Economic importance of the logistics sector in Belgium

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Abstract

This Working Paper assesses the economic importance of the logistics sector in Belgium for the period 2010-2015 on the basis of the data from the annual accounts submitted to the NBB's Central Balance Sheet Office. The logistics sector was defined on the basis of the NACE-Bel nomenclature of activities and corresponds to what is generally referred to as the professional logistics sector.

The sector's economic importance was calculated via two different channels, namely the direct and indirect effects. The direct effects concern the contribution made within the sector itself in terms of value added, employment and investment. Those results are also broken down according to firm size and region. The indirect effects generated by the sector through its links with the rest of the economy are estimated for the variables employment and value added. The sensitivity of the results to the definition of the sector is then assessed by a rough estimate of the logistic activities taking place outside the defined sector.

The results of the calculations show that in 2015 the logistics sector directly created € 11.9 billion in value added and employed 134 000 full-time equivalents; in so doing, the sector contributed 2.9% of GDP and 3.3% of domestic employment (expressed in full-time equivalents). The total economic importance of the logistic sector – i.e. including the indirect effects generated by the sector– came to 4.6% of GDP and 5.4% of domestic employment. If the definition of the sector is extended to include logistic activities outside the defined sector, the estimates for both percentages increase by more than half, to roughly 7.6% of GDP and 8.0% of domestic employment.

In the Working Paper, the analysis of the sector's economic importance is supplemented by an analysis from the social and financial point of view, presenting the findings relating to the social balance sheet, the financial ratios, the NBB's financial health indicator, and credit risk based on the NBB's In-house Credit Assessment System.

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Keywords: transport, logistics, sector analysis, value added, employment, investment, indirect effects

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Introduction

With its central location in Europe and the existing infrastructure (seaports, airports and well-developed network for transport by land, rail and inland waterways), Belgium has some significant advantages as a location for logistic activities. The logistics sector holds an important position in the economy, and was designated a strategic priority sector by the regional governments.

In 2008 the NBB published its first Working Paper[1] assessing the economic importance of the sector. Since then, however, the market environment has changed radically. The economic crisis of 2008-2009 had a serious impact on this very cyclically sensitive sector. Moreover, various forces fundamentally altered the playing field for logistics companies. Increased pressure of competition from Central and Eastern Europe as a result of the enlargement of the EU and the rise of e-commerce are striking developments which have had a major influence on the sector's market conditions in the last decade.

In response to requests from the sector, the NBB therefore conducted another study on the logistics sector, and the results are presented in this paper. The aim of the study is to establish the current situation by updating the calculation of the sector's economic importance. Those calculations were conducted for the period 2010-2015, with the emphasis on 2015, and are based on the micro-economic data obtained from the annual accounts submitted to the NBB's Central Balance Sheet Office (CBSO).

This research paper is in 3 parts.

Part 1 covers the definitions of logistics, the delineation of the logistics sector and the way in which the data set for the study was compiled.

The second part of the paper assesses the economic importance of the logistics sector via two different channels, namely the direct and indirect effects. The direct effects concern the contribution made within the sector itself in terms of value added, employment and investment. Those results are also broken down according to firm size and region. The sensitivity of the results to the definition of the sector is then briefly examined by also looking at the logistic activities taking place outside the defined sector. In the case of the indirect effects, the input-output tables are used to examine the upstream effects generated via the (domestic) supply chains, or in other words the impact on other sectors of the Belgian economy resulting from the intermediate consumption of goods and services bought from Belgian suppliers. These indirect effects are estimated via two variables: employment and value added.

In the third part, the analysis of the sector's economic importance is supplemented by an analysis from the social and financial point of view, presenting the results of the social balance sheet, the financial ratios, the NBB's financial health indicator, and credit risk based on the NBB's In-house Credit Assessment System (ICAS).

[1] Lagneaux (2008).

1. The logistics sector: definition, data set and market context

1.1 Definition and delineation of the logistics sector

The literature contains various definitions of logistics[2]. Some of those definitions state briefly that *"*logistics covers the activities that manage flows of goods"[3], while others offer a fuller definition: *"*Logistics is a set of services including the planning, organisation, management, execution and monitoring of a company's entire material, goods and information flows (from purchasing, production and warehousing, to added value services, distribution and reverse logistics*)"*[4].

However, it is clear from all the definitions that logistics is a very elastic term. Goods flow both within a single firm and between different firms; flows can be managed in house or outsourced to professional service providers, and ultimately logistic activities take place in one form or another in more or less every sector of the economy. The size of the logistics sector and the quantification of its economic importance therefore depend very much on the definition used.

Like the earlier study published by the NBB on the logistics sector, this study adopts a pragmatic approach. The logistics sector is defined in the strict sense here and concerns more specifically the branches relating to goods transportation and the associated transport supporting services from section H (Transport and storage) in the NACE-Bel nomenclature. That definition of the logistics sector offers the best way of calculating the sector's economic impact since statistical information is available on the basis of the NACE-Bel nomenclature of activities.

Table 1 shows the branches included in the study at the NACE 5-digit level, and the two subsectors in which they are aggregated.

The transport subsector covers the various forms of transport used to carry freight: rail freight, road haulage (including removal services), transport via pipeline, sea and coastal freight water transport, inland freight water transport and freight transport by air. Other logistic services include services incidental to transportation, storage, cargo handling, other transportation supporting activities (including intermediaries, namely agencies and forwarders) and postal and courier activities. Since the activities that come under the branch covering services incidental to transportation may also relate to passenger transport, an adjustment is made here in the composition of the data set (see section 1.2 and section 2.1.1).

The data set therefore coincides with what is generally known as the professional logistics sector, namely firms that primary carry out logistic activities for third parties. Section 2.4 of this paper attempts to give some indication of the importance of the logistic activities that, strictly speaking, fall outside the professional sector and are therefore outside the scope of this study.

[2] For an overview of these definitions, see Lagneaux (2008).
[3] Vanoutrive et al. (2014) p2.
[4] EC (2015) p23.

TABLE 1 NACE-BEL BRANCHES INCLUDED IN THE STUDY

NACE-Bel	Description	Branch of activity	Subsector
49200	Freight rail transport	Rail transport	Transport
49410	Freight road transport (except removal)	Road transport	Transport
49420	Removal services	Road transport	Transport
49500	Transport via pipelines	Pipeline transport	Transport
50200	Sea and coastal freight water transport	Sea and coastal water transport	Transport
50400	Inland freight water transport	Inland water transport	Transport
51210	Freight transport by air	Air transport	Transport
52241	Cargo handling in seaports	Cargo handling	Other Logistic Services
52249	Other cargo handling (except seaports)	Cargo handling	Other Logistic Services
52100	Warehousing and storage (including refrigerating)	Cargo storage	Other Logistic Services
52210	Service activities incidental to land transportation	Supporting transport activities	Other Logistic Services
52220	Service activities incidental to water transportation	Supporting transport activities	Other Logistic Services
52230	Service activities incidental to air transportation	Supporting transport activities	Other Logistic Services
52290	Other transportation supporting activities	Agencies and forwarders	Other Logistic Services
53100	Postal activities under universal service obligation	Postal and courier activities	Other Logistic Services
53200	Other postal and courier activities	Postal and courier activities	Other Logistic Services

Sources: NAI, NBB.

1.2 Composition of the data set

In principle, the data set comprises all companies which came under the selected NACE-Bel codes according to the national accounts database (NAD) in the period 2010-2015 and which had submitted annual accounts to the Central Balance Sheet Office for the years in question[5,6]. Sole traders (natural persons) were therefore not included in the data set[7]. In this text however, the terms companies, firms and businesses are used as synonyms.

The database also includes Belgian branches of foreign firms and non-profit institutions (NPI) in so far as those legal persons employed staff according to the NAD data.

Since 2009, the NACE-Bel2008[8] has applied to the sectoral classification of firms. During the years considered in this study, there was harmonisation of the NACE-Bel activity codes assigned to firms between the institutions of the National Accounts Institute (NAI). In principle, these harmonised codes

[5] Obvious misclassifications were corrected, and activities concerning passenger transport were eliminated. The NACE-Bel codes of some companies were coordinated with the codes used in the NBB's studies of ports and airports.
[6] For more information on the obligation to file annual accounts, see the website of the NBB's Central Balance Sheet Office: http://www.nbb.be > Central Balance Sheet Office > filing.
[7] According to data from the Institute of Road Transport and Logistics in Belgium (ITLB), the number of sole traders in the logistics sector appears to be quite considerable: in 2013, the professional road hauliers sector included 1615 sole traders. (ITLB (2016))
[8] For more information on the NACE-Bel codes, see the website of the Directorate General of Statistics (DGS): http://statbel.fgov.be

were introduced retroactively from the year 2009. Consequently, the data set in this study is not immediately comparable with the one for the study of the logistics sector published previously by the NBB, which was based on NACE-Bel2003. As a result of changes in the activity codes assigned to them following the introduction of NACE-Bel2008 and harmonisation within the NAI, firms were added to or removed from the logistics sector, or were transferred between branches within the logistics sector[9]. Due caution is therefore necessary when comparing the results of this study with the previous edition.

As stated in section 1.1 above, adjustments were made for some firms that come under the transport-related services branch. On the one hand, businesses concerned (primarily) with passenger transport, such as urban car parks and recovery services, were eliminated from the data set. Also, a number of larger firms with mixed activities were only partially included in the data set[10].

In addition, a few firms for which the NACE-Bel code was not among the selected codes were deemed to belong to the logistics sector. More specifically, that concerns the SNCB/NMBS (transport operator) which officially comes under NACE-Bel code 49.100 (passenger rail transport), but was included in the data set in respect of its share in freight transport under NACE-Bel code 49.200 (freight rail transport). By analogy with the port studies published by the NBB, the employers' associations in the Belgian ports – classified under activity code 78.200 (employment agencies) in the NAD – were added to the cargo handling branch for the purposes of this study.

In principle, Belgian firms have to file their annual accounts within 7 months following the end of the financial year. In practice, however, some firms – mainly the smallest businesses or ones in difficulties – do not fulfil their publication obligation by that date. Extraction of the data for this study was concluded at the end of December 2016. For firms which were included in the database in 2014 but had not yet filed any annual accounts for 2015 at the end of December 2016, estimates were made unless the Central Enterprise Databank (CED) was aware of the cessation of activities. These estimates concern around 250 small firms; in 2015 they represented less than 0.4% of direct employment and 0.3% of direct value added. Consequently, in a few cases the number of firms and the results for 2015 are only estimates and are not yet final; they are marked as provisional (^{p}) in the tables and charts. However, in view of the limited importance of these firms, the estimates for 2015 do not alter the fundamental trends for that year.

1.3 Description of the data set

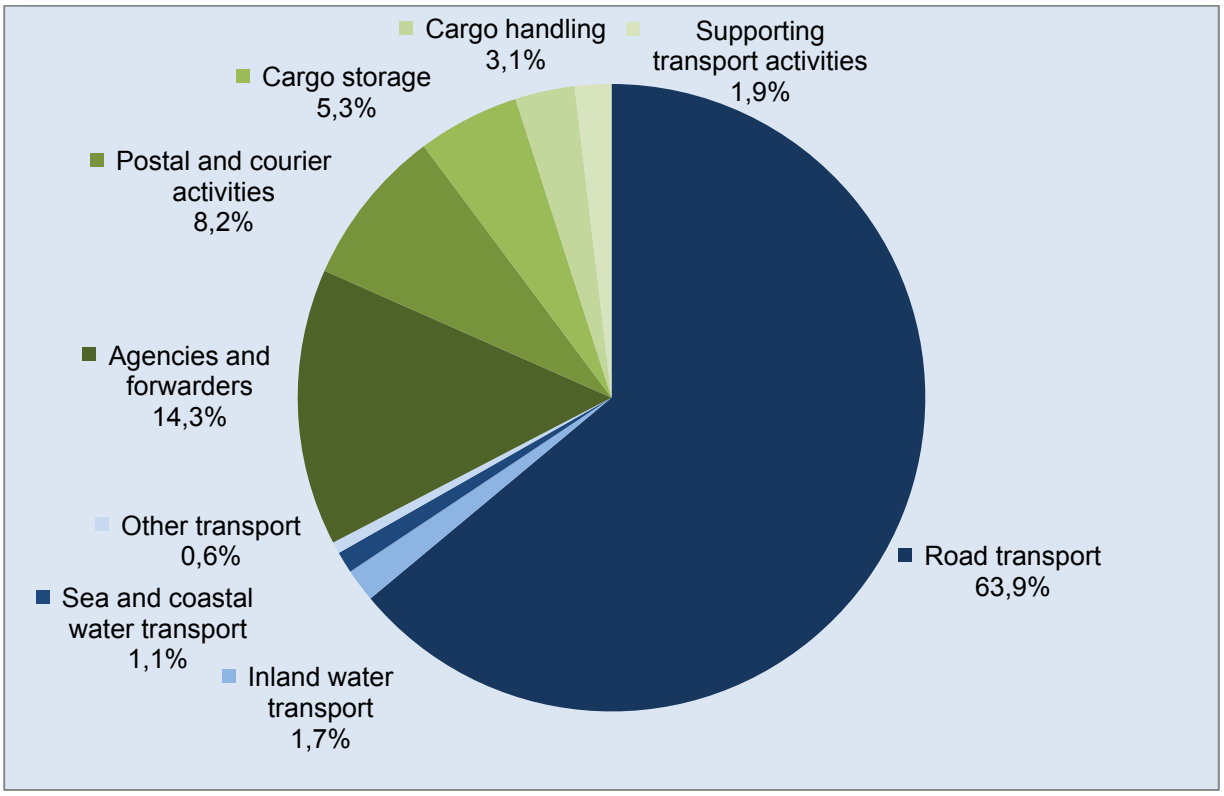
The total number of firms in the logistics sector is roughly 9000. Over the period 2010-2015 that figure declined steadily from almost 9300 in 2010 to just over 8800 in 2015. That fall is attributable primarily to the subsector transport, and more specifically the road transport branch which accounts for the major part of the sector.

There are various reasons for the net decline in the number of firms. There may actually be firms that cease trading, either as a result of liquidation (voluntary or otherwise), or as a result of mergers and acquisitions. Changing activities may also be the reason, because firms are classified entirely in one particular branch on the basis of their main activity, so that they may cease to belong to the logistics sector[11]. Finally, firms may disappear from the data set because they no longer meet the other criteria

[9] In this connection the NAI found that, in 2012, at the branch level that it uses for publication, 8.9% of the value added of non-financial corporations changed branches as a result of that harmonisation.. (NAI (2015a))
[10] See section 2.1.1.
[11] In this connection it is always possible that the harmonisation of the NACE-Bel codes allocated among the NAI institutions, mentioned in section 1.2, may have played a role here.

for inclusion in the database – filing annual accounts in the case of Belgian firms, and employing staff in the case of foreign firms. In many cases, that presages the final cessation of activities.

CHART 1 COMPANIES BY BRANCH OF ACTIVITY
(in % of total number of companies, 2015[p])



Sources: NAI,NBB.

There was little change in the branch structure of the sector over the period considered. However, in regard to the apparently unchanged structure and, more generally, the breakdown of the results by branch, it should be noted that the divisions between branches are certainly not clear-cut. Operators do not all confine their activities purely to their own branch: they often engage in mixed activities, and diversification is actually a deliberate strategy. For example, road hauliers and forwarders are increasingly offering storage facilities and value added activities and services[12] (see also section 1.4).

In 2015, 67.3% or roughly two-thirds of the sector consisted of transport firms and 32.7%, or approximately one-third, comprised other logistic service providers. Road transport is by far the most important branch with a share of 63.9%, followed by agencies and forwarders (14.3%), and postal and courier activities (8.2%). In relative terms, the smallest branches are freight rail transport, transport via pipelines and freight transport by air; their joint share is barely 0.6%. The small number of firms in these branches is obviously due to the more difficult access to these market segments, in view of the substantial physical investment and/or the importance of historical monopolies. (chart1)

[12] Value added logistics (VAL) and value added services (VAS) are logistic services relating respectively to the flow of goods and the flow of information that a logistic services provider offers to customers. Examples of VAL are labelling and assembly; examples of VAS are stock management and customs management. (VIL (2004))

1.4 Market context

The country's central location in Europe and the existing infrastructure (sea ports, airports and a well-developed transport network by road, rail and inland waterways) give Belgium a significant advantage as a location for logistic activities. Belgium has traditionally ranked high in the logistics league table. The World Bank's Logistics Performance Index (LPI) 2016 ranks Belgium in 6th place, and a recent survey by the logistic real estate manager ProLogis confirmed that Benelux is a favourite location for distribution activities[13,14.] This has also resulted in a leading position in international trade; according to the World Trade Organisation's data, Belgium was ranked as the world's 12th largest exporter and 14th largest importer of goods in 2016[15]. Logistics is an important sector of the economy in terms of value added and employment, and is regarded as a priority cluster by (regional) policymakers.

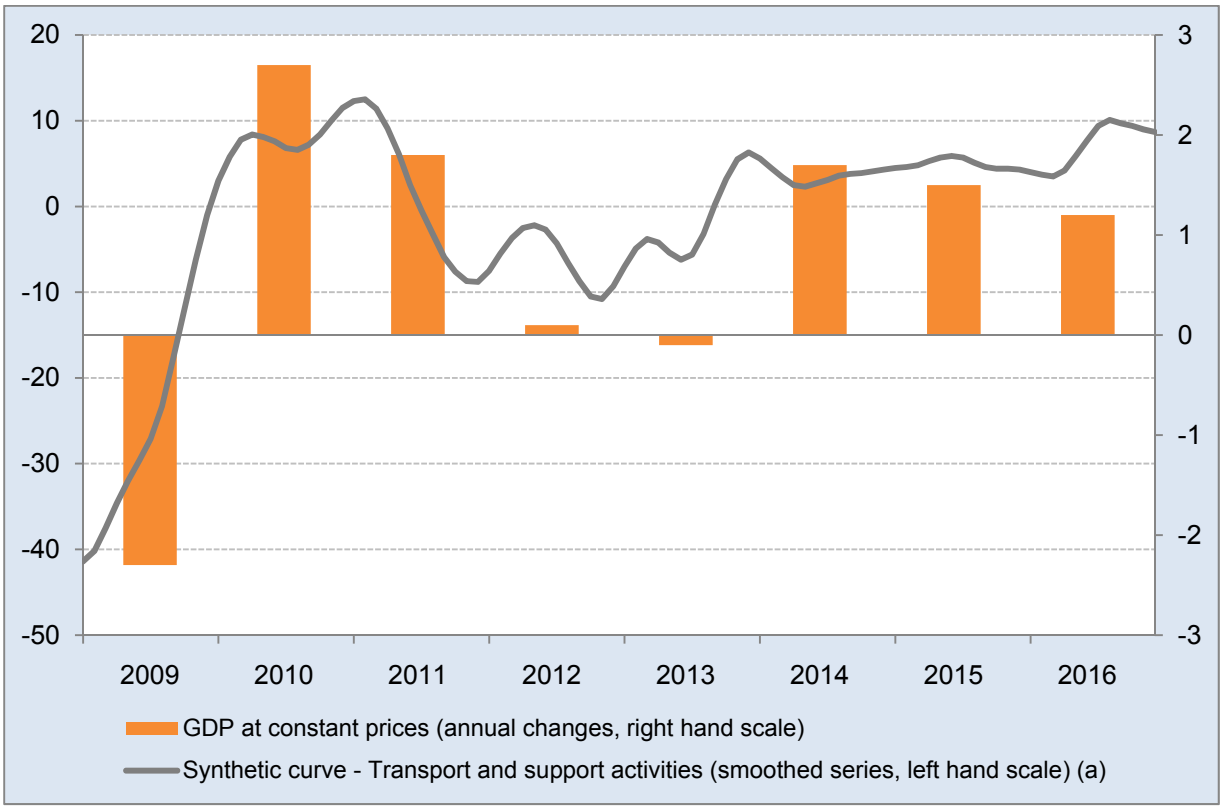
Logistics is naturally also a cornerstone of the economy because of its facilitating role, as a vital link for business activity in the other sectors In turn, the logistics sector is heavily dependent on national and international business: no flows of goods take place without production and trade. This great sensitivity to the business cycle is reflected in chart 2, showing the close correlation between the synthetic business indicator for the sector "transport and support activities"[16] and GDP or general (domestic) activity.

Until the spring of 2011, Belgium was still recovering noticeably more strongly than the rest of the EU after the global and financial crisis of 2008-2009. However, during 2011 the business climate began to deteriorate rapidly, and stagnation ensued. In mid-2013 a recovery set in, and persisted at a modest pace in the subsequent years. The figures published by Eurostat for activity in the Belgian seaports and airports reflect that cyclical pattern. Over the period 2010-2015 the freight tonnage handled increased by 5.8% for the seaports and 18.1% for the airports, while the increases for the EU as a whole came to 4.6% and 11.4% respectively. Transport by inland waterway (in tonne/kilometres) also recorded a (marked) increase between 2010 and 2015, namely 15.0% (EU:-5.1%). However, in the same period, road haulage by Belgian vehicles declined almost continuously: at the end of 2015 the volume in tonne/kilometres was 9.4% lower than in 2010, whereas the EU as a whole recorded a small rise of 0.7%.

Apart from the impact of cyclical factors such as economic activity, the logistics sector is greatly influenced by social trends and market developments. Various external factors (political, regulatory, socio-cultural, economic, technological, ecological, etc.) which also interact with one another have radically altered the playing field for the logistics sector in recent decades. The logistics players' response to those changed market conditions triggered a dynamic and resulted in logistic trends. Various authors regard globalisation, chain reversal, the rise of new technologies and the growing concern for sustainability as the main driving forces behind the current trends in logistics[17].

[13] World Bank (2016); Prologis (2016).
[14] However, Belgium's lower ranking compared to LPI2014 (third place), and the rise of Central and East European locations to the detriment of Western Europe, identified by Prologis in the study, show that the top position is not secure.
[15] World Trade Organisation (2017).
[16] The business survey curve for transport and support activities is based on the responses from 200 firms active in road haulage, cargo handling, storage, transport supporting activities and other transport intermediaries.
[17] E.g. EU (2015), ING (2015), ING (2016), VIL (2004), Rome (2004), Van Nieuwenhuyse (2004) and Sleuwagen et al. (2004).

CHART 2 GDP AND BUSINESS CLIMATE INDICATOR FOR THE LOGISTICS SECTOR



Sources: NAI, NBB.
(a) Balance of replies to monthly survey, seasonally adjusted data.

On the one hand, the globalisation of the economy, with the lowering or total elimination of geographical barriers between markets, has led to increased consumer demand which has also benefited the logistics sector. On the other hand, however, that has also generated greater regional and/or global pressure of competition and eroded competitive advantages. Firms have abandoned a multinational strategy and have restructured and optimised their production and logistic activities by developing them on an appropriate scale in the right location. The rise of regional and European distribution centres which are replacing national distribution centres is one sign of that; another is the trend towards outsourcing of logistic activities to specialist logistic service providers. For cost reasons, producers concentrate on their core activities and outsource part of the increasingly long and complex logistic chain. The range of outsourced logistic activities is ever expanding, from purely operational logistic activities (transport and storage) to value added logistics (VAL) and value added services (VAS), and including total supply chain management, creating logistics networks. These various basic forms of outsourcing are generally referred to as 1PL, 2 PL, 3 PL and 4PL (i.e. respectively first, second, third and fourth party logistics)[18].

The logistics sector likewise encountered increased international competition and that has become considerably more acute in the past decade owing to the further liberalisation of the European transport market and the eastward enlargement of the EU. Transport firms (particularly road hauliers) are being especially hard hit by that market development; as regards the logistic locations for distribution centres, Central and Eastern Europe are becoming more attractive, to the detriment of

[18] See Annex 1 for a definition of these terms.

Western Europe[19]. As a result, logistics firms feel the need to aim at a strategy of growth and cost reduction and/or specialisation by scaling up. Some hauliers have latched onto the trend towards outsourcing to offer other activities with better profit margins than those on transport (3PL), or have even gone a stage further and work as chain managers via subcontractors (4PL). Conversely, others have opted to specialise in particular market segments (such as tank trucks), a particular region (such as Benelux) or a particular product (such as healthcare) in order to stand out from the competition, or have set up subsidiaries in Eastern Europe. (see Annex 2)

The trend towards chain reversal is due to the stronger focus on service and the shift from a supply-oriented economy to one more geared to demand. The logistics chain must then be approached on the basis of the preferences of businesses or consumers. The modern, well-informed customer is very demanding; reliable, speedy delivery of personalised products – e.g. just-in-time deliveries to firms or the delivery of online orders to consumers – has become the new norm. For firms, it is important in that case to make their products customer-specific at the latest possible stage in the logistics chain (mass customisation), and to continue for as long as possible operating with large pack sizes, low transport costs and limited stocks of basic products. Logistics firms have responded to that development by offering VAL (customer-specific final assembly and packing, etc.) as part of their range of logistic services.

The rise of new technologies, especially information and communication technology (ICT), is another development that has had a significant impact on the organisation of firms in the logistics sector. The widespread internal and external use of new technologies such as ICT tools can make logistic processes more efficient and flexible, expand capacity and drive down costs. There are countless examples of this: real-time track-and-tracing of goods, navigation systems, on-board computers, intelligent transport systems (ITS)[20], (external) data exchange via data platforms, route planning software, warehouse management software, etc. Technological progress is constantly generating new possibilities and they are being tried out in logistics (self-driving cars, use of drones (in warehouses), 3D -printing, etc.).

Of course, where technological developments are concerned, the rise of e-commerce cannot be ignored. However, e-logistics – or in other words the logistical handling of electronic business – differs in a number of key respects from ordinary logistics, and thus presents new challenges for the sector. For instance, logistics players come into more direct contact with the final consumer (chain shortening), and that is accompanied by highly fragmented deliveries, a multitude of delivery options (delivery to the home address or an alternative address, collection points, delivery within 24 hours, time slot deliveries, etc.) and the growing importance of return logistics. The specific approach that this requires has led to the emergence of a new type of logistics players - e-fulfilment firms[21] - on the logistics market. However, it is evident that the trend towards insourcing is also becoming popular with major online stores. The main reasons cited for dealing with logistics in house are control over the supply chain and the ability to respond faster to changing market circumstances.

As a result of growing awareness of sustainability, there is also more focus on the negative external effects of logistics, such as harmful emissions, excessive noise, safety and congestion. The market is imposing tougher sustainability requirements on the logistics sector, and the regulations are also becoming stricter (emission standards, mileage levies, etc.). The sector's efforts in terms of sustainability are aimed primarily at cutting energy consumption and emissions (cleaner transport equipment, alternative fuels, green warehouses, etc.); in that regard, technical innovations naturally play a major role. Increasing efforts are also being devoted to improving load factors and cutting the number of vehicles by combining flows of goods via cooperation between shippers and/or logistics

[19] Prologis (2016).
[20] ITS includes the application of ICT in vehicles and transport infrastructure to make transport safer, more efficient, more reliable and more environment friendly.
[21] E-fulfilment firms deal with the logistics for online stores (stock management, preparation and dispatch of the orders, return logistics).

players. The establishment of urban distribution platforms, whether or not combined with bicycle couriers and electric vehicles, can also be mentioned here. Yet the ever-increasing popularity of e-commerce, for which the logistical handling involves fragmented transport and substantial return flows, is a development that does not yet entirely chime with the trend towards sustainable logistics via the bundling of goods flows. Finally, the development of multimodality also offers the opportunity to improve the sustainability of freight transport. Despite the government's financial incentives, however, the modal shift to rail and water does not seem to be going very well at the moment according to the data published by Eurostat[22]: over the period considered, the share of inland waterway freight (expressed in tonne/kilometres) had risen only slightly, from 17.6% in 2010 to 21.2% in 2015, while the share of rail freight was more or less stable at 14.7% compared to 14.5% in 2010. According to the long-term forecasts for transport demand drawn up by the Belgian Federal Planning Bureau[23] the total number of tonne/kilometres completed on Belgian territory up to 2030 was estimated to increase by an annual average of 2.1%; as regards the modal breakdown of the tonne/kilometres completed, road haulage (lorries and vans) would remain the dominant form of transport and only lose a very small share in relative terms.

2. Economic importance of the logistics sector

This part of the study assesses the economic importance of the logistics sector via two different channels, namely the direct and indirect effects.

The direct effects concern the contribution made within the sector itself in terms of value added, employment and investment. The results are also broken down by firm size and region.

The indirect effects are the effects that occur upstream via the (domestic) supply chain, or in other words the impact on other sectors of the Belgian economy resulting from the intermediate consumption of goods and services bought from Belgian suppliers. Those indirect effects are estimated for two variables: value added and employment.

To assess the sensitivity of the results to the sector definition used, section 2.4 briefly examines the logistic activities taking place outside the defined sector.

The methodology forming the basis for calculating both types of effect is briefly explained below.

[22] Online database Eurostat .
[23] FPB (2015).

2.1 Methodological aspects

2.1.1 Direct effects

The direct effects reflect the economic contribution of the sector itself. They are calculated for the period 2010-2015 on the basis of the annual accounts filed with the NBB's Central Balance Sheet Office by firms belonging to the sector defined.

The variables calculated are:

- **Value added at current prices**: the value that a firm adds to its inputs via production during the financial year. That added value reflects the firm's contribution to the prosperity of the region or country (in % of GDP). In accounting terms, these variables are calculated as the sum of staff costs, depreciation and impairments, provisions for risks and charges, other operating expenses, operating expenses capitalised as restructuring costs, and the operating result. Operating subsidies and compensatory amounts received from the government do not represent any value created by the firm and are therefore deducted when calculating the value added[24].

- **Salaried employment**: the average number of staff during the financial year, expressed as full-time equivalents (FTE).

  In this analysis a different approach was applied to firms in the SNCB/NMBS group. As a result of the restructurings in 2005 and 2014, SNCB-Holding and HR Rail respectively became the legal employers of the railway personnel. Most of those personnel were made available by the SNCB (transport operator) and Infrabel. On the basis of the information supplied by the SNCB, those employees were regarded as the own staff of the firms concerned (SNCB, Infrabel, B-Logistics) and attributed directly to them. The value added was adjusted accordingly.

- **Investment at current prices**: this corresponds to the tangible fixed assets acquired during the financial year, including produced fixed assets.

In calculating these variables, adjustments were made in the case of annual accounts covering a period of more than 12 months.

As already stated in section 1.2, the figures for a number of (large) firms with mixed activities in the transport supporting activities branch were only partly included in the study [25]. For that purpose, the share of freight logistics in the total activity was calculated on the basis of various available activity indicators, obtained from such sources as the annual accounts, annual reports, or information supplied directly by the firms concerned. This distribution key was then applied to all headings in the annual accounts, on the assumption of proportionality between activity and balance sheet items. However, in the case of investment – in so far as the information was available or could be inferred – account was taken of whether or not particular investment projects were connected with freight logistics.

[24] Except for the regional airport operators, which are also excluded from the national accounts calculations on the basis of the ESA2010 methodology. See Vennix (2017).
[25] This concerns firms such as the SNCB (transport operator), Infrabel, Belgocontrol, baggage handlers and airport operators. In the case of Sofico, only the activities relating to inland waterways were included; in the case of Bpost, the retail banking activities were disregarded.

2.1.2 Indirect effects

Indirect effects arise as a result of expenditure by the logistics sector on goods and services offered by (Belgian) suppliers. Those effects are not confined purely to the first level of suppliers but extend to an infinite number of levels.

They are estimated on the basis of the input-output table (IOT), which covers intermediate supplies of goods and services between branches, from which sector multipliers are generated by use of the Leontief system. This method of calculating the indirect effects and the assumptions on which they are based were described in detail in earlier NBB publications[26].

In this study, the calculation of the indirect effects was based on the links between the various branches as reflected in the latest available IOT for domestic production, namely 2010, and the supply and use tables (SUT) available annually for the years 2010-2013[27]. The estimate of the indirect effects for the years 2014 and 2015 is based on the technical coefficients for 2013. The data used for the estimate (IOT, SUT, value added and employment per SUT branch at national level) were obtained from the NAI.

In the calculation of the indirect effects, mutual dealings between branches in the logistics sector were filtered out to avoid double counting, because they are already covered by the direct effects.

In interpreting the results, it should be noted that the SUT branches used as the basis for calculating the indirect effects are linked to the NACE-Bel branches. Their content was therefore also changed as a result of the introduction of NACE2008 and harmonisation within the NAI, mentioned in section 1.2; consequently, due caution is required in making comparisons with the results of the previous study.

A further point to be noted is that, unlike the direct effects, the indirect effects concerning employment also include self-employed persons.

Finally, it should be borne in mind that the techniques applied have their limitations, and the results are subject to a margin of error.

2.2 Direct effects of the logistics sector

2.2.1 Value added

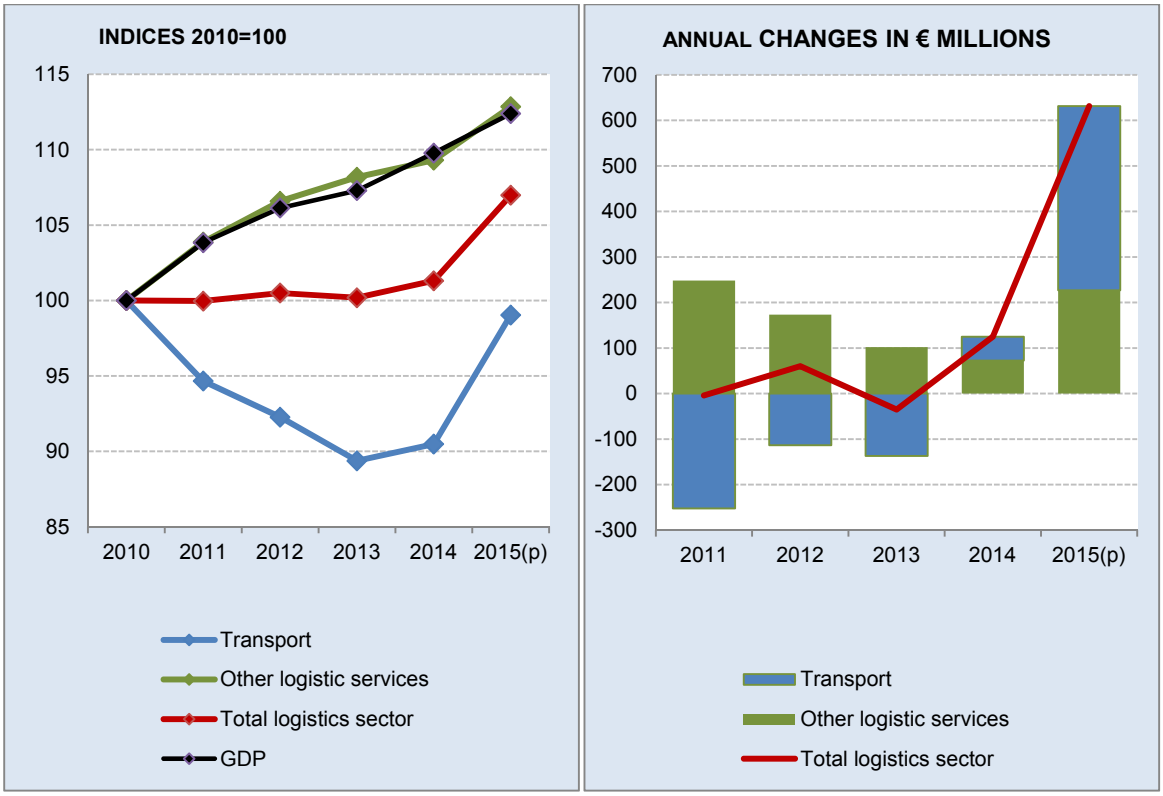
The direct value added of the logistics sector was virtually stable between 2010 and 2013. After that, the improvement in the business climate gave a boost to value added, which was particularly marked in 2015, when year-on-year growth reached 5.6%.

Despite that catching-up process at the end of the period considered, the growth of value added in the logistics sector lagged behind that achieved by the Belgian economy as a whole. Over the years 2010-2015 annual growth in the logistics sector averaged only 1.4% whereas GDP as a whole grew by

[26] See Coppens (2005); Coppens and van Gastel (2003).
[27] The input-output system provides a detailed description of the production process and the flows of goods and services, and includes supply and use tables (SUT) and the symmetrical input-output tables (IOT) derived from them. The SUTs link product groups to branches while the IOTs either link product groups to product groups or branches to branches. The branch classification is the SUT classification in which each SUT branch is an aggregation of 3-digit NACE branches. See NAI (2016).

2.4%. In real terms – with the amounts at current prices deflated via the GDP deflator – the value added of the logistics sector actually recorded zero growth over the period 2010-2015.
In 2015 the logistics sector generated direct value added of € 11.9 billion (at current prices), thus making a direct contribution of 2.9% to GDP, compared to 3.0% in 2010.

CHART 3 DIRECT VALUE ADDED BY SUBSECTOR (current prices)

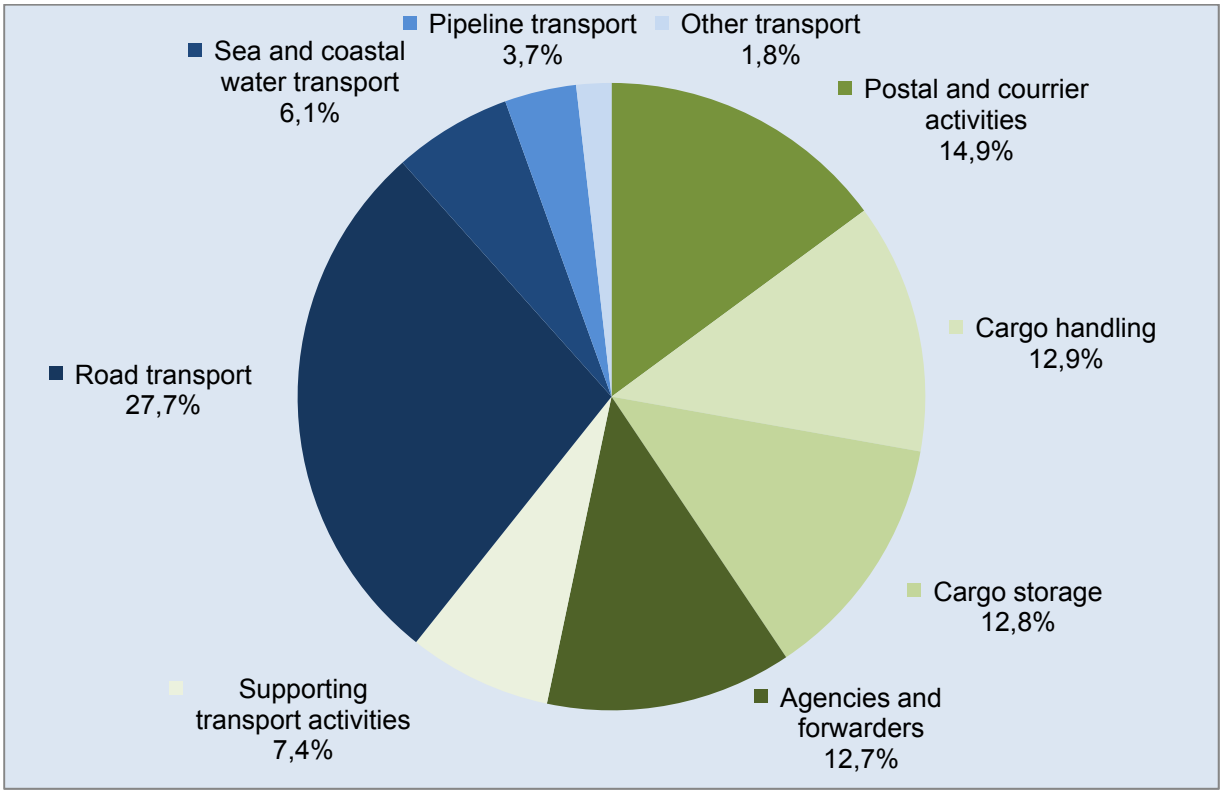


Sources: NAI, NBB (CBSO, own calculations).

Value added displayed a divergent picture in the two subsectors. Other logistic services expanded steadily in the period 2010-2015, recording annual average growth of 2.4%, equalling GDP growth. In contrast, value added in transport declined between 2010 and 2013, and – despite the growth of value added in 2014, and especially in 2015 - that fall was not entirely made good. Consequently, annual average growth in 2010-2015 was slightly negative in that subsector (-0.2%). The relative importance of the transport subsector in the sector's value added thus declined from 42.5% in 2010 to 39.3% in 2015, while that of the other logistic services subsector increased from 57.5% to 60.7%.

Among the individual branches, road transport makes the largest contribution to the sector's value added. At € 3.3 billion in 2015, it represented 27.7% of the total for the sector. In contrast to most other transport branches, road transport achieved positive growth over the period 2010-2015, averaging 1.1% a year. However, the global figure for road transport masks wide variations. On the one hand, some (major) road hauliers recorded substantial growth of value added, and growth in double figures was quite common in 2015. They include a number of large Belgian family businesses which have concentrated on niche areas such as hazardous goods and temperature-controlled transport. These firms gained ground both via organic growth and by strategic acquisitions of other operators in the sector (H Essers Transport Company, Henri Essers en Zonen International Transport, Fockedey Truck, Transports Vervaeke, etc.).

CHART4 DIRECT VALUE ADDED BY BRANCH OF ACTIVITY
(in % of total direct value added at current prices, 2015[p])



Sources: NAI, NBB (CBSO, own calculations).

A number of Belgian subsidiaries of foreign groups or companies also recorded strong growth in 2015. (e.g. XPO Supply Chain Chemicals Belgium, Ceva Logistics Belgium, Gefco Benelux, Post NL Cargo Belgium, Jost Trucking). On the other hand, in 2015 as in the preceding years quite a few (smaller) firms posted negative value added or went out of business (voluntarily or otherwise).

Postal and courier activities were the second most important branch at € 1.8 billion in 2015, accounting for 14.9% of the total logistics sector. While this branch has a large number of players, it is nevertheless highly concentrated. Although their combined share has diminished slightly since 2010, the historical postal service operator Bpost and the four large international integrators[28] (DHL, Fedex, TNT Express and UPS) still accounted for over 90% of value added in 2015. Bpost, which will continue to provide the universal service until the end of 2018, is active in all segments of the postal market; however, the shrinking segments concerning letter post and the distribution of printed matter seem to be depressing value added. Conversely, as a result of the growing importance of e-commerce, the parcels and express delivery segment is a growth area within the postal market which is attracting many suppliers. During the period considered, and especially in 2015, a number of postal operators from neighbouring countries who have entered this market via Belgian subsidiaries recorded a marked rise in value added (DPD Belgium, GLS Belgium, PostNL Paketten Belgium, G3 Worldwide Belgium), and succeeded in increasing their market share to some extent.

[28] "Integrators are companies that control a comprehensive air and road small package delivery network and are capable of offering a broad portfolio of reliable delivery services."(EC (2016))

The branches comprising cargo handling, storage, agencies and forwarders recorded continuous growth over the period 2010-2015. With value added of around € 1.5 billion in 2015, they each represented roughly 13% of the logistics sector. The storage branch posted the strongest growth within the logistics sector, with an annual average of 5% growth over the period 2010-2015. As a result, the share of that branch increased from 10.7% in 2010 to 12.8% in 2015. Nike's European distribution centres (Nike Europe Holding) make by far the biggest contribution to the value added of this branch, and also account for most of the 4.6% growth recorded in 2015. In the case of the cargo handling branch, 90% of the value added concerns cargo handling in the seaports. The employers' associations in the ports of Antwerp and Zeebrugge, like MSC PSA European Terminal, represent a particularly large share of the value added generated in this branch. The 4.5% growth in 2015 is therefore attributable primarily to the record performance concerning cargo transhipment and container handling in the port of Antwerp, and the success of the port of Zeebrugge as an auto-hub. The agencies and forwarders branch saw value added increase by 5.4% in 2015. The firm-level data indicate that the growth was driven largely by a number of major players who achieved growth in double figures (e.g. TNT Express, DHL, Kuehne + Nagel, 2XL), thereby increasing their market share.

Sea and coastal freight water transport contributed just 6.1% to the sector's value added in 2015, compared to 7.8% in 2010. Value added in this branch fluctuates considerably from year to year. The remarkable 71.7% growth in 2015 is almost entirely due to the tanker shipping company Euronav. The tanker market had an excellent year in 2015, thanks to low and falling oil prices, which drove up demand for transport capacity and hence international freight rates. Conversely, shipping companies in other maritime transport segments such as container transport and dry bulk were hit by lower revenues owing to reduced demand from the Far East and the existing surplus capacity[29].

Apart from pipeline transport – an activity completely dominated by the gas transport monopoly holder Fluxys Belgium and its subsidiary Fluxys LNG that runs the LNG terminal in Zeebrugge – the importance of the other transport branches is less than 1% of the sector total. Rail freight mainly reflects the activities of B-Logistics, the SNCB freight division which was privatised in 2011. In the case of air freight, most of the value added is generated by the cargo divisions of the courier companies TNT Express and DHL (respectively TNT Airways which has its main European hub at Liège airport, and European Air Transport Leipzig (EAT)-Belgium branch)[30].

[29] For more detailed information on developments in maritime transport, see Mathys (2017).
[30] For more detailed information on developments in aviation, see Vennix (2017).

TABLE 2 DIRECT VALUE ADDED BY BRANCH OF ACTIVITY (current prices)

Branch of activity	In € million						*Share in %*		Change in %		*Annual average change 2010 – 2015[p] (in %)*
	2010	2011	2012	2013	2014	2015[p]	*2010*	*2015[p]*	From 2014 to 2015[p]	From 2010 to 2015[p]	
Rail transport	143.7	125.0	47.3	68.1	75.6	86.8	*1.3*	*0.7*	14.8	-39.6	*-9.6*
Road transport	3,119.6	3,178.6	3,144.4	3,150.4	3,206.0	3,296.9	*28.0*	*27.7*	2.8	5.7	*1.1*
Pipeline transport	459.2	539.2	433.7	421.0	435.3	435.2	*4.1*	*3.7*	0.0	-5.2	*-1.1*
Sea and coastal water transport	865.1	485.0	539.0	425.8	424.6	729.1	*7.8*	*6.1*	71.7	-15.7	*-3.4*
Inland water transport	49.0	53.6	52.6	48.6	57.7	61.2	*0.4*	*0.5*	6.2	24.9	*4.5*
Air transport	94.1	97.0	148.1	114.2	81.4	75.9	*0.8*	*0.6*	-6.7	-19.4	*-4.2*
Transport	**4,730.8**	**4,478.4**	**4,365.0**	**4,228.1**	**4,280.6**	**4,685.2**	***42.5***	***39.3***	**9.5**	**-1.0**	***-0.2***
Cargo handling	1,325.9	1,375.6	1,422.7	1,440.9	1,466.8	1,533.3	*11.9*	*12.9*	4.5	15.6	*2.6*
Cargo storage	1,191.8	1,264.3	1,348.0	1,423.9	1,454.0	1,520.4	*10.7*	*12.8*	4.6	27.6	*5.0*
Supporting transport activities	723.8	770.1	813.8	793.2	827.3	881.5	*6.5*	*7.4*	6.5	21.8	*4.5*
Agencies and forwarders	1,350.2	1,414.6	1,429.2	1,449.8	1,435.7	1,513.7	*12.1*	*12.7*	5.4	12.1	*2.3*
Postal and courier activities	1,811.0	1,826.3	1,810.6	1,818.4	1,814.9	1,776.7	*16.3*	*14.9*	-2.1	-1.9	*-0.4*
Other logistic services	**6,402.7**	**6,651.0**	**6,824.3**	**6,926.3**	**6,998.8**	**7,225.5**	***57.5***	***60.7***	**3.2**	**12.9**	***2.4***
TOTAL	**11,133.5**	**11,129.3**	**11,189.4**	**11,154.4**	**11,279.3**	**11,910.7**	***100.0***	***100.0***	**5.6**	**7.0**	***1.4***

Sources: NAI, NBB (CBSO,own calculations).

TABLE 3 DIRECT VALUE ADDED - TOP 20[(a)] IN 2015[p]

	Company name	Branch of activity[(b)]
1	BPOST	Postal and courier activities
2	CENTRALE DER WERKGEVERS AAN DE HAVEN VAN ANTWERPEN	Cargo handling
3	FLUXYS BELGIUM	Pipeline transport
4	EURONAV	Sea and coastal water transport
5	HAVENBEDRIJF ANTWERPEN	Supporting transport activities
6	NIKE EUROPE HOLDING	Cargo storage
7	CENTRALE DER WERKGEVERS ZEEBRUGGE	Cargo handling
8	INFRABEL	Supporting transport activities
9	MSC PSA EUROPEAN TERMINAL	Cargo handling
10	TNT EXPRESS WORLDWIDE (EURO HUB)	Agencies and forwarders
11	OILTANKING STOLTHAVEN ANTWERP	Cargo storage
12	DHL AVIATION	Agencies and forwarders
13	EURONAV SHIPPING	Sea and coastal water transport
14	PSA ANTWERP	Cargo handling
15	EURONAV TANKERS	Sea and coastal water transport
16	EXMAR SHIPPING	Sea and coastal water transport
17	WATERWEGEN EN ZEEKANAAL	Supporting transport activities
18	TNT AIRWAYS	Air transport
19	FLUXYS LNG	Pipeline transport
20	DE SCHEEPVAART	Supporting transport activities
	Total of top 20	
	In € million	4,320.0
	In % of total sector	36.3

Sources: NAI, NBB (CBSO, own calculations).

(a) The ranking was based on the statutory annual accounts of the individual companies and may therefore deviate from the top 20 groups based on consolidated annual accounts.
(b) In principle, the said branch of activity corresponds to the NACE-Bel code assigned in the NAD (see section 1.2). In exceptional cases, it may not/ no longer tally precisely with the firm's actual activities.

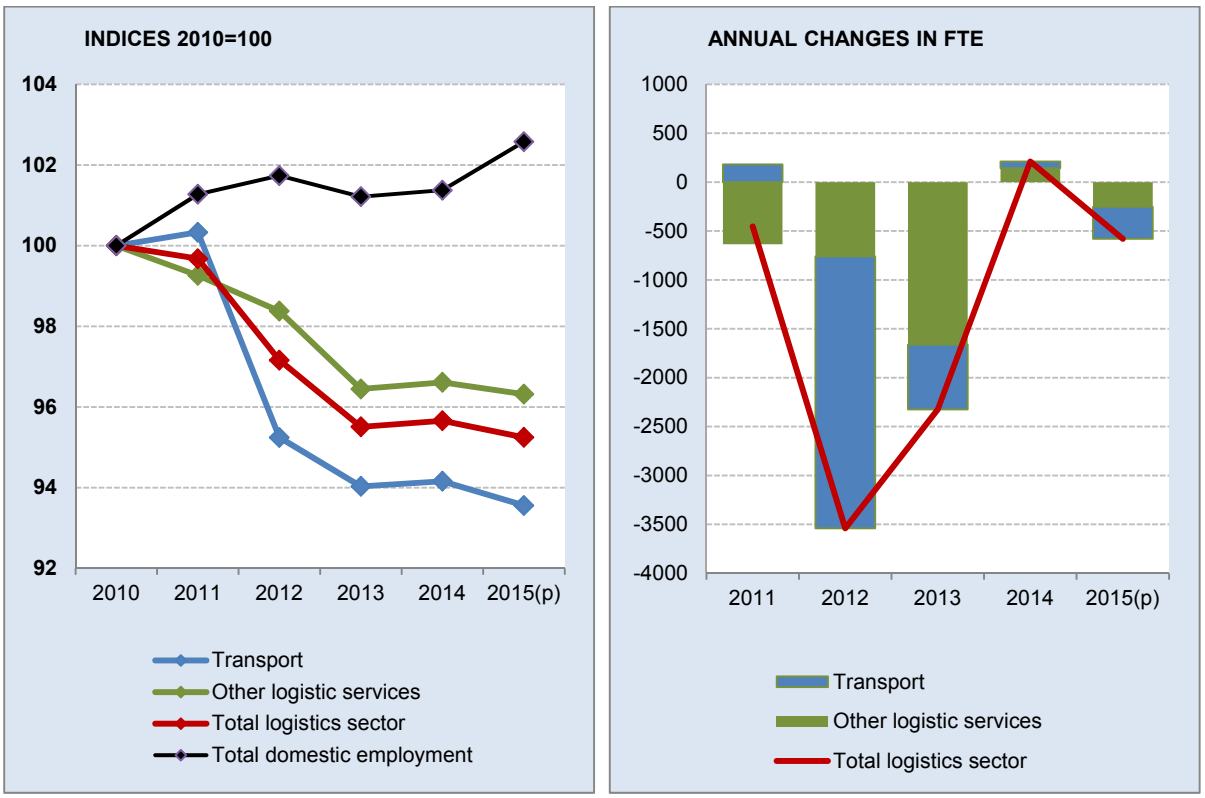
Table 3 shows the top 20 individual companies in the logistics sector with the highest value added in 2015. The list includes companies from both subsectors and changes little from year to year. In 2015, Bpost was well in front for value added, followed by the association of employers in the port of Antwerp (CEPA) and Fluxys Belgium. The ranking also includes one foreign company, namely Nike Europe Holding, with the Belgian branches of Nike European Logistics Campus in Laakdal taking 6th place. Altogether, the firms in the top 20 account for € 4.3 billion, which is 36.3% of the total sector's value added.

2.2.2 Employment

In 2015, salaried employment in the logistics sector totalled roughly 134 000 full-time equivalents (FTE), compared to almost 141 000 FTE in 2010. Most of the job losses occurred in 2012 and 2013; after that, employment tended to stabilise.

In the period 2010-2015, the trend in employment in the logistics sector was less favourable than in other sectors; for the economy as a whole, the figures for domestic employment in FTE[31] indicate a more or less stable picture. In the period considered, annual average growth at -1.0% for the logistics sector therefore lagged behind the 0.5% growth recorded for the Belgian economy as a whole. The share of the logistics sector in total domestic employment declined accordingly from 3.6% in 2010 to 3.3% in 2015.

CHART 5 DIRECT EMPLOYMENT BY SUBSECTOR



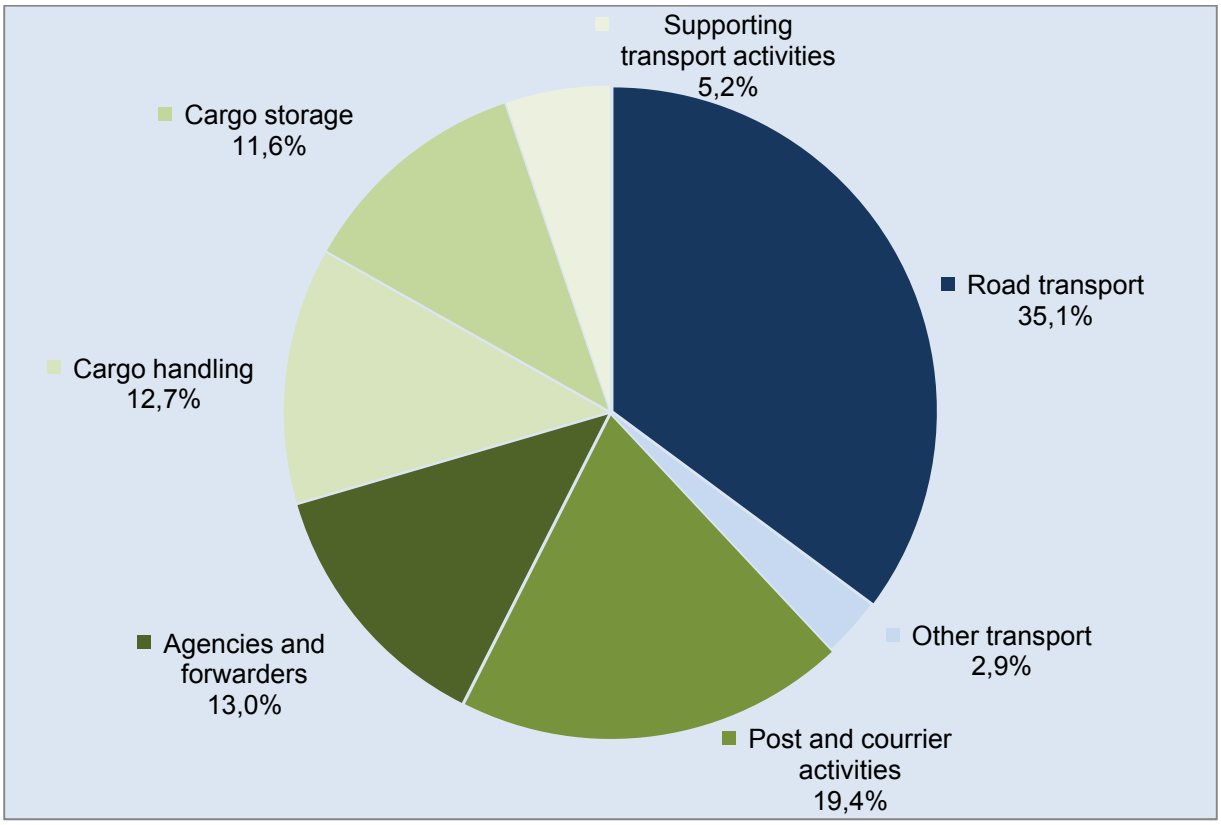
Sources: NAI, NBB (CBSO, own calculations).

Employment declined in both subsectors, but the fall was more pronounced in transport. As a result, the transport subsector's share in the sector total dipped slightly from 38.9% in 2010 to 38.2% in 2015, while the share of the other logistic services subsector increased from 61.1% to 61.8%.

The breakdown of the employment figures at the level of the individual branches shows that the steep decline in the transport subsector in 2012 was due mainly to the restructuring and staff reduction at SNCB-Logistics (named B-Logistics since 2016), the company created in 2011 by establishing the SNCB cargo division as a subsidiary[32]. In 2013 most of the job losses occurred in road transport. Although 80% of firms in that branch have fewer than 10 employees – and over half of them do not actually employ any staff – the road transport branch accounts for the major share of employment in the sector. That share comes to 35.1% of employment, which is actually slightly higher than the share of value added. In the other transport branches the opposite applies: none of those transport branches has a share of more than 1% in employment, in contrast to the figure for value added. The downward trend in employment in the transport via pipelines and freight transport by air branches is attributable entirely to Fluxys Belgium and the Belgian branch of EAT- Leipzig (DHL) respectively.

[31] The data on domestic employment obtained from the NAI were converted to FTE on the basis of an equivalence factor derived from the social balance sheets.
[32] Information on employment supplied by the SNCB (see also section 2.1.1)

CHART 6 DIRECT EMPLOYMENT BY BRANCH OF ACTIVITY
(in % of total direct employment in FTE, 2015[p])



Sources: NAI, NBB (CBSO, own calculations).

TABLE 4 DIRECT EMPLOYMENT BY BRANCH OF ACTIVITY

Branch of activity	In FTE						Share in %		Change in %		Annual average change 2010-2015[p] (in %)
	2010	2011	2012	2013	2014	2015[p]	*2010*	*2015[p]*	From 2014 to 2015[p]	From 2010 to 2015[p]	
Rail transport	2,882	3,116	1,159	1,160	1,267	1,310	*2.0*	*1.0*	3.3	-54.6	*-14.6*
Road transport	48,584	48671	48,123	47,304	47,304	47,063	*34.5*	*35.1*	-0.5	-3.1	*-0.6*
Pipeline transport	1,108	1,092	1,092	1,091	1,040	992	*0.8*	*0.7*	-4.6	-10.4	*-2.2*
Sea and coastal water transport	1,015	953	764	1,013	995	893	*0.7*	*0.6*	-10.2	-12.0	*-2.5*
Inland water transport	304	333	259	252	301	305	*0.2*	*0.2*	1.6	0.3	*0.1*
Air transport	771	679	666	580	563	579	*0.5*	*0.4*	2.8	-24.9	*-5.6*
Transport	**54,663**	**54,844**	**52,064**	**51,401**	**52,470**	**51,142**	***38.9***	***38.2***	**-0.6**	**-6.4**	***-1.3***
Cargo handling	17,286	16,921	16,655	16,474	16,571	16,951	*12.3*	*12.7*	2.3	-1.9	*-0.4*
Cargo storage	13,933	14,858	15,135	15,147	15,373	15,589	*9.9*	*11.6*	1.4	11.9	*2.3*
Supporting transport activities	7,122	7,189	7,052	7,072	6,908	6,918	*5.1*	*5.2*	0.1	-2.9	*-0.6*
Agencies and forwarders	17,066	16,967	17,503	17,030	17,192	17,372	*12.1*	*13.0*	1.0	1.8	*0.4*
Postal and courier activities	30,617	29,453	28,282	27,244	27,064	26,025	*21.8*	*19.4*	-3.8	-15.0	*-3.2*
Other logistic services	**86,023**	**85,388**	**84,628**	**82,966**	**83,108**	**82,865**	***61.1***	***61.8***	**-0.3**	**-3.7**	***-0.7***
TOTAL	**140,686**	**140,232**	**136,691**	**134,367**	**134,578**	**133,998**	***100.0***	***100.0***	**-0.4**	**-4.8**	***-1.0***

Sources: NAI, NBB (CBSO, own calculations).

The decline in employment in the other logistic services subsector mainly reflects the steady reductions in staff at Bpost; the share of employment in postal and courier activities dropped from 21.8% to 19.4%. The further staff cuts at Bpost in 2015 masked the positive developments in the other branches of the subsector. In that year, salaried employment expanded most strongly in cargo handling, at 2.3%, which was largely attributable to Logisport, specialised in e-commerce. In storage, employment was up by 1.4%: the substantial increase in employment resulting from expansion of Nike's European distribution centres (Nike Europe Holding) more than outweighed the job losses at DSV Solutions, among others (Volvo took over some of that supplier's staff together with the activities). TNT Express Worldwide (Euro hub) and DHL Aviation accounted for much of the 1% growth in agencies and forwarders.

TABLE 5 DIRECT EMPLOYMENT - TOP 20[(a)] IN 2015[p]

	Company name	Branch of activity[(b)]
1	BPOST	Postal and courier activities
2	CENTRALE DER WERKGEVERS AAN DE HAVEN VAN ANTWERPEN	Cargo handling
3	NIKE EUROPE HOLDING	Cargo storage
4	CENTRALE DER WERKGEVERS ZEEBRUGGE	Cargo handling
5	INFRABEL	Supporting transport activities
6	HAVENBEDRIJF ANTWERPEN	Supporting transport activities
7	TNT EXPRESS WORLDWIDE (EURO HUB)	Agencies and forwarders
8	DHL AVIATION	Agencies and forwarders
9	FLUXYS BELGIUM	Pipeline transport
10	B LOGISTICS	Rail transport
11	WATERWEGEN EN ZEEKANAAL	Supporting transport activities
12	WALDICO	Cargo storage
13	CEVA LOGISTICS BELGIUM	Road transport
14	UNITED PARCEL SERVICE BELGIUM	Postal and courier activities
15	LOGISPORT	Cargo handling
16	DHL INTERNATIONAL	Postal and courier activities
17	SCHENKER	Agencies and forwarders
18	H. ESSERS LOGISTICS COMPANY	Cargo storage
19	DISTRI-LOG	Cargo storage
20	TNT EXPRESS BELGIUM	Postal and courier activities
	Total of top 20	
	In FTE	48,441
	In % of total sector	36.2%

Sources: NAI, NBB (CBSO, own calculations).
(a) The ranking was based on the statutory annual accounts of the individual companies and may therefore deviate from the top 20 groups based on consolidated annual accounts.
(b) In principle, the said branch of activity corresponds to the NACE-Bel code assigned in the NAD (see section 1.2). In exceptional cases, it may not/no longer tally precisely with the firm's actual activities.

As in the case of value added, the ranking of the individual firms with the largest number of jobs in table 5 is headed by Bpost, followed by CEPA. Nike Europe Holding completes the top 3. In contrast to the top 20 for value added, there are no shipping companies in this top 20, but the ranking does include a number of firms from the couriers and road haulage branches. These 20 biggest firms together employ over 48 000 persons, corresponding to 36.2% of the sector total.

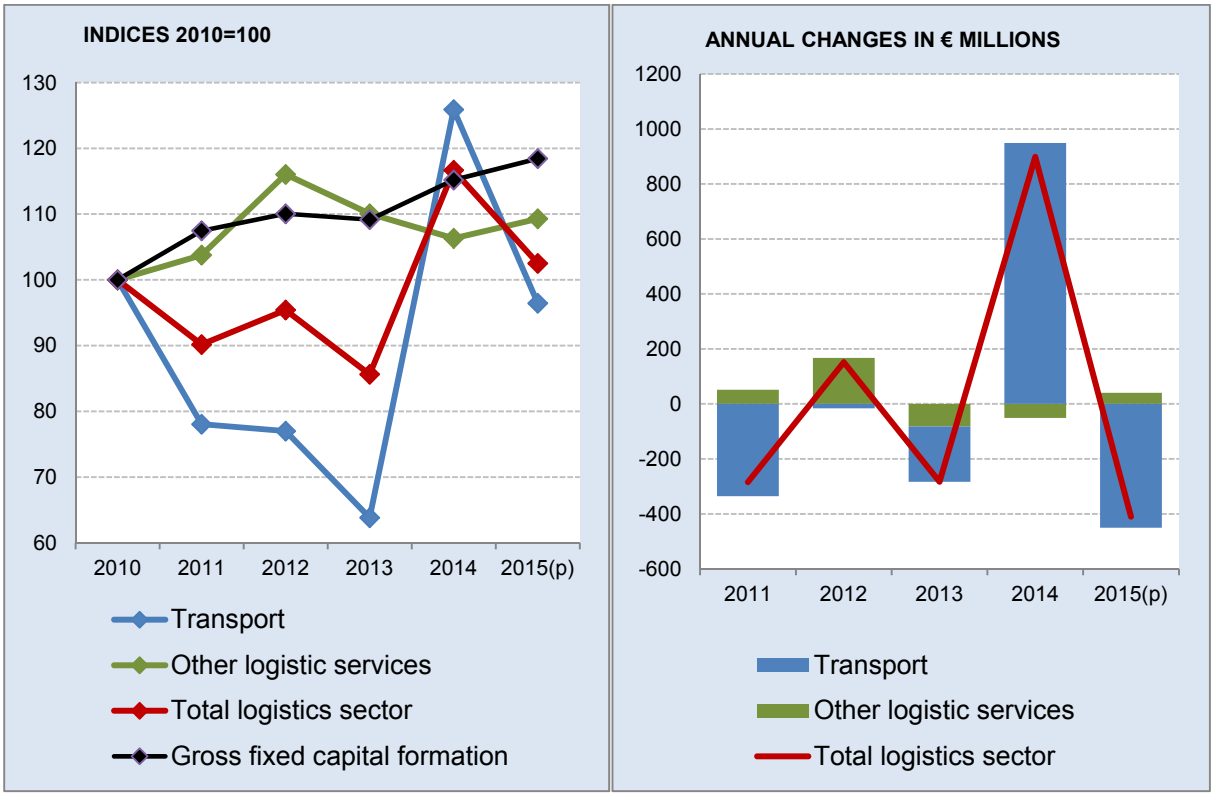
2.2.3. Investment

Between 2010 and 2013, investment by the logistics sector displayed a downward trend; after that it took a positive turn and in 2014 investment surged by 36%.

However, over 2010-2015 as a whole, the pace of investment by the logistics sector lagged behind the gross fixed capital formation (GFCF) in the total economy. On average, that increased by 3.4% a year, while the annual average growth rate for the logistics sector was barely 0.5%. At constant prices – with the investment figures at current prices deflated by the GFCF deflator – investment actually declined by an average of 0.8% a year.

With investment totalling just over € 2.9 billion in 2015, the logistics sector contributed 3.1% of the Belgian economy's GFCF; in 2010 that contribution had reached 3.6%.

CHART 7 DIRECT INVESTMENT BY SUBSECTOR (current prices)

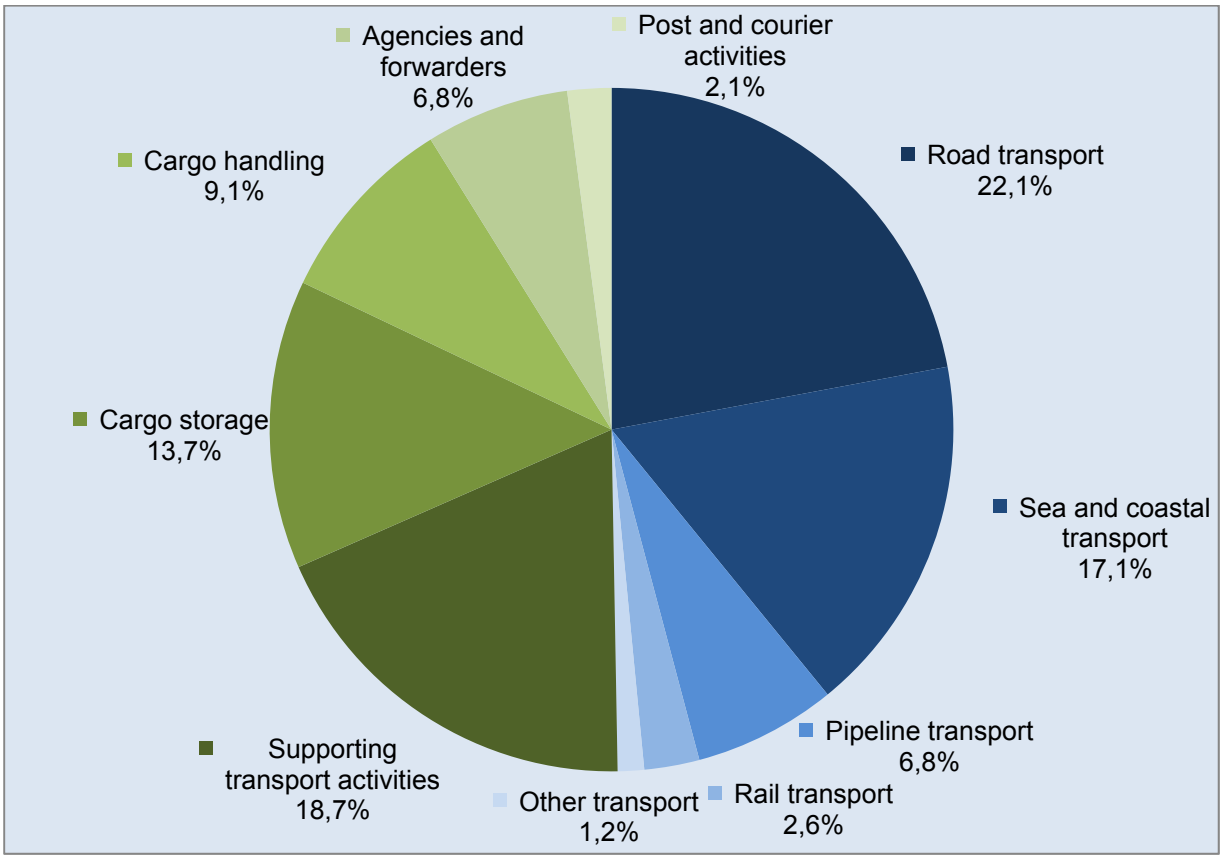


Sources: NAI, NBB (CBSO, own calculations).

The breakdown of investment by subsector reveals divergent developments. In the logistics sector as a whole, the investment figures predominantly reflect the situation in the transport sector, whereas the other logistic services subsector displayed a more positive trend. Average annual growth came to -0.7% for transport, compared to +1.8% for other logistics.

The relative importance of the subsectors and individual branches in the sector's total investment differs slightly from their share in value added and employment. In 2015, investment was evenly distributed between the two subsectors, at almost € 1.5 billion each.

CHART 8 DIRECT INVESTMENT BY BRANCH OF ACTIVITY
(in % of total direct investment at current prices, 2015[p])



Sources: NAI, NBB (CBSO, own calculations).

TABLE 6 DIRECT INVESTMENT BY BRANCH OF ACTIVITY (current prices)

Branch of activity	In € million (current prices)						*Share in %*		Change in %		*Annual average change 2010-2015[p] (in %)*
	2010	2011	2012	2013	2014	2015[p]	*2010*	*2015[p]*	From 2014 to 2015[p]	From 2010 to 2015[p]	
Rail transport	14.1	20.5	12.0	7.9	6.0	77.3	*0.5*	*2.6*	1,180.5	447.9	*40.5*
Road transport	565.5	652.7	664.7	588.3	633.3	654.5	*19.5*	*22.1*	3.3	15.8	*3.0*
Pipeline transport	362.9	242.3	122.6	111.5	93.9	200.4	*12.5*	*6.8*	113.5	-44.8	*-11.2*
Sea and coastal water transport	539.8	251.5	363.9	235.9	1,156.6	506.2	*18.6*	*17.1*	-56.2	-6.2	*-1.3*
Inland water transport	46.2	26.7	11.5	32.5	35.1	26.3	*1.6*	*0.9*	-25.1	-43.1	*-10.7*
Air transport	1.8	0.4	3.3	0.4	0.9	10.7	*0.1*	*0.4*	1,099.6	503.2	*43.2*
Transport	**1,529.8**	**1,194.0**	**1,178.0**	**976.6**	**1,925.9**	**1,475.4**	***52.8***	***49.7***	**-23.4**	**-3.6**	***-0.7***
Cargo handling	319.0	262.1	208.2	120.5	169.6	268.9	*11.0*	*9.1*	58.5	-15.7	*-3.4*
Cargo storage	305.2	353.1	469.9	419.9	418.9	405.5	*10.5*	*13.7*	-3.2	32.9	*5.8*
Supporting transport activities	535.4	563.4	711.2	695.6	686.1	554.8	*18.5*	*18.7*	-19.1	3.6	*0.7*
Agencies and forwarders	148.6	148.2	133.9	194.3	117.2	201.6	*5.1*	*6.8*	71.9	35.6	*6.3*
Postal and courier activities	57.3	90.1	61.4	72.4	60.0	61.6	*2.0*	*2.1*	2.8	7.6	*1.5*
Other logistic services	**1,365.5**	**1,416.9**	**1,584.5**	**1,502.7**	**1,451.8**	**1,492.4**	***47.2***	***50.3***	**2.8**	**9.3**	***1.8***
DIRECT INVESTMENT	**2,895.3**	**2,610.9**	**2,769.0**	**2,479.3**	**3,377.7**	**2,967.8**	***100***	***100***	**-12.1**	**2.5**	***0.5***

Sources: NAI, NBB (CBSO, own calculations).

Road transport remains the largest of the individual branches; however, its 22.1% share in investment is considerably smaller than its share in the other two variables. The supporting transport activities and sea and coastal transport branches play a much bigger role in investment at 18.7% and 17.1% respectively. In supporting transport activities, the infrastructure projects of Waterwegen en Zeekanaal, Infrabel and Deurganckdoksluis nv together accounted for over two-thirds of investment by that branch in 2015. In 2014 and 2015, two tanker shipping companies dominated investment in sea and coastal water transport. Under a global consolidation strategy, the oil tanker shipping company Euronav bought mammoth tankers that it placed with two new subsidiaries set up for that purpose. The gas tanker shipping company Exmar invested in supertankers, floating storage and regasification facilities, and floating LNG facilities. The storage branch represented 13.7% of the total. In this branch the bulk of the investment expenditure concerned the expansion of Nike's European Logistics Campus, adding a new distribution centre, and the expansion of the tank storage capacity for chemicals, gases and petroleum products in the port of Antwerp (e.g. Oiltanking Stolthaven Antwerp, VOPAK Terminal Eurotank, ITC Rubis Terminal Antwerp and Liefkenshoek Logistic HUB). In the cargo handling branch, the main investments – representing 9.1% altogether – concerned expansion projects and the purchase of super cranes for the purpose of serving the megaships used for economies of scale in shipping (MSC PSA European Terminal (MPET), Schelde container Terminal Noord (SCTN), Antwerp Euroterminal (AET)).

TABLE 7 DIRECT INVESTMENT - TOP 20 [(a)] IN 2015[p]

	Company name*	Branch of activity [(b)]
1	EURONAV	Sea and coastal water transport
2	WATERWEGEN EN ZEEKANAAL	Supporting transport activities
3	INFRABEL	Supporting transport activities
4	FLUXYS BELGIUM	Pipeline transport
5	MSC PSA EUROPEAN TERMINAL	Cargo handling
6	NIKE EUROPE HOLDING	Cargo storage
7	EXMAR SHIPPING	Sea and coastal water transport
8	DEURGANCKDOKSLUIS	Supporting transport activities
9	B LOGISTICS	Rail transport
10	SCHELDE CONTAINER TERMINAL NOORD	Cargo handling
11	FLUXYS LNG	Pipeline transport
12	HAVENBEDRIJF ANTWERPEN	Supporting transport activities
13	EXMAR MARINE	Sea and coastal water transport
14	TNT EXPRESS WORLDWIDE (EURO HUB)	Agencies and forwarders
15	DHL AVIATION	Agencies and forwarders
16	OILTANKING STOLTHAVEN ANTWERP	Cargo storage
17	BOCIMAR INTERNATIONAL	Sea and coastal water transport
18	DE SCHEEPVAART	Supporting transport activities
19	BPOST	Postal and courier activities
20	VOPAK TERMINAL EUROTANK	Cargo storage
	Total of top 20	
	In € million	1,631.4
	In % of total sector	55.0

Sources: NAI, NBB (CBSO, own calculations).

(a) The ranking was based on the statutory annual accounts of the individual companies and may therefore deviate from the top 20 groups based on consolidated annual accounts.

(b) In principle, the said branch of activity corresponds to the NACE-Bel code assigned in the NAD (see section 1.2). In exceptional cases, it may not/no longer tally precisely with the firm's actual activities.

The surge in investment in the agencies and forwarders branch in 2015 is attributable almost entirely to the courier firms TNT Express and DHL, which substantially increased the capacity of their two sorting centres, located respectively at Liège and Zaventem airport (TNT Express Worldwide (Euro hub); DHL Aviation). Total investment by this branch represented 6.8%. The other branches together represented 6.0 %.

The investment top 20 in table 7 clearly differs from the top 20 for value added and employment. The reason is that substantial investment expenditure generally concerns very specific projects. Together, these companies invested over € 1.6 billion, corresponding to 55.0% for the sector.

2.2.4. Results by company size

In this section, the figures for the direct effects are broken down on the basis of two different criteria according to company size: the annual accounts model used and the average size of the workforce.

Annual accounts format criterion

TABLE 8 RESULTS BY COMPANY SIZE - ANNUAL ACCOUNTS FORMAT[(a)] CRITERION (in % of total branch, 2015[p])

	Number of firms		Direct Value Added		Direct Employment		Direct Investment	
Branch of activity	Large firms	SMEs	Large firms	SMEs	Large firms	SMEs	Large firms	SMEs
Rail transport	58.3	41.7	93.6	6.4	95.8	4.2	99.7	0.3
Road transport	9.8	90.2	50.6	49.4	51.1	48.9	40.3	59.7
Pipeline transport	41.7	58.3	99.3	0.7	96.2	3.8	99.8	0.2
Sea and coastal water transport	41.4	58.6	98.9	1.1	96.8	3.2	98.9	1.1
Inland water transport	10.3	89.7	40.7	59.3	40.4	59.6	3.4	96.6
Air transport	23.5	76.5	94.3	5.7	94.6	5.4	99.9	0.1
Transport	**10.6**	**89.4**	**64.0**	**36.0**	**54.4**	**45.6**	**71.3**	**28.7**
Cargo handling	46.9	53.1	94.6	5.4	93.6	6.4	95.5	4.6
Cargo storage	40.0	60.0	91.1	8.9	92.0	8.0	90.3	9.7
Supporting transport activities	32.9	67.1	96.6	3.4	95.9	4.1	96.0	3.9
Agencies and forwarders	32.3	67.7	83.2	16.8	85.3	14.7	87.1	12.9
Postal and courier activities	3.5	96.5	95.9	4.1	95.4	4.6	67.2	32.8
Other logistic services	**27.7**	**72.3**	**92.0**	**8.0**	**92.3**	**7.7**	**92.0**	**8.0**
TOTAL	**16.2**	**83.8**	**81.0**	**19.0**	**77.5**	**22.5**	**81.7**	**18.3**

Sources: NAI, NBB (CBSO,own calculations).
(a) The size criterion is based on the model (full -format or abridged format) used by the company for filing the annual accounts with the Central Balance Sheet Office; for foreign companies and non-profit organisations the breakdown is based on the average workforce (> or <= than 100 FTE)

The companies are divided into two groups on the basis of the annual accounts format criterion. Firms that file their annual accounts in the full format are considered to be large, while firms using the abridged format are considered to be SMEs[33].

The figures for 2015 reveal that 83.8% of firms in the logistics sector are SMEs, compared to just 16.2% large firms. The predominance of SMEs is more marked in transport – at 89.4% - as opposed to other logistic services at 72.3%; that is attributable mainly to the road transport branch. Other individual branches with a high percentage of SMEs are inland water transport and postal and courier activities.

However, the contribution of the two groups of firms to the sector's value added, employment and investment presents the opposite picture. SMEs clearly account for the smallest share, with 19.0% of value added, 22.5% of employment and 18.3% of investment. This applies to a greater extent in other logistic services than in transport. In the latter subsector the contributions of the two groups of firms in road transport and inland water transport are clearly more evenly balanced than in the other branches.

Average workforce criterion

The concentration of value added, employment and investment in a relatively small number of large firms in the logistics sector – a point already evident from the combined share of the top 20 firms in the sector total – is even clearer if the firms are broken down by size according to the criterion concerning the average workforce.

TABLE 9 NUMBER OF COMPANIES BY COMPANY SIZE - COMPARISON OF BOTH CRITERIA (2015[p])

	Number of companies			Share in % of total		
Employment	Large firms	SMEs	Employment class	Large firms	SMEs	Employment class
Employment = 0	230	3,759	3,989	2.6	42.5	45.1
0<Employment<10	357	2,739	3,096	4.0	31.0	35.0
10<=Employment <50	522	888	1,410	5.9	10.0	15.9
50<=Employment <100	150	23	173	1.7	0.3	2.0
100<=Employment <250	111	1	112	1.3	0.0	1.3
250<=Employment <500	32		32	0.4	0.0	0.4
500<=Employment	28	1	29	0.3	0.0	0.3
Total employment classes	**1,430**	**7,411**	**8,841**	**16.2**	**83.8**	**100**

Sources: NAI, NBB (CBSO,own calculations).

Table 9 presenting the breakdown of firms according to both criteria shows that, according to the data in the annual accounts, no less than 45.1% of firms in the logistics sector employ no staff[34], including a considerable number of firms classed as large on the basis of the annual accounts format used. Barely 2% of firms in the data set employ 100 or more persons. However, as is evident from table 10, those firms account for over half of the value added and employment, and 40.2% of the investment by the total sector.

[33] Since this study concerns the figures for 2010-2015, the 'old' size criteria still apply (see Annex 3). For firms that do not file any annual accounts (Belgian branches of foreign companies) a breakdown was produced on the basis of employment, with a threshold of 100 FTE.

[34] NB: this analysis only considers salaried employment.

TABLE 10 RESULTS BY COMPANY SIZE – EMPLOYMENT CRITERION ([a]) (2015[p])

	Value added		Employment		Investment	
	In € million	*Share in %*	In FTE	*Share in %*	In € million	*Share in %*
Employment = 0	575.3	*4.8*	0	*0.0*	349.7	*11.8*
0<Employment<10	1,028.1	*8.6*	10,987	*8.2*	263.2	*8.9*
10<=Employment <50	2,969.1	*24.9*	32,151	*24.0*	968.0	*32.6*
50<=Employment <100	1,090.6	*9.2*	11,981	*8.9*	194.3	*6.5*
100<=Employment <250	1,424.0	*12.0*	16,646	*12.4*	320.5	*10.8*
250<=Employment <500	782.7	*6.6*	10,327	*7.7*	68.9	*2.3*
500<=Employment	4,040.9	*33.9*	51,905	*38.7*	803.1	*27.1*
Total	**11,910.7**	***100.0***	**133,998**	***100.0***	**2,967.8**	***100.0***

Sources: NAI, NBB(CBSO, own calculations).
(a) Based on the total of item 9087.

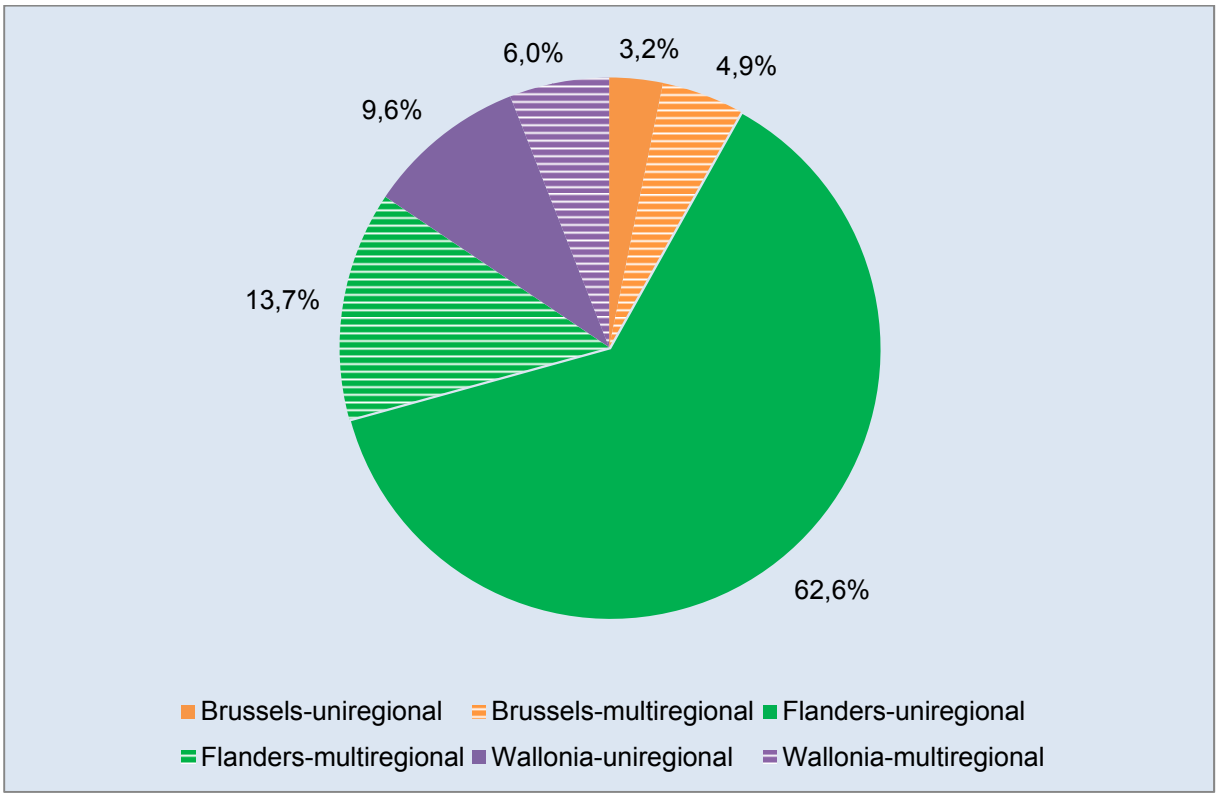
2.2.5 Results by region

For the analysis of the results by region, the annual accounts were broken down according to the region in which the firms are located on the basis of distribution keys obtained from the NAI. Uniregional firms – i.e. firms which have their head office and place(s) of business in a single region – are assigned entirely to the region in question. In the case of multiregional firms, or in other words firms that are based in more than one region, the annual accounts headings are broken down in proportion to the number of jobs in each region[35]. This approach, which is also used by the NAI in drawing up the regional accounts, is therefore based on the assumption of proportionality between the numbers employed and the balance sheet items. In the case of investment expenditure, which often concerns specific projects, use of the proportionality assumption is less appropriate. The regional analysis is therefore confined to direct value added and employment.

In 2015, uniregional firms represented over 99% of the sector. Of those firms, 9.4 % were located in the Brussels Capital Region, 73.0 % in the Flemish Region and 17.6% in the Walloon Region. There were only 70 multiregional firms; a minority of them (12) had branches in each of the three regions. They were all large firms which, apart from historical monopoly operators such as Bpost, firms in the SNCB group and Fluxys Belgium, also included some international courier and transport firms (DHL International, FEDEX Europe, Ziegler, etc.). Although they are few in number, owing to their size the multiregional firms still represented no less than 24.6 % of value added and 28.0 % of employment in the logistics sector in 2015. More specifically, they account for the major share in rail transport, pipeline transport, and postal and courier activities.

[35] For Infrabel and SNCB (transport operator) the distribution keys were based on the NAI data for HR Rail, the legal employer of the railway personnel.

CHART 9 DIRECT VALUE ADDED BY REGION
(in % of total direct value added at current prices, 2015[p])



Sources: NAI, NBB (CBSO, own calculations).

The breakdown of value added by region in chart 9 presents a picture very similar to that for the regional distribution of the number or firms. In 2015, Flanders represented 76.3% of the sector's value added, with Wallonia and Brussels accounting for 15.6% and 8.1% respectively. In each region, the logistics sector contributed 3.8%, 2.0% and 1.3% respectively to the regional GDP.

In Brussels, in contrast to the other two regions, multiregional firms (with their head office in the capital) account for the largest share of value added. The main contribution to the sector's value added in that region comes from the activities of multiregional firms in pipeline transport and in postal and courier activities.

In the Walloon Region, the most notable point is the larger share of road transport firms and postal and courier activities in value added. The distribution of value added across the various branches in Flanders is most clearly reflected in the distribution for the logistics sector as a whole. Cargo handling and storage, and to a lesser extent sea and coastal water transport, hold a more prominent position than in the other two regions; that is, of course, largely attributable to the presence of the four seaports.

The value added generated in each branch, broken down by region of origin, in fact shows a high concentration of the said branches in the Flemish Region. Conversely, the value added of the air freight sector seems to be created mainly in the Walloon Region, and is of course due to the European hub of TNT Airways at Liège airport (table 11).

TABLE 11 DIRECT VALUE ADDED BY REGION (2015[p])

Branch of activity	Share of region in total branch (in %)				Share of branch in total region (in %)			
	Brussels	Flanders	Wallonia	Total	Brussels	Flanders	Wallonia	Total
Rail transport	28.4	56.8	14.8	100	2.5	0.5	0.7	0.7
Road transport	3.3	75.4	21.4	100	11.1	27.3	38.0	27.7
Pipeline transport	67.2	25.7	7.1	100	30.2	1.2	1.7	3.7
Sea and coastal water transport	5.9	93.0	1.0	100	4.5	7.5	0.4	6.1
Inland water transport	0.0	90.8	9.2	100	0.0	0.6	0.3	0.5
Air transport	3.3	18.2	78.5	100	0.3	0.2	3.2	0.6
Transport	**10.0**	**72.4**	**17.5**	**100**	**48.6**	**37.3**	**44.2**	**39.3**
Cargo handling	1.7	96.0	2.3	100	2.6	15.5	1.8	12.9
Cargo storage	1.7	86.8	11.5	100	2.7	14.5	9.4	12.8
Supporting transport activities	7.4	79.5	13.1	100	7.3	8.3	6.7	7.4
Agencies and forwarders	4.5	80.7	14.8	100	7.0	13.4	12.0	12.7
Postal and courier activities	17.3	55.7	27.0	100	31.8	10.9	25.8	14.9
Other logistic services	**6.9**	**78.8**	**14.3**	**100**	**51.4**	**62.7**	**55.8**	**60.7**
TOTAL	**8.1**	**76.3**	**15.6**	**100**	**100**	**100**	**100**	**100**

Sources: NAI, NBB (CBSO, own calculations).

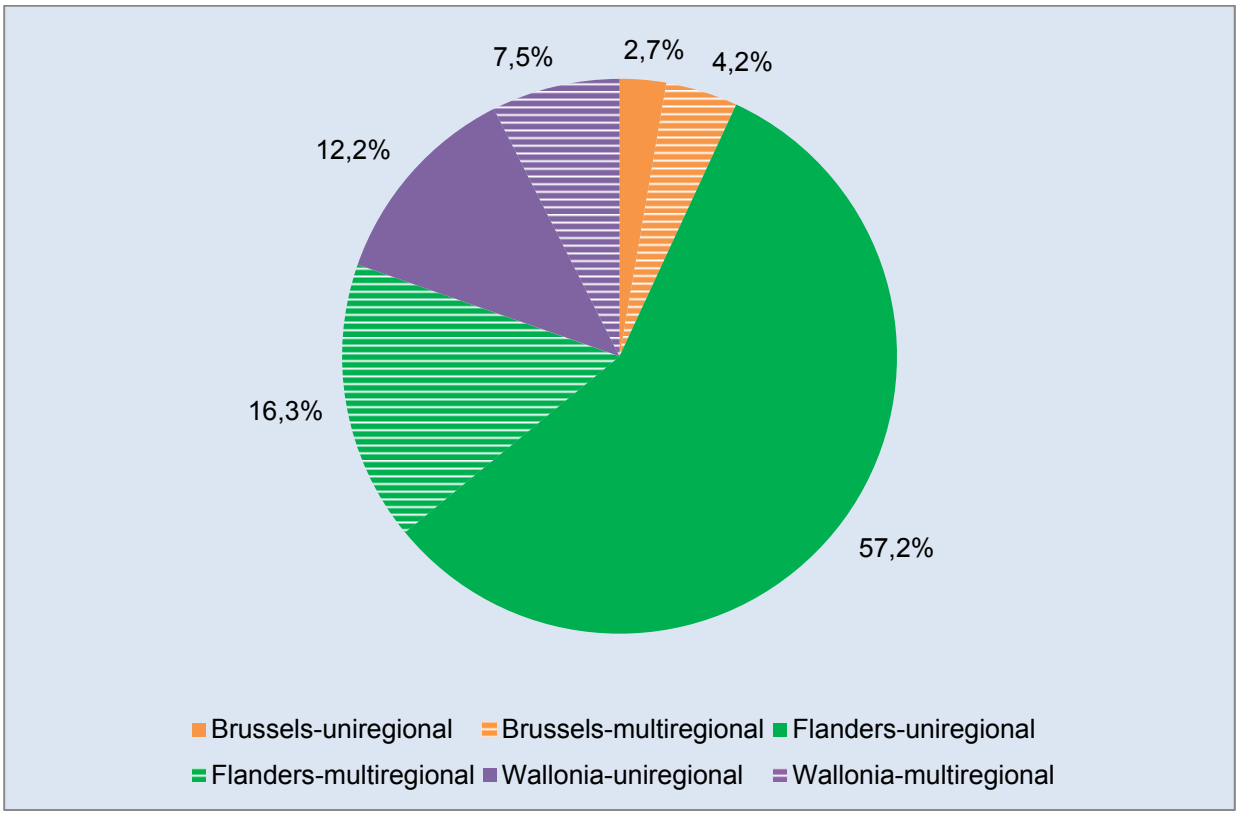
The regional breakdown of employment (chart 10) presents a fairly similar picture to that for value added. However, Wallonia's share in employment, at 19.7%, outweighs its share in value added, at the expense of the other two regions.

For Flanders Region and the Brussels Region, the respective shares in employment come to 73.4% and 6.9%. The fact that Wallonia's share in employment exceeds its share in value added appears to be a fairly widespread phenomenon if the individual branches are examined; however, the differences are most marked in inland water transport and storage. In 2015, the logistics sector accounted for 1.5% of regional employment (in FTE[36]) in the Brussels Capital Region; for the Flemish Region it was 4.2% and for the Walloon Region it was 2.4%.

The breakdown of regional employment by branches in table 12 shows that road transport and postal and courier activities are relatively significant employers, while the opposite applies to sea transport and pipeline transport.

[36] The regional employment figures obtained from the NAI were converted to FTE on the basis of an equivalence factor derived from the social balance sheet.

CHART 10 DIRECT EMPLOYMENT BY REGION (in % of total direct employment in FTE, 2015[p])



Sources: NAI, NBB (CBSO, own calculations).

TABLE 12 DIRECT EMPLOYMENT BY REGION (2015[p])

	Share of region in total branch (in %)				Share of branch in total region (in %)			
Branch of activity	Brussels	Flanders	Wallonia	Total	Brussels	Flanders	Wallonia	Total
Rail transport	31.7	50.9	17.4	100	4.5	0.7	0.9	1.0
Road transport	3.8	73.2	23.0	100	19.3	35.1	41.1	35.0
Pipeline transport	62.1	30.1	7.8	100	6.6	0.3	0.3	0.7
Sea and coastal water transport	0.7	97.7	1.6	100	0.1	0.9	0.1	0.7
Inland water transport	0.0	79.9	20.1	100	0.0	0.2	0.2	0.2
Air transport	3.3	18.9	77.8	100	0.2	0.1	1.7	0.4
Transport	**5.6**	**71.6**	**22.8**	**100**	**30.6**	**37.3**	**44.2**	**38.2**
Cargo handling	3.2	93.7	3.1	100	5.5	15.2	1.9	11.9
Cargo storage	1.4	80.7	17.9	100	2.3	12.8	10.6	11.6
Supporting transport activities	8.6	73.8	17.6	100	7.3	5.9	5.3	5.9
Agencies and forwarders	3.8	78.7	17.6	100	7.0	13.9	11.6	13.0
Postal and courier activities	16.9	56.3	26.8	100	47.3	14.9	26.5	19.4
Other logistic services	**7.8**	**74.5**	**17.7**	**100**	**69.4**	**62.7**	**55.8**	**61.8**
TOTAL	**6.9**	**73.4**	**19.7**	**100**	**100**	**100**	**100**	**100**

Sources: NAI, NBB (CBSO, own calculations).

2.3 Indirect effects of the logistics sector

2.3.1 Value added

The indirect value added of the logistics sector grew by barely 0.5% per annum on average over the period 2010-2015. The catching-up that took place in 2015 was driven mainly by the development in sea and coastal freight water transport.

The multiplier[37] for the latter branch is greater than 1 (as it is for freight transport by air), which means that for each extra euro of value added created in the branch itself more than € 1 in indirect value added is created among (domestic) suppliers outside the logistics sector. For the other branches in the logistics sector, the multiplier is well below 1, and the indirect effects on the rest of the economy are smaller, at least in relative terms. For the logistics sector as a whole, the multiplier came to 0.58 in 2015.

For 2015, the indirect value added can therefore be estimated at € 6.9 billion, or around 1.7% of GDP. The total impact of the logistics sector – i.e. the direct and indirect effects taken together – can therefore be estimated at € 18.1 billion or 4.6% of GDP in that year.

[37] The multiplier gives the ratio between indirect and direct effects.

TABLE 13 DIRECT AND INDIRECT VALUE ADDED
(current prices, in € millions unless otherwise stated)

	2010	2011	2012	2013	2014	2015[p]	Multiplier (a) 2015[p]	Change in % From 2014 to 2015[p]	Change in % From 2010 to 2015[p]	Annual average change 2010-2015[p] (in %)
Direct value added	11,133.5	11,129.3	11,189.4	11,154.4	11,279.3	11,910.7		5.6	7.0	*1.4*
in % of GDP	*3.0%*	*2.9%*	*2.9%*	*2.8%*	*2.8%*	*2.9%*				
Indirect value added	6,730.6	6,215.7	6,408.6	6,125.1	6,250.1	6,898.1	*0.58*	10.4	2.5	*0.5*
in % of GDP	*1.8%*	*1.6%*	*1.7%*	*1.6%*	*1.6%*	*1.7%*				
Direct + indirect value added	**17,864.2**	**17,345.1**	**17,597.9**	**17,279.4**	**17,529.4**	**18,808.9**		**7.3**	**5.3**	***1.0***
in % of GDP	*4.9%*	*4.6%*	*4.5%*	*4.4%*	*4.4%*	*4.6%*				

Sources: NAI, NBB (CBSO, own calculations).
(a) The multiplier gives the ratio between indirect and direct effects.

TABLE 14 DIRECT AND INDIRECT[(b)] EMPLOYMENT (in FTE unless otherwise stated)

	2010	2011	2012	2013	2014	2015[p]	Multiplier (a) 2015[p]	Change in % From 2014 to 2015[p]	Change in % From 2010 to 2015[p]	Annual average change 2010-2015[p] (in %)
Direct employment	140,686	140,232	136,691	134,367	134,578	133,998		-0.4	-4.8	-1.0
idem in % domestic employment	*3.6%*	*3.5%*	*3.4%*	*3.4%*	*3.4%*	*3.3%*				
Indirect* employment	82,586	81,060	80,696	78,933	80,461	83,520	0.60	3.8	1.1	0.2
idem in % domestic employment	*2.1%*	*2.0%*	*2.0%*	*2.0%*	*2.0%*	*2.1%*				
Direct + indirect (a) employment	**223,272**	**221,292**	**217,388**	**213,300**	**215,039**	**217,517**		**1.2**	**-2.6**	**-0.5**
idem in % domestic employment	*5.7%*	*5.5%*	*5.4%*	*5.3%*	*5.4%*	*5.4%*				

Sources: NAI, NBB (CBSO, own calculations).
(a) The multiplier gives the ratio between indirect and direct effects.
(b) Indirect employment includes employees and self-employed persons, while direct employment only relates to employees.

In the logistics sector, (domestic) intermediate demand is particularly strongly focused on business services. The supply sectors (SUT branches) where the logistics sector has the greatest indirect effects in terms of the value added generated are (in descending order of importance): head office activities (70A); provision of staff (78A); financial services (64A); motor vehicles trade and repairs (45A); architects and engineers, technical testing and analysis (71A); buying and selling of real estate, estate agencies and letting (68A;68B), wholesale trade (46A) and hire and leasing of machinery (77C).

2.3.2 Indirect employment[38]

Thanks to a favourable turnaround from 2014, the trend in the indirect employment effects was slightly positive over the period 2010-2015 as a whole, in contrast to the direct effects. Developments in the cargo handling, agencies and forwarders, and storage branches – where the employment multiplier is higher than the value added multiplier – made the biggest contribution to the growth of indirect employment in 2015.

The employment (including self-employed persons) generated by the logistics sector in 2015 among Belgian suppliers is estimated at over 83000 FTE, or around 2.1% of total domestic employment expressed in FTE. The total impact – i.e. the sum of the direct and indirect effects – of the logistics sector came to 5.4% of total domestic employment (in FTE).

The sectors feeling the greatest indirect effects on employment are to some extent the same as for indirect value added, namely: employment agencies (78A); head office activities (70A), architects and engineers; technical testing and analysis (71A). Other sectors where employment effects apply are cleaning (81B), administrative support (82A), bars and restaurants (56A), security and investigation services (80A) and legal and accounting services (69).

2.4 From logistics sector to logistic activities

Naturally, the economic importance of logistics depends very much on how the sector is defined. The above figures concerning the direct effects relate only to the logistics sector in the strict sense, namely the professional logistics sector. A broader interpretation of the “logistics sector” implies that logistic activities conducted outside the professional sector are included in the figures.

This section attempts to indicate the degree to which the above figures underestimate the sector’s importance if a broader definition is used. For that purpose, rough estimates are made of the logistic services offered on the market outside the defined sector, and of the logistic services provided by shippers themselves[39], or in other words in-house logistics.

[38] In contrast to the direct effects, the indirect effects also include self-employed persons.
[39] Shipper: the party dispatching the goods (using own means of transport or hauliers).

2.4.1 Logistic services offered by other sectors

The firms from the professional logistics sector which are included in the data set are not the only firms offering logistic services on the market. Companies may pursue a variety of activities, but are classified entirely in a single NACE branch on the basis their main activity. Consequently, logistic services may also be offered – as a side line – in sectors other than the logistics sector defined in this study.

The supply table[40] – showing the supply of types of goods and services by sector – permits identification of the sectors where logistic services are offered as a secondary activity. Two assumptions are made in order to estimate the importance of those logistic activities on the basis of the supply table. First, it is assumed that the share of logistic services in the (market) production of those sectors in 2013 – i.e. the latest year for which the SUTs are available – is constant in the subsequent years. Next, it is assumed that the share of the logistic activities in production corresponds to the share of those activities in the value added and employment of the sectors concerned.

For 2015, the value added and employment generated by the logistic activities offered by sectors other than the defined logistics sector can be roughly estimated at € 700 million (0.2% of GDP) and over 5200 FTE (0.1% of domestic employment) respectively. The sectors making the biggest contribution here are the wholesale trade (including the wholesaling of solid, liquid and gaseous substances and the motor vehicles trade), head office activities, water extraction and supply, refuse collection, the manufacture of basic chemicals, advertising and market research, manufacture of dairy products, demolition and land development, and the manufacture and assembly of motor vehicles.

2.4.2 In-house logistics

Apart from the secondary logistic activities conducted by firms outside the defined sector, in-house logistics also leads to an underestimate. Despite the trend towards the outsourcing of logistics, firms naturally still take charge of their own logistics, too, or in other words they keep the logistics in house.

No precise figures are available on logistic activities conducted in house. Since these in-house logistics are not traded, they are not included in the supply and use tables.

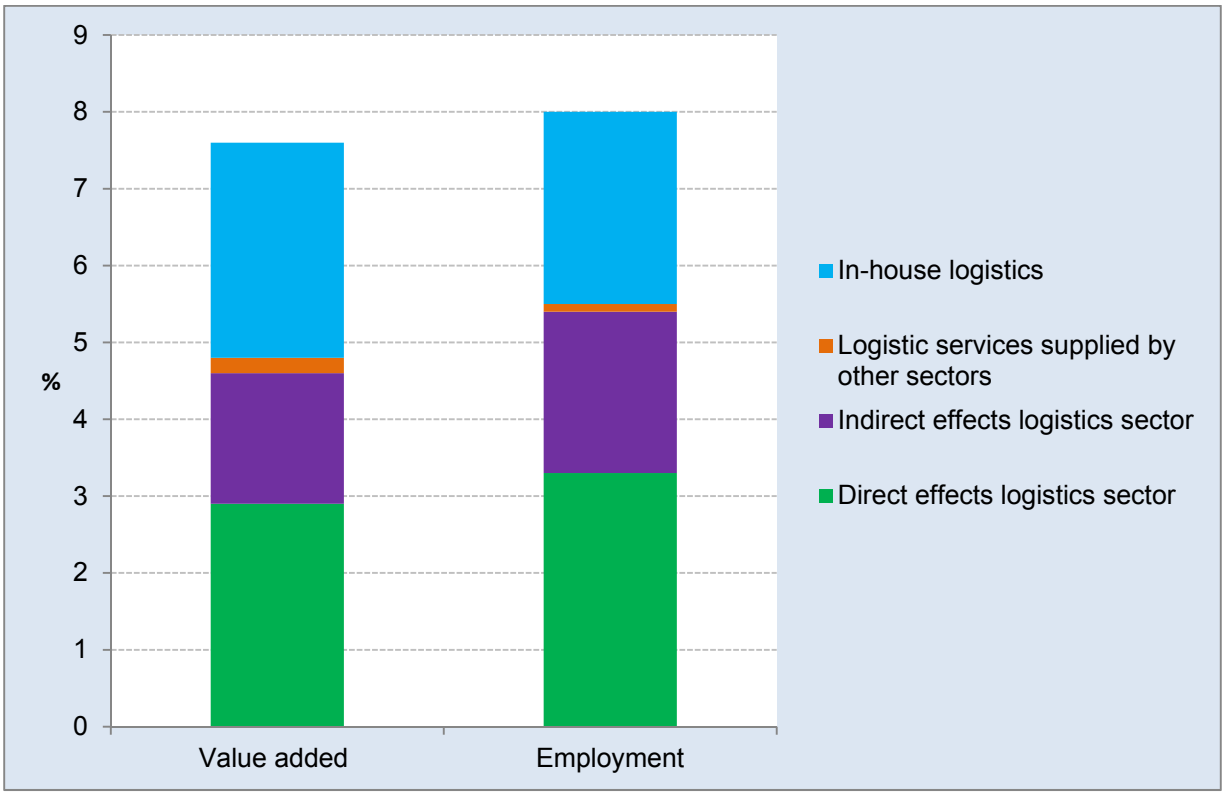
However, in the specific case of road transport the FPS Economy (DGS) does publish figures for transport by Belgian vehicles (in tonne/kilometres) broken down into own-account transport and transport for third parties. Those figures reveal that in 2015 the shares of the two categories came to 21.8% and 78.2% respectively. Assuming proportionality between the activity on the one hand and value added and employment on the other, on the basis of the direct effects of the road transport branch estimated in section 2.2 the own-account transport can be said to generate roughly € 900 million in value added and over 13 000 FTE in employment.

Of course, not all logistic activities are outsourced to the same degree. However, the sporadic indications published on the subject by various sources[41] do not appear to permit any well-informed estimates of the importance of other in-house logistics: not only are the data less recent and/or derived from small-scale surveys, but the outsourcing percentages often vary significantly according to the source.

[40] The supply and use tables (SUT) are matrices which, for each branch and product group, provide a detailed description of the domestic production processes and the transactions in products for the national economy. Together with the symmetrical input-output tables (IOT) they form part of the input-output system. For more information, see NAI (2016).
[41] EC (2015), VIL (2004) and Echotransport (2010).

The Flanders Institute for Logistics (VIL) nevertheless stated in a recent unpublished study that at least 10% of employees in shipping firms (industry, trade, etc.) in fact conduct in-house logistic activities (transport, storage, planning, etc.). On the basis of that percentage and assuming proportionality between employment and value added, the effects generated by in-house logistics as a whole can be estimated respectively at € 11.7 billion (2.8% of GDP) and 103 000 FTE (2.5% of domestic employment) in 2015. In other words, the economic importance of in-house logistics is thus (at least) of the same order of magnitude as the direct effects generated by the logistics sector.

CHART 11 RELATIVE IMPORTANCE OF LOGISTIC ACTIVITIES INSIDE AND OUTSIDE THE LOGISTICS SECTOR
(in % of GDP at current prices and of domestic employment in FTE, 2015[p])



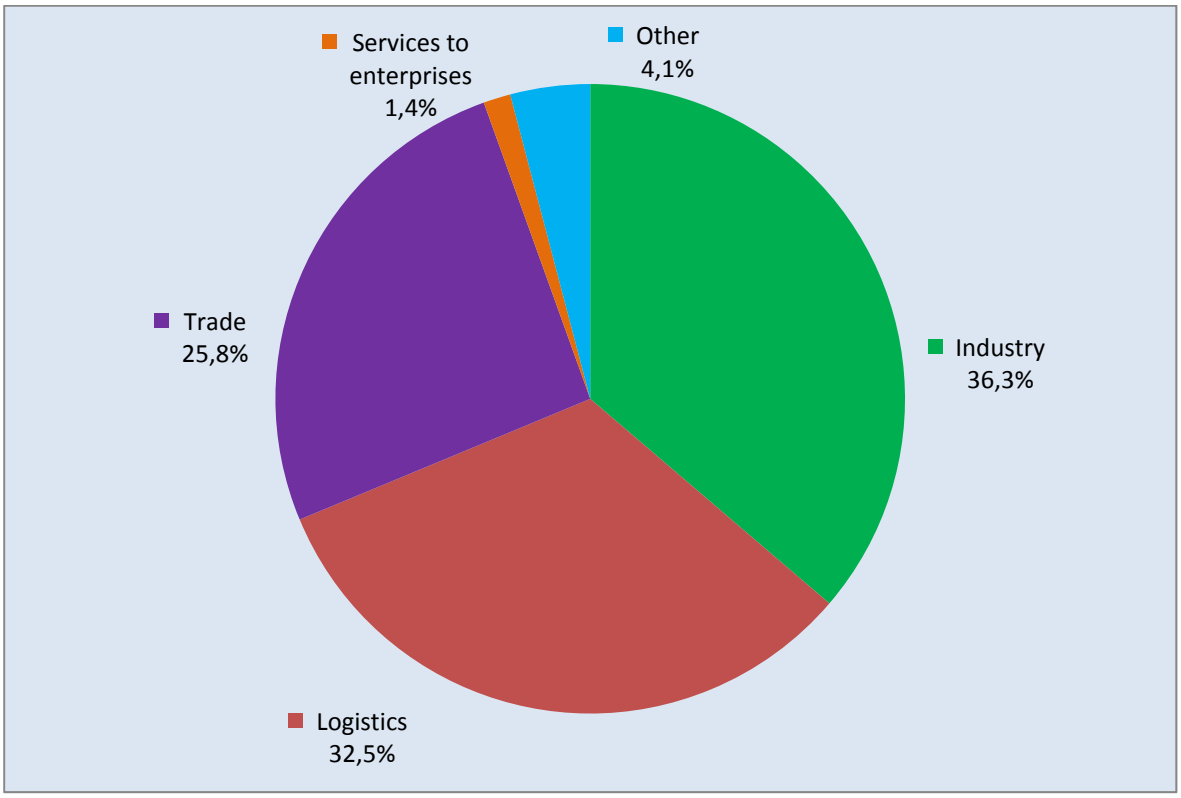
Sources: NAI, NBB (CBSO, own calculations), VIL.

Consequently, for 2015 the economic importance of the total logistic activities – direct and indirect effects of the logistics sector, logistic services offered outside the defined sector, and in-house logistics – comes to 7.6% of GDP and 8.0% of domestic employment. On the basis of a broader definition, the economic importance of logistics could therefore exceed the estimate based on a strictly defined sector by between 50% (employment) and 66% (value added).

Figures obtained from a recent survey of European distribution centres (EDC) in Flanders[42,43] certainly illustrate that a great deal of logistic activity is hidden outside the professional logistics sector. These data relating to over 650 EDCs show that only 32.5% or around a third of the EDCs come under the logistics sector as defined in section 1.1 of this study. The other two-thirds consists of EDCs which, on the basis of the activity of the firm to which they belong, are assigned to NACE-Bel codes outside the logistics sector, and particularly to industry (36.3%) and trade (25.8%).(chart 12)

[42] For the other regions, it emerged upon inquiry that no recent survey of EDCs was available. It is reasonable to assume that the findings for Flanders are also valid for Wallonia and Brussels.
[43] For the study, an EDC was defined as a distribution centre from which goods are distributed to at least 5 European countries. When this Working Paper was published, the results from this study were still being examined and will be published in 2017by the Flanders Department of Transport and Public Works.

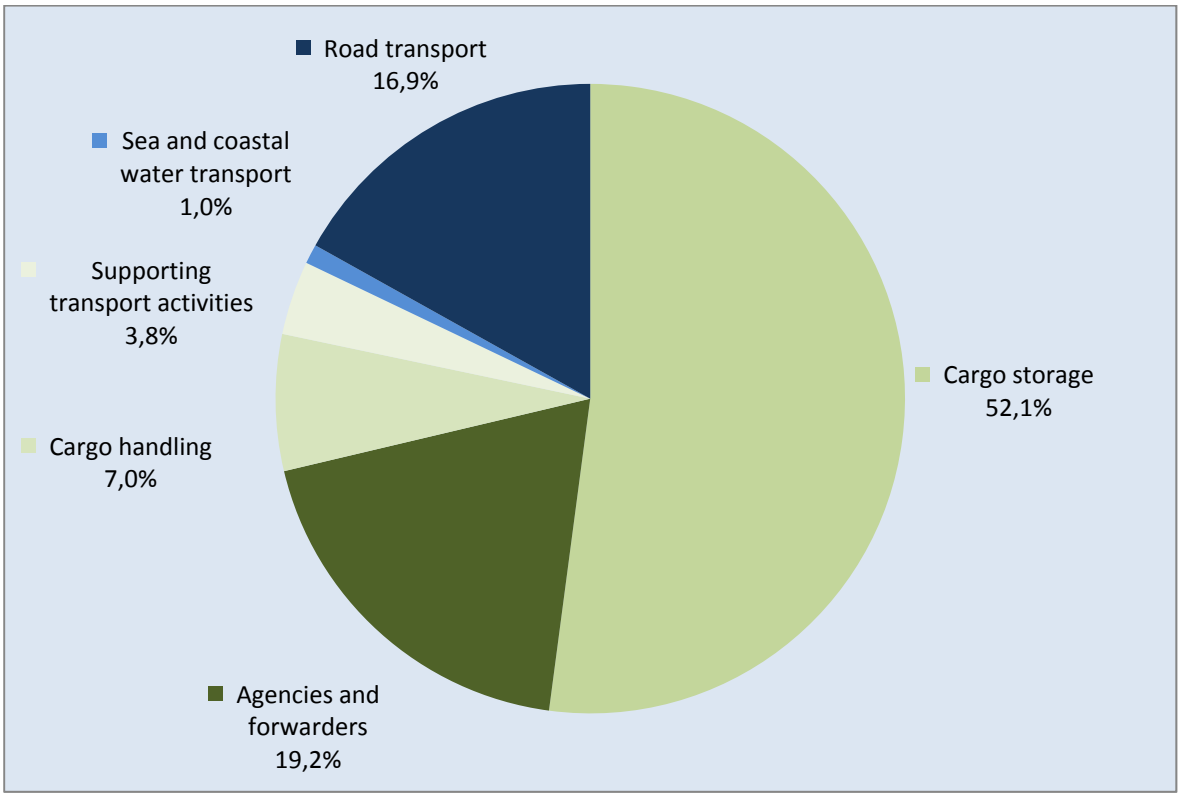
CHART 12 EDCs IN FLANDERS BY SECTOR
(in % of total number of EDCs in Flanders, 2016)



Sources: Flanders Department of Transport and Public Works, NAI.

The breakdown of the EDCs classified under the logistics sector in chart 13 further highlights the fact that they are not only found in the storage branch. Almost half of them come under other branches in the sector, by far the most important being agencies and forwarders and road transport firms, with 19.2% and 16.9 % respectively. These figures illustrate how logistic service providers develop activities in various market segments, and it can be said that there is some blurring of the distinctions between branches in the logistics sector.

CHART 13 EDCs IN THE LOGISTICS SECTOR IN FLANDERS BY BRANCH OF ACTIVITY (in % of total EDCs in the logistics sector in Flanders, 2016)



Sources: Flanders Department of Transport and Public Works, NAI.

3 Social balance sheet and financial situation of the logistics sector

The study of the economic importance of the logistics sector will now be supplemented by an analysis first from the social point of view and then from the financial angle.

For methodological reasons, the results presented in respect of the social balance sheet, the financial ratios, the NBB's financial health indicator and the credit risk according to the NBB's In-house Credit Assessment System (ICAS) relate only to reduced data sets in each case.

3.1 Social balance sheet

The social balance sheet contains a coherent set of data concerning diverse aspects of employment in firms, such as working time and labour costs, workforce characteristics, the use of external staff, and training efforts. Consequently, the social balance sheet data provide further information on some aspects of the aforementioned direct employment in the logistics sector.

Almost all non-financial firms pursuing activities in Belgium are obliged to draw up a social balance sheet[44]. However, the analysis which follows is based on a small sample of firms and therefore does not relate to exhaustive sectoral data. For reasons concerning homogeneity and consistency, the results were calculated on the basis of a constant sample of firms which had filed annual accounts over the whole of the period 2010-2015 in the full format, and for which the annual accounts covered a 12-month financial year.

Owing to these strict selection criteria, the constant sample of firms is rather small, and includes barely 10% of firms belonging to the sector defined above. Nevertheless, in each of the years considered the representativeness in terms of employment is around 63%, though the constant sample is not equally representative for all branches. The analysis is therefore essentially confined to the sector as a whole and the subsectors.

Nonetheless, the social balance sheet data for the sector as a whole must be interpreted with due caution, for instance because the figures are averages for firms which may vary greatly in activity and size. In that connection it is also good to bear in mind that the constant sample only concerns large firms, and that the transport subsector with a share of around 25% of employment is relatively under-represented compared to the total data set, while the opposite is true of the other logistic services subsector with a share of roughly 75%.

The data for the total of the non-financial firms ('national average') are used as the reference point for the analysis. The latest available data on the national average in relation to the logistics sector concern the year 2014[45]. The social balance sheet results for 2010 and 2015 are presented per subsector in Annex 4.

Working time and labour costs

The data from the constant sample concerning the average working time reveal a different picture from that for non-financial firms as a whole. In the latter case, the situation has tended to stabilise in recent years, whereas the average number of hours worked per FTE in the logistics sector has been rising since 2010. In 2015, at 1540 hours the average working time in the logistics sector exceeded the national average of 1504 hours in 2014.

The increase in the number of hours worked occurred in both subsectors of the logistics sector, but there are clear differences in level: in 2015, the average working time totalled 1747 hours in transport firms and 1474 hours in other logistic service providers.

In the period 2010-2015, average hourly labour costs in the logistics sector increased faster than the national average, narrowing the gap between the two. In 2015, an hour's work in firms in the logistics sector averaged € 37.7, compared to a national average of € 38.1 (2014). At € 33.2 in 2015, hourly labour costs in transport were much lower than in other logistic services, where the figure came to € 39.4 according to the results of the constant sample for that year.

Consequently, average labour costs per FTE in the logistics sector caught up with the national average. In 2015 those costs came to around € 58000 for both subsectors, and hence for the sector as a whole.

[44] The only firms exempt from the obligation to complete a social balance sheet are NPIs, foundations and other private legal entities employing fewer than 20 FTEs. For more information on the obligation to submit a social balance sheet and the form to be used, see the Central Balance Sheet Office website: http://www.nbb.be > Central Balance Sheet Office> Drawing up> Models > Social Balance Sheet.

[45] The national average figures for 2015 will not be available until the end of 2017.

TABLE 15 HOURS WORKED AND ASSOCIATED COST OF INTERNAL HUMAN RESOURCES (reduced population[(a)])

	2010	2011	2012	2013	2014	2015
Average number of hours worked per annum per full-time equivalent	1,503	1,512	1,527	1,539	1,519	1,540
Average annual staff costs per full-time equivalent (in €)	51,189	53,455	55,694	56,636	56,845	58,019
Average staff costs per hour worked (in €)	34.1	35.4	36.5	36.8	37.4	37.7
Average staff costs per hour worked (annual change in %.)		3.8	3.2	0.9	1.7	0.7
p.m. National average						
Average number of hours worked per annum per full-time equivalent	*1,510*	*1,513*	*1,506*	*1,505*	*1,504*	*n*
Average annual staff costs per full- time equivalent (in €)	*53,031*	*54,549*	*55,786*	*57,005*	*57,378*	*n*
Average staff costs per hour worked (in €)	*35.1*	*36.0*	*37.0*	*37.9*	*38.1*	*n*
Average staff costs per hour worked (annual change in %.)		*2.7*	*2.8*	*2.2*	*0.7*	*n*
Inflation (health index - in %.)		3.1	2.7	1.3	0.4	1.1

Source: NBB (CBSO own calculations).
(a) Figures calculated for a constant population (full format accounts for which the financial years cover 12 months only) during the period 2010-2015.

Employee characteristics

The data on the internal workforce at the end of the financial year show that the composition remains fairly constant over the six years considered. For some aspects, however, the composition of the workforce in the logistics sector and the trends evident there differ clearly from the national average.

When broken down by professional category, the composition of the workforce in the logistics sector is not significantly different from the national average although – in contrast to the national trend – the share of blue-collar workers tended to increase over the period considered, primarily at the expense of white-collar workers, At the end of 2015, the workforce in the logistics sector comprised 55.0% white-collar workers, 43.6% blue-collar workers and 1.4% other staff[46]. However, those averages mask widely varying percentages for the two subsectors, because in transport the share of blue-collar workers at around 70% in 2015 was almost twice as high as in other logistic services.

The difference in composition between the logistics sector and the national average according to working time arrangements was already very marked in 2010 and has become somewhat more pronounced in the past few years. Thus, the percentage of full-time workers in the logistics sector increased from 80.6% in 2010 to 83.4% in 2015, while the national average declined from 69.0% in 2010 to 66.9% in 2014. The contrast with the national average is greater in transport (91.3% full-time workers) than in other logistic services (81.0% full-time workers).

[46] This category comprises managerial staff and workers with a traineeship or apprenticeship contract.

TABLE 16 INTERNAL WORKFORCE AT THE END OF THE FINANCIAL YEAR (reduced population[a], in % of total internal workforce)

	2010	2011	2012	2013	2014	2015
By professional category						
White-collar	*57.5*	*56.7*	*57.2*	*55.7*	*55.0*	*55.0*
Blue-collar	*41.0*	*41.8*	*41.3*	*42.5*	*43.6*	*43.6*
Other staff	*1.5*	*1.5*	*1.5*	*1.7*	*1.4*	*1.4*
By sex						
Males	*76.7*	*76.7*	*76.9*	*77.3*	*77.4*	*77.6*
Females	*23.3*	*23.3*	*23.1*	*22.7*	*22.6*	*22.4*
By working time						
Full-time	*80.6*	*81.0*	*81.9*	*82.4*	*83.4*	*83.4*
Part-time	*19.4*	*19.0*	*18.1*	*17.6*	*16.6*	*16.6*
By educational level						
Males						
Primary education	*39.7*	*40.1*	*39.5*	*38.5*	*37.9*	*37.2*
Secondary education	*46.7*	*46.3*	*46.4*	*47.1*	*47.3*	*48.0*
Higher non-university education	*9.4*	*9.0*	*9.1*	*9.4*	*9.6*	*9.6*
University education	*4.2*	*4.6*	*5.0*	*5.0*	*5.2*	*5.2*
Females						
Primary education	*27.3*	*28.2*	*27.0*	*25.8*	*25.5*	*25.1*
Secondary education	*51.0*	*48.9*	*49.6*	*48.9*	*48.5*	*48.2*
Higher non-university education	*15.4*	*15.8*	*16.0*	*17.2*	*17.4*	*17.8*
University education	*6.3*	*7.0*	*7.4*	*8.2*	*8.6*	*8.9*

Source: NBB (CBSO,own calculations).
(a) Figures calculated for a constant population (full format accounts for which the financial years cover 12 months only) during the period 2010-2015.

That finding is most probably due to the composition of the workforce by sex. Female workers, who are more likely to work part time than male workers, represented less than a quarter of the workforce in the logistics sector, at 22.4% in 2015, while the national average is about twice that figure, at 45.2% in 2014. At the level of the individual subsectors, the predominance of male workers is more pronounced in transport than in other logistic services, at 87.1% as opposed to 74.5%.

In both the male and the female workforce, roughly half the workers are educated to (no more than) secondary level. For the logistics sector, the most striking point is that the percentage of low-skilled workers is almost twice the national average for both sexes: in 2015 the figure was 37.2% for men (against a national average of 17.9 % in 2014), while the corresponding figure for women was 25.1% (against a national average of 14.4% in 2014.). However, the percentage of low-skilled workers has declined slowly since 2010; the relative increase in educational level is most apparent in the highly skilled female staff category.

According to the data from the constant sample, the large percentage of low-skilled workers in the logistics sector is even more marked in the other logistic services subsector than in transport.

External personnel

Apart from their in-house staff, firms may also use external personnel – agency workers and staff made available – where the volume can be adapted to the needs of the business more readily than traditional employment. According to the data from the constant sample, this is common practice in the logistics sector: on average, around two-thirds of firms have used external personnel in recent years, and at the end of 2015 that figure had actually risen to 71%. This concerns almost exclusively agency workers.

TABLE 17 HIRED TEMPORARY STAFF AND STAFF PLACED AT THE COMPANY'S DISPOSAL (reduced population[(a)], in % of total number of hours actually worked)

	2010	2011	2012	2013	2014	2015
Share of external staff in total employment	7.6	8.8	8.6	8.7	9.8	11.6
p.m. national average	*4.4*	*4.8*	*4.3*	*4.2*	*4.4*	*n.*

Source: NBB (CBSO, own calculations).
(a) Figures calculated for a constant population (full format accounts for which the financial years cover 12 months only) during the period 2010-2015.

Since 2010, the share of external staff in internal and external employment (measured in hours) has tended to increase in the logistics sector, and amounted to 11.6 % at the end of 2015 (compared to 7.6% in 2010). Over the same period, the national average fluctuated between 4.2% and 4.8%. Other logistic service providers make more use of external personnel than transport firms, in relative terms.

Training[47]

The percentage of firms with formal and informal training schemes in the logistics sector is considerably above the national average: the sector's score is three times as high, at 58.9% and 32.3% respectively in 2015. The high percentages for the logistics sector are undoubtedly attributable to the compulsory further training for lorry drivers (under European rules). However, where initial training is concerned, the sector is in line with the national average at 5.5%.

In the specific case of formal training, the participation rate – i.e. the ratio between the number of trainees and the average number of workers – (43.8% compared to 41.0%) and the training costs per hour (€ 63.3 compared to € 53.5) seem above the national average. Conversely, the average duration of training is below the national average, at 20.1 hours as opposed to 26.6 hours.

[47] Formal training covers courses and traineeships run by instructors at a location other than the workplace. Informal training covers other training activities determined on the basis of the trainee's individual needs, including on-the-job training. Initial training is provided for persons under an apprenticeship scheme alternating work and study with a view to obtaining a diploma.

TABLE 18 EFFORTS DEVOTED TO TRAINING (reduced population[a])

	2010	2011	2012	2013	2014	2015
Formal training						
% of firms reporting formal training	47.2	52.3	60.1	62.5	63.8	58.9
p.m. national average	*12.7*	*12.2*	*14.6*	*15.3*	*15.2*	*n.*
Participation rate (in %)	37.5	42.6	48.2	50.3	46.0	43.8
Males	33.9	41.6	44.9	49.0	45.3	43.4
Females	48.3	45.6	58.5	54.3	48.2	45.0
p.m. national average	*36.7*	*37.2*	*39.5*	*40.6*	*41.0*	*n.*
Number of hours' training per participant	19.4	20.4	18.2	19.2	18.9	20.1
Males	20.4	21.6	19.0	19.7	19.6	21.2
Females	17.2	17.3	16.3	17.8	16.7	16.7
p.m. national average	*26.6*	*26.3*	*26.6*	*27.1*	*26.6*	*n.*
Training costs per hour (in €)	61.5	54.7	54.6	57.1	62.1	63.3
Males	61.2	54.1	54.8	56.5	60.9	60.0
Females	62.3	56.6	54.1	59.1	66.3	76.1
p.m. national average	*53.0*	*55.7*	*55.2*	*54.7*	*53.3*	*n.*
% of the number of hours worked devoted to training	0.5	0.6	0.6	0.7	0.6	0.6
p.m. national average	*0.7*	*0.7*	*0.8*	*0.8*	*0.8*	*n.*
Training costs as a percentage of total staff costs	0.9	0.9	0.9	1.0	1.0	1.0
p.m. national average	*1.1*	*1.1*	*1.2*	*1.2*	*1.2*	*n.*
Informal and initial training						
% of firms reporting informal training	24.0	27.4	31.1	32.9	32.0	32.3
p.m. national average	*7.2*	*7.6*	*9.0*	*9.4*	*9.0*	*n.*
% of firms reporting initial training	4.3	6.1	5.8	6.3	5.5	5.5
p.m. national average	*5.3*	*5.7*	*6.0*	*6.1*	*5.9*	*n.*

Source: NBB (CBSO, own calculations).
(a) Figures calculated for a constant population (full format accounts for which the financial years cover 12 months only) during the period 2010-2015.

There are no significant differences between the two subsectors in terms of the participation rate and the average duration of formal training; the hourly costs of that training are noticeably higher in other logistics (€ 66.7) than in transport (€ 53.1).

A breakdown of the social balance sheet results by size of workforce shows no clear trends in terms of working time, labour costs or workforce characteristics. Conversely, as regards the training efforts, the results confirm the prevailing belief that, in comparison with employees of large companies, staff of smaller firms have fewer opportunities to improve their knowledge or learn new skills.

TABLE 19 EFFORTS DEVOTED TO TRAINING BY EMPLOYMENT CLASS (reduced population[(a)], 2015)

	Employment						
	<=25 FTE	>25 and <= 50 FTE	>50 and <= 100 FTE	>100 and <= 250 FTE	>250 and <= 500 FTE	>500 FTE	Total
% of firms reporting							
formal training	24.9	59.8	77.4	80.5	100.0	100.0	58.9
informal training	11.9	32.5	40.0	47.1	69.2	56.5	32.3
initial training	1.6	3.1	6.1	11.5	15.4	34.8	5.5
Participation rate employees (in %).....	19.3	31.9	44.0	41.3	49.0	46.0	43.8
Training costs							
in euros per hour	35.9	42.3	40.5	42.6	55.6	79.8	63.3
as a % of total staff costs	0.2	0.4	0.8	0.5	1.1	1.3	1.0

Source: NBB (CBSO, own calculations).
(a) Figures calculated for a constant population (full format accounts for which the financial years cover 12 months only) during the period 2010-2015.

As table 19 indicates, the percentage of firms providing training for their staff and the participation rate and training costs all increase with firm size.

3.2 Financial health

The financial situation of the logistics sector is first analysed on the basis of globalised financial ratios. Of course, the globalised ratios for the sector as a whole may conceal widely varying situations at the level of the individual firms. The financial situation analysis is therefore supplemented by two risk indicators calculated by the NBB on the basis of the data from the individual annual accounts: the financial health class and the credit risk class. These indicators respectively reflect the risk of failure within 3 years and the risk of default within 1 year.

3.2.1 Financial ratios

Table 20 shows the financial situation of the logistics sector on the basis of three ratios: the return on equity (after tax), liquidity in the broad sense, and solvency. The return on equity after tax measures the return that a firm generates in relation to the capital used. It indicates the degree to which a firm is able to generate profits, and is therefore an indicator of a firm's financial vigour and future chance of survival. Liquidity in the broad sense (current ratio) indicates the degree to which short-term liabilities are covered by short-term assets, or in other words the degree to which the firm can meet its short-term liabilities. A figure of more than 1 means that the firm is liquid. The solvency ratio indicates a

firm's ability to pay off both short-term and long-term debts out of its capital. It is the size of the buffer (capital) in the total liabilities or, in other words, the degree to which the firm is independent of external resources. The precise definition of the ratios is given in Annex 5.

In order to eliminate the impact on the financial results of changes in the data set – newcomers or firms disappearing – the financial ratios were calculated on the basis of a constant sample of firms[48] for the years 2010-2015. The ratios, presented in the form of globalised figures[49], must be interpreted with due caution since some branches consequently comprise only a small number of firms, and the trends identified may be attributable to just a few firms, or only one. (A breakdown of the ratios by branches is given in Annex 6).

In the period 2010-2015 the return on equity (ROE) fluctuated in much the same way as the national average (i.e. the total for non-financial companies), although the movements were more marked. For instance, in 2011 the ROE fell more sharply in the logistics sector; in the transport subsector, the ROE was actually negative in that year as a result of the developments in maritime freight. Following the profitability revival in subsequent years, the logistics sector (again) achieved an ROE which was higher than the national average.

Although liquidity in the broad sense remained above the critical value of 1 throughout the period 2010-2015, it was rather low in comparison with the national average. The transport subsector did noticeably less well on the liquidity front than other logistic services, although in both subsectors there are firms which form an exception to the general picture. For instance, liquidity was decidedly good in freight transport by air, but generally (too) low in cargo handling and storage.

In regard to solvency, with a score of around 45% the logistics sector's position was more than satisfactory throughout the period, and actually better than the national average. Solvency is particularly high in the other logistic services subsector; that is attributable to the remarkable ratios in the supporting transport activities branch.

[48] The constant sample comprises all firms in the data set which, for each of the years in the period considered, filed annual accounts covering a 12-month financial year in which the headings in the accounts meet the conditions for calculating these ratios. Thus, for the purpose of calculating profitability, the financial year must cover 12 months and the capital must be strictly positive. The same distribution keys are applied to the headings for calculation of the ratios as those that apply for calculating the other parameters. The constant sample comprises 4730 firms, or 54 % of the total number included in the study. It represents 66% of value added and 63% of employment.

[49] In this calculation method the sum of the numerators of all firms is divided by the sum of their denominators.

TABLE 20 FINANCIAL RATIOS BY SUBSECTOR (reduced population[a])

Branch of activity	Liquidity in the broad sense						Return on equity after taxes (in %)						Solvency (in %)					
	2010	2011	2012	2013	2014	2015[p]	2010	2011	2012	2013	2014	2015[p]	2010	2011	2012	2013	2014	2015[p]
Transport	0.93	1.01	1.03	1.02	1.17	0.93	13.7	-2.9	9.9	7.5	3.7	10.1	39.7	34.4	35.9	37.8	37.9	40.8
Other logistic services	1.34	1.19	1.12	1.19	1.23	1.34	12.5	2.4	6.6	7.1	7.6	8.2	49.9	49.4	51.0	50.4	50.0	48.9
TOTAL	**1.17**	**1.14**	**1.11**	**1.08**	**1.12**	**1.21**	**13.0**	**0.5**	**7.7**	**7.2**	**6.2**	**8.9**	**45.5**	**42.8**	**44.8**	**45.4**	**45.0**	**45.6**
p.m. total non-financial companies	*1.18*	*1.20*	*1.26*	*1.25*	*1.24*	*1.27*	*8.8*	*6.7*	*6.8*	*5.3*	*5.5*	*5.9*	*41.3*	*42.8*	*43.1*	*43.1*	*43.4*	*43.9*

Source: NBB (CBSO,own calculations).
(a) Figures calculated for a constant population (accounts for which the financial years cover 12 months) during the period 2010-2015.

3.2.2 Financial health indicator

The NBB developed a financial health indicator[50] based on firms' annual accounts. The indicator sums up the profitability, liquidity and solvency situation in a single value. On the basis of the indicator, each firm is assigned to one of ten financial health classes, in which each class corresponds to a risk of failure within three years. The first four classes correspond to below-average failure rates and therefore indicate a favourable financial situation. Classes 6 to 10 correspond to above-average failure rates and thus indicate a financially vulnerable position. Class 5 corresponds to a failure rate equal to the average and is therefore interpreted as neutral.

The financial health indicator findings for the logistics sector relate to a reduced data set, as the indicator can only be calculated for firms that meet a number of conditions concerning legal form, size, length of the financial year and content of the annual accounts. The reduced data set covered 78% of the total number of firms from the data set compiled for the study, which together accounted for 70% of employment in the logistics sector.

TABLE 21 RELATIVE FREQUENCY DISTRIBUTION OF FINANCIAL HEALTH CLASSES - NUMBER OF COMPANIES (reduced population, in % of the number of companies)

	2010	2011	2012	2013	2014	2015
Class 1	6.8	6.5	7.3	7.3	7.4	8.2
Class 2	16.1	16.2	16.1	17.1	18.0	20.6
Class 3	17.4	17.6	18.0	19.2	19.3	20.4
Class 4	19.4	19.5	19.6	19.8	20.6	18.8
Class 5	20.0	20.6	19.7	18.9	17.8	17.3
Class 6	14.2	13.8	13.7	13.0	12.1	11.0
Class 7	4.0	3.6	3.3	3.2	3.0	2.6
Class 8	1.7	1.8	1.7	1.2	1.3	0.8
Class 9	0.3	0.3	0.3	0.3	0.2	0.2
Class 10	0.2	0.2	0.2	0.1	0.1	0.1
Total	*100*	*100*	*100*	*100*	*100*	*100*
Class 6-10						
Transport	*20.5*	*19.6*	*18.9*	*17.2*	*15.9*	*13.5*
Other logistic services	*19.6*	*19.2*	*17.8*	*16.8*	*14.7*	*17.3*
Total logistics sector	*20.4*	*19.6*	*19.2*	*17.8*	*16.8*	*14.7*
p.m.						
Total non-financial companies	*19.4*	*18.9*	*18.8*	*18.2*	*17.5*	*16.0*

Source: NBB (CBSO, own calculations).

Like non-financial firms as a whole, the percentage of firms in the logistics sector with an above-average financial risk (classes 6 to 10) declined gradually over the period 2010-2015, from 20.4% to 14.7%. At the same time, the proportion of healthy firms increased from 59.6% to 68.0%.

[50] See Vivet (2011).

The downward trend in the percentage of financially vulnerable firms and the percentage rise in the number of healthy firms occurred in both logistics subsectors, although the tendency was more pronounced in transport than in other logistic services. There are notable exceptions within the two subsectors. In the transport branches, it is mainly sea and coastal transport and inland water transport that have a noticeably lower percentage of firms in classes 6 to 10, namely 7%. In other logistics the financial situation of postal and courier activities is clearly less favourable than in the other branches, with 25% of firms in classes 6 to 10.

TABLE 22 RELATIVE FREQUENCY DISTRIBUTION OF FINANCIAL HEALTH CLASSES – COMPANY SIZE
(reduced population, in % of workers entered in the staff register)

	2010	2011	2012	2013	2014	2015
Class 1	8.0	5.8	7.6	8.2	8.7	9.1
Class 2	17.6	16.9	16.8	18.9	16.9	18.8
Class 3	28.7	30.5	30.5	27.7	27.8	30.6
Class 4	21.8	20.4	21.4	22.7	25.2	20.2
Class 5	16.0	15.9	15.6	14.3	13.3	14.5
Class 6	5.8	8.3	5.9	6.0	6.0	5.4
Class 7	1.0	1.2	1.2	1.0	1.1	1.0
Class 8	0.8	0.8	0.6	0.9	0.8	0.3
Class 9	0.1	0.1	0.1	0.2	0.1	0.1
Class 10	0.2	0.2	0.1	0.0	0.1	0.0
Total	*100*	*100*	*100*	*100*	*100*	*100*
Class 6-10						
Transport	*10.5*	*15.2*	*11.2*	*10.9*	*9.7*	*8.0*
Other logistic services	*5.1*	*5.6*	*4.8*	*5.2*	*6.7*	*5.7*
Total logistics sector	*7.8*	*10.6*	*8.0*	*8.1*	*8.2*	*6.8*
p.m.						
Total non-financial companies	*7.9*	*8.0*	*8.4*	*8.0*	*7.3*	*6.4*

Source: NBB (CBSO, own calculations).

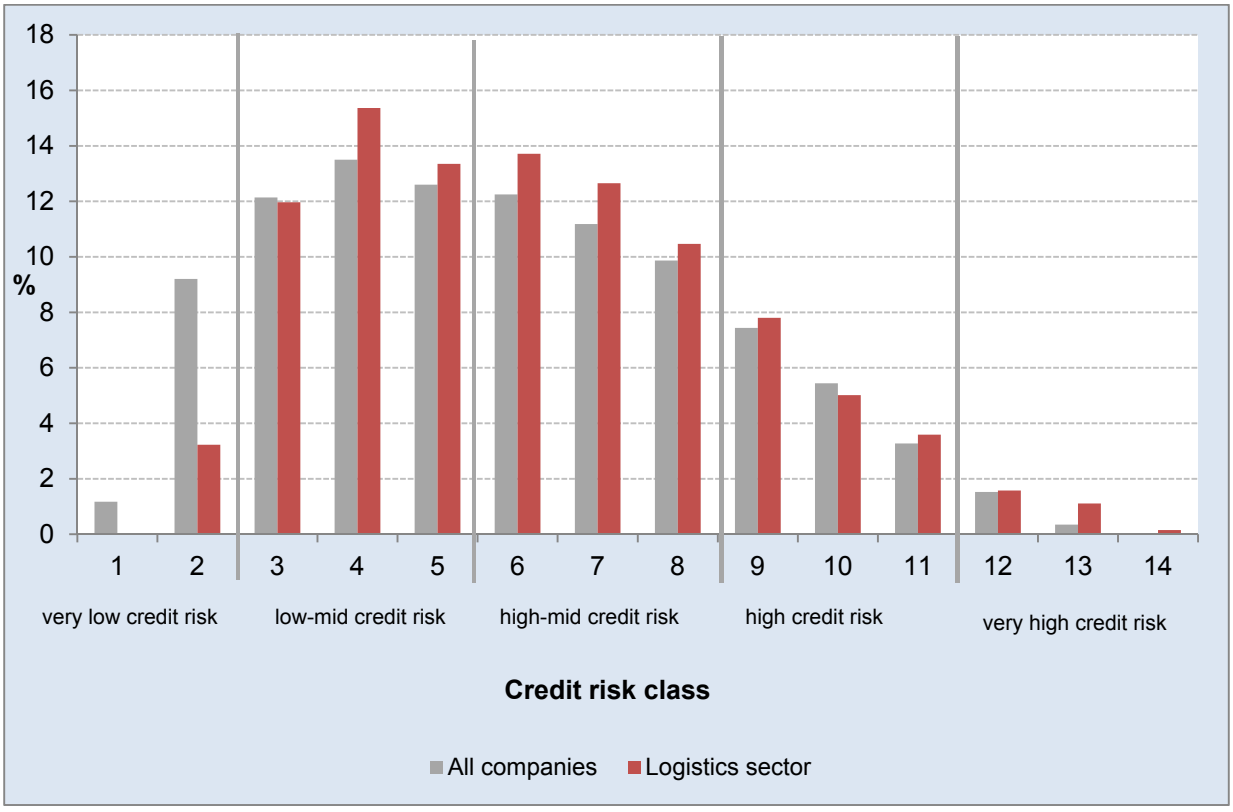
Examination of financial health in terms of employment highlights the size effect that operates here: there is a negative relationship between size and failure rates. The proportion of employment represented by firms in classes 6 to 10 is only about half their percentage share, and the decline is smaller, namely from 7.8% to 6.8%. In the transport subsector the share of employment in these classes at the start of the period considered was twice as high as in other logistics, but dropped gradually to 8.0%. Conversely, in other logistic services that percentage was fairly stable and came to 5.7% in 2015.

3.2.3 Credit risk

The NBB set up an In-house Credit Assessment System (ICAS) which was approved by the ECB in 2015. The ICAS is a credit assessment system that the NBB can use to assess the default risk of Belgian non-financial institutions in the private sector in connection with the Euro system's monetary policy[51]. The ICAS involves use of a statistical model based on data from the individual annual accounts. On the basis of the ICAS model, each firm is assigned to one of 14 different risk classes. In this study, those classes were numbered 1 to 14 in ascending order of credit risk.

The distribution of the individual firms across the 14 risk classes of the ICAS model in chart 14 shows that the logistics sector has relatively fewer firms with a very low credit risk compared to the total of Belgian firms filing annual accounts. In the logistics sector, only 3.2% of firms have a credit risk that can be considered good (classes 1 and 2), compared to 10.4% for the total. However, firms in the logistics sector are relatively better represented in risk classes 3 to 5, corresponding to an acceptable risk; the figure for firms in those classes is 40.7% for the logistics sector, compared to 38.2% for the total. But at 56.1%, the proportion of firms with a high credit risk (classes 6 to 14) is higher for the logistics sector than the figure of 51.4% for all companies.

CHART 14 RELATIVE FREQUENCY DISTRIBUTION OF 2015 CREDIT RISK CLASSES



Source: NBB (CBSO, own calculations).

[51] To protect the Euro system against potential losses, credit institutions have to deposit collateral in exchange for the provision of liquidity. That collateral, which does not only take the form of securities but may also comprise bank loans to the non-financial sector, must of course meet strict quality standards. Credit quality is measured as the likelihood of default within the next year. In this connection, default means not only bankruptcy and compulsory administration proceedings but also (material) payment arrears of 90 days and bank loans classified as doubtful.

A breakdown of the distribution of firms across the risk classes by subsector reveals that the overall picture for the sector is virtually the same as for the transport subsector, which is numerically predominant in the sector. Conversely, the other logistic services subsector has a higher risk profile, with 61% of firms in risk classes 6 to 14. The storage and postal and courier activities branches, in particular, have a relatively large number of firms in those risk classes. Within the transport subsector there are also individual branches where the percentage of firms with a high credit risk is considerably over 60%, namely inland water transport and freight transport by air.

Conclusion

- In this research paper, the economic importance of the logistics sector in Belgium was calculated for the period 2010-2015, with the emphasis on 2015. The data forming the basis of the calculations came from the annual accounts filed at the NBB's Central Balance Sheet Office; sole traders/natural persons were therefore not included in the calculations. The logistics sector was defined on the basis of the NACE-Bel nomenclature of activities, and corresponds to what is generally referred to as the professional logistics sector.
- The logistics sector comprises around 9 000 firms; over the period considered, however, that number declined steadily. Firms in the sector vary greatly in size and activity, although there is also some blurring of the distinctions between branches. As regards the sector's branch structure, there was little change over the period considered. In 2015, transport firms, mainly road hauliers, made up 67% of the sector.
- The logistics sector is very sensitive to the business cycle, and was hard hit by the economic crisis of 2008-2009. Apart from the cyclical aspect, the sector is also greatly influenced by social trends and market developments such as globalisation, European unification and EU enlargement, chain reversal, technological innovations (digitalisation, e-commerce, etc.), and growing concern for sustainability. These developments are leading to increased pressure of competition and significant changes in logistic organisation and processes.
- The sector's economic importance was assessed via 2 different channels: the direct and indirect effects. The direct effects concern the contribution made within the sector itself in terms of value added, (salaried) employment and investment. In regard to the indirect effects, the input-output tables were used to examine the effects on value added and employment (employment + self-employed activity) occurring upstream among Belgian suppliers.
- In 2010-2015, the logistics sector's performance did not keep pace with the rest of the economy. Although there was a catching-up at the end of the period considered in terms of value added and investment, the sector's relative economic importance had dropped compared to 2010.
- Direct value added stabilised between 2010 and 2013; after that, the improvement in the business climate led to an increase. In 2015 the logistics sector generated direct value added amounting to € 11.9 billion. Since the growth of value added over the period considered lagged behind that for the Belgian economy as a whole, the sector's contribution to GDP declined from 3.0% in 2010 to 2.9% in 2015. Indirect value added for 2015 is estimated at € 6.9 billion or around 1.7% of GDP. The total impact (i.e. direct and indirect effects together) of the logistics sector is therefore put at € 18.8 billion or 4.6% of GDP, compared to 4.9% in 2010.
- Salaried employment in the logistics sector declined over the period 2010-2015, so that the trend was less favourable than in the total economy, where a slight increase was recorded. In 2015 the logistics sector comprised roughly 134 000 FTE, corresponding to 3.3% of total domestic employment (expressed in FTE), compared to 3.6% in 2010. The employment generated by the sector among Belgian suppliers is estimated at more than 83 000 FTE, or roughly 2.1% of domestic employment. The sector's overall importance in terms of employment can therefore be estimated at almost 218 000 FTE or 5.4% of total domestic employment (2010: 5.7%).
- Although investment in the logistics sector surged in 2014, the average pace of investment over the period 2010-2015 trailed behind the rate of gross fixed capital formation in Belgium. In 2015 the sector contributed 3.1% of GFCF with investment amounting to just over € 2.9 billion; in 2010 that contribution had reached 3.6%.
- A breakdown of the figures by company size shows that SMEs make up 83.8% of the sector and large firms 16.2%. No less than 45% of firms in the sector employ no staff. Direct value added, employment and investment are concentrated on a relatively small number of large firms. In 2015, the combined share of the top 20 companies in the sector total came to over 36% for value added and employment, while in the case of investment the figure reached 55%.

- The logistics sector has only a few multiregional firms. In 2015 the share of the regions in (direct) value added came to 76% for Flanders, 16% for Wallonia and 8% for Brussels. In contrast to the other two regions, the largest share of value added in Brussels is attributable to multiregional firms. The regional breakdown of (direct) employment reveals a picture similar to that for value added, namely 73% for Flanders, 20% for Wallonia and 7% for Brussels.
- A rough estimate of the logistics activities conducted outside the professional logistics sector illustrates how the findings concerning the sector's economic importance are influenced by the definition of the sector. If the strict definition is extended to include in-house logistics and secondary logistic activities offered on the market by sectors other than the defined logistics sector, the economic importance can be put at at more than 50% higher. On the basis of that estimate, logistics in the broad sense accounted for roughly 7.6% of GDP and 8.0 % of domestic employment in 2015.
- On the basis of the social balance sheets of a reduced sample of (large) firms, it was found that, compared to the national average, the structure of the workforce in the logistics sector features a high percentage of full-time workers (83% against 67%), a low percentage of female workers (22% against 45%) and a lower educational level. For both sexes the percentage of low-skilled is almost twice the national average. The use of external staff (mainly agency workers) is common practice in the logistics sector. Over the years considered, the proportion of external staff in the workforce increased to 11.6% - probably because of the uncertainty over the economic revival – while the national average was more or less stable at 4%. The percentage of firms with formal and informal training efforts is also noticeably higher than the national average.
- Analysis of the globalised financial ratios for a constant sample shows that the return on capital fluctuated in much the same way as the national average (though the movements were somewhat more marked), solvency is more than satisfactory, while liquidity in the broad sense is rather low compared to the national average. The analysis of the sector's financial situation was supplemented by two risk indicators for individual firms, calculated by the NBB. The assessment on the basis of the financial health indicator (risk of failure within 3 years) shows that the percentage of firms in a financially vulnerable position has declined in the same way as for the economy as a whole. The distribution of firms across the credit risk classes of the ICAS model (risk of default within 1 year) indicates a somewhat higher credit risk profile for the logistics sector as a whole.

Abbreviations

1PL	First-party logistics provider
2PL	Second-party logistics provider
3PL	Third-party logistics provider
4PL	Fourth-party logistics provider
5PL	Fifth-party logistics provider
BIPT	Belgian Institute for Postal services and Telecommunications
IBOT/BITO	Institut Belge des Organisateurs de Transport / Belgisch Instituut der Transportorganisatoren (Belgian institute of transport organisers)
CED	Central Enterprise Databank
CBSO	Central Balance Sheet Office
CEPA	Association of employers at the Port of Antwerp
DGS	Directorate General Statistics
ECB	European Central Bank
EDC	European Distribution Centre
ESA	European System of Accounts
EU	European Union
FPS	Federal Public Service
FTE	Full-time equivalent
GDP	Gross domestic product
GFCF	Gross fixed capital formation
ICAS	In-house Credit Assessment System
ICT	Information and Communications Technology
ITLB	Institut Transport routier et Logistique Belgique/Instituut wegTransport en Logistiek België (Belgian institute of road transport and logistics)
ITS	Intelligent Transport Systems
LPI	Logistics Performance Index
NACE-Bel	Nomenclature of economic activities in the European Community (Belgian version)
NAD	National Accounts Database
NAI	National Accounts Institute

NBB	National Bank of Belgium
NPI	Non profit institution
SNCB/NMBS	Société Nationale des Chemins de Fer Belges / Nationale Maatschappij der Belgische Spoorwegen (Belgian Railways)
ROE	Return on equity
SMEs	Small and medium-sized enterprises
SUT	Supply and Use Table
IOT	Input Output Table
WP	Working paper
VAL	Value added logistics
VAS	Value added services
VIL	Vlaams Instituut voor de Logistiek (Innovation platform for the logistics sector in Flanders)

Conventional signs

€	euro
n.	data not available
p	provisional data
p.m.	pro memoria

ANNEX 1 Basic forms of logistics outsourcing

The various basic forms of logistics outsourcing are referred to as first party logistics (1PL), second party logistics (2PL), third party logistics (3PL) and fourth party logistics (4PL). However, the definition of these terms is not always clear.

According to the VIL publications, the role of the logistic services provider in each of these forms of outsourcing can be described as follows[52]:

- **1PL (first party logistic player)**: The logistic services provider the carries out operational assignments - transport and storage – ad hoc on an irregular non-contractual basis, for a shipper or a logistic services provider higher up the chain. He is paid per assignment.
- **2PL (second party logistic player)**: The logistic services provider only carries out operational assignments; however, he has a fixed contract and in peak periods, if his own resources have insufficient capacity, he may outsource assignments to another logistic services provider in a 1PL role.
- **3PL (third party logistic player)**: The logistic services provider does not only take charge of the basic logistic services such as transport and storage but also offers value added activities. This concerns not only value added activities concerning the flow of goods (VAL), such as labelling, assembly or kitting, but also increasingly activities concerning the flow of information (VAS), such as customs management, stock management or taking orders. Some 3PLs carry out this work themselves, others hand over (part of) the execution to one or more other logistic service providers with a 2PL – or possibly a 1PL – role.
- **4PL (fourth party logistics player)**: The logistic services provider – also referred to as the lead logistics provider or integrator – is a chain manager who takes over responsibility for the organisation and management of large parts of the logistics chain, or the whole chain, from the shipper.
  Van Nieuwenhuyse (2014) points out that 4PL service providers often do not have their own means of transport or warehouses, and act as intermediaries between the shipper and various transport and logistics firms.

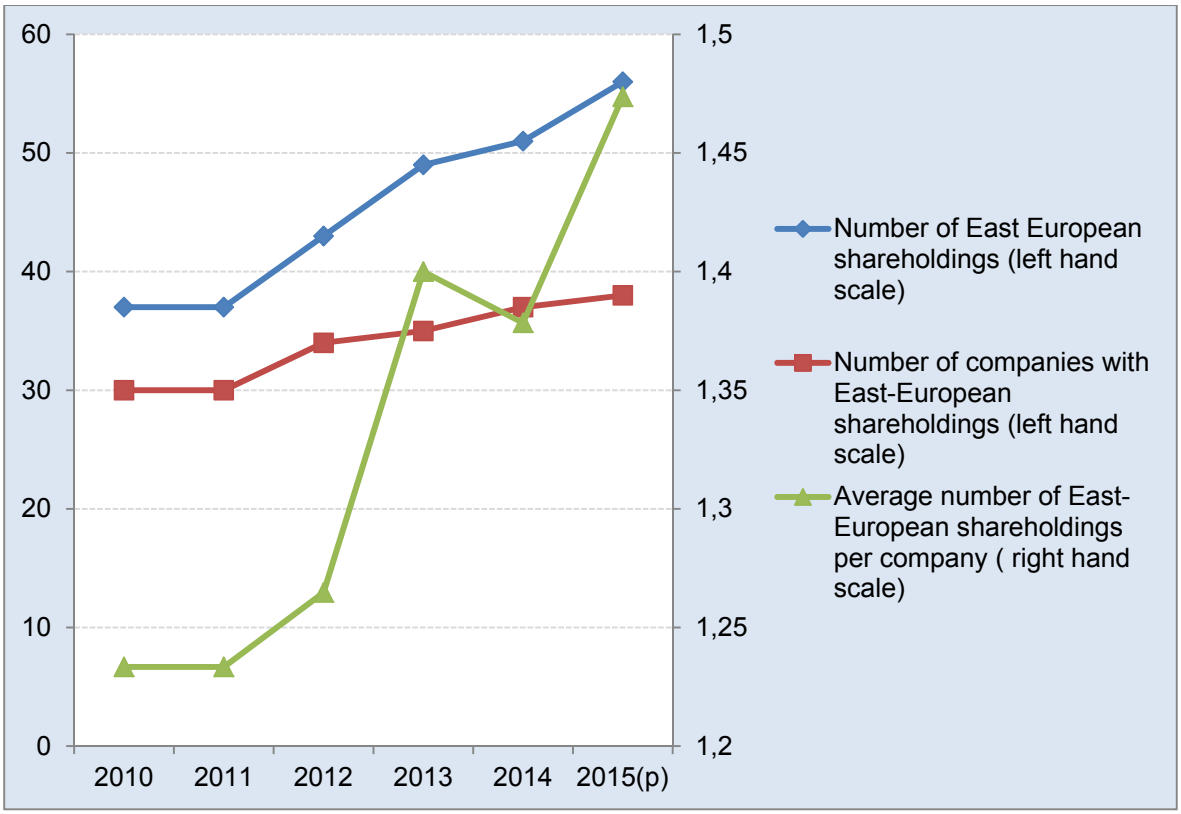
- The term **5PL (fifth party logistic player**) also comes up occasionally. Although there is no consensus on this either, the concept is often used in connection with e-commerce, referring to the switch from supply chains to supply networks[53].

[52] VIL (2004) and VIL (2007).
[53] http:// www.LogisticsGlossary.com

ANNEX 2 East European shareholdings in the logistics sector

The liberalisation of the European transport market has greatly increased the pressure of competition. The (international) road transport sector is particularly exposed to competition from East European transport firms. As a result of the enlargement of the European Union in 2004 and 2007[54], transport firms in the new Member States gained unlimited access to the European market for international road transport, and owing to the wage differential they have forced out hauliers from countries such as Belgium. As is evident from the data obtained from the ITLB, the cost of drivers is the principal cost element in transport for Belgian firms, whereas the other components vary relatively little from one country to another[55]. A recent comparative study by the French Comité National Routier (CNR) confirms that hourly labour costs in Western Europe are around four times as high as in most East European countries. In that regard, Belgium is in a particularly unfavourable position: according to the survey data, it has the highest labour cost at around € 33.

CHART A2.1 EAST EUROPEAN SHAREHOLDINGS IN THE LOGISTICS SECTOR



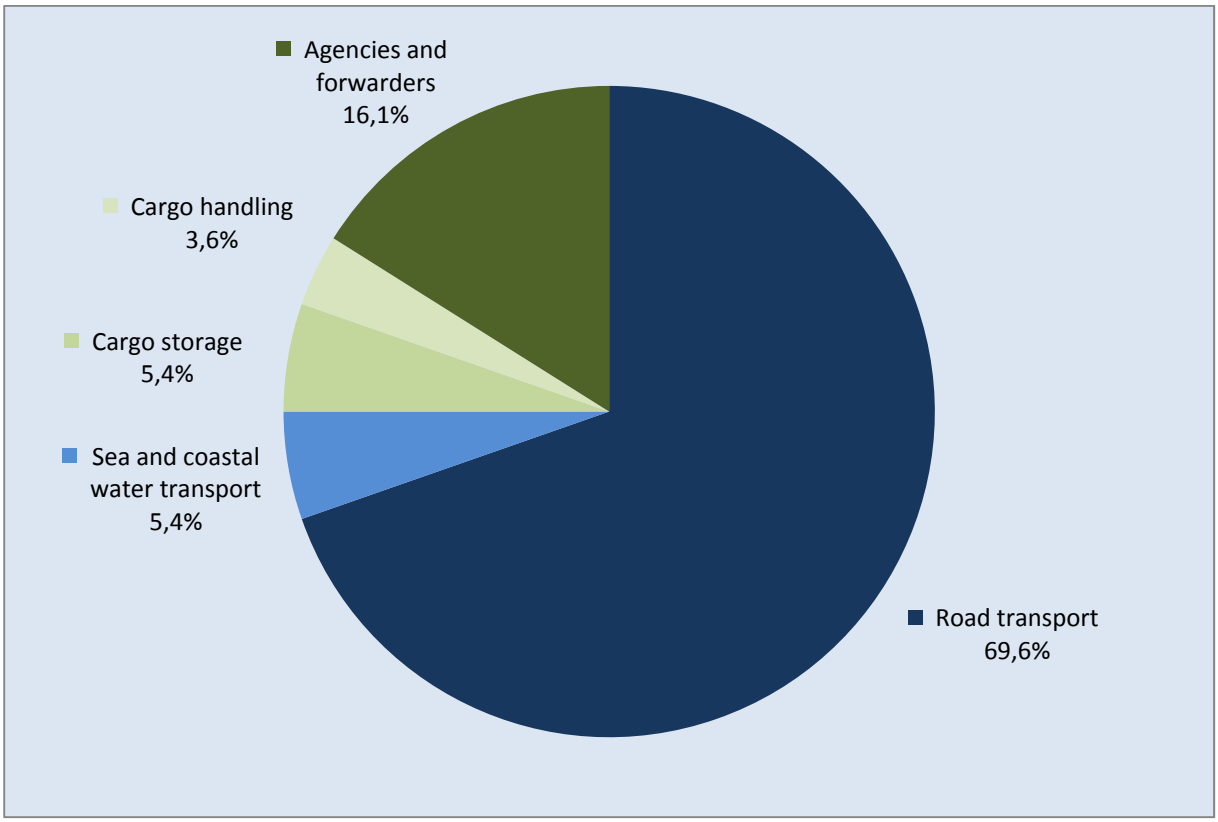
Sources: NAI, NBB (CBSO, own calculations).

In these circumstances, road hauliers have made strategic choices. Some firms have refocused on the domestic market, some have aimed at niches requiring considerable product knowledge where margins are still positive, such as chilled transport and hazardous goods transport, or have developed secondary activities such as offering storage space. It also seems that the developments have prompted some firms to set up or acquire their own subsidiaries in Eastern Europe with a view to international transport.

[54] In May 2004 10 new Member States joined the European Union: Cyprus, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Slovenia, Slovakia and Czechia. In 2007 that was followed by the accession of Bulgaria, Croatia and Romania.
[55] According to the ITLB data, the relative share of the cost item "drivers" came to 38.1% for national transport in general, 46.1% for national general goods traffic and 31.2% for international transport in general at the end of 2016.

However, a census of the number of firms in the logistics sector with subsidiaries in Eastern Europe on the basis of note 5.5 to the annual accounts – where firms must report shareholdings of more than 10% – revealed only a (very) small number. According to this census, at the end of 2015, 38 firms in the logistics sector defined in this research paper had a total of 56 holdings in East European countries. However, according to the industry associations, that number is not representative of the phenomenon. One reason for the underestimate might be that the participating interests are not owned by the firm itself but by a parent company not belonging to the logistics sector (holding company, head office activities, etc.) or are owned by private shareholders and were thus omitted from the census.

CHART A2.2 EAST EUROPEAN SHAREHOLDINGS IN THE LOGISTICS SECTOR BY BRANCH OF ACTIVITY
(in % of total, 2015[p])



Sources: NAI, NBB (CBSO, own calculations).

Although the number of East European shareholdings and companies concerned that can be identified on the basis of the annual accounts from the logistics sector appears to underestimate reality, the figures still indicate a steady rise since 2010. That trend is attributable mainly to road transport: the share of that branch in the East European shareholdings of the logistics sector increased from less than 50% in 2010 to around 70% in 2015. For road transport firms, the average number of East European shareholdings increased from 1.3 in 2010 to 1.6 in 2015, compared to an average of 1.5 for the sector as a whole.

ANNEX 3 Company size criteria

The company size criteria determine the annual accounts model that has to be submitted.

Pursuant to Article 15 of the Companies Code, in the case of annual accounts for financial years commencing before 1 January 2016 a company was considered small if, during the preceding two complete financial years, it did not exceed more than one of the following criteria:

- Annual average number of employees (in FTE):50
- Annual turnover (excluding VAT): € 7 300 000
- Balance sheet total: € 3 650 0000.

unless the annual average number of employees exceeded 100. In that case a company was always considered to be large.

The Companies Code allowed unlisted small firms to submit their annual accounts in the abridged format. Large firms and listed small firms were obliged to use the full format.

The Law of 18 December 2015 transposing Directive 2013/34/EU, made changes to these size criteria. The new criteria apply to annual accounts relating to financial years from 1 January 2016 onwards. Among other things, they provide for the creation of a subcategory of microfirms within the small firms category; in their case, it is sufficient to submit annual accounts according to the micromodel. In addition, thresholds apply which means, for instance, that a firm with more than 100 employees is no longer automatically classed as large.

For more information on company size criteria, see the Central Balance Sheet Office website: http://www.nbb.be > Central Balance Sheet Office > Drawing up > Size criteria

ANNEX 4

TABLE A4 SOCIAL BALANCE SHEET BY SUBSECTOR (reduced population[a], 2010 and 2015)

	2010			2015		
	Other logistic services	Transport	Total	Other logistic services	Transport	Total
Hours worked and associated cost of internal human resources						
Average number of hours worked per annum per full-time equivalent	1,446	1,704	1,503	1,473	1,747	1,540
Average annual staff costs per full-time equivalent (euros)	50,365	54,091	51,189	58,037	57,962	58,019
Average staff costs per hour worked (euros)	34.8	31.8	34.1	39.4	33.2	37.7
Internal workforce at the end of the financial year						
By professional category						
White-collar (%)	65.7	28.9	57.5	63.6	28.5	55.0
Blue-collar (%)	33.2	68.2	41.0	35.2	69.5	43.6
Other staff (%)	1.1	2.9	1.5	1.2	2.0	1.4
By sex						
Males (%)	73.9	86.8	76.7	74.5	87.1	77.6
Females (%)	26.1	13.2	23.3	25.5	12.9	22.4
By working time						
Full-time (%)	77.7	91.2	80.6	81.0	91.3	83.4
Part-time (%)	22.3	8.8	19.4	19.0	8.7	16.6
By educational level						
Males						
Primary education (%)	43.1	29.6	39.7	38.2	34.5	37.2
Secondary education (%)	43.7	55.9	46.7	46.2	52.5	48.0
Higher non-university education (%)	8.6	11.7	9.4	9.7	9.4	9.6
University education (%)	4.6	2.9	4.2	5.8	3.5	5.2
Females						
Primary education (%)	29.5	12.2	27.3	26.0	19.2	25.1
Secondary education (%)	50.4	55.1	51.0	48.6	45.4	48.2
Higher non-university education (%)	14.0	25.4	15.4	16.4	26.4	17.8
University education (%)	6.1	7.4	6.3	8.9	8.9	8.9
Hired temporary staff and staff placed at the enterprise's disposal						
Share of external staff in total employment [b] (in %.)	7.8	6.9	7.6	12.4	9.4	11.6

TABLE A4 SOCIAL BALANCE SHEET BY SUBSECTOR (CONTINUED) (reduced population[a], 2010 and 2015)

	2010			2015		
	Other logistic services	Transport	Total	Other logistic services	Transport	Total
Efforts devoted to formal training						
% of firms reporting formal training	*52.4*	*40.1*	*47.2*	*61.2*	*55.8*	*58.9*
Participation rate (%)	40.2	27.6	37.5	43.6	44.5	43.8
Males (%)	36.4	26.1	33.9	42.9	45.0	43.4
Females (%)	49.9	36.8	48.3	45.6	41.3	45.0
Number of hours' training per person involved	17.6	29.2	19.4	19.8	21.1	20.1
Males	18.0	30.9	20.4	21.1	21.6	21.2
Females	16.7	21.6	17.2	16.6	17.2	16.7
Training costs per hour	62.8	57.3	61.5	66.7	53.1	63.3
Males (euros)	62.5	57.7	61.2	62.8	53.0	60.0
Females (euros)	63.2	55.2	62.3	79.6	53.4	76.1
% of the number of hours worked devoted to training	0.5	0.5	0.5	0.6	0.6	0.6
Training costs as a percentage of total staff costs	0.9	0.9	0.9	1.0	0.9	1.0
Pm						
% of firms reporting informal training	*27.2*	*19.6*	*24.0*	*33.9*	*30.1*	*32.3*
% of firms reporting initial training	*3.9*	*5.0*	*4.3*	*5.5*	*5.5*	*5.5*

Source: NBB (CBSO, own calculations).

(a) Figures calculated for a constant population (full format accounts for which the financial years cover 12 months only) during the period 2010-2015.

(b) Based on the number of hours actually worked.

ANNEX 5 Definition of the financial ratios used in the 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 x 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 x 100 **Conditions for calculating the ratio:** -		

ANNEX 6

TABLE A6 FINANCIAL RATIOS BY BRANCH OF ACTIVITY (reduced population[a])

	Liquidity in the broad sense						Return on equity after taxes (in %)						Solvency (in %)					
Branch of activity	2010	2011	2012	2013	2014	2015[p]	2010	2011	2012	2013	2014	2015[p]	2010	2011	2012	2013	2014	2015[p]
Rail transport	1.09	0.87	0.79	0.68	0.76	1.30	20.2	-64.1	-31.0	-19.4	-26.0	-11.8	23.4	45.0	42.9	38.4	35.5	32.0
Road transport	1.26	1.28	1.24	1.23	1.25	1.27	8.0	9.9	7.8	10.4	6.6	10.0	37.7	38.6	38.9	39.6	40.4	41.6
Pipeline transport	0.97	0.48	0.47	0.48	0.65	0.75	17.8	15.3	8.1	6.9	6.5	6.6	44.5	33.8	34.9	34.5	29.8	29.8
Sea and coastal water transport	0.87	0.73	0.89	0.95	0.87	1.23	18.1	-22.7	17.3	6.8	3.0	14.3	35.0	25.7	33.1	38.3	41.7	49.3
Inland water transport	0.91	0.86	0.97	1.05	1.12	1.05	3.0	3.9	5.1	5.4	13.2	6.4	26.4	25.9	27.5	28.0	31.8	32.5
Air transport	1.39	2.97	1.53	1.60	1.47	1.22	2.7	2.6	73.2	17.5	9.8	18.3	80.7	82.5	32.6	35.0	30.8	23.6
Transport	**1.09**	**0.93**	**1.01**	**1.03**	**1.02**	**1.17**	**13.7**	**-2.9**	**9.9**	**7.5**	**3.7**	**10.1**	**39.7**	**34.4**	**35.9**	**37.8**	**37.9**	**40.8**
Cargo handling	0.92	1.07	1.23	1.15	1.09	0.98	32.7	20.9	13.2	18.5	20.4	14.3	29.1	31.1	35.4	35.7	30.8	31.2
Cargo storage	0.88	0.99	0.88	0.87	1.02	1.11	18.5	7.9	6.9	9.0	8.4	13.5	33.6	32.6	31.7	33.2	36.7	29.1
Supporting transport activities	1.62	1.45	1.74	1.61	1.67	1.96	2.0	-2.8	3.3	1.3	2.1	2.4	77.4	74.7	78.7	78.3	74.4	75.6
Agencies and forwarders	1.27	1.40	1.18	1.16	1.30	1.29	25.3	8.9	7.9	7.6	8.7	12.9	40.0	40.6	39.5	32.8	36.6	37.1
Postal and courier activities	1.45	1.80	1.26	0.97	1.02	1.06	23.2	-2.9	21.7	45.8	43.2	37.7	38.1	36.1	32.3	29.1	30.5	30.9
Other logistic services	**1.22**	**1.34**	**1.19**	**1.12**	**1.19**	**1.23**	**12.5**	**2.4**	**6.6**	**7.1**	**7.6**	**8.2**	**49.9**	**49.4**	**51.0**	**50.4**	**50.0**	**48.9**
TOTAL	**1.17**	**1.14**	**1.11**	**1.08**	**1.12**	**1.21**	**13.0**	**0.5**	**7.7**	**7.2**	**6.2**	**8.9**	**45.5**	**42.8**	**44.8**	**45.4**	**45.0**	**45.6**
p.m. total (non-financial) companies	*1.18*	*1.20*	*1.26*	*1.25*	*1.24*	*1.27*	*8.8*	*6.7*	*6.8*	*5.3*	*5.5*	*5.9*	*41.3*	*42.8*	*43.1*	*43.1*	*43.4*	*43.9*

Sources: NAI, NBB (CBSO, own calculations).
(a) Figures calculated for a constant population (accounts for which the financial years cover 12 months) during the period 2010-2015.

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