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Economic importance of the Belgian maritime and inland ports Report 2019

by Ilse Rubbrecht, Emmanuel Dhyne and Cédric Duprez

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ABSTRACT

The main purpose of this Working Paper is providing an overview of the economic importance of the Flemish maritime ports, the Liège port complex and the port of Brussels over the period 2014–2019 in terms of value added, employment and investment based on annual account figures.

In 2019, Belgian ports generated € 32.2 billion in direct and indirect value added (6.8% of Belgian GDP) and employed 254 009 full-time equivalents (FTEs) either directly or indirectly (5.9% of Belgian domestic employment including the self-employed).

Direct employment at Belgian ports rose by 2% in 2019 mainly due to additional jobs in the cargo handling. Other sectors generated extra jobs too. All Belgian ports except for Brussels contributed to the overall job growth.

Direct value added at Belgian ports grew by 1.4% in 2019. The increase was particularly evident at the ports of Antwerp and Liège, partly owing to wider capacity at nuclear power plants, after lower capacity in 2018. At the port of Antwerp, shipping companies faced higher value added. All Belgian ports enjoyed a rise in direct value added.

After a high investment volume in 2018 thanks to a merger among shipping companies direct investment by all Belgian ports together bounced back by 22.9% to a level of € 4.8 billion in 2019, an amount quite similar to that seen two years before.

Sea transport is the dominant transport mode of Belgian international trade in terms of volumes to countries outside the EU. The trend in international trade by shipping is explored, with a particular focus on the trade situation during the COVID-19 pandemic.

To contain the spread of COVID-19, governments worldwide imposed stringent containment measures that resulted in huge economic disruptions. A first glimpse of the impact on Belgian ports in 2020 is provided, based on monthly turnover figures.

This report is available for download at the following address http://www.nbb.be.

Key words: Belgian ports, microeconomic data, direct effects, indirect effects, input-output table, employment, value added, investment

JEL classification: C13, C43, C67, C81, J21, J49, L91, L92, R11, R15 and R41.

Authors

Ilse Rubbrecht, National Bank of Belgium, Boulevard de Berlaimont 14, 1000 Brussels, Belgium,
e-mail: Ilse.Rubbrecht@nbb.be
Emmanuel Dhyne, National Bank of Belgium, Boulevard de Berlaimont 14, 1000 Brussels, Belgium,
e-mail: Emmanuel.Dhyne@nbb.be
Cédric Duprez, National Bank of Belgium, Boulevard de Berlaimont 14, 1000 Brussels, Belgium,
e-mail: Cedric.Duprez@nbb.be

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Contents

FOREWORD

Since 1991, the National Bank of Belgium has been monitoring the economic importance of the Belgian maritime and inland ports. The study aims to present an update until 2019, based on the full set of all available annual accounts for the accounting year 2019. Two aspects of the economic impact on the ports sector are highlighted: both direct and indirect effects. The former concern business activities resulting from the presence of maritime and non-maritime enterprises and public services in or near the ports, while the latter relate to the value added and employment generated by suppliers and subcontractors serving these enterprises and based in Belgium.

The statistical data covers the 2014-2019 period. Data-gathering via annual accounts was completed at the end of February 2021. This study does not take into account any annual accounts information published after this date. Unless otherwise stated, the methodology remains unchanged: the criteria for selecting firms and the analysis itself are the same as in previous editions. The NACE-Bel 2008 code is used to select and classify companies by sector.

The introduction comments briefly on the methodology. The first chapter describes the economic importance of Belgian ports as a unit in terms of cargo traffic, competitiveness, value added, employment, investment and financial ratios. The second chapter is split into six sections, each devoted to one of the ports with particular attention paid to the change between 2018-2019. The third chapter outlines Belgium's international trade and the trend in used transport modes with a focus on the trade situation during the COVID-19 pandemic, while the fourth chapter gives a first impression as to how COVID-19 will affect monthly turnover levels at Belgian ports in 2020.

INTRODUCTION

Objectives of the study and comments on the methodology

This study analyses the evolving economic importance of Belgium's ports, presenting an update till 2019 based on the complete set of all available annual accounts for the accounting year 2019. The port population covers only firms belonging to branches of activity which have an economic link with ports. That link is defined in relation to a dual criterion: functional and geographical. The functional dimension refers to the nature of activity and the geographical dimension refers to the boundary[1] defined for each port.

As such, two clusters are defined. The **maritime cluster**[2] contains the branches of activities specific to the ports themselves and those whose existence is essential to them. There is a direct economic link between these maritime activities and the port concerned. The **non-maritime cluster**[3] contains segments that only have an indirect economic link with port activity due to their geographical proximity and frequent use of infrastructure. Details on the composition of the port population are extensively described in the methodology part in Annex 1 by Lagneaux F. (2006).

In a first step, the paper considers the actual activity of the companies considered in the port population, which implies calculation of the **direct effects** for three economic variables: value added, employment and investment.

- Value added at current prices is the value a firm adds to its inputs during the financial year via the production process. The value added of a firm indicates its contribution to the wealth of the country or region (in percentages of GDP). Since value added is linked to unbiased market transactions, operating subsidies (code 740[4] in annual accounts) will be deducted. In accounting terms, value added is calculated as the sum of staff costs (code 62), depreciation and value adjustments (code 630 and 631/4), provisions for liabilities and charges (code 635/7), other operating expenses (code 640/8) and the recurrent operating profit or loss (code 9901 plus code 66A[5] minus code 76A[6]), less operating costs capitalised as restructuring expenses (code 649).
- Employment in full-time equivalents (FTE) is the average workforce (code 9087) over the financial year. Direct employment only covers employees on the payroll of the businesses and public services concerned.
- Investment at current prices[7]: corresponds to the acquisition of tangible fixed assets during the year under consideration, including capitalised production costs[8]. In atypical cases like mergers and acquisitions, adjusted figures are used, in accordance with the national accounts method, based on VAT code 83.

The microeconomic data used to calculate direct effects are mainly based on figures from the annual accounts filed with the Central Balance Sheet Office. The latest annual accounts for the year 2019

[1] The port areas were established by Royal Decree of 2 February 1993, defined in the Appendix to this Royal Decree, issued on 4 March 1993 in the *Belgisch Staatsblad/Moniteur belge*. Our population file, originally based on this information, was adapted according to the development of new port sites afterwards.

[2] Maritime branches of activity are shipping companies, shipping agents and forwarders, cargo handling, storage, shipbuilding and repair, port construction, dredging, fishing, maritime and pilotage services, locks, etc.

[3] The non-maritime cluster contains four segments: trade, industry, land transport and other logistic services.

[4] Code 740 concerns only non-product related subsidies (Eurostat, 2013), used to support employment or cover annual deficits.

[5] 66A are non-recurrent operating expenses.

[6] 76A are non-recurrent operating revenues.

[7] Unless otherwise stated, investment is always indicated at current prices, in gross. Developments at constant prices (by volume) are explicitly mentioned. Investment at constant prices is calculated by means of the deflator of gross fixed capital formation.

[8] Decommissioning of assets is not taken into account.

included in this study were submitted to the CBSO at the end of February 2021[9]. Figures for public entities or administrations, for which no accounts are available at the Central Balance Sheet Office were obtained via surveys.

In a second step, **indirect effects** are measured for value added and employment. They are calculated on a top-down basis, meaning that the estimated indirect effects are not confined to the immediate suppliers (level1), but include the indirect effects observed over the whole upstream chain, to infinity. All these levels are aggregated in the total of the indirect effects, for value added and employment, for each year.
The estimation of indirect effects of all port activities on the Belgian economy is based on three types of data, coming from the National Accounts Institute[10] (NAI), namely:

- the share of the port population considered in each SUT[11] branch at national level,
- the national levels for value added and employment per SUT branch,
- the links between branches deduced from supply and use tables (SUT 2014, 2015, 2016, 2017) and/or indicated by the input output tables (IOT) for 2010 and 2015.

In December 2020, a new SUT table for 2017 was published.

Since the data series needed to calculate indirect effects come from NAI, those estimated effects consider foreign companies, self-employed operators and public entities and authorities as well. Moreover, indirect effects are assessed for each port separately, assuming that national technical coefficients are also valid at regional level. So, computed indirect effect figures need to be interpreted with caution. They only give an indication for the importance of ports concerned compared to the national or local economy and they illustrate the evolution over time. The reader should not pay too much attention to the absolute value itself.

Since ports have some economic link between them, a portion of the indirect effect calculated by port is cancelled out when the calculation is done at more aggregate level, for example for all Belgian ports together. The sum of indirect effects by port is thus larger than the total indirect effects calculated for all Belgian ports as a whole.

Some of the **figures** for years up to 2015 may **differ slightly from those noted in the last study** due to the availability of more accurate data on certain firms, information that is extrapolated into the past to ensure consistent time series. Annual accounts of newly-established enterprises can only be recorded after a certain time lag. The most important modifications, having an impact on the direct effects, are the following:

- The population of Brussels harbor companies was extended with some small operating companies that were brought to our attention due to a comparison exercise we executed upon request of the VUB[12] for a study on behalf of the Brussels Port Authority. The impact on total direct employment and value added in the port of Brussels was very limited: +28 VTE and € +3.6 million yearly over the period 2015-2018.

[9] Belgian companies have to submit their annual accounts to the Central Balance Sheet Office no later than seven months after the end of the financial year. On that date, there are some companies – mainly the smallest ones or those in difficulty – which have not yet met that obligation. At the end of February 2021, the number was negligible and the impact of missing data was immaterial as statistical techniques have been used to estimate the missing figures as accurately as possible.

[10] The National Accounts Institute in Belgium consists of three institutions: FPS Economy, SMEs, Self-employed and Energy (Directorate General Statistics), National Bank of Belgium (Statistics Department, National and Regional Accounts Service) and Federal Planning Bureau.

[11] SUT stands for supply and use tables. Supply and use tables are published by the National Accounts Institute. These are matrices that record how supplies of different kinds of goods and services originate from domestic industries and imports and how those supplies are allocated between various intermediate or final uses including exports.

[12] The VUB (Free University of Brussels) defines the harbour population for the Port of Brussels as concession holders, as companies operational at the ECFV (European centre of fruit and vegetables) and at the MABRU (early morning market at Brussels).

- Due to a change in the accounting period of a big chemical industry in Antwerp, the investment figure for 2018 was underestimated. Correcting for this error, the chemicals industry's investment volume at the port of Antwerp increased enormously (€ +297 million) in 2018.
- For multi-district companies, the breakdown key values for the accounting year 2018 were updated in line with more accurate information of the National Accounts Institute.

Estimates of the indirect effects differ slightly from those in previous publication, since a new SUT for 2017 was used.

This study, splitted up into four parts, relies on annual account figures up to 2019. The first chapter focuses on the economic importance of Belgian ports as a unit, described in terms of cargo traffic, competitiveness, value added, employment, investment and financial ratios. The second chapter is split into six sections, each devoted to one of the ports. Comments are on the main developments in direct value added, employment and investment recorded in the 2018-2019 period. The third chapter looks at the Belgium's international trade by sea transport with a little touch on the impact of COVID-19 on trade flows, while the fourth chapter gives a first glimpse on how COVID-19 will affect the monthly turnover levels of Belgian ports in 2020.

1 ECONOMIC IMPORTANCE OF THE BELGIAN PORTS

1.1 National and international economic context

As Cariou (2020) stated: "*shipping remains a derived demand and future maritime demand will still continue to largely depend on the future changes in the world economy, the world population and GDP*".

The world economy's economic growth dropped to 2.8% in 2019. Annual GDP growth declined in several main economies. The trade dispute between the United States and China, geopolitical tensions in the Middle East and persistent uncertainty over Brexit were some of the explanatory factors. The reduced growth in international trade in 2019 resulted mainly from the escalating trade tensions between the United States and China and the widespread decline in manufacturing output, both closely linked. (NBB, 2020).

In 2020, almost all governments around the world took unprecedented health and safety measures to slow down the spread of the COVID19 virus. Only one lockdown in most major economies proved insufficient. Relapses led to the reintroduction of restrictive measures. Therefore, all major countries with the exception of China entered into a recession. The distinction in the magnitude of negative growth in the countries could be explained by the difference in the intensity of the pandemic, by the structural features of each economy and how strong each policy response was. Additionally, many countries were already struggling with weak growth in 2019. (NBB, 2021)

TABLE 1.1 GDP OF THE MAIN ECONOMIES AND OF BELGIUM
(percentage changes in volume compared to previous year)

	2018	2019	2020
Advanced economies	2.2	1.6	-4.9
of which United States	*3.0*	*2.2*	*-3.4*
Japan	*0.3*	*0.3*	*-5.1*
Euro area	*1.9*	*1.3*	*-7.3*
of which Belgium	*1.8*	*1.7*	*-6.3*
United Kingdom	*1.3*	*1.4*	*-10.0*
Emerging economies	4.5	3.6	-2.4
of which China	*6.7*	*6.0*	*2.3*
India	*6.1*	*4.2*	*-8.0*
Russia	*2.5*	*1.3*	*-3.6*
Brazil	*1.3*	*1.4*	*-4.5*
World	3.5	2.8	-3.5
p.m. World trade	3.6	1.0	-9.6

Source: NBB Annual Report (2021), National Accounts Institute (2021)

In 2019, Belgium saw a small slowdown in the expansion of its economic activity with real GDP growth of 1.7%. This slowdown, which was more moderate than in the euro area as a whole, was driven by changes in inventories: their negative contribution to growth has been partly compensated by the more favourable contribution of net exports, due to a more sustained growth of exports and the more lower increase of imports. In 2020, real GDP in Belgium fell by - 6.3%. The COVID-19 pandemic caused an unprecedented fall in the Belgian domestic demand. Other than government consumption, all the components of domestic demand took a really bad hit.

This paper takes a look at the activity of Belgian ports in this (inter)national economic context.

1.2 Traffic in the Belgian ports

All six Belgian ports together recorded 2.6% growth in traffic in 2019. The rise was mainly attributable to the port of Zeebrugge (contribution of 1.7%) and Antwerp (contribution of 0.9% to overall growth). From early 2020, the spread of the COVID-19 virus brought huge economic disruptions, and maritime goods transport was no exception. **The change in 2020 was negative (-3.4%):** maritime transshipment fell in all Belgian ports except for the port of Zeebrugge.

The focus in this report is on the change between 2018-2019.

TABLE 1.2 CARGO TRAFFIC IN THE BELGIAN PORTS
(in millions of tonnes)

Ports	2014	2015	2016	2017	2018	2019	2020	Contribution to growth (%) 2018-2019	Contribution to growth (%) 2019-2020
Antwerp	199.0	208.4	214.1	223.7	235.3	238.2	231.0	0.9	-2.1
North Sea Port Flanders	25.9	26.4	29.1	32.5	32.6	32.5	29.1	0.0	-1.0
Zeebrugge	42.5	38.3	37.8	37.1	40.1	45.8	47.0	1.7	0.4
Ostend	1.4	1.3	1.5	1.4	1.5	1.6	1.5	0.0	0.0
Flemish ports	268.9	274.4	282.5	294.7	309.5	318.0	308.6	2.6	-2.8
Liège	15.0	14.6	15.5	15.9	16.0	15.9	14.0	0.0	-0.6
Brussels	4.4	4.4	4.5	4.8	5.2	5.2	4.9	0.0	-0.1
Inland ports	19.4	19.0	19.9	20.8	21.2	21.1	18.9	0.0	-0.6
Total	288.3	293.4	302.4	315.4	330.7	339.2	327.5	2.6	-3.4

Source: MORA Mobiliteitsraad : *"Zeehavens en luchthavens in Vlaanderen - Feiten, statistieken en indicatoren voor 2019"*, port authorities.

In 2019, transshipment of cargo at the **port of Zeebrugge** expanded (+14.2%) as a result of expansion in all important sectors: liquefied natural gas (LNG), containers and roll-on roll-off.
Liquid bulk volume rose enormously (+60.8%) to 10.8 million tonnes in 2019, as a result of higher LNG volumes. *Container traffic* in total tonnage increased (+7%) to 16.2 million tonnes in 2019. *Roll-on roll-off traffic* grew by 3.7% to a total volume of 16.5 million tonnes, with growth on destinations like Ireland (+6.3%) and Spain (+153.1%). The extra traffic to Spain was due to great results on Cobelfret's connection to Santander and Finnlines' scaling up of ships on the Bilbao route. Deepsea RoRo also rose (+13.9%). RoRo traffic with destination UK declined by 2.5%, while Scandinavia RoRo cargo dropped as well (-2.7%). The loss in UK RoRo loads can be partly explained by the Brexit effect and the cargo shift to the Ireland destinations. After a year of no change, 2019 once again illustrated growth in the automotive sector, where the total number of handled vehicles rose with 4.6%.
The increase in traffic volumes in 2020 (+2.7%) was due to the growth in containers, liquid and dry bulk which did offset the fall in roll-on roll-off, mainly owing to the drop in car traffic because of the COVID-19 crisis.

In 2019, the **port of Antwerp** achieved **a record** volume of traffic for the seventh consecutive year, **on the back of container transshipment and dry bulk** (table 1.3). The strong growth in *container traffic* continued in 2019, to reach 138.7 million tonnes. All container trades experienced growth in import and export, except for supplies from Latin America and disposals to Near East, where a decrease was noted. *Dry bulk* enjoyed a boost, due to a more than twofold increase in coal transshipment, largely caused by increased speculation on the coal market. *Liquid bulk* fell due to economic growth delays and volatile oil prices. Lower steel trading and declining automotive sales explain mainly the drop in *conventional cargo.* Despite corona, the port of Antwerp was able to limit the decline in total maritime transshipment (-3%) in 2020 due to a revival of container traffic after a difficult second quarter.

North Sea Port Flanders[13], as part of North Sea Port, is the principal Flemish **port for dry bulk**. In 2019, a limited relapse is visible for the trade in dry bulk, roll-on roll-off and conventional cargo (-3%, -8.6% and -4.5% respectively). Liquid bulk traffic grew (+13.6%) due to a higher production of biodiesel and a temporary contract of one large tank terminal operator in Ghent for oils, gases and chemicals which resulted in rising in and outflows of petroleum products.
In 2020, the lower volumes of maritime traffic (-10.4%) resulted from the COVID-19 pandemic and the fact that 2020 was a difficult year for the liquid petroleum industry.

In 2019, maritime transshipment in the **port of Ostend** expanded by 5%, mainly due to growing volumes of dry bulk (deliveries of sand and gravel from the sea for the construction industry), partly explained by the boom in construction. The drop in 2020 (-6%) was due to the arrival of the COVID-19 virus. The port of Ostend no longer focuses solely on being a "blue energy port", but broadens its view to additional activities: such as transshipment of bulk and project cargo, enhancing cruises and roll-on roll-off, enforcing the circular industry and maintaining the fisheries sector.

In 2019, the fastest growing segment in the maritime traffic by Flemish ports (table 1.3) was container cargo (share of 48.8%). The proportions of the other cargo types declined slightly. The falling share of liquid bulk was due to a global economic slowdown and fluctuating oil prices, while the reducing share of conventional cargo is in addition also attributable to a shift from conventional to container cargo as big container ships work at much lower prices as breakbulk operators do, since the handling of conventional goods is much more labour intensive.

TABLE 1.3 MARITIME TRAFFIC IN THE FLEMISH PORTS IN 2018-2019
(in millions of tonnes, unless otherwise stated)

	Antwerp	North Sea Port Flanders	Zeebrugge	Ostend	Total	Share (%)
2018						
Containers	130.9	0.2	15.2	0.0	146.2	47.2
Roll-on roll-off [(1)]	5.3	2.3	15.9	0.0	23.6	7.6
Conventional cargo [(2)]	10.2	3.8	1.0	0.1	15.1	4.9
Liquid bulk	75.9	5.4	6.7	0.0	88.1	28.5
Dry bulk	13.1	20.8	1.2	1.4	36.5	11.8
TOTAL 2018	235.3	32.6	40.1	1.5	309.5	100.0
2019						
Containers	138.7	0.3	16.2	0.0	155.3	48.8
Roll-on roll-off [(1)]	5.1	2.1	16.5	0.0	23.8	7.5
Conventional cargo [(2)]	8.3	3.6	0.9	0.1	12.9	4.1
Liquid bulk	72.1	6.2	10.8	0.0	89.1	28.0
Dry bulk	13.9	20.2	1.3	1.5	37.0	11.6
TOTAL 2019	238.2	32.5	45.8	1.6	318.0	100.0
Contribution to the growth (%)						
Containers	2.5%	0.0%	0.3%	0.0%	2.9%	
Roll-on roll-off [(1)]	-0.1%	-0.1%	0.2%	0.0%	0.1%	
Conventional cargo [(2)]	-0.6%	-0.1%	0.0%	0.0%	-0.7%	
Liquid bulk	-1.2%	0.2%	1.3%	0.0%	0.3%	
Dry bulk	0.3%	-0.2%	0.0%	0.0%	0.1%	
TOTAL	0.9%	0.0%	1.8%	0.0%	2.8%	

Source: MORA Mobiliteitsraad : *"Zeehavens en luchthavens in Vlaanderen - Feiten, statistieken en indicatoren voor 2019"*, port authorities.
[(1)] Roll-on roll-off, abbreviated as RoRo, refers to the horizontal handling of goods using wheeled equipment inside and outside the ship, in contrast to 'lift-on lift-off which illustrates the vertical handling. RoRo data in the report do not take into account containerised cargo, because this is included in the line entitled "containers".
[(2)] Conventional cargo is non-containerised general cargo, mainly iron and steel, fruit, paper, wood and machinery.

[13] North Seaport Flanders refers to the port of Ghent.

1.3 Competitive position of the Belgian ports

To analyse the competitive position of **the Belgian maritime ports**, a comparison is made between the Flemish ports and the Hamburg – Le Havre port range as these are European competing maritime ports serving the same hinterland. Together, they cover, from North to South, Hamburg and Bremen in Germany, Amsterdam and Rotterdam in the Netherlands, Antwerp, North Sea Port Flanders and Zeebrugge in Belgium, Dunkirk and Le Havre in France. In this exercise, the port of Ostend is also included in the Hamburg-Le Havre range. As the port of Ghent and the Dutch Zeeland Seaports Vlissingen and Terneuzen merged into North Sea Port, the Dutch part is added as well. The share of the four Flemish maritime ports in the Hamburg – Le Havre range (table 1.4) grew from 22.7% in 2014 to 25.3% in 2019.

In table 1.5, cargo traffic in the **Belgian inland ports** (Brussels and Liège) is compared to that for the leading West European inland ports (Duisburg and Paris). All inland ports except for Duisburg experienced growing or stable cargo traffic.

TABLE 1.4 TOTAL MARITIME TRAFFIC IN THE HAMBURG - LE HAVRE RANGE (INCLUDING OSTEND AND ZEELAND SEAPORTS)
(in millions of tonnes, unless otherwise stated)

Ports	2014	2015	2016	2017	2018	2019	Change 2014-19 (%)	Change 2018-19 (%)	Share 2014-19 (%)	Share 2019 (%)
Amsterdam*	97.8	94.9	95.1	100.8	101.8	105.1	1.4	3.2	8.1	8.4
Rotterdam	444.7	466.4	461.2	467.4	469.0	469.4	1.1	0.1	38.0	37.4
Bremen and Bremerhaven	78.2	73.4	75.2	74.2	74.4	69.4	-2.4	-6.7	6.1	5.5
Hamburg	145.7	137.8	138.2	136.5	135.1	136.6	-1.3	1.1	11.3	10.9
Dunkirk	47.1	46.6	46.7	50.3	51.6	52.7	2.3	2.0	4.0	4.2
Le Havre	66.9	68.3	66.0	72.7	71.7	65.8	-0.3	-8.2	5.6	5.2
North Sea Port				66.6	70.4	71.4		1.4	2.8	5.7
of which North Sea Port Netherlands	35.1	33.1	33.2	34.2	37.8	38.9	2.1	3.0	2.9	3.1
of which North Sea Port Flanders	25.9	26.4	29.1	32.5	32.6	32.5	4.6	-0.4	2.4	2.6
Antwerp	199.0	208.4	214.1	223.7	235.3	238.2	3.7	1.2	18.0	19.0
Ostend	1.4	1.3	1.5	1.4	1.5	1.6	2.1	5.3	0.1	0.1
Zeebrugge	42.5	38.3	37.8	37.1	40.1	45.8	1.5	14.2	3.3	3.6
Total Flemish ports	268.9	274.4	282.5	294.7	309.5	318.0	3.4	2.8	23.9	25.3
Total 10 ports	1 184	1 195	1 198	1 231	1 251	1 256	1.2	0.4	100.0	100.0
Total world traffic	9 842	10 023	10 295	10 716	11 019	11 076	2.4	0.5		
Share 10 ports / Total world traffic (%)	12.0	11.9	11.6	11.5	11.4	11.3				
Share Flemish ports / 10 ports (%)	22.7	23.0	23.6	23.9	24.7	25.3				
Share Flemish ports / Total world traffic (%)	2.7	2.7	2.7	2.7	2.8	2.9				

Sources: MORA Mobiliteitsraad : *"Zeehavens en luchthavens in Vlaanderen - Feiten, statistieken en indicatoren voor 2019"*, port authorities and UNCTAD *"Review of Maritime Transport 2020"*
* it concerns the whole North Sea Canal Area.

TABLE 1.5 CARGO TRAFFIC BY SHIP IN THE PORTS OF DUISBURG, PARIS, LIÈGE AND BRUSSELS
(in millions of tonnes, unless otherwise stated)

Ports	2014	2015	2016	2017	2018	2019	Change 2014-19 (%)	Change 2018-19 (%)	Share 2014-19 (%)	Share 2019 (%)
Duisburg	51.1	51.9	53.1	50.2	48.1	47.6	-1.4	-1.0	54.6	50.6
Paris	20.3	20.2	20.3	21.2	22.1	25.3	4.6	14.4	23.4	26.9
Liège	15.0	14.6	15.5	15.9	16.0	15.9	1.2	-0.4	16.8	16.9
Brussels	4.4	4.4	4.5	4.8	5.2	5.2	3.3	0.0	5.2	5.6

Sources: Port authorities.

1.4 Value added at the Belgian ports

The (in)direct value added generated at the Belgian ports between 2014-2019 is reported in tables 1.6 and 1.7, the former giving an overview of the contribution of each port into the total direct value added and the latter breaking the total down into its main branches of activity. It should be noted that the percentages in the columns “contribution to growth (%)” are different from the growth percentages for each port or branch of activity.

TABLE 1.6 OVERVIEW OF VALUE ADDED BY PORT
(in € million - current prices)

Ports	2014	2015	2016	2017	2018	2019	Contribution to growth (%)* 2018-2019
Antwerp	10 009.2	10 962.8	10 784.5	11 523.2	11 139.4	11 215.3	0.4
North Sea Port Flanders	3 617.6	3 778.2	3 856.5	4 435.4	4 475.8	4 486.6	0.1
Zeebrugge	954.9	981.0	1 010.2	1 046.8	1 034.2	1 079.3	0.2
Ostend	499.5	533.7	527.1	542.6	568.0	600.9	0.2
Flemish ports	15 081.2	16 255.6	16 178.2	17 547.9	17 217.5	17 382.1	0.9
Liège	1 165.5	1 070.8	1 167.6	1 150.7	984.8	1 040.6	0.3
Brussels	487.9	799.5	735.8	854.5	801.3	844.4	0.2
Inland ports	1 653.4	1 870.4	1 903.4	2 005.2	1 786.2	1 885.0	0.5
Direct	16 734.6	18 126.0	18 081.7	19 553.1	19 003.7	19 267.2	1.4
Indirect	13 998.5	12 965.5	12 526.6	13 355.3	13 016.4	12 958.3	
Total	30 733.1	31 091.5	30 608.3	32 908.4	32 020.0	32 225.4	

Source: NBB.
* Contribution to growth in %: definition see Annex 2.1.

TABLE 1.7 OVERVIEW OF VALUE ADDED BY BRANCH OF ACTIVITY
(in € million - current prices)

	2014	2015	2016	2017	2018	2019	Contribution to growth (%)* 2018-2019	Weight (%) 2019
Cargo handling	2 080.5	2 131.3	2 227.2	2 318.0	2 298.2	2 387.7	0.5	12.4
Shipping agents and forwarders	714.7	771.3	726.6	743.1	725.8	777.4	0.3	4.0
Shipping companies	501.7	790.7	721.2	488.4	462.6	704.2	1.3	3.7
Other maritime	1 120.7	1 216.4	1 176.7	1 197.6	1 169.6	1 183.0	0.1	6.1
Maritime	4 417.6	4 909.7	4 851.7	4 747.0	4 656.2	5 052.3	2.1	26.2
Chemicals industry	3 718.4	4 082.4	3 786.0	4 418.7	4 404.5	3 814.6	-3.1	19.8
Trade	2 062.7	2 078.8	2 246.6	2 352.8	2 483.8	2 617.7	0.7	13.6
Other logistic services	890.9	1 196.6	1 141.6	1 361.3	1 398.3	1 501.0	0.5	7.8
Other non-maritime	5 645.0	5 858.5	6 055.7	6 673.4	6 060.9	6 281.5	1.2	32.6
Non-maritime	12 317.0	13 216.3	13 230.0	14 806.1	14 347.5	14 214.9	-0.7	73.8
Direct	16 734.6	18 126.0	18 081.7	19 553.1	19 003.7	19 267.2	1.4	100.0
Indirect	13 998.5	12 965.5	12 526.6	13 355.3	13 016.4	12 958.3		
Total	30 733.1	31 091.5	30 608.3	32 908.4	32 020.0	32 225.4		

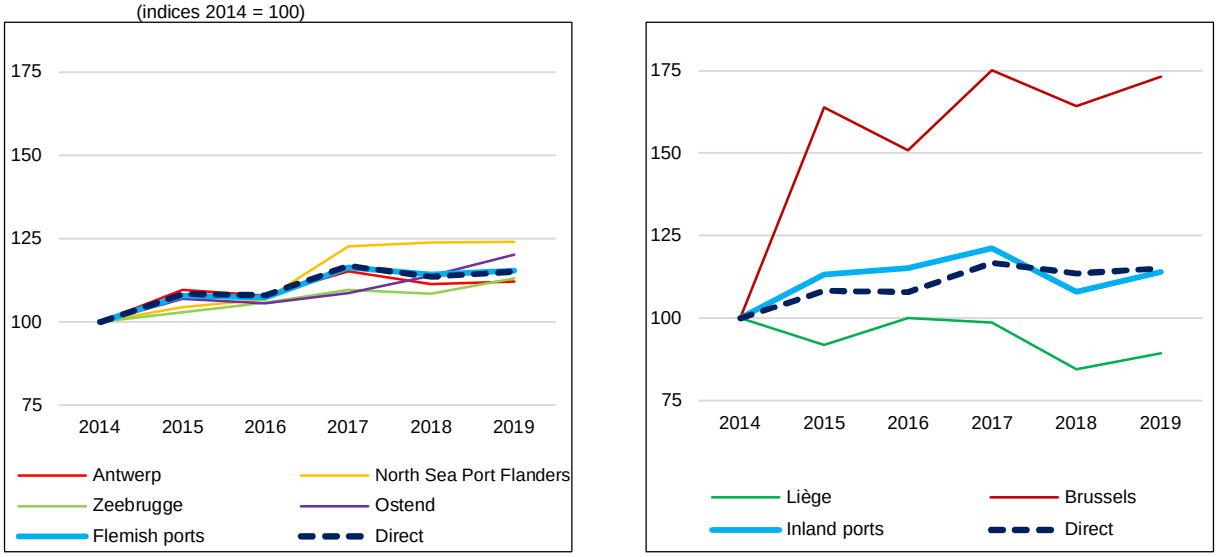
Source: NBB.
* Contribution to growth in %: definition see Annex 2.1.

Between 2018 and 2019, direct value added at the Belgian ports rose by 1.4%, a growth rate that is lower than the 4.3% growth estimation in the NBB Flash forecast, published 8 October 2020.

The most important explanation for the over-growth estimate at that time was an excessively favourable forecast[14] for BASF Antwerpen, the largest chemical company in the port of Antwerp. This company did not file its financial statement 2019 before mid-October 2020. The magnitude of the drop in its value added due to a 50% cut in its operating result coming from lower sales volumes and sales prices during the accounting year 2019, was seriously underestimated in the Flash forecast.

All Belgian ports enjoyed growth in direct value added in 2019. This growth was relatively more evident in the ports of Antwerp and Liège, with gains of respectively 0.4% and 0.3% contribution to the overall gain of 1.4%. The recovery in those two ports did not completely reverse the decline recorded in 2018. Table 1.7 shows that, for all Belgian ports taken together, the biggest branches of activity in terms of value added are the chemicals industry (20%), trade (13%), cargo handling (12%) and metal working industry (7.5%). Growth in direct value added in 2019 was particularly driven by the energy sector (as part of "other non-maritime" branches), shipping companies and trade. The indirect value amounted to around 67% of direct value added for the year 2019. Indirect effects fell slightly (-0.3%) mainly due to declining direct effects in the chemicals industry on the one hand and a reduced multiplier at the metalworking industry on the other hand. The reader should bear in mind that indirect effects must be handled with caution, more as an indicator of the importance of the ports for the national and local economy than as an absolute value. In 2019, direct value added generated by the Belgian ports accounted for 4% of Belgium's GDP (and 6.8% including indirect value added).

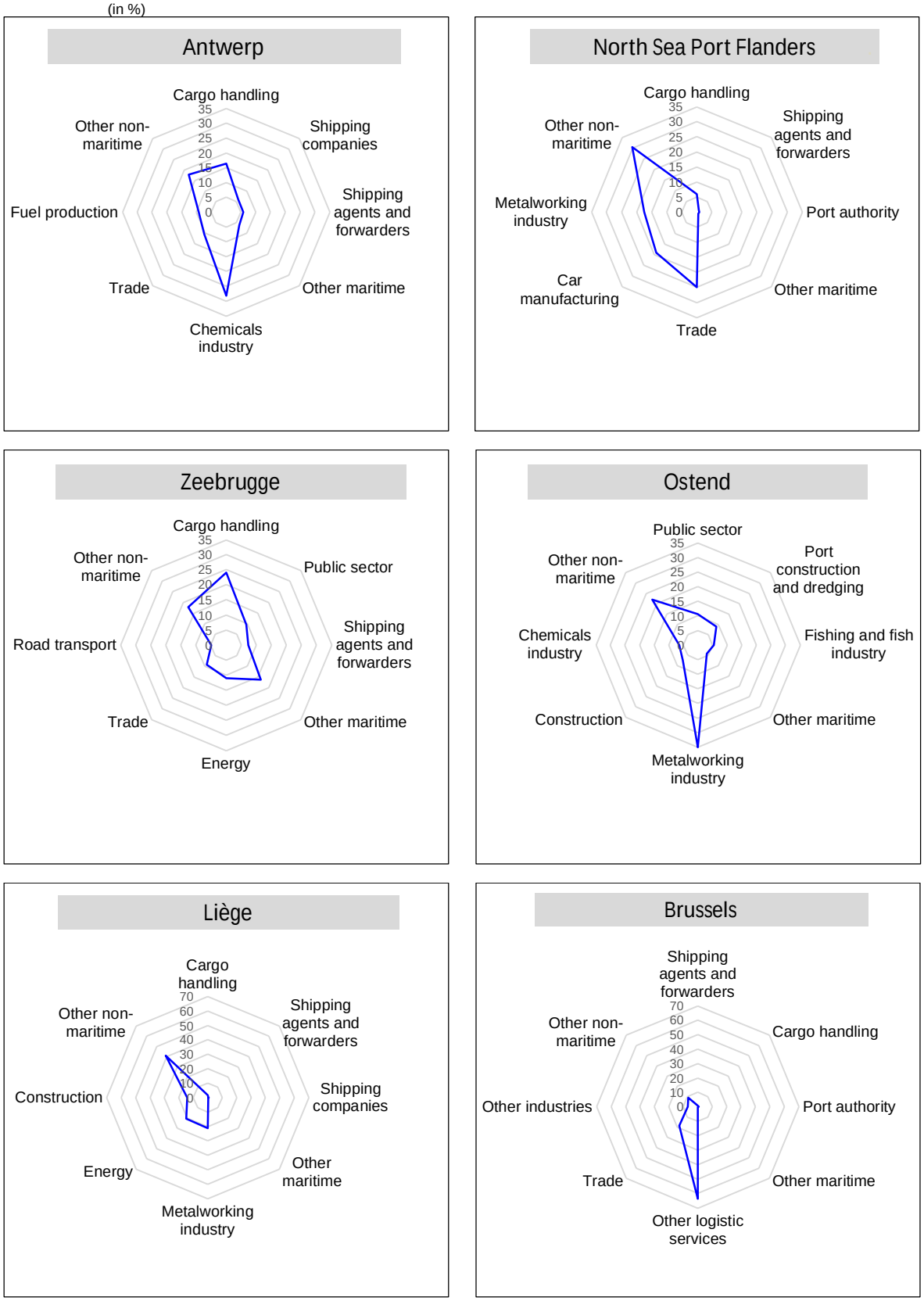
FIGURE 1.1 VALUE ADDED AT THE BELGIAN PORTS
(indices 2014 = 100)



Source: NBB.

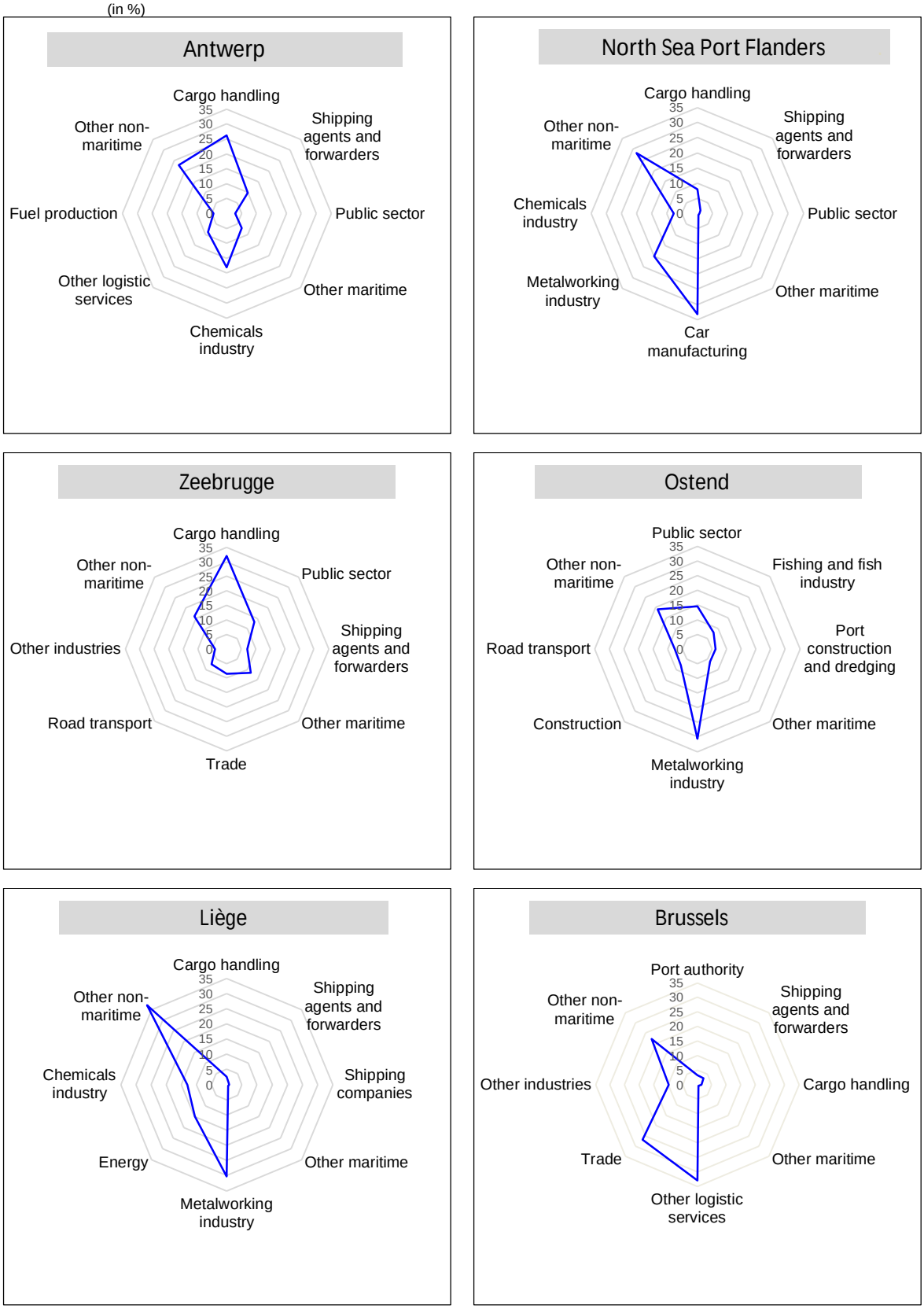
[14] The figures for the Flash forecast for the year 2019 were estimates obtained with the help of statistics. Owing to the COVID-19 pandemic, companies had been given an extra ten weeks in which to hold their annual general meetings and, therefore, obtained an extra ten weeks to publish their annual accounts, which led to a larger margin of error in the Flash estimates of 8 October 2020.

FIGURE 1.2 MOST IMPORTANT SECTORS AT THE BELGIAN PORTS IN TERMS OF VALUE ADDED IN 2019
(in %)



Source: NBB.

FIGURE 1.3 MOST IMPORTANT SECTORS AT THE BELGIAN PORTS IN TERMS OF EMPLOYMENT IN 2019
(in %)



Source: NBB.

1.6 Employment at the Belgian ports

Direct employment at the Belgian ports grew by 2 348 FTEs in 2019 (table 1.8). All ports generated additional jobs, except for Brussels. With 1.1%, the port of Antwerp contributed the most to the overall growth of 2% in direct employment in 2019, which is not surprising since the port of Antwerp is the biggest in size. Table 1.9 illustrates that the cargo handling and other logistic services segments delivered the largest shares (respectively 0.7% and 0.4%) in total direct job creation in the Belgian ports in 2019. Indirect employment totals around 1.1 times direct employment (2019). So, the indirect employment multiplier is larger than 1, while the value added multiplier is less than 1. The share of port jobs in total Belgian domestic employment came to 2.8% for direct employment[15] and 5.9% for total employment in 2019.

TABLE 1.8 OVERVIEW OF EMPLOYMENT BY PORT
(in FTE)

Ports	2014	2015	2016	2017	2018	2019	Contribution to growth (%)* 2018-2019
Antwerp	61 112	60 346	60 664	61 989	62 764	64 121	1.1
North Sea Port Flanders	28 229	27 660	27 988	28 413	28 676	29 112	0.4
Zeebrugge	9 453	9 330	9 566	9 713	9 829	10 031	0.2
Ostend	5 058	5 120	5 033	4 978	5 091	5 278	0.2
Flemish ports	103 852	102 455	103 251	105 094	106 360	108 541	1.8
Liège	8 292	8 170	7 808	7 909	7 837	8 032	0.2
Brussels	4 182	4 264	4 085	3 960	3 852	3 824	0.0
Inland ports	12 474	12 434	11 893	11 869	11 690	11 856	0.1
Direct	116 326	114 889	115 144	116 963	118 049	120 397	2.0
Indirect	133 517	122 315	122 448	126 478	131 024	133 612	
Total	249 843	237 204	237 591	243 440	249 073	254 009	

Source: NBB.
* Contribution to growth in %: definition see Annex 2.1.

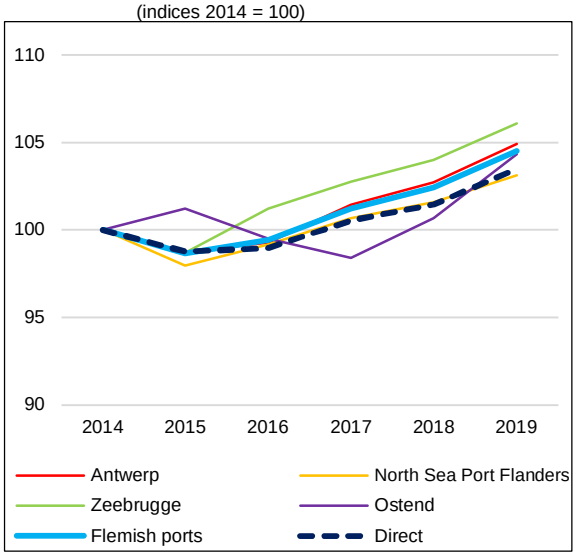
TABLE 1.9 OVERVIEW OF EMPLOYMENT BY BRANCH OF ACTIVITY
(in FTE)

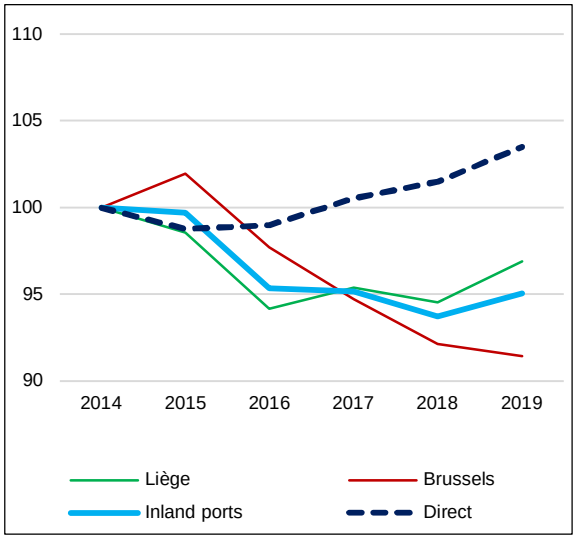
	2014	2015	2016	2017	2018	2019	Contribution to growth (%)* 2018-2019	Weight (%) 2019
Cargo handling	19 933	19 708	20 206	20 850	21 792	22 626	0.7	18.8
Shipping agents and forwarders	7 952	7 911	7 763	7 799	7 675	7 660	0.0	6.4
Public sector	4 369	4 225	4 181	4 083	3 990	4 067	0.1	3.4
Other maritime	7 018	6 840	6 965	6 831	6 915	7 132	0.2	5.9
Maritime	39 272	38 684	39 115	39 564	40 372	41 484	0.9	34.5
Chemicals industry	14 678	14 578	14 735	14 887	15 236	15 486	0.2	12.9
Metalworking industry	14 043	13 598	13 590	13 584	12 781	12 841	0.1	10.7
Car manufacturing	10 146	10 536	10 281	10 317	10 408	10 561	0.1	8.8
Other non-maritime	38 187	37 493	37 423	38 612	39 252	40 025	0.7	33.2
Non-maritime	77 054	76 206	76 029	77 399	77 677	78 913	1.0	65.5
Direct	116 326	114 889	115 144	116 963	118 049	120 397	2.0	100.0
Indirect	133 517	122 315	122 448	126 478	131 024	133 612		
Total	249 843	237 204	237 591	243 440	249 073	254 009		

Source: NBB.
* Contribution to growth in %: definition see Annex 2.1.

[15] Direct employment does not include self-employment or temporary agency work, with the exception of dock-workers covered by a separate regime.

FIGURE 1.4 EMPLOYMENT AT THE BELGIAN PORTS
(indices 2014 = 100)





Source: NBB.

1.7 Investment in the Belgian ports

After a high investment level in 2018 due to the merger between tanker shipping company Euronav and US-based crude oil shipping company Gener8 Maritime, the direct investment[16] figure by the Belgian ports bounced back by 22.9% to € 4.8 billion in 2019, a quite similar figure to two years earlier. As Euronav is established at the geographical zone of the port of Antwerp, the contribution to the overall drop in investment was highest in Antwerp, while investment declined in Liège and Ostend as well. North Sea Port Flanders recorded strong investment growth due to higher sums invested in the metalworking and chemicals industries and in cargo handling.

TABLE 1.10 OVERVIEW OF INVESTMENT BY PORT
(in € million)

Ports	2014	2015	2016	2017	2018	2019	Contribution to growth (%)* 2018-2019
Antwerp	3 319.6	3 106.9	3 484.1	3 459.0	4 956.8	3 265.6	-27.2
North Sea Port Flanders	414.1	383.5	541.7	721.3	555.5	802.2	4.0
Zeebrugge	203.8	243.2	315.3	303.4	242.3	315.9	1.2
Ostend	119.5	80.7	94.0	84.6	131.7	111.3	-0.3
Flemish ports	4 057.0	3 814.3	4 435.1	4 568.3	5 886.3	4 495.0	-22.3
Liège	198.4	219.1	196.3	242.6	235.7	205.4	-0.5
Brussels	53.0	65.1	75.2	72.4	104.3	102.8	0.0
Inland ports	251.3	284.2	271.5	315.0	339.9	308.1	-0.5
Direct	4 308.3	4 098.5	4 706.7	4 883.3	6 226.2	4 803.1	-22.9

Source: NBB.
* Contribution to growth in %: definition see Annex 2.1.

TABLE 1.11 OVERVIEW OF INVESTMENT BY BRANCH OF ACTIVITY
(in € million)

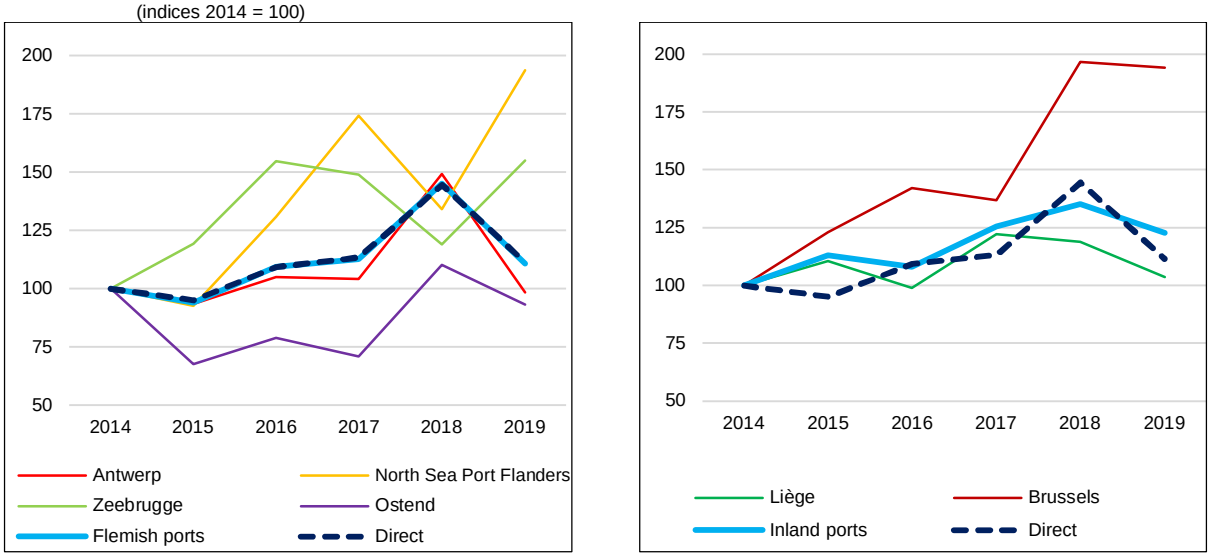
	2014	2015	2016	2017	2018	2019	Contribution to growth (%)* 2018-2019	Weight (%) 2019	Contribution to growth excluding merger (%)* 2018-2019
Cargo handling	683.3	687.8	815.2	937.6	1 046.9	975.8	-1.1	20.3	-1.4
Shipping companies	1 011.9	591.7	748.5	421.6	1 580.7	512.5	-17.2	10.7	3.5
Port construction and dredging	75.0	73.7	39.2	340.4	237.4	277.3	0.6	5.8	0.8
Other maritime	320.0	305.0	356.2	279.5	327.2	361.1	0.5	7.5	0.7
Maritime	2 090.2	1 658.1	1 959.2	1 979.2	3 192.2	2 126.8	-17.1	44.3	3.6
Chemicals industry	836.5	784.8	887.3	919.2	1 281.2	1 084.2	-3.2	22.6	-4.0
Energy	226.1	350.8	321.5	384.5	423.6	311.2	-1.8	6.5	-2.3
Metalworking industry	129.9	138.7	181.6	248.4	150.8	230.1	1.3	4.8	1.6
Other non-maritime	1 025.6	1 166.1	1 357.1	1 352.1	1 178.4	1 050.8	-2.0	21.9	-2.6
Non-maritime	2 218.2	2 440.3	2 747.5	2 904.1	3 034.0	2 676.4	-5.7	55.7	-7.2
Direct	4 308.3	4 098.5	4 706.7	4 883.3	6 226.2	4 803.1	-22.9	100.0	-3.6

Source: NBB.
* Contribution to growth in %: definition see Annex 2.1.
* Contribution to growth excluding merger: Contribution of each branch of activity to total growth, excluding the merger sum from the "shipping companies" segment.

[16] The investment considered is gross investment, i.e. all new investment in the year concerned. The investment figures cover both private and public investment. The public investment figures (1.9% of all port investment in 2019) include those compiled by the Brussels, Flemish and Walloon authorities. Public investment figures comprise only new investment. Costs linked to an Ordinance are not considered, nor are the costs related to harbour masters' services, nor expenditure on maintaining maritime access.

Taking all Belgian ports together, cargo handling, the chemicals industry and shipping companies are the segments with the biggest shares in investment.
If the investment volume related to the merger between Euronav and Gener8 Maritime is excluded from the shipping companies segment and thus excluded from total investments in 2018, the corrected change is still a decline in 2019 compared to 2018 but less drastic (-3.6% in stead of -22.9%), coming from lower investments in the chemicals industry, energy, cargo handling, other logistic services and fuel production, the last two combined in the “other non-maritime segment”. The pattern of investment is closely linked to projects and is therefore highly volatile. This implies that changes in investment levels need to be interpreted with caution.

FIGURE 1.5 INVESTMENT AT THE BELGIAN PORTS
(indices 2014 = 100)



Source: NBB.

1.8 Financial ratios in the Belgian ports

The ratios presented below show net return on equity after tax, liquidity in the broad sense (the current ratio), and the degree of financial independence[17]. The return on equity illustrates the return on the capital invested by shareholders. It concerns a firm's ability to generate profits after interest and tax payments over equity. The liquidity ratio shows the firm's ability to mobilise in due time the cash resources that it needs in order to meet its short-term liabilities. The best-known measurement of solvency is the degree of financial independence, i.e. the ratio between equity and total liabilities. The greater its financial independence, the smaller the company's debt position and the bigger its equity-based buffer for repaying its creditors.

The ratios are calculated as globalised averages[18], reflecting the situation of companies with the highest denominator value and the situation of companies with a small weight but with an extremely high value for the ratio. Figures 1.6 to 1.8 distinguish these two effects. Companies are ranked in descending order of weight. On the horizontal axis, from zero to one, the cumulative weight of the first companies is presented. Zero reflects no companies, one reflects all companies. In the panel on Brussels in figure 1.6, the horizontal axis illustrates that the first company has a very large weight reflecting 83% of the sum of equity held by all companies in the population of the port of Brussels (see purple arrow).

The vertical axis shows how the considered ratio changes to reach its total globalised average for the whole population, moving up with the first company (with the largest weight) and adding up the values for the extra companies that are ranked in descending order of weight. Each dotted line represents a year (2017-2019). A large shift to the right on the horizontal axis, e.g. in the panel for Antwerp in figure 1.6 for 2018, illustrates when a company with a large weight is added (see red curly bracket). The company with the highest weight in equity in 2018 represents 21% of the aggregate equity of all companies in the port of Antwerp (see first red arrow). A large shift on the vertical axis occurs when a company has a high ratio (see second red arrow).

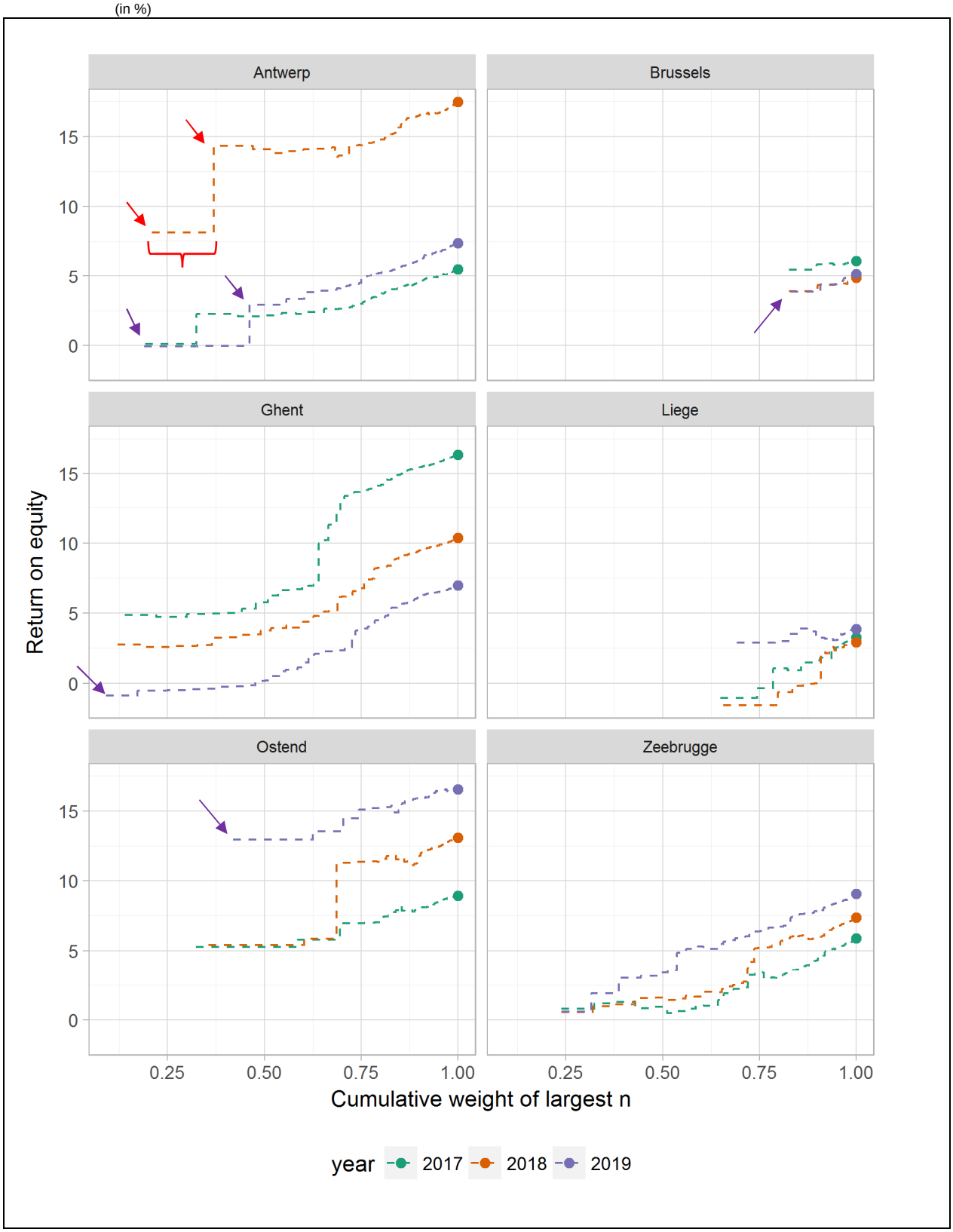
The globalised **return on equity** (ROE) fell in Antwerp and Ghent between 2018 and 2019, while it increased in Ostend and Zeebrugge. The drop in Antwerp is quite important, falling from 17.4% in 2018 to 7.2% in 2019 – represented by the purple dot on the right-hand side of the first panel. This decline was influenced by three large companies, one in the chemicals industry (BASF Antwerpen), one in other logistic services (BASF Belgium Coordination Center) and one in fuel production (Exxonmobil Petroleum & Chemical). All three firms received exceptionally high dividends from their subsidiaries in 2018, while this was not the case in 2019 for the first two entities and only to a lesser extent for the third company. Figure 1.6 (first panel) gives a snapshot of the impact of BASF Antwerpen (accounting for 19% of the total equity of all firms in the port of Antwerp) on the globalised average return on equity in Antwerp. That is where the dotted purple line starts (see first purple arrow). The extra contribution from Exxonmobil Petroleum & Chemical, the third biggest firm in terms of equity (representing 14% of total equity in port of Antwerp) is illustrated by the purple dotted line that moves vertically up (see second purple arrow).

At the port of Ghent, the globalized return on equity declined to 6.9% in 2019 from 10.2% in 2018 and 16.5% in 2017. The main reason is a negative ROE figure for a large metalworking industry corporation (ArcelorMittal Belgium) due to a negative operating result coming from lower sales prices for its steel while its customers cut back on their orders. This explains why the ROE of the starting point fell below zero (see purple arrow in the panel on Ghent).

[17] See Annex 3 for the definition of the ratios.

[18] A global average is the sum of the numerators of all companies divided by the sum of their denominators. Hence, the globalised ratio is the weighted average of all ratios at individual company level, while the weight is the proportion of each company in the total value of the ratio denominator.

FIGURE 1.6 CONVERGENCE PATH OF RETURN ON EQUITY
(in %)



Source: NBB.

At the port of Ostend, the globalized return on equity rose to 16.5%, compared to 13% in 2018 and 8.6% in 2017. The company with the largest weight (42%) – Daikin Europe – has a high ROE value, due to exceptionally high dividends from their subsidiaries. This double effect (large weight, high ROE value) explains why the dotted purple line starts at such a high level (see purple arrow).

The globalised return on equity at the port of Zeebrugge increased from 7.2% in 2018 to 8.5% in 2019. The company with the largest weight does not account for the higher globalised ROE. The growth is actually due to companies with smaller weights.

TABLE 1.12 RETURN ON EQUITY BY PORT
(in %)

	Antwerp	North Sea Port Flanders	Zeebrugge	Ostend	Liège	Brussels	Total
Globalised average							
2017	5.3	16.5	5.7	8.6	3.3	6.1	6.5
2018	17.4	10.2	7.2	13.0	3.0	4.8	12.4
2019	7.2	6.9	8.5	16.5	3.9	5.1	6.7
Median							
	Antwerp	North Sea Port Flanders	Zeebrugge	Ostend	Liège	Brussels	Total
2017	7.1	8.2	6.6	6.9	7.5	8.3	7.2
2018	8.5	9.3	8.0	8.7	8.5	8.5	8.6
2019	9.2	7.9	7.9	7.4	6.0	9.1	8.4

Source: NBB.

Besides the globalised average, the median value can be considered. The median is the central value, with 50% of firms having a ratio above the median and 50% having a ratio below the median. Combining the global average with the median figure permits a complementary analysis, since globalised ratios are influenced by extreme values (outliers), while the median values neutralise those extremes.

While the globalised ROE at the port of Ostend increased to 16.5% in 2019 with a level high above the globalised ratio for all port together (6.7%), the median value decreased to 7.4%, a level under the median value for all port companies together (8.4%). As mentioned above, the company with the largest weight in terms of equity (Daikin Europe) had a high ROE value, as such that double effect (large weight and high ROE) explained the high globalised ratio value. The median company in Ostend in 2018 shifted from position with a different company which lead to a lower median level in 2019 compared to 2018.

The same calculation is made for the liquidity and solvency ratios.

Table 1.13 illustrates that, in 2019, the globalised average **liquidity ratio** at all ports, except for the port of Ghent, was smaller than its median level, meaning that companies with more short-term liabilities possess relatively less current assets for every € 1 of current liabilities they had to redeem.

Overall, the liquidity ratio for a median company in the Belgian ports is 1.3 in 2019, similar to the level seen in the two previous years. This means that the median company in the Belgian ports can meet its short-term debt obligations 1.3 times over. In order to stay solvent, the company must have a ratio of at least 1.0 which means it can exactly meet its current debt obligations. In the Belgian ports, the median firm is sufficiently liquid. At the port of Brussels, the median firm could improve its liquidity in 2019 somehow, while in the other ports it stayed quite stable or declined slightly.

The median values, as well as the globalised average values of the **financial independence** of companies operating in the Belgian ports, point to an improvement over the last few years (table 1.14). The port of Antwerp has the lowest equity ratio, explained by the fact that this port has a strong fuel industry presence and the equity ratio of that branch is quite low. The chemical companies based in Antwerp are often Belgian subsidiaries of multinationals. Group entities often have little equity because they can call on intra-group loans.

TABLE 1.13 LIQUIDITY RATIO PER PORT

Globalised average

	Antwerp	North Sea Port Flanders	Zeebrugge	Ostend	Liège	Brussels	Total
2017	1.1	1.3	1.3	1.2	0.6	1.2	1.1
2018	1.3	1.4	1.3	1.2	0.7	1.0	1.2
2019	1.1	1.3	1.3	1.0	0.6	1.2	1.1

Median

	Antwerp	North Sea Port Flanders	Zeebrugge	Ostend	Liège	Brussels	Total
2017	1.3	1.4	1.3	1.5	1.3	1.3	1.3
2018	1.3	1.4	1.3	1.4	1.2	1.4	1.3
2019	1.3	1.3	1.4	1.4	1.2	1.5	1.3

Source: NBB.

TABLE 1.14 FINANCIAL INDEPENDENCE PER PORT
(in %)

Globalised average

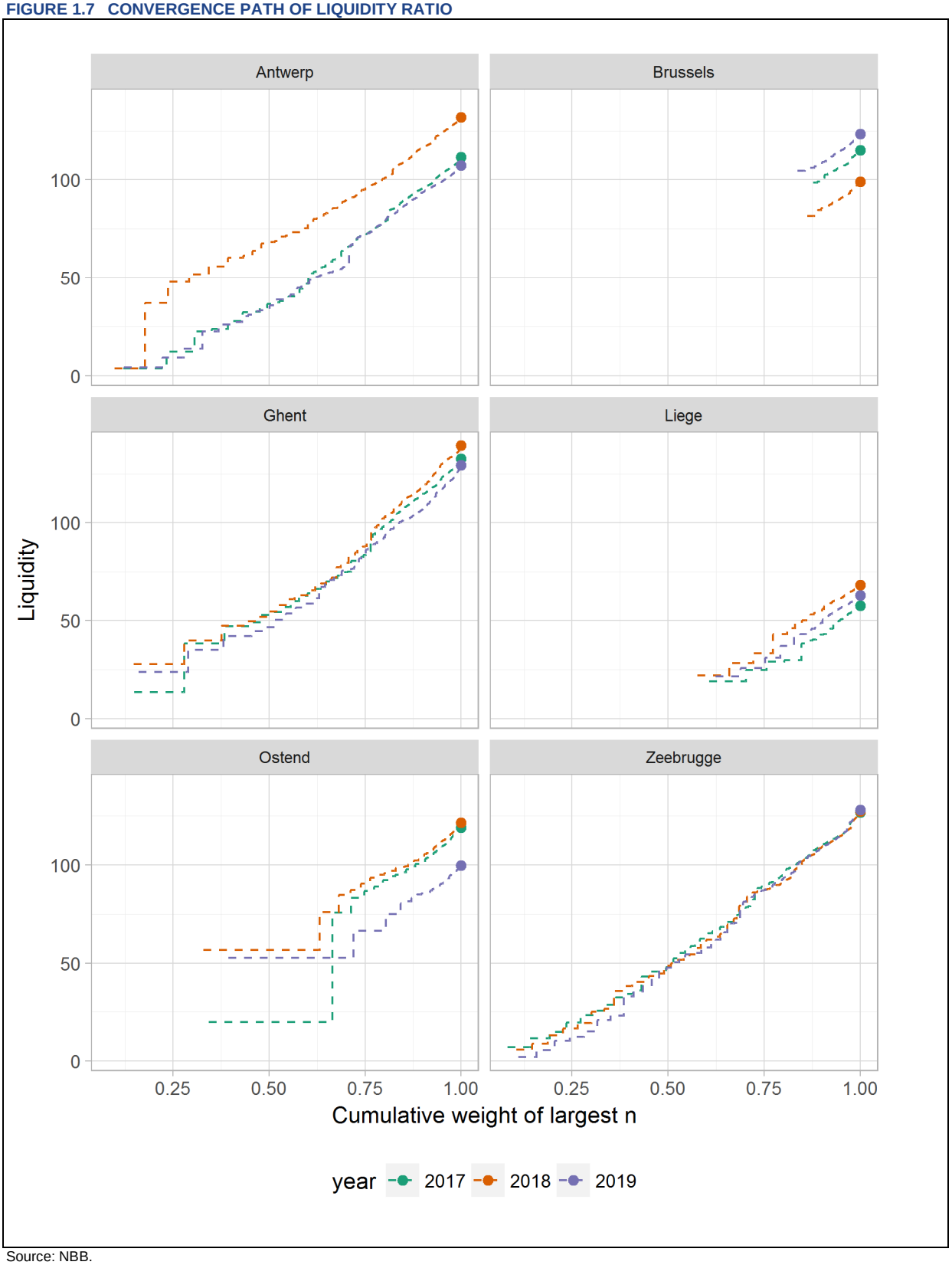
	Antwerp	North Sea Port Flanders	Zeebrugge	Ostend	Liège	Brussels	Total
2017	33.6	44.3	46.7	39.5	37.6	56.5	38.6
2018	33.9	46.4	48.1	41.0	38.0	59.2	39.3
2019	40.0	43.7	48.2	35.4	37.6	62.8	43.1

Median

	Antwerp	North Sea Port Flanders	Zeebrugge	Ostend	Liège	Brussels	Total
2017	31.0	42.8	34.7	40.4	33.5	34.0	33.9
2018	31.0	43.1	35.5	42.3	34.0	36.2	34.8
2019	33.5	39.3	38.1	39.3	33.5	39.6	36.0

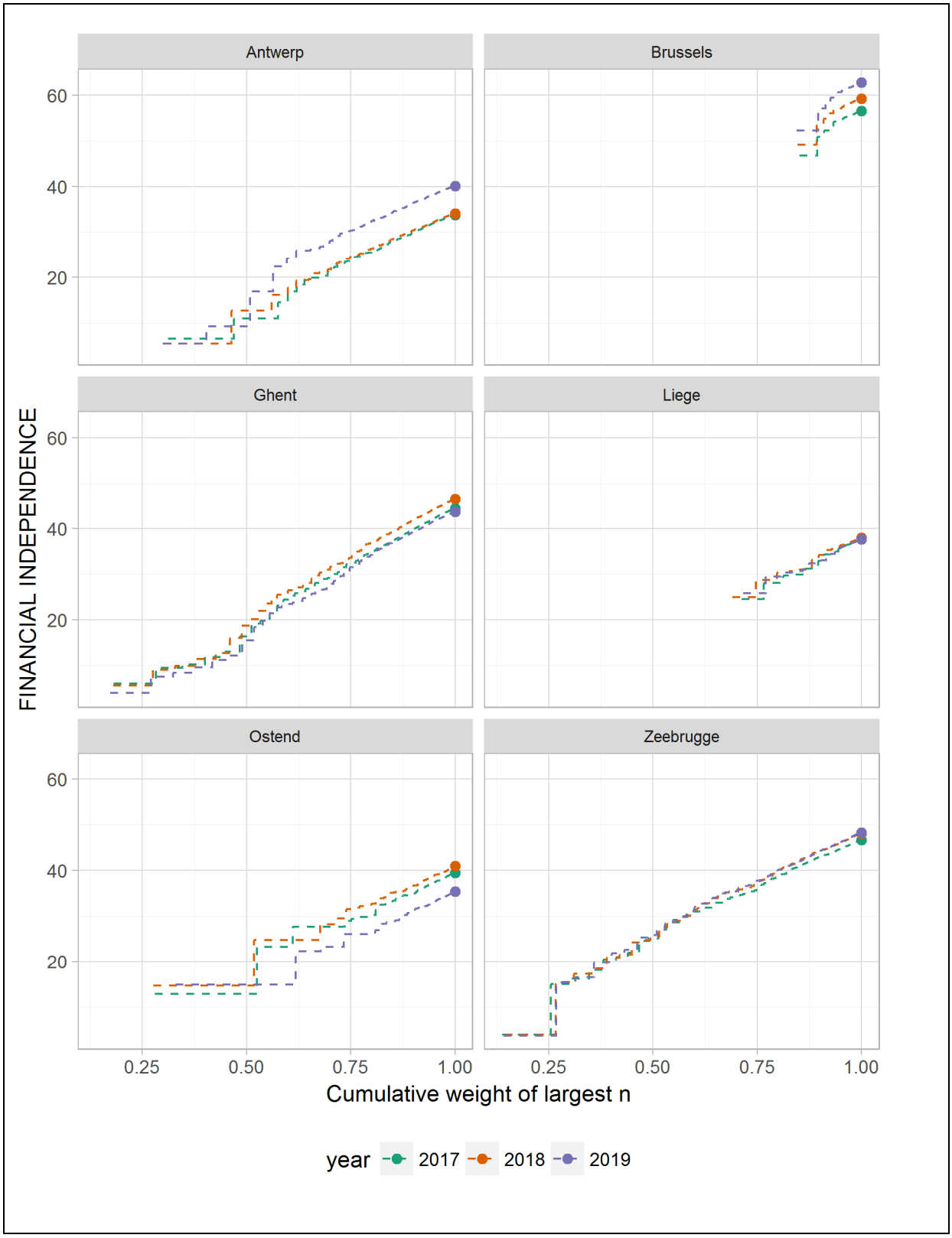
Source: NBB.

FIGURE 1.7 CONVERGENCE PATH OF LIQUIDITY RATIO



Source: NBB.

FIGURE 1.8 CONVERGENCE PATH OF FINANCIAL INDEPENDENCE
(in %)



Source: NBB.

2 ANALYSIS BY PORT

2.1 Port of Antwerp

2.1.1 Port developments

In 2019, the volume of freight loaded or unloaded in Antwerp rose by **1.2%** to 238.2 million tonnes. The growth was fuelled by growing volumes of container traffic (6%) and dry bulk (6.6%). The drop in liquid bulk (-5%) was due to slowing economic growth and volatile oil prices, while lower steel trading and declining automotive sales mainly explained the drop in conventional cargo (-18.3%).

In 2020, the port of Antwerp recorded **traffic volume** of 231 million tonnes. Due to strong container traffic (+0.3%), the port of Antwerp was able to limit the decline in total maritime transshipment (-3%). Despite the coronavirus crisis, container traffic once again recorded stronger volumes after a difficult second quarter. Increasing global protectionism and the associated trade problems weighed negatively on conventional cargo flows. Steel in particular, the most important commodity in this segment, felt the impact. The automotive sector also suffered from the coronavirus crisis, causing roll-on roll-off traffic to decline by 9.4%. The growing supply of green energy and reduced demand for coal and ores from the steel sector explained the decline in dry bulk transshipment (-17%). Liquid bulk also fell (-4.2%), partly due to lower refining activities.

TABLE 2.1 MARITIME TRAFFIC AT THE PORT OF ANTWERP
(in millions of tonnes)

	2017	2018	2019	2020	Change (%) 2018-2019	Change (%) 2019-2020	Share (%) 2019	Share (%) 2020
Containers	123.0	130.9	138.7	139.1	6.0	0.3	58.3	60.2
Roll-on roll-off	5.1	5.3	5.1	4.6	-3.8	-9.4	2.2	2.0
Conventional cargo	10.3	10.2	8.3	6.6	-18.3	-20.6	3.5	2.9
Liquid bulk	73.2	75.9	72.1	69.0	-5.0	-4.2	30.3	29.9
Dry bulk	12.2	13.1	13.9	11.6	6.6	-17.0	5.8	5.0
Total	223.7	235.3	238.2	231.0	1.2	-3.0		

Source: MORA Mobiliteitsraad : “Zeehavens en luchthavens in Vlaanderen - Feiten, statistieken en indicatoren voor 2019”, port authority.

Maritime transshipment at the port of Antwerp has grown strongly in the last four decades, **almost entirely due to container traffic**. The trend to put as much as possible in containers (from fruit to steel) continues unabated. Ever larger container ships are shipping bigger and bigger volumes. The Antwerp Port Authority states that the maximum container capacity will very soon be reached, so extra container handling capacity is urgently needed. In December 2019, the Flemish government approved a final Preferential Decision for the **ECA project**[19] **(Extra Container handling capacity in port of Antwerp**). By mid-2020 several parties had filed a request for annulment against the Preferential Decision regarding the ECA project. Those complaints submitted will be investigated thoroughly by the Council of State while study work and research around the ECA project is continued.

According to the Antwerp Port Authority, the development of the new container handling capacity project can not be considered separately from further expansion of industrial and logistical activities in the port area of Antwerp, as the port of Antwerp is not only a maritime hub but also an industrial cluster. **The port of Antwerp is home to Europe’s largest integrated chemicals and petrochemicals clusters**. Several

[19] The eye-catcher in the ECA project will be the new tidal dock (provisionally without a name) that connects to the Deurganck dock. The new dock would have a capacity of 3.7 million TEU. Container activity will only be developed on the southern side of the new dock, which preserves the village of Doel on the northern side. In addition, 3.5 million TEU of extra container capacity will be provided elsewhere in the port of Antwerp: partly via extra sea berth at the Noordzee Terminal, partly via two extra sea berths and four extra berths for entering behind the locks on the left bank, and partly via a new container terminal on the Waasland canal at the west of the Kieldrecht lock.

international chemical giants are operating in this port, since many of the market leaders have built their production facilities here.

In mid-February 2021, the boards of directors of the ports of Antwerp and Zeebrugge gave the green light to the merger of the two port companies. **The merger – Port of Antwerp-Bruges – is expected to be completed by the end of 2021** if the Belgian Competition Authority approves the merger proposal. The ambition is to become the world's first port that reconciles economy, people and climate. Through the merger, the ports want to create as many synergies as possible and strengthen their position as a logistics, maritime and industrial centre. Antwerp is strong in the maritime traffic and storage of containers, breakbulk and chemical products, while Zeebrugge is important for RoRo, container handling and the transshipment of liquefied natural gas. In the unified port, freight transport by railway will be bundled between the two locations, estuary traffic will be optimised and connections via pipelines will be undertaken. The two ports have set three strategic priorities: sustainable growth, resilience and leadership in the energy and digital transition. In the merged port, Antwerp will continue to focus on containers and chemicals.

Meanwhile, the Antwerp Port Authority wants to accelerate the **transition to a low-carbon economy** by investing more in R&D into new technologies. Since the port of Antwerp is the largest European integrated energy and chemical cluster, it is the ideal location to **create new partnerships to start innovative CO_2 reduction**. Eight companies in the Antwerp port area – Air Liquide, BASF, Borealis, INEOS, ExxonMobil, Fluxys, Port of Antwerp and Total – signed a cooperation agreement in the beginning of 2020, as a first step in the development of a CO_2 infrastructure. This consortium (Antwerp@C) conducts a study investigating the technical and economic feasibility of infrastructure **to support CCUS (Carbon Capture, Utilisation and Storage**). Such CCUS applications are a promising route in achieving the global climate objectives.

Another project under development is the **Hydrogen coalition**, in which seven major players (Deme, Engie, Exmar, Fluxys, Port of Antwerp, Port of Zeebrugge and WaterstofNet) have joined forces to launch concrete projects for the production, transport and storage of hydrogen in the future.

Moreover, ten years after the closure of the Opel factory, the Port Authority is committed to promising talks with investors. **The former General Motors site at the Churchill dock is being prepared** by the Antwerp Port Authority **for a sustainable and circular industrial activity**. Since October 2020, the 88 hectare site has been renamed 'NextGen District'. The sites will be ready for the newcomers by the end of 2021.

2.1.2 Value added

Table 2.2 illustrates both direct and indirect value added generated at the port of Antwerp over the period 2014-2019, while table 4.1.1 in Annex 4 shows the details on a sectoral level, their respective shares and their changes over the years. Direct value added is broken down into a maritime and a non-maritime cluster, each further sub-divided into its contributing sectors. 66% of the value added created by the port of Antwerp came from the non-maritime sectors, especially in the chemicals industry (28%), trade (10%) and fuel production (9%). Cargo handling, a maritime activity, also took a sizeable share of 16%. The last column in table 2.2 shows the contribution of each segment to total growth of value added in the port of Antwerp over the 2018-2019 period.

Direct value added in the port of Antwerp grew by 0.7% in 2019 (table 2.2). The main reason for the limited growth was a strong decline in value added in the non-maritime sector (contribution of -2.5%), mainly explained by the drop in the **chemical industry** (contribution to the growth of -4.7%), due to a strong decline in the operating profit of BASF Antwerp, the biggest chemical company in the port of Antwerp. Its revenue dropped drastically partly because of a fall in sales prices and partly because of contracting sales volumes as demand from several key customer industries, especially from the automotive sector, declined considerably. Additionally, BASF Antwerp experienced lower production

capacity for reasons of maintenance of a lot of installations in 2019. Other non-maritime branches such as **energy and trade** partly offset the negative contribution of the chemicals sector. The energy sector (positive contribution of +0.9%) generated more value added owing to wider capacity in nuclear power plants. The favourable contribution (+0.5%) of the trade segment was mainly due to Kuwait Petroleum Belgium, attributing its increasing value added to higher operating profits thanks to growing "other revenues" such as revenues from shops and intercompany services. At the same time, the company experienced lower purchase costs for commodities, raw materials and consumables.

Value added in maritime activities contributed positively to the total rise in value added. Explanatory factors were growth in **shipping companies** (contribution of +2.3%) due to the rise in forward charter rates and the increase in **cargo handling** (contribution to growth of +0.6%).

TABLE 2.2 VALUE ADDED AT THE PORT OF ANTWERP
(in € million)

	2014	2015	2016	2017	2018	2019	Contribution to growth (%)* 2018-2019
Cargo handling	1 604.8	1 667.4	1 718.6	1 797.4	1 773.3	1 841.3	0.6
Shipping companies	438.8	736.1	659.8	431.1	402.5	657.8	2.3
Shipping agents and forwarders	593.1	631.3	607.1	614.7	605.2	645.2	0.4
Other maritime	686.3	748.4	715.5	736.2	709.7	704.6	0.0
Maritime	3 323.0	3 783.2	3 700.9	3 579.4	3 490.7	3 848.9	3.2
Chemicals industry	3 113.2	3 421.7	3 165.0	3 673.4	3 671.9	3 149.9	-4.7
Trade	917.0	901.9	999.5	1 077.7	1 116.4	1 170.3	0.5
Fuel production	824.9	1 063.3	1 066.4	1 262.4	1 019.5	1 033.2	0.1
Other non-maritime	1 831.1	1 792.7	1 852.6	1 930.2	1 841.0	2 012.9	1.5
Non-maritime	6 686.2	7 179.6	7 083.5	7 943.7	7 648.7	7 366.3	-2.5
Direct	10 009.2	10 962.8	10 784.5	11 523.2	11 139.4	11 215.3	0.7
Indirect	8 987.1	8 309.1	7 844.7	8 079.8	7 786.0	7 742.3	
Total	18 996.3	19 271.9	18 629.2	19 603.0	18 925.4	18 957.5	

Source: NBB.
* For definition of contribution to growth, see Annex 2.1.

Changes in commodity and sales prices can influence the change in value added in current prices in a specific sector. Other explanatory factors are mergers, restructuring processes, bankruptcies, business relocations or the establishment of new companies. Larger depreciation values because of new investment or the recording/reversal of impairments and provisions in the annual accounts can have an impact on changes in value added as well.

Although BASF Antwerpen experienced a lower operating profit due to a fall in sales prices and contracting volumes of sales, and consequently a decline in its value added, it remained the leader in petrochemicals. Exxonmobil Petroleum's value added fell in 2019 as well, explained by a lower operating profit, partly due to lower refinery margins in chemicals and partly due to lower sales volumes in the lubricants sector. Euronav was able to benefit from a repaired tankermarket in the fourth quarter of 2019 when large oil tankers were contracted at the highest real-time freight rates ever seen. In the first three quarters of 2019 however, the tanker market experienced a lot of production restrictions, weak demand for oil, increasing fleet growth and long-term adaptation work on refineries.

Growth in traffic volume at the port of Antwerp meant that the employers' organisation CEPA[20] had to hire more dockers and thus paid higher staff costs, which in turn pushed up CEPA's value added figures.

[20] CEPA stands for Centrale der Werkgevers aan de haven van Antwerpen. CEPA's main purpose is to optimise the organisation of harbour labour in the port of Antwerp. Its responsibilities are threefold: [1] represent all harbour employers during the social bargaining process and during industrial disputes, [2] being responsible for the organisation and administration concerning hirings and wages of all blue-collar dock workers in the port, and [3] acting as an umbrella organisation for the daily management of the aforementioned service organisations.

The ten biggest companies in terms of value added, listed in table 2.3, represent 42.4% of the direct value added generated in Antwerp in 2019, while direct value added in the port of Antwerp accounted for 2.4% of Belgian GDP or 4% of GDP in the Flemish Region in 2019. Total value added (including indirect effects) accounted for 4% of Belgian GDP.

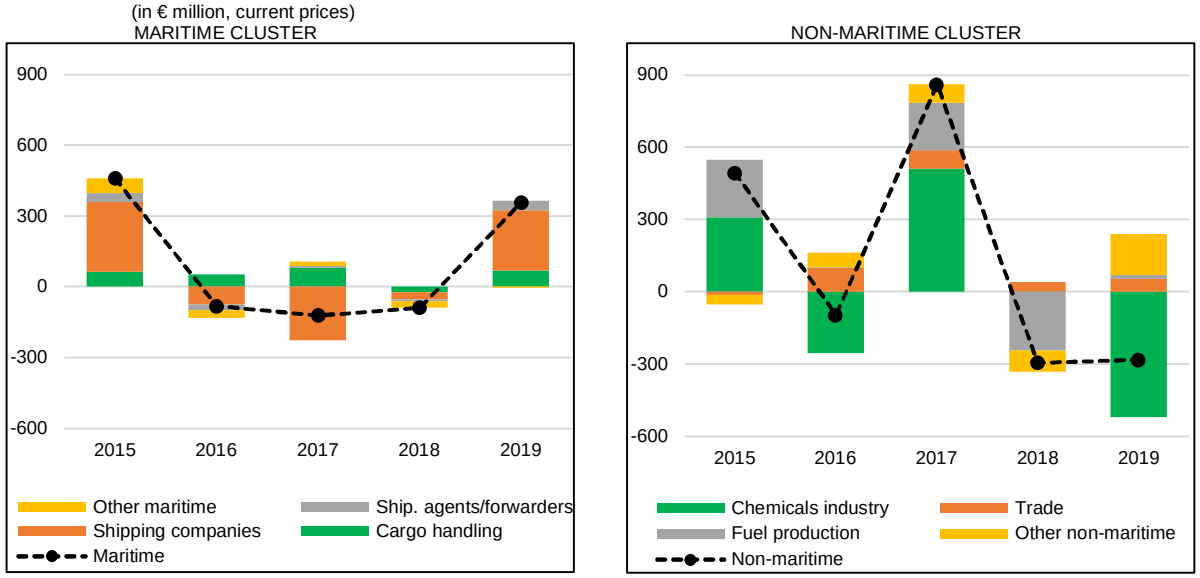
The fall in indirect value added is largely attributable to developments in chemicals industry.

TABLE 2.3 TOP 10 VALUE ADDED AT THE PORT OF ANTWERP

Rank	Name	Sector
1	BASF Antwerpen	Chemicals industry
2	Kuwait Petroleum (belgium)	Trade
3	Centrale Der Werkgevers Aan De Haven Van Antwerpen	Cargo handling
4	Exxonmobil Petroleum & Chemical	Fuel production
5	Euronav	Shipping companies
6	Total Raffinaderij Antwerpen	Fuel production
7	Antwerp Port Authority	Port authority
8	Covestro	Chemicals industry
9	Evonik Antwerpen	Chemicals industry
10	Dredging International	Port construction and dredging

Source: NBB.

FIGURE 2.1 CHANGE IN VALUE ADDED AT THE PORT OF ANTWERP
(in € million, current prices)



Source: NBB.

2.1.3 Employment

Table 2.4 shows direct and indirect employment[21] at the port of Antwerp over the period 2014-2019. While value added grew slowly, **direct employment went up more strongly with 2.2%** in 2019 compared to 2018. The maritime cluster enjoyed a larger increase (+881 FTEs) than the non-maritime cluster (+475 FTEs). 46% of the workforce at the port of Antwerp is employed in the maritime segment (compared to 34% of value added), while 54% was employed in the non-maritime part (compared to 66% of value added).

[21] Details on sectoral level, their respective shares and their changes over the years are visible in table 4.1.2 in Annex 4.

Cargo handling was the leading employer in 2019, providing more than a quarter of direct employment. The chemicals industry followed in second place with 18%, tracked by shipping agents and freight forwarders (10%) and the other logistic services (9%). While the maritime and non-maritime clusters' shares of total employment were relatively stable in the 2014-2019 period, cargo handling and other logistic services saw their shares growing.

TABLE 2.4 EMPLOYMENT AT THE PORT OF ANTWERP
(in FTE)

	2014	2015	2016	2017	2018	2019	Contribution to growth (%)* 2018-2019
Cargo handling	14 581	14 857	15 037	15 527	16 168	16 838	1.1
Shipping agents and forwarders	6 701	6 657	6 561	6 553	6 375	6 301	-0.1
Public sector	1 828	1 745	1 740	1 699	1 669	1 766	0.2
Other maritime	4 271	4 197	4 358	4 196	4 323	4 511	0.3
Maritime	27 381	27 456	27 694	27 975	28 535	29 416	1.4
Chemicals industry	10 936	10 800	10 873	10 975	11 284	11 491	0.3
Other logistic services	4 180	4 347	4 622	5 238	5 473	5 717	0.4
Fuel production	2 626	2 750	2 751	2 905	2 872	2 822	-0.1
Other non-maritime	15 988	14 992	14 724	14 896	14 600	14 674	0.1
Non-maritime	33 731	32 890	32 970	34 014	34 230	34 705	0.8
Direct	61 112	60 346	60 664	61 989	62 764	64 121	2.2
Indirect	80 499	74 521	74 480	76 788	79 481	80 203	
Total	141 611	134 867	135 145	138 777	142 246	144 324	

Source: NBB.
* For definition of contribution to growth, see Annex 2.1.

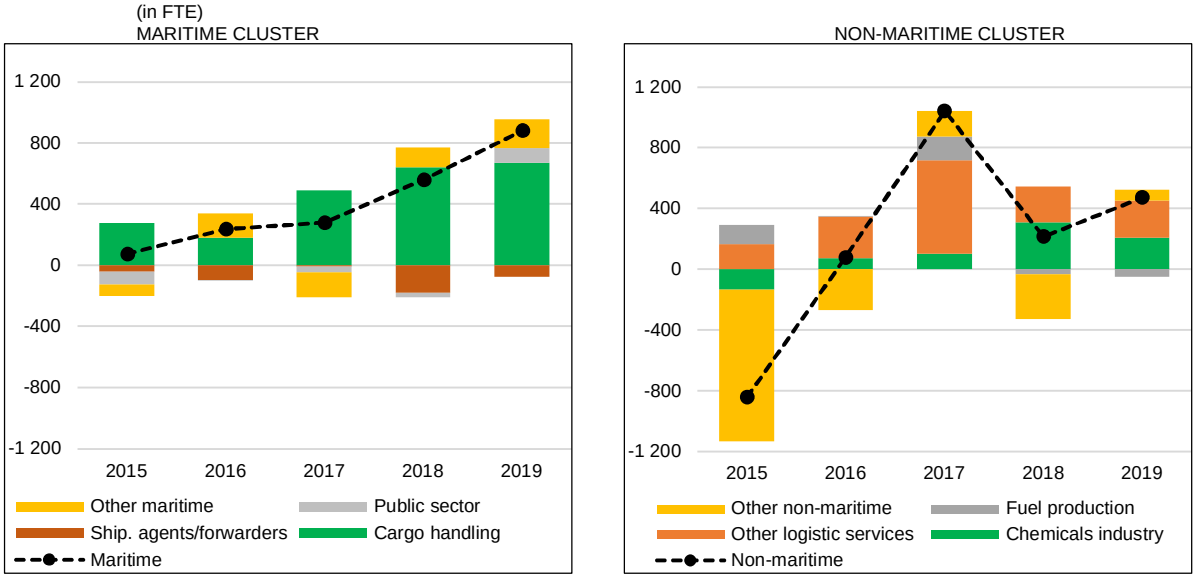
Total direct employment growth of 2.2% in 2019 was driven by both the maritime (contribution of 1.4%) and non-maritime cluster (contribution of 0.8%). **The biggest contribution came from cargo handling**, reflecting more recruitments of dockers by the employers' organisation CEPA due to the growth in the maritime traffic in the port of Antwerp in 2019 (table 2.1) and extra employees hired by General Services Antwerp, a sister company of Katoen Natie. **Port construction and dredging** (as component of other maritime branches) also enjoyed an increase in their employment in 2019 due to extra job recruitments by Dredging International and by DEME Offshore BE company[22], a new division of DEME in which DEME brings together its activities of GeoSea Maintenance and EverSea. The new company focusses on the transport and installation of foundations and turbines, cable installations and operational and sub-security activities. The job growth in the **public sector** was related to additional hires in the customs and excise department.
Non-maritime branches such as **other logistic services** and the **chemicals industry** (partly due to extra jobs in BASF Antwerpen, Lanxess, Covestro and Borealis Kallo) contributed positively to the total direct employment growth as well.

In contrast to the fall in indirect value added, indirect employment grew in 2019 following the upward trend in direct employment. Among the explanatory factors are the fact that cargo handling and the chemicals industry recorded an increase in indirect employment.

[22] DEME Offshore Holding separated its operational activities and classified them into a new company, called DEME Offshore BE.

FIGURE 2.2 CHANGE IN EMPLOYMENT AT THE PORT OF ANTWERP

(in FTE)



Source: NBB.

The top ten companies in terms of employment (table 2.5) account for 36.6% of total direct employment at Port of Antwerp in 2019.

Total direct employment in Antwerp's port accounted for 2.5% of all employment in the Flemish Region and 1.5% of Belgian domestic employment. Total employment, including indirect jobs, accounted for 3.4% of Belgian domestic employment.

TABLE 2.5 TOP 10 EMPLOYMENT AT THE PORT OF ANTWERP

Rank	Name	Sector
1	Centrale Der Werkgevers Aan De Haven Van Antwerpen	Cargo handling
2	BASF Antwerpen	Chemicals industry
3	Public sector	Public sector
4	Antwerp Port Authority	Port authority
5	Exxonmobil Petroleum & Chemical	Fuel production
6	General Services Antwerp	Cargo handling
7	Total Raffinaderij Antwerpen	Fuel production
8	Dredging International	Port construction and dredging
9	BNRC Group	Other land transport
10	Evonik Antwerpen	Chemicals industry

Source: NBB.

2.1.4 Investment

Table 2.6. shows investment[23] at the port of Antwerp over the 2014-2019 period. After a high investment figure at the port of Antwerp in 2018 (due to the huge merger of Euronav among the shipping companies[24]), investment bounced back in 2019 to a similar level as the previous couple of years. Investment in the port of Antwerp fell by 34.1%, to settle at € 3 265.6 million in 2019. If the investment amount for the merger of Euronav is excluded from the total investment figures for 2018, corrected growth figures are calculated and noted in the last column in table 2.6.

[23] Details on a sectoral level are visible in table 4.1.3 in Annex 4.

[24] Euronav concluded in June 2018 the merger with Gener8 Maritime, a US based crude oil shipping company. Integrating the Gener8 vessels into the Euronav fleet turned Euronav into a leading independent large crude tanker operator on world level. This event explains the huge growth in investment in the port of Antwerp in 2018.

TABLE 2.6 INVESTMENT AT THE PORT OF ANTWERP
(in € million)

	2014	2015	2016	2017	2018	2018 excluding merger	2019	Contribution to growth (%)* 2018-2019	Contribution to growth excluding merger (%)* 2018-2019
Cargo handling	578.6	607.8	673.2	729.5	936.3	936.3	795.6	-2.8	-4.3
Shipping companies	1 009.8	591.0	734.3	401.8	1 576.3	332.1	510.1	-21.5	5.4
Port construction and dredging	27.4	70.6	34.4	334.9	230.5	230.5	274.3	0.9	1.3
Other maritime	215.2	185.9	210.2	143.9	190.4	190.4	173.8	-0.3	-0.5
Maritime	1 831.0	1 455.3	1 652.2	1 610.1	2 933.5	1 689.3	1 753.7	-23.8	2.0
Chemicals industry	737.3	690.8	791.3	803.6	1 115.1	1 115.1	867.5	-5.0	-7.6
Fuel production	417.8	525.3	616.7	433.7	242.8	242.8	185.5	-1.2	-1.8
Energy	108.4	167.5	142.1	249.2	280.3	280.3	139.9	-2.8	-4.3
Other non-maritime	225.2	268.0	281.8	362.3	385.0	385.0	319.1	-1.3	-2.0
Non-maritime	1 488.7	1 651.6	1 831.9	1 848.9	2 023.3	2 023.3	1 511.9	-10.3	-15.7
Direct	3 319.6	3 106.9	3 484.1	3 459.0	4 956.8	3 712.6	3 265.6	-34.1	-13.7

Source: NBB.
* For definition of contribution to growth, see Annex 2.1.

The adjusted year-on-year investment growth in 2019 decreased by 13.7%. The biggest contribution to this drop came from the chemicals industry (contribution of -7.6%) due to Nippon Shokubai Europe. After completion of the huge investment by Nippon Shokubai in 2018 in a new plant for the production of superabsorbent polymers and in a new production site for the manufacture of acrylic acid, the main raw material for the polymers, the investment level returned to a more normal level in 2019. Meanwhile, Borealis significantly boosted its investments to expand the capacity of its propylene factories. With this investment Borealis responds to a growing market for propylene in Europe. Additional capacity is needed for the automotive sector, which is increasingly using polymers. In addition, propylene is also used as a raw material for packaging and in the health care sector.

The **energy sector** contributed a negative -4.3% to the change in total investment in 2019, due to a lower amount for maintenance investment for the Doel nuclear power station, after extra investment in 2018 by Electrabel to modernise and extend the service life of the nuclear production plants.

The contribution of **cargo handling** was negative (-4.3%) as well. Higher investment amounts in 2019 by the Oiltanking Antwerp Gas Terminal (for the construction of new propane storage tank to supply the Borealis production facility in Kallo) and General Services Antwerp, were completely overruled by the reduced investment levels by Sea-Tank 700B and ATPC (Antwerp Terminal and Processing Company). Sea-Tank 700B, as part of the Sea-Invest Group established in Ghent, continued its investment in the construction of a tank terminal for liquid chemicals in the Delwaide dock, but with a lower investment level in 2019 compared to 2018. This new tank terminal is expected to be partly operational in 2021. ATPC finalized its investment in the construction of a 30 000m^3 LPG[25]-ethane tank storage park in 2019 with a lower investment amount compared to 2018. With this expansion the company seeks to become a major player in the ARA[26] LPG and ethane storage market.

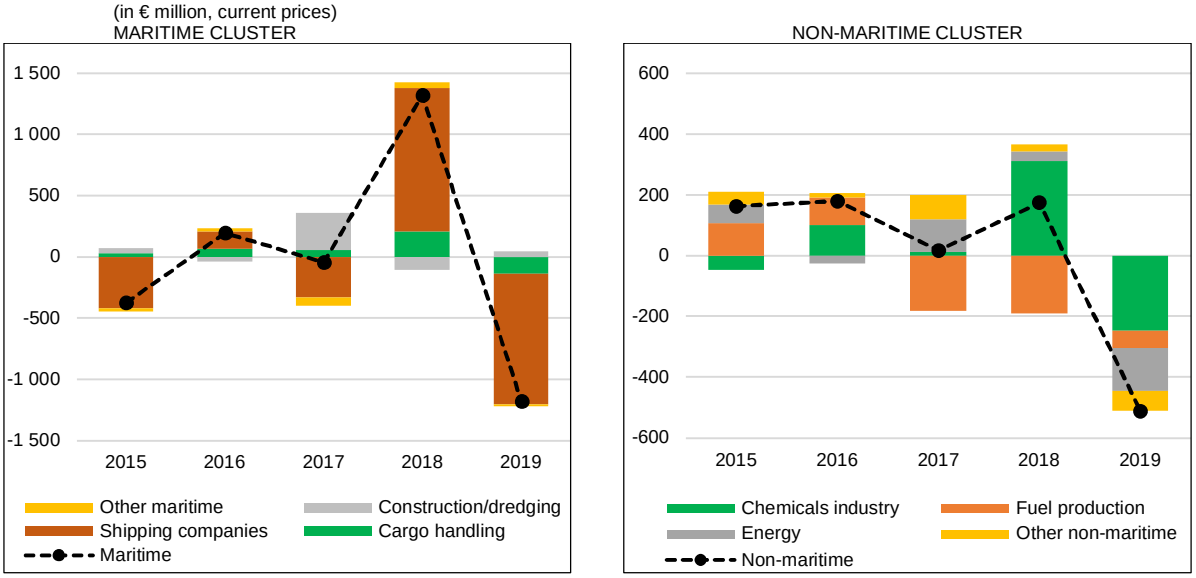
F**uel production** made a negative contribution of -1.8% to the change in total investment due to lower investment by Exxonmobil Petroleum & Chemical, because the company officially took its new coker unit into operation in 2019. The construction of the new production unit for low-sulphur fuels started in 2014 and represents a total investment of €1 billion over 5 years. The new plant converts heavy high-sulphur oil products into cleaner transport fuels, which meet the strict 2020 standards of the International Maritime Organisation (IMO), which allows ship fuel to have only a 0.5% of the sulphur content, compared to 3.5% before.

[25] LPG stands for liquefied petroleum gas.

[26] ARA stands for Amsterdam-Rotterdam-Antwerp.

Some sectors contributed positively to the total investment evolution in 2019. The contribution of **shipping companies** became positive (+5.4%) after exclusion of the merger amount of Euronav for 2018. CMB (Compagnie Maritime Belge) carried out some major investment in 2019 by buying extra container and capesize ships. In general terms, the shipping companies segment has fluctuated the most over time. Investing in shipping companies involves purchasing or leasing new or second-hand vessels and either operating them directly or chartering them to other operators. The **port construction and dredging** contributed for 1.3% to the total investment change in 2019, due to higher investment amounts by DEME that continues to invest in vessels, including Spartacus, the most powerful and environmentally friendly cutter suction dredger ever.

FIGURE 2.3 CHANGE IN INVESTMENT AT THE PORT OF ANTWERP
(in € million, current prices)



Source: NBB.

TABLE 2.7 TOP 10 INVESTMENT AT THE PORT OF ANTWERP

Rank	Name	Sector
1	Dredging, Environmental & Marine Engineering	Port construction and dredging
2	Belgische Scheepvaartmaatschappij-Compagnie Maritime Belge	Shipping companies
3	BASF Antwerpen	Chemicals industry
4	Euronav	Shipping companies
5	Borealis Kallo	Chemicals industry
6	Electrabel	Energy
7	Oiltanking Antwerp Gas Terminal	Cargo handling
8	Antwerp Port Authority	Port authority
9	Exxonmobil Petroleum & Chemical	Fuel production
10	Total Raffinaderij Antwerpen	Fuel production

Source: NBB.

The pattern of investment is closely linked to projects and is therefore highly volatile, so the figures need to be interpreted with care. BASF Antwerpen invested in a new ammonia tank and in projects to boost efficiency in its plants. Ineos invested in expanding its ethylene oxide production and storage capacity and in removing a number of bottlenecks from the plant. The Antwerp Port Authority invested in quay walls, extra road bridges for the Kieldrecht lock, new waiting areas, the expansion of existing waiting areas, some bridges and finishing new workshops.

The top ten companies in terms of investment in the port of Antwerp are listed in table 2.7 and account for 43.5% of all direct investment in the port.

2.2 North Sea Port Flanders

2.2.1 Port developments

North Sea Port is a cross-border port area that stretches from Vlissingen on the North Sea coast in the Netherlands some 32 kilometres inland to Ghent in Belgium. **North Sea Port –** founded on 1 January 2018 as result of a merger between the Belgian port of Ghent and the Dutch Zeeland Seaports Vlissingen and Terneuzen **– is primarily a dry bulk port** since dry bulk accounts for 48.4% of the transshipment of goods by sea-going vessels in the port. This mainly concerns deliveries of agricultural products, salt, sugar, iron ore, fertilisers, solid fuels, ferrous alloys and building materials (North Sea Port, website).

TABLE 2.8 MARITIME TRAFFIC AT NORTH SEA PORT FLANDERS
(in millions of tonnes)

	2017	2018	2019	2020	Change (%) 2018-2019	Change (%) 2019-2020	Share (%) 2019	Share (%) 2020
Containers	0.1	0.2	0.3	0.4	62.9	3.8	1.1	1.2
Roll-on roll-off	2.4	2.3	2.1	2.0	-8.6	-7.7	6.6	6.8
Conventional cargo	3.6	3.8	3.6	3.1	-4.5	-14.2	11.1	10.6
Liquid bulk	5.3	5.4	6.2	4.5	13.6	-26.1	19.0	15.6
Dry bulk	21.1	20.8	20.2	19.1	-3.0	-5.5	62.3	65.7
Total	32.5	32.6	32.5	29.1	-0.4	-10.4		

Source: MORA Mobiliteitsraad : "Zeehavens en luchthavens in Vlaanderen - Feiten, statistieken en indicatoren voor 2019", port authority.

Table 2.8, noting the figures for the port of Ghent (North Sea Port Flanders) alone, seems to confirm that **North Sea Port Flanders is the principal Flemish port for dry bulk, with a volume of 19.1 million tonnes in 2020**. Also, liquid bulk is important in the port of Ghent with a share of 15.6% in 2020, comprising the transshipment of petroleum products, biodiesel, chemicals, liquid fertilisers, fruit juice and gases.

In 2019, a small relapse is visible for dry bulk, roll-on roll-off and conventional cargo (-3%, -8.6% and - 4.5% respectively). The drop in dry bulk is mainly due to reduced inflow rates of coal and iron ores for steel producers. The decline in roll-on roll-off transport was partly caused by a temporary decline in the number of departures from Gent to Göteborg (Sweden) in mid-2019. The fall in conventional cargo mainly resulted from lower volumes of slabs (semi-finished products of iron and steel). Another reason may be the shift from palletisation to containers in the transshipment of fruit. Liquid bulk traffic grew by 13.6% due to higher production of biodiesel and a temporary contract of one large tank terminal operator in Ghent for oils, gases and chemicals which resulted in a greater inflow and outflow of petroleum products.

The reduced maritime traffic volumes in 2020 (-10.4%) resulted from the COVID-19 pandemic, uncertainties about Brexit and the oil crisis. 2020 was a difficult year for the liquid petroleum industry, which partly explained the drop in liquid bulk (-26.1%). The fall in dry bulk (-5.5%) was down to smaller input of coal and iron ores for steel producers, while reduced traffic in conventional cargo (-14.2%) came from lower imports of slabs linked to an economy that was temporarily shut down.

As in previous years, the principal infrastructure project for North Sea Port Flanders in 2019 was **the construction of the new lock in Terneuzen on Dutch territory**. This new lock will provide access for post-Panamax seagoing vessels from 2023. The lock will be 427 metres long and 55 metres wide. The objective is to provide access to the canal area from Terneuzen to Ghent for considerably larger ships. The new lock is not only necessary because seagoing and inland vessels keep on getting bigger, but also to guarantee that the Ghent-Terneuzen Canal stays easily accessible in case the Westsluis – so far, the only lock for seagoing vessels –stops operating. It also takes care of the increasingly busy navigation at the lock complex, both inland and seagoing navigation. This way, waiting times can be avoided as much as possible. (North Sea Port, website).

The **new AWT (All-Weather Terminal[27])**, owned by AWT Gent, ha**s been operational since the last quarter of 2020**. Thanks to the new terminal, loading high-quality steel is now possible 24 hours a day, regardless of the weather conditions, which enables ArcelorMittal Belgium to better distribute the delivery of steel from Arcelor Mittal's shipping halls in Ghent to the quay, so that the internal logistical process can be optimised. In this way up to 25 000 truck transport movements per year can be avoided.

Volvo Cars has converted the new V6 terminal near the Mercator dock into a brand new train terminal[28], which fits into Volvo Cars' strategy to operate more quickly, more sustainably and more cost-efficiently in terms of logistics as well as production since exporting some cars by train instead of by ship or truck, not only reduces the impact on the environment but also results in a time gain of up to 30% for the car to reach its final destination.

North Sea Port is committed to strive for a climate-neutral world and therefore supports the investment in **a second carbon dioxide recovery unit by Alco Bio Fuel**, located at North Sea Port Flanders. By building an additional CO_2 plant on the site, the company can drive its production of bio-ethanol by 25 to 50%. A lot of CO_2 will be released, which will then be recovered and commercialised. Both the CO_2 production unit and the storage capacity will be expanded.

Daan Schalk, CEO of North Sea Port, is also calling for **more investment in rail freight transport in 2021**, since the European Commission has declared 2021 the year of the railways. This ambition is in line with the European Green Deal and with the European, national and regional Recovery Funds, that should give the economy the necessary space after COVID-19 through investments.

2.2.2 Value added

Table 2.9 illustrates the direct and indirect value added[29] at the North Sea Port Flanders over the period 2014-2019. Direct value added is broken down into a maritime and a non-maritime cluster, each further subdivided into its contributing sectors. 92% of the value added generated at North Sea Port Flanders comes from the non-maritime sectors, especially from trade (24%), car manufacturing (19%) and the metalworking industry (18%). The last column in table 2.9 shows the contribution of each segment to total growth of value added at North Sea Port Flanders over the 2018-2019 period.

The port of Ghent's direct value added grew by 0.2% in 2019. Only the maritime cluster contributed to total growth.
In the different non-maritime sectors contradictory trends were visible. The biggest positive growth **has been in trade** (contribution of +1.4%), **car manufacturing** (contribution of +1.4%) **and fuel production** (contribution of +0.7%) as part of "other non-maritime sectors". Big trading companies such as Belgian Shell and Total Belgium enjoyed a substantial increase in their value added in 2019 explained by higher excise duties**–** as an element of other operating expenses **–** because of higher fuel volumes sold. Car manufacturer Volvo Car Belgium enjoyed higher operational profits due to rising production of the XC40 hybride, after the XC40 car model was first introduced in 2018. Truck manufacturer Volvo Group Belgium recorded higher staff costs and provisions in the company's annual accounts for 2019. Alco Bio Fuel, producer of bio-ethanol, experienced higher sales prices for ethanol, while cereal prices remained fairly stable throughout the year. In addition, the volumes of ethanol produced grew by 5% in 2019, which

[27] The covered quay wall is 200 metres long at a 25-metre-wide dock. The pre-sorting zone is equipped with two automated travelling cranes. Besides that, there are two telescopic cranes for (un)loading the ships. The terminal also includes a warehouse with a storage capacity of 60 000 metric tonnes, two rails connected to the quay area and three fully automated travelling cranes for (un)loading and sorting materials. It involved an investment of € 50 million. ArcelorMittal Ghent was not involved financially, but it had concluded a long-term agreement for the use of the terminal and will pay according to the volumes handled. North Sea Port has provided the land that was needed for this in concession.

[28] The new train terminal was established due to a collaboration between Volvo Cars, the Danish shipping company DFDS and the Belgian rail freight operator Lineas.

[29] Table 4.2.1 in Annex 4 shows the details at sectoral level, their respective shares and their changes over the years.

pushed up Alco Bio Fuel's value added figures. The **negative contribution from the metalworking industry** (contribution of -3.8% to total change) in value added in the Port of Ghent in 2019 can mainly be explained by steel company ArcelorMittal Belgium that suffered from a lower operating result due to lower sales prices for its steel owing to a European surplus[30], while ArcelorMittal's automobile and industrial customers cut back on their orders. The **chemicals industry** – as component of "other non-maritime sectors **–** delivered an important negative contribution (-1.3%) as well. Kronos Europe, a producer of titanium dioxide – a substance that is added to many products to whiten them or give them more shine – experienced a substantial increase in its purchase cost of raw materials in 2019, which reduced its operational profit and thus its value added volume. Shell Catalysts & Technologies Belgium, a producer of lubricating greases and polymer modified asphalt on the one hand and a producer of catalysts on the other hand, recorded a lower operating result in 2019 due to higher purchasing costs of raw materials and lower revenues from sales.

TABLE 2.9 VALUE ADDED AT NORTH SEA PORT FLANDERS
(in € million)

	2014	2015	2016	2017	2018	2019	Contribution to growth (%)* 2018-2019
Cargo handling	247.6	222.8	237.6	251.9	254.9	264.5	0.2
Shipping agents and forwarders	33.0	34.8	33.9	42.0	37.8	37.9	0.0
Port authority	24.8	23.9	32.2	30.5	30.4	31.7	0.0
Other maritime	32.8	29.7	29.9	30.4	30.3	30.9	0.0
Maritime	338.2	311.3	333.6	354.9	353.4	364.9	0.3
Trade	805.9	822.0	905.4	977.2	1 050.9	1 112.8	1.4
Car manufacturing	713.5	722.6	711.4	746.4	791.0	854.4	1.4
Metalworking industry	641.0	773.9	835.5	1 056.7	956.8	785.1	-3.8
Other non-maritime	1 119.0	1 148.4	1 070.7	1 300.2	1 323.7	1 369.5	1.0
Non-maritime	3 279.4	3 466.9	3 522.9	4 080.5	4 122.5	4 121.7	0.0
Direct	3 617.6	3 778.2	3 856.5	4 435.4	4 475.8	4 486.6	0.2
Indirect	3 901.0	3 456.7	3 447.4	4 147.0	4 083.4	4 045.7	
Total	7 518.5	7 234.9	7 303.9	8 582.4	8 559.2	8 532.3	

Source: NBB.
* For definition of contribution to growth, see Annex 2.1.

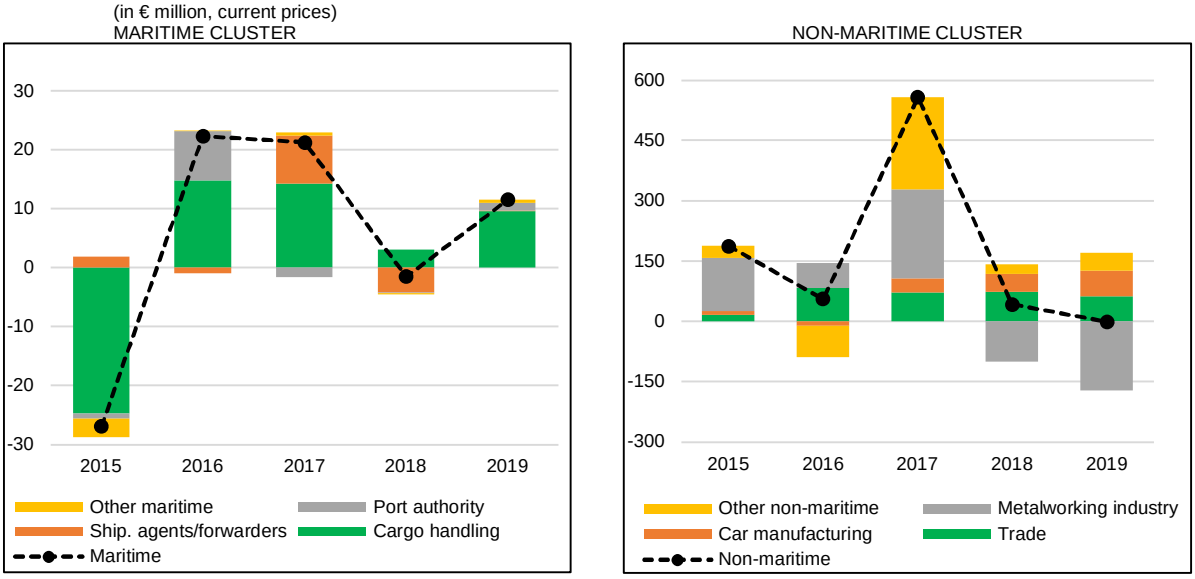
The fall in indirect value added in 2019 was largely attributable to the metalworking industry, generating less value added in the supplier sectors.

The ten biggest companies in terms of value added, mentioned in table 2.10, represent 63% of the direct value added generated at North Sea Port Flanders in 2019. The total amount of direct value added created at North Sea Port Flanders in 2019 accounted for 0.9% of Belgian GDP or 1.6% of the Flemish Region's GDP in 2019. Total value added (including indirect effects as well) accounted for 1.8% of Belgian GDP.

[30] 2019 was a crisis year for the European steel industry. The number of orders from automotive and other industrial customers dropped sharply, its lowest level since 2015. In addition, steel sales prices fell sharply on the back of a fall in order books and high import volumes of steel into Europe at low prices.

FIGURE 2.4 CHANGE IN VALUE ADDED AT NORTH SEA PORT FLANDERS

(in € million, current prices)



Source: NBB.

TABLE 2.10 TOP 10 VALUE ADDED AT NORTH SEA PORT FLANDERS

Rank	Name	Sector
1	ArcelorMittal Belgium	Metalworking industry
2	Total Belgium	Trade
3	Volvo Car Belgium	Car manufacturing
4	Belgian Shell	Trade
5	Volvo Group Belgium	Car manufacturing
6	Stora Enso Langerbrugge	Other industries
7	Taminco	Chemicals industry
8	BP Europa SE	Fuel production
9	Denys	Construction
10	Rain Carbon	Chemicals industry

Source: NBB.

2.2.3 Employment

Direct employment[31] at North Sea Port Flanders grew by 436 extra jobs in 2019 (+1.5%). Table 2.11 illustrates that the rise is visible in both the maritime and non-maritime cluster. Most of the employment at North Sea Port Flanders is generated in the non-maritime cluster (89% in 2019). One-third of the jobs came from the car manufacturing and one-fifth of the metalworking industry.

The contribution to the total rise in direct employment was **largest in** the non-maritime cluster, namely in **car manufacturing** (contributing 0.6% to total growth) and **other logistic services** (contributing 0.3%), as an element of "other non-maritime sectors". Car manufacturer Volvo Car Belgium and heavy goods vehicle manufacturer Volvo Group Belgium, together created almost extra 300 jobs in 2019. Volvo Car Belgium stepped up production of the XC40 hybrid model in 2019, and therefore needed more workforce. The additional jobs in other logistic services mainly resulted from mergers[32] in which the

[31] Table 4.2.2 in Annex 4 shows detailed employment figures at the port of Gent, together with the respective shares of the branches and their change over time.

[32] Labo Devlieger-Van Vooren, previously called Geo Measuring & Analysis, took over Labo Ir. Devlieger - not included in the port population - while Combell took over Stone Internet Services – no element of the port population either.

acquired companies where not part of the port population before the merger date and the establishments of the acquired companies themselves were discontinued as a result of the takeover.

TABLE 2.11 EMPLOYMENT AT NORTH SEA PORT FLANDERS
(in FTE)

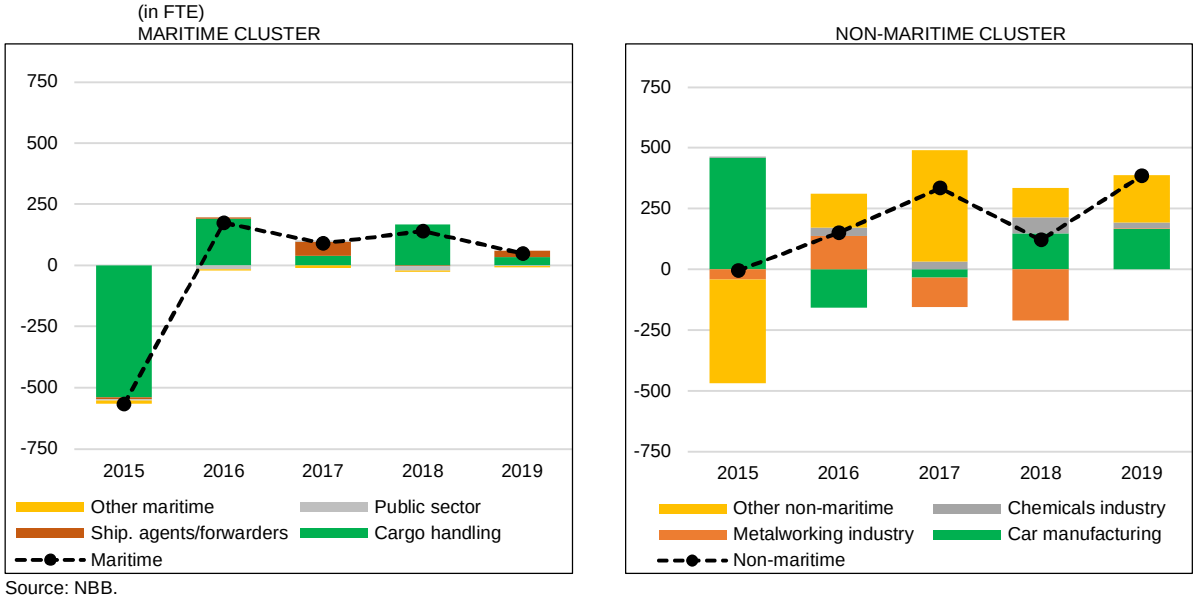
	2014	2015	2016	2017	2018	2019	Contribution to growth (%)* 2018-2019
Cargo handling	2 407	1 867	2 057	2 097	2 264	2 297	0.1
Shipping agents and forwarders	360	354	359	416	414	439	0.1
Public sector	235	228	211	214	196	193	0.0
Other maritime	221	210	206	196	191	184	0.0
Maritime	3 223	2 658	2 833	2 923	3 064	3 113	0.2
Car manufacturing	9 088	9 546	9 388	9 355	9 503	9 670	0.6
Metalworking industry	6 057	6 015	6 151	6 030	5 818	5 819	0.0
Chemicals industry	2 102	2 109	2 145	2 176	2 241	2 265	0.1
Other non-maritime	7 759	7 332	7 471	7 929	8 049	8 244	0.7
Non-maritime	25 006	25 002	25 155	25 490	25 612	25 999	1.3
Direct	28 229	27 660	27 988	28 413	28 676	29 112	1.5
Indirect	35 358	31 314	32 055	33 663	34 975	36 033	
Total	63 587	58 974	60 043	62 076	63 651	65 145	

Source: NBB.
* For definition of contribution to growth, see Annex 2.1.

In 2019, indirect employment at North Sea Port Flanders was up. Metalworking industry and car manufacturing are the main branches generating extra jobs in the supplier sectors.

The top ten companies in terms of employment account for 58% of total direct employment at North Sea Port Flanders in 2019. Total direct employment represented 1.2% of the employment in the Flemish Region and 0.7% of Belgian domestic employment. Total employment, including indirect jobs, accounted for 1.5% of Belgian domestic employment.

FIGURE 2.5 CHANGE IN EMPLOYMENT AT NORTH SEA PORT FLANDERS
(in FTE)



Source: NBB.

TABLE 2.12 TOP 10 EMPLOYMENT AT NORTH SEA PORT FLANDERS

Rank	Name	Sector
1	Volvo Car Belgium	Car manufacturing
2	ArcelorMittal Belgium	Metalworking industry
3	Volvo Group Belgium	Car manufacturing
4	Denys	Construction
5	Centrale Betaalkassen Der Gentse Centrale Der Zee- En Binnenvaartwerkgevers	Cargo handling
6	Honda Motor Europe Logistics	Trade
7	Ghent Handling and Distribution	Cargo handling
8	Taminco	Chemicals industry
9	Stora Enso Langerbrugge	Other industries
10	Oleon	Chemicals industry

Source: NBB.

2.2.4 Investment

Table 2.13 gives an overview of the investment volumes at the port of Ghent[33] over the 2014-2019 period. 76% of all investment at North Sea Port Flanders in 2019 went into the non-maritime cluster, especially in the chemicals (one-fifth), car manufacturing (19%), and metalworking industry (16%). Investment in the maritime cluster was mainly driven by cargo handling (16%).

TABLE 2.13 INVESTMENT AT NORTH SEA PORT FLANDERS
(in € million)

	2014	2015	2016	2017	2018	2019	Contribution to growth (%)* 2018-2019
Cargo handling	48.9	45.4	90.4	143.5	71.2	128.5	10.3
Port authority	6.6	8.5	8.6	11.7	17.7	34.8	3.1
Shipping agents and forwarders	1.9	1.8	4.4	2.0	7.0	16.7	1.8
Other maritime	4.4	11.3	19.2	12.1	4.7	8.1	0.6
Maritime	61.8	66.9	122.6	169.3	100.6	188.1	15.8
Chemicals industry	70.3	52.4	54.3	70.1	109.3	158.3	8.8
Car manufacturing	50.6	53.4	115.9	191.5	120.6	151.6	5.6
Metalworking industry	75.2	84.2	122.1	159.3	72.9	132.3	10.7
Other non-maritime	156.2	126.5	126.8	131.1	152.2	171.8	3.5
Non-maritime	352.3	316.5	419.1	552.0	454.9	614.1	28.6
Direct	414.1	383.5	541.7	721.3	555.5	802.2	44.4

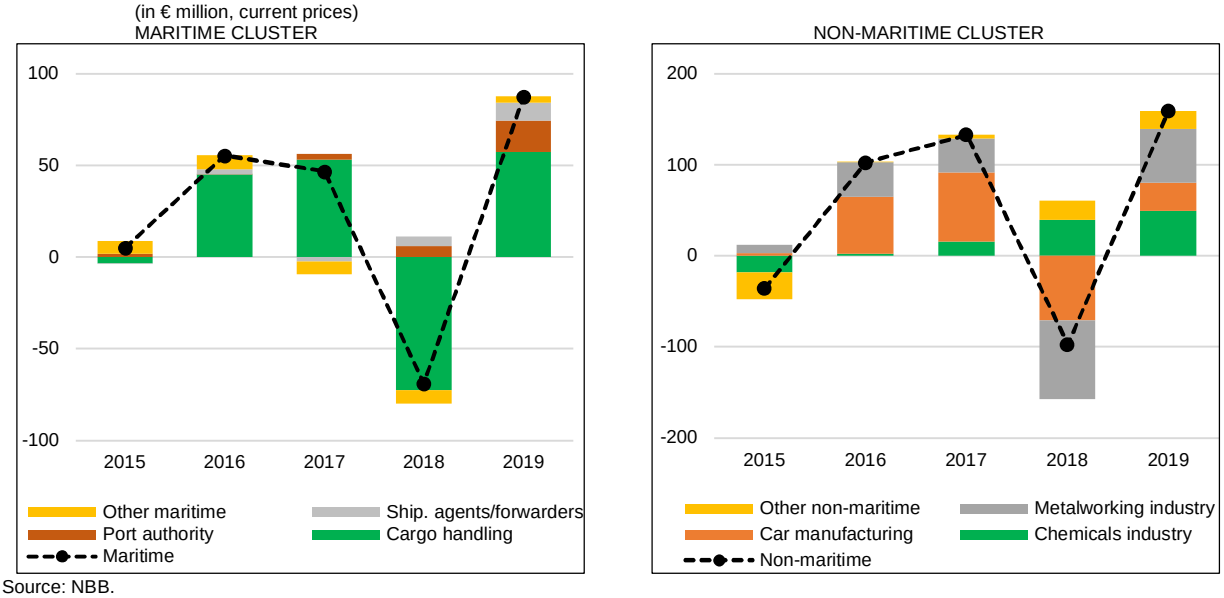
Source: NBB.
* For definition of contribution to growth, see Annex 2.1.
Note: The pattern of investment is closely linked to projects and is therefore highly volatile, so figures require a nuanced interpretation.

Direct investment in North Sea Port Flanders grew by 44.4% from € 556 million in 2018 to € 802 million in 2019. Both, maritime and non-maritime cluster contributed, respectively, 15.8% and 28.6% (see last column of table 2.13). The sectors contributing the most to the increase in total investment are the **metalworking industry** (contribution of 10.7%), **cargo handling** (share of 10.3%), **chemicals industry** (contribution of 8.8%), **car manufacturing** (contribution of 5.6%), **port authority** (share of 3.1%) and **shipping agents and forwarders** (contribution of 1.8%).
Despite weak demand for steel, strengthened by steel custumers scalingdown their inventories, ArcelorMittal Belgium, as the biggest metalworking industry firm in Ghent, continued to invest in 2019.

[33] Table 4.2.3 in Annex 4 shows investment at the port of Ghent in detail, together with the respective shares of the component economic sectors and their changes over the years.

The company invested in two new unloading cranes on the quay, in order to be prepared when larger ships will be able to reach the quay after the new sea lock in Terneuzen becomes operational.
AWT Gent, a cargo handler responsible for the design, construction, financing, maintenance and operation of the All-Weather Terminal, invested substantially in this terminal in 2019. AWT Gent was established in 2018 by the Flemish investment company PMV and the investment fund EPICo. Louis Dreyfus Company Belgium, another cargo handler, stepped up its investment in its storage installations in 2019. Once orange juice has been processed in its own facilities in Brazil, it is shipped to the terminal in Ghent, where it is securely stored before being taken to one of the many destinations around the world.
The rising investment in the chemicals industry resulted mainly from Unilin Resins, C-Shift and Sadaci. In 2019, Unilin Resins expanded substantially with the construction of a second formaldehyde factory on the Moervaartkaai. C-shift, a subsidiary of ArcelorMittal Belgium, is investing over several years in setting up a plant that will convert steel process gases into bio-ethanol and convert waste wood into biocoal. In this way, ArcelorMittal Belgium wants to drastically reduce its CO_2 emissions. In addition, C-Shift is expanding its activities to bio-ethanol production and trade, responding to the trend to recover and re-use as many substances as possible. Sadaci, one of the Chilean Molymet group's production sites, invested in 2019 in the construction of a production unit for high-purity molybdenum oxide, which is used in high-tech applications in chemicals and electronics.
In 2019, investment by Volvo Car Belgium, the biggest car manufacturing plant in Ghent, remained at a very high level. An important part was used to prepare the plant for production of the fully electric XC40 model, which meant adding a new battery pack assembly plant. The rest of the investment was used for the capacity expansion and maintenance of the production equipment.
The higher investment by North Sea Port Flanders in 2019 mainly resulted from the port authority's contribution to the construction of the sea lock in Terneuzen.
Extra investment by shipping agents and forwarders are mainly attributable to Seaport Brewing, a new company established in 2018, that invested in the construction of a brand new production facility where mainly tanks for beer production are set up.

FIGURE 2.6 CHANGE IN INVESTMENT AT NORTH SEA PORT FLANDERS
(in € million, current prices)



Source: NBB.

The top ten companies in terms of investment are listed in table 2.14, together reflecting 54% of all investment at North Sea Port Flanders in 2019.

TABLE 2.14 TOP 10 INVESTMENT AT NORTH SEA PORT FLANDERS

Rank	Name	Sector
1	Volvo Car Belgium	Car manufacturing
2	ArcelorMittal Belgium	Metalworking industry
3	Ghent Port Authority	Port authority
4	C-shift	Chemicals industry
5	Sadaci	Chemicals industry
6	Volvo Group Belgium	Car manufacturing
7	AWT Gent	Cargo handling
8	Dynea	Chemicals industry
9	Rousselot	Chemicals industry
10	Belgian Shell	Trade

Source: NBB.

2.3 Port of Zeebrugge

2.3.1 Port developments

In 2019, transshipment of cargo at the **port of Zeebrugge rose by 14.2% as a result of growth in all important cargo types**: liquefied bulk, roll-on roll-off and containers.

Liquid bulk volume rose enormously (+60.8%) to 10.8 million tonnes in 2019, as a result of higher LNG[34] volumes. In 2019, the Fluxys LNG terminal in Zeebrugge handled more LNG tankers, with a doubling of transshipments and at the same time unloading operations at the scaffolding. Moreover, the fifth LNG storage tank with a capacity of 180 000 m^3 LNG and associated process facilities under the long-term contract with Yamal Trade, built at the Fluxys LNG terminal, became operational in December 2019. With this additional capacity, LNG vessels at the Yamal production terminal can bypass LNG to conventional LNG vessels without having to dock two vessels at the same time.

Within the **RoRo segment** (16.5 million tonnes in 2019), 2.96 million new cars were handled, an increase of 4.6% compared to 2018. After one year of little change, 2019 was a new year of growth for the automotive sector in Zeebrugge which resulted into more deepsea RoRo (+13.9%). Thanks to positive results on Cobelfret's Santander link and the scaling-up of Finnlines link to Bilbao, short-sea RoRo traffic improved on destinations in Ireland (+6.3%) and Spain (+153%). On the other hand, volumes of RoRo cargo dropped on connections with Scandinavia (-2.7%) and the UK (-2.5%). The latter can be partly explained by a shift of cargo to Irish destinations.

Container traffic in total tonnage **increased** (+7%) to 16.2 million tonnes in 2019, while in TEU, the number of containers increased by 4.8% to 1.7 million TEU.

Dry bulk grew due to increasing volumes of sand and gravel, feed and grain. **Conventional cargo** is the only cargo type that **fell** in 2019. More wood, fresh fruit and vegetables were treated in the port of Zeebrugge, but less paper pulp, paper and cardboard were transshipped. In recent years, forest products have been shipped less as conventional cargo, but have instead been containerised. These volumes are therefore recorded in favour of containers. (Maatschappij van de Brugse Zeehaven, 2019)

TABLE 2.15 MARITIME TRAFFIC AT THE PORT OF ZEEBRUGGE
(in millions of tonnes)

	2017	2018	2019	2020	Change (%) 2018-2019	Change (%) 2019-2020	Share (%) 2019	Share (%) 2020
Containers	15.4	15.2	16.2	17.9	7.0	10.3	35.5	38.1
Roll-on roll-off	15.0	15.9	16.5	14.2	3.7	-14.2	36	30.1
Conventional cargo	1.3	1.0	0.9	0.6	-13.6	-29.2	2	1.3
Liquid bulk	4.1	6.7	10.8	12.6	60.8	16.5	23.7	26.8
Dry bulk	1.3	1.2	1.3	1.7	7.7	28.9	2.9	3.6
Total	37.1	40.1	45.8	47.0	14.2	2.7		

Source: Port authorities.

In 2020, the port of Zeebrugge handled a total volume of 47 million tonnes. The growth in containers, liquid and dry bulk offset the decline in RoRo, mainly owing to the drop in car traffic because of the COVID-19 crisis. **Container traffic increased by 10.3%** to 17.9 million tonnes or 1.8 million TEU in 2020. The growth was visible in deepsea, short-sea and estuary shipping. **Liquid bulk rose by 16.5%** due to an expansion in LNG to a record volume of 11 million tonnes, while other liquid bulk fell by 50% to 1.6 million tonnes. **Dry bulk rose to 1.7 million tonnes** thanks to infrastructure works in the port and due to the volume of animal feed that more than doubled.

The Chinese want to develop Zeebrugge into a strategic hub in their Silk Route. CSP Zeebrugge (Cosco[35] Shipping Ports Zeebrugge) started investing in raising cranes and is seeking to boost the capacity of the terminal from 1.2 to 2 million containers. The port of Zeebrugge and Yugo, a Chinese

[34] LNG stands for liquified natural gas.

[35] Cosco is a billion-dollar company with headquarters in Beijing, China. It is one of the largest shipping groups in the world and is controlled by the Chinese government.

logistics and trade company, are devoted to providing e-commerce services between Belgium and China. A signed Memorandum of Understanding is seen as an important step in the development of the Lingang Overseas Modern Industrial Park in Zeebrugge, which will serve exporters and importers from both the EU and China. Lingang is a major development company in China, owned by the city state of Shanghai, that builds and operates mega-business parks and even new cities. In May 2020 the Lingang Group received a building permit from the city Council of Bruges to develop in an initial phase at the Port of Zeebrugge a 15-hectare logistics zone, that will handle goods imported by containers from China to Europe or vice versa, for both e-commerce and traditional offline trade, such as textiles and electronics. Due to the decision not to build 'at risk', the construction project will only start as soon as a considerable volume has been pre-let.

Many agree that a second access to the inner port is necessary as a back-up to the Pierre Vandamme lock, but also to expand the port of Zeebrugge's capacity. **The Belgian Official Gazette published on 1 October 2019 the preferential decision of the Flemish government of 28 June 2019 for the old Visart lock as a location for a new second sea lock in Zeebrugge**. A legal period of 60 days followed to lodge an appeal with the Council of State for annulment of the preferential decision. Multiple objections were submitted. The Council of State is expected to make a ruling by the beginning of 2021, while in December 2020 its auditor advised the preferential decision to be overturned. It remains to be seen whether the Flemish Department of Mobility and Public Works and Port of Zeebrugge, together with the parties that objected to the preferential decision, can reach an agreement before the Council of State makes a final decision.

The announcement of the **new merged port Port of Antwerp-Bruges**, in mid-February 2021, came after more than a year of negotiations between the ports of Antwerp and Zeebrugge. The unification process is expected to take a year to finalise. By joining forces, the two ports want to arm themselves better to compete with other international ports and to be more resilient to the challenges of the future. Their current port activities are largely complementary: Antwerp excels in the traffic and storage of containers, breakbulk and chemical products; Zeebrugge is strong in RoRo, container handling and transshipment of liquefied natural gas. Combining the industrial cluster in Antwerp and Zeebrugge's location on the coast creates an opportunity to address the energy challenges in Flanders. In the unified port, Zeebrugge will play an important role in the energy market, as an import hub for green hydrogen, but also with the production of hydrogen. Pipelines between the two sites will serve consumers in Antwerp as well.

Even after Brexit, the port of Zeebrugge will remain the bridgehead for freight traffic to and from the United Kingdom with over 17 million tonnes of goods passing through this trade route every year. The **RX/SeaPort data platform,** which enables a digital connection between stakeholders in logistics and the Belgian customs authorities for import and export – is operational, as is the circulation and mobility plan of the port of Zeebrugge. Additional temporary parking spaces for freight traffic are provided as well. All logistics stakeholders have made numerous efforts.

The industrial site of International Car Operators (ICO) in Zeebrugge – an important worldwide hub for roll-on/roll-off goods – simultaneously became the **largest onshore wind farm in Flanders** with a total capacity of 44 megawatts, which amounts to an annual production of 110 GWh. This energy transition took place in cooperation with Engie and Port of Zeebrugge. In the short run, one-third of the cars passing through the port of Zeebrugge are expected to be electric. To charge them, a large number of electrical loading stations is required. The new wind farm – developed by ICO – will provide the necessary power. The wind energy produced will additionally be used by the local community and moored ships, allowing them to turn off their engines completely during port operations.

In addition, Colruyt and gas network operator Fluxys are planning to produce hydrogen from wind energy in Zeebrugge. The **Hyoffwind project** will be carried out by the Fluxys, Eoly and Parkwind consortium. Depending on when the necessary permits are obtained, construction of the hydrogen plant may start in mid-2021 and should be operational by the beginning of 2023.

2.3.2 Value added

Table 2.16 displays direct and indirect value added[36] at the port of Zeebrugge over the period 2014-2019. The total **direct value added in the port of Zeebrugge** in 2019 was **mainly** generated in the **maritime cluster** (57%): cargo handling accounted for almost a quarter of value added, while the public sector[37], as the second biggest branch, represented 9.6%. In the non-maritime cluster, the two biggest branches were the energy and trade sector, responsible for respectively 11% and 9% of direct value added in Zeebrugge.

TABLE 2.16 VALUE ADDED AT THE PORT OF ZEEBRUGGE
(in € million)

	2014	2015	2016	2017	2018	2019	Contribution to growth (%)* 2018-2019
Cargo handling	205.4	218.2	246.6	247.0	246.8	259.7	1.2
Public sector	107.1	103.3	103.1	103.0	102.3	103.6	0.1
Shipping agents and forwarders	68.9	84.8	67.1	69.3	66.0	79.2	1.3
Other maritime	160.0	172.9	173.0	178.5	175.2	174.0	-0.1
Maritime	541.4	579.1	589.7	597.9	590.3	616.6	2.5
Energy	98.4	91.5	89.8	93.7	91.4	119.4	2.7
Trade	85.7	85.8	88.1	88.1	99.2	98.5	-0.1
Road transport	47.7	45.6	50.1	59.7	62.8	53.1	-0.9
Other non-maritime	181.6	179.0	192.3	207.4	190.5	191.7	0.1
Non-maritime	413.4	401.9	420.4	448.9	443.9	462.7	1.8
Direct	954.9	981.0	1 010.2	1 046.8	1 034.2	1 079.3	4.4
Indirect	781.7	684.0	716.4	733.9	739.9	781.1	
Total	1 736.5	1 664.9	1 726.6	1 780.7	1 774.1	1 860.4	

Source: NBB.
* For definition of contribution to growth, see Annex 2.1.

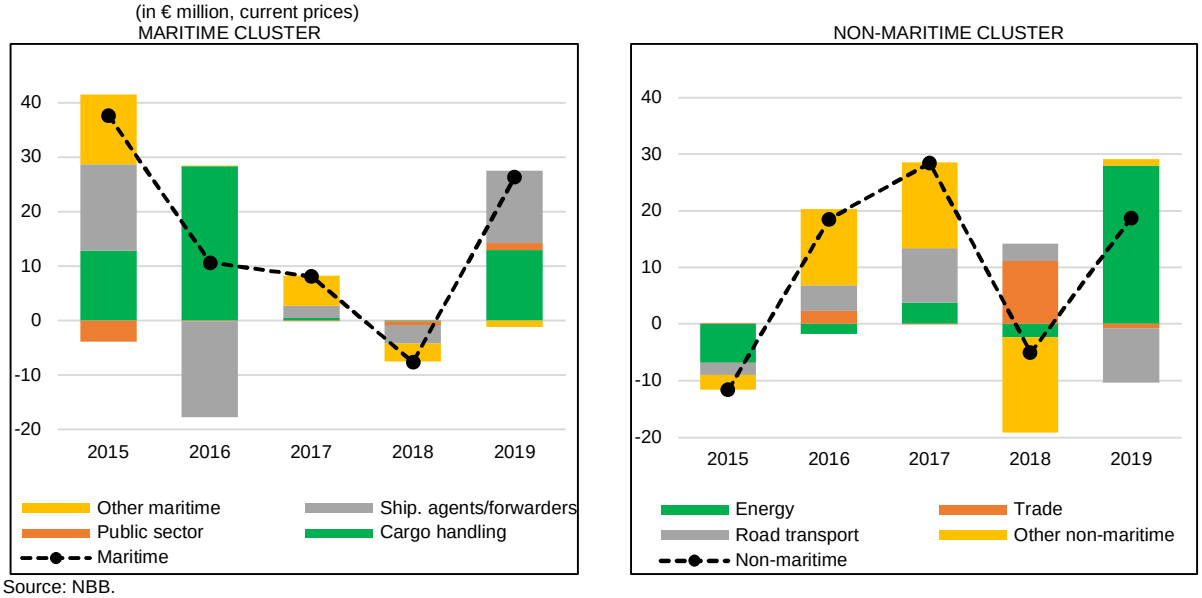
The port of Zeebrugge's direct value added grew by 4.4% in 2019. Both maritime and non-maritime clusters contributed, respectively with 2.5% and 1.8% to the total growth. The **main contributing maritime branches were cargo handling** (+1.2%), **shipping agents and forwarders** (+1.3%) and **port construction and dredging** (+0.6%), the last as element of other maritime sectors. Details at each branch level are shown in table 4.3.1 in Annex 4. The cargo handling sector's value added increased mainly due to the growth in maritime traffic at the port of Zeebrugge, which resulted into more recruitments of dockers by the employers' organization Centrale der Werkgevers Zeebrugge and thus led to higher wage costs and an increase in its value added. As in 2019, ECS European Containers took over part of the activities of DD Trans (with main operational activity in road transport), a shift in value added was visible away from road transport towards shipping agents and forwarders. Artes Depret, the Zeebrugge branch of port construction contractor Artes group, is active in the hydraulic engineering department and experienced an increase in value added in 2019 due to a higher operating result, increasing provisions and rising wage costs. In this branch turnover is only recorded on the basis of provisional acceptance of works.
The **shipping companies contributed negatively** to the total growth (-1.2%) mainly due to the uncertainty about Brexit throughout the year 2019.

Direct value added in the non-maritime cluster **grew as well**, more concretely **in the energy sector** (contribution of 2.7% to total growth) **and in other logistic services** (part of +0.4%). In Zeebrugge, the upturn in the energy sector was attributable to an increase in the net allowance for expansion investments

[36] Table 4.3.1 in Annex 4 reveals the details of the component economic sectors, their shares and changes over the years.
[37] The public sector consists mainly of the general government and Belgian Navy.

in liquefied natural gas plants. Moreover in 2019, the number of transshipments of LNG from ship to ship doubled, while a second LNG loading station for lorries was opened to meet the growing demand. The growing value added in other logistic services was partly due to rising wage costs at ECS Corporate due to extra recruitments by the parent company.

FIGURE 2.7 CHANGE IN VALUE ADDED AT THE PORT OF ZEEBRUGGE
(in € million, current prices)



Source: NBB.

The top ten companies in terms of value added are listed in table 2.17. All together, they account for half of the direct value added generated in the port of Zeebrugge.

The growth in indirect value added is larger than the rise in direct value added, due partly to "port construction and dredging", a branch whose multiplier is higher than those of other sectors, implying that its increase in direct value added resulted in an even larger gain in indirect value added.
Direct value added accounted for 0.4% of the Flemish Region's GDP and 0.2% of Belgian GDP. Total value added (including indirect effects) accounted for 0.4% of Belgian GDP.

TABLE 2.17 TOP 10 VALUE ADDED AT THE PORT OF ZEEBRUGGE

Rank	Name	Sector
1	Centrale der werkgevers Zeebrugge	Cargo handling
2	Fluxys LNG	Energy
3	Belgian Navy	Public sector
4	Zeebrugge Port Authority	Port authority
5	Public sector	Public sector
6	Fluxys Belgium	Energy
7	P.B.I. Fruit Juice Company	Food industry
8	Artes Depret	Port construction and dredging
9	Cobelfret Ferries	Shipping companies
10	International Car Operators	Cargo handling

Source: NBB.

2.3.3 Employment

Table 2.18 shows direct and indirect employment[38] at the port of Zeebrugge over the 2014-2019 period. In 2019, the maritime cluster employed almost two-thirds of the workforce at the port of Zeebrugge with the cargo handling branch as the biggest provider of employment (share of 32%) and the public sector following in second place (share of 13%), tracked by trade (8%) and road transport (7%).

TABLE 2.18 EMPLOYMENT AT THE PORT OF ZEEBRUGGE
(in FTE)

	2014	2015	2016	2017	2018	2019	Contribution to growth (%)* 2018-2019
Cargo handling	2 630	2 694	2 822	2 977	3 109	3 227	1.2
Public sector	1 563	1 478	1 443	1 399	1 357	1 332	-0.3
Shipping agents and forwarders	658	652	637	643	689	714	0.3
Other maritime	1 242	1 172	1 154	1 185	1 132	1 164	0.3
Maritime	6 092	5 997	6 056	6 205	6 287	6 437	1.5
Trade	803	849	875	827	829	855	0.3
Road transport	662	581	670	690	732	739	0.1
Other industries	447	418	399	415	401	404	0.0
Other non-maritime	1 449	1 485	1 566	1 577	1 579	1 596	0.2
Non-maritime	3 361	3 333	3 510	3 509	3 541	3 594	0.5
Direct	9 453	9 330	9 566	9 713	9 829	10 031	2.1
Indirect	9 876	8 740	9 025	9 143	9 587	9 899	
Total	19 329	18 070	18 591	18 856	19 416	19 929	

Source: NBB.
* For definition of contribution to growth, see Annex 2.1.

Direct employment grew by 2.1% to 10 031 FTE in 2019, with an increase in both the maritime (contribution of 1.5%) and non-maritime cluster (contribution of 0.5%). **The largest contribution came from cargo handling** (contribution of 1.2 %), reflecting more recruitments of dockers by the employers' organisation Centrale der Werkgevers Zeebrugge due to the growth in maritime traffic at the port of Zeebrugge. General cargo handling agent ICO (International Cargo Operator) and C.ro Ports Zeebrugge saw an increase in volumes handled in 2019 and consequently recruited additional staff as well. In the maritime cluster, the **public sector recorded a fall in employment** owing to fewer jobs in the Belgian Navy.

In the non-maritime segments, the **other logistics** (as a component of other non-maritime branches) contributed positively (with a share of +0.4%) to total direct employment growth mainly resulting from additional jobs at Esc Corporate, as mentioned in the previous section.

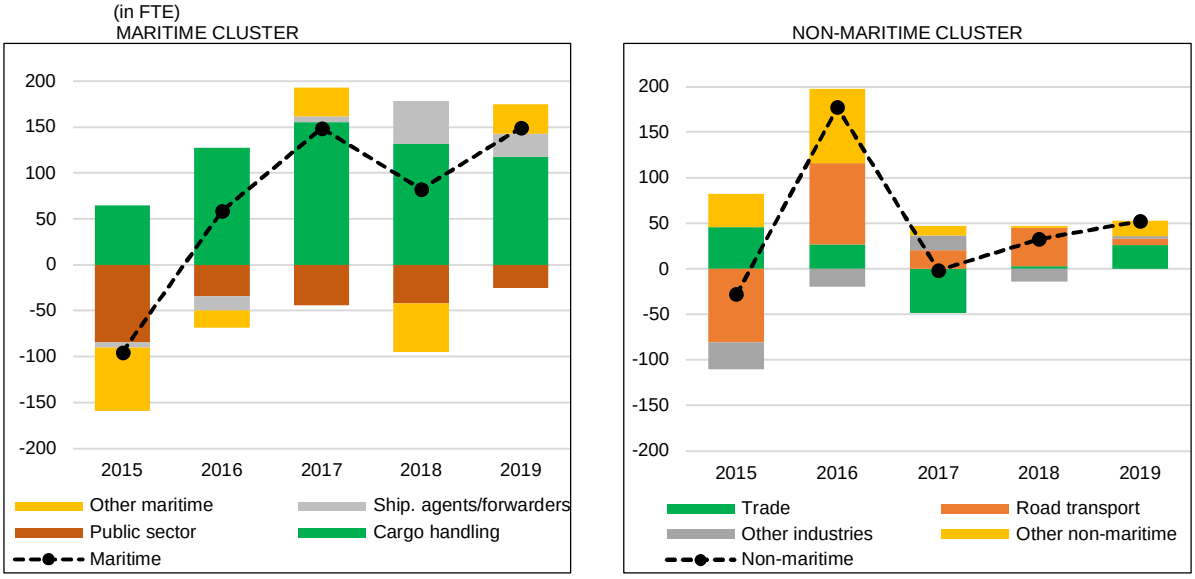
The top ten companies in terms of employment, listed in table 2.19 represent account for more than half of the staff working at the port of Zeebrugge.

The increase in the number of indirect jobs in the port of Zeebrugge was driven by the growth in direct employment. The main driving force was the cargo handling segment.
Direct employment accounted for 0.4% of all employment in the Flemish Region and 0.2% of Belgian domestic employment. Total employment, including indirect jobs, accounted for 0.5% of Belgian domestic employment.

[38] An overview of the employment figures for the component economic sectors at the port of Zeebrugge is given in table 4.3.2 in Annex 4.

FIGURE 2.8 CHANGE IN EMPLOYMENT AT THE PORT OF ZEEBRUGGE

(in FTE)



Source: NBB.

TABLE 2.19 TOP 10 EMPLOYMENT AT THE PORT OF ZEEBRUGGE

Rank	Name	Sector
1	Centrale der werkgevers Zeebrugge	Cargo handling
2	Belgian Navy	Public sector
3	Public sector	Public sector
4	P.B.I. Fruit Juice Company	Food industry
5	Mowi Belgium	Fishing and fish industry
6	Artes Depret	Port construction and dredging
7	Wallenius Wilhelmsen Logistics Zeebrugge	Cargo handling
8	I.V.B.O.	Other industries
9	International Car Operators	Cargo handling
10	2xl	Shipping agents and forwarders

Source: NBB.

2.3.4 Investment

Table 2.20 gives the investment[39] levels at the port of Zeebrugge over the 2014-2019 period. **Between 2018 and 2019, investment bounced back by 30.1%,** from € 242 million to € 316 million. In 2019, the energy sector invested the most in the port of Zeebrugge, accounting for almost one-third. The cargo handling sector was ranked second with a share of 14%, followed by the public sector (13%) and port authority (8%).

The last column in table 2.20 shows the contribution of each activity branch to total investment growth in 2019, with a maritime and non-maritime cluster both contributing positively but to a different extent.

[39] More details, together with the respective shares of the component economic sectors and their changes over the years, are shown in table 4.3.3 in Annex 4.

TABLE 2.20 INVESTMENT AT THE PORT OF ZEEBRUGGE
(in € million)

	2014	2015	2016	2017	2018	2019	Contribution to growth (%)* 2018-2019
Cargo handling	50.7	28.1	43.3	59.4	33.8	43.7	4.1
Public sector	13.4	9.0	7.5	30.6	3.2	42.5	16.2
Port authority	22.0	13.4	24.2	22.7	26.1	25.6	-0.2
Other maritime	28.0	35.3	47.0	38.9	26.7	30.1	1.4
Maritime	114.1	85.8	122.0	151.7	89.8	142.0	21.5
Energy	31.7	85.1	105.5	64.9	59.5	101.4	17.3
Trade	10.6	11.7	9.8	13.2	12.4	13.5	0.4
Other land transport	10.4	20.5	21.9	22.3	27.7	10.8	-7.0
Other non-maritime	37.0	40.1	56.1	51.2	52.9	48.2	-1.9
Non-maritime	89.7	157.4	193.3	151.7	152.5	173.9	8.8
Direct	203.8	243.2	315.3	303.4	242.3	315.9	30.4

Source: NBB.
* For definition of contribution to growth, see Annex 2.1.
Note: The pattern of investment is closely linked to projects and is therefore highly volatile, so that figures require a nuanced interpretation.

The positive contribution of the maritime cluster (+21.5% to total investment rise) resulted mainly from the public sector (part of 16.2%) **and the cargo handling** (contributing for 4.1%). The first refers to higher investment spending by the Flemish Region mainly due to the works on the Pierre Vandamme lock (renovation of the door, door room, replacement of road surface panels on bridges). The second came from increasing investment volumes by some major cargo handlers. The 2019 investments by CSP Zeebrugge Terminal formed part of the project to convert Zeebrugge into a hub for North West Europe, with a terminal with deepsea connections and feeder[40] services at once. The terminal was simultaneously expanded: five of the seven cranes were raised by an extra 12 metres up to 54 metres working height so the very largest container ships can be welcomed, while the two remaining cranes are kept to handle the feeders. Additionally, CSP Zeebrugge Terminal invested in expanding its fumigation[41] zone, so that Zeebrugge can position itself as the European gateway to Chinese markets for fumigated goods. International Car Operators (ICO) invested in the installation of a large number of electrical loading stations since one-third of the cars passing through the port of Zeebrugge are expected to be electric. Additionally, ICO's investment in 2019 included the construction of new head office and a 54-hectare expansion of the BastenakenTerminal in Zeebrugge.

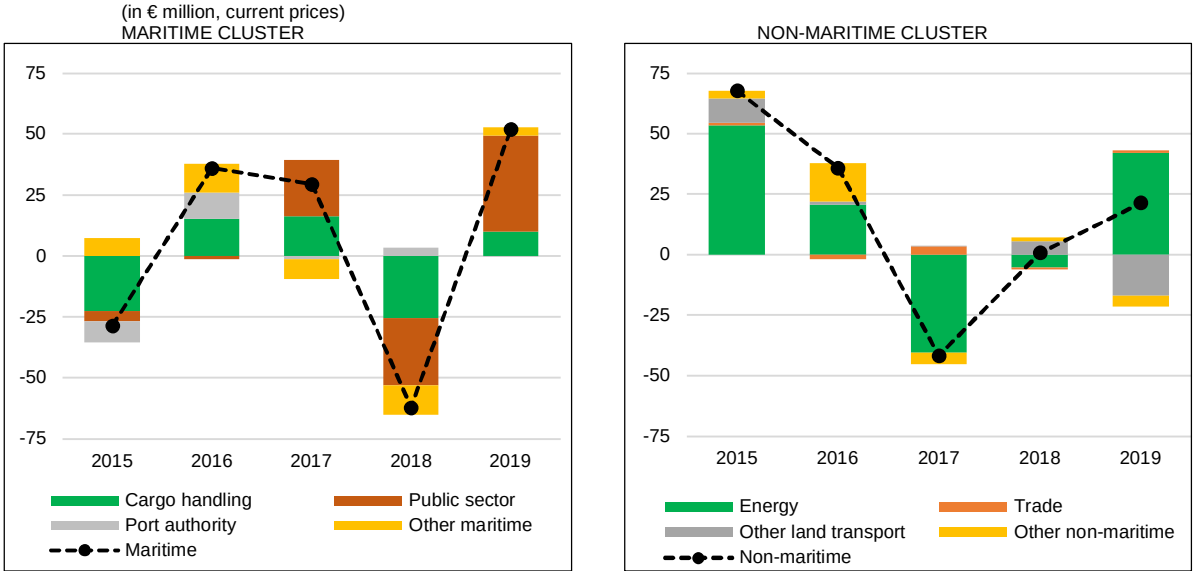
The growth in the non-maritime cluster (part of 8.8% to total growth) is mainly due to the energy sectors' higher investment. The large investment amount by ICO Windpark - established in 2019 with shareholders International Car Operations (ICO), Electrabel and Portfineco - aimed to build and operate 11 wind turbines at the port of Zeebrugge at the industrial areas of International Car Operators. The higher investment by Fluxys LNG in 2019 was used to finalise construction of the fifth LNG storage tank and to install extra LNG loading stations for lorries. Via the joint project company Libeccio I of Portfineco and Eneco Wind Belgium, new investment projects were carried out in 2019 for the installation of two new wind turbines, one on the Pepsico harbor concession and one on the European Food Center site.
The lower investment in "other land transport" may be explained by lower investment levels by the Belgian National Railway Company (BNRC) group in the port area of Zeebrugge.

[40] Feeder services connect to the international deepsea services.

[41] Fumigation means the disinfection of commodities with gas.

FIGURE 2.9 CHANGE IN INVESTMENT AT THE PORT OF ZEEBRUGGE

(in € million, current prices)



Source: NBB.

The top ten companies in terms of investment are listed in table 2.21 and represent 66% of all investment in the port of Zeebrugge in 2019. Zeebrugge Port Authority invested in the construction of quay walls and dredging works for the RoRo and car sector, the building of tunnel elements[42] for the Oosterweel connection in Antwerp, roads and bridges and the creation of extra parking zones in the context of Brexit. CldN-subsidiary, C.RO Ports Zeebrugge, prepared for capacity expansion of its terminal at the Brittany dock in 2019. At the same time the company planned to develop an additional 13 hectares of terminal at the Koning Albert II dock in the western outer port.

TABLE 2.21 TOP 10 INVESTMENT AT THE PORT OF ZEEBRUGGE

Rank	Name	Sector
1	Fluxys LNG	Energy
2	Public sector	Public sector
3	Zeebrugge Port Authority	Port authority
4	Ico Windpark	Energy
5	BNRC Group	Other land transport
6	International Car Operators	Cargo handling
7	Libeccio I	Energy
8	Csp Zeebrugge Terminal	Cargo handling
9	C.RO Ports Zeebrugge	Cargo handling
10	Umicore Specialty Materials Brugge	Chemicals industry

Source: NBB.

[42] The tunnel elements for the Antwerp Oosterweel connection will be made in Zeebrugge and will then be transported by tugboats via the North Sea and Western Scheldt to their new home in Antwerp.

2.4 Port of Ostend

2.4.1 Port developments

Like the port of Zeebrugge, the port of Ostend is located on the Belgian coast, being the smallest of the two coastal ports. The port of Ostend mainly focuses on the construction and maintenance of wind farms in the North Sea. While the port used to be the largest Flemish port in terms of passenger transport, it has largely converted its activity to cargo transshipment.

In 2019, maritime transshipment expanded by 5%, mainly due to the rise in the volume of dry bulk. The boom in construction in 2019 is partly responsible for the increased deliveries of sand and gravel from the sea. In the same year, Ostend welcomed 13 cruises with 3 782 passengers. The port is aiming at smaller cruise ships from the higher market segment.

In 2020, the port of Ostend handled 1.491 million tonnes, a **drop of 6%** on 2019 due to the COVID-19 virus. Despite the fall in handled tonnage, the port recorded 20% more shipping movements, mainly resulting from an extra number of work vessels for the "blue economy".

TABLE 2.22 MARITIME TRAFFIC AT THE PORT OF OSTEND
(in millions of tonnes)

	2017	2018	2019	2020	Change (%) 2018-2019	Change (%) 2019-2020
Total	1.4	1.5	1.6	1.5	5.3	-6.2

Source: Mora Mobiliteitsraad *"De Vlaamse havens – Feiten, statistieken en indicatoren voor 2019"*, port authorities.

As the port of Ostend wants to distinguish itself as **a "blue energy port**" – a port that offers all kinds of services to offshore wind farms – in 2019, the port authority bought all the shares held by PMV, DEME and Artes Group in REBO[43] and as such became the only shareholder in REBO (Renewable Offshore Base Oostende). As sole shareholder, the port authority maximised its efforts to promote the growth of business activities at this REBO terminal.

The construction of SeaMade, the eighth and last wind farm in the first concession zone on the Belgian part of the North Sea was finalized in 2020. It will take a few more years before construction of the second wave of wind farms in the western part of the Belgian North Sea will start. In the meantime, the port authority is looking for other activities for the REBO terminal. The focus is on project cargo and the dismantling of wind turbines, gas and oil structures.

Now Brexit is completed and new practicalities for shipping are clear, the port of Ostend has a **new ambition to set up a liner service with the UK and Ireland in the context of bulk and project cargo**. The recent broadening of the port access, the refined infrastructure for receiving RoRo ships and the full availability of the REBO terminal after the completion of the SeaMade wind farm are positive elements in this new ambitious project.

To further r**einforce the circular industry**, the port authority concluded a 20-year concession contract with the new company West Recycle at the end of 2019. This firm will build a production unit where waste materials will be processed into end products to reuse in the construction sector. Next to the West Recycle site are the Canadian company AIM Recycling Europe, which processes non-ferrous materials and Renasci, which is under construction and will process waste into energy and raw materials without residual waste. In this way, a cluster of companies active in the circular economy is slowly emerging in the inner port.

[43] REBO is the entity that manages the large offshore platform in the outer port from which the installation of wind farms in the Belgian part of the North Sea is carried out. REBO acts as a logistics developer that invests in and rents out infrastructure (heavy-duty quay, quay walls, office buildings, etc.) on Ostend port sites.

In addition, hydraulic engineering group DEME, financier PMV and Ostend Port Authority are **planning to build the first European large hydrogen factory**, **Hyport**, to use offshore wind power by 2025. The main sales market for Hyport will be hydrogen as transport fuel.

In its search for **innovative activities**, the Ostend Port Authority has granted a concession on the ex-Beliard site to ECA Robotics Belgium which will build a 5 000-square-metre drone factory that will be operational at the beginning of 2022. The company will build a production centre for underwater drones in 2021, thanks to the mine hunter contract between the Belgian and Dutch Navies.

The Flanders Marine Institute (VLIZ) has applied for a permit for the construction of a new innovation centre for maritime robotics, Ocean Innovation Space, which should become a breeding ground for ideas for the Blue economy.

2.4.2 Value added

Table 2.23 reports direct and indirect value added[44] at the port of Ostend over the 2014-2019 period.
In 2019, the non-maritime cluster generated more than two-thirds (71%) of value added with the metalworking industry as the biggest provider (35%). The maritime cluster, generating 29% of value added, is nevertheless very important, with the public sector (public administration and Belgian Navy) and the port construction and dredging segment respectively producing 10% and 9% of direct value added.

TABLE 2.23 VALUE ADDED AT THE PORT OF OSTEND
(in € million)

	2014	2015	2016	2017	2018	2019	Contribution to growth (%)* 2018-2019
Public sector	51.7	56.2	58.3	59.2	61.7	63.2	0.3
Port construction and dredging	57.6	70.5	57.1	42.6	47.8	53.3	1.0
Fishing and fish industry	39.8	38.8	40.6	43.6	38.2	33.0	-0.9
Other maritime	23.3	23.5	22.9	23.6	27.1	25.5	-0.3
Maritime	172.4	189.0	178.9	169.1	174.8	175.0	0.0
Metalworking industry	169.6	168.3	164.5	190.6	199.1	210.4	2.0
Construction	31.7	33.9	30.8	39.2	35.0	43.8	1.6
Chemicals industry	36.7	34.3	38.4	36.6	38.6	38.1	-0.1
Other non-maritime	89.1	108.3	114.5	107.1	120.6	133.6	2.3
Non-maritime	327.1	344.7	348.2	373.5	393.2	426.0	5.8
Direct	499.5	533.7	527.1	542.6	568.0	600.9	5.8
Indirect	384.9	388.2	367.2	378.6	397.8	431.2	
Total	884.4	921.9	894.3	921.2	965.8	1 032.1	

Source: NBB.
* For definition of contribution to growth, see Annex 2.1.

After strong annual growth in 2018, **direct value added boosted** again **by 5.8%** to € 601 million in 2019, **fully driven by growth in the non-maritime cluster**. **Explanatory segments are the metalworking industry, construction and other logistic services,** the latter as a component of "other non-maritime branches", contributing respectively 2%, 1.6% and 1.6% to total growth. The first came from an increase in turnover with a positive impact on the operating result and value added at Daikin Europe, due to the growing air conditioning market in North Europe and an expanding European market for heat pumps. The second - the increase in value added at the construction sector - was partly due to the start of public works in mid-2019 to widen the access channel to the port of Ostend. These construction works will probably take two years. Construction companies experience more fluctuations in value added than other

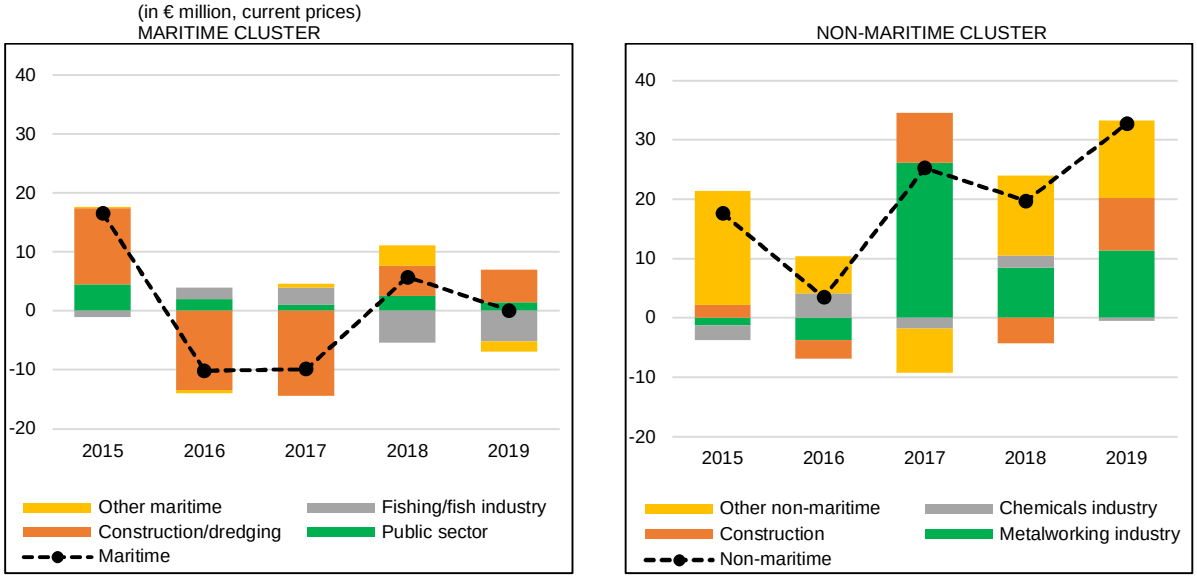
[44] Table 4.4.1 in Annex 4 reveals the details of the component economic sectors, their shares and changes over the years.

branches, since turnover can only be recorded on the basis of provisional acceptance of works. The third - the rising value added in other logistic services - resulted from increasing wage costs in MHI Vestas Offshore Wind Belgium, a subsidiary of the Danish producer of wind turbines MHI Vestas, that expanded its employment in 2019. Extra employees were needed to serve more than 240 wind turbines at sea from the Port of Ostend. In mid-2019, the company additionally absorbed MHI Vestas Offshore Wind Bligh Bank and MHI Vestas Offshore Wind Northwind, before operating as metalworking industries as main activity.

In the maritime cluster, the positive part of the port construction and dredging (+1% to total growth) was completely offset by the negative input (-0.9%) from the fishing and fish industry. The port construction and dredging sectors value added increased due to the rising operating profit generated by the dredging projects of Baggerwerken Decloedt & Zoon. In addition to maintenance dredging works in the maritime access roads in the North Sea, the company is also active in a variety of specialist and complex hydraulic engineering domains in Europe, Africa and South America. The fishing and fish industries value added reduced mainly due to lower wage costs in Morubel, which is a member of the shrimp group Shore. The company experienced a difficult year in 2018, as such it was forced to restructure, which resulted in a lower number of jobs and therefore a lower wage bill.

FIGURE 2.10 CHANGE IN VALUE ADDED AT PORT OF OSTEND

(in € million, current prices)



Source: NBB.

TABLE 2.24 TOP 10 VALUE ADDED AT THE PORT OF OSTEND

Rank	Name	Sector
1	Daikin Europe	Metalworking industry
2	Baggerwerken Decloedt & Zoon	Port construction and dredging
3	Public sector	Public sector
4	Verhelst Aannemingen	Construction
5	Proviron Functional Chemicals	Chemicals industry
6	Aquafin Nv	Other industries
7	Algemene Ondernemingen Soetaert	Construction
8	Mhi Vestas Offshore Wind Belgium	Other logistic services
9	Biostoom Oostende	Energy
10	Mainfreight Logistic Services Belgium	Road transport

Source: NBB.

The top ten companies in terms of value added (table 2.24), accounted for 66% of direct value added generated in the port of Ostend in 2019.

In 2019, the growth in indirect value added is even larger than the rise in direct value added, due partly to construction and port construction and dredging, two branches whose multipliers are higher than those of other sectors, implying that their rise in direct value added resulted in even larger gains in indirect value added. The metalworking industry and other logistic services generated extra value added in their supplier sectors as well.

Direct value added represented 0.2% of the Flemish Region's GDP and 0.1% of Belgian GDP. Total value added, including indirect effects, accounted for 0.2% of Belgian GDP.

2.4.3 Employment

Table 2.25 shows direct and indirect employment[45] at the port of Ostend over the 2014-2019 period. Similar to the distribution of value added, the non-maritime cluster employed two-thirds of the workforce at the port of Ostend, and the maritime cluster one-third. The metalworking industry was the biggest provider of employment with 30%. The public sector (public administration and Belgian Navy) followed in second place with 15%, tracked by the fishing and fish industry (8%), construction (8%), road transport (8%), and the port construction and dredging sector (6%).

TABLE 2.25 EMPLOYMENT AT THE PORT OF OSTEND
(in FTE)

	2014	2015	2016	2017	2018	2019	Contribution to growth (%)* 2018-2019
Public sector	740	772	786	770	767	775	0.2
Fishing and fish industry	409	422	412	426	433	414	-0.4
Port construction and dredging	381	364	345	332	328	323	-0.1
Other maritime	344	311	306	299	312	323	0.2
Maritime	1 875	1 868	1 850	1 826	1 840	1 835	-0.1
Metalworking industry	1 450	1 431	1 388	1 445	1 498	1 614	2.3
Construction	413	421	432	439	420	415	-0.1
Road transport	406	419	417	416	408	408	0.0
Other non-maritime	915	980	947	852	926	1 007	1.6
Non-maritime	3 184	3 251	3 183	3 152	3 251	3 443	3.8
Direct	5 058	5 120	5 033	4 978	5 091	5 278	3.7
Indirect	4 307	4 267	4 072	4 110	4 234	4 372	
Total	9 365	9 386	9 105	9 088	9 325	9 650	

Source: NBB.
* For definition of contribution to growth, see Annex 2.1.

Direct employment grew by 3.7% to 5 278 FTE in 2019, mainly explained by the increase in the non-maritime cluster. **The biggest contribution came from the metalworking industry** (contribution of 2.3% to total growth). Due to the growing air conditioning market in North Europe and an expanding European market for heat pumps, Daikin Europe recruited more workers. The other non-maritime sector made a positive contribution (1.6%) to total employment growth as well, explained by the **job growth in other logistic services**. MHI Vestas Offshore Wind Belgium, a subsidiary of the Danish producer of wind turbines MHI Vestas, expanded its employment in 2019, as explained in the previous section. In mid-2019 the company also absorbed MHI Vestas Offshore Wind Bligh Bank and MHI Vestas Offshore Wind Northwind, whose employees were before active in the metal working industry.

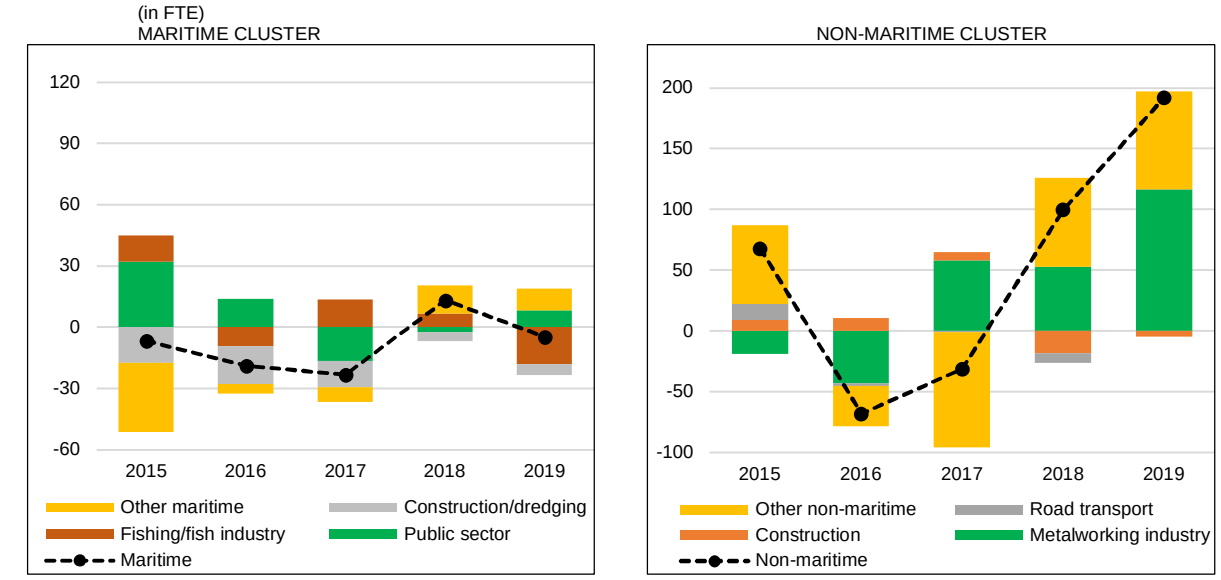
[45] An overview of the employment figures for the component economic sectors is given in table 4.4.2 in Annex 4.

In the maritime segments, the public sector and the shipbuilding and repair branch, this last branch as a component of other maritime sectors, **contributed positively to total direct job growth** as well (respectively with 0.2% and 0.3%). Most notably, extra jobs were created at the Vlaams Instituut voor Zee and at Eigen Vermogen van het Instituut voor Landbouw en Visserijonderzoek, two public entities. And Clemaco Contracting, a company offering an "all-in" maintenance solution for many types of naval- and maritime vessels, hired extra workers.
Jobs in the fishing and fish industry went down by 19 FTE, partly due to less employment at Morubel resulting from its restructuring process as mentioned in previous section.

The top ten companies in terms of employment, shown in table 2.26 represent 64% of the workforce at the port of Ostend.

In 2019, indirect employment at Port of Ostend expanded. The metalworking industry, together with “other logistic services” were the main branches generating extra jobs in the supplier sectors.
Direct employment represented 0.2% of the employment in the Flemish Region and 0.1% of Belgian domestic employment. Total employment, including indirect job creation, accounted for 0.2% of Belgian domestic employment.

FIGURE 2.11 CHANGE IN EMPLOYMENT AT PORT OF OSTEND



Source: NBB.

TABLE 2.26 TOP 10 EMPLOYMENT AT THE PORT OF OSTEND

Rank	Name	Sector
1	Daikin Europe	Metalworking industry
2	Public sector	Public sector
3	Baggerwerken Decloedt & Zoon	Port construction and dredging
4	Verhelst Aannemingen	Construction
5	Mainfreight Logistic Services Belgium	Road transport
6	Proviron Functional Chemicals	Chemicals industry
7	Clemaco Contracting	Shipbuilding and repair
8	Algemene Ondernemingen Soetaert	Construction
9	Belgian Navy	Public sector
10	Morubel	Fishing and fish industry

Source: NBB.

2.4.4 Investment

The amounts invested at the port of Ostend over the 2014-2019 period are reported in table 2.27[46]. In 2019, other industries, whose investment doubled, invested the most in the port of Ostend, accounting for one-fourth of the sums invested. The metalworking industry was ranked second with a share of 23%. Other major investors were the construction and fishing and fish industry.

TABLE 2.27 INVESTMENT AT THE PORT OF OSTEND
(in € million)

	2014	2015	2016	2017	2018	2019	Contribution to growth (%)* 2018-2019
Fishing and fish industry	4.0	4.3	4.1	11.1	10.9	10.6	-0.2
Public sector	13.9	13.8	23.8	5.4	32.7	6.8	-19.7
Shipping agents and forwarders	0.6	2.5	3.8	0.4	1.6	2.2	0.5
Other maritime	51.9	1.6	2.2	5.2	3.7	4.4	0.5
Maritime	70.5	22.2	33.8	22.1	48.9	24.0	-18.9
Other industries	1.4	18.8	14.4	10.7	12.6	28.4	12.0
Metalworking industry	11.2	12.5	8.7	11.2	21.4	25.6	3.2
Construction	13.6	10.6	21.2	15.1	20.1	10.8	-7.0
Other non-maritime	22.8	16.6	15.9	25.6	28.7	22.4	-4.8
Non-maritime	48.9	58.5	60.2	62.5	82.8	87.3	3.4
Direct	119.5	80.7	94.0	84.6	131.7	111.3	-15.5

Source: NBB.
* For definition of contribution to growth, see Annex 2.1.
Note: The pattern of investment is closely linked to projects and is therefore highly volatile, so figures require a nuanced interpretation.

Direct investment in the port of Ostend fell by 15.5% from € 132 million to € 111 million in 2019. **The sectors contributing the most to the total decline in investment in 2019 were the public sector and construction**. The high investment by the Flemish Region in 2018, used for widening the port channel at the Halve Maan and the restoration of the Westerstaketsel, was not repeated in 2019, which explained the lower investment by the public sector. Falling investment in construction resulted from less investment by several construction companies.

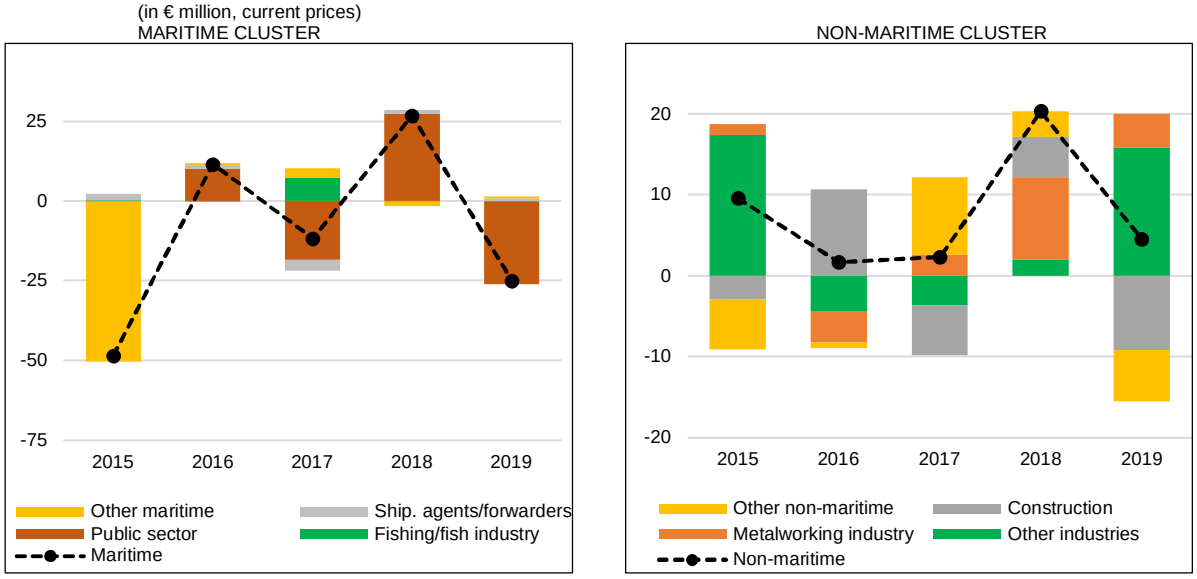
The **expanding investment volumes in other industries** (contribution of 12% to the total change), partly countered the total decline in sums invested in the total port area. The other industries sector doubled its investment in 2019 thanks to higher figures under the heading “assets under construction” for Renasci Oostende Recycling and Renasci Oostende Smart Chain Processing, two subsidiaries of Renasci Oostende Holding. This concerned investment in establishing a new waste recycling plant in Ostend that eventually aims to recycle 120 000 tonnes of household and industrial waste annually. The aim is to use new technologies to recycle plastic, metal and paper, on the one hand, and to convert non-recyclable waste into biodiesel, pellets and filling material for the construction industry, on the other hand.

The top ten companies in terms of investment are listed in table 2.28, together they reflect 64% of all investment at the port of Ostend in 2019.

[46] Table 4.4.3 in Annex 4 illustrates investment at the port of Ostend in detail, together with the respective shares of the component economic sectors and their changes over the years.

FIGURE 2.12 CHANGE IN INVESTMENT AT PORT OF OSTEND

(in € million, current prices)



Source: NBB.

TABLE 2.28 TOP 10 INVESTMENT AT THE PORT OF OSTEND

Rank	Name	Sector
1	Daikin Europe	Metalworking industry
2	Renasci Oostende Recycling	Other industries
3	Aquafin Nv	Other industries
4	Verhelst Aannemingen	Construction
5	Public sector	Public sector
6	Renasci Oostende Smart Chain Processing	Other industries
7	Algemene Ondernemingen Soetaert	Construction
8	Proviron Functional Chemicals	Chemicals industry
9	Verhelst Machines	Metalworking industry
10	Cool Solutions	Shipping agents and forwarders

Source: NBB.

2.5 Liège port complex

2.5.1 Port developments

Belgium's largest inland port, the Liège port complex, experienced **a small decline** in its cargo traffic **to 15.9 million tonnes in 2019**. The three container terminals in the Liège port complex (Renory, Trilogiport and Euroports) together handled 10 700 TEU more than in 2018. Container volume increased from 40 665 TEU in 2015 to 96 330 in 2019. Container transport as well as secondary raw materials and waste transport showed an upward trend. All other types of commodities (coal, metals, wood, petroleum, agricultural and chemical products) were either down or unchanged in 2019.

In 2020, the volume of freight shipped declined by 1.9 million tonnes, reflecting the economic impact of the pandemic.

TABLE 2.29 MARITIME TRAFFIC AT THE LIÈGE PORT COMPLEX
(in millions of tonnes)

	2017	2018	2019	2020	Change (%) 2018-2019	Change (%) 2019-2020
Total	15.9	16.0	15.9	14.0	-0.4	-12.1

Source: Port authority.

The joint venture between the Liège Container Terminal (LCT) and Trilogiport, named as **DPW Liège Container Terminal,** was a good deal for both parties, as the LCT terminal in Renory suffered from shortage of space, while DP World, the Trilogiport operator, had a hard time starting up and attracting more volumes. LCT container volumes have grown by 20% annually over the last few years, while DP World has offered many expansion opportunities and space for logistics. On top of this, container volumes can now be bundled more effectively, which can reduce congestion in seaports.

In 2020, DPW Liège Container Terminal not only extended its existing railway but also constructed a second rail track. The Port Authority of Liège and the Walloon government invested € 2 million in this rail connection. Due to the full rail track connection, the LCT and Trilogiport are now truly trimodal terminals. In the meantime, two rail links with China are operational. The cargoes consist mainly of medical equipment, e-commerce commodities and textiles.
Trilogiport's logistics platform is taking shape as well, with over 100m^2 warehouses in all.

2.5.2 Value added

Table 2.30 shows direct and indirect value added[47] at the Liège port complex over the period 2014-2019. In terms of value added, the complex is mainly non-maritime, so this cluster's share was 97% in 2019, largely consisting of the metalworking industry (21%), energy (21%) and construction (14%).

Direct value added in the Liège port complex increased by 5.7% in 2019, resulting from the rise in the non-maritime cluster. The **strong positive contribution of the energy sector** (+13.9%) can be explained by wider capacity in the nuclear power plants and gains from savings plans, which have led to a higher operating result and thus more value added.
The **falling value added in the metalworking industry** (share of -9.2% in the overall trend), **partly offset the positive contribution of the energy sector**. Many industrial metalworking companies suffered a drop in their value added, due to lower operating profits triggered by the crisis in the European steel industry. The biggest impact however came from ArcelorMittal Belgium and its subsidiary in Liège. Following ArcelorMittal's takeover of Ilva in Italy, it was ordered by the European Commission to dispose of a certain number of assets in order to prevent concentrations impeding effective competition in the European Economic Area. This imposition led to a split in the Liège site of ArcelorMittal Belgium where

[47] Table 4.5.1 in Annex 4 notes value added for more detailed branches, together with their respective shares and their changes over the years.

the demerged part became a new entity that was sold to the British group Liberty Steel in mid-2019. The drop in value added in the metal working industry at the port Liège complex was largely explained by this event, since this new entity was not operational for several months.

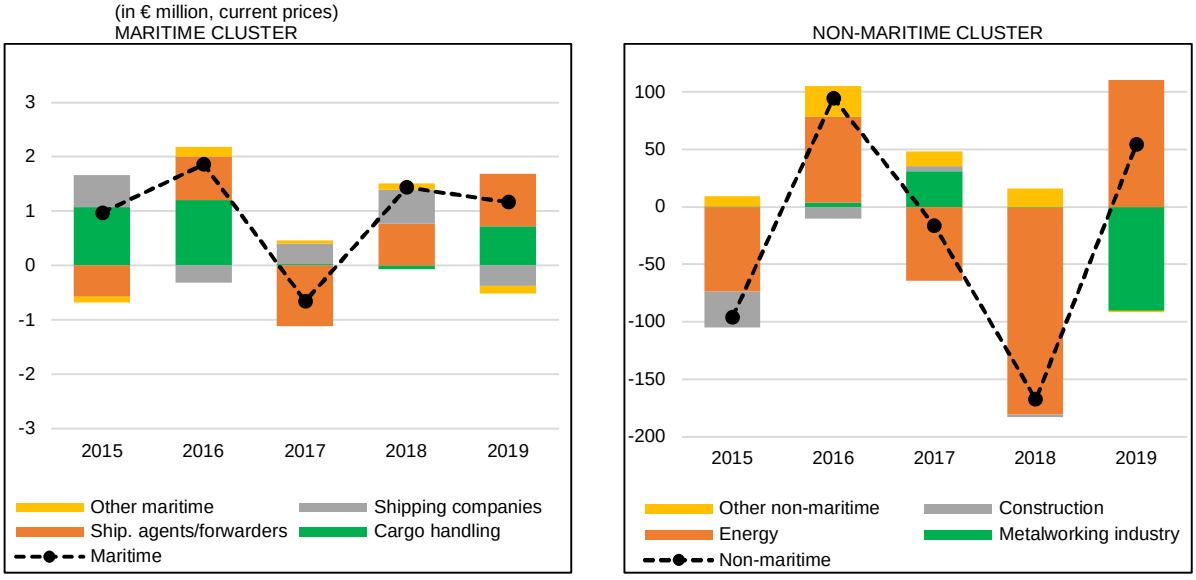
The growing value added in the construction sector (contribution of +1% to total change) was partly attributable to Cimenteries CBR that saw both higher operating profit and wage costs in 2019, the latter owing to the acquisition of Beton Baguette Marcel by Cimenteries CBR in 2018.

TABLE 2.30 VALUE ADDED AT THE LIÈGE PORT COMPLEX
(in € million)

	2014	2015	2016	2017	2018	2019	Contribution to growth (%)* 2018-2019
Cargo handling	13.1	14.2	15.4	15.4	15.4	16.1	0.1
Shipping agents and forwarders	3.6	3.1	3.9	2.7	3.5	4.5	0.1
Shipping companies	3.6	4.2	3.8	4.2	4.8	4.5	0.0
Other maritime	3.2	3.1	3.3	3.3	3.4	3.3	0.0
Maritime	23.5	24.5	26.4	25.7	27.2	28.3	0.1
Metalworking industry	274.6	275.0	278.9	310.0	309.1	218.3	-9.2
Energy	324.7	250.8	324.9	260.5	80.5	216.9	13.9
Construction	175.8	145.1	134.9	139.1	136.8	146.5	1.0
Other non-maritime	366.9	375.5	402.6	415.5	431.3	430.6	-0.1
Non-maritime	1 142.0	1 046.3	1 141.3	1 125.0	957.7	1 012.3	5.5
Direct	1 165.5	1 070.8	1 167.6	1 150.7	984.8	1 040.6	5.7
Indirect	1 145.4	969.3	1 045.1	1 096.6	1 000.5	934.6	
Total	2 310.9	2 040.1	2 212.8	2 247.3	1 985.3	1 975.3	

Source: NBB.
* For definition of contribution to growth, see Annex 2.1.

FIGURE 2.13 CHANGE IN VALUE ADDED AT THE LIEGE PORT COMPLEX
(in € million, current prices)



Source: NBB.

The ten biggest companies in terms of value added, mentioned in table 2.31, accounted for 70% of the direct value added created in the Liège port complex in 2019.

Although direct value added increased at the Liège port complex, indirect value added fell in 2019. The drop was mainly due to the metalworking industry branch's multiplier being, larger than that of other sectors, implying that its decline in direct value added led to even larger losses in indirect value added.

The companies delivering inputs to the energy sector generated extra value added which partly offset the drop overall. Direct value added accounted for 0.2% of Belgian GDP or 0.9% of the GDP in the Walloon Region in 2019. Total value added, including indirect effects, accounted for 0.4% of Belgian GDP.

TABLE 2.31 TOP 10 VALUE ADDED AT THE LIÈGE PORT COMPLEX

Rank	Name	Sector
1	Electrabel	Energy
2	ArcelorMittal Belgium	Metalworking industry
3	Prayon	Chemicals industry
4	Biowanze	Fuel production
5	N. et B. Knauf et Cie	Construction
6	Cockerill Maintenance & Ingenierie	Metalworking industry
7	Carrières et Fours à Chaux Dumont-Wautier	Construction
8	Cimenteries CBR Cementbedrijven	Construction
9	Association Intercommunale de Traitement des Déchets Liégeois	Other industries
10	Imerys Mineraux Belgique	Chemicals industry

Source: NBB.

2.5.3 Employment

Table 2.32 illustrates the (in)direct employment[48] figures at the Liège port complex over the period 2014-2019. In terms of full-time equivalent jobs, the Liège port complex is mainly non-maritime with a stable share of 95% during the period. The biggest employer providers are the metalworking industry (30%), energy (15%) and the chemicals industry (13%).

TABLE 2.32 EMPLOYMENT AT THE LIÈGE PORT COMPLEX
(in FTE)

	2014	2015	2016	2017	2018	2019	Contribution to growth (%)* 2018-2019
Cargo handling	153	157	174	185	189	203	0.2
Shipping agents and forwarders	47	41	42	44	58	68	0.1
Shipping companies	52	53	55	52	53	51	0.0
Other maritime	44	43	45	44	43	45	0.0
Maritime	296	294	316	325	343	367	0.3
Metalworking industry	2 783	2 440	2 307	2 357	2 374	2 433	0.7
Energy	1 293	1 286	1 244	1 219	1 197	1 199	0.0
Chemicals industry	996	1 011	1 036	1 032	1 032	1 046	0.2
Other non-maritime	2 924	3 139	2 904	2 975	2 891	2 986	1.2
Non-maritime	7 996	7 877	7 492	7 584	7 495	7 665	2.2
Direct	8 292	8 170	7 808	7 909	7 837	8 032	2.5
Indirect	11 199	10 013	9 721	10 005	10 425	10 828	
Total	19 491	18 184	17 528	17 914	18 262	18 860	

Source: NBB.
* For definition of contribution to growth, see Annex 2.1.

Direct employment in the Liège port complex grew by 2.5% in 2019, mainly **due to the positive contribution by the metalworking industry** (adding 0.7% to total change) **and "other non-maritime branches**" (+1.2% to total increase).

[48] More details for all component economic sectors, together with their shares and changes over time are noted in Annex 4 table 4.5.2.

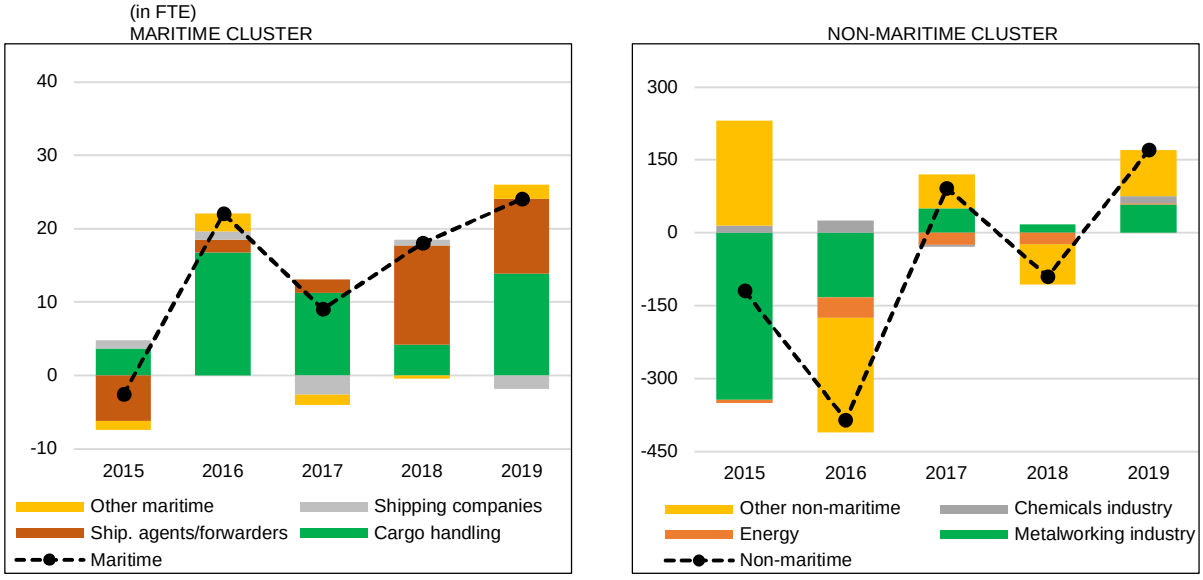
The extra employment generated in the metalworking industry came from extra hirings in Cockerill Maintenance & Ingenierie, subsidiary of the John Cockerill group. The transfer of a part of the Liège activity by ArcelorMittal Belgium – under pressure from the EU competition authority – to a new created entity, sold to the British group Liberty Steel, had no impact on the aggregated employment level, since the new entity is considered to be part of the Liège port population as well.

Job increases in the "other non-maritime branches" came from employment growth in **other logistic services, other industries and construction**, respectively contributing 0.6%, 0.4% and 0.3% to the total increase in employment. Arjemo, a logistics provider within the steel sites of the Liège basin, expanded its customer base: ArcelorMittal Belgium was no longer the only client, as subsidiaries of the Liberty Steel group also became clients in 2019, resulting in additional workforce. Cimenteries *CBR,* producer of cement for concrete applications or masonry, increased its staff number partly as result of the acquisition of Beton Baguette Marcel by Cimenteries *CBR* in 2018.

Employment grew slowly in the maritime cluster (contribution of +0.3% to total change), owing to a small increase in employment in the cargo handling branch and in the shipping agents and forwarders sector. The former was due to a rise in container volumes at the three container terminals (Renory, Trilogiport and Euroports) at the Liège port complex

FIGURE 2.14 CHANGE IN EMPLOYMENT AT THE LIEGE PORT COMPLEX

(in FTE)



Source: NBB.

The ten biggest companies in terms of full-time equivalents, mentioned in table 2.33, represented 63% of all full-time equivalents employed directly in the Liège port complex in 2019. Direct employment accounted for 0.2% of Belgian domestic employment or 0.7% of the employment in the Walloon Region in 2019. Total employment, including indirect job creation, accounted for 0.4% of the Belgian domestic employment.

In contrast to the fall in indirect value added, indirect employment rose at an even stronger pace than the upward trend in direct employment in 2019. This trend is mainly down to the metal working and chemicals industries, whose multipliers were higher than those in other branches. Extra jobs in those sectors led to even stronger job creation in the suppling companies delivering inputs to the metalworking and chemicals industries.

TABLE 2.33 TOP 10 EMPLOYMENT AT THE LIÈGE PORT COMPLEX

Rank	Name	Sector
1	Electrabel	Energy
2	ArcelorMittal Belgium	Metalworking industry
3	Cockerill Maintenance & Ingenierie	Metalworking industry
4	Prayon	Chemicals industry
5	Association Intercommunale de Traitement des Déchets Liégeois	Other industries
6	Liberty Liège - Dudelange (BE)	Metalworking industry
7	Cimenteries CBR Cementbedrijven	Construction
8	N. et B. Knauf et Cie	Construction
9	Carrières et Fours à Chaux Dumont-Wautier	Construction
10	Arjemo	Other logistic services

Source: NBB.

2.5.4 Investment

Table 2.34 notes the investment[49] levels at the Liège port complex over the 2014-2019 period. **In 2019, investment shrank by 12.9%** from € 236 million to € 205 million. 96% of the investment at the Liège port complex in 2019 came from the non-maritime cluster. The energy sector invested the most, accounting for more than one-fourth of the sums invested. The chemicals industry was ranked second with a share of almost 20%.

TABLE 2.34 INVESTMENT AT THE LIÈGE PORT COMPLEX
(in € million)

	2014	2015	2016	2017	2018	2019	Contribution to growth (%)* 2018-2019
Cargo handling	2.6	3.0	6.9	3.6	4.0	4.3	0.1
Public sector	0.0	3.4	0.3	0.8	1.2	2.3	0.5
Port authority	0.3	0.8	0.1	0.2	0.5	0.6	0.0
Other maritime	2.3	0.8	1.3	1.2	1.0	0.5	-0.2
Maritime	5.2	8.0	8.6	5.9	6.7	7.6	0.4
Energy	79.8	93.3	66.4	63.6	75.2	58.9	-6.9
Chemicals industry	18.4	31.4	31.8	29.9	40.3	40.3	0.0
Metalworking industry	30.5	27.3	35.2	55.8	43.5	32.1	-4.8
Other non-maritime	64.5	59.1	54.4	87.3	70.0	66.5	-1.5
Non-maritime	193.2	211.1	187.7	236.7	228.9	197.7	-13.2
Direct	198.4	219.1	196.3	242.6	235.7	205.4	-12.9

Source: NBB.
* For definition of contribution to growth, see Annex 2.1.
Note: The pattern of investment is closely linked to projects and is therefore highly volatile, so figures require a nuanced interpretation.

Investment in the non-maritime cluster contributed negatively (-13.2%), while conversely, investment in the maritime cluster contributed positively (+0.4%) to the total investment change in 2019. Falling investment in the non-maritime cluster was **due to lower sums invested in the energy** (contribution of -6.9%), **in the metalworking industry** (part of -4.8%) **and in "other non-maritime sectors"** (contribution of -1.5% to total change). Lower investment levels in the **energy sector** were due to a lower amount for maintenance investment at the Tihange nuclear power station, after extra investments was made in 2018 by Electrabel to modernise and extend the service life of the nuclear production units. ArcelorMittal Belgium, as the biggest metalworking company in Liège, continued to

[49] More details, together with the respective shares of the component economic sectors and their changes over the years, are shown in table 4.5.3 in Annex 4.

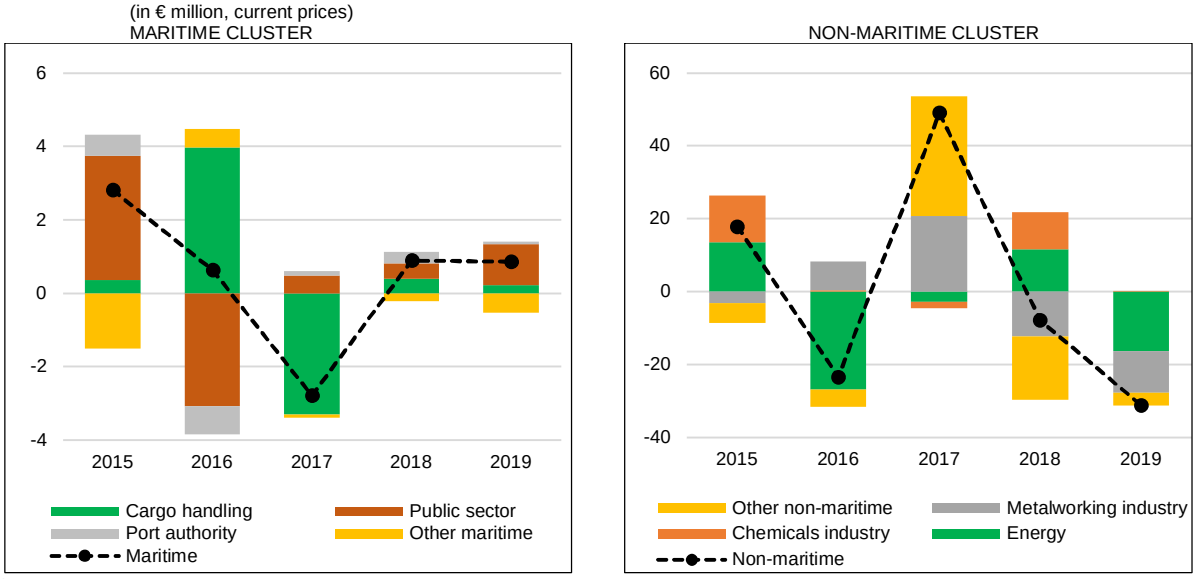
invest in 2019 despite the weak steel market. This increase was completely offset by reduced investment volumes by other industrial metalworking companies. The drop in investment in "other non-maritime sectors" resulted mainly from lower investment in fuel production and other industries, notably by Biowanze, a producer of bioethanol from wheat and sugar beet and also because of investment cuts by two major players in "other industries".

The **limited investment growth in the maritime cluster (contribution of +0.4% to total growth**) was explained by higher investment by cargo handlers and the public sector. The latter refers to infrastructure investment by the Walloon Region, concerning new docks, roads and railways.

The top ten companies in terms of investment are listed in table 2.35 and accounted for 74% of all investment in the Liège port complex in 2019.

FIGURE 2.15 CHANGE IN INVESTMENT AT THE LIEGE PORT COMPLEX

(in € million, current prices)



Source: NBB.

TABLE 2.35 TOP 10 INVESTMENT AT THE LIÈGE PORT COMPLEX

Rank	Name	Sector
1	Electrabel	Energy
2	Prayon	Chemicals industry
3	ArcelorMittal Belgium	Metalworking industry
4	EDF Luminus	Energy
5	Association Intercommunale de Traitement des Déchets Liégeois	Other industries
6	Biowanze	Fuel production
7	Cimenteries CBR Cementbedrijven	Construction
8	Carrières et Fours à Chaux Dumont-Wautier	Construction
9	Société Industrielle Liégeoise Des Oxydes	Chemicals industry
10	Recyclage et Valorisation Technique	Other industries

Source: NBB.

2.6 Port of Brussels

2.6.1 Port developments[50]

The record figure of 5.2 million tonnes of maritime traffic in 2018 was maintained in 2019. The two most important types of cargo were building materials and petroleum products, the first growing (+1.6%), the second dropping slightly (-7.3%) partly due to mild weather conditions in 2019 and drastic changes in the travel habits of Brussels inhabitants. Container traffic secured third place in 2019 with a new all-time record volume for this type of transport in Brussels (+24%) with nearly 45 000 TEU.

With more than 4.9 million tonnes of transshipments in 2020, the 5.3% decline in maritime traffic is minimal, considering that the lockdown in the first quarter of 2020 had led to a sharp slowdown in port activity in Brussels and that, in the past, only the year 2018 and 2019 had exceeded 5 million tonnes of goods transported. The top three product categories traded at the port of Brussels remained unchanged from the previous year: building materials (-5.3%), petroleum products (-7.7%) and containers (-4.4%). The suspension of work on construction sites and the reduced number of moves during the spring lock-down explained the fall in transshipped building materials and petroleum products.

TABLE 2.36 MARITIME TRAFFIC AT THE PORT OF BRUSSELS
(in millions of tonnes)

	2017	2018	2019	2020	Change (%) 2018-2019	Change (%) 2019-2020
Total	4.8	5.2	5.2	4.9	0.0	-5.3

Source: Port authority.

The port of Brussels wants to promote the multimodal connection between rail and waterways by allowing freight transport by rail to arrive in the outer port. In this way, the port will become more attractive and can strengthen supply chains at European level while at the same time reducing the carbon impact.

In addition, the port of Brussels wants to contribute to an ecological transition of the economy and support companies that are part of that transition, for instance by facilitating the development of the circular economy in Brussels.

2.6.2 Value added

Direct value added at the port of Brussels in 2019 was **mainly generated in the non-maritime cluster** (98%): other logistic services accounted for 63% of value added and trade, as the second biggest branch, provided 18%. Table 2.37 gives direct and indirect value added[51] at the port of Brussels over the period 2014-2019.

Direct value added in the port of Brussels rose by 5.4% to € 844.4 million in 2019, **owing to other logistic services and trade**: contributing 3.5% and 2.3% respectively.
The headquarters of Solvay, the mayor player in other logistic services in Brussels, and Plastic Omnium Advanced Innovation and Research[52], another important logistic service company, both generated more value added owing to higher operating results because of extra other operating income. The increase in trade can mainly be explained by a big wholesaler of chemical products for industrial use (Solvay Chemicals International), that doubled its operating profit due to higher sales prices.

[50] Sources: Port of Brussels.

[51] Table 4.6.1 in Annex 4 reveals the details of the component economic sectors, their shares and changes over the years.

[52] The company is in charge of innovations (R&D) in on-board energy systems and the reduction of polluting emissions for the Plastic Omnium Group.

The top ten companies in terms of value added (table 2.38) account for three quarters of the direct value added generated in port of Brussels.

The growth in indirect value added followed the rise in direct value added albeit to a lesser extent, since other logistic services and trade have a small multiplier, implying that extra value added in those branches definitely leads to more value added in its suppliers companies but on a smaller scale.

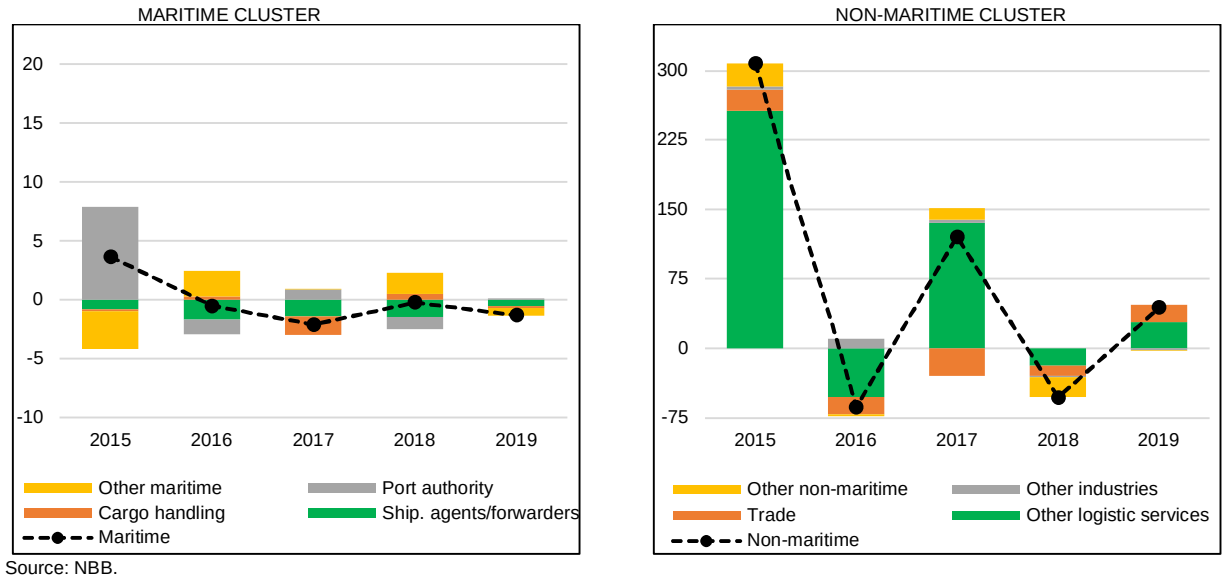
Direct value added accounted for 1.0% of the GDP of the Brussels Capital Region and 0.2% of Belgian GDP. Total value added, including indirect effects, accounted for 0.3% of Belgian GDP.

TABLE 2.37 VALUE ADDED AT THE PORT OF BRUSSELS
(in € million)

	2014	2015	2016	2017	2018	2019	Contribution to growth (%)* 2018-2019
Shipping agents and forwarders	13.2	12.3	10.7	9.2	7.8	7.2	-0.1
Cargo handling	6.4	6.3	6.5	5.0	5.5	5.3	0.0
Port authority	-1.9	6.0	4.7	5.5	4.5	4.6	0.0
Other maritime	1.3	-1.9	0.2	0.3	2.1	1.4	-0.1
Maritime	19.0	22.6	22.1	20.0	19.9	18.5	-0.2
Other logistic services	187.6	443.8	390.7	525.8	507.2	535.2	3.5
Trade	173.7	196.8	178.8	148.6	137.5	156.2	2.3
Other industries	45.3	48.4	58.5	62.3	60.4	58.1	-0.3
Other non-maritime	62.3	87.8	85.7	97.7	76.3	76.3	0.0
Non-maritime	468.9	776.9	713.7	834.4	781.5	825.9	5.5
Direct	487.9	799.5	735.8	854.5	801.3	844.4	5.4
Indirect	354.5	475.4	464.8	503.8	465.9	488.0	
Total	842.4	1 274.9	1 200.6	1 358.3	1 267.3	1 332.4	

Source: NBB.
* For definition of contribution to growth, see Annex 2.1.

FIGURE 2.16 CHANGE IN VALUE ADDED AT THE PORT OF BRUSSELS
(in € million, current prices)



Source: NBB.

TABLE 2.38 TOP 10 VALUE ADDED AT THE PORT OF BRUSSELS

Rank	Name	Sector
1	Solvay	Other logistic services
2	Plastic Omnium Advanced Innovation And Research	Other logistic services
3	Solvay Chemicals International	Trade
4	Aquiris	Other industries
5	Ineos Services Belgium	Other logistic services
6	Scania Belgium	Trade
7	Bruxelles Energie - Brussel Energie	Other industries
8	Solvay Specialty Polymers Belgium	Chemicals industry
9	Total Belgium	Trade
10	Loomis Belgium	Other logistic services

Source: NBB.

2.6.3 Employment

Table 2.39 shows that **direct employment[53] at the port of Brussels declined with 28 full-time equivalents in 2019 (-0.7%).** Like in the value added section, most of the employment at Brussels' port was generated in the non-maritime cluster (92%): one-third in other logistic services and 26% in the trade segment.

TABLE 2.39 EMPLOYMENT AT THE PORT OF BRUSSELS
(in FTE)

	2014	2015	2016	2017	2018	2019	Contribution to growth (%)* 2018-2019
Port authority	122	125	123	122	120	125	0.1
Shipping agents and forwarders	167	178	136	114	109	115	0.1
Cargo handling	99	87	83	54	55	56	0.0
Other maritime	17	21	23	18	19	20	0.0
Maritime	405	411	366	309	304	316	0.3
Other logistic services	1 212	1 216	1 222	1 265	1 243	1 257	0.4
Trade	1 369	1 388	1 274	1 165	1 073	1 024	-1.3
Other industries	343	352	369	357	358	376	0.5
Other non-maritime	852	897	854	865	875	851	-0.6
Non-maritime	3 777	3 853	3 719	3 651	3 548	3 507	-1.1
Direct	4 182	4 264	4 085	3 960	3 852	3 824	-0.7
Indirect	3 690	3 810	3 537	3 313	3 223	3 175	
Total	7 872	8 074	7 622	7 273	7 075	6 999	

Source: NBB.
* For definition of contribution to growth, see Annex 2.1.

The fall in direct employment in 2019 was entirely **attributable to the drop** in the non-maritime sector, more precisely by the decline **in the trade segment** (contribution of -1.3%) **and the metalworking industry** (contribution of -0.4% to total change) **partly countered by small growth in the other industries and other logistic services,** contributing respectively 0.5 and 0.4% to total change.

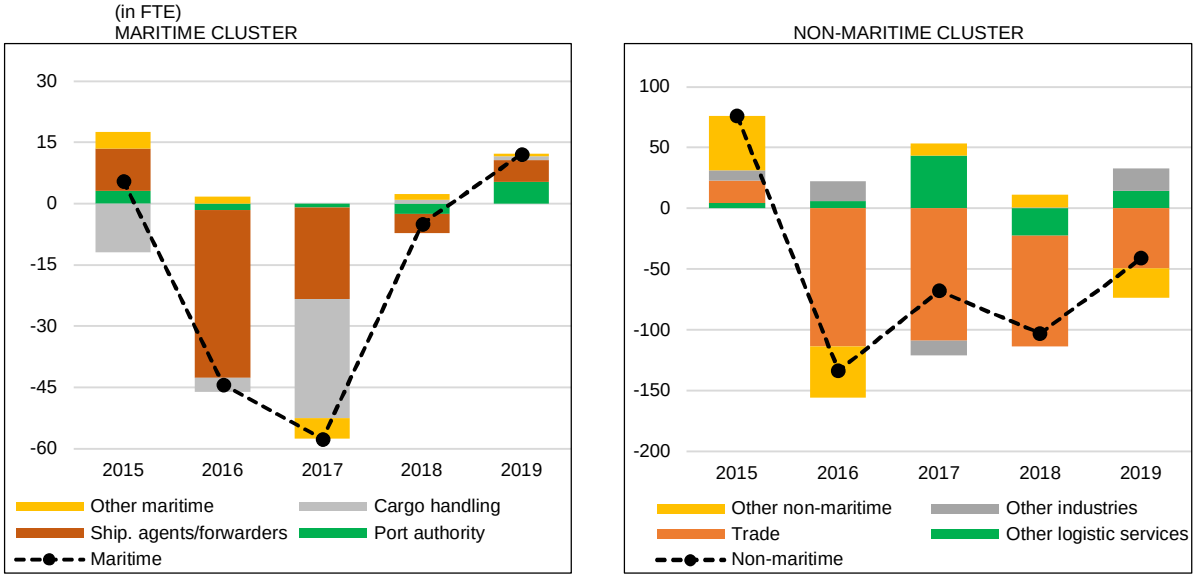
The job losses in the trade branch stemmed from many trade firms cutting back their staff numbers and the movement of a trade company (Emiel De Roeck en Zonen) away from the port site. The reduced employment in the metalworking industry came mainly from a drop in jobs at Feneko, a producer of

[53] Table 4.6.2 in Annex 4 gives details on employment figures at the port of Brussels, together with the respective shares of the branches and their change over time.

aluminum door panels and windows, while another metalworking producer moved its subsidiary established in Brussels to an area outside the geographical site of the port of Brussels.
The job growth in other industries resulted from several other industrial firms increasing their staff numbers. The other logistic services benefited in particular from the development of additional recruits by Solvay and extra hirings by Loomis Belgium, a leading supplier of cash management.

The ten biggest employers (table 2.40) accounted for 45% of all full-time equivalents employed directly in the port of Brussels in 2019. Indirect employment fell partly because of lower direct employment in trade and metalworking industry. Direct employment represented 0.6% of the employment in the Brussels-Capital Region and 0.1% of Belgian domestic employment. Total employment, including indirect workplaces, accounted for 0.2% of Belgian domestic employment.

FIGURE 2.17 CHANGE IN EMPLOYMENT AT THE PORT OF BRUSSELS



Source: NBB.

TABLE 2.40 TOP 10 EMPLOYMENT AT THE PORT OF BRUSSELS

Rank	Name	Sector
1	Solvay	Other logistic services
2	Brussels Port Authority	Port authority
3	Scania Belgium	Trade
4	Loomis Belgium	Other logistic services
5	Plastic Omnium Advanced Innovation And Research	Other logistic services
6	Suez R&R Be North	Other industries
7	Ceres	Food industry
8	Ineos Services Belgium	Other logistic services
9	Ziegler	Road transport
10	Corden Pharma Brussels	Chemicals industry

Source: NBB.

2.6.4 Investment

Table 2.41 notes the investment[54] levels at the port of Brussels over the 2014-2019 period. **In 2019, investment fell slightly by -1.4%** from € 104 million to € 103 million. 89% of the funds invested in the Brussels port came from the non-maritime cluster. "Other logistic services" invested more than half of the total sums invested. Trade was ranked second (share of 11%).

Investment in the maritime cluster declined due to lower sums invested by the port authority, public sector and port trade, which reflected a negative contribution of respectively -0.6%, -0.3% and -0.8% to the total investment change in 2019, partly offset by a higher investment volume in cargo handling (contribution of 0.8% to total change). The latter benefited from the strong growth of one company's investment (Fri-Agra) in its installations, machinery and tools.

Investment in the non-maritime cluster remained stable. While sums invested in trade and other industries (contributing respectively -2% and -2.7% to total evolution) fell, investment in other logistic services and the chemicals industry contributed positively with respectively 2.4% and 2.3%. In trade, several firms invested less. In the other industries segment, the Brussels waste water treatment plant Aquiris's major investment amount in land and buildings in 2018 was halved in 2019, resulting in lower investment volumes for the segment. The other logistic services branch benefited from higher amounts invested in 2019 by Solvay, while the increased investment levels in chemicals resulted from a more than doubling of the investment amounts in two of the three largest chemicals companies in the Brussels port area.

In terms of investment, the top ten companies accounted in 2019 for almost three-quarters of the total investment amount at the port of Brussels.

TABLE 2.41 INVESTMENT AT THE PORT OF BRUSSELS
(in € million)

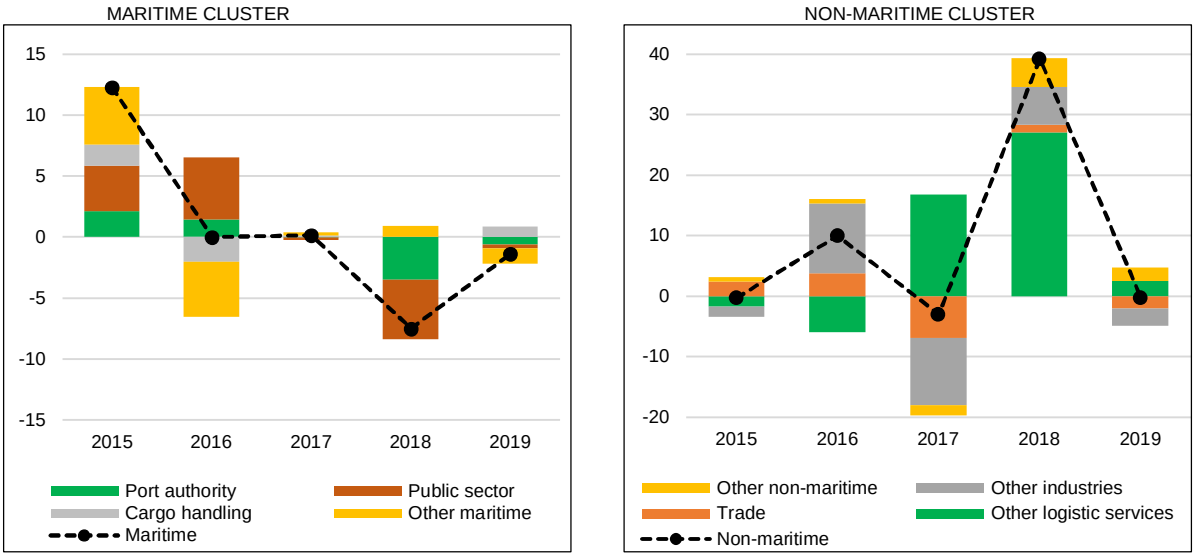
	2014	2015	2016	2017	2018	2019	Contribution to growth (%)* 2018-2019
Port authority	5.4	7.5	9.0	9.0	5.5	4.9	-0.6
Public sector	0.0	3.7	8.8	8.6	3.7	3.4	-0.3
Cargo handling	1.6	3.3	1.3	1.5	1.5	2.3	0.8
Other maritime	0.6	5.3	0.8	1.1	2.0	0.7	-1.2
Maritime	7.6	19.9	20.0	20.1	12.7	11.3	-1.3
Other logistic services	19.4	17.7	11.8	28.6	55.7	58.2	2.4
Trade	13.5	16.0	19.8	12.9	14.1	12.0	-2.0
Other industries	3.4	1.7	13.2	2.2	8.5	5.6	-2.7
Other non-maritime	9.0	9.7	10.4	8.6	13.3	15.5	2.1
Non-maritime	45.4	45.1	55.2	52.3	91.6	91.4	-0.1
Direct	53.0	65.1	75.2	72.4	104.3	102.8	-1.4

Source: NBB.
* For definition of contribution to growth, see Annex 2.1.
Note: The pattern of investment is closely linked to projects and is therefore highly volatile, so figures require a nuanced interpretation.

[54] More details, together with the respective shares of the component economic sectors and their changes over the years, are shown in table 4.6.3 in Annex 4.

FIGURE 2.18 CHANGE IN INVESTMENT AT THE PORT OF BRUSSELS

(in € million, current prices)



Source: NBB.

TABLE 2.42 TOP 10 INVESTMENT AT THE PORT OF BRUSSELS

Rank	Name	Sector
1	Plastic Omnium Advanced Innovation And Research	Other logistic services
2	Solvay	Other logistic services
3	Brussels Port Authority	Port authority
4	Ziegler	Road transport
5	Public sector	Public sector
6	Go4green Project Financing	Energy
7	Aquiris	Other industries
8	Solvay Specialty Polymers Belgium	Chemicals industry
9	Van Dijk Foods Belgium	Trade
10	Loomis Belgium	Other logistic services

Source: NBB.

3 BELGIUM'S INTERNATIONAL TRADE BY SEA TRANSPORT

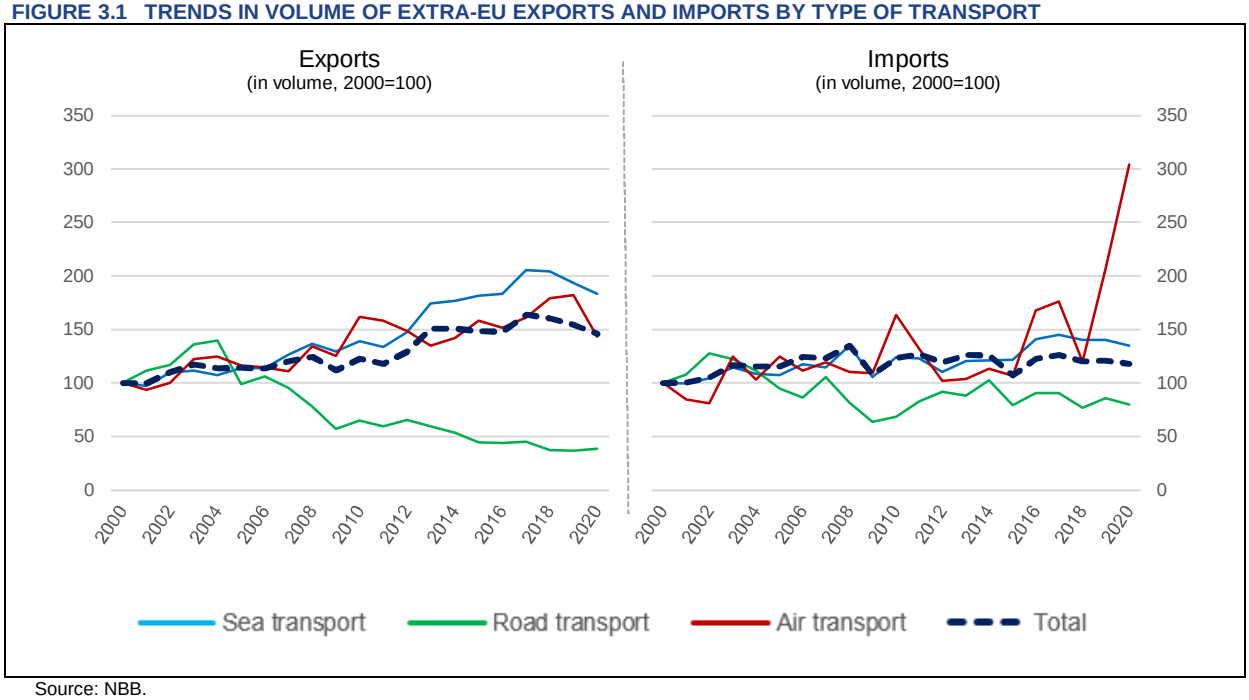
Customs declarations, made by companies that exchange goods with partners located outside the European Union[55], provide a lot of information on the nature of the goods exported and imported by Belgium, and in particular on the mode of transport chosen to trade with these markets.

On the basis of the data available within the Bank, it is thus possible to obtain monthly changes in Belgian exports and imports outside the EU by major modes of transport: sea, air, rail, river, road, etc. The purpose of this section is to present the changes in international shipping trade. It also focuses particularly on the trade situation during the COVID-19 pandemic. The purpose here is not to analyse exports and imports in value terms, as is often the case in the literature, but to look at the volume of trade (expressed in tonnes transported) and at the contribution of the main transport modes to this trade.

In 2000, there were 22 449 Belgian firms exporting outside the EU and 21 973 Belgian firms importing from outside the EU. While the number of exporting firms declined steadily to 16 367 in 2020, the number of importing firms increased steadily to 41 735 in 2016 and then declined to 38 798 in 2020.

Among exporting firms, more and more companies have resorted to maritime transport. For instance, 40% of exporting companies in 2000 used this mode of transport. This share had reached almost 50% by 2020. As for imports, the percentage of companies using maritime transport dropped from 33% of importing companies in 2000 to 25% in 2020.

FIGURE 3.1 TRENDS IN VOLUME OF EXTRA-EU EXPORTS AND IMPORTS BY TYPE OF TRANSPORT



Source: NBB.

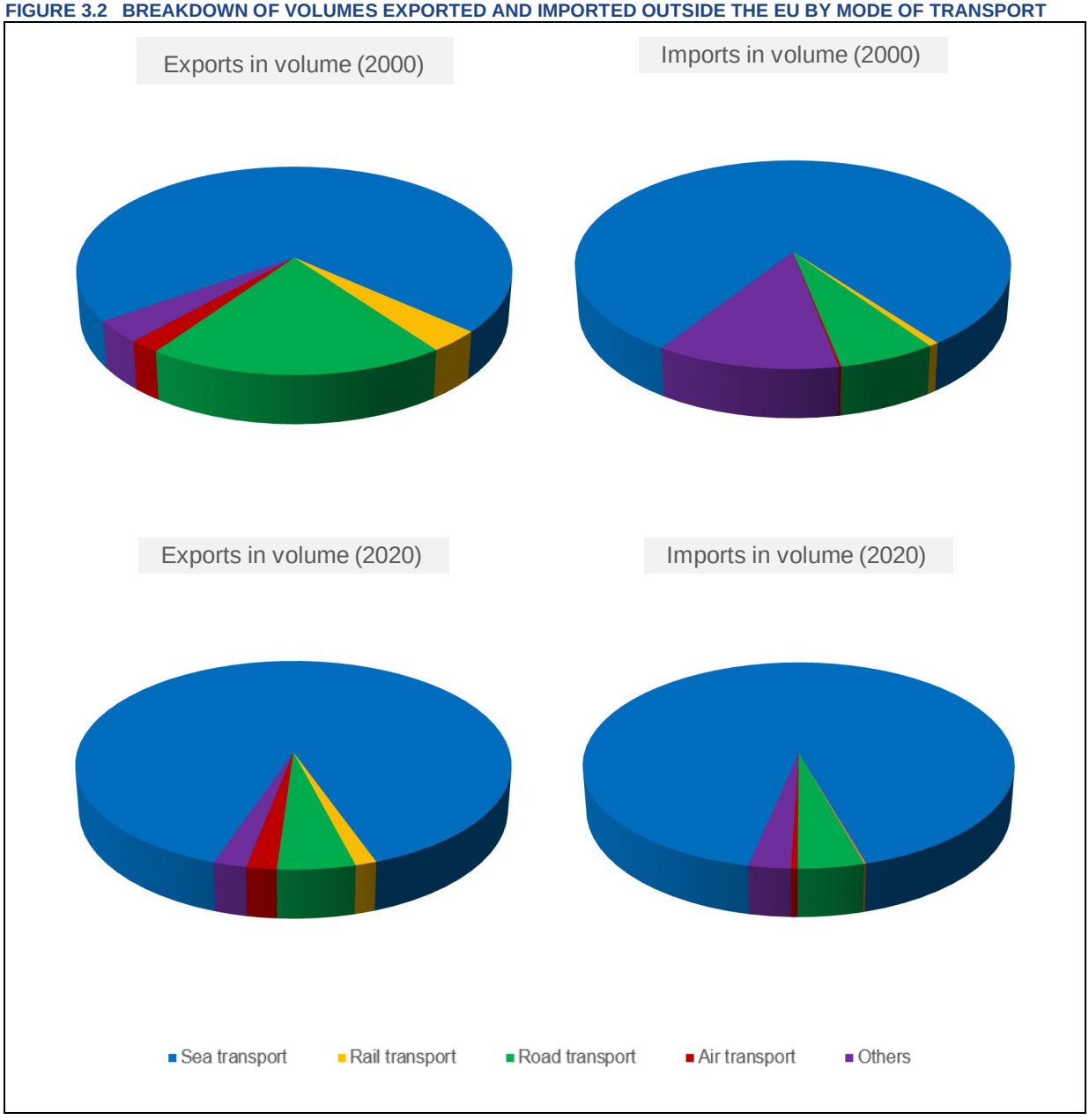
Even though of maritime transport in international trade is concentrated in the hands of a few companies, it is nevertheless true that it is the dominant mode of transport for trade outside the EU. This mode of transport accounted for respectively 71 and 80% of all exported and imported volumes in 2000. By 2020, its market share had reached respectively 90 and 92% of exported and imported volumes.

Volumes transported by ship have thus globally grown at a more sustained rate than the total volumes traded over the last 20 years. This has also been the case for trade by air transport although the market

[55] Trade flows with the UK are not covered in our figures as these flows did not require a custom declaration until 1 January 2021.

share of this mode of transport is much more marginal. Since 2000, volumes exported by sea and by air outside the EU grew on average by 3.5% and 3.2% per year respectively between 2000 and 2019, i.e. at a higher rate than the overall volume of exports outside the EU (2.3%). In terms of import volumes, the growth of the two modes of transport was also more sustained than total growth (1% per year), although growth of maritime transport (1.8% per year) was less sustained than that of air transport (3.8% per year).

FIGURE 3.2 BREAKDOWN OF VOLUMES EXPORTED AND IMPORTED OUTSIDE THE EU BY MODE OF TRANSPORT

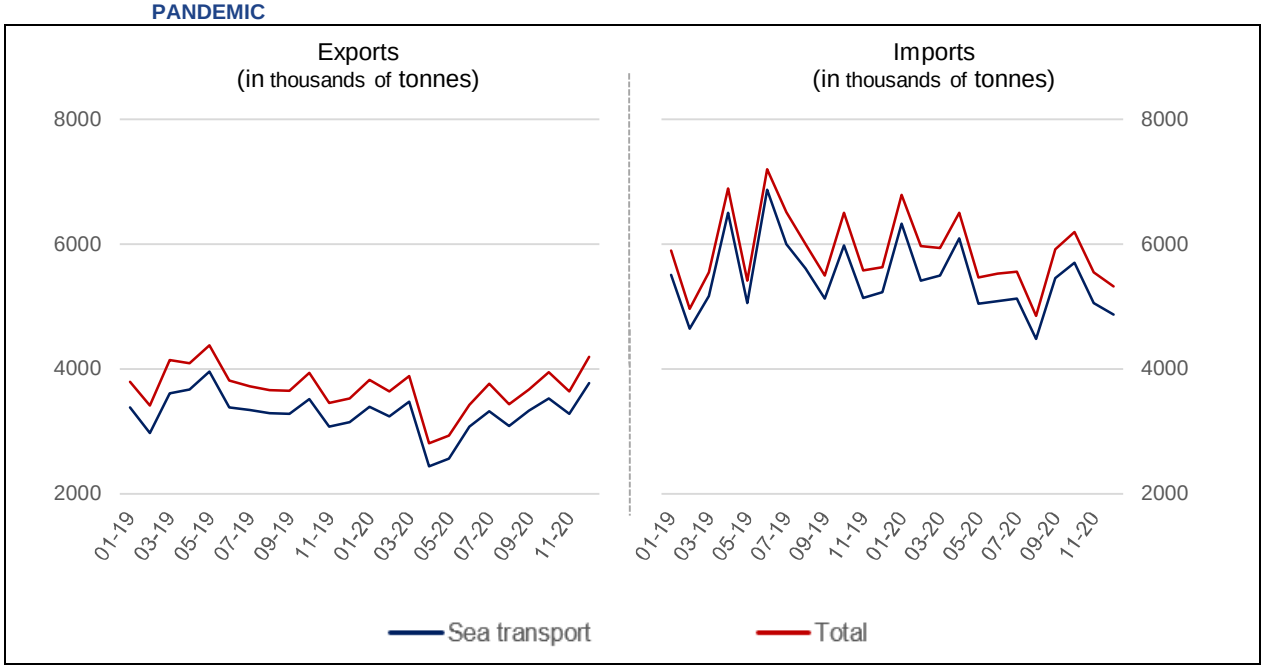


Source: NBB.

Naturally, the year 2020 has seen a significant drop in volumes exported and imported via maritime transport, by respectively 5% for exports and 4% for imports. The decline in exports was particularly marked during the first lockdown, with export volumes rising steadily from June onwards. On the import side, after a rebound in the third quarter, a decline in volume was again recorded from October onwards[56].

[56] We should mention that, in addition to the impact of the COVID-19 crisis, international trade flows in 2020Q4 may also have been affected by the imminent Brexit. Adjustment in the calendar of international shipments to avoid custom procedures in the case of re-exporting to or from the UK may have inflated trade flows in 2020Q4.

FIGURE 3.3 CHANGE IN VOLUME OF EXTRA-EU EXPORTS AND IMPORTS VIA MARITIME TRANSPORT DURING THE PANDEMIC



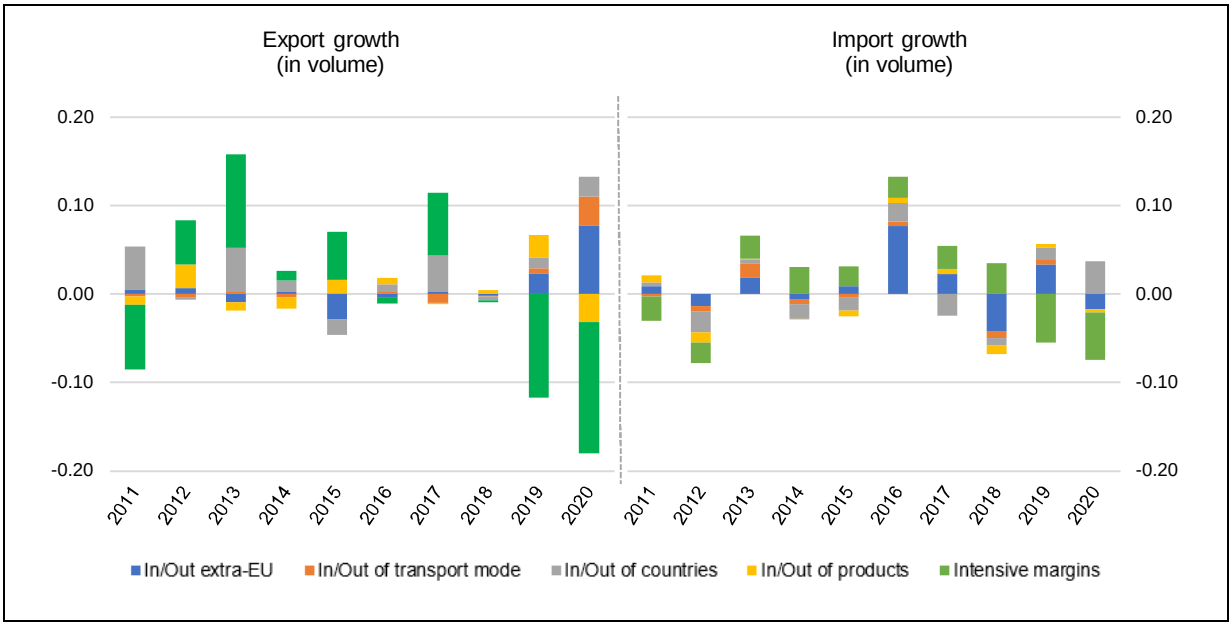
Source: NBB.

If we analyse in more detail the sources of growth in import and export flows by sea over the last ten years, we naturally observe that this growth is primarily linked to the development of existing trade relations, or the intensive margin, i.e. the growth in volumes linked to the import or export of a product on or from a given market by companies already active on this market in the previous year. There has thus been a sharp decline in the importance of established trade flows in 2019 and 2020, particularly in the case of exports. This means that in the markets in which Belgian companies have been active, demand for Belgian products seems to have fallen significantly.

This decline in activity associated with established trade relations has been partially offset by the opening of new, sufficiently dynamic trade relations. This is referred to as the extensive margin of growth. This margin has various components. It can be associated with the entry into international markets of new companies or the full exit of others. It may also reflect the decision to start or stop exporting by sea. It may also take into account the opening or termination of trade relations with one or more countries. Finally, it may reflect the fact that a company is introducing or withdrawing products in a market it was already serving.

In 2019 and 2020, the extensive margin was particularly dynamic. For example, in 2020, a few companies decided to start trading outside the Single Market or turned to maritime transport to reach their non-EU markets. The opening of new destinations also helped mitigate the loss of volumes recorded in existing markets by pre-established operators. On the import side, losses associated with the decline in volumes of existing transactions were only partially offset by the opening of trade relations from new supplier countries by established companies. This may partly reflect the partial reorientation of production chains upstream from Belgium to partially compensate for supply disruptions due to the restrictions imposed by the pandemic.

FIGURE 3.4 BREAKDOWN OF GROWTH IN EXTRA-EU TRADE VOLUMES TRANSPORTED BY MARITIME TRANSPORT



Source: NBB.

Dhyne and Duprez (2020)[57] have investigated the impact of the pandemic, captured by the death rate due to COVID-19 in the population of trading partner countries, on bilateral trade flows (in values). Considering exports and imports by destination, regressions of the year-on-year growth of export and import growth by country of destination or origin on the death rate in the foreign country over the first three quarters of 2020 indicate that trade with the most severely impacted countries declined the most. A deviation of +1‰ in the death rate with respect to the average country induced a lower growth rate of exports of 1.9 percentage points if the country was outside the EU or 1.96 percentage points if it was in the EU (see first column in Table 3.1). Considering only continuous exporters to a given destination over the last seven quarters available and only the 40 main destinations, the estimated response of export growth to a 1‰ higher death rate drops in the range of 1.5 percentage points to 1.7 percentage points (column 3 in table 3.1). Considering the import side, it seems that intra-EU imports of Belgian firms were less closely related to the strength of the pandemic in the foreign country, while extra-EU imports were more sensitive to that dimension. A 1‰ higher death rate reduced the imports from an extra-EU country by 1.7 to 2.1 percentage points according to the specification considered.

[57] Dhyne and Duprez, “Firms during (the first wave of) the COVID-19 crisis”, mimeo, ESCB Cluster 2 annual meeting, November 2020.

TABLE 3.1 INTERNATIONAL TRADE AND THE PANDEMIC

	dlogX All exporters All destinations	dlogX Continuous exporters All destinations	dlogX Continuous exporters Top 40 destinations	dlogM All importers All destinations	dlogM Continuous importers All destinations	dlogM Continuous importers Top 40 destinations
Death rate x Extra EU	-190.162***	-156.112***	-153.919***	-207.735***	-217.419***	-168.180***
	(41.797)	(48.521)	(50.165)	(43.304)	(44.855)	(47.969)
Death rate x Intra EU	-196.891***	-192.906***	-167.114***	-53.031**	-44.093*	-42.076*
	(18.534)	(19.534)	(19.674)	(24.432)	(25.045)	(24.836)
Constant	0.020**	0.035***	0.075***	0.032***	0.030**	0.077***
	(0.010)	(0.012)	(0.013)	(0.012)	(0.013)	(0.013)
N	191 543	154 465	127 282	146 839	137 682	113 032
Adjusted R^2	0.026	0.028	0.044	0.023	0.023	0.037

Source: NBB. All equations include intra or extra EU dummies and quarter dummies interacted with intra or extra EU dummies. Sample period: 2020Q1-2020Q3. * significant at 10% level; ** significant at 5% level; *** significant at 1% level. Standard errors in brackets. Death rate represents the death rate in the foreign country due to the pandemic.

4 IMPACT OF THE COVID-19 PANDEMIC ON TURNOVER

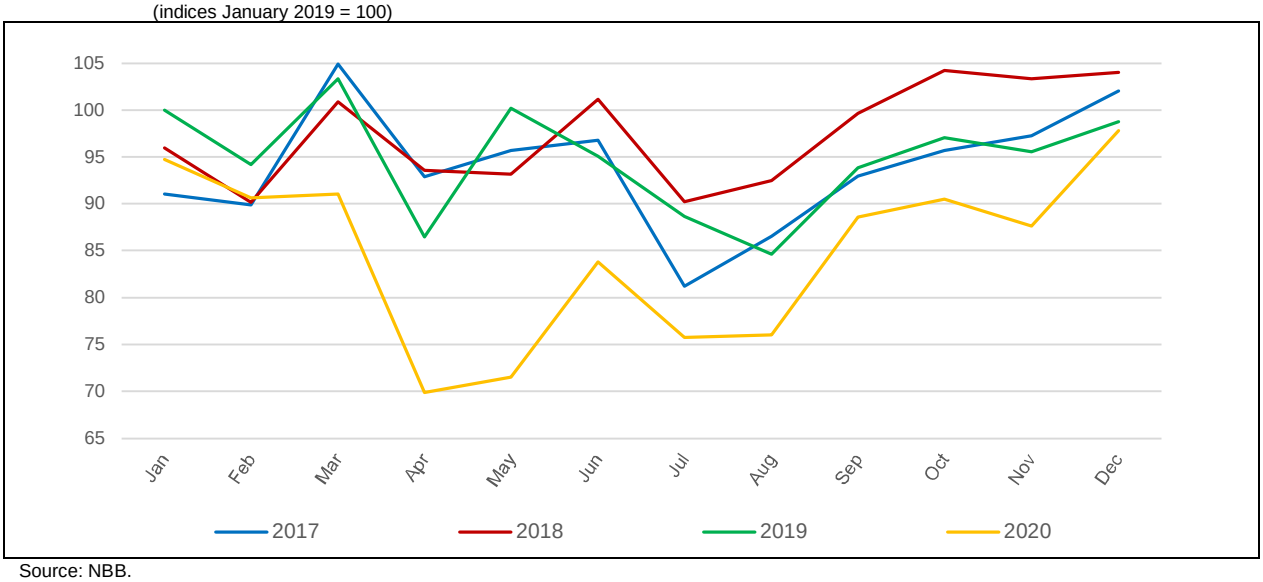
4.1 Impact on aggregate turnover level in 2020

In 2020, COVID-19 affected almost all countries. Governments worldwide faced difficult trade-offs given the health, economic and social challenges the virus raised. (Sub)national governments are still being confronted by COVID-19's asymmetric health, economic, social and fiscal impact. The intensity of the pandemic, the effectiveness of policy responses, national health systems' facilities, and the specifications of each economy differ between countries. Many economies will not get back to their 2019 output levels until 2022 at the earliest.

It goes without saying that the Belgian ports were hit hard as well. A future update in 2022 of this report will reveal to what extent value added, employment and investment in 2020 were actually affected. In order to provide a first glimpse of the economic consequences for the Belgian ports, aggregate data from VAT declarations have been used, and more specifically monthly turnover figures. A sample of 1 678 companies was compiled, all of them having monthly turnover figures during the 2017-2019 period that differ from zero. 41% of these companies have a maritime activity, 59% a non-maritime activity. The sample represented respectively 83%, 84% and 84% of total direct value added in 2017, 2018 and 2019. For multi-regional companies whose figures are only partly considered in the Belgian port aggregates, the assumption of an unchanged share in the port study, compared to the share accorded in 2019, is applied for 2020.

Figure 4.1 shows the relative level of aggregate turnover, as reported via VAT declarations on a monthly basis for the year 2020. The levels for 2017, 2018 and 2019 are shown as well. The aggregate turnover level in the month January 2019 is used as a comparison base and as such has been set at 100. Yearly drops in the aggregate turnover level are visible in April, July and November due to seasonal effects but the chart highlights a sharper fall in turnover in April and May 2020.

FIGURE 4.1 CHANGE IN AGGREGATE TURNOVER FROM JANUARY TO DECEMBER FOR A SAMPLE
(indices January 2019 = 100)



Source: NBB.

During the first three months of 2020, aggregate turnover at Belgian ports was already lower than the figure for the previous quarter (Q4 2019), while the containment measures imposed in the first lockdown-period were only introduced in mid-March 2020.

The lockdown imposed by Belgian authorities resulted in an immediate closure of bars, restaurants and non-essential retail shops and consumer services. Domestic mobility was curtailed, as people were only

allowed to go out for medical reasons, work and food essential shopping. Teleworking was made compulsory unless operational activities really required staff to be present on-site. Many business activities were shut down (partially) due to staff shortages, lower demand or supply chain disruptions. The strict coronavirus measures were kept in place throughout April, with only a very gradual easing in May and June. This led to a sharp drop in sales in April and May (year-on-year change of respectively -19% and -28%) with a less strong year-over-year drop of 12% in June (figure 4.1).

A recovery of aggregate revenue in the third (compared to the second) quarter was driven by the less worrying health situation at the time and thus a temporary return to a more normal economic activity. Since then, lots of health measures have remained in place including social distancing, compulsory use of face masks, limited numbers of people allowed in one place at the same time.

Despite these measures, the coronavirus epidemic expanded again through the autumn. In late October 2020, public authorities imposed a second lockdown, but this time less strict. In November, a new drop in aggregate turnover was the result. Fortunately, the decline was limited (-8% in November 2020 compared to November 2019), while turnover even recovered in December. Companies adapted more easily to the re-imposed restrictions due to their experiences from the first lockdown. Switching to teleworking, to online orders and to safe collection arrangements went smoother the second time round. Schools and childcare generally remained (partially) open, so parents could better combine work and family life. Additionally, the government institutions had learned from the first lockdown that the manufacturing industry, construction and retail trade could remain open without any major risk of infection, subject to strict compliance with the health and safety measures imposed by the public authorities.

For the entire January to December period, aggregate turnover in 2020 was 10.5% below the comparable figure for 2019. The question remains as to what extent firms with declining revenues were able to downscale their costs by a similar magnitude. In the event of imbalances, the pressure on corporate liquidity and profitability will increase in the short and medium run.

4.2 Impact on sectoral turnover level in 2020

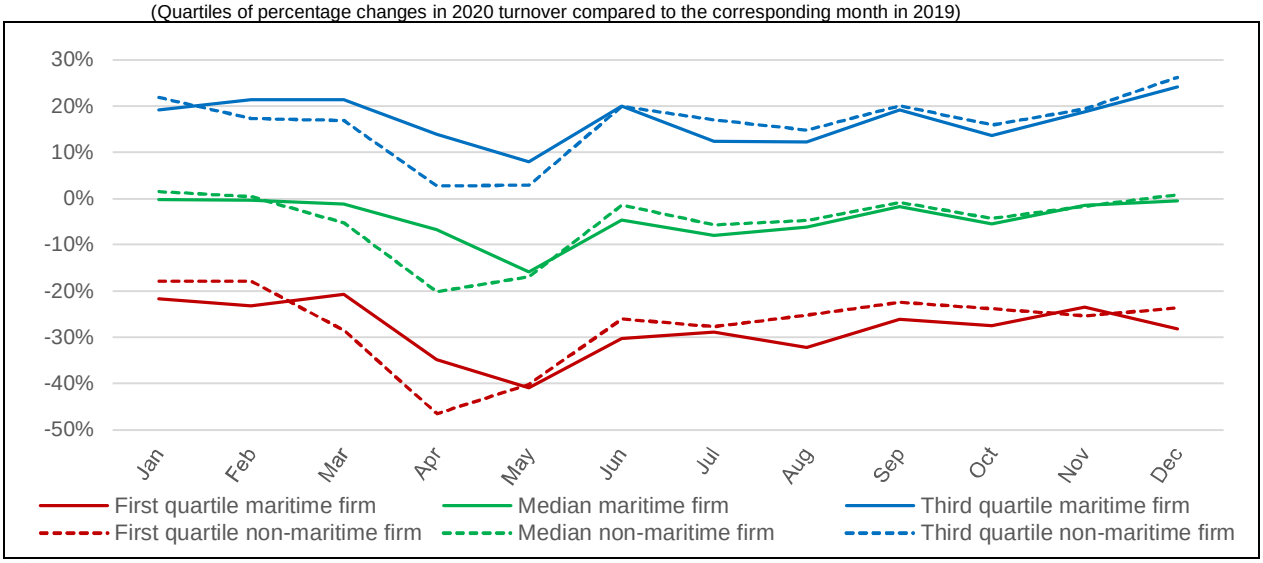
While the lockdown measures were effective incurbing the pandemic and limiting its consequences in terms of public health, they brought an economic shock that differed among sectors. As already mentioned in the previous section, the decline in operational revenue was most severe in April and May when the shock to a median[58] port firms' turnover amounted respectively to -14% and -16% on a year-on-year basis. This fall is much more limited than the 32% drop seen in a Belgian median non-financial corporation's revenue, according to Tielens (2020), which is no surprise since the port population does not feature any of the branches of activity that were hit the most such as firms active in the cultural sector, sport and recreation, travel agencies, accommodation businesses, hairdressers, beauty and wellness centres. Moreover, many of the activities linked to ports were considered as essential, as such those business activities were not restricted provided that the required health and safety measures were met.

The COVID-19 shock affected a median maritime and non-maritime firm differently (figure 4.2). The non-maritime company experienced its biggest drop (-20%) in turnover in April 2020 while the maritime firm was affected the most in May (-16%), partly influenced by blank sailings that were peaking at the time, affecting the business activity of cargo handlers and shipping agents and forwarders (figure 4.3). The increasing number of blank sailings resulted from a huge drop in world trade in May 2020. The sales

[58] Referring to the sample of port firms for which monthly figures on turnover are filed at the TVA registration, for each month a median value for the year-over-year growth rates in turnover for port firms can be calculated. These medians make up a fictitious median port company. The same exercise can be done on different (sub)populations, in order to create different fictitious median companies, such as a median maritime company for the sample maritime port companies or a median car manufacturer for the sample of car manufacturing corporations in the port sample and so on.

shocks have been visible in most branches, with first and third quartiles moving in conjunction with the median value.

FIGURE 4.2 IMPACT OF COVID-19 ON MONTHLY SALES OF MARITIME AND NON MARITIME FIRMS
(Quartiles of percentage changes in 2020 turnover compared to the corresponding month in 2019)



Source: NBB.

Taking into account only those branches of activity with sufficient companies[59] that disclose monthly data in the VAT declarations, figures 4.3 and 4.4 show that the impact of COVID-19 was not evenly distributed across sectors. The revenue of a median car manufacturing industry fell the most (-86%) in April 2020 compared to April 2019. Also, the turnover of a median fuel producer declined sharply in April (-46%). The number of observations for these two branches is quite small but the car manufacturing companies available in our sample represent 100% of those in the port population, while the fuel producers provided in the sample represent 51% of those in the port population. The two large fuel producers missing from the sample, are member of VAT units and therefore no separate monthly revenue data exist for them in the VAT declarations.

The steep revenue decline in a median car manufacturer in April 2020 was partly the result of factory shutdowns during the lockdown months of March, April and May. Its supply chain was disrupted as well. Additionally, due to the coronavirus crisis consumers kept postponing their car purchases, which reinforced the effect of a contraction in the motor vehicle industry already visible in 2019. The sharply declining revenue in a median fuel producing company in April 2020 was party explained by the drop in demand for kerosene due to the number of planes grounded at that time, while demand for motor fuels was also down sharply because of the slowdown in road passenger and freight transport. Moreover, demand for chemical products fell as so many customers had to close.

Looking at the difference between the first and third quartiles per sector, figures 4.3 and 4.4 illustrate that the extent of the shock was more heterogeneous across firms operating in shipbuilding and repair and among trading companies.

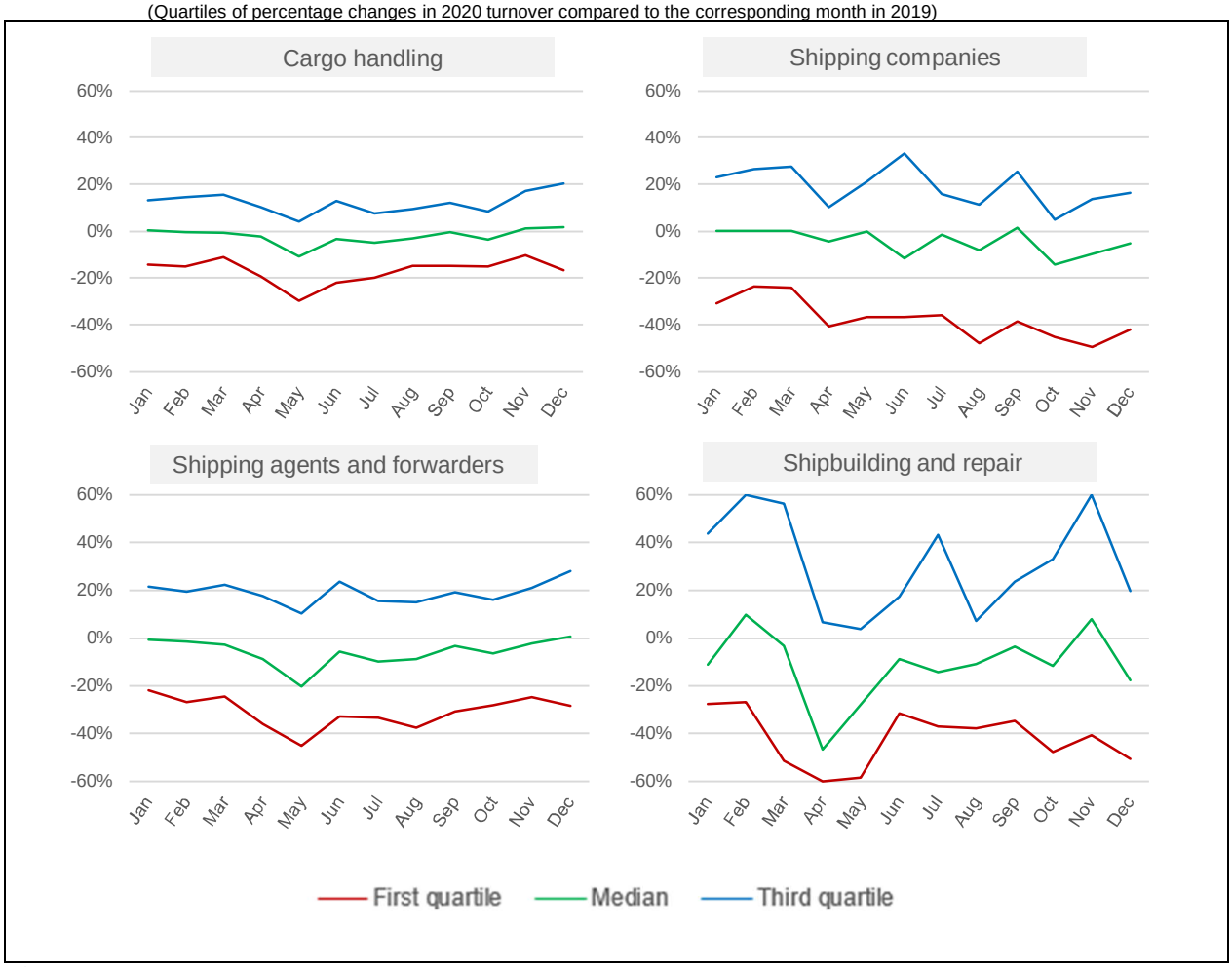
[59] For the non-maritime and maritime sectors considered, we mention only the number of companies for which we could collect monthly revenue figures for each month in 2019 and 2020.

- Non-maritime branches: “other logistic services”: 194, “other industries”: 68, “chemicals industry”: 76, “trade”: 334, “construction”: 75, “metalworking industry”: 73, “food industry”: 24, “road transport”: 96, “car manufacturing”: 13, “fuel production”: 6.
- Maritime branches: “cargo handling”: 184, “shipping companies”: 70, “shipping agents and forwarders”: 364, “shipbuilding and repair”: 37

Some of the companies active in the shipbuilding and repair branch suffered a huge drop in their turnover (first quartile fell by -60% in April 2020) since demand for their services plummeted in April.
Containment measures did not affect all trading firms to the same extent. Some retailers benefited from a change in consumption patterns such as traders in face masks, personal protection equipment and antibacterial hand gels or wholesale distributors in fresh fruit and vegetables. Also trading companies excelling in online shopping solutions were not negatively affected by the containment measures.

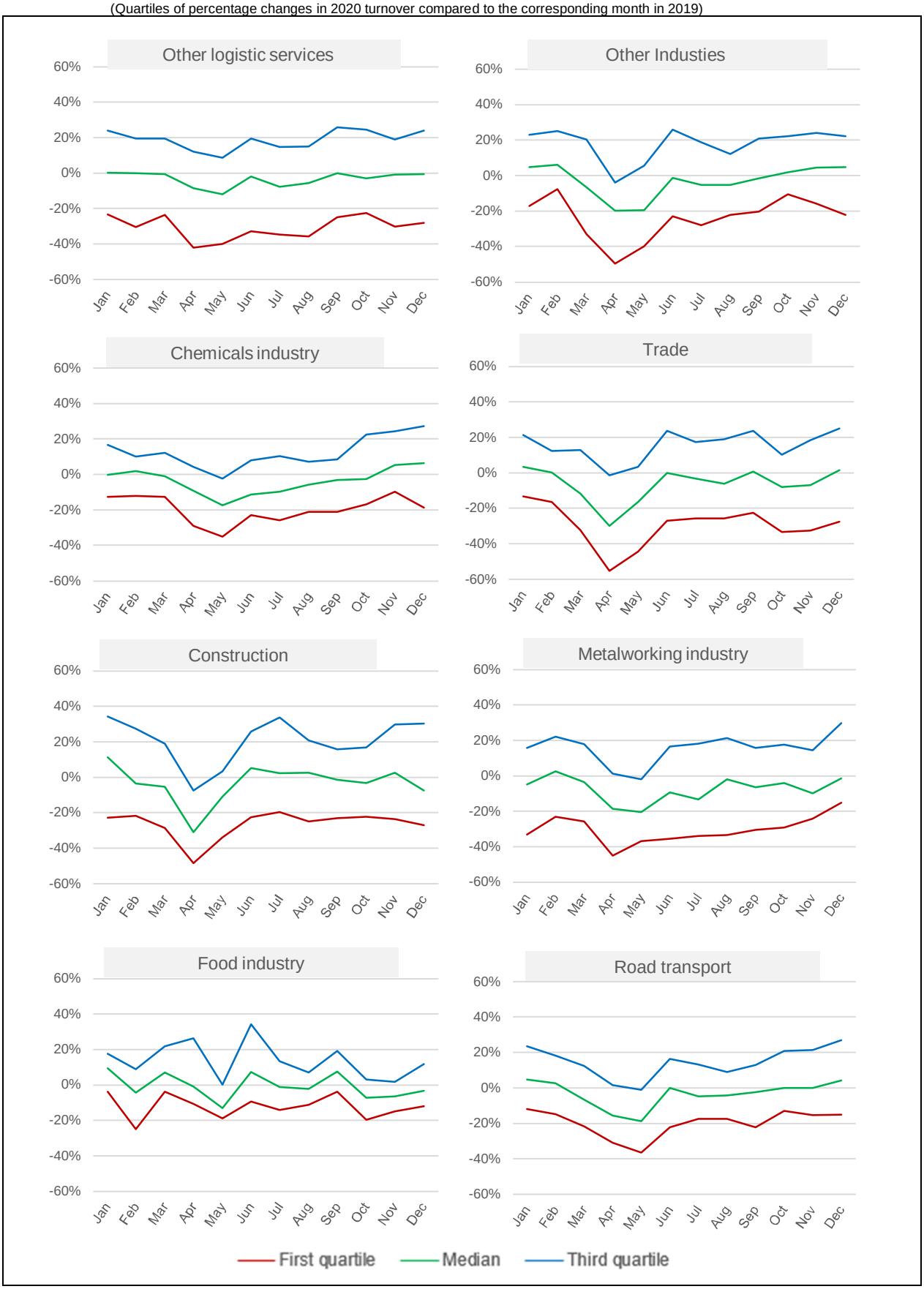
The heterogeneity in the magnitude of the shock to turnover was smallest within the food industry, since domestic demand for food commodities remained strong. The food manufacturers in our population are quite diverse. Not only basic food commodities are produced, but also sweets, chocolate and compound feed for animals are made by the companies in our food industrial population, which explains why some impact COVID-19 is visible – albeit to a lesser extent –on their turnover levels, partly linked to interruptions in their supply chains.

FIGURE 4.3 IMPACT OF COVID-19 ON FIRMS' MONTHLY SALES IN A SELECTION OF MARITIME BRANCHES
(Quartiles of percentage changes in 2020 turnover compared to the corresponding month in 2019)



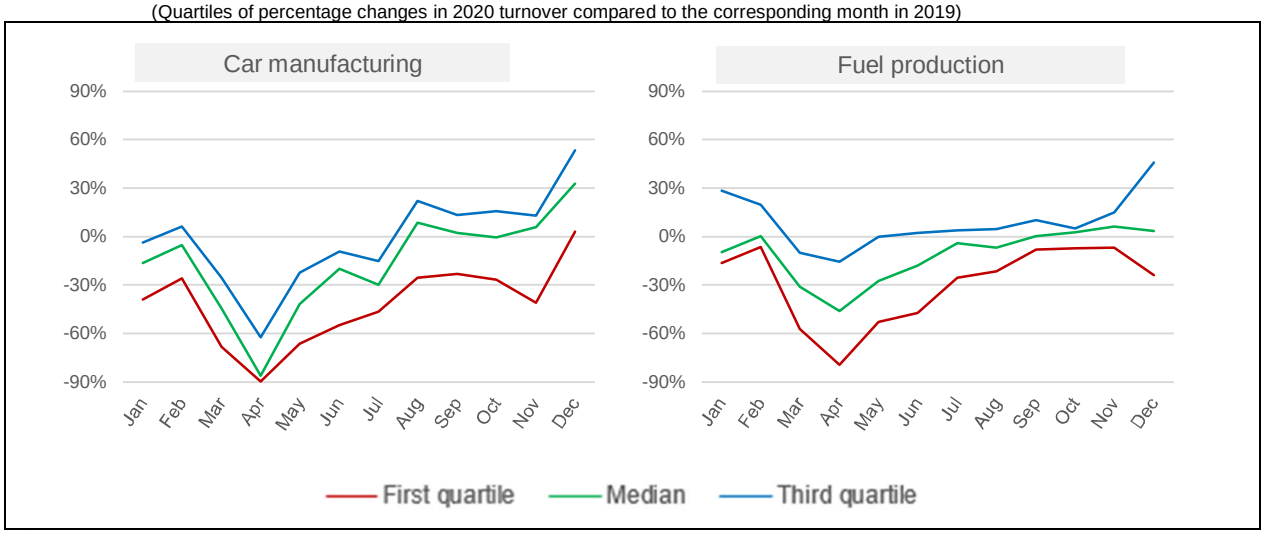
Source: NBB.

FIGURE 4.4 IMPACT OF COVID-19 ON FIRMS' MONTHLY SALES IN A SELECTION OF NON-MARITIME BRANCHES (PART 1)
(Quartiles of percentage changes in 2020 turnover compared to the corresponding month in 2019)



Source: NBB

FIGURE 4.4 IMPACT OF COVID-19 ON FIRMS' MONTHLY SALES IN A SELECTION OF NON-MARITIME BRANCHES (PART 2)
(Quartiles of percentage changes in 2020 turnover compared to the corresponding month in 2019)



Source: NBB.

5 SUMMARY

Over the period from 2014 to 2019, cargo traffic at Belgian ports grew year after year. In 2019, maritime freight traffic rose by 2.6% to 339 million of tonnes, mainly thanks to the ports of Zeebrugge and Antwerp. Transshipment of cargo at the port of Zeebrugge grew in all important sectors: liquefied natural gas, containers and roll-on roll-off traffic. The port of Antwerp achieved a record volume of traffic for the seventh year running with containers and dry bulk as the main drivers.

The upward trend in Belgian maritime cargo traffic in 2019 is reflected in employment and value added at Belgian ports considered as a whole. Direct and indirect employment grew by 2% in 2019 to 254 009 full-time equivalents, accounting for 5.9% of Belgian domestic employment. All Belgian ports except for Brussels generated additional jobs. The increase in direct employment was mainly due to extra jobs in cargo handling. Other branches created news jobs too. At the port of Antwerp, employment also grew in the chemicals industry and in other logistic services. At North Sea Port Flanders employment expanded in car manufacturing, while in Ostend and Liège this was the case in the metalworking industry and other logistic services. Extra jobs were created in the other logistic services, trade and 'shipping agents and forwarders' at the port of Zeebrugge.

In 2019, direct value added at Belgian ports rose by 1.4%, while indirect effects fell slightly (-0.3%) due to declining direct effects in the chemicals industry on the one hand and a reduced multiplier at the metalworking industry on the other hand. Total value added (including direct and indirect effects) came to € 32.2 billion in 2019, representing 6.8% of Belgian GDP. Direct value added was up in all Belgian ports. The increase was relatively more evident in the ports of Antwerp and Liège owing to a wider capacity at nuclear power plants. At the port of Antwerp, shipping companies also generated higher value added due to the rise in forward charter rates, while the chemicals industry suffered a sharp decline coming from a huge drop in the operating profit of the biggest chemicals company. At the inland port of Brussels, growth in value added was driven by other logistic services and trade. Zeebrugge experienced a rise in its value added as well, mainly thanks to the energy sector and cargo handling. The energy sector benefited from a higher net allowance for expansion investments in liquefied natural gas plants. The expansion in value added at the port of Ostend was fully driven by the metalworking industry, construction and other logistic services, while the growth at North Sea Port Flanders was a result of more value added in trade and car manufacturing.

After a high investment volume in 2018 influenced by a merger between shipping companies, direct investment by all Belgian ports together bounced back by 22.9% to a level of € 4.8 billion in 2019, an amount quite similar to that seen two years earlier. If that merger investment figure is deducted from total investment by Belgian ports in 2018, the corrected change still shows a decline in 2019 compared to 2018, albeit less drastic (-3.6% instead of -22.9%), coming from lower investment in the chemicals industry, energy, cargo handling, other logistic services and fuel production.

Even though only a limited share of exporters and importers in Belgium use trade by sea, this mode of transport is by far the most important in terms of volumes. As expected, trade volumes through maritime transport declined significantly in 2020, by respectively 5% for exports and 4% for imports. The drop in exports was particularly marked during the first lockdown, while the fall in import can also be seen during the second lockdown. When we investigate the impact of the pandemic, captured by the death rate due to COVID-19 in the population of trading partner countries, we show that bilateral trade flows with the hardest-hit countries were the most affected.

Belgian ports were hit by the impact of COVID-19 as well. The strict lockdown imposed by the Belgian authorities in mid-March 2020 with a gradual easing in May and June led to a sharp drop in aggregate turnover figures in April and May 2020 with a year-on-year change of respectively -19% and -28% for the port sample considered. The second lockdown imposed in late October 2020, resulted in a new drop in

aggregate revenue in November 2020, although the decline was smaller with a recovery in December as companies adapted more easily to re-imposed restrictions thanks to experience from the first lockdown. The size of the shock to a median port firms' turnover in April 2020 (-14% on a year-to-year basis) was much smaller than the fall (-32%) visible in the revenue of a median non-financial Belgian firm. The impact of COVID-19 was not evenly distributed across sectors. Turnover of a median car manufacturing company fell the most (-86%) in April 2020 compared to April 2019. In the same month, the revenue of a median fuel producing company dropped sharply (-46%) as well. In the shipbuilding and repair segment and among trading firms, the extent of the shock in 2020 was more heterogenous. The magnitude of the shock to turnover was the smallest in the food industry.

LIST OF ABBREVIATIONS

BNRC	Belgian National Railway Company
EU	European Union
FTE	Full-time equivalent
GDP	Gross domestic product
GT	Gross tonnage
IOT	Input-Output Table
NAI	National Accounts Institute
NBB	National Bank of Belgium
SMEs	Small and medium-sized enterprises
SUT	Supply and Use Table
TEU	Twenty-foot Equivalent Unit

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ANNEX 1 LIST OF NACE-BEL BRANCHES (NACE-BEL 2008)[60]

SUT	NACE-BEL	Cluster	Segment	Sector	Definition
03A	03110	MAR	MAR	VI	Marine fishing
08A	08121	NOMAR	IN	AI	Quarrying of gravel
08A	08122	NOMAR	IN	AI	Quarrying of sand
08A	08910	NOMAR	IN	AI	Mining of chemical and fertiliser minerals
08A	08990	NOMAR	IN	AI	Other mining and quarrying n.e.c.
09A	09900	NOMAR	IN	AI	Support activities for other mining and quarrying
10A	10130	NOMAR	IN	VO	Production of meat and poultry meat products
10B	10200	MAR	MAR	VI	Processing and preserving of fish, crustaceans and molluscs
10C	10320	NOMAR	IN	VO	Manufacture of fruit and vegetable juice
10D	10410	NOMAR	IN	VO	Manufacture of oils and fats
10E	10510	NOMAR	IN	VO	Operation of dairies and cheese making
10E	10520	NOMAR	IN	VO	Manufacture of ice cream
10F	10610	NOMAR	IN	VO	Manufacture of grain mill products
10H	10810	NOMAR	IN	VO	Manufacture of sugar
10H	10820	NOMAR	IN	VO	Manufacture of cocoa, chocolate and sugar confectionery
10I	10890	NOMAR	IN	VO	Manufacture of other food products n.e.c.
10J	10910	NOMAR	IN	VO	Manufacture of prepared feeds for farm animals
11A	11010	NOMAR	IN	VO	Distilling, rectifying and blending of spirits
11A	11060	NOMAR	IN	VO	Manufacture of malt
13A	13100	NOMAR	IN	AI	Preparation and spinning of textile fibres
13B	13929	NOMAR	IN	AI	Manufacture of other textiles, except wearing apparel
16A	16100	NOMAR	IN	AI	Sawmilling and planing of wood
16A	16230	NOMAR	IN	AI	Manufacture of other builders' carpentry and joinery
16A	16240	NOMAR	IN	AI	Manufacture of wooden containers
17A	17120	NOMAR	IN	AI	Manufacture of paper and paperboard
17A	17210	NOMAR	IN	AI	Manufacture of corrugated paper and paperboard and of containers of paper and paperboard
17A	17290	NOMAR	IN	AI	Manufacture of other articles of paper and paperboard
18A	18120	NOMAR	IN	AI	Other printing
18A	18130	NOMAR	IN	AI	Pre-press and pre-media services
19A	19200	NOMAR	IN	PE	Manufacture of refined petroleum products
20A	20110	NOMAR	IN	CH	Manufacture of industrial gases
20A	20120	NOMAR	IN	CH	Manufacture of dyes and pigments
20B	20130	NOMAR	IN	CH	Manufacture of other inorganic basic chemicals
20A	20140	NOMAR	IN	CH	Manufacture of other organic basic chemicals
20A	20150	NOMAR	IN	CH	Manufacture of fertilisers and nitrogen compounds
20A	20160	NOMAR	IN	CH	Manufacture of plastics in primary forms
20A	20170	NOMAR	IN	CH	Manufacture of synthetic rubber in primary forms
20C	20200	NOMAR	IN	CH	Manufacture of pesticides and other agrochemical products
20D	20300	NOMAR	IN	CH	Manufacture of paints, varnishes and similar coatings, printing ink and mastics
20F	20520	NOMAR	IN	CH	Manufacture of glues
20F	20590	NOMAR	IN	CH	Manufacture of other chemical products n.e.c.
20G	20600	NOMAR	IN	CH	Manufacture of man-made fibres
21A	21100	NOMAR	IN	CH	Manufacture of basic pharmaceutical products

[60] The nomenclature in this list is in accordance with the NACE-BEL revision having taken place in 2008 (Rev.2).

SUT	NACE-BEL	Cluster	Segment	Sector	Definition
21A	21201	NOMAR	IN	CH	Manufacture of medicines
22A	22110	NOMAR	IN	CH	Manufacture of rubber tyres and tubes; retreating and rebuilding of rubber tyres
22A	22190	NOMAR	IN	CH	Manufacture of other rubber products
22B	22210	NOMAR	IN	CH	Manufacture of plastic plates, sheets, tubes and profiles
22B	22220	NOMAR	IN	CH	Manufacture of plastic packing goods
22B	22230	NOMAR	IN	CH	Manufacture of builders' ware of plastic
22B	22290	NOMAR	IN	CH	Manufacture of other plastic products
23A	23110	NOMAR	IN	CS	Manufacture of flat glass
23A	23120	NOMAR	IN	CS	Shaping and processing of flat glass
23B	23322	NOMAR	IN	CS	Manufacture of tiles and construction products, in baked clay
23C	23510	NOMAR	IN	CS	Manufacture of cement
23C	23520	NOMAR	IN	CS	Manufacture of lime and plaster
23D	23610	NOMAR	IN	CS	Manufacture of concrete products for construction purposes
23D	23620	NOMAR	IN	CS	Manufacture of plaster products for construction purposes
23D	23630	NOMAR	IN	CS	Manufacture of ready-mixed concrete
23D	23640	NOMAR	IN	CS	Manufacture of mortars
23D	23700	NOMAR	IN	CS	Cutting, shaping and finishing of stone
23D	23990	NOMAR	IN	CS	Manufacture of other non-metallic mineral products n.e.c.
24A	24100	NOMAR	IN	ME	Manufacture of basic iron and steel and of ferro-alloys
24A	24200	NOMAR	IN	ME	Manufacture of tubes, pipes, hollow profiles and related fittings, of steel
24B	24310	NOMAR	IN	ME	Cold drawing of bars
24B	24420	NOMAR	IN	ME	Aluminium production
24B	24510	NOMAR	IN	ME	Casting of iron
25A	25110	NOMAR	IN	ME	Manufacture of metal structures and parts of structure
25A	25120	NOMAR	IN	ME	Manufacture of doors and windows of metal
25A	25210	NOMAR	IN	ME	Manufacture of central heating radiators and boilers
25A	25290	NOMAR	IN	ME	Manufacture of other tanks, reservoirs and containers of metal
25A	25300	NOMAR	IN	ME	Manufacture of steam generators, except central heating hot water boilers
25A	25501	NOMAR	IN	ME	Forging of metal
25B	25610	NOMAR	IN	ME	Treatment and coating of metals
25B	25620	NOMAR	IN	ME	Machining
25C	25930	NOMAR	IN	ME	Manufacture of wire products, chain and springs
25C	25940	NOMAR	IN	ME	Manufacture of fasteners and screw machine products
25C	25999	NOMAR	IN	ME	Manufacture of other fabricated metal articles
26A	26110	NOMAR	IN	MP	Manufacture of electronic valves and tubes and other electronic components
26B	26300	NOMAR	IN	MP	Manufacture of communication equipment
26B	26400	NOMAR	IN	MP	Manufacture of consumer electronics
26C	26510	NOMAR	IN	MP	Manufacture of instruments and appliances for measuring, testing and navigation
27A	27110	NOMAR	IN	MP	Manufacture of electric motors, generators and transformers
27A	27120	NOMAR	IN	MP	Manufacture of electricity distribution and control apparatus
27A	27401	NOMAR	IN	MP	Manufacture of electric lamps
27B	27510	NOMAR	IN	MP	Manufacture of electric domestic appliances
27B	27900	NOMAR	IN	MP	Manufacture of other electrical equipment
28A	28110	NOMAR	IN	ME	Manufacture of engines and turbines, except aircraft, vehicle and cycle engines
28A	28120	NOMAR	IN	ME	Manufacture of fluid power equipment
28A	28220	NOMAR	IN	ME	Manufacture of lifting and handling equipment
28A	28250	NOMAR	IN	ME	Manufacture of non-domestic cooling and ventilation equipment

SUT	NACE-BEL	Cluster	Segment	Sector	Definition
28A	28291	NOMAR	IN	ME	Manufacture of packing-machines
28A	28295	NOMAR	IN	ME	Manufacture of filter equipment
28A	28299	NOMAR	IN	ME	Manufacture of other general-purpose machinery n.e.c.
28B	28910	NOMAR	IN	ME	Manufacture of machinery for metallurgy
29A	29100	NOMAR	IN	AU	Manufacture of motor vehicles
29B	29201	NOMAR	IN	AU	Manufacture of bodies (coachwork) for motor vehicles
29B	29202	NOMAR	IN	AU	Manufacture of trailers and semi-trailers and caravans
29B	29320	NOMAR	IN	AU	Manufacture of other parts and accessories for motor vehicles
30A	30110	MAR	MAR	SB	Building of ships and floating structures
30A	30120	MAR	MAR	SB	Building of pleasure and sporting boats
30B	30200	NOMAR	IN	AI	Manufacture of railway locomotives and rolling stock
32B	32990	NOMAR	IN	AI	Other manufacturing n.e.c.
33A	33110	NOMAR	IN	ME	Repair of fabricated metal products
33A	33120	NOMAR	IN	ME	Repair of machinery
33A	33150	MAR	MAR	SB	Repair and maintenance of ships and boats
33A	33170	NOMAR	IN	ME	Repair and maintenance of other transport equipment
35A	35110	NOMAR	IN	EN	Production of electricity
35B	35210	NOMAR	IN	EN	Manufacture of gas
35B	35220	NOMAR	IN	EN	Distribution of gaseous fuels through mains
37A	37000	NOMAR	IN	AI	Sewerage
38A	38110	NOMAR	IN	AI	Collection of non-hazardous waste
38A	38219	NOMAR	IN	AI	Other processing and disposal of non-hazardous waste
38A	38222	NOMAR	IN	AI	Processing and disposal of hazardous
38B	38310	NOMAR	IN	AI	Dismantling of wrecks
38B	38321	NOMAR	IN	AI	Sorting of non-hazardous waste for recycling
38B	38322	NOMAR	IN	AI	Recovery of waste metal
38B	38323	NOMAR	IN	AI	Recovery of inert waste
39A	39000	NOMAR	IN	AI	Remediation activities and other waste management services
41A	41102	NOMAR	IN	CS	Non-residential development projects
41A	41203	NOMAR	IN	CS	Construction of other non-residential buildings
42A	42110	NOMAR	IN	CS	Construction of roads and motorways
42A	42130	NOMAR	IN	CS	Construction of bridges and tunnels
42A	42211	NOMAR	IN	CS	Construction of water and gas supply networks
42A	42219	NOMAR	IN	CS	Civil engineering works relating to fluids n.e.c.
42A	42220	NOMAR	IN	CS	Construction of utility projects for electricity and telecommunications
42A	42911	MAR	MAR	DR	Dredging
42A	42919	MAR	MAR	DR	Construction of water projects, except dredging
43A	43110	NOMAR	IN	CS	Demolition
43A	43120	NOMAR	IN	CS	Site preparation
43B	43211	NOMAR	IN	CS	Electrical engineering installations in buildings
43B	43221	NOMAR	IN	CS	Plumbing
43B	43222	NOMAR	IN	CS	Heat and air conditioning installation
43B	43291	NOMAR	IN	CS	Insulation work activities
43C	43320	NOMAR	IN	CS	Joinery installation
43C	43341	NOMAR	IN	CS	Painting of buildings
43D	43910	NOMAR	IN	CS	Roofing activities
43D	43999	NOMAR	IN	CS	Other specialised construction activities
45A	45111	NOMAR	CO	CO	Wholesale of cars and light motor vehicles

SUT	NACE-BEL	Cluster	Segment	Sector	Definition
45A	45191	NOMAR	CO	CO	Wholesale of other motor vehicles (> 3,5 ton)
45A	45193	NOMAR	CO	CO	Retail sale of other motor vehicles (> 3,5 ton)
45A	45202	NOMAR	CO	CO	Maintenance and general repair of motor vehicles
45A	45205	NOMAR	CO	CO	Tyre specialists
45A	45310	NOMAR	CO	CO	Wholesale trade and intermediary of motor vehicle parts and accessories
46A	46110	NOMAR	CO	CO	Agents involved in the sale of agricultural raw materials, live animals, textile raw materials and semi-finished goods
46A	46120	NOMAR	CO	CO	Agents involved in the sale of fuels, ores, metals and industrial chemicals
46A	46140	NOMAR	CO	CO	Agents involved in the sale of machinery, industrial equipment, ships and aircraft
46A	46170	NOMAR	CO	CO	Agents involved in the sale of food, beverages and tobacco
46A	46180	NOMAR	CO	CO	Agents specialised in the sale of other particular products
46A	46190	NOMAR	CO	CO	Agents involved in the sale of a variety of goods
46A	46216	NOMAR	CO	CO	Wholesale of animal feeds and agricultural raw materials
46A	46319	NOMAR	CO	CO	Wholesale of fruit and vegetables, except potatoes
46A	46332	NOMAR	CO	CO	Wholesale of edible oils and fats
46A	46349	NOMAR	CO	CO	Wholesale of alcoholic and other beverages, general assortment
46A	46381	NOMAR	CO	CO	Wholesale of fish, crustaceans and molluscs
46A	46389	NOMAR	CO	CO	Wholesale of other food n.e.c.
46A	46391	NOMAR	CO	CO	Non-specialised wholesale of frozen food
46A	46392	NOMAR	CO	CO	Non-specialised wholesale of non-frozen food, beverages and tobacco
46A	46412	NOMAR	CO	CO	Wholesale trade in household textiles and bedding
46A	46423	NOMAR	CO	CO	Wholesale trade in clothing other than work clothes and underwear
46A	46431	NOMAR	CO	CO	Wholesale trade in domestic electrical appliances and audio and video equipment
46A	46442	NOMAR	CO	CO	Wholesale of cleaning materials
46A	46460	NOMAR	CO	CO	Wholesale of pharmaceutical goods
46A	46499	NOMAR	CO	CO	Wholesale of other household goods n.e.c.
46A	46510	NOMAR	CO	CO	Wholesale of computers, computer peripheral equipment and software
46A	46620	NOMAR	CO	CO	Wholesale of machine tools
46A	46630	NOMAR	CO	CO	Wholesale of mining, construction and civil engineering machinery
46A	46693	NOMAR	CO	CO	Wholesale trade in electrical equipment, including installation materials
46A	46694	NOMAR	CO	CO	Wholesale trade in lifting and transport equipment
46A	46695	NOMAR	CO	CO	Wholesale trade in pumps and compressors
46A	46699	NOMAR	CO	CO	Wholesale of other machinery and equipment n.e.c
46B	46710	NOMAR	CO	CO	Wholesale of solid, liquid and gaseaous fuels and related products
46A	46720	NOMAR	CO	CO	Wholesale of metals and metal ores
46A	46731	NOMAR	CO	CO	Wholesale of construction materials, general assortment
46A	46732	NOMAR	CO	CO	Wholesale of wood
46A	46733	NOMAR	CO	CO	Wholesale trade in wallpapers, paints and household textiles
46A	46741	NOMAR	CO	CO	Wholesale of hardware
46A	46751	NOMAR	CO	CO	Wholesale of industrial chemical products
46A	46769	NOMAR	CO	CO	Wholesale trade in other intermediate products n.e.c.
46A	46772	NOMAR	CO	CO	Wholesale trade in iron and steel scrap and non-ferrous scrap metals
46A	46900	MAR	MAR	CP	Non-specialised wholesale trade
47A	47230	NOMAR	CO	CO	Retail sale of fish, crustaceans and molluscs in specialised stores
47B	47300	NOMAR	CO	CO	Retail sale of automotive fuel in specialised stores
47A	47410	NOMAR	CO	CO	Retail sale of computers, peripheral units and software in specialised stores
47A	47521	NOMAR	CO	CO	Specialist retail trade in building materials and DIY supplies, general range
47A	47781	NOMAR	CO	CO	Specialist retail trade in fuels other than road fuel

SUT	NACE-BEL	Cluster	Segment	Sector	Definition
49A	49200	NOMAR	TR	TP	Freight rail transport
49C	49410	NOMAR	TR	WE	Freight transport by road, except removal
49C	49420	NOMAR	TR	WE	Removal services
49C	49500	NOMAR	TR	WE	Transport via pipelines
50A	50200	MAR	MAR	RE	Sea and coastal freight water transport
50B	50400	MAR	MAR	RE	Inland freight water transport
52A	52100	MAR	MAR	GO	Warehousing and storage, including refrigerating
52A	52210	NOMAR	LO	AD	Service activities incidental to land transportation
52A	52220	MAR	MAR	GO	Service activities incidental to water transportation
52A	52241	MAR	MAR	GO	Cargo handling in sea ports
52A	52249	MAR	MAR	GO	Cargo handling except sea ports
52A	52290	MAR	MAR	SE	Other transportation support activities
53A	53200	NOMAR	TR	WE	Other postal and courier activities
62A	62010	NOMAR	LO	AD	Computer programming activities
66A	66210	NOMAR	LO	AD	Risk and damage evaluation
66A	66220	NOMAR	LO	AD	Activities of insurance agents and brokers
66A	66290	NOMAR	LO	AD	Other activities auxiliary to insurance and pension funding
68B	68203	NOMAR	LO	AD	Renting and operating of own or leased non residential real estate, except lands
68A	68321	NOMAR	LO	AD	Management of residential real estate on a fee or contract basis
68A	68322	NOMAR	LO	AD	Management of non-residential real estate on a fee or contract basis
69A	69201	NOMAR	LO	AD	Accountants and fiscal advisors
70A	70100	NOMAR	LO	AD	Activities of head offices
70A	70220	NOMAR	LO	AD	Business and other management consultancy activities
71A	71121	NOMAR	LO	AD	Engineering activities and related technical consultancy, except surveyor
71A	71209	NOMAR	LO	AD	Other technical testing and analysis
72A	72190	NOMAR	LO	AD	Other research and experimental development on natural sciences and engineering
73A	73110	NOMAR	LO	AD	Advertising agencies
77A	77120	NOMAR	LO	AD	Renting and leasing of trucks
77C	77320	NOMAR	LO	AD	Renting and leasing of construction and civil engineering machinery and equipment
77C	77340	NOMAR	LO	AD	Renting and leasing of water transport equipment
77C	77399	NOMAR	LO	AD	Renting and leasing of other machinery, equipment and tangible goods
80A	80100	NOMAR	LO	AD	Private security activities
81A	81100	NOMAR	LO	AD	Combined facilities support activities
81B	81220	NOMAR	LO	AD	Other building and industrial cleaning activities
81B	81290	NOMAR	LO	AD	Other cleaning activities
82A	82110	NOMAR	LO	AD	Combined office administrative service activities
82A	82920	NOMAR	LO	AD	Packaging activities
82A	82990	NOMAR	LO	AD	Other business support service activities n.e.c.
84A	84111	MAR	MAR	PU	Federal public administration activities
84B	84220	MAR	MAR	PU	Defence activities

Source: NBB.

Legend

Cluster code	Cluster definition	Segment code	Segment definition	Sector code	Sector definition
MAR	Maritme	MAR	Maritime	GO	Cargo handling
				SE	Shipping agents and forwarders
				RE	Shipping companies
				DR	Port construction and dredging
				HB	Port authority
				PU	Public sector
				SB	Shipbuilding and repair
				CP	Port trade
				VI	Fishing and fish industry
NOMAR	Non-maritime	CO	Trade	CO	Trade
		IN	Industry	EN	Energy
				PE	Fuel production
				CH	Chemicals industry
				AU	Car manufacturing
				MP	Electronics
				ME	Metalworking industry
				CS	Construction
				VO	Food industry
				AI	Other industries
		TR	Land transport	WE	Road transport
				TP	Other land transport
		LO	Other logistic services	AD	Other logistic services

ANNEX 2 FORMULAE

Annex 2.1 Contribution to growth

Let us assume that s is a sector in port p and let $v_{sp}(y)$ be the value of some variable for that sector s in port p in year y. v could be value added, employment, … Then the total for p for that variable is just the sum of the values for all the sectors in that port or $v_{*p}(y) = \sum_{s \in p} v_{sp}(y)$.

The growth of the value for the port between $y-1$ and y is equal to the change in value, divided by the value in the first year or $g_{*p}(y) = \frac{v_{*p}(y) - v_{*p}(y-1)}{v_{*p}(y-1)}$ and similar for the growth of the sector in that port: $g_{sp}(y) = \frac{v_{sp}(y) - v_{sp}(y-1)}{v_{sp}(y-1)}$

It follows from this that:

$$g_{*p}(y) = \frac{v_{*p}(y) - v_{*p}(y-1)}{v_{*p}(y-1)}$$

$$= \sum_{s \in p} \frac{v_{sp}(y) - v_{sp}(y-1)}{v_{*p}(y-1)}$$

$$= \sum_{s \in p} \frac{v_{sp}(y) - v_{sp}(y-1)}{v_{*p}(y-1)} \underbrace{\frac{v_{sp}(y-1)}{v_{sp}(y-1)}}_{= 1 \text{ if } v_{sp}(y-1) \neq 0}$$

$$= \overbrace{\sum_{s \in p} \overbrace{\underbrace{\frac{v_{sp}(y) - v_{sp}(y-1)}{v_{sp}(y-1)}}_{= g_{sp}(y), \text{ see supra}} \underbrace{\frac{v_{sp}(y-1)}{v_{*p}(y-1)}}_{\alpha_{sp}(y-1)}}^{sum\ contribution}}^{sum\ of\ sectoral\ contributions}$$

where $\alpha_{sp}(y-1) = \frac{v_{sp}(y-1)}{v_{*p}(y-1)}$ is the value for the sector divided by the total for the port, or it is the share of the sector for that port (if $\forall s \in p, v_{sp}(y-1) \geq 0$).

So we find that[61] the growth of v in the port p is the sum of sectoral contributions to that growth, each sector's contribution is equal to that sector's share in the previous year times the sector's own growth. This is equivalent to saying that the growth for the port is the weighted average of the growths of the sectors in that port, the weights are the shares of the sectors in $y-1$.

[61] If $\forall s \in p, v_{sp}(y-1) > 0$

Annex 2.2 Decomposition of the globalised ratio

A (company) ratio is by definition a division of a variable for a company (the numerator, n_c) by another variable for that company (the denominator, d_c) or $r_c = \frac{n_c}{d_c}$.

The globalised ratio for a sector is then the sum of the numerators divided by the sum of the denominators or $r_s = \frac{\sum_{c \in s} n_c}{\sum_{c \in s} d_c}$. Using some basic properties of addition and multiplication we find that:

$$r_s = \frac{\sum_{c \in s} n_c}{\sum_{c \in s} d_c}$$

$$= \frac{\sum_{c \in s} n_c}{D_s}, (\text{where } D_s = \sum_{c \in s} d_c)$$

$$= \frac{\sum_{c \in s} n_c \frac{d_c}{d_c}}{D_s}, (\text{if } d_c \neq 0)$$

$$= \frac{\sum_{c \in s} d_c \frac{n_c}{d_c}}{D_s}$$

$$= \sum_{c \in s} \frac{d_c}{D_s} \frac{n_c}{d_c}$$

$$= \sum_{c \in s} \omega_c \frac{n_c}{d_c}, (where\ \omega_c = \frac{d_c}{D_s})$$

$$= \sum_{c \in s} \omega_c r_c$$

So we find that:

$$r_s = \overbrace{\sum_{c \in s} \underbrace{\omega_c r_c}_{\text{contribution of company } c}}^{\text{sum of individual contributions}}$$

where $\omega_c = \frac{d_c}{D_s}$ is the share of the company *c* in sector *s* measured in terms of the denominator.

So we find that the globalised ratio for a sector is a weighted sum of the ratios of the individual companies in that sector. The weight for a company is the share of the company in the sector, measured in terms of the ratio's denominator.

ANNEX 3 DEFINITION OF THE FINANCIAL RATIOS

RATIO	ITEMS USED IN ANNUAL ACCOUNTS
RETURN ON EQUITY AFTER TAX	
Numerator (N)	9904
Denominator (D)	10/15
*Ratio = N / D * 100*	
Conditions for calculating the ratio:12-month financial year and item 10/15 > 0	
LIQUIDITY IN THE BROAD SENSE	
Numerator (N)	3+40/41+50/53+54/58+490/1
Denominator (D)	42/48+492/3
Ratio = N / D	
Conditions for calculating the ratio: none	
SOLVENCY: DEGREE OF FINANCIAL INDEPENDENCE	
Numerator (N)	10/15
Denominator (D)	10/49
*Ratio = N / D * 100*	
Conditions for calculating the ratio: none	

ANNEX 4 DETAILED TABLES BY PORT AREA

Annex 4.1 Port of Antwerp

TABLE 4.1.1 Value added at the port of Antwerp (in € million)

	2014	2015	2016	2017	2018	2019	$\sigma_{2019,s}$	$\alpha_{2019,s}$	$\tilde{\alpha}_s$
Cargo handling	1 604.8	1 667.4	1 718.6	1 797.4	1 773.3	1 841.3	16.4	3.8	2.8
Shipping companies	438.8	736.1	659.8	431.1	402.5	657.8	5.9	63.4	8.4
Shipping agents and forwarders	593.1	631.3	607.1	614.7	605.2	645.2	5.8	6.6	1.7
Port construction and dredging	236.2	308.3	278.6	286.5	275.6	254.3	2.3	-7.7	1.5
Port authority	251.0	252.4	247.9	258.9	246.5	245.5	2.2	-0.4	-0.4
Public sector	150.8	143.6	145.7	148.7	149.9	158.6	1.4	5.8	1.0
Shipbuilding and repair	35.9	30.5	31.3	34.1	32.1	39.2	0.3	22.1	1.8
Port trade	11.0	12.2	10.2	7.0	4.9	6.4	0.1	30.6	-10.3
Fishing and fish industry	1.4	1.2	1.8	1.2	0.6	0.6	0.0	0.0	-15.6
Maritime	3 323.0	3 783.2	3 700.9	3 579.4	3 490.7	3 848.9	34.3	10.3	3.0
Chemicals industry	3 113.2	3 421.7	3 165.0	3 673.4	3 671.9	3 149.9	28.1	-14.2	0.2
Trade	917.0	901.9	999.5	1 077.7	1 116.4	1 170.3	10.4	4.8	5.0
Fuel production	824.9	1 063.3	1 066.4	1 262.4	1 019.5	1 033.2	9.2	1.3	4.6
Other logistic services	502.1	545.6	559.5	626.0	680.2	719.4	6.4	5.8	7.5
Energy	321.8	280.6	341.7	310.0	155.0	259.3	2.3	67.3	-4.2
Construction	160.0	159.1	158.2	168.1	222.0	218.9	2.0	-1.4	6.5
Metalworking industry	250.3	249.1	235.6	250.6	217.8	216.3	1.9	-0.7	-2.9
Other industries	144.5	149.3	163.4	172.4	167.8	170.2	1.5	1.4	3.3
Road transport	141.6	144.9	142.4	146.7	143.9	158.3	1.4	10.0	2.3
Other land transport	155.0	115.1	103.0	93.8	101.0	111.0	1.0	9.9	-6.5
Food industry	59.3	61.5	61.3	63.8	65.7	78.0	0.7	18.7	5.6
Car manufacturing	86.5	77.1	77.2	86.2	77.6	73.5	0.7	-5.3	-3.2
Electronics	10.1	10.2	10.4	12.6	10.0	8.1	0.1	-19.0	-4.3
Non-maritime	6 686.2	7 179.6	7 083.5	7 943.7	7 648.7	7 366.3	65.7	-3.7	2.0
Direct	10 009.2	10 962.8	10 784.5	11 523.2	11 139.4	11 215.3	100.0	0.7	2.3
Indirect	8 987.1	8 309.1	7 844.7	8 079.8	7 786.0	7 742.3			
Total	18 996.3	19 271.9	18 629.2	19 603.0	18 925.4	18 957.5			

Source: NBB.

Where $\sigma_{2019,s} = 100 \times \frac{v_{2019,s}}{v_{2019,Direct}}$ is the share of sector s (in %) in 2019, $\alpha_{2019,s} = 100 \times \frac{v_{2019}-v_{2018}}{v_{2018}}$ is the growth of sector s (in %) between 2018 and 2019, $\tilde{\alpha}_s = 100\, x \left(\left(\frac{v_{2019}}{v_{2014}}\right)^{1/5} - 1\right)$ is the (geometric) average growth of sector s (in %) between 2014 and 2019.

TABLE 4.1.2 Employment at the port of Antwerp (in FTE)

	2014	2015	2016	2017	2018	2019	$\sigma_{2019,s}$	$\alpha_{2019,s}$	$\tilde{\alpha}_s$
Cargo handling	14 581	14 857	15 037	15 527	16 168	16 838	26.3	4.1	2.9
Shipping agents and forwarders	6 701	6 657	6 561	6 553	6 375	6 301	9.8	-1.2	-1.2
Public sector	1 828	1 745	1 740	1 699	1 669	1 766	2.8	5.8	-0.7
Port construction and dredging	1 260	1 313	1 420	1 441	1 590	1 694	2.6	6.5	6.1
Port authority	1 607	1 564	1 584	1 570	1 551	1 530	2.4	-1.4	-1.0
Shipping companies	929	852	899	758	782	858	1.3	9.7	-1.6
Shipbuilding and repair	371	365	361	363	351	384	0.6	9.1	0.7
Port trade	92	89	82	52	43	41	0.1	-5.2	-15.2
Fishing and fish industry	14	13	13	11	6	6	0.0	0.0	-14.7
Maritime	27 381	27 456	27 694	27 975	28 535	29 416	45.9	3.1	1.4
Chemicals industry	10 936	10 800	10 873	10 975	11 284	11 491	17.9	1.8	1.0
Other logistic services	4 180	4 347	4 622	5 238	5 473	5 718	8.9	4.5	6.5
Fuel production	2 626	2 750	2 751	2 905	2 872	2 822	4.4	-1.7	1.4
Metalworking industry	3 579	3 557	3 572	3 572	2 864	2 766	4.3	-3.4	-5.0
Construction	1 723	1 674	1 751	1 819	2 409	2 439	3.8	1.3	7.2
Trade	2 404	2 151	2 175	2 269	2 198	2 308	3.6	5.0	-0.8
Road transport	2 154	2 050	1 939	1 924	1 877	1 962	3.1	4.5	-1.8
Other land transport	2 439	1 938	1 676	1 503	1 502	1 398	2.2	-6.9	-10.5
Other industries	1 200	1 226	1 233	1 294	1 305	1 343	2.1	2.9	2.3
Energy	946	916	1 014	1 056	1 035	1 025	1.6	-1.0	1.6
Car manufacturing	1 004	942	846	910	859	855	1.3	-0.5	-3.2
Food industry	407	405	381	410	423	451	0.7	6.7	2.1
Electronics	133	134	137	140	130	128	0.2	-1.3	-0.7
Non-maritime	33 731	32 890	32 970	34 014	34 230	34 705	54.1	1.4	0.6
Direct	61 112	60 346	60 664	61 989	62 764	64 121	100.0	2.2	1.0
Indirect	80 499	74 521	74 480	76 788	79 481	80 203			
Total	141 611	134 867	135 145	138 777	142 246	144 324			

Source: NBB.

Where $\sigma_{2019,s} = 100 \times \frac{v_{2019,s}}{v_{2019,Direct}}$ is the share of sector s (in %) in 2019, $\alpha_{2019,s} = 100 \times \frac{v_{2019}-v_{2018}}{v_{2018}}$ is the growth of sector s (in %) between 2018 and 2019, $\tilde{\alpha}_s = 100\, x \left(\left(\frac{v_{2019}}{v_{2014}}\right)^{1/5} - 1\right)$ is the (geometric) average growth of sector s (in %) between 2014 and 2019.

TABLE 4.1.3 Investment at the port of Antwerp (in € million)

	2014	2015	2016	2017	2018	2019	$\sigma_{2019,s}$	$\alpha_{2019,s}$	$\bar{\alpha}_s$
Cargo handling	578.6	607.8	673.2	729.5	936.3	795.6	24.4	-15.0	6.6
Shipping companies	1 009.8	591.0	734.3	401.8	1 576.3	510.1	15.6	-67.6	-12.8
Port construction and dredging	27.4	70.6	34.4	334.9	230.5	274.3	8.4	19.0	58.5
Port authority	154.2	131.0	141.1	79.6	98.6	94.3	2.9	-4.4	-9.4
Shipping agents and forwarders	32.7	33.0	37.0	45.8	50.2	37.4	1.1	-25.5	2.7
Public sector	26.5	19.8	29.3	15.6	38.0	31.4	1.0	-17.4	3.5
Shipbuilding and repair	1.3	1.7	2.3	1.3	2.7	10.3	0.3	281.5	51.3
Fishing and fish industry	0.0	0.0	0.0	0.6	0.8	0.3	0.0	-62.5	
Port trade	0.4	0.3	0.5	1.1	0.1	0.1	0.0	0.0	-24.2
Maritime	1 831.0	1 455.3	1 652.2	1 610.1	2 933.5	1 753.7	53.7	-40.2	-0.9
Chemicals industry	737.3	690.8	791.3	803.6	1 115.1	867.5	26.6	-22.2	3.3
Fuel production	417.8	525.3	616.7	433.7	242.8	185.5	5.7	-23.6	-15.0
Energy	108.4	167.5	142.1	249.2	280.3	139.9	4.3	-50.1	5.2
Other logistic services	69.8	85.4	120.0	137.0	150.1	101.6	3.1	-32.3	7.8
Other industries	19.6	24.0	25.1	84.0	44.2	39.2	1.2	-11.3	14.9
Trade	56.1	54.0	48.1	35.6	38.8	37.9	1.2	-2.3	-7.5
Metalworking industry	11.4	12.9	14.3	18.6	11.2	37.8	1.2	237.5	27.1
Road transport	33.9	24.6	32.1	20.2	32.2	27.0	0.8	-16.1	-4.4
Other land transport	12.2	23.6	13.7	30.7	45.7	25.0	0.8	-45.3	15.4
Food industry	12.9	22.7	13.3	13.1	34.9	24.1	0.7	-30.9	13.3
Construction	8.7	15.1	12.5	18.4	25.0	22.3	0.7	-10.8	20.7
Car manufacturing	0.6	5.7	2.7	4.3	2.6	3.9	0.1	50.0	45.4
Electronics	0.0	0.0	0.0	0.4	0.3	0.4	0.0	33.3	
Non-maritime	1 488.7	1 651.6	1 831.9	1 848.9	2 023.3	1 511.9	46.3	-25.3	0.3
Direct	3 319.6	3 106.9	3 484.1	3 459.0	4 956.8	3 265.6	100.0	-34.1	-0.3

Source: NBB.

Where $\sigma_{2019,s} = 100 \times \frac{v_{2019,s}}{v_{2019,Direct}}$ is the share of sector s (in %) in 2019, $\alpha_{2019,s} = 100 \times \frac{v_{2019}-v_{2018}}{v_{2018}}$ is the growth of sector s (in %) between 2018 and 2019, $\bar{\alpha}_s = 100\, x \left(\left(\frac{v_{2019}}{v_{2014}}\right)^{1/5} - 1\right)$ is the (geometric) average growth of sector s (in %) between 2014 and 2019.

Annex 4.2 North Sea Port Flanders

TABLE 4.2.1 Value added at North Sea Port Flanders (in € million)

	2014	2015	2016	2017	2018	2019	$\sigma_{2019,s}$	$\alpha_{2019,s}$	$\bar{\alpha}_s$
Cargo handling	247.6	222.8	237.6	251.9	254.9	264.5	5.9	3.8	1.3
Shipping agents and forwarders	33.0	34.8	33.9	42.0	37.8	37.9	0.8	0.3	2.8
Port authority	24.8	23.9	32.2	30.5	30.4	31.7	0.7	4.3	5.0
Public sector	21.1	21.4	22.2	21.1	22.5	21.3	0.5	-5.3	0.2
Shipbuilding and repair	4.1	4.1	3.9	4.1	3.5	6.0	0.1	71.4	7.9
Shipping companies	7.4	3.9	3.4	4.9	4.0	3.3	0.1	-17.5	-14.9
Port trade	0.3	0.4	0.4	0.3	0.3	0.3	0.0	0.0	0.0
Maritime	338.2	311.3	333.6	354.9	353.4	364.9	8.1	3.3	1.5
Trade	805.9	822.0	905.4	977.2	1 050.9	1 112.8	24.8	5.9	6.7
Car manufacturing	713.5	722.6	711.4	746.4	791.0	854.4	19.0	8.0	3.7
Metalworking industry	641.0	773.9	835.5	1 056.7	956.8	785.1	17.5	-17.9	4.1
Chemicals industry	384.5	428.4	372.5	486.5	491.6	433.4	9.7	-11.8	2.4
Other industries	178.1	141.3	149.8	140.2	175.5	180.2	4.0	2.7	0.2
Construction	122.0	118.1	125.0	144.6	154.7	159.3	3.6	3.0	5.5
Fuel production	41.4	56.4	36.6	126.6	119.5	148.7	3.3	24.4	29.1
Food industry	104.4	112.4	104.3	107.3	119.8	143.6	3.2	19.9	6.6
Other logistic services	141.8	138.3	113.7	123.9	120.6	133.5	3.0	10.7	-1.2
Road transport	66.4	68.6	69.7	73.4	70.8	77.7	1.7	9.7	3.2
Energy	36.2	38.0	57.2	49.6	23.8	45.4	1.0	90.8	4.6
Electronics	34.1	35.5	30.0	36.9	36.3	34.8	0.8	-4.1	0.4
Other land transport	10.1	11.3	11.8	11.1	11.1	13.0	0.3	17.1	5.2
Non-maritime	3 279.4	3 466.9	3 522.9	4 080.5	4 122.5	4 121.7	91.9	0.0	4.7
Direct	3 617.6	3 778.2	3 856.5	4 435.4	4 475.8	4 486.6	100.0	0.2	4.4
Indirect	3 901.0	3 456.7	3 447.4	4 147.0	4 083.4	4 045.7			
Total	7 518.5	7 234.9	7 303.9	8 582.4	8 559.2	8 532.3			

Source: NBB.

Where $\sigma_{2019,s} = 100 \times \frac{v_{2019,s}}{v_{2019,Direct}}$ is the share of sector s (in %) in 2019, $\alpha_{2019,s} = 100 \times \frac{v_{2019}-v_{2018}}{v_{2018}}$ is the growth of sector s (in %) between 2018 and 2019, $\bar{\alpha}_s = 100\, x \left(\left(\frac{v_{2019}}{v_{2014}}\right)^{1/5} - 1\right)$ is the (geometric) average growth of sector s (in %) between 2014 and 2019.

TABLE 4.2.2 Employment at North Sea Port Flanders (in FTE)

	2014	2015	2016	2017	2018	2019	$\sigma_{2019,s}$	$\alpha_{2019,s}$	$\tilde{\alpha}_s$
Cargo handling	2 407	1 867	2 057	2 097	2 264	2 297	7.9	1.5	-0.9
Shipping agents and forwarders	360	354	359	416	414	439	1.5	6.1	4.1
Public sector	235	228	211	214	196	193	0.7	-1.6	-3.9
Port authority	148	148	148	143	138	134	0.5	-2.7	-2.0
Shipbuilding and repair	52	53	51	47	46	46	0.2	-0.4	-2.3
Port trade	3	3	4	2	3	2	0.0	-4.0	-5.6
Shipping companies	18	5	4	4	4	2	0.0	-59.0	-38.4
Maritime	3 223	2 658	2 833	2 923	3 064	3 113	10.7	1.6	-0.7
Car manufacturing	9 088	9 546	9 388	9 355	9 503	9 670	33.2	1.8	1.2
Metalworking industry	6 057	6 015	6 151	6 030	5 818	5 819	20.0	0.0	-0.8
Chemicals industry	2 102	2 109	2 145	2 176	2 241	2 265	7.8	1.1	1.5
Construction	1 460	1 453	1 548	1 686	1 792	1 815	6.2	1.3	4.4
Trade	2 072	1 597	1 603	1 638	1 657	1 626	5.6	-1.9	-4.7
Other logistic services	1 159	1 166	1 155	1 347	1 281	1 371	4.7	7.0	3.4
Other industries	1 019	889	930	974	1 015	1 057	3.6	4.2	0.7
Road transport	783	718	732	760	766	807	2.8	5.4	0.6
Food industry	632	650	636	677	680	706	2.4	3.8	2.3
Electronics	253	267	258	250	262	256	0.9	-2.1	0.2
Fuel production	42	220	228	235	228	231	0.8	1.1	40.9
Energy	180	184	196	202	202	201	0.7	-0.1	2.3
Other land transport	160	189	185	160	166	174	0.6	4.4	1.7
Non-maritime	25 006	25 002	25 155	25 490	25 612	25 999	89.3	1.5	0.8
Direct	28 229	27 660	27 988	28 413	28 676	29 112	100.0	1.5	0.6
Indirect	35 358	31 314	32 055	33 663	34 975	36 033			
Total	63 587	58 974	60 043	62 076	63 651	65 145			

Source: NBB.

Where $\sigma_{2019,s} = 100 \times \frac{v_{2019,s}}{v_{2019,Direct}}$ is the share of sector s (in %) in 2019, $\alpha_{2019,s} = 100 \times \frac{v_{2019}-v_{2018}}{v_{2018}}$ is the growth of sector s (in %) between 2018 and 2019, $\tilde{\alpha}_s = 100\, x \left(\left(\frac{v_{2019}}{v_{2014}}\right)^{1/5} - 1\right)$ is the (geometric) average growth of sector s (in %) between 2014 and 2019.

TABLE 4.2.3 Investment at North Sea Port Flanders (in € million)

	2014	2015	2016	2017	2018	2019	$\sigma_{2019,s}$	$\alpha_{2019,s}$	$\tilde{\alpha}_s$
Cargo handling	48.9	45.4	90.4	143.5	71.2	128.5	16.0	80.5	21.3
Port authority	6.6	8.5	8.6	11.7	17.7	34.8	4.3	96.6	39.4
Shipping agents and forwarders	1.9	1.8	4.4	2.0	7.0	16.7	2.1	138.6	54.5
Public sector	3.0	10.3	17.7	8.6	0.5	5.7	0.7	1040.0	13.7
Shipping companies	1.0	0.2	0.7	2.2	3.9	1.6	0.2	-59.0	9.9
Shipbuilding and repair	0.4	0.8	0.6	1.3	0.3	0.7	0.1	133.3	11.8
Port trade	0.1	0.0	0.1	0.0	0.0	0.0	0.0		-100.0
Maritime	61.8	66.9	122.6	169.3	100.6	188.1	23.4	87.0	24.9
Chemicals industry	70.3	52.4	54.3	70.1	109.3	158.3	19.7	44.8	17.6
Car manufacturing	50.6	53.4	115.9	191.5	120.6	151.6	18.9	25.7	24.5
Metalworking industry	75.2	84.2	122.1	159.3	72.9	132.3	16.5	81.5	12.0
Trade	43.6	31.8	33.6	31.2	34.0	43.3	5.4	27.4	-0.1
Food industry	15.1	22.7	23.9	19.3	22.1	29.2	3.6	32.1	14.1
Construction	10.7	14.3	10.1	13.5	15.1	23.4	2.9	55.0	16.9
Other logistic services	26.5	15.4	19.1	24.9	33.3	23.3	2.9	-30.0	-2.5
Other industries	19.3	17.1	18.2	16.5	14.1	18.0	2.2	27.7	-1.4
Other land transport	16.5	7.2	2.4	5.1	8.6	9.7	1.2	12.8	-10.1
Road transport	14.6	9.7	9.3	10.6	10.4	8.2	1.0	-21.2	-10.9
Fuel production	2.2	1.7	2.2	2.3	3.9	7.4	0.9	89.7	27.5
Energy	5.9	4.4	6.3	4.5	5.3	6.6	0.8	24.5	2.3
Electronics	1.8	2.2	1.8	3.3	5.5	2.8	0.3	-49.1	9.2
Non-maritime	352.3	316.5	419.1	552.0	454.9	614.1	76.6	35.0	11.8
Direct	414.1	383.5	541.7	721.3	555.5	802.2	100.0	44.4	14.1

Source: NBB.

Where $\sigma_{2019,s} = 100 \times \frac{v_{2019,s}}{v_{2019,Direct}}$ is the share of sector s (in %) in 2019, $\alpha_{2019,s} = 100 \times \frac{v_{2019}-v_{2018}}{v_{2018}}$ is the growth of sector s (in %) between 2018 and 2019, $\tilde{\alpha}_s = 100\, x \left(\left(\frac{v_{2019}}{v_{2014}}\right)^{1/5} - 1\right)$ is the (geometric) average growth of sector s (in %) between 2014 and 2019.

Annex 4.3 Port of Zeebrugge

TABLE 4.3.1 Value added at the port of Zeebrugge (in € million)

	2014	2015	2016	2017	2018	2019	$\sigma_{2019,s}$	$\alpha_{2019,s}$	$\tilde{\alpha}_s$
Cargo handling	205.4	218.2	246.6	247.0	246.8	259.7	24.1	5.2	4.8
Public sector	107.1	103.3	103.1	103.0	102.3	103.6	9.6	1.3	-0.7
Shipping agents and forwarders	68.9	84.8	67.1	69.3	66.0	79.2	7.3	20.0	2.8
Fishing and fish industry	43.5	47.7	52.2	53.3	52.8	53.9	5.0	2.1	4.4
Port authority	36.7	35.8	35.0	37.7	41.7	45.1	4.2	8.2	4.2
Shipping companies	50.0	48.3	53.9	47.9	49.7	37.4	3.5	-24.7	-5.6
Port construction and dredging	18.6	30.4	19.6	28.3	20.6	26.4	2.4	28.2	7.3
Shipbuilding and repair	10.1	9.6	11.2	10.7	9.7	10.4	1.0	7.2	0.6
Port trade	1.1	1.0	1.1	0.7	0.8	0.8	0.1	0.0	-6.2
Maritime	541.4	579.1	589.7	597.9	590.3	616.6	57.1	4.5	2.6
Energy	98.4	91.5	89.8	93.7	91.4	119.4	11.1	30.6	3.9
Trade	85.7	85.8	88.1	88.1	99.2	98.5	9.1	-0.7	2.8
Road transport	47.7	45.6	50.1	59.7	62.8	53.1	4.9	-15.4	2.2
Other logistic services	26.6	28.8	36.0	40.4	35.2	39.7	3.7	12.8	8.3
Other industries	43.3	40.2	38.4	44.7	37.1	34.7	3.2	-6.5	-4.3
Construction	23.8	25.5	31.7	31.6	33.0	33.6	3.1	1.8	7.1
Food industry	35.7	33.8	35.7	34.6	31.6	31.4	2.9	-0.6	-2.5
Chemicals industry	36.1	34.0	33.2	37.2	31.5	30.9	2.9	-1.9	-3.1
Other land transport	6.7	7.4	7.6	7.1	7.8	8.3	0.8	6.4	4.4
Metalworking industry	5.1	4.4	4.8	5.6	8.7	8.1	0.8	-6.9	9.7
Electronics	3.0	3.3	3.5	4.5	4.1	3.5	0.3	-14.6	3.1
Car manufacturing	1.3	1.5	1.4	1.7	1.7	1.6	0.1	-5.9	4.2
Non-maritime	413.4	401.9	420.4	448.9	443.9	462.7	42.9	4.2	2.3
Direct	954.9	981.0	1 010.2	1 046.8	1 034.2	1 079.3	100.0	4.4	2.5
Indirect	781.7	684.0	716.4	733.9	739.9	781.1			
Total	1 736.5	1 664.9	1 726.6	1 780.7	1 774.1	1 860.4			

Source: NBB.

Where $\sigma_{2019,s} = 100 \times \frac{v_{2019,s}}{v_{2019,Direct}}$ is the share of sector s (in %) in 2019, $\alpha_{2019,s} = 100 \times \frac{v_{2019}-v_{2018}}{v_{2018}}$ is the growth of sector s (in %) between 2018 and 2019, $\tilde{\alpha}_s = 100\, x \left(\left(\frac{v_{2019}}{v_{2014}}\right)^{1/5} - 1\right)$ is the (geometric) average growth of sector s (in %) between 2014 and 2019.

TABLE 4.3.2 Employment at the port of Zeebrugge (in FTE)

	2014	2015	2016	2017	2018	2019	$\sigma_{2019,s}$	$\alpha_{2019,s}$	$\tilde{\alpha}_s$
Cargo handling	2 630	2 694	2 822	2 977	3 109	3 227	32.2	3.8	4.2
Public sector	1 563	1 478	1 443	1 399	1 357	1 332	13.3	-1.9	-3.1
Shipping agents and forwarders	658	652	637	643	689	714	7.1	3.6	1.7
Fishing and fish industry	533	530	530	522	493	514	5.1	4.2	-0.7
Port construction and dredging	213	194	185	196	202	205	2.0	1.5	-0.7
Shipping companies	212	175	147	174	177	178	1.8	0.7	-3.4
Port authority	135	133	136	133	131	134	1.3	2.1	-0.1
Shipbuilding and repair	136	128	141	150	116	121	1.2	4.3	-2.3
Port trade	14	13	15	11	12	12	0.1	-0.8	-3.1
Maritime	6 092	5 997	6 056	6 205	6 287	6 437	64.2	2.4	1.1
Trade	803	849	875	827	829	855	8.5	3.1	1.3
Road transport	662	581	670	690	732	739	7.4	0.9	2.2
Other industries	447	418	399	415	401	404	4.0	0.7	-2.0
Construction	336	347	360	345	353	353	3.5	0.2	1.0
Other logistic services	169	207	235	275	274	310	3.1	12.8	12.9
Food industry	300	310	337	291	291	283	2.8	-3.0	-1.2
Chemicals industry	263	234	248	281	240	236	2.4	-1.7	-2.2
Energy	134	127	125	123	119	127	1.3	6.5	-1.2
Other land transport	107	133	127	114	119	112	1.1	-5.9	0.9
Metalworking industry	85	67	66	70	111	109	1.1	-1.4	5.1
Electronics	43	46	55	62	56	50	0.5	-10.3	3.4
Car manufacturing	13	13	15	17	17	17	0.2	2.4	6.2
Non-maritime	3 361	3 333	3 510	3 509	3 541	3 594	35.8	1.5	1.3
Direct	9 453	9 330	9 566	9 713	9 829	10 031	100.0	2.1	1.2
Indirect	9 876	8 740	9 025	9 143	9 587	9 899			
Total	19 329	18 070	18 591	18 856	19 416	19 929			

Source: NBB.

Where $\sigma_{2019,s} = 100 \times \frac{v_{2019,s}}{v_{2019,Direct}}$ is the share of sector s (in %) in 2019, $\alpha_{2019,s} = 100 \times \frac{v_{2019}-v_{2018}}{v_{2018}}$ is the growth of sector s (in %) between 2018 and 2019, $\tilde{\alpha}_s = 100\, x \left(\left(\frac{v_{2019}}{v_{2014}}\right)^{1/5} - 1\right)$ is the (geometric) average growth of sector s (in %) between 2014 and 2019.

TABLE 4.3.3 Investment at the port of Zeebrugge (in € million)

	2014	2015	2016	2017	2018	2019	$\sigma_{2019,s}$	$\alpha_{2019,s}$	$\tilde{\alpha}_s$
Cargo handling	50.7	28.1	43.3	59.4	33.8	43.7	13.8	29.3	-2.9
Public sector	13.4	9.0	7.5	30.6	3.2	42.5	13.5	1228.1	26.0
Port authority	22.0	13.4	24.2	22.7	26.1	25.6	8.1	-1.9	3.1
Fishing and fish industry	8.8	13.9	6.2	8.1	11.4	13.4	4.2	17.5	8.8
Shipbuilding and repair	2.5	3.3	4.7	2.1	4.9	7.7	2.4	57.1	25.2
Shipping agents and forwarders	14.7	15.0	19.3	9.3	4.5	5.2	1.6	15.6	-18.8
Port construction and dredging	1.3	3.0	3.6	2.7	5.7	3.0	0.9	-47.4	18.2
Shipping companies	0.8	0.2	13.0	16.7	0.2	0.6	0.2	200.0	-5.6
Port trade	0.0	0.0	0.2	0.1	0.0	0.1	0.0		
Maritime	114.1	85.8	122.0	151.7	89.8	142.0	44.9	58.1	4.5
Energy	31.7	85.1	105.5	64.9	59.5	101.4	32.1	70.4	26.2
Trade	10.6	11.7	9.8	13.2	12.4	13.5	4.3	8.9	5.0
Other land transport	10.4	20.5	21.9	22.3	27.7	10.8	3.4	-61.0	0.8
Other logistic services	6.2	6.7	5.4	8.0	8.4	10.4	3.3	23.8	10.9
Other industries	6.3	6.2	4.1	8.1	11.6	8.6	2.7	-25.9	6.4
Road transport	10.8	16.6	35.6	18.0	14.5	8.2	2.6	-43.4	-5.4
Chemicals industry	4.3	3.6	3.4	5.8	5.9	7.9	2.5	33.9	12.9
Construction	2.6	2.5	2.7	3.7	3.5	6.9	2.2	97.1	21.6
Food industry	5.9	3.7	4.3	4.4	7.9	4.5	1.4	-43.0	-5.3
Metalworking industry	0.3	0.3	0.2	3.0	0.8	1.4	0.4	75.0	36.1
Electronics	0.5	0.4	0.2	0.1	0.2	0.4	0.1	100.0	-4.4
Car manufacturing	0.0	0.1	0.2	0.1	0.0	0.1	0.0		
Non-maritime	89.7	157.4	193.3	151.7	152.5	173.9	55.1	14.0	14.2
Direct	203.8	243.2	315.3	303.4	242.3	315.9	100.0	30.4	9.2

Source: NBB.

Where $\sigma_{2019,s} = 100 \times \frac{v_{2019,s}}{v_{2019,Direct}}$ is the share of sector s (in %) in 2019, $\alpha_{2019,s} = 100 \times \frac{v_{2019}-v_{2018}}{v_{2018}}$ is the growth of sector s (in %) between 2018 and 2019, $\tilde{\alpha}_s = 100\, x \left(\left(\frac{v_{2019}}{v_{2014}}\right)^{1/5} - 1\right)$ is the (geometric) average growth of sector s (in %) between 2014 and 2019.

Annex 4.4 Port of Ostend

TABLE 4.4.1 Value added at the port of Ostend (in € million)

	2014	2015	2016	2017	2018	2019	$\sigma_{2019,s}$	$\alpha_{2019,s}$	$\tilde{\alpha}_s$
Public sector	51.7	56.2	58.3	59.2	61.7	63.2	10.5	2.4	4.1
Port construction and dredging	57.6	70.5	57.1	42.6	47.8	53.3	8.9	11.5	-1.5
Fishing and fish industry	39.8	38.8	40.6	43.6	38.2	33.0	5.5	-13.6	-3.7
Shipbuilding and repair	14.0	12.6	12.9	13.2	14.4	17.1	2.8	18.8	4.1
Port authority	2.4	2.7	2.9	3.5	4.6	4.0	0.7	-13.0	10.8
Shipping agents and forwarders	2.9	5.0	4.0	5.0	5.5	3.5	0.6	-36.4	3.8
Cargo handling	3.1	2.4	2.5	1.3	2.4	0.7	0.1	-70.8	-25.7
Shipping companies	0.9	0.7	0.6	0.5	0.2	0.2	0.0	0.0	-26.0
Maritime	172.4	189.0	178.9	169.1	174.8	175.0	29.1	0.1	0.3
Metalworking industry	169.6	168.3	164.5	190.6	199.1	210.4	35.0	5.7	4.4
Construction	31.7	33.9	30.8	39.2	35.0	43.8	7.3	25.1	6.7
Chemicals industry	36.7	34.3	38.4	36.6	38.6	38.1	6.3	-1.3	0.8
Other logistic services	13.5	13.0	14.5	15.9	23.0	32.0	5.3	39.1	18.8
Road transport	22.8	25.0	26.0	26.0	24.8	27.8	4.6	12.1	4.0
Other industries	7.2	21.6	22.9	18.5	22.6	23.9	4.0	5.8	27.1
Energy	18.8	18.9	19.6	18.7	21.3	20.5	3.4	-3.8	1.7
Food industry	11.6	14.5	16.7	16.9	16.9	17.2	2.9	1.8	8.2
Trade	14.3	12.1	13.4	9.1	10.1	10.7	1.8	5.9	-5.6
Car manufacturing	0.8	2.7	0.8	1.4	1.3	1.2	0.2	-7.7	8.4
Other land transport	0.0	0.6	0.5	0.5	0.5	0.3	0.0	-40.0	
Non-maritime	327.1	344.7	348.2	373.5	393.2	426.0	70.9	8.3	5.4
Direct	499.5	533.7	527.1	542.6	568.0	600.9	100.0	5.8	3.8
Indirect	384.9	388.2	367.2	378.6	397.8	431.2			
Total	884.4	921.9	894.3	921.2	965.8	1 032.1			

Source: NBB.

Where $\sigma_{2019,s} = 100 \times \frac{v_{2019,s}}{v_{2019,Direct}}$ is the share of sector s (in %) in 2019, $\alpha_{2019,s} = 100 \times \frac{v_{2019}-v_{2018}}{v_{2018}}$ is the growth of sector s (in %) between 2018 and 2019, $\tilde{\alpha}_s = 100\, x \left(\left(\frac{v_{2019}}{v_{2014}}\right)^{1/5} - 1\right)$ is the (geometric) average growth of sector s (in %) between 2014 and 2019.

TABLE 4.4.2 Employment at the port of Ostend (in FTE)

	2014	2015	2016	2017	2018	2019	$\sigma_{2019,s}$	$\alpha_{2019,s}$	$\tilde{\alpha}_s$
Public sector	740	772	786	770	767	775	14.7	1.1	0.9
Fishing and fish industry	409	422	412	426	433	414	7.8	-4.2	0.3
Port construction and dredging	381	364	345	332	328	323	6.1	-1.6	-3.3
Shipbuilding and repair	221	197	207	223	235	253	4.8	7.5	2.7
Port authority	38	37	35	34	37	40	0.8	7.3	0.8
Shipping agents and forwarders	20	31	28	28	30	24	0.4	-22.7	3.5
Cargo handling	63	45	33	9	6	5	0.1	-27.4	-41.1
Shipping companies	2	1	2	4	4	3	0.1	-30.8	9.7
Maritime	1 875	1 868	1 850	1 826	1 840	1 835	34.8	-0.3	-0.4
Metalworking industry	1 450	1 431	1 388	1 445	1 498	1 614	30.6	7.7	2.2
Construction	413	421	432	439	420	415	7.9	-1.2	0.1
Road transport	406	419	417	416	408	408	7.7	0.0	0.1
Chemicals industry	312	309	304	299	310	309	5.9	-0.5	-0.2
Other logistic services	96	115	119	117	171	235	4.5	37.2	19.5
Food industry	142	143	135	130	133	138	2.6	3.9	-0.6
Trade	197	208	201	113	123	131	2.5	6.8	-7.8
Other industries	79	118	117	120	120	124	2.3	3.0	9.5
Energy	56	46	36	40	39	46	0.9	17.5	-3.8
Car manufacturing	33	29	26	26	22	18	0.3	-17.1	-10.8
Other land transport	0	10	8	7	7	5	0.1	-26.5	
Non-maritime	3 184	3 251	3 183	3 152	3 251	3 443	65.2	5.9	1.6
Direct	5 058	5 120	5 033	4 978	5 091	5 278	100.0	3.7	0.9
Indirect	4 307	4 267	4 072	4 110	4 234	4 372			
Total	9 365	9 386	9 105	9 088	9 325	9 650			

Source: NBB.

Where $\sigma_{2019,s} = 100 \times \frac{v_{2019,s}}{v_{2019,Direct}}$ is the share of sector s (in %) in 2019, $\alpha_{2019,s} = 100 \times \frac{v_{2019} - v_{2018}}{v_{2018}}$ is the growth of sector s (in %) between 2018 and 2019, $\tilde{\alpha}_s = 100\, x \left(\left(\frac{v_{2019}}{v_{2014}} \right)^{1/5} - 1 \right)$ is the (geometric) average growth of sector s (in %) between 2014 and 2019.

TABLE 4.4.3 Investment at the port of Ostend (in € million)

	2014	2015	2016	2017	2018	2019	$\sigma_{2019,s}$	$\alpha_{2019,s}$	$\tilde{\alpha}_s$
Fishing and fish industry	4.0	4.3	4.1	11.1	10.9	10.6	9.5	-2.8	21.5
Public sector	13.9	13.8	23.8	5.4	32.7	6.8	6.1	-79.2	-13.3
Shipping agents and forwarders	0.6	2.5	3.8	0.4	1.6	2.2	2.0	37.5	29.7
Port authority	2.9	1.1	0.4	2.0	1.3	2.0	1.8	53.8	-7.2
Cargo handling	0.9	0.2	0.0	0.1	0.1	1.5	1.3	1400.0	10.8
Shipbuilding and repair	1.6	0.2	0.4	0.1	1.0	0.8	0.7	-20.0	-12.9
Shipping companies	0.2	0.0	0.0	0.2	0.1	0.1	0.1	0.0	-12.9
Port construction and dredging	46.4	0.1	1.3	2.8	1.2	0.0	0.0	-100.0	-100.0
Maritime	70.5	22.2	33.8	22.1	48.9	24.0	21.6	-50.9	-19.4
Other industries	1.4	18.8	14.4	10.7	12.6	28.4	16.4	125.4	82.6
Metalworking industry	11.2	12.5	8.7	11.2	21.4	25.6	15.4	19.6	18.0
Construction	13.6	10.6	21.2	15.1	20.1	10.8	9.7	-46.3	-4.5
Chemicals industry	5.7	6.0	5.9	8.6	9.3	6.6	7.1	-29.0	3.0
Other logistic services	3.8	3.1	1.4	2.8	8.3	5.1	6.4	-38.6	6.1
Trade	7.4	3.6	2.9	5.0	2.5	3.6	3.1	44.0	-13.4
Food industry	3.7	1.3	1.9	4.1	3.6	3.3	2.8	-8.3	-2.3
Road transport	1.8	2.4	2.5	4.3	4.0	2.0	1.9	-50.0	2.1
Energy	0.2	0.3	1.1	0.7	0.9	1.7	0.7	88.9	53.4
Other land transport	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	
Car manufacturing	0.1	0.0	0.1	0.0	0.0	0.0	0.0		-100.0
Non-maritime	48.9	58.5	60.2	62.5	82.8	87.3	78.4	5.4	12.3
Direct	119.5	80.7	94.0	84.6	131.7	111.3	100.0	-15.5	-1.4

Source: NBB.

Where $\sigma_{2019,s} = 100 \times \frac{v_{2019,s}}{v_{2019,Direct}}$ is the share of sector s (in %) in 2019, $\alpha_{2019,s} = 100 \times \frac{v_{2019} - v_{2018}}{v_{2018}}$ is the growth of sector s (in %) between 2018 and 2019, $\tilde{\alpha}_s = 100\, x \left(\left(\frac{v_{2019}}{v_{2014}} \right)^{1/5} - 1 \right)$ is the (geometric) average growth of sector s (in %) between 2014 and 2019.

Annex 4.5 Liège port complex

TABLE 4.5.1 Value added at the Liège port complex (in € million)

	2014	2015	2016	2017	2018	2019	$\sigma_{2019,s}$	$\alpha_{2019,s}$	$\tilde{\alpha}_s$
Cargo handling	13.1	14.2	15.4	15.4	15.4	16.1	1.5	4.5	4.2
Shipping agents and forwarders	3.6	3.1	3.9	2.7	3.5	4.5	0.4	28.6	4.6
Shipping companies	3.6	4.2	3.8	4.2	4.8	4.5	0.4	-6.3	4.6
Port authority	2.6	2.6	2.6	2.8	2.8	2.8	0.3	0.0	1.5
Shipbuilding and repair	0.6	0.5	0.6	0.5	0.7	0.5	0.0	-28.6	-3.6
Maritime	23.5	24.5	26.4	25.7	27.2	28.3	2.7	4.3	3.8
Metalworking industry	274.6	275.0	278.9	310.0	309.1	218.3	21.0	-29.4	-4.5
Energy	324.7	250.8	324.9	260.5	80.5	216.9	20.8	169.4	-7.8
Construction	175.8	145.1	134.9	139.1	136.8	146.5	14.1	7.1	-3.6
Chemicals industry	143.1	132.4	149.4	151.3	152.3	144.8	13.9	-4.9	0.2
Fuel production	39.2	40.4	69.6	75.5	78.9	89.1	8.6	12.9	17.8
Other industries	61.3	75.6	69.5	71.5	63.8	71.2	6.8	11.6	3.0
Trade	66.0	60.2	61.4	52.1	69.6	69.2	6.6	-0.6	1.0
Other logistic services	19.4	27.1	27.2	29.2	32.1	41.2	4.0	28.3	16.3
Food industry	26.9	28.5	15.5	23.6	22.0	6.8	0.7	-69.1	-24.0
Road transport	5.3	4.3	4.2	4.5	5.3	4.8	0.5	-9.4	-2.0
Electronics	4.2	6.1	4.8	6.7	6.5	3.3	0.3	-49.2	-4.7
Other land transport	1.1	0.8	0.6	0.6	0.6	0.2	0.0	-66.7	-28.9
Car manufacturing	0.4	0.3	0.4	0.4	0.2	0.0	0.0	-100.0	-100.0
Non-maritime	1 142.0	1 046.3	1 141.3	1 125.0	957.7	1 012.3	97.3	5.7	-2.4
Direct	1 165.5	1 070.8	1 167.6	1 150.7	984.8	1 040.6	100.0	5.7	-2.2
Indirect	1 145.4	969.3	1 045.1	1 096.6	1 000.5	934.6			
Total	2 310.9	2 040.1	2 212.8	2 247.3	1 985.3	1 975.3			

Source: NBB.

Where $\sigma_{2019,s} = 100 \times \frac{v_{2019,s}}{v_{2019,Direct}}$ is the share of sector s (in %) in 2019, $\alpha_{2019,s} = 100 \times \frac{v_{2019}-v_{2018}}{v_{2018}}$ is the growth of sector s (in %) between 2018 and 2019, $\tilde{\alpha}_s = 100\, x \left(\left(\frac{v_{2019}}{v_{2014}}\right)^{1/5} - 1\right)$ is the (geometric) average growth of sector s (in %) between 2014 and 2019.

TABLE 4.5.2 Employment at the Liège port complex (in FTE)

	2014	2015	2016	2017	2018	2019	$\sigma_{2019,s}$	$\alpha_{2019,s}$	$\tilde{\alpha}_s$
Cargo handling	153	157	174	185	189	203	2.5	7.3	5.8
Shipping agents and forwarders	47	41	42	44	58	68	0.8	17.9	7.8
Shipping companies	52	53	55	52	53	51	0.6	-3.6	-0.5
Port authority	35	34	35	34	33	34	0.4	3.0	-0.3
Shipbuilding and repair	9	9	10	10	10	11	0.1	7.8	3.9
Maritime	296	294	316	325	343	367	4.6	7.0	4.4
Metalworking industry	2 783	2 440	2 307	2 357	2 374	2 433	30.3	2.5	-2.7
Energy	1 293	1 286	1 244	1 219	1 197	1 199	14.9	0.2	-1.5
Chemicals industry	996	1 011	1 036	1 032	1 032	1 046	13.0	1.4	1.0
Construction	1 017	1 043	1 026	1 060	1 012	1 036	12.9	2.4	0.4
Other industries	729	888	750	692	708	736	9.2	3.9	0.2
Other logistic services	345	358	366	411	397	443	5.5	11.6	5.1
Trade	396	387	367	374	370	376	4.7	1.8	-1.0
Fuel production	125	125	125	122	121	122	1.5	0.4	-0.6
Food industry	111	155	101	140	109	111	1.4	1.3	0.0
Electronics	71	74	73	81	85	87	1.1	2.5	4.2
Road transport	105	91	78	77	75	74	0.9	-2.1	-6.8
Other land transport	17	12	10	8	8	3	0.0	-69.1	-31.6
Car manufacturing	9	7	8	10	7	0	0.0	-100.0	-100.0
Non-maritime	7 996	7 877	7 492	7 584	7 495	7 665	95.4	2.3	-0.8
Direct	8 292	8 170	7 808	7 909	7 837	8 032	100.0	2.5	-0.6
Indirect	11 199	10 013	9 721	10 005	10 425	10 828			
Total	19 491	18 184	17 528	17 914	18 262	18 860			

Source: NBB.

Where $\sigma_{2019,s} = 100 \times \frac{v_{2019,s}}{v_{2019,Direct}}$ is the share of sector s (in %) in 2019, $\alpha_{2019,s} = 100 \times \frac{v_{2019}-v_{2018}}{v_{2018}}$ is the growth of sector s (in %) between 2018 and 2019, $\tilde{\alpha}_s = 100\, x \left(\left(\frac{v_{2019}}{v_{2014}}\right)^{1/5} - 1\right)$ is the (geometric) average growth of sector s (in %) between 2014 and 2019.

TABLE 4.5.3 Investment at the Liège port complex (in € million)

	2014	2015	2016	2017	2018	2019	$\sigma_{2019,s}$	$\alpha_{2019,s}$	$\tilde{\alpha}_s$
Cargo handling	2.6	3.0	6.9	3.6	4.0	4.3	1.6	7.5	10.6
Public sector	0.0	3.4	0.3	0.8	1.2	2.3	0.5	91.7	
Port authority	0.3	0.8	0.1	0.2	0.5	0.6	0.3	20.0	14.9
Shipping agents and forwarders	2.1	0.6	0.8	0.5	0.8	0.2	0.2	-75.0	-37.5
Shipping companies	0.2	0.2	0.4	0.7	0.2	0.1	0.1	-50.0	-12.9
Shipbuilding and repair	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	
Maritime	5.2	8.0	8.6	5.9	6.7	7.6	3.7	12.9	8.0
Energy	79.8	93.3	66.4	63.6	75.2	58.9	31.9	-21.7	-5.9
Chemicals industry	18.4	31.4	31.8	29.9	40.3	40.3	18.4	0.0	17.0
Metalworking industry	30.5	27.3	35.2	55.8	43.5	32.1	17.1	-26.2	1.0
Other industries	14.5	18.0	13.9	31.6	25.6	23.1	10.8	-9.8	9.8
Construction	30.5	15.6	15.8	14.4	16.2	21.6	6.9	33.3	-6.7
Fuel production	7.2	7.2	7.7	7.7	9.6	6.7	4.1	-30.2	-1.4
Trade	6.7	7.0	5.9	7.1	5.9	5.8	2.8	-1.7	-2.8
Other logistic services	1.9	4.3	3.6	20.3	6.0	4.6	2.5	-23.3	19.3
Food industry	1.9	4.2	4.2	4.1	3.4	2.0	1.4	-41.2	1.0
Electronics	0.6	0.7	1.6	1.8	1.5	1.3	0.6	-13.3	16.7
Road transport	0.5	1.7	1.2	0.4	1.5	1.2	0.6	-20.0	19.1
Other land transport	0.7	0.3	0.3	0.0	0.2	0.1	0.1	-50.0	-32.2
Car manufacturing	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
Non-maritime	193.2	211.1	187.7	236.7	228.9	197.7	96.3	-13.6	0.5
Direct	198.4	219.1	196.3	242.6	235.7	205.4	100.0	-12.9	0.7

Source: NBB.

Where $\sigma_{2019,s} = 100 \times \frac{v_{2019,s}}{v_{2019,Direct}}$ is the share of sector s (in %) in 2019, $\alpha_{2019,s} = 100 \times \frac{v_{2019}-v_{2018}}{v_{2018}}$ is the growth of sector s (in %) between 2018 and 2019, $\tilde{\alpha}_s = 100\, x \left(\left(\frac{v_{2019}}{v_{2014}}\right)^{1/5} - 1\right)$ is the (geometric) average growth of sector s (in %) between 2014 and 2019.

Annex 4.6 Port of Brussels

TABLE 4.6.1 Value added at the port of Brussels (in € million)

	2014	2015	2016	2017	2018	2019	$\sigma_{2019,s}$	$\alpha_{2019,s}$	$\tilde{\alpha}_s$
Shipping agents and forwarders	13.2	12.3	10.7	9.2	7.8	7.2	0.9	-7.7	-11.4
Cargo handling	6.4	6.3	6.5	5.0	5.5	5.3	0.6	-3.6	-3.7
Port authority	-1.9	6.0	4.7	5.5	4.5	4.6	0.5	2.2	-219.3
Shipping companies	1.0	-2.5	-0.3	-0.3	1.4	0.9	0.1	-35.7	-2.1
Port trade	0.0	0.4	0.4	0.5	0.6	0.4	0.0	-33.3	
Public sector	0.2	0.1	0.1	0.1	0.1	0.1	0.0	0.0	-12.9
Shipbuilding and repair	0.1	0.1	0.1	0.1	0.0	0.0	0.0		-100.0
Fishing and fish industry	0.0	0.0	0.0	0.0	0.1	0.0	0.0	-100.0	
Maritime	19.0	22.6	22.1	20.0	19.9	18.5	2.2	-6.6	-0.5
Other logistic services	187.6	443.8	390.7	525.8	507.2	535.2	63.4	5.5	23.3
Trade	173.7	196.8	178.8	148.6	137.5	156.2	18.5	13.6	-2.1
Other industries	45.3	48.4	58.5	62.3	60.4	58.1	6.9	-3.8	5.1
Construction	15.6	15.8	20.1	21.8	23.0	24.1	2.9	4.8	9.1
Chemicals industry	4.9	31.6	27.5	33.6	18.6	17.5	2.1	-5.9	29.0
Road transport	18.2	18.1	14.5	16.0	17.5	16.2	1.9	-7.4	-2.3
Metalworking industry	8.1	7.8	9.6	9.9	9.8	8.8	1.0	-10.2	1.7
Food industry	14.8	12.9	13.0	16.1	10.3	8.7	1.0	-15.5	-10.1
Energy	0.7	1.6	0.8	0.2	-2.9	1.1	0.1	-137.9	9.5
Other land transport	0.1	0.0	0.0	0.0	0.0	0.0	0.0		-100.0
Non-maritime	468.9	776.9	713.7	834.4	781.5	825.9	97.8	5.7	12.0
Direct	487.9	799.5	735.8	854.5	801.3	844.4	100.0	5.4	11.6
Indirect	354.5	475.4	464.8	503.8	465.9	488.0			
Total	842.4	1 274.9	1 200.6	1 358.3	1 267.3	1 332.4			

Source: NBB.

Where $\sigma_{2019,s} = 100 \times \frac{v_{2019,s}}{v_{2019,Direct}}$ is the share of sector s (in %) in 2019, $\alpha_{2019,s} = 100 \times \frac{v_{2019}-v_{2018}}{v_{2018}}$ is the growth of sector s (in %) between 2018 and 2019, $\tilde{\alpha}_s = 100\, x \left(\left(\frac{v_{2019}}{v_{2014}}\right)^{1/5} - 1\right)$ is the (geometric) average growth of sector s (in %) between 2014 and 2019.

TABLE 4.6.2 Employment at the port of Brussels (in FTE)

	2014	2015	2016	2017	2018	2019	$\sigma_{2019,s}$	$\alpha_{2019,s}$	$\tilde{\alpha}_s$
Port authority	122	125	123	122	120	125	3.3	4.4	0.6
Shipping agents and forwarders	167	178	136	114	109	115	3.0	4.9	-7.2
Cargo handling	99	87	83	54	55	56	1.5	1.6	-10.7
Shipping companies	14	15	18	13	12	14	0.4	22.6	-0.4
Port trade	0	5	4	4	6	5	0.1	-16.7	
Public sector	3	2	1	1	1	1	0.0	0.0	-19.7
Fishing and fish industry	0	0	0	0	1	0	0.0	-100.0	
Maritime	405	411	366	309	304	316	8.3	4.0	-4.8
Other logistic services	1 212	1 216	1 222	1 265	1 243	1 257	32.9	1.1	0.7
Trade	1 369	1 388	1 274	1 165	1 073	1 024	26.8	-4.6	-5.7
Other industries	343	352	369	357	358	376	9.8	5.2	1.8
Road transport	286	305	244	247	255	252	6.6	-1.4	-2.6
Construction	247	245	237	247	243	243	6.4	0.0	-0.4
Chemicals industry	69	115	130	124	129	139	3.6	7.8	15.1
Food industry	140	128	122	123	124	117	3.1	-5.6	-3.4
Metalworking industry	89	88	106	110	117	101	2.6	-13.7	2.5
Energy	20	17	15	15	8	0	0.0	-100.0	-100.0
Other land transport	1	0	0	0	0	0	0.0		-100.0
Non-maritime	3 777	3 853	3 719	3 651	3 548	3 507	91.7	-1.2	-1.5
Direct	4 182	4 264	4 085	3 960	3 852	3 824	100.0	-0.7	-1.8
Indirect	3 690	3 810	3 537	3 313	3 223	3 175			
Total	7 872	8 074	7 622	7 273	7 075	6 999			

Source: NBB.

Where $\sigma_{2019,s} = 100 \times \frac{v_{2019,s}}{v_{2019,Direct}}$ is the share of sector s (in %) in 2019, $\alpha_{2019,s} = 100 \times \frac{v_{2019} - v_{2018}}{v_{2018}}$ is the growth of sector s (in %) between 2018 and 2019, $\tilde{\alpha}_s = 100\, x \left(\left(\frac{v_{2019}}{v_{2014}} \right)^{1/5} - 1 \right)$ is the (geometric) average growth of sector s (in %) between 2014 and 2019.

TABLE 4.6.3 Investment at the port of Brussels (in € million)

	2014	2015	2016	2017	2018	2019	$\sigma_{2019,s}$	$\alpha_{2019,s}$	$\tilde{\alpha}_s$
Port authority	5.4	7.5	9.0	9.0	5.5	4.9	4.8	-10.9	-1.9
Public sector	0.0	3.7	8.8	8.6	3.7	3.4	3.3	-8.1	
Cargo handling	1.6	3.3	1.3	1.5	1.5	2.3	2.2	53.3	7.5
Shipping agents and forwarders	0.6	5.2	0.6	0.7	1.1	0.6	0.6	-45.5	0.0
Port trade	0.0	0.1	0.2	0.3	0.9	0.1	0.1	-88.9	
Maritime	7.6	19.9	20.0	20.1	12.7	11.3	11.0	-10.4	8.3
Other logistic services	19.4	17.7	11.8	28.6	55.7	58.2	56.6	4.5	24.6
Trade	13.5	16.0	19.8	12.9	14.1	12.0	11.7	-14.9	-2.3
Other industries	3.4	1.7	13.2	2.2	8.5	5.6	5.4	-34.1	10.5
Road transport	3.5	2.7	1.9	1.5	4.1	4.4	4.3	7.3	4.7
Chemicals industry	0.4	0.7	0.6	1.1	1.3	3.7	3.6	184.6	56.0
Construction	2.2	2.3	2.2	2.6	3.6	3.6	3.5	0.0	10.4
Energy	0.1	0.3	0.0	1.4	2.5	2.6	2.5	4.0	91.9
Metalworking industry	1.4	1.4	1.1	0.4	1.0	0.9	0.9	-10.0	-8.5
Food industry	1.3	2.3	4.6	1.6	0.9	0.5	0.5	-44.4	-17.4
Non-maritime	45.4	45.1	55.2	52.3	91.6	91.4	89.0	-0.2	15.1
Direct	53.0	65.1	75.2	72.4	104.3	102.8	100.0	-1.4	14.2

Source: NBB.

Where $\sigma_{2019,s} = 100 \times \frac{v_{2019,s}}{v_{2019,Direct}}$ is the share of sector s (in %) in 2019, $\alpha_{2019,s} = 100 \times \frac{v_{2019} - v_{2018}}{v_{2018}}$ is the growth of sector s (in %) between 2018 and 2019, $\tilde{\alpha}_s = 100\, x \left(\left(\frac{v_{2019}}{v_{2014}} \right)^{1/5} - 1 \right)$ is the (geometric) average growth of sector s (in %) between 2014 and 2019.

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Editor

Pierre Wunsch
Governor of the National Bank of Belgium

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