrol employed a few more staff in Ostend, and Ostend Air College recorded higher depreciation and a bigger operating profit.

In 2007 the air transport sector still had a share of almost 25 %. In the two ensuing years, that share was down to barely 13 %. Since the end of 2007, Noordzee Helikopters Vlaanderen has ceased to operate from Ostend Airport. It now has its own heliport and is therefore classified as outside the airports from 2008.

In the other airport-related activities, public services still account for the largest share despite a 12.8 % fall in value added. Skytanking Ostend (trade) is one of the few firms to increase its value added. This positive development was due to a higher operating profit.

⁸⁴ Sources include: www.ost.aero and miscellaneous press articles.

⁸⁵ A flight consisting of one segment, in other words a flight with no scheduled intermediate stops.

TABLE 43 OSTEND AIRPORT: VALUE ADDED FROM 2007 TO 2009
(in € million – current prices)

Cluster and sector	2007	2008	2009	Share in 2009 (in %)	Change from 2008 to 2009 (in %)	Annual average change from 2007 to 2009 (in %)
1. DIRECT EFFECTS.....	35.5	31.4	30.3	100.0	-3.3	-7.5
Air transport cluster.....	27.8	23.6	23.2	76.6	-1.5	-8.6
Air transport.....	8.8	4.0	3.9	12.8	-2.0	-33.5
Travel agencies and tour operators	0.2	0.2	0.1	0.3	-56.1	-33.3
Forwarding offices	0.4	0.4	0.4	1.4	+10.0	+8.4
Airport operator*	7.1	7.5	7.8	25.9	+4.5	+5.3
Airport handling	5.6	5.1	4.9	16.3	-3.1	-6.5
Other air transport supporting activities...	4.9	5.5	5.9	19.6	+8.8	+10.5
Building and repairing of aircraft	0.9	1.0	0.1	0.3	-90.8	-67.9
Other airport-related activities.....	7.7	7.8	7.1	23.4	-8.7	-3.9
Passenger land transport.....	0.3	0.3	0.2	0.7	-35.8	-16.0
Cargo handling and storage	0.7	0.5	0.5	1.5	-14.5	-19.9
Freight transport by road	0.0	0.0	0.0	0.0	n.	n.
Courier and post activities	0.0	0.0	0.0	0.0	n.	n.
Public services	4.5	4.7	4.1	13.4	-12.8	-5.0
Security and industrial cleaning	0.0	0.0	0.0	0.0	n.	n.
Trade.....	1.2	1.4	1.5	5.0	+10.4	+12.2
Hotels, restaurants and catering	0.9	0.8	0.8	2.5	-3.5	-6.9
Other services	0.1	0.1	0.1	0.3	-2.6	-0.7
Other industries	0.0	0.0	0.0	0.0	n.	n.
2. INDIRECT EFFECTS	33.5	19.7	20.5	-	+4.1	-21.8
TOTAL	69.0	51.0	50.8	-	-0.4	-14.2

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 compensatory amounts paid by public authorities, totalling around € 4.5 million in 2007, € 4.7 million in 2008 and € 4.9 million in 2009.

Table 44 shows the ten firms creating the most value added at Ostend Airport. As a result of the relocation of Noordzee Helikopters Vlaanderen, Belgocontrol is in 2nd place. Compared to the situation in 2006⁸⁶, Race Cargo Airlines⁸⁷ and Lufthansa Technik Brussels have also disappeared from the top ten. As a result, a few other firms have appeared for the first time towards the bottom of the list.

⁸⁶ See Kupfer and Lagneaux (2009).

⁸⁷ Opening of bankruptcy proceedings on 7 June 2006.

TABLE 44 OSTEND AIRPORT: DIRECT VALUE ADDED TOP 10 IN 2009

	Name of company or organisation	Sector
1	Flemish Government	Airport operator
2	Belgocontrol	Other air transport supporting activities
3	AviaPartner Belgium	Airport handling
4	MK Airlines	Air transport
5	Customs	Public services
6	Federal Police	Public services
7	Skytanking Ostend	Trade
8	Egyptair	Air transport
9	Flightcare Belgium	Airport handling
10	Rainbow Air Cargo Express Limited*	Other air transport supporting activities
TOTAL		26.49 million euro
Share in total Ostend Airport		87.3 %

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

* The name of the Ostend branch is Speed Handling Services.

2.2.6.3 Employment

The pattern of direct employment at Ostend Airport matches the trend in direct value added. In the past two years the number of full-time equivalents has fallen by an annual average of 7 % (Table 45). Conversely, indirect employment fell at more than twice that rate over the same period. Thus, in 2009 total employment was down to 723 full-time equivalents and represented 0.03 % of Flemish employment.

In 2008 the air transport cluster was hardest hit by the relocation of Noordzee Helikopters Vlaanderen (air transport sector). A year later, employment in this cluster declined further to 323 full-time equivalents. Lufthansa Technik Brussels has ceased to be active at Ostend Airport since 2009. As a result, employment in the building and repairing of aircraft sector slumped by 88.1 %. Finally, AviaPartner Belgium (airport handling) employed 4.5 fewer full-time equivalents in Ostend in 2009.

The workforce in other airport-related activities declined by six full-time equivalents in two successive years. In 2009 most of this decline was due to trade. As a result of the start of bankruptcy proceedings at Pharaana in May 2009, a number of people lost their job. In the hotels, restaurants and catering sector, employment was also 12.5 % down. The staff cuts at Belair and the start of bankruptcy proceedings at Icarus in July 2008 were only partly offset by the new Charles Lindbergh restaurant⁸⁸ which opened in the Icarus building.

Just ten firms account for 87.3 % of direct employment at Ostend Airport (Table 46). The top four are still the same as in 2006⁸⁹. Other firms have taken over the positions of Race Cargo Airlines, Noordzee Helikopters Vlaanderen and Lufthansa Technik Brussels. Thus, Ostend Air College is now in 6th place, since self-employed instructors are taken into account.

⁸⁸ The official name of the company is Beachvos.

⁸⁹ See Kupfer and Lagneaux (2009).

TABLE 45 OSTEND AIRPORT: EMPLOYMENT FROM 2007 TO 2009
(FTE)

Cluster and sector	2007	2008	2009	Share in 2009 (in %)	Change from 2008 to 2009 (in %)	Annual average change from 2007 to 2009 (in %)
1. DIRECT EFFECTS.....	476	433	412	100.0	-5.0	-7.0
Air transport cluster.....	374	338	323	78.3	-4.5	-7.2
Air transport.....	65	35	37	9.0	+6.0	-24.8
Travel agencies and tour operators	2	2	1	0.2	-50.0	-29.3
Forwarding offices	4	5	5	1.2	+0.0	+3.9
Airport operator	130	127	126	30.5	-0.8	-1.7
Airport handling	101	96	91	22.0	-5.8	-5.0
Other air transport supporting activities...	59	59	62	15.0	+4.3	+2.6
Building and repairing of aircraft	13	14	2	0.4	-88.1	-64.5
Other airport-related activities.....	101	95	89	21.7	-6.5	-6.2
Passenger land transport.....	2	2	3	0.7	+28.6	+6.1
Cargo handling and storage	7	8	6	1.5	-22.3	-7.6
Freight transport by road	0	0	0	0.0	n.	n.
Courier and post activities	0	0	0	0.0	n.	n.
Public services	42	41	43	10.5	+6.0	+2.0
Security and industrial cleaning	0	0	0	0.0	n.	n.
Trade.....	24	23	18	4.3	-21.5	-14.4
Hotels, restaurants and catering	25	21	18	4.5	-12.5	-14.5
Other services	1	1	1	0.2	-0.5	-0.1
Other industries	0	0	0	0.0	n.	n.
2. INDIRECT EFFECTS	443	353	311	-	-11.7	-16.2
TOTAL	919	786	723	-	-8.0	-11.3

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

TABLE 46 OSTEND AIRPORT: DIRECT EMPLOYMENT TOP 10 IN 2009

	Name of company or organisation	Sector
1	Flemish Government	Airport operator
2	AviaPartner Belgium	Airport handling
3	Belgocontrol	Other air transport supporting activities
4	MK Airlines	Air transport
5	Customs	Public services
6	Ostend Air College	Other air transport supporting activities
7	Federal Police	Public services
8	Belair	Hotels, restaurants and catering
9	Skytanking Ostend	Trade
10	Flightcare Belgium	Airport handling
TOTAL		359 FTE
Share in total Ostend Airport		87.3 %

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

3 SUMMARY

The air transport sector was significantly affected by the economic and financial crisis. At the level of global traffic, freight transport was harder hit than passenger transport. However, both types of traffic began rising again in 2010, exceeding their pre-crisis levels. In Belgium, the impact of this crisis varied from one airport to another. In 2009, Liège Airport became Europe's 7th largest cargo airport, and moved into first place in Belgium, overtaking Brussels Airport. Conversely, in terms of passenger traffic Brussels Airport is still by far the biggest airport in Belgium with almost three-quarters of the traffic in 2010. Charleroi Airport consolidated its position in 2nd place with the dramatic expansion of its traffic, which almost tripled between 2003 and 2010.

In 2009, the air transport sector as a whole, i.e. firms in the air transport sector as well as firms in other sectors based at the site of one or more of Belgium's six airports, generated direct and indirect value added in excess of € 6.1 billion in Belgium, equivalent to 1.8 % of Belgium's GDP and 2.0 % of Belgium's domestic value added. That figure was 4 % down against 2008, but there was growth averaging 0.7 % per annum between 2007 and 2009. Direct value added came to more than € 2.6 billion in 2009, which was less than in 2007 (-2.2 % per annum on average). Three-quarters of that value added was generated inside the airports and, more specifically, 47 % in the air transport cluster inside the airports. At sectoral level, it was air transport that generated the most direct value added in 2009, with over € 470 million, of which 441 million was created inside the airports. Next after this sector is the building and repairing of aircraft sector (€ 444 million), followed by the airport operators (€ 314 million).

The air transport sector in the broad sense (including airport-related activities) provided direct and indirect employment for almost 80,300 full-time equivalents in 2009 (or 2.0 % of domestic employment in FTE), an increase of 5 % per annum on average since 2007, but 6 % down against 2008. The number of direct jobs has fallen slightly since 2007 (-0.6 % per annum, on average). In 2009, it totalled 31,600 FTE, 72 % of that figure inside the airports. The building and repairing of aircraft sector is by far the biggest employer with over 6,100 FTE in 2009, of which 4,400 work outside the airports. It is ahead of the air transport sector, which employs close on 5,000 FTE (4,800 inside the airports) and travel agencies and tour operators (4,000 FTE).

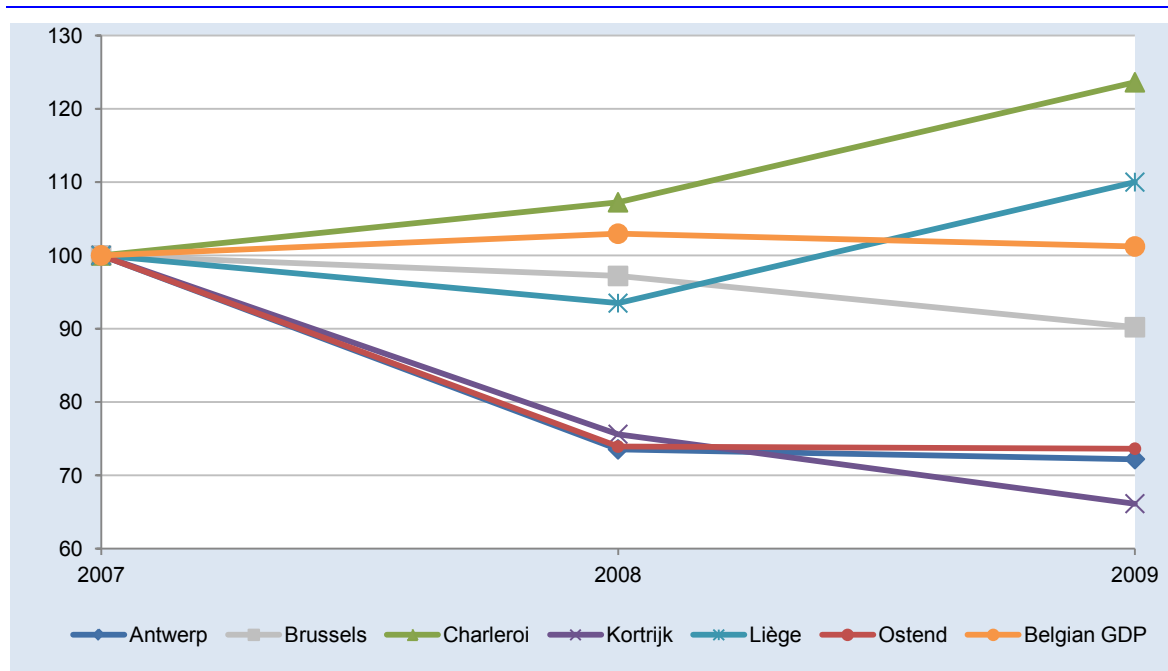
In 2009, direct investment in air transport as a whole came to almost € 380 million, down sharply both against 2008 (-23 %) and during the three years under review (-15 % per annum on average). The other air transport supporting activities sector, led by SOWAER and Belgocontrol, heads the sectors investing the largest amount in 2009, at € 97 million, despite a reduction compared to 2007 when investment in tangible fixed assets came to € 147 million. Next comes the air transport sector (in the narrowest sense), with investments totalling € 79 million in 2009, compared to € 136 million in 2007. The third biggest sector in terms of investment, namely the airport operators sector, is one of the few to record increased investment during the period under review. Despite a 29 % decline in 2009, investment in this sector increased by an average of 24 % per annum to € 78 million in 2009.

On the basis of a limited constant sample of firms representing 70 % of direct employment recorded in this study, analysis of the social balance sheet revealed that the average working time per employee in the air transport sector as a whole was significantly below the national average in 2009, and that the average staff expenses – both per FTE and per hour – were above the national average. Moreover, during the period under review the air transport sector recorded a marked fall in the number of net recruitments, a figure which actually became negative in 2009. In that same year, redundancies accounted for one in five departures, twice the proportion seen in 2007. The air transport sector also has a larger percentage of male staff than the average for the Belgian economy as a whole. Moreover, in 2009 35 % of the staff in the constant sample had higher education qualifications, and one in two had access to formal training, i.e. courses or training programmes designed by training officers.

Three financial ratios were also analysed on the basis of a constant sample representing 54 % of firms and 61 % of direct value added taken into account in this study. The return on equity after taxes of the air transport sector as a whole in 2008 and 2009 was below the average for non-financial corporations in general in Belgium. Throughout the period under review, the sector also had a higher liquidity ratio and a lower solvency ratio than the average. Another notable point is that firms in the other airport-related activities cluster have significantly higher profitability than those in the air transport cluster.

The analysis of value added and employment per airport confirms the dominance of Brussels Airport already seen in the air passenger transport figures. In fact, at 80 % of direct value added and 79 % of direct employment recorded at the airport sites, the national airport is still the leading Belgian airport in terms of economic importance. Next comes Liège Airport, representing 11 % of direct value added and direct employment inside the airports, followed by Charleroi Airport which is about half as important as Liège Airport in terms of employment and value added, and twice as important as the next two airports, namely Antwerp and Ostend. These two airports which are similar in importance are ahead of Kortrijk Airport which trails relatively far behind the others. Together, in 2009 the six airports totalled € 4 billion in direct and indirect value added and 48,000 FTE, respectively representing 1.2 % of Belgium's GDP and 1.2 % of domestic employment in FTE.

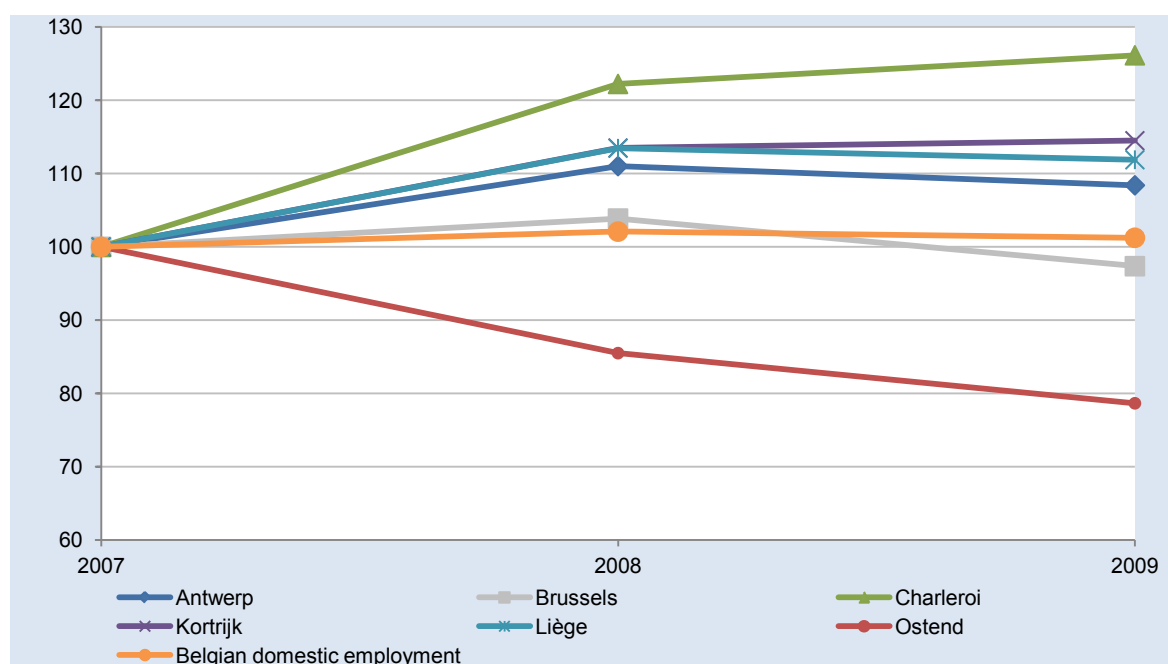
CHART 9 EVOLUTION OF DIRECT AND INDIRECT VALUE ADDED IN THE SIX BELGIAN AIRPORTS
(current prices, index 2007 = 100)



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

Chart 9 and Chart 10 show the trend in value added and employment respectively at the six airports during the period 2007 - 2009. The growth figures for passengers at Charleroi and freight at Liège clearly had a positive impact on value added in these airports. In 2009, growth at both these airports outpaced the rise in Belgian GDP. In contrast, the Flemish regional airports lost a significant share of their value added during the period under review. In terms of employment, not only Charleroi and Liège but also Kortrijk and Antwerp perform better than the national economy. The steepest decline in employment occurred at Ostend.

CHART 10 EVOLUTION OF DIRECT AND INDIRECT EMPLOYMENT IN THE SIX BELGIAN AIRPORTS
(FTE, index 2007 = 100)



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

Apart from the figures, mention should also be made of the impending partial privatisation of the Flemish regional airports. The Flemish Government has in fact begun the process of finding private partners to operate each of the three airports in order to encourage the expansion of their activities. Ultimately, all Belgian airports will therefore be run partly by private operators. In addition, Ostend Airport, which tended to focus on cargo in the past, aims to develop its passenger transport as well, and in 2007 it became the leading Flemish regional airport in that sector. This comprehensive passenger and cargo approach contrasts with the strategy of the other regional airports, which have specialised in passenger transport (Charleroi), freight (Liège), and private business aviation or flight training (Antwerp and Kortrijk).

BIBLIOGRAPHY

Air Cargo Media (2010), *Air Cargo News - March 2010*, Ashford, UK

Airline Cargo Management (2010), *Volume 9, Issue 4 - December 2010*

Air Transport World (2010), "Top 50 Airports", *World Airline Report - July 2010*, New York City, NY, USA

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

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

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

De Lloyd, miscellaneous press articles from 2009 to 2011, Antwerp

De Tijd, miscellaneous press articles from 2009 to 2011, Brussels

Deville, X. and F. Verduyn (2010), *Analysis of the population of non-financial corporations with a negative economic profitability*, NBB, Economic Review, June 2010, Brussels

Direction générale opérationnelle de la mobilité et des voies hydrauliques (2010), *1. Rapport d'activités 2009 - 2. Qui sommes-nous? 2009*

Eurostat on-line (ec.europa.eu/eurostat), Luxembourg

Heuse P. and H. Zimmer (2010), *The 2009 social balance sheet*, NBB, Economic Review, December 2010, Brussels

ICAO (2010), *Annual Report of the Council - 2009*, Montréal, Canada

ICAO (2011), *Annual Report of the Council - 2010*, Montréal, Canada

IATA (2010), *Air Transport Market Analysis – December 2009*, Geneva, Switzerland

IATA (2010), *Annual Report 2010*, Geneva, Switzerland

International Freightling Weekly (IFW): <http://www.ifw-net.com>

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), Brussels

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

Luchthaven Antwerpen (2008), *Luchthaven Antwerpen: Jaarverslag 2007*, Antwerp

Luchthaven Antwerpen (2009), *Luchthaven Antwerpen: Jaarverslag 2008*, Antwerp

Luchthaven Antwerpen (2010), *Luchthaven Antwerpen: Jaarverslag 2009*, Antwerp

Luchthaven Antwerpen (2011), *Luchthaven Antwerpen: Jaarverslag 2010*, Antwerp

- Luchthaven Antwerpen (2011), *Luchthaven Antwerpen: Statistisch Jaarboek 2010*, Antwerp
- Manager Magazines, *Manager Vlaanderen nr. 24 – maart 2008*, Hasselt
- Mathys, C. (2009), *Importance économique des ports belges : Ports maritimes flamands, complexe portuaire liégeois et port de Bruxelles - Rapport 2007*, NBB, Working Paper nr. 172 (Document series), Brussels
- NBB (2010), *Report 2009 - Economic and financial developments*, Brussels
- Ooghe H. and C. Van Wymeersch (2006), *Traité d'analyse financière tome 1*, Intersentia, Antwerp
- Ostend-Bruges International Airport: <http://www.ost.aero>
- Ostend-Bruges International Airport (2008), *Internationale Luchthaven Oostende-Brugge: Jaarverslag 2007*, Ostend
- Ostend-Bruges International Airport (2009), *Internationale Luchthaven Oostende-Brugge: Jaarverslag 2008*, Ostend
- Ostend-Bruges International Airport (2010), *Internationale Luchthaven Oostende-Brugge: Jaarverslag 2009*, Ostend
- Ostend-Bruges International Airport (2011), *Internationale Luchthaven Oostende-Brugge: Duurzaamheids- en Jaarverslag 2010*, Ostend
- Vivet, D. (2010), *Results and financial structure of firms in 2009*, NBB, Economic Review, December 2010, Brussels

ANNEX 1: DEFINITION OF THE FINANCIAL RATIOS USED IN THIS STUDY

	Headings in the accounts format	
	full	abridged
1. RETURN ON EQUITY AFTER TAX		
Numerator (N)	9904	9904
Denominator (D)	10/15	10/15
Ratio = $N/D \times 100$		
Conditions for calculating the ratio:		
12-month financial year		
10/15 > 0		
2. LIQUIDITY IN THE BROAD SENSE		
Numerator (N)	3+40/41+50/53+54/58+490/1	3+40/41+50/53+54/58+490/1
Denominator (D)	42/48+492/3	42/48+492/3
Ratio = N/D		
Conditions for calculating the ratio:		
-		
3. SOLVENCY		
Numerator (N)	10/15	10/15
Denominator (D)	10/49	10/49
Ratio = $N/D \times 100$		
Conditions for calculating the ratio:		
-		

NATIONAL BANK OF BELGIUM - WORKING PAPERS SERIES

1. "Model-based inflation forecasts and monetary policy rules", by M. Dombrecht and R. Wouters, *Research Series*, February 2000.
2. "The use of robust estimators as measures of core inflation", by L. Aucremanne, *Research Series*, February 2000.
3. "Performances économiques des Etats-Unis dans les années nonante", by A. Nyssens, P. Butzen and P. Bisciari, *Document Series*, March 2000.
4. "A model with explicit expectations for Belgium", by P. Jeanfils, *Research Series*, March 2000.
5. "Growth in an open economy: Some recent developments", by S. Turnovsky, *Research Series*, May 2000.
6. "Knowledge, technology and economic growth: An OECD perspective", by I. Visco, A. Bassanini and S. Scarpetta, *Research Series*, May 2000.
7. "Fiscal policy and growth in the context of European integration", by P. Masson, *Research Series*, May 2000.
8. "Economic growth and the labour market: Europe's challenge", by C. Wyplosz, *Research Series*, May 2000.
9. "The role of the exchange rate in economic growth: A euro-zone perspective", by R. MacDonald, *Research Series*, May 2000.
10. "Monetary union and economic growth", by J. Vickers, *Research Series*, May 2000.
11. "Politique monétaire et prix des actifs: le cas des États-Unis", by Q. Wibaut, *Document Series*, August 2000.
12. "The Belgian industrial confidence indicator: Leading indicator of economic activity in the euro area?", by J.-J. Vanhaelen, L. Dresse and J. De Mulder, *Document Series*, November 2000.
13. "Le financement des entreprises par capital-risque", by C. Rigo, *Document Series*, February 2001.
14. "La nouvelle économie" by P. Bisciari, *Document Series*, March 2001.
15. "De kostprijs van bankkredieten", by A. Bruggeman and R. Wouters, *Document Series*, April 2001.
16. "A guided tour of the world of rational expectations models and optimal policies", by Ph. Jeanfils, *Research Series*, May 2001.
17. "Attractive prices and euro - Rounding effects on inflation", by L. Aucremanne and D. Cornille, *Documents Series*, November 2001.
18. "The interest rate and credit channels in Belgium: An investigation with micro-level firm data", by P. Butzen, C. Fuss and Ph. Vermeulen, *Research series*, December 2001.
19. "Openness, imperfect exchange rate pass-through and monetary policy", by F. Smets and R. Wouters, *Research series*, March 2002.
20. "Inflation, relative prices and nominal rigidities", by L. Aucremanne, G. Brys, M. Hubert, P. J. Rousseeuw and A. Struyf, *Research series*, April 2002.
21. "Lifting the burden: Fundamental tax reform and economic growth", by D. Jorgenson, *Research series*, May 2002.
22. "What do we know about investment under uncertainty?", by L. Trigeorgis, *Research series*, May 2002.
23. "Investment, uncertainty and irreversibility: Evidence from Belgian accounting data" by D. Cassimon, P.-J. Engelen, H. Meersman and M. Van Wouwe, *Research series*, May 2002.
24. "The impact of uncertainty on investment plans", by P. Butzen, C. Fuss and Ph. Vermeulen, *Research series*, May 2002.
25. "Investment, protection, ownership, and the cost of capital", by Ch. P. Himmelberg, R. G. Hubbard and I. Love, *Research series*, May 2002.
26. "Finance, uncertainty and investment: Assessing the gains and losses of a generalised non-linear structural approach using Belgian panel data", by M. Gérard and F. Verschueren, *Research series*, May 2002.
27. "Capital structure, firm liquidity and growth", by R. Anderson, *Research series*, May 2002.
28. "Structural modelling of investment and financial constraints: Where do we stand?", by J.-B. Chatelain, *Research series*, May 2002.
29. "Financing and investment interdependencies in unquoted Belgian companies: The role of venture capital", by S. Manigart, K. Baeyens, I. Verschueren, *Research series*, May 2002.
30. "Development path and capital structure of Belgian biotechnology firms", by V. Bastin, A. Corhay, G. Hübner and P.-A. Michel, *Research series*, May 2002.
31. "Governance as a source of managerial discipline", by J. Franks, *Research series*, May 2002.
32. "Financing constraints, fixed capital and R&D investment decisions of Belgian firms", by M. Cincera, *Research series*, May 2002.

33. "Investment, R&D and liquidity constraints: A corporate governance approach to the Belgian evidence", by P. Van Cayseele, *Research series*, May 2002.
34. "On the origins of the Franco-German EMU controversies", by I. Maes, *Research series*, July 2002.
35. "An estimated dynamic stochastic general equilibrium model of the euro area", by F. Smets and R. Wouters, *Research series*, October 2002.
36. "The labour market and fiscal impact of labour tax reductions: The case of reduction of employers' social security contributions under a wage norm regime with automatic price indexing of wages", by K. Burggraefe and Ph. Du Caju, *Research series*, March 2003.
37. "Scope of asymmetries in the euro area", by S. Ide and Ph. Moës, *Document series*, March 2003.
38. "De autonijverheid in België: Het belang van het toeleveringsnetwerk rond de assemblage van personenauto's", by F. Coppens and G. van Gastel, *Document series*, June 2003.
39. "La consommation privée en Belgique", by B. Eugène, Ph. Jeanfils and B. Robert, *Document series*, June 2003.
40. "The process of European monetary integration: A comparison of the Belgian and Italian approaches", by I. Maes and L. Quaglia, *Research series*, August 2003.
41. "Stock market valuation in the United States", by P. Bisciari, A. Durré and A. Nyssens, *Document series*, November 2003.
42. "Modeling the term structure of interest rates: Where do we stand?", by K. Maes, *Research series*, February 2004.
43. "Interbank exposures: An empirical examination of system risk in the Belgian banking system", by H. Degryse and G. Nguyen, *Research series*, March 2004.
44. "How frequently do prices change? Evidence based on the micro data underlying the Belgian CPI", by L. Aucremanne and E. Dhyne, *Research series*, April 2004.
45. "Firms' investment decisions in response to demand and price uncertainty", by C. Fuss and Ph. Vermeulen, *Research series*, April 2004.
46. "SMEs and bank lending relationships: The impact of mergers", by H. Degryse, N. Masschelein and J. Mitchell, *Research series*, May 2004.
47. "The determinants of pass-through of market conditions to bank retail interest rates in Belgium", by F. De Graeve, O. De Jonghe and R. Vander Vennet, *Research series*, May 2004.
48. "Sectoral vs. country diversification benefits and downside risk", by M. Emiris, *Research series*, May 2004.
49. "How does liquidity react to stress periods in a limit order market?", by H. Beltran, A. Durré and P. Giot, *Research series*, May 2004.
50. "Financial consolidation and liquidity: Prudential regulation and/or competition policy?", by P. Van Cayseele, *Research series*, May 2004.
51. "Basel II and operational risk: Implications for risk measurement and management in the financial sector", by A. Chapelle, Y. Crama, G. Hübner and J.-P. Peters, *Research series*, May 2004.
52. "The efficiency and stability of banks and markets", by F. Allen, *Research series*, May 2004.
53. "Does financial liberalization spur growth?", by G. Bekaert, C.R. Harvey and C. Lundblad, *Research series*, May 2004.
54. "Regulating financial conglomerates", by X. Freixas, G. Lóránth, A.D. Morrison and H.S. Shin, *Research series*, May 2004.
55. "Liquidity and financial market stability", by M. O'Hara, *Research series*, May 2004.
56. "Economisch belang van de Vlaamse zeehavens: Verslag 2002", by F. Lagneaux, *Document series*, June 2004.
57. "Determinants of euro term structure of credit spreads", by A. Van Landschoot, *Research series*, July 2004.
58. "Macroeconomic and monetary policy-making at the European Commission, from the Rome Treaties to the Hague Summit", by I. Maes, *Research series*, July 2004.
59. "Liberalisation of network industries: Is electricity an exception to the rule?", by F. Coppens and D. Vivet, *Document series*, September 2004.
60. "Forecasting with a Bayesian DSGE model: An application to the euro area", by F. Smets and R. Wouters, *Research series*, September 2004.
61. "Comparing shocks and frictions in US and euro area business cycle: A Bayesian DSGE approach", by F. Smets and R. Wouters, *Research series*, October 2004.
62. "Voting on pensions: A survey", by G. de Walque, *Research series*, October 2004.
63. "Asymmetric growth and inflation developments in the acceding countries: A new assessment", by S. Ide and P. Moës, *Research series*, October 2004.
64. "Importance économique du Port Autonome de Liège: rapport 2002", by F. Lagneaux, *Document series*, November 2004.

65. "Price-setting behaviour in Belgium: What can be learned from an ad hoc survey", by L. Aucremanne and M. Druant, *Research series*, March 2005.
66. "Time-dependent versus state-dependent pricing: A panel data approach to the determinants of Belgian consumer price changes", by L. Aucremanne and E. Dhyne, *Research series*, April 2005.
67. "Indirect effects – A formal definition and degrees of dependency as an alternative to technical coefficients", by F. Coppens, *Research series*, May 2005.
68. "Noname – A new quarterly model for Belgium", by Ph. Jeanfils and K. Burggraeve, *Research series*, May 2005.
69. "Economic importance of the Flemish maritime ports: Report 2003", by F. Lagneaux, *Document series*, May 2005.
70. "Measuring inflation persistence: A structural time series approach", by M. Dossche and G. Everaert, *Research series*, June 2005.
71. "Financial intermediation theory and implications for the sources of value in structured finance markets", by J. Mitchell, *Document series*, July 2005.
72. "Liquidity risk in securities settlement", by J. Devriese and J. Mitchell, *Research series*, July 2005.
73. "An international analysis of earnings, stock prices and bond yields", by A. Durré and P. Giot, *Research series*, September 2005.
74. "Price setting in the euro area: Some stylized facts from Individual Consumer Price Data", by E. Dhyne, L. J. Álvarez, H. Le Bihan, G. Veronese, D. Dias, J. Hoffmann, N. Jonker, P. Lünemann, F. Rumler and J. Vilmunen, *Research series*, September 2005.
75. "Importance économique du Port Autonome de Liège: rapport 2003", by F. Lagneaux, *Document series*, October 2005.
76. "The pricing behaviour of firms in the euro area: New survey evidence", by S. Fabiani, M. Druant, I. Hernando, C. Kwapil, B. Landau, C. Loupias, F. Martins, T. Mathä, R. Sabbatini, H. Stahl and A. Stokman, *Research series*, November 2005.
77. "Income uncertainty and aggregate consumption", by L. Pozzi, *Research series*, November 2005.
78. "Crédits aux particuliers - Analyse des données de la Centrale des Crédits aux Particuliers", by H. De Doncker, *Document series*, January 2006.
79. "Is there a difference between solicited and unsolicited bank ratings and, if so, why?", by P. Van Roy, *Research series*, February 2006.
80. "A generalised dynamic factor model for the Belgian economy - Useful business cycle indicators and GDP growth forecasts", by Ch. Van Nieuwenhuyze, *Research series*, February 2006.
81. "Réduction linéaire de cotisations patronales à la sécurité sociale et financement alternatif", by Ph. Jeanfils, L. Van Meensel, Ph. Du Caju, Y. Saks, K. Buysse and K. Van Cauter, *Document series*, March 2006.
82. "The patterns and determinants of price setting in the Belgian industry", by D. Cornille and M. Dossche, *Research series*, May 2006.
83. "A multi-factor model for the valuation and risk management of demand deposits", by H. Dewachter, M. Lyrio and K. Maes, *Research series*, May 2006.
84. "The single European electricity market: A long road to convergence", by F. Coppens and D. Vivet, *Document series*, May 2006.
85. "Firm-specific production factors in a DSGE model with Taylor price setting", by G. de Walque, F. Smets and R. Wouters, *Research series*, June 2006.
86. "Economic importance of the Belgian ports: Flemish maritime ports and Liège port complex - Report 2004", by F. Lagneaux, *Document series*, June 2006.
87. "The response of firms' investment and financing to adverse cash flow shocks: The role of bank relationships", by C. Fuss and Ph. Vermeulen, *Research series*, July 2006.
88. "The term structure of interest rates in a DSGE model", by M. Emiris, *Research series*, July 2006.
89. "The production function approach to the Belgian output gap, estimation of a multivariate structural time series model", by Ph. Moës, *Research series*, September 2006.
90. "Industry wage differentials, unobserved ability, and rent-sharing: Evidence from matched worker-firm data, 1995-2002", by R. Plasman, F. Rycx and I. Tojerow, *Research series*, October 2006.
91. "The dynamics of trade and competition", by N. Chen, J. Imbs and A. Scott, *Research series*, October 2006.
92. "A New Keynesian model with unemployment", by O. Blanchard and J. Gali, *Research series*, October 2006.
93. "Price and wage setting in an integrating Europe: Firm level evidence", by F. Abraham, J. Konings and S. Vanormelingen, *Research series*, October 2006.
94. "Simulation, estimation and welfare implications of monetary policies in a 3-country NOEM model", by J. Plasmans, T. Michalak and J. Fornero, *Research series*, October 2006.

95. "Inflation persistence and price-setting behaviour in the euro area: A summary of the Inflation Persistence Network evidence ", by F. Altissimo, M. Ehrmann and F. Smets, *Research series*, October 2006.
96. "How wages change: Micro evidence from the International Wage Flexibility Project", by W.T. Dickens, L. Goette, E.L. Groshen, S. Holden, J. Messina, M.E. Schweitzer, J. Turunen and M. Ward, *Research series*, October 2006.
97. "Nominal wage rigidities in a new Keynesian model with frictional unemployment", by V. Bodart, G. de Walque, O. Pierrard, H.R. Sneessens and R. Wouters, *Research series*, October 2006.
98. "Dynamics on monetary policy in a fair wage model of the business cycle", by D. De la Croix, G. de Walque and R. Wouters, *Research series*, October 2006.
99. "The kinked demand curve and price rigidity: Evidence from scanner data", by M. Dossche, F. Heylen and D. Van den Poel, *Research series*, October 2006.
100. "Lumpy price adjustments: A microeconomic analysis", by E. Dhyne, C. Fuss, H. Peseran and P. Sevestre, *Research series*, October 2006.
101. "Reasons for wage rigidity in Germany", by W. Franz and F. Pfeiffer, *Research series*, October 2006.
102. "Fiscal sustainability indicators and policy design in the face of ageing", by G. Langenus, *Research series*, October 2006.
103. "Macroeconomic fluctuations and firm entry: Theory and evidence", by V. Lewis, *Research series*, October 2006.
104. "Exploring the CDS-bond basis", by J. De Wit, *Research series*, November 2006.
105. "Sector concentration in loan portfolios and economic capital", by K. Düllmann and N. Masschelein, *Research series*, November 2006.
106. "R&D in the Belgian pharmaceutical sector", by H. De Doncker, *Document series*, December 2006.
107. "Importance et évolution des investissements directs en Belgique", by Ch. Piette, *Document series*, January 2007.
108. "Investment-specific technology shocks and labor market frictions", by R. De Bock, *Research series*, February 2007.
109. "Shocks and frictions in US business cycles: A Bayesian DSGE approach", by F. Smets and R. Wouters, *Research series*, February 2007.
110. "Economic impact of port activity: A disaggregate analysis. The case of Antwerp", by F. Coppens, F. Lagneaux, H. Meersman, N. Sellekaerts, E. Van de Voorde, G. van Gastel, Th. Vanelander, A. Verhetsel, *Document series*, February 2007.
111. "Price setting in the euro area: Some stylised facts from individual producer price data", by Ph. Vermeulen, D. Dias, M. Dossche, E. Gautier, I. Hernando, R. Sabbatini, H. Stahl, *Research series*, March 2007.
112. "Assessing the gap between observed and perceived inflation in the euro area: Is the credibility of the HICP at stake?", by L. Aucremanne, M. Collin and Th. Stragier, *Research series*, April 2007.
113. "The spread of Keynesian economics: A comparison of the Belgian and Italian experiences", by I. Maes, *Research series*, April 2007.
114. "Imports and exports at the level of the firm: Evidence from Belgium", by M. Muûls and M. Pisu, *Research series*, May 2007.
115. "Economic importance of the Belgian ports: Flemish maritime ports and Liège port complex - Report 2005", by F. Lagneaux, *Document series*, May 2007.
116. "Temporal distribution of price changes: Staggering in the large and synchronization in the small", by E. Dhyne and J. Konieczny, *Research series*, June 2007.
117. "Can excess liquidity signal an asset price boom?", by A. Bruggeman, *Research series*, August 2007.
118. "The performance of credit rating systems in the assessment of collateral used in Eurosystem monetary policy operations", by F. Coppens, F. González and G. Winkler, *Research series*, September 2007.
119. "The determinants of stock and bond return comovements", by L. Baele, G. Bekaert and K. Inghelbrecht, *Research series*, October 2007.
120. "Monitoring pro-cyclicality under the capital requirements directive: Preliminary concepts for developing a framework", by N. Masschelein, *Document series*, October 2007.
121. "Dynamic order submission strategies with competition between a dealer market and a crossing network", by H. Degryse, M. Van Achter and G. Wuyts, *Research series*, November 2007.
122. "The gas chain: Influence of its specificities on the liberalisation process", by C. Swartenbroekx, *Document series*, November 2007.
123. "Failure prediction models: Performance, disagreements, and internal rating systems", by J. Mitchell and P. Van Roy, *Research series*, December 2007.
124. "Downward wage rigidity for different workers and firms: An evaluation for Belgium using the IWFP procedure", by Ph. Du Caju, C. Fuss and L. Wintr, *Research series*, December 2007.
125. "Economic importance of Belgian transport logistics", by F. Lagneaux, *Document series*, January 2008.

126. "Some evidence on late bidding in eBay auctions", by L. Wintr, *Research series*, January 2008.
127. "How do firms adjust their wage bill in Belgium? A decomposition along the intensive and extensive margins", by C. Fuss, *Research series*, January 2008.
128. "Exports and productivity – Comparable evidence for 14 countries", by The International Study Group on Exports and Productivity, *Research series*, February 2008.
129. "Estimation of monetary policy preferences in a forward-looking model: A Bayesian approach", by P. Ilbas, *Research series*, March 2008.
130. "Job creation, job destruction and firms' international trade involvement", by M. Pisu, *Research series*, March 2008.
131. "Do survey indicators let us see the business cycle? A frequency decomposition", by L. Dresse and Ch. Van Nieuwenhuyze, *Research series*, March 2008.
132. "Searching for additional sources of inflation persistence: The micro-price panel data approach", by R. Raciborski, *Research series*, April 2008.
133. "Short-term forecasting of GDP using large monthly datasets - A pseudo real-time forecast evaluation exercise", by K. Barhoumi, S. Benk, R. Cristadoro, A. Den Reijer, A. Jakaitiene, P. Jelonek, A. Rua, G. Rünstler, K. Ruth and Ch. Van Nieuwenhuyze, *Research series*, June 2008.
134. "Economic importance of the Belgian ports: Flemish maritime ports, Liège port complex and the port of Brussels - Report 2006", by S. Vennix, *Document series*, June 2008.
135. "Imperfect exchange rate pass-through: The role of distribution services and variable demand elasticity", by Ph. Jeanfils, *Research series*, August 2008.
136. "Multivariate structural time series models with dual cycles: Implications for measurement of output gap and potential growth", by Ph. Moës, *Research series*, August 2008.
137. "Agency problems in structured finance - A case study of European CLOs", by J. Keller, *Document series*, August 2008.
138. "The efficiency frontier as a method for gauging the performance of public expenditure: A Belgian case study", by B. Eugène, *Research series*, September 2008.
139. "Exporters and credit constraints. A firm-level approach", by M. Muûls, *Research series*, September 2008.
140. "Export destinations and learning-by-exporting: Evidence from Belgium", by M. Pisu, *Research series*, September 2008.
141. "Monetary aggregates and liquidity in a neo-Wicksellian framework", by M. Canzoneri, R. Cumby, B. Diba and D. López-Salido, *Research series*, October 2008.
142. "Liquidity, inflation and asset prices in a time-varying framework for the euro area, by Ch. Baumeister, E. Durinck and G. Peersman, *Research series*, October 2008.
143. "The bond premium in a DSGE model with long-run real and nominal risks", by G. D. Rudebusch and E. T. Swanson, *Research series*, October 2008.
144. "Imperfect information, macroeconomic dynamics and the yield curve: An encompassing macro-finance model", by H. Dewachter, *Research series*, October 2008.
145. "Housing market spillovers: Evidence from an estimated DSGE model", by M. Iacoviello and S. Neri, *Research series*, October 2008.
146. "Credit frictions and optimal monetary policy", by V. Cúrdia and M. Woodford, *Research series*, October 2008.
147. "Central Bank misperceptions and the role of money in interest rate rules", by G. Beck and V. Wieland, *Research series*, October 2008.
148. "Financial (in)stability, supervision and liquidity injections: A dynamic general equilibrium approach", by G. de Walque, O. Pierrard and A. Rouabah, *Research series*, October 2008.
149. "Monetary policy, asset prices and macroeconomic conditions: A panel-VAR study", by K. Assenmacher-Wesche and S. Gerlach, *Research series*, October 2008.
150. "Risk premiums and macroeconomic dynamics in a heterogeneous agent model", by F. De Graeve, M. Dossche, M. Emir, H. Sneessens and R. Wouters, *Research series*, October 2008.
151. "Financial factors in economic fluctuations", by L. J. Christiano, R. Motto and M. Rotagno, *Research series*, to be published.
152. "Rent-sharing under different bargaining regimes: Evidence from linked employer-employee data", by M. Rusinek and F. Rycx, *Research series*, December 2008.
153. "Forecast with judgment and models", by F. Monti, *Research series*, December 2008.
154. "Institutional features of wage bargaining in 23 European countries, the US and Japan", by Ph. Du Caju, E. Gautier, D. Momferatou and M. Ward-Warmedinger, *Research series*, December 2008.
155. "Fiscal sustainability and policy implications for the euro area", by F. Balassone, J. Cunha, G. Langenus, B. Manzke, J. Pavot, D. Prammer and P. Tommasino, *Research series*, January 2009.
156. "Understanding sectoral differences in downward real wage rigidity: Workforce composition, institutions, technology and competition", by Ph. Du Caju, C. Fuss and L. Wintr, *Research series*, February 2009.

157. "Sequential bargaining in a New Keynesian model with frictional unemployment and staggered wage negotiation", by G. de Walque, O. Pierrard, H. Sneessens and R. Wouters, *Research series*, February 2009.
158. "Economic importance of air transport and airport activities in Belgium", by F. Kupfer and F. Lagneaux, *Document series*, March 2009.
159. "Rigid labour compensation and flexible employment? Firm-Level evidence with regard to productivity for Belgium", by C. Fuss and L. Wintr, *Research series*, March 2009.
160. "The Belgian iron and steel industry in the international context", by F. Lagneaux and D. Vivet, *Document series*, March 2009.
161. "Trade, wages and productivity", by K. Behrens, G. Mion, Y. Murata and J. Südekum, *Research series*, March 2009.
162. "Labour flows in Belgium", by P. Heuse and Y. Saks, *Research series*, April 2009.
163. "The young Lamfalussy: An empirical and policy-oriented growth theorist", by I. Maes, *Research series*, April 2009.
164. "Inflation dynamics with labour market matching: Assessing alternative specifications", by K. Christoffel, J. Costain, G. de Walque, K. Kuester, T. Linzert, S. Millard and O. Pierrard, *Research series*, May 2009.
165. "Understanding inflation dynamics: Where do we stand?", by M. Dossche, *Research series*, June 2009.
166. "Input-output connections between sectors and optimal monetary policy", by E. Kara, *Research series*, June 2009.
167. "Back to the basics in banking? A micro-analysis of banking system stability", by O. De Jonghe, *Research series*, June 2009.
168. "Model misspecification, learning and the exchange rate disconnect puzzle", by V. Lewis and A. Markiewicz, *Research series*, July 2009.
169. "The use of fixed-term contracts and the labour adjustment in Belgium", by E. Dhyne and B. Mahy, *Research series*, July 2009.
170. "Analysis of business demography using markov chains – An application to Belgian data", by F. Coppens and F. Verduyn, *Research series*, July 2009.
171. "A global assessment of the degree of price stickiness - Results from the NBB business survey", by E. Dhyne, *Research series*, July 2009.
172. "Economic importance of the Belgian ports: Flemish maritime ports, Liège port complex and the port of Brussels - Report 2007", by C. Mathys, *Document series*, July 2009.
173. "Evaluating a monetary business cycle model with unemployment for the euro area", by N. Groshenny, *Research series*, July 2009.
174. "How are firms' wages and prices linked: Survey evidence in Europe", by M. Druant, S. Fabiani and G. Kezdi, A. Lamo, F. Martins and R. Sabbatini, *Research series*, August 2009.
175. "Micro-data on nominal rigidity, inflation persistence and optimal monetary policy", by E. Kara, *Research series*, September 2009.
176. "On the origins of the BIS macro-prudential approach to financial stability: Alexandre Lamfalussy and financial fragility", by I. Maes, *Research series*, October 2009.
177. "Incentives and tranche retention in securitisation: A screening model", by I. Fender and J. Mitchell, *Research series*, October 2009.
178. "Optimal monetary policy and firm entry", by V. Lewis, *Research series*, October 2009.
179. "Staying, dropping, or switching: The impacts of bank mergers on small firms", by H. Degryse, N. Masschelein and J. Mitchell, *Research series*, October 2009.
180. "Inter-industry wage differentials: How much does rent sharing matter?", by Ph. Du Caju, F. Rycx and I. Tojerow, *Research series*, October 2009.
181. "Empirical evidence on the aggregate effects of anticipated and unanticipated US tax policy shocks", by K. Mertens and M. O. Ravn, *Research series*, November 2009.
182. "Downward nominal and real wage rigidity: Survey evidence from European firms", by J. Babecký, Ph. Du Caju, T. Kosma, M. Lawless, J. Messina and T. Rõõm, *Research series*, November 2009.
183. "The margins of labour cost adjustment: Survey evidence from European firms", by J. Babecký, Ph. Du Caju, T. Kosma, M. Lawless, J. Messina and T. Rõõm, *Research series*, November 2009.
184. "Discriminatory fees, coordination and investment in shared ATM networks" by S. Ferrari, *Research series*, January 2010.
185. "Self-fulfilling liquidity dry-ups", by F. Malherbe, *Research series*, March 2010.
186. "The development of monetary policy in the 20th century - some reflections", by O. Issing, *Research series*, April 2010.
187. "Getting rid of Keynes? A survey of the history of macroeconomics from Keynes to Lucas and beyond", by M. De Vroey, *Research series*, April 2010.
188. "A century of macroeconomic and monetary thought at the National Bank of Belgium", by I. Maes, *Research series*, April 2010.

189. "Inter-industry wage differentials in EU countries: What do cross-country time-varying data add to the picture?", by Ph. Du Caju, G. Kátay, A. Lamo, D. Nicolitsas and S. Poelhekke, *Research series*, April 2010.
190. "What determines euro area bank CDS spreads?", by J. Annaert, M. De Ceuster, P. Van Roy and C. Vespro, *Research series*, May 2010.
191. "The incidence of nominal and real wage rigidity: An individual-based sectoral approach", by J. Messina, Ph. Du Caju, C. F. Duarte, N. L. Hansen, M. Izquierdo, *Research series*, June 2010.
192. "Economic importance of the Belgian ports: Flemish maritime ports, Liège port complex and the port of Brussels - Report 2008", by C. Mathys, *Document series*, July 2010.
193. "Wages, labor or prices: how do firms react to shocks?", by E. Dhyne and M. Druant, *Research series*, July 2010.
194. "Trade with China and skill upgrading: Evidence from Belgian firm level data", by G. Mion, H. Vandenbussche, and L. Zhu, *Research series*, September 2010.
195. "Trade crisis? What trade crisis?", by K. Behrens, G. Corcos and G. Mion, *Research series*, September 2010.
196. "Trade and the global recession", by J. Eaton, S. Kortum, B. Neiman and J. Romalis, *Research series*, October 2010.
197. "Internationalization strategy and performance of small and medium sized enterprises", by J. Onkelinx and L. Sleuwaegen, *Research series*, October 2010.
198. "The internationalization process of firms: From exports to FDI?", by P. Conconi, A. Sapir and M. Zanardi, *Research series*, October 2010.
199. "Intermediaries in international trade: Direct versus indirect modes of export", by A. B. Bernard, M. Grazzi and C. Tomasi, *Research series*, October 2010.
200. "Trade in services: IT and task content", by A. Ariu and G. Mion, *Research series*, October 2010.
201. "The productivity and export spillovers of the internationalisation behaviour of Belgian firms", by M. Dumont, B. Merlevede, C. Piette and G. Rayp, *Research series*, October 2010.
202. "Market size, competition, and the product mix of exporters", by T. Mayer, M. J. Melitz and G. I. P. Ottaviano, *Research series*, October 2010.
203. "Multi-product exporters, carry-along trade and the margins of trade", by A. B. Bernard, I. Van Beveren and H. Vandenbussche, *Research series*, October 2010.
204. "Can Belgian firms cope with the Chinese dragon and the Asian tigers? The export performance of multi-product firms on foreign markets" by F. Abraham and J. Van Hove, *Research series*, October 2010.
205. "Immigration, offshoring and American jobs", by G. I. P. Ottaviano, G. Peri and G. C. Wright, *Research series*, October 2010.
206. "The effects of internationalisation on domestic labour demand by skills: Firm-level evidence for Belgium", by L. Cuyvers, E. Dhyne, and R. Soeng, *Research series*, October 2010.
207. "Labour demand adjustment: Does foreign ownership matter?", by E. Dhyne, C. Fuss and C. Mathieu, *Research series*, October 2010.
208. "The Taylor principle and (in-)determinacy in a New Keynesian model with hiring frictions and skill loss", by A. Rannenberg, *Research series*, November 2010.
209. "Wage and employment effects of a wage norm: The Polish transition experience" by A. de Crombrughe and G. de Walque, *Research series*, February 2011.
210. "Estimating monetary policy reaction functions: A discrete choice approach" by J. Boeckx, *Research series*, February 2011.
211. "Firm entry, inflation and the monetary transmission mechanism" by V. Lewis and C. Poilly, *Research series*, February 2011.
212. "The link between mobile telephony arrears and credit arrears" by H. De Doncker, *Document series*, March 2011.
213. "Development of a financial health indicator based on companies' annual accounts", by D. Vivet, *Document series*, April 2011.
214. "Wage structure effects of international trade: Evidence from a small open economy", by Ph. Du Caju, F. Rycx and I. Tojerow, *Research series*, April 2011.
215. "Economic importance of the Belgian ports: Flemish maritime ports, Liège port complex and the port of Brussels - Report 2009", by C. Mathys, *Document series*, June 2011.
216. "Verti-zontal differentiation in monopolistic competition", by F. Di Comite, J.-F. Thisse and H. Vandenbussche, *Research series*, October 2011.
217. "The evolution of Alexandre Lamfalussy's thought on the international and European monetary system (1961-1993)" by I. Maes, *Research series*, November 2011.
218. "Economic importance of air transport and airport activities in Belgium – Report 2009", by X. Deville and S. Vennix, *Document series*, December 2011.

National Bank of Belgium
Limited liability company
RLP Brussels – Company's number: 0203.201.340
Registered office: boulevard de Berlaimont 14 – BE-1000 Brussels
www.nbb.be

Editor

Jan Smets

Member of the Board of directors of the National Bank of Belgium

© Illustrations: National Bank of Belgium

Layout: Analysis and Research Group
Cover: NBB AG – Prepress & Image

Published in December 2011