

# ECONOMIC REVIEW

June 2020





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# Economic projections for Belgium – Spring 2020

- The global economy is clobbered by the Covid-19 containment measures
- The impact on Belgian growth in 2020 is unprecedented in modern times: activity drops by 9 % and the recovery is slow and uncertain
- The Covid-19 crisis wipes out 47 billion euro in welfare in 2020 and the Belgian economy does not recover completely by 2022
- Private consumption picks up quite quickly, while business investment takes longer to recover
- While the Covid-19 impact on the labour market is cushioned by the temporary unemployment system in particular, as well as by other government support measures, the unemployment rate soars above 8 % in 2021
- Core inflation is not affected much and continues to trend slightly upwards
- The budget deficit rises to more than 10 % of GDP this year but, more importantly, stays at around 6 % of GDP in the following two years
- The risks surrounding the outlook remain tilted to the downside and could result in a more adverse scenario, in particular if the health situation is not under control in the autumn and domestic and foreign demand do not recover as currently expected
- As usual, the projections only take into account government measures that have been decided and are likely to pass the legislative process and were announced in sufficient detail at the cut-off date (25 May 2020). Additional government measures could affect the growth outlook but also the public finance projections.

## Introduction

The macroeconomic projections for Belgium described in this article are part of the joint Eurosystem projections for the euro area. That projection exercise is based on a set of technical assumptions and forecasts for the international environment drawn up jointly by the participating institutions, namely the ECB and the national central banks of the euro area. The cut-off date for the Belgian projections was 25 May.<sup>1</sup> The baseline projections for Belgium are discussed in detail below. However, given the unprecedented level of uncertainty that is currently surrounding the projections, an alternative, more severe scenario has also been elaborated. It is briefly presented in the final section of this article.

<sup>1</sup> Hence, the [Eurostat guidance note on non-market output in the context of the Covid-19 crisis](#) published on that day was not taken into account in these projections. Non-market output is valued using the traditional deflated sum-of-costs approach. If this sum-of-costs approach overstates actual public sector output (e.g. because public sector employees have been unable to work because of the confinement measures but have received their full salary) and assuming that the NAI is compliant with the Eurostat guidance note by adjusting its volume measurement, GDP growth may be somewhat overstated in these projections.

## 1. The global economy is clobbered by the Covid-19 containment measures

The Covid-19 pandemic and especially the exceptional containment measures taken by many countries to limit the spread of the virus have profoundly affected the global economy. The available data and estimates already suggest that the economic fall-out in the near term will be greater than during the global financial crisis of 2008-2009. According to the Eurosystem assumptions, global activity should contract by 4 % this year, but it is expected to pick up again as containment measures are starting to be eased. Overall, global activity is projected to increase by 6 % in 2021 and by nearly 4 % in 2022. However, the strength of the recovery is very uncertain, in particular as the confinement measures are likely to have inflicted some permanent damage on the global economy. Viable businesses have collapsed during the lockdown or are at risk of doing so in the near future, unemployment is likely to be structurally higher than before the crisis, while consumer behaviour and preferences may have changed and international trade may not fully recover anytime soon.

The impact of the Covid-19 pandemic has been even more detrimental to global trade than it was to global growth, as it was amplified by logistic disruptions and closed borders that affected global value chains. As a result, global real imports (excluding the euro area) are projected to decline by almost 13 % this year, before increasing by 8 % and 4.3 % in 2021 and 2022, respectively. This implies that, within the projection period up to 2022, the Covid-19 crisis will have a lasting impact on trade, which will not regain its 2019 level. In addition, the assumed trade rebound is subject to downside risks, as the Covid-19 crisis may prove to be a game-changer for globalisation, possibly leading firms to rethink their production networks in favour of reshoring part of their operations in order to limit supply risks.

As usual, the profile of world trade determines the growth path of euro area foreign demand and Belgian export markets, with the latter being an important element for the macroeconomic projections for Belgium in the medium term. For Belgium, these assumptions imply that export markets will barely return to the end-2019 level by the end of the projection horizon, at which point they will still remain 6 % below the level that could have been reached according to the Eurosystem's Autumn 2019 projections.

**Table 1**

### The international environment

(annual percentage changes)

	2018	2019	2020 e	2021 e	2022 e
World (excluding euro area) real GDP	3.8	3.0	-4.0	6.0	3.9
World (excluding euro area) trade	4.6	-0.3	-12.9	8.0	4.3
Euro area foreign demand <sup>1</sup>	4.0	0.9	-15.1	7.8	4.2
Belgium's relevant export markets <sup>1</sup>	3.4	1.6	-12.7	8.5	5.0

Source: Eurosystem.

<sup>1</sup> Calculated as a weighted average of imports of trading partners.



## 2. An unprecedented decline in GDP is estimated for the euro area

In the euro area, economic activity registered a record decline of 3.8 % in the first quarter of 2020. However, as Covid-19 lockdowns have typically affected a larger number of weeks in the second quarter, an even bigger fall is generally expected for that quarter, even though the containment measures are now gradually being relaxed. According to the Eurosystem's current estimates, euro area real GDP should drop by 8.7 % in 2020, despite a strong rebound in the second half of the year. The recovery is projected to continue in the two following years but not all of the lost output will be recovered by 2022.

Inflation is set to drop sharply to 0.3 % this year, on the back of the substantial fall in energy prices. As energy prices are projected to recover in the projection period, inflation should rebound in the 2021-2022 period, while remaining clearly below the 2 % level at the end of the projection horizon. Despite the huge drop in activity, core inflation is quite resilient: negative demand effects are expected to be, in part, offset by cost pressures related to supply side disruptions and shortages. Core inflation rises somewhat towards the end of the projection period, as demand recovers, but remains below 1 %.

Despite the existence or creation of specific temporary lay-off schemes in most countries that are aimed to prevent dismissals, the crisis is also taking its toll on the euro area labour market. Employment shrinks by nearly 3 % this year and the unemployment rate shoots up to about 10 % by 2021. In the final year of the projection period the unemployment rate should still be significantly higher than in 2019.

The average budget deficit in the euro area will widen dramatically, to 8.5 % of GDP in 2020. This strong worsening stems from the very large fiscal emergency measures and the economic downturn that pushes up spending and reduces revenue via the automatic stabilisers. While the budget deficit is set to narrow again in the following years, it should remain rather elevated at about 4 % of GDP on average. This persistent worsening mostly reflects the permanent output loss due to the Covid-19 pandemic.

**Table 2**

### Eurosystem projections for the euro area

(percentage changes compared to the previous year, unless otherwise stated)

	2018	2019	2020 e	2021 e	2022 e
<b>Real GDP</b>	1.9	1.2	-8.7	5.2	3.3
of which (contributions in percentage points):					
Domestic demand (excluding changes in inventories)	1.5	2.2	-7.1	4.4	3.3
Net exports	0.4	-0.5	-1.3	0.7	0.0
<b>Inflation (HICP)</b>	1.8	1.2	0.3	0.8	1.3
<b>Core inflation<sup>1</sup></b>	1.0	1.0	0.8	0.7	0.9
<b>Domestic employment</b>	1.6	1.2	-2.8	0.4	1.5
<b>Unemployment rate<sup>2</sup></b>	8.1	7.5	9.8	10.1	9.1
<b>General government financing requirement (-) or capacity<sup>3</sup></b>	-0.5	-0.6	-8.5	-4.9	-3.8

Source: ECB.

1 Measured by the HICP excluding food and energy.

2 In % of the labour force.

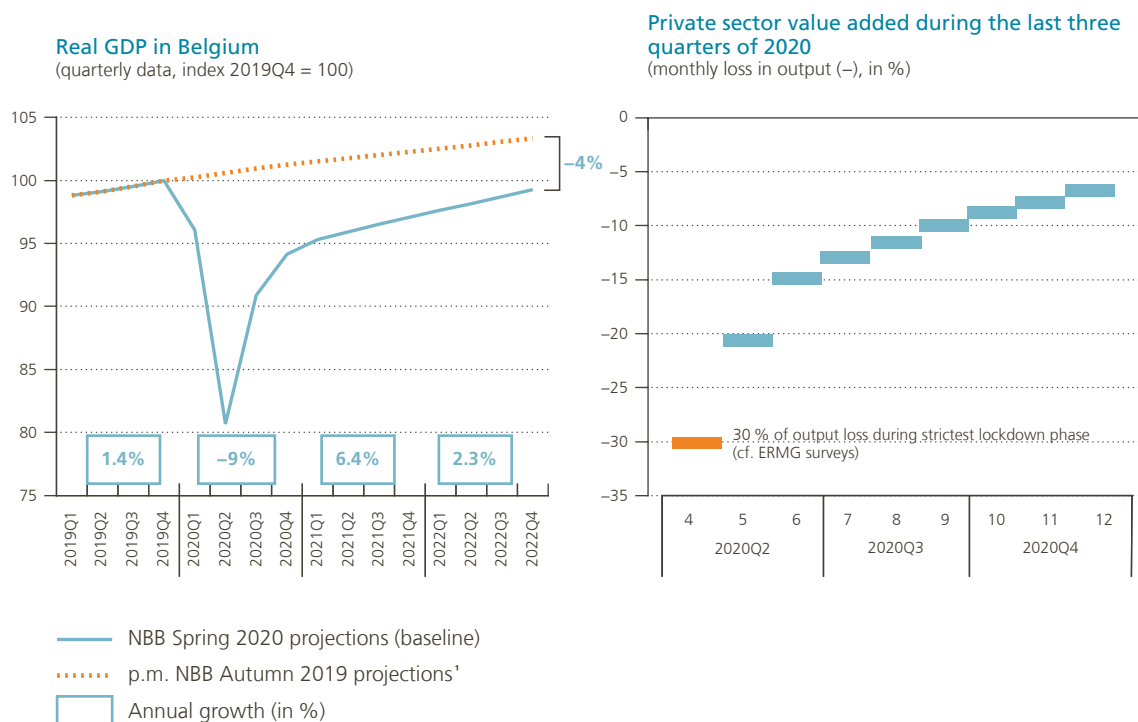
3 In % of GDP.

### 3. The Belgian economy faces permanent damage due to bankruptcies and higher unemployment

By mid-February, the Covid-19 outbreak that started in China had also spread to the euro area, although it remained concentrated initially in a few specific regions, such as the north of Italy. Very stringent containment measures were taken in the course of March in nearly all euro area countries. Belgium was no exception with the closure of bars and restaurants on 13 March and most non-food shops a few days later, as well as restrictions on people's movements. In the first weeks of this regime, production units also closed down, inter alia due to a lack of staff, as well as falling demand. From early May onwards, i.e. after seven weeks of confinement, a gradual and stepwise exit strategy was rolled out, although public life still hasn't returned to normal at the time of writing and most industries are likely to remain affected by social distancing measures for some time to come. Information collected from firms by the surveys conducted in the context of the Economic Risk Management Group (ERMG) suggests that businesses have lost about one third of their turnover during each of the lockdown weeks.<sup>1</sup>

Chart 1

The rebound of the Belgian economy will be gradual and incomplete



Sources: NAI, NBB.

<sup>1</sup> This corresponds to the growth profile projected in the NBB's Autumn 2019 projections, but the figures have been updated with statistics until end-2019.

<sup>1</sup> For more details on the results of the ERMG survey, please refer to the various press releases issued via the website of the National Bank of Belgium as of April 3rd.

This is also reflected in the current NAI estimates for GDP growth in the first quarter of 2020: while the containment measures only concerned roughly two weeks in that first quarter, economic activity has already shrunk by 3.6%.<sup>1</sup> As a larger number of weeks is affected in the second quarter, the current projections point to a much steeper fall, by a whopping 16%, in that quarter.

The most recent ERMG surveys show that sales by Belgian companies recovered slightly when the containment measures were relaxed in May, and in particular in the second half of that month. However, at the time of writing they remain far below their pre-crisis levels, with companies reporting a lack of demand to be the main obstacle to scaling up production. Against that background, the Belgian economy's rebound is likely to be only very gradual. In the current projections it is assumed that – like foreign demand – domestic demand will recover slowly, although the picture will be uneven across different goods and services categories, with spending on arts, recreation, travel and events, in particular, likely to be affected much longer. Activity is then expected to pick up in the second half of this year, although the ease and speed of recovery remain uncertain. In annual terms, GDP is still predicted to drop by 9% in 2020, before recovering by 6.4% and 2.3% in the following two years.

Apart from being gradual, the recovery will also be incomplete. This reflects the permanent damage inflicted by the Covid-19 crisis. In addition to the aforementioned lasting negative impact on world trade, the containment measures are also leaving scars on Belgian production capacity. First, while the ERMG surveys show that the bankruptcy risks are fairly limited for the economy overall, they are rather high in the worst-hit industries, such as accommodation and food service activities and entertainment. It is therefore expected that not all companies, in particular in those industries, will survive the Covid-19 crisis. Second, while immediate job losses have been contained by the system of temporary unemployment and specific support measures for the self-employed, the ERMG surveys clearly show that employment is likely to decline significantly in the near term. Hence, some temporary unemployment could morph into regular unemployment. All in all, at the end of the projection period, Belgian real GDP is likely to be about 4% lower than the level estimated in the NBB's Autumn 2019 projections. A more severe scenario with a larger persistent output loss and a slower recovery is discussed in section 8.

#### **4. Belgian private consumption picks up quite quickly, while business investment takes longer to recover**

During the lockdown phase, which is spread (unevenly) over the first and second quarter of the year, all domestic demand components are negatively affected.

Private consumption is projected to fall back by about 20% in real terms in the first half of the year, as the lockdown measures and shop closures have limited households' consumption possibilities. While the available electronic payments data show that e-commerce has increased strongly, this has only partly offset the fall in purchases in brick and mortar facilities. As containment measures are lifted, private consumption is expected to recover. First, the recovery may initially be boosted by pent-up demand, i.e. necessary purchases that had to be postponed. Second, while household disposable income growth was definitely lowered due to the crisis, the loss was on average relatively limited due to the strong automatic stabilisers and specific government measures. As a result, households have been temporarily 'forced' to save in excess of their needs, granting them the opportunity to tap into those excess savings from the third quarter onwards. Solid income growth will generally support the rebound of consumption. In annual terms, purchasing power per person should remain virtually stable in 2020 compared to last year and grow by a cumulative 2.2% in 2021-2022. As a result of both forced saving and crisis-induced precautionary saving, the household savings ratio will reach over 20% of disposable income this year, which is even higher than the peaks observed during the 2008-2009 financial crisis. From 2021 on, the savings ratio is expected to subside to around 14%, close to its pre-crisis levels.

<sup>1</sup> The NBB Spring 2020 projections were finalised before the second NAI estimate was published and, hence, are still anchored to the somewhat worse flash estimate of -3.9%.

Business investment takes an even bigger hit and falls back by a third in the second quarter of 2020 alone. Companies have to deal with a sudden and, in modern times, unprecedented shock that affects both the supply and the demand side. The Covid-19 shock seriously erodes their operating surpluses and profit margins and the uncertainty about the recovery of demand is very high. Hence, they massively push back or even cancel their investment plans. As shown in the ERMG surveys, two out of three companies intend to postpone investment projects, half of them indefinitely. As a result, business investment is set to recover only quite gradually and to remain 4 % below the 2019 level at the end of the projection horizon.

The very high level of uncertainty but also certain physical constraints during the lockdown phase (that have affected the construction industry) also weigh on residential investment, which is estimated to fall by 17 % in 2020. As the fundamentals remain healthy, with historically low mortgage rates in particular, it will swiftly rebound in the following years.

Export growth is projected to largely mirror the trend in export market growth, dropping markedly in the second quarter of this year, but gradually picking up thereafter. Belgian exporters are set to see some decline in their market shares throughout the entire projection period, reflecting longer-term competitiveness trends. Imports show a similar profile to exports: they drop sharply in the first half of 2020 as both domestic demand and exports (and, hence, the import content thereof) are shrinking, but they recover in the second half of the year. With exports falling just slightly faster than imports this year and picking up somewhat more slowly, net exports reduce GDP growth slightly throughout the projection period, by an annual average of close to 0.4 pp.

Turning to public expenditure, public consumption is estimated to be boosted this year by additional spending to fight the pandemic: in real terms it increases by 3 %. As most of the additional spending is temporary and disappears in the following years, public consumption drops slightly in 2021 before reverting to a more normal growth rate in 2022. As the interruptions in the construction industry have also affected public works, government investment also shrinks in 2020, but it is projected to rebound sharply next year.

Table 3

**GDP and main expenditure categories**

(seasonally adjusted volume data; percentage changes compared to the previous year, unless otherwise stated)

	2018	2019	2020 e	2021 e	2022 e
Household and NPI final consumption expenditure	1.5	1.1	-7.7	9.2	2.0
General government final consumption expenditure	1.0	1.8	3.0	-0.3	1.2
Gross fixed capital formation	4.0	3.2	-18.4	10.0	5.5
General government	10.9	-0.4	-10.6	12.8	1.2
Housing	1.0	4.9	-17.0	9.0	4.6
Businesses	3.9	3.2	-20.1	9.8	6.5
<i>p.m. Domestic expenditure excluding the change in inventories<sup>1</sup></i>	<i>1.9</i>	<i>1.7</i>	<i>-7.7</i>	<i>6.8</i>	<i>2.5</i>
Change in inventories <sup>1</sup>	0.3	-0.4	-0.9	0.0	0.0
Net exports of goods and services <sup>1</sup>	-0.7	0.1	-0.4	-0.4	-0.2
Exports of goods and services	1.2	1.1	-11.9	8.1	4.3
Imports of goods and services	2.1	1.0	-11.5	8.8	4.6
Gross domestic product	1.5	1.4	-9.0	6.4	2.3

Sources: NAI, NBB.

<sup>1</sup> Contribution to the change in GDP compared to the previous year, percentage points.

## 5. The favourable trend on the Belgian labour market is interrupted by the Covid-19 impact

Until the end of 2019, the Belgian labour market had been improving strongly. Over the past six years, domestic employment has grown at an average annual pace of 1.2 %, resulting in the net creation of over 300 000 jobs and a declining unemployment rate that reached a historical low last year. While the labour market was already expected to lose some traction, the Covid-19 containment measures have put a sudden stop to this favourable trend. As in many other European countries, the federal and regional governments have put in place measures that aim to limit permanent job losses in the short term and to ensure that workers can be reintegrated quickly once activity picks up again. In this connection, the temporary lay-off system was broadened and reinforced. At the peak of the crisis, over 1 million employees benefited from this scheme, albeit on a part-time basis for some. At the same time, self-employed persons could apply for a replacement income, notably in the form of bridging rights, and it is estimated that about half of them did so.

These systems cushioned the initial blow to employment, with the drop in activity mainly being reflected in strong falls in average hours worked and labour productivity. However, as the economy recovers and temporary support mechanisms come to an end, some labour shedding will be inevitable in the coming quarters. The current projections point to domestic employment falling by 67 000 units this year and by another 23 000 in 2021. Not surprisingly, the brunt of the downward impact will be felt by those active in branches sensitive to the business cycle, whereas employees in public administration and in health services should not be affected. The self-employed workforce will also shrink by 9 000 this year.

As the labour force is still expanding, the number of unemployed will increase strongly, by 150 000 in the 2020-2021 period, with a spike in the number of unemployed of some 186 000 in the last three quarters of 2020 alone. The harmonised unemployment rate shoots up from a historic low in 2019 to more than 8 % in 2022. From the second half of 2021, the labour market will start recovering, and jobs will be created in net terms again, bringing unemployment back down in annual terms by 2022.

Table 4

**Labour supply and demand<sup>1</sup>**

(seasonally adjusted data; changes in thousands of persons, unless otherwise stated)

	2018	2019	2020 e	2021 e	2022 e
Total population	55	54	53	51	47
Working age population <sup>2</sup>	13	13	11	9	6
Labour force	36	58	35	22	14
Domestic employment	66	77	-67	-23	61
Employees	53	61	-58	-29	41
Branches sensitive to the business cycle <sup>3</sup>	37	40	-73	-40	26
Administration and education	4	6	4	1	2
Other services <sup>4</sup>	11	15	10	11	14
Self-employed	13	16	-9	6	19
Unemployed job-seekers	-30	-19	102	45	-46
<i>p.m. Harmonised unemployment rate<sup>5,6</sup></i>	6.0	5.4	7.3	8.3	7.6
<i>Harmonised employment rate<sup>5,7</sup></i>	69.7	70.5	68.9	68.5	69.3

Sources: FPB, NAI, NEO, Statbel, NBB.

1 The figures regarding population growth in this table were still based on the FPB's demographic projections published in March 2020. In light of the Covid-19 pandemic, the FPB published an update of their population projections on 2 June 2020. As a result of lower migration and somewhat higher mortality rates, the increase in the total and working age population should be smaller in 2020 and 2021. All other things equal, the increase in the number of unemployed job-seekers should then be more contained, with the harmonised unemployment rate reaching 8.1 % in 2021.

2 Population aged 15-64 years.

3 Agriculture, industry, energy and water, construction, trade, hotels and restaurants, transport and communication, financial activities, property services and business services.

4 Health, welfare, community, public social services, personal services and domestic services.

5 On the basis of data from the labour force survey.

6 Job-seekers in % of the labour force aged 15-64 years.

7 Persons in work in % of the total population of working age (20-64 years).

## 6. Core inflation is expected to edge up slightly as labour costs continue to pick up

Hourly wage growth in the private sector is set to gradually pick up from just below 1 % this year to over 2 % in 2022. In 2020, wage cost growth is still dampened marginally by the last phase of the tax shift, which includes a payroll tax reduction in the construction industry. Moreover, the contribution of the indexation effect is expected to remain contained throughout 2020 and 2021, because of the modest increase in the health index. Towards the end of the projection horizon, the increasing indexation effect will push up hourly labour cost growth more strongly again.

As for real negotiated wages, it is still assumed that the maximum wage margin of 1.1 % for the period 2019-2020 will be fully used, of which 0.4 % should be granted in 2020. For 2021-2022, no interprofessional agreement has been negotiated by the social partners yet, so the technical assumption has been made that negotiated wages will grow at a slightly more modest rate of 1 % over this period, reflecting the less tight labour market. The wage drift should have a limited positive impact on hourly wage growth over the projection period, mostly due to structural composition effects (such as an increasing share of older workers and the increasing education levels of the working-age population).

Due to the impact of the Covid-19 pandemic, labour productivity shrinks in 2020. This reflects labour hoarding that is not unusual in crisis times but is amplified by the impact of restrictive social distancing measures in certain industries. Productivity is expected to recover gradually in the following years.

**Table 5**

**Price and cost indicators**

(percentage changes compared to the previous year, unless otherwise stated)

	2018	2019	2020 e	2021 e	2022 e
<b>Private sector labour costs<sup>1</sup>:</b>					
Labour costs per hour worked	1.4	2.2	0.9	1.5	2.2
of which:					
Real negotiated wages	0.4	0.7	0.4	0.5	0.5
Indexation	1.7	1.8	0.9	1.0	1.5
Social contributions	-0.8	-0.1	-0.6	-0.1	0.0
Wage drift and other factors	0.1	-0.1	0.1	0.1	0.1
<i>p.m. Labour costs per hour worked according to the national accounts<sup>2</sup></i>	<i>1.4</i>	<i>2.3</i>	<i>1.3</i>	<i>1.6</i>	<i>2.1</i>
Labour productivity <sup>3</sup>	-0.4	0.0	-2.6	1.6	1.2
Unit labour costs <sup>1</sup>	1.8	2.2	3.5	-0.1	1.0
Total inflation (HICP)	2.3	1.2	0.3	1.4	1.8
Core inflation <sup>4</sup>	1.3	1.5	1.6	1.6	1.7
of which:					
Services	1.6	1.8	2.0	2.0	2.1
Non-energy industrial goods	0.8	1.0	0.9	1.0	1.1
Energy	8.9	-0.8	-14.1	-1.5	2.5
Food	2.7	1.3	2.6	1.9	1.8
<i>p.m. Inflation according to the national index (NCPI)</i>	<i>2.1</i>	<i>1.4</i>	<i>0.6</i>	<i>1.1</i>	<i>1.8</i>
Health index <sup>5</sup>	1.8	1.5	1.0	1.1	1.7

Sources: DGS, EC, FPS Employment, Labour and Social Dialogue, NAI, NBB.

1 Labour costs are not shown here according to the national accounts concept but according to a broader concept that also includes reductions in contributions for target groups and wage subsidies. That concept gives a better idea of the true labour cost for firms.

2 Excluding wage subsidies and reductions in contributions for target groups.

3 Value added in volume per hour worked by employees and the self-employed.

4 Measured by the HICP excluding food and energy.

5 Measured by the national consumer price index excluding tobacco, alcoholic beverages and motor fuel.

Despite the large drop in economic activity, core inflation is edging up marginally over the projection period. In 2020, it is projected to amount to 1.6 %, slightly higher than last year's rate, notwithstanding a strong fall in demand that could have a dampening impact on prices. In this connection, it should be stressed that inflation is temporarily pushed up slightly by a methodological change regarding the index of the rents. As regards the underlying factors, the surge in unit labour costs, that mostly reflects the aforementioned fall in productivity, is offset in 2020 by a decline in profit margins. However, it is expected that the latter will recover and, in particular, that firms will raise their prices in the post-lockdown phase in response to higher costs related to heightened public health measures or in an attempt to compensate for income losses linked to containment or social distancing measures. This should keep core inflation broadly constant in 2021 even though unit labour costs marginally decline due to recovery in productivity.

Despite the broadly constant underlying price pressures, headline inflation based on the harmonised consumer price index (HICP) should be very low this year, reaching only 0.3 %, as it is greatly affected by the strong decline in oil prices. The latter have generally been on a downward path since the end of 2019 and plunged as low as 20 USD per barrel in the course of April, due to the combined impact of lower global demand prospects and excess supply following the collapse of the OPEC+ alliance. According to the Eurosystem assumptions, which are based on futures prices, Brent crude oil prices are expected to gradually increase over the projection horizon, to around 40 USD in 2022.<sup>1</sup> As a result, energy inflation is the primary driver behind the recovery in headline inflation, to 1.4 % in 2021 and 1.8 % in 2022.

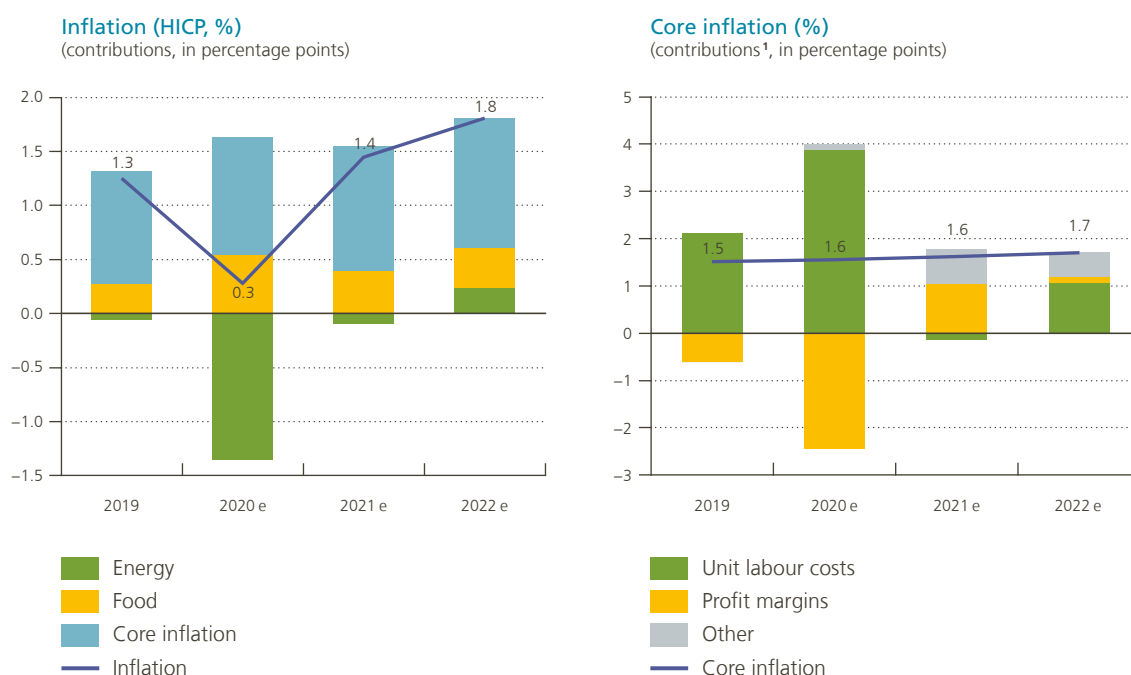
Inflation measured according to the Belgian national consumer price index (NCPI) may deviate slightly from the HICP figure owing to methodological differences. The NCPI is used to calculate the health index, which excludes tobacco, alcoholic beverages and motor fuels, and serves as a reference for price indexation of wages and replacement incomes. Still, as electricity, heating oil and gas are taken into account in the health index, its growth rate should slow down in 2020 and pick up in 2022. The next pivotal index for public wages and social benefits is set to be exceeded in December 2021.

<sup>1</sup> In reality, they seem to have recovered already to that level in the weeks after the cut-off date of these projections, which implies upward risks for energy and overall inflation.



Chart 2

**Inflation is strongly impacted by the oil price drop this year, while core inflation is quite stable**



Sources : EC, NAI, NBB.

<sup>1</sup> The chart is inspired by an article in the Bulletin of the Banque de France no. 225 (September/October 2019) by Diev, Kalantzis and Lalliard: "Why have strong wage dynamics not pushed up inflation in the euro area?". Margins are defined as GDP deflator growth minus unit labour cost growth. "Other" factors are mainly determined by changes in the terms of trade excluding energy and food, and by price differences between private consumption and other domestic demand components such as government consumption and investment. This term also comprises a statistical adjustment due to differences between the consumption deflator and the HICP inflation

## 7. The general government deficit is expected to deteriorate sharply and the impact from Covid-19 is partly persistent

In 2020, the general government deficit is set to shoot up, reaching 10.6% of GDP, the highest deficit ratio recorded for at least two decades. On the revenue side, fiscal and parafiscal revenues decline in line with economic activity. Moreover, the Covid-19 pandemic and the government support measures in addition to the automatic stabilisers on the spending side boost primary expenditure.

While market incomes of both companies and households are very seriously affected by the economic crisis, the government sector partly offsets those losses. The net amount of taxes and social contributions paid and transfers received drops by more than 20 billion euro for households and by more than 5 billion euro for companies. This cushions the blow for households and companies that see their after-tax disposable income decline to a lesser extent than their market incomes. Considering that, in addition to the drop in net direct taxes, indirect taxes such as VAT and excise duties also shrink due to the declining tax bases such as private consumption, the government budget clearly absorbs most of the income losses generated by the Covid-19 crisis. The latter is estimated to wipe out about 47 billion euro in welfare in 2020 and more than 70 % of that loss, or some 34 billion euro, is ultimately borne by the government sector.<sup>1</sup>

<sup>1</sup> The loss in welfare is measured by comparing the expected disposable incomes of households, businesses and the government in 2020 against the figures according to the NBB's Autumn 2019 projections. This view excludes the rest of the world.

The negative impact via the automatic stabilisers, as well as the additional support measures are mostly of a temporary nature and should gradually unwind once the economy starts to recover. Indeed, as of 2021 the budget deficit improves but it does not come down significantly below 6 % of GDP by 2022. This mostly reflects the fact that the Covid-19 crisis has a lasting impact on GDP within the projection period, as indicated above. While previous forecasts, such as the NBB's Autumn 2019 projections or the March 2020 medium-term projections by the Federal Planning Bureau, saw the government deficit gradually widening to (close to) 3 % of GDP, the persistent Covid-19 damage to public finances implies a deficit that is twice as high by 2022 according to the current outlook.

**Table 6**

**General government accounts**

(in % of GDP)

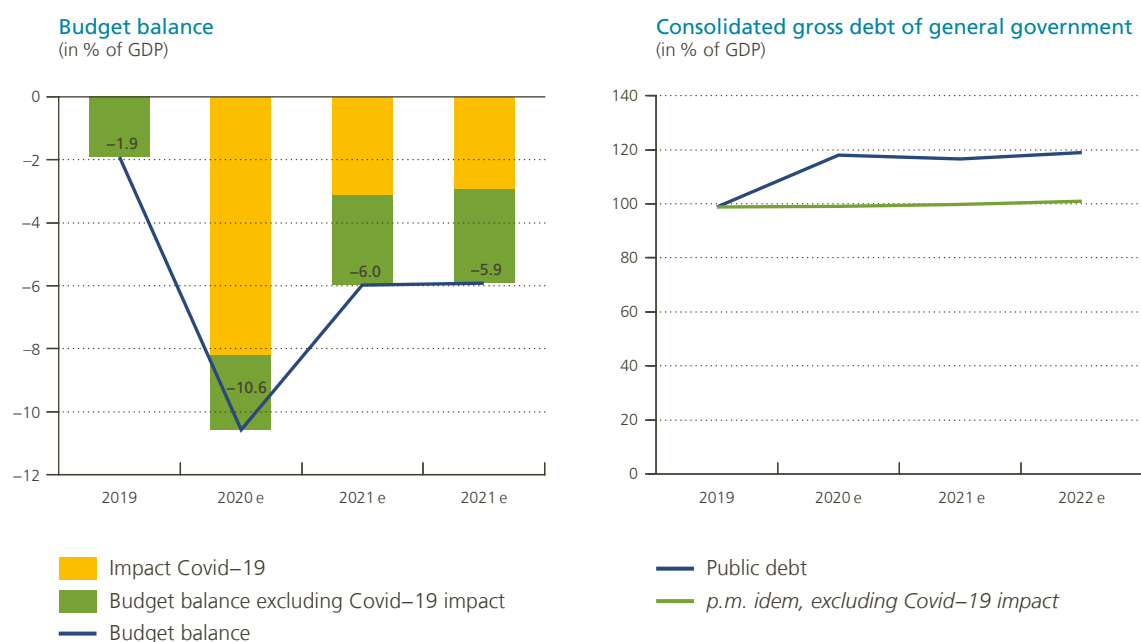
	2018	2019	2020 e	2021 e	2022 e
<b>General government</b>					
Revenue	51.4	50.4	50.4	50.1	49.9
of which: fiscal and parafiscal revenue	44.3	43.3	42.8	42.8	42.7
Primary expenditure	50.1	50.3	58.9	54.2	54.1
Primary balance	1.3	0.1	-8.6	-4.1	-4.2
Interest charges	2.1	2.0	2.0	1.9	1.8
<b>Financing requirement (-) or capacity</b>	<b>-0.8</b>	<b>-1.9</b>	<b>-10.6</b>	<b>-6.0</b>	<b>-5.9</b>

Sources: NAI, NBB.

The government debt ratio is estimated to shoot up dramatically this year by about one fifth. This reflects not only the large government deficit but also the deep recession, as the debt ratio is expressed with respect to GDP. In the remaining years of the projection period, the debt ratio is expected to remain broadly constant, but it is important to stress that it is on an upward path. If growth returns to a more normal rate after 2022, a primary deficit of 4 % of GDP, as in 2022, implies an annual increase in the debt ratio, even if interest rates stay at their current, historically low levels.

Chart 3

The budget balance in 2022 is twice as high as it would have been without the crisis



Sources : NAI, NBB.

## 8. The risks surrounding the outlook remain tilted to the downside and could result in a more adverse scenario

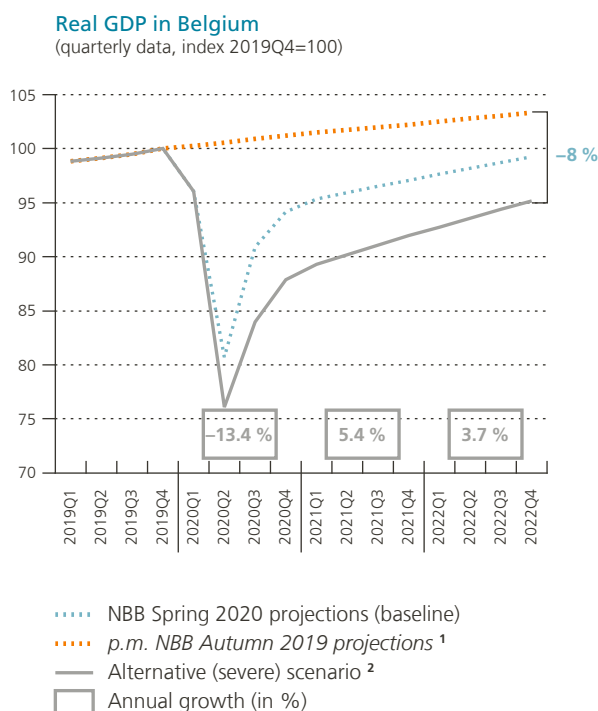
The projections presented above are subject to a significant margin of uncertainty that is larger than usual. Risks for activity growth would seem to be primarily tilted to the downside. Although the recovery is already assumed to be partial and incomplete, resulting in a permanent output loss of 4 % by 2022, reality could still be worse.

In this connection, specific risks pertain to the development of the health situation. If the pandemic cannot be effectively controlled in the coming months, new outbreaks may be possible until a medical solution is found. This means that further containment measures in the near future cannot be excluded, even if they are unlikely to be of the same magnitude as those seen in the spring. In addition, the current baseline scenario assumes a gradual recovery in domestic demand, similar to the revival of foreign demand in accordance with the Eurosystem assumptions. However, the lasting uncertainty, as well as the various social distancing measures that are still in place, may imply that demand does not fully recover. This would actually be in line with the rather pessimistic expectations of companies in the ERMG survey at the end of May: on average, companies did not expect a further recovery in sales in the third quarter (beyond the level reached at the end of May) due to a lack of both domestic and foreign demand.

Against this background, a stylised, more severe alternative scenario has also been elaborated that could be consistent with the aforementioned risks materialising. According to that scenario, activity would shrink more in 2020, by over 13 %, and would recover somewhat more slowly in 2021. The persistent output loss would be about twice as large as in the baseline scenario.

Chart 4

In a more severe scenario, activity could shrink by 13 % in 2020



Sources : NAI, NBB.

1 This corresponds to the growth profile projected in the NBB's Autumn 2019 projections, but the figures have been updated with statistics until end-2019.

2 A scenario in which the health situation is not effectively controlled, possibly necessitating further containment measures, or in which demand picks up more slowly than expected.

Obviously, the impact on the labour market would also be more detrimental and employment losses would become more permanent, due to hysteresis effects. The harmonised unemployment rate could reach as high as 10 % of the active population, a level which has not been recorded over the past two decades.

In the more severe scenario, the impact on public finances would also be more substantial: the general government deficit rises to 13 % of GDP in the current year and remains above 8 % afterwards. The government debt ratio keeps on increasing and reaches 130 % of GDP by 2022.

## Projections for the Belgian economy: summary of the main results

(percentage changes compared to the previous year, unless otherwise stated)

	2018	2019	2020 e	2021 e	2022 e
<b>Growth (calendar adjusted data)</b>					
Real GDP	1.5	1.4	-9.0	6.4	2.3
Contributions to growth:					
Domestic expenditure, excluding change in inventories	1.9	1.7	-7.7	6.8	2.5
Net exports of goods and services	-0.7	0.1	-0.4	-0.4	-0.2
Change in inventories	0.3	-0.4	-0.9	0.0	0.0
<b>Prices and costs</b>					
Harmonised index of consumer prices	2.3	1.2	0.3	1.4	1.8
Health index	1.8	1.5	1.0	1.1	1.7
GDP deflator	1.5	1.5	1.4	0.9	1.2
Terms of trade	-1.0	0.3	2.4	0.2	-0.4
Unit labour costs in the private sector <sup>1</sup>	1.8	2.2	3.5	-0.1	1.0
Hourly labour costs in the private sector <sup>1</sup>	1.4	2.2	0.9	1.5	2.2
Hourly productivity in the private sector	-0.4	0.0	-2.6	1.6	1.2
<b>Labour market</b>					
Domestic employment (annual average change in thousands of persons)	65.7	76.8	-66.7	-22.7	60.6
Total volume of labour <sup>2</sup>	1.7	1.3	-7.1	4.9	1.3
Harmonised unemployment rate (in % of the labour force aged 15 years and over)	6.0	5.4	7.3	8.3	7.6
<b>Incomes</b>					
Real disposable income of individuals	1.1	2.6	0.5	1.1	2.2
Savings ratio of individuals (in % of disposable income)	11.8	13.1	20.2	13.8	14.0
<b>Public finances</b>					
Primary balance (in % of GDP)	1.3	0.1	-8.6	-4.1	-4.2
Budget balance (in % of GDP)	-0.8	-1.9	-10.6	-6.0	-5.9
Public debt (in % of GDP)	99.9	98.7	118.1	116.5	119.0
<b>Current account</b> (according to the balance of payments, in % of GDP)	-1.4	-1.2	-0.3	-0.4	-0.7

Sources: EC, NAI, Statbel, NBB.

1 Including wage subsidies (mainly reductions in payroll tax) and targeted reductions in social contributions.

2 Total number of hours worked in the economy.



# Does the EU convergence machine still work?

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## Introduction

From the very beginning, convergence has been one of the explicit goals of the EU. The 1957 Treaty of Rome states that European leaders were “[...] *anxious to strengthen the unity of their economies and to ensure their harmonious development by reducing the differences existing between the various regions and by mitigating the backwardness of the less favoured*”. The passage reflects the importance of convergence of income levels, in particular for the legitimacy of the European integration process. The prospect of catching up with EU living standards has undeniably been one of the major attractions of EU membership for potential candidates, while socio-economic underperformance in some countries or regions may undermine support for the European project in current member states. Indeed, Europeans’ views on EU membership and on the EU’s future deteriorated in the aftermath of the crisis, notably in those member states most affected by it (EC, 2014). Moreover, regions that have experienced relative economic decline or seen lower employment rates are more likely to vote for anti-EU parties (Dijkstra *et al.*, 2019).

This article sheds light on whether the EU “convergence machine” (Gill and Raiser, 2012; Bodewig and Ridao-Cano, 2018) still works. To be more precise, we assess the achievements of the EU with respect to income convergence, expressed in terms of GDP per capita, at both the national and regional level. Income (or real) convergence typically refers to the process of poorer countries/regions catching up towards the income levels of richer countries/regions. Convergence can also be explored along a variety of other dimensions. In the run-up to the EMU, the emphasis was mostly on nominal convergence, as the Maastricht Treaty established criteria for adoption of the euro in the form of nominal variables such as inflation, interest and exchange rates, fiscal deficits and debts. Moreover, economies are said to display cyclical convergence when they are in the same phase of the business cycle at the same time and hence move in synchronisation (Franks *et al.*, 2018). In this article, we disregard those other convergence dimensions.

There is an extensive empirical literature on convergence in the EU. Whereas various studies have considered convergence within a subset of EU member states – most often the euro area or Central and Eastern European countries – our own analysis extends to all EU member states, still including the United Kingdom. Another aspect that sets this article apart from most other studies is that convergence is examined at both the national and regional level, and that we attempt to draw connections between developments at those two levels. Moreover, we adopt a longer-term perspective than is usual, as far as European Commission data allow it. Convergence among the older EU15 member states is thus analysed from 1960 onwards, while for the countries that have

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joined the EU since 2004, data beginning in 1995 are used. At the regional level, we employ data on about 200 EU28 large regions from 1996 onwards. Finally, our research also adjusts the boundaries of regions to take better account of the commuting zones of important metropolises, as one of our objectives is to examine the impact of agglomeration economies, in particular through the growth premium for regions which include a national capital or another metropolitan area.

The remainder of the article is structured as follows. Section 1 briefly reviews the main theoretical concepts that form the basis of our empirical analysis. Section 2 focuses on the convergence process among EU member states, while Section 3 investigates the extent of convergence at the regional level.

## 1. Main theoretical concepts

There are many different concepts of (real) convergence, but beta and sigma convergence are the most frequently analysed. Beta convergence implies that lower-income countries or regions tend to grow faster than richer ones. It is a necessary, though not sufficient, condition for sigma convergence, which is in turn defined as a decrease in the dispersion of per capita incomes across countries or regions over time.

The idea of beta convergence follows directly from the neoclassical growth theory (Solow, 1956; Swan, 1956) and hinges on the assumption of diminishing returns on (physical) capital. Poor, capital-scarce economies tend to attract larger capital inflows, as they exhibit higher returns on this production factor, thereby growing faster and catching up with the real per capita levels of richer economies. In other words, neoclassical models assume that countries grow at different rates because they have different stocks of capital and are therefore at different points on their growth paths. An economy grows faster the further it is below its so-called “steady state”, where it eventually continues to grow at a constant, long-run rate<sup>1</sup>.

Convergence tends to be a slow process however, as Barro and Sala-i-Martin (1992) were among the first to demonstrate empirically. A so-called “iron law of convergence” seems to apply, according to which the gaps in real GDP per capita between economies diminish at a rate of about 2 % per year. This implies that it takes around 35 years for half of the initial income gap to disappear, while the time needed to close three-quarters of the gap between economies’ incomes is no less than 70 years. The time required for substantial convergence to materialise is thus typically in the order of several generations.

When all economies are assumed to converge towards the same steady state, beta convergence is said to be unconditional or absolute. The concept of conditional convergence, on the other hand, takes into account the fact that economies differ in a variety of structural or institutional characteristics. Under such circumstances, countries or regions may still converge, but not towards the same steady states. In other words, beta convergence then only holds when a certain set of economy-specific features are kept fixed. One implication of conditional convergence is that economies with similar features are likely to display similar growth trajectories, which is referred to as “club convergence”.

Standard neoclassical growth theory predicts that integration, by lifting barriers to the movement of goods, services, capital and workers and, hence, by its effect on capital accumulation, leads to income convergence. However, and especially at subnational levels, opposing agglomeration forces may be at work. Availability of a large pool of potential customers and easy access to intermediate goods and services can be a factor driving concentration of economic activity. As such effects tend to boost growth in certain regions at the expense of others, convergence

<sup>1</sup> This long run, steady state growth rate depends on the rate of technological progress, which neoclassical models assume to be exogenously determined. A new wave of growth models sought to endogenise technological progress, either by introducing it in its own right or by allowing for increasing returns on capital (e.g. Romer, 1986; Lucas, 1988). According to these so-called “endogenous growth models”, economies with greater access to knowledge may always grow faster and divergence may occur.



does not necessarily occur<sup>1</sup>. The concentration of activities in urban regions, to the detriment of more rural areas, is a well-known example of these effects. The EU's cohesion policy was set up precisely with these concerns in mind.

## 2. Convergence at the national level

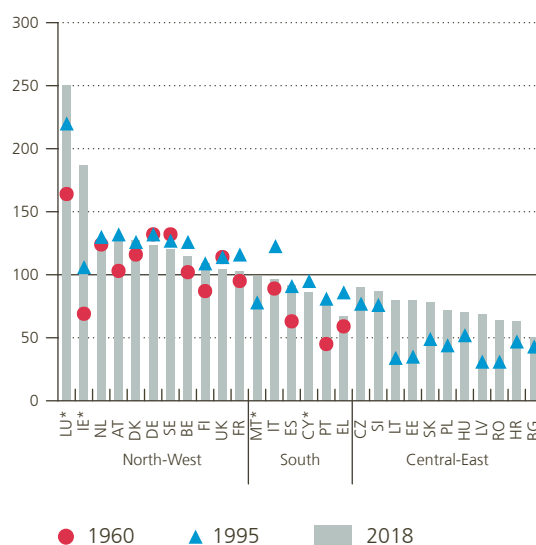
### 2.1 A cursory look at cross-country convergence

The following sections analyse the extent of convergence and the speed at which it has been taking place across countries within the EU. Chart 1 shows EU member states' GDP<sup>2</sup> per capita (in purchasing power standards or PPS<sup>3</sup>) in 1960 (where available), 1995 and 2018<sup>4</sup>, illustrating that large differences in per capita incomes still exist between EU countries. Since GDP data for certain small countries – i.e. Luxembourg, Ireland, Cyprus and Malta – are biased by the presence of large multinational corporate structures and/or an outsized financial sector, we leave these countries out of the remainder of our analysis<sup>5</sup>.

Chart 1

#### Large differences in per capita incomes persist across EU member states...

(GDP per capita in PPS, EU15 average = 100 for 1960 and EU28 average = 100 for 1995 and 2018)



Source: EC (Ameco).

\* The GDP per capita figures of LU, IE, MT and CY have to be treated with caution, given the presence of large multinational corporate structures and/or an outsized financial sector.

1 See, among others, Martín *et al.* (2001) and Alcidi (2019).

2 GDP data include the (short-term) effect of structural and investment funds at the national level and at the regional level.

3 Price levels differ across countries; prices are usually higher in richer than in poorer countries. In order to better compare incomes, these are converted using purchasing power standards or PPS. PPS is an artificial currency unit used by Eurostat; one PPS can buy the same amount of goods and services in each EU country.

4 Data for member states that joined the EU since 2004 are only available as from 1995; for the "older" EU member states – i.e. those that joined the EU before 2004 – data are available as from 1960.

5 Because they are well-known concepts, we continue to use "EU15" to refer to our sample of "old" member states (i.e. the countries that joined the EU before 2004) and "EU28" for the entire sample of EU countries, even though the respective samples include 13 and 24 countries only.

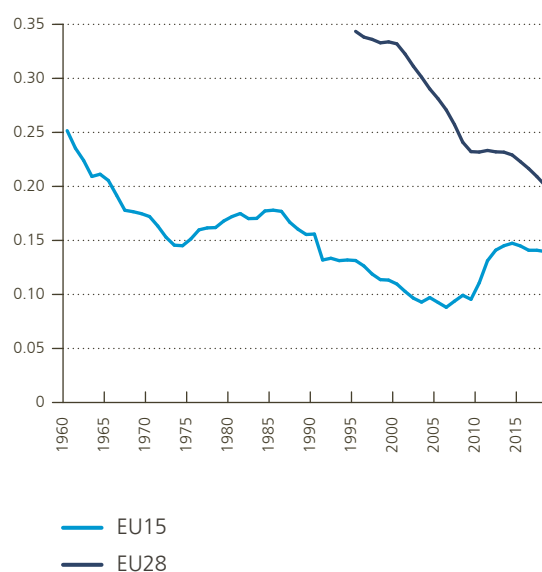
In 2018, incomes in the North-Western European countries were all above the EU average. This contrasts with incomes in Southern and Central-Eastern Europe (CEE), which were all below the EU average. The per capita income in the EU's poorest member state, Bulgaria, still amounted to only half of the EU average in 2018, similar to its situation in 1995. In that respect, Bulgaria differs from most other CEE countries, where per capita incomes have moved up compared to the EU28 average over the past two decades. On the other hand, most countries in the (initially) richer North-West and South of Europe have only just maintained their relative income positions or experienced a deterioration. This is a first indication that, between 1995 and 2018, broad convergence took place between the EU28 countries.

A similar trend can be observed in Chart 2, which plots the coefficient of variation of EU per capita incomes – a measure of sigma convergence – over time. Between 1995 and 2018, cross-country differences in EU28 incomes have been declining and sigma convergence has thus taken place. From 1960 to just before the global financial crisis, sigma convergence can also be observed among EU15 countries, though periods of faster convergence alternated with periods of stagnation or even divergence. In the aftermath of the global financial and European sovereign debt crises, per capita incomes in crisis-hit Southern European countries drifted apart from those in North-Western Europe. Hence, in 2014 the dispersion of incomes among EU15 countries was back at its 1990 level, before gradually diminishing again.

## Chart 2

### ... but the dispersion in per capita incomes has generally decreased over time

(population-weighted coefficient of variation \* of EU countries' GDP per capita in PPS)



Source: EC (Ameco).

\* Standard deviation divided by the mean.

## 2.2 Unconditional beta convergence

In this section, we start by investigating the existence of beta convergence among EU countries, a concept that, as explained in section 1, captures the extent to which initially poorer EU countries have caught up with richer ones. We first examine the existence of unconditional or absolute beta convergence, irrespective of countries' structural differences. In the next section, we will look into conditional convergence, which allows us to delve deeper into the main drivers of cross-country growth differences among EU member states.

The existence of absolute beta convergence can be verified with a simple linear regression in which the explained variable is the average annual growth rate of GDP per capita over a certain period of time – as is common in the literature, we consider five-year periods – and the only explanatory variable is the initial level of GDP per capita. The equation, which we estimate using ordinary least squares (OLS), thus becomes:

$$\frac{1}{5} \ln \left( \frac{Y_{i,t+5}}{Y_{i,t}} \right) = \alpha + \beta \ln Y_{i,t} + \varepsilon_{i,t}$$

where  $\frac{1}{5} \ln \left( \frac{Y_{i,t+5}}{Y_{i,t}} \right)$  is the average annual growth rate of per capita GDP in country  $i$  between the years  $t$  and  $t+5$  and  $(\ln) Y_{i,t}$  is the (natural logarithm of) initial per capita income in country  $i$ . A negative coefficient for the latter variable indicates absolute beta convergence, as it implies that a lower initial income tends to go hand in hand with stronger growth in the following period. A positive coefficient would point to divergence. Chart 3 shows the result of such a regression exercise, repeated for 5-year rolling windows since 1960 (i.e. 1960-1965 income growth regressed on 1960 income, 1961-1966 income growth regressed on 1961 income, etc.) for the EU15 countries (left-hand panel) and since 1995 for the EU28 countries (right-hand panel). The results confirm that convergence in the EU has not been a smooth process. The 1960s to the mid-1970s marked a period of significant convergence between EU15 countries, as illustrated by a strongly negative beta. This period covers part of the “Golden Age” for Western Europe, which extended from the end of the Second World War to the early 1970s and was characterised by historically high economic growth rates, strong productivity growth and low unemployment. The establishment of the predecessors of the EU – the European Coal and Steel Community in 1951 and the European Economic Community in 1957 – contributed to this development by boosting intra-European trade, allowing for a more efficient allocation of resources and widespread technology transfers. The oil crisis and the collapse of the Bretton Woods system at the beginning of the 1970s put an end to this period of strong convergence.

Subsequently, convergence picked up again from the mid-1980s, more or less until the global financial crisis in 2008. First of all, the signing of the European Single Act in 1986, which led to the creation of the European Single Market in 1993, supported convergence by reducing obstacles to the free movement of people, goods, services and capital. The accession of some relatively poorer countries to the EU (in particular, Spain and Portugal in 1986) also gave a renewed boost to the convergence process<sup>1</sup>. It was only during the early 1990s that convergence was weaker. These were turbulent years; the iron curtain came down, the Soviet empire imploded and the Gulf War erupted. The industrial world entered a recession, triggered by rising oil prices and rising real interest rates in Europe due to the re-unification of Germany. The Bundesbank responded to the expansionary fiscal policy in Germany by increasing its interest rate. In autumn 1992 and summer 1993, the recession culminated in Europe with the Exchange Rate Mechanism (ERM) crisis.

The global financial and European sovereign debt crises marked a period of divergence. The strong financial integration in the run-up to the crisis, with capital flowing abundantly from the richer “core” to the countries in the “periphery”, supported growth in the latter countries and, therefore, convergence, but this later proved to be unsustainable. Investment was channelled primarily to the non-tradable sector – in some cases the counterpart of housing market bubbles – and was accompanied by competitiveness losses, worsening the prospects for more durable growth based on exports (Coutinho and Turrini, 2019). Over the last few years, the beta coefficient has again entered negative territory however, suggesting that convergence among the EU15, driven by higher growth in some Southern European countries, may have resumed.

When the CEE countries are added to the sample (right-hand panel), negative betas and, thus, absolute convergence can be observed for the entire period from 1995 onward. It is only during the 1990s – a period of transition and low growth for countries in the region – that the model provides a weaker fit and convergence was less pronounced. Convergence reached its fastest rate on the eve of the global financial crisis, which in

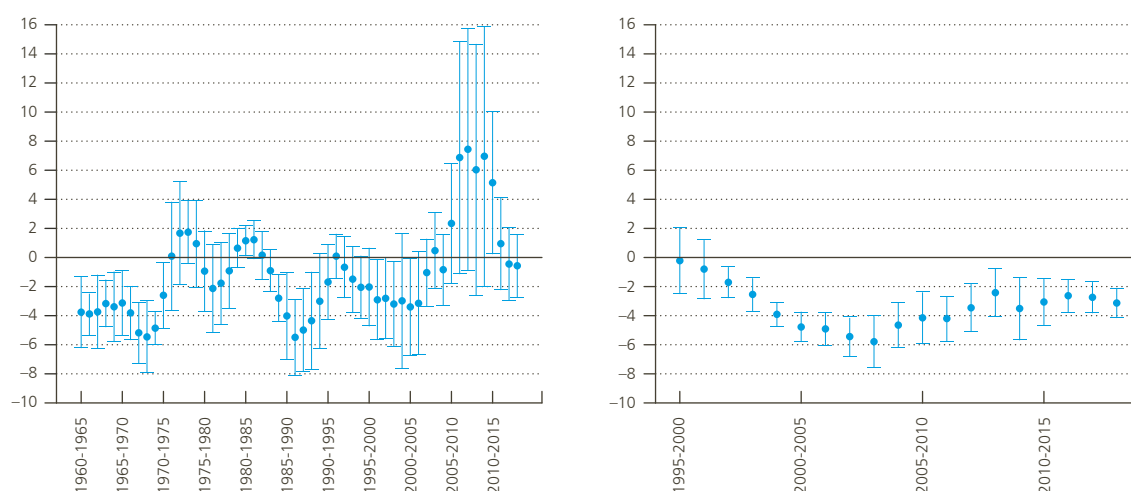
<sup>1</sup> Nominal convergence in the run-up to the introduction of the euro in 1999 initially also seemed to go hand in hand with real convergence. In fact, Diaz del Hoyo *et al.* (2017) point out that so-called “Maastricht” convergence may have facilitated real convergence by providing stable macroeconomic conditions and by anchoring expectations.

turn marked a period of weaker (but still statistically significant) convergence for the EU28. In the last couple of years, the convergence machine seems to have regained some speed, although it is still too early to tell whether the fast pace of the early 2000s can be matched. The chart illustrates that Central-Eastern Europe has played a prominent role in the EU convergence process during the last two decades. The transition from centrally planned to market-based economies led to a significant reallocation of resources, stimulating catch-up growth. This process was supported by the region's rapid integration with the rest of Europe, a process that started with the signing of the first Association Agreements in 1994 and eventually culminated in EU accession for most countries in 2004, for Bulgaria and Romania in 2007, and for Croatia in 2013. Moreover, several of these countries have also joined the euro area in the meantime. The integration process further boosted trade linkages with the rest of Europe and spurred capital and labour mobility and innovation.

### Chart 3

#### Convergence has not been a smooth process

(unconditional beta coefficients in % and their 95 % confidence intervals, estimated from rolling OLS regressions for 5-year-ahead growth in GDP per capita in PPS)



Source: EC (Ameco).

Charts 4 and 5 offer an alternative way of visualising the convergence process, at the same time allowing us to identify individual countries' trajectories vis-à-vis the EU average in GDP per capita terms. The panels in these charts correspond with the different sub-periods identified in Chart 3, for the EU15 and EU28 country samples respectively. The panels plot EU countries' change in GDP per capita over the sub-period considered against their initial income levels, both relative to the EU average. As such, the charts illustrate whether and to what extent initially poorer countries grew faster than their richer counterparts: if the (regression) line of best linear fit has a negative slope, this again signifies convergence, whereas a positive slope points to divergence. The charts furthermore indicate which countries grew faster or slower than their initial incomes would suggest: countries above (below) the fitted line grew faster (slower) than expected.

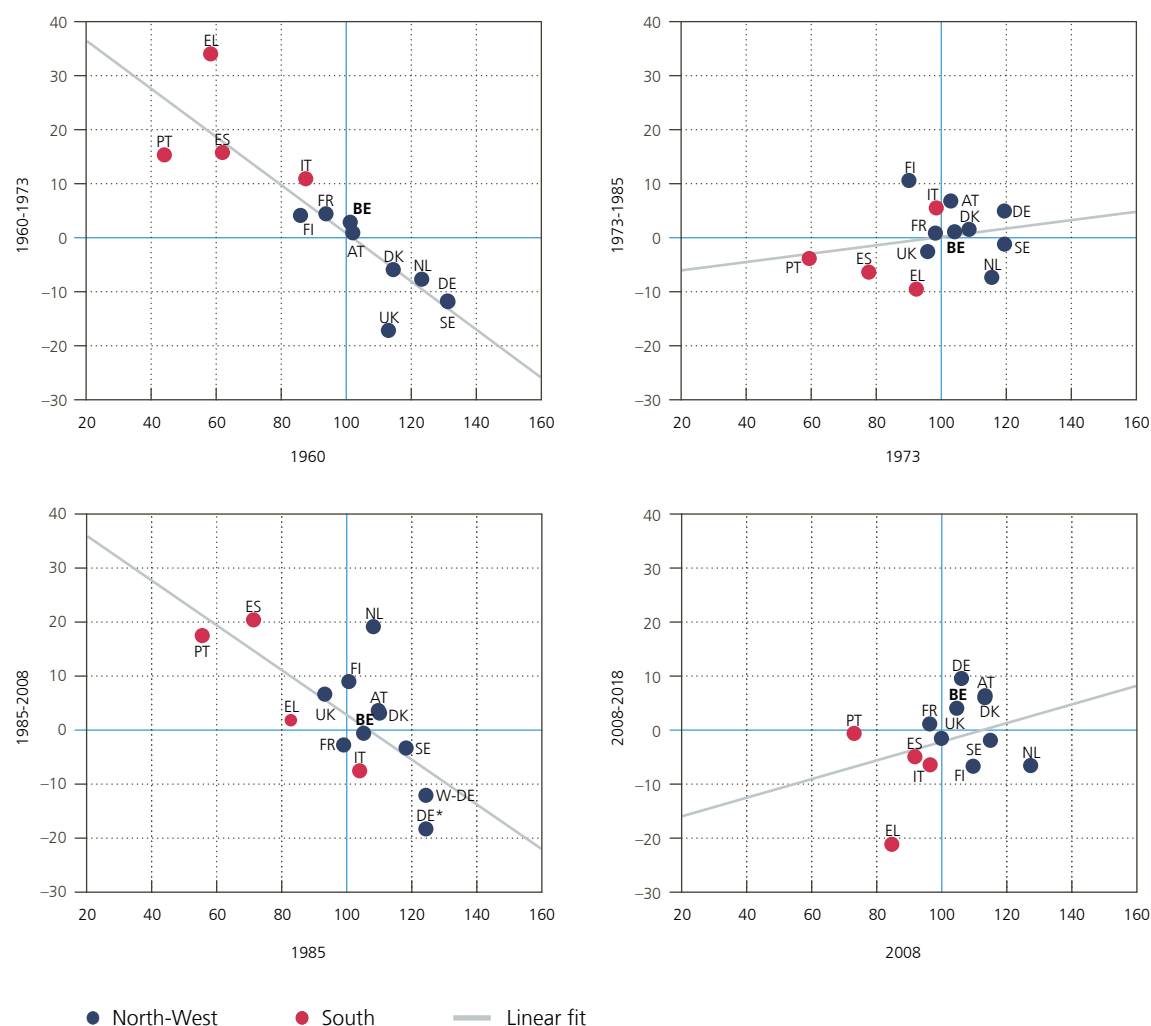
As highlighted before, within the EU15, periods of convergence alternated with periods of divergence (Chart 4). The strong convergence observed from the 1960s to the mid-1970s was driven by Southern European countries catching up with the countries in the North-West; Spain, Italy, Greece and Portugal all recorded below-EU average income levels at the beginning of the period but grew, on average, substantially faster than their richer counterparts. The next convergence period, from the mid-1980s until the crisis, was supported by strong growth in Spain and Portugal; Greece did not succeed in keeping pace with them, while Italy even witnessed below-average growth and saw its relative position deteriorate. As the last panel of Chart 4 illustrates, the global financial and

European sovereign debt crises had exactly this effect on all countries in the South, particularly in Greece, where per capita incomes declined by more than 20 percentage points relative to the EU average over the period 2008-2018.

#### Chart 4

### Strong convergence among “old” member states during the first decades of EU integration has (temporarily?) come to a halt

(change in GDP per capita in PPS over the sub-period considered versus initial GDP per capita in PPS, both relative to the EU15 average)



Source: EC (Ameco).

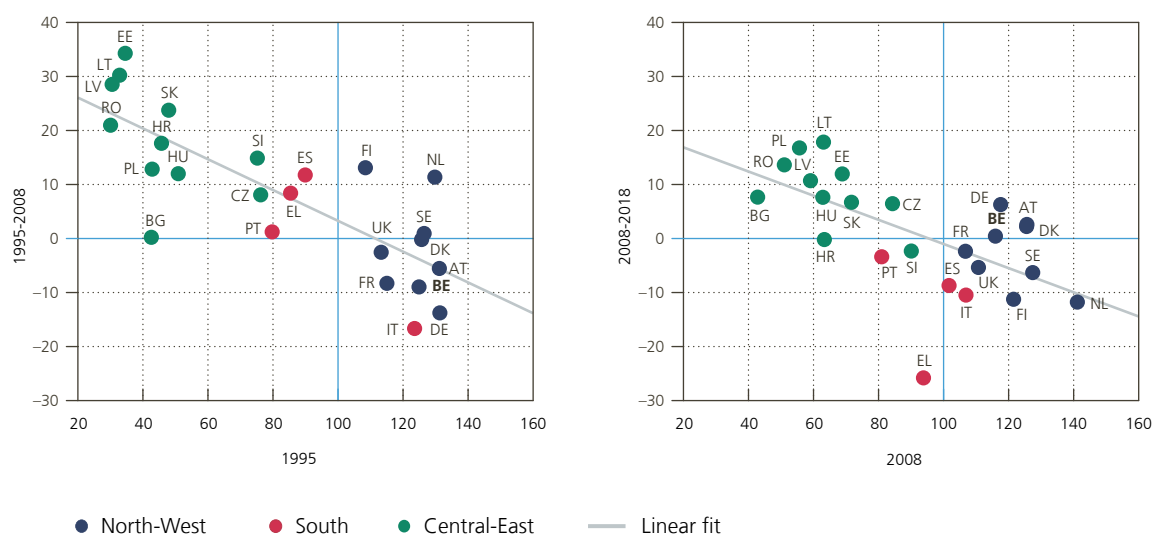
\* The position of Germany (DE) in the lower-left panel is influenced by the reunification of the country; from 1991 onwards, data for Germany include data from both the Western and Eastern parts of the country (whereas for the years before, only West Germany is included). The addition of data from a relatively poorer area pushes the position of Germany downward. For the sake of clarity, the data point for West Germany (W-DE) is also included.

Chart 5 again introduces the CEE member states to the sample. Most countries from this region are situated in the upper left part of the chart, for both sub-periods considered: most of these initially poorer countries managed to grow substantially faster than the EU average, especially in the decade leading up to the crisis. The Baltic countries and Romania in particular registered very strong growth and therefore managed to significantly improve their positions relative to the EU28 average. Between 1995 and 2018, the latter countries managed to more than double their per capita incomes compared to the EU average (cf. Chart 1).

Chart 5

### Accession of Central-Eastern European countries gave a new boost to convergence

(change in GDP per capita in PPS over the sub-period considered versus initial GDP per capita in PPS, both relative to the EU28 average)



Source: EC (Ameco).

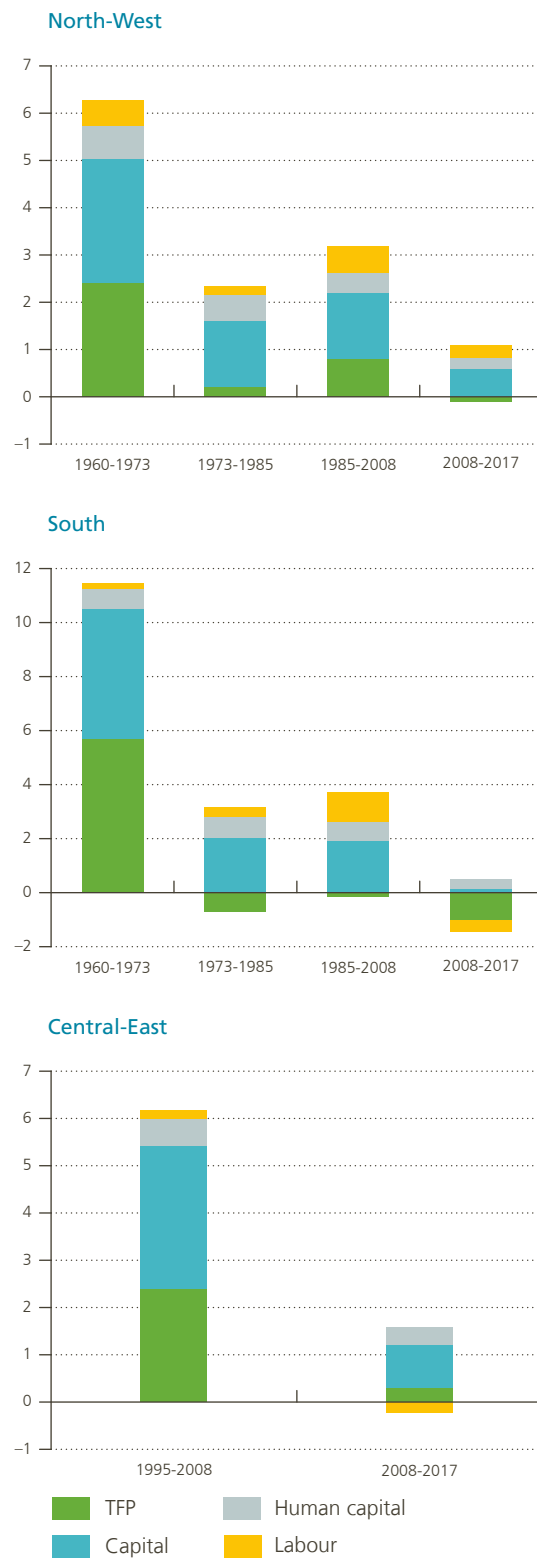
One way of distinguishing between the various drivers of economic growth for the different sub-periods identified above is through a growth accounting exercise (Chart 6). During the so-called “Golden Age”, economic growth in the North-Western and Southern European countries was driven mainly by total factor productivity (TFP) and an accumulation of capital. Growth touched historic highs, with economies in North-Western Europe advancing by more than 6 % on average annually (in real terms) and by more than 10 % in Southern Europe. Similar growth rates were never attained again and the contribution of productivity gains diminished strongly in subsequent periods. In the South, productivity losses even became a drag on growth in all subsequent periods, especially so in the aftermath of the global financial and European sovereign debt crises. The crises also induced large South-North migration flows – especially in the segment of the young and educated –, with the resulting declines in human capital and labour further negatively affecting growth.

As for Central-Eastern Europe, the 1995-2008 period was characterised by strong annual growth of more than 6 % on average, boosted by increases in both capital and productivity. Capital and financial sector liberalisation, the gradual adoption of the EU acquis in view of accession, and large-scale privatisations in the transition from centrally planned to market economies attracted large capital inflows from other European countries. Furthermore, TFP dynamics in CEE countries were especially strong in the period preceding the crisis, reflecting in part the beneficial consequences of these countries’ integration into the EU and the gains from a reallocation of resources during transition. Growth has, however, slowed sharply since the crisis. Investments were scaled down and emigration translated into a negative contribution of labour dynamics to growth. As this concerned mainly the young and higher educated, emigration, in turn, also adversely affected human capital.

## Chart 6

### The drivers of growth in the EU have changed over time

(contributions to average annual growth rates of real GDP, percentage points)



Source: Penn World Table 9.1.

## 2.3 Conditional beta convergence

We now go one step further than our simple convergence tests above, taking into account the fact that growth rates differ across countries not only as a result of different initial income levels, but also because of other factors. We therefore add a vector of control variables  $X_{i,t}$ , that may also affect countries' steady states, to our equation :

$$\frac{1}{5} \ln \left( \frac{Y_{i,t+5}}{Y_{i,t}} \right) = \alpha + \beta \ln Y_{i,t} + \gamma X_{i,t} + \varepsilon_{i,t}$$

As explained above, by allowing for countries to move towards different steady states, this equation thus enables us to study the extent of *conditional* convergence among EU member states. However, we do not attempt to pin-point the exact drivers of growth in the EU in an exhaustive way ( as there is already a vast body of research on that subject), or to establish causality. Instead, we consider a small set of key variables distilled from the most relevant literature<sup>1</sup>.

### Explanatory variables

Next to the initial level of GDP per capita, we introduce population growth as an independent variable in the equation. On the one hand, to the extent that population growth implies a dilution of the capital stock per capita, it negatively affects economic growth. Population growth through migration flows, on the other hand, may also affect growth by impacting human capital. The sign of this variable's coefficient is therefore ambiguous. The ratio of investment to GDP is expected to enter the equation with a positive sign, reflecting the fact that higher investment is associated with faster capital accumulation and, therefore, higher growth. The build-up of human capital per worker is approximated by an index based on the average years of schooling and an assumed rate of return for education. We expect this factor to make a positive contribution to growth. Trade openness, as measured by the ratio of exports plus imports to GDP, is introduced to the equation with an expected positive sign, as trade is known to enhance the allocation of resources and the diffusion of technology and knowledge, thus benefiting growth. Finally, inflation and government consumption are included as measures of macroeconomic (in)stability, both with an expected negative sign. With regard to the former, both the average annual rate as well as the standard deviation of inflation are included in the regression, reflecting the importance of both low and stable inflation for economic activity to flourish. Public consumption, for its part, is assumed to proxy for expenditures that do not directly affect productivity but entail distortions to private decisions (Barro, 2003). Annex 1 provides more details on the variables used in the regression.

We include period dummies to control for possible common shocks affecting all countries, and geographical dummies (for Southern and Central-Eastern Europe; with North-Western Europe being the base category)<sup>2</sup> to control for shocks and hard-to-model structural characteristics common to specific regional blocs.

### Regression results

The regression is again estimated using simple (pooled) OLS. Following standard practice in the estimation of growth regressions with panel data, annual observations are converted into averages (or changes) over non-overlapping, five-year sub-periods, to reduce the effects of short-term disturbances on the results. To maximise the number of observations for this particular regression exercise, we employ an unbalanced sample, including observations since 1960 for the EU15 member states, and since 1995 for the other EU28 countries. The regression results are displayed in Table 1.

1 See, among many others, Coutinho and Turrini (2019), Barro (2003), Kaitila (2005) and Savelin and Žuk (2018). We refrain from assessing the (long-term) impact of the EU's structural and investment funds on economic growth and convergence. This is the subject of an extensive literature with largely inconclusive results (see, e.g., the meta studies by Dall'Erba and Fang, 2017, and Darvas *et al.*, 2019).

2 Geographical dummies can be seen as an alternative to including country-specific fixed effects which would, instead, absorb all (time-invariant) between-country variations and may introduce bias into the estimation (see Temple, 1999).



Table 1

**Cross-country regression results**

(panel OLS regression, 5-year non-overlapping periods, 1960-2018 for EU15, 1995-2018 for the other member states)

	No control variables	With control variables
<b>Dependent variable</b>		
Average GDP per capita growth		
<b>Independent variables</b>		
Initial GDP per capita	–2.700***	–4.507***
Dummy for Southern countries		–0.436
Dummy for CEE countries		–1.134*
Population growth		–0.339**
Investment ratio		0.070
Human capital		0.723
Trade openness		0.007*
Government consumption ratio		–0.070*
Inflation		–0.116**
Inflation volatility		–0.002
Constant	30.407***	45.122***
Period dummies	No	Yes
Number of observations	211	209
Number of countries	24	24
R-squared	0.618	0.922
Adjusted R-squared	0.616	0.913

Sources: EC (Ameco), Penn World Table 9.1 and World Bank.

Note: Standard errors (not shown) are clustered at the country level, \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

Our estimations confirm the existence of absolute beta convergence for our sample of EU countries between 1960 and 2018: running the regression with no control variables yields a negative beta coefficient of –2.7. Running the regression with the above-described control variables yields a more negative beta coefficient of –4.5. In other words, over the longer term and considering all member states, convergence in the EU has been quite strong. In fact, a beta coefficient of –4.5 implies that a 1 % decrease in initial per capita GDP would raise a country's average growth rate over the next five years by 4.5 basis points annually. Beta estimates can also be used to project the time that countries would need to move closer to their steady states. More specifically, at a convergence rate of 4.5 %, it would take countries about 15 years to eliminate half of the gap towards their long-run steady states. All the other independent variables enter the equation with the expected sign (with population growth negatively affecting growth), even though they are not all statistically significant at the conventional 5 % or 10 % level<sup>1</sup>.

In order to illustrate how the regression variables have affected growth in the EU, we plot them against “residual” growth of GDP per capita (correcting for the influence of all other variables included in the regression) in Chart 7. For each country, the latest observation (the variable's average over 2015-2018) is marked in colour. The chart illustrates the positive correlation of growth with investment, human capital and trade openness, and the negative association with government consumption. Moreover, the chart enables us to assess how the

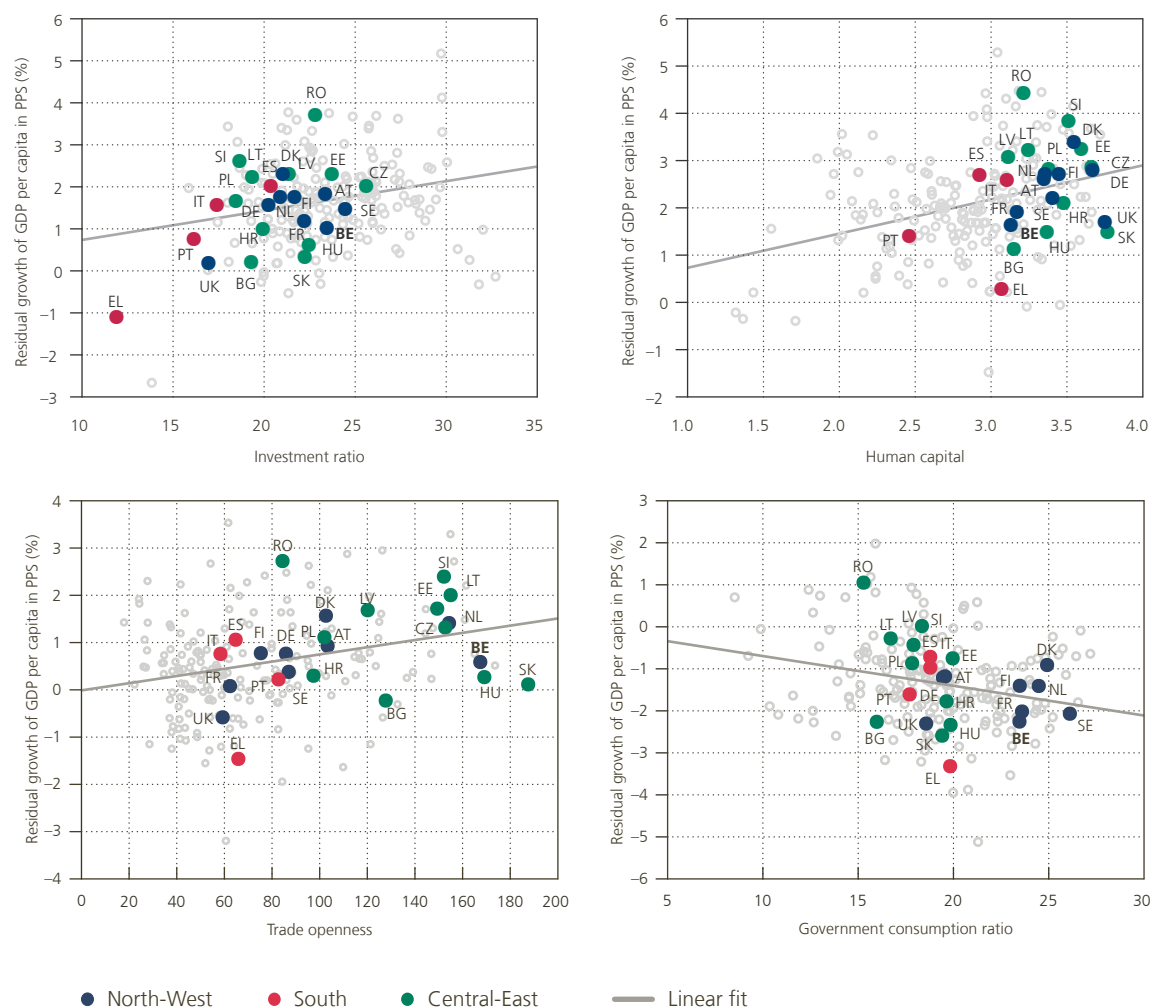
1 The coefficients of investment and of human capital are only statistically significant at the 15 % level.

different countries perform with regard to the variables concerned. In particular, during the latest observation period (2015-2018), Southern European countries performed quite poorly on the variables that positively affected growth. CEE countries have relatively high values for human capital and trade openness, while North-Western European countries tend to have relatively high government consumption ratios.

## Chart 7

### Investment, human capital and trade openness are positively associated with growth in the EU, while government consumption shows a negative correlation

(partial residual plots with average country values for 2015-2018 marked in colour)\*



Sources: EC (Ameco), Penn World Table 9.1.

\* The charts plot the residuals from the panel regression model (with control variables) plus the contribution of the variable of interest on the y-axis against the variable of interest on the x-axis. The slope of the trend line therefore corresponds with the regression coefficient of the independent variable in question (shown in Table 1).

### 3. Convergence at the regional level

In this section, we pursue three objectives. First, we verify whether there is also convergence of GDP per capita<sup>1</sup> levels between the regions across the EU28<sup>2</sup>. Second, we classify regions into different categories according to their economic performance, including the Belgian regions. Third, we examine the role played by capital cities and other important metropolises in terms of convergence and growth. To this end, we selected the 24 capitals as well as 75 metropolitan areas, according to the EU-OECD definition<sup>3</sup>, with a population of more than 500 000. In particular, we are interested in the incremental effect on income growth when a region includes, respectively, such a metropolitan area, a “large” metropolitan area with a population of more than 1.5 million, or a capital (irrespective of its population size). The motivation for considering metropolises comes from the literature on agglomeration economies, which advances the idea that productivity and growth benefit from the concentration of economic activity through increasing returns to scale and positive externalities such as lower transportation costs, knowledge spill-overs, and a better matching on the labour market (Krugman, 1991a and 1991b).

Before examining (sigma and beta) convergence, we first elaborate on our data and methodology.

#### 3.1 Data and methodology

Our research uses the novel regional database Ardeco, made available online in December 2019 by the European Commission<sup>4</sup>. This provides us with regional-level data starting in 1996 for all the 24 countries considered.

We use a concept of large regions developed by the OECD (Territorial Level 2, henceforth TL2) and also commonly employed by the IMF (see IMF, 2019 and Ebeke *et al.*, 2020). The European literature, however, typically uses the Eurostat NUTS classification (Nomenclature of Territorial Units for Statistics): NUTS1 for major socio-economic regions; NUTS2 for the reference regions for the application of EU regional policies (regions eligible for cohesion funds); and NUTS3 for small regions (Eurostat, 2018). For example, in the case of Belgium, NUTS3 corresponds to districts (“*arrondissements*”), NUTS2 to “provinces” and NUTS1 to “regions”. The OECD typology builds on the NUTS nomenclature in order to distinguish only two categories: large and small regions (the latter referred to as Territorial Level 3, TL3). For the EU member states, TL2 regions correspond to NUTS2 regions except for Germany, the UK and Belgium, where NUTS1 aggregates are considered instead: Länder in Germany, regions/nations in the UK and regions in Belgium. Compared to NUTS2, the TL2 typology places more emphasis on administrative regions (where policy decisions are taken) than on the homogeneity of the sample in terms of population. As illustrated in the left-hand map in Chart 8, other TL2 regions include those that people generally have in mind such as the regions in Italy, the former regions in France, the autonomous communities in Spain, the provinces in the Netherlands and the voivodeships in Poland.

In this article, we take the TL2 regions as our starting point, because the use of administrative regions makes more sense in terms of economic policy, because we are more interested in large regions than small ones, and because smaller entities are more subject to methodological issues, in particular the issue of spatial dependence, as economic growth in one region may affect the growth of neighbouring regions. This spill-over effect is found to be most significant within a travel time of 150 minutes (EC, 2017 and Annoni *et al.*, 2019). In the remainder of our analysis, we disregard the effects of spatial dependence.

1 In this section, we also use income convergence as synonymous with GDP per capita convergence or real convergence.

2 As in the previous section, EU28 actually stands for the 24 EU countries considered, as Ireland, Luxembourg, Cyprus and Malta were excluded from our research. Here we also exclude regions located outside Europe (the Territoires d’Outre-Mer for France; the Canary Islands, Ceuta and Melilla for Spain; and the Azores and Madeira for Portugal), as well as one tiny region inside Europe (Åland in Finland). In addition, we drop the Dutch province of Groningen because the volatility in its GDP per capita mainly reflects fluctuations in the price of gas, the extraction of which has constituted a significant share of economic activity.

3 See the common EU-OECD definition of Functional Urban Areas (FUAs) (Dijkstra *et al.*, 2019; OECD, 2019; EC, 2016, 2019). Basically, FUAs are cities and their commuting zones. Metropolitan areas are FUAs with a population of more than 500 000.

4 While country data are based on the Ameco database released with the Autumn 2019 EC forecasts, the regional figures extracted from Ardeco in December 2019 were based on a previous vintage of EC forecasts (Spring 2019). This implies that revisions in national accounts that have been implemented in the autumn of 2019 in some countries, including Belgium, have not been taken into account in our regional analysis.

Table 2

## Twenty TL2 regions with the highest GDP per capita (PPS) in 2018 \*

	Name of the Region	GDP per capita	Area (km <sup>2</sup> )	Ranking area **	GDP per capita after correction	Ranking in GDP per capita after correction
1	Hamburg	60 762	755	6	45 895	12
2	Brussels	60 442	162	1	49 340	6
3	Prague	58 795	496	4	42 468	18
4	London	58 674	1 572	9	50 013	4
5	Bratislava	55 813	2 053	12	55 813	1
6	Ile de France	54 683	12 070	76	54 683	2
7	North-Holland	52 537	3 403	23	49 699	5
8	Stockholm	51 108	7 153	42	51 108	3
9	Copenhagen	50 647	2 559	16	47 837	8
10	Utrecht	48 102	1 449	8	48 102	7
11	Warsaw	47 677	6 104	39	47 677	9
12	Bremen	47 156	420	3	37 178	31
13	Salzburg	47 072	7 154	43	47 072	10
14	Vienna	46 766	415	2	42 058	21
15	Budapest	45 558	525	5	33 629	48
16	Bucharest-Ilfov	45 072	1 804	10	45 072	13
17	Helsinki	44 153	9 568	63	44 153	14
18	Bavaria	43 733	70 543	196	43 733	15
19	Bolzano	43 689	7 398	46	43 689	16
20	Baden-Württemberg	42 618	35 745	180	42 194	20

Sources: EC (Ardeco), own calculations.

\* Grey rows show TL2 regions that were corrected to incorporate their commuting areas.

\*\* Ranking area: position in the ranking of TL2 regions by area (from the smallest to the largest).

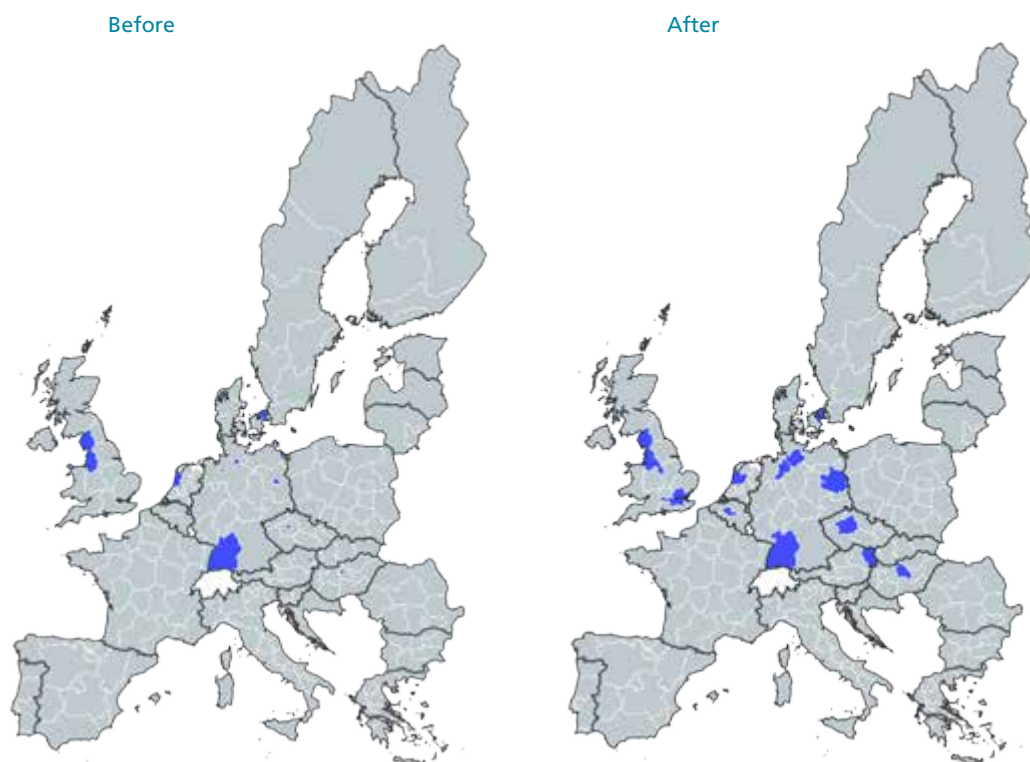
Ranking the TL2 regions by GDP per capita (Table 2), we observe that the richest regions often include the national capital or a large metropole. They are sometimes also very small in terms of area. Notably, the Brussels-Capital Region is by far the smallest of the 204 TL2 regions. A small size and a high income (GDP per capita) often go hand in hand. Indeed, regional GDP per capita is a ratio between total production in the region and the number of people living there. The smaller the geographical unit, the more likely a substantial fraction of local GDP is attributable to commuters (Monfort, 2008). Commuters contribute to the GDP of a small capital region like Brussels but they do not belong to the population of that region. Brussels' high GDP per capita – the highest in the EU28 in 1996 and the second highest in 2018 – is therefore partly an artefact of its very narrow geographical definition. As one of our main purposes is to compare the performance of capital regions or metropolitan regions with other regions, and since the administrative definition of regions varies from country to country in terms of size, we have expanded several TL2 regions to encompass the commuting zones of their metropole(s) in order to diminish the bias from inter-regional commuting. While Lazio largely covers Rome and Ile-de-France largely covers the Parisian basin, the TL2 regions of some other capitals and metropolises do not in fact cover their commuting areas sufficiently.

In practice, according to our analysis of the 24 capitals and 75 metropolises (see Annex 2), twelve capital or metropole regions are found to extend beyond one TL2 region. They are coloured in blue in the left-hand map of Chart 8, while their extended TL2 region is represented in the right-hand map. They include the six capital

NUTS2 regions often corrected in the literature (Annoni *et al.*, 2019; Iammarino *et al.*, 2018): Amsterdam, Berlin, Brussels, London, Prague and Vienna. The other TL2 regions that are expanded to include commuting flows comprise two other capital regions (Budapest and Copenhagen), two Länder cities (Hamburg and Bremen) and two other regions where a metropole is situated close to the border with other TL2 regions (North of England because of Manchester, and Baden-Württemberg because of Mannheim).

#### Chart 8

**Twelve of the 204 large regions were expanded to cover the whole commuting zone of their metropole(s)**



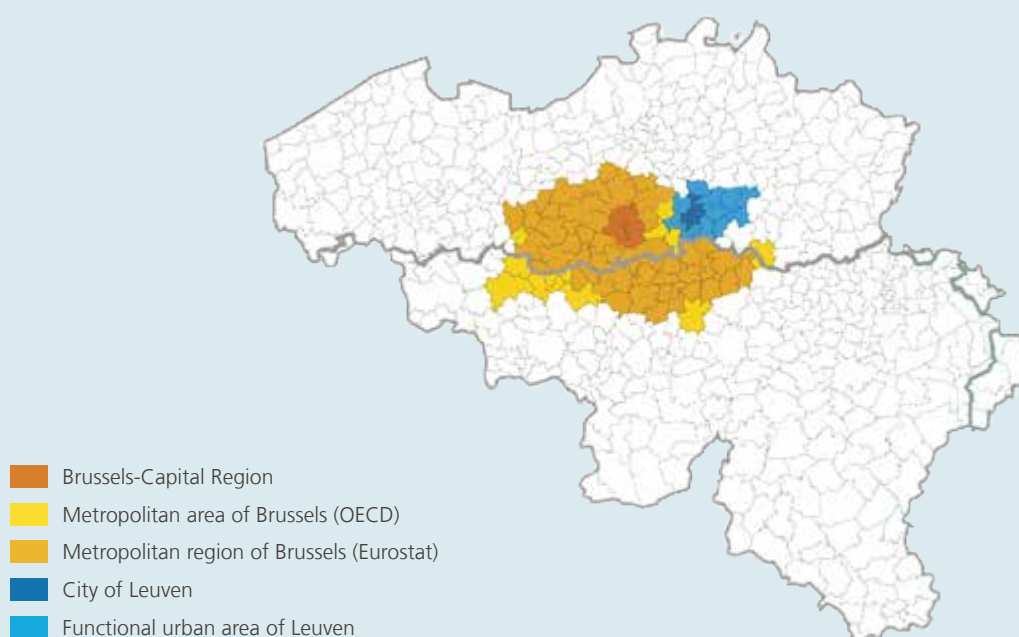
Sources: Eurostat, OECD.

In three cases, the extension of the TL2 regions involves merging two regions, so that we end up with 201 “TL2-corrected” regions. In the nine other cases, the expansion implies a reduction in the size of neighbouring TL2 regions (see Annex 3 for more details on the corrections). The correction applied to Brussels and its effect on the GDP per capita of each Belgian region is illustrated in Box 1. Based on the TL2-corrected definition, the ranking of regions according to their GDP per capita changes significantly (Table 2). In particular, metropolitan regions whose TL2 is expanded, such as Hamburg, Brussels and Prague, see significant drops in their income ranking. As a result, Bratislava now has the highest GDP per capita at over 55 000 euros (in PPS), significantly less than Hamburg’s figure of almost 60 800 euros before corrections. Conversely, some areas adjacent to a corrected metropole (such as Lower Saxony) enjoy a higher GDP per capita than before the correction.

## The correction for Brussels as an important metropolitan area and its consequences

Belgium has two metropolitan areas according to the EU-OECD definition: Brussels and Antwerp. Wallonia has no metropolitan areas, as Charleroi and Liège and their respective commuting zones have a population of less than 500 000.

### Brussels: from metropolitan area to metropolitan region



Sources: Eurostat, OECD.

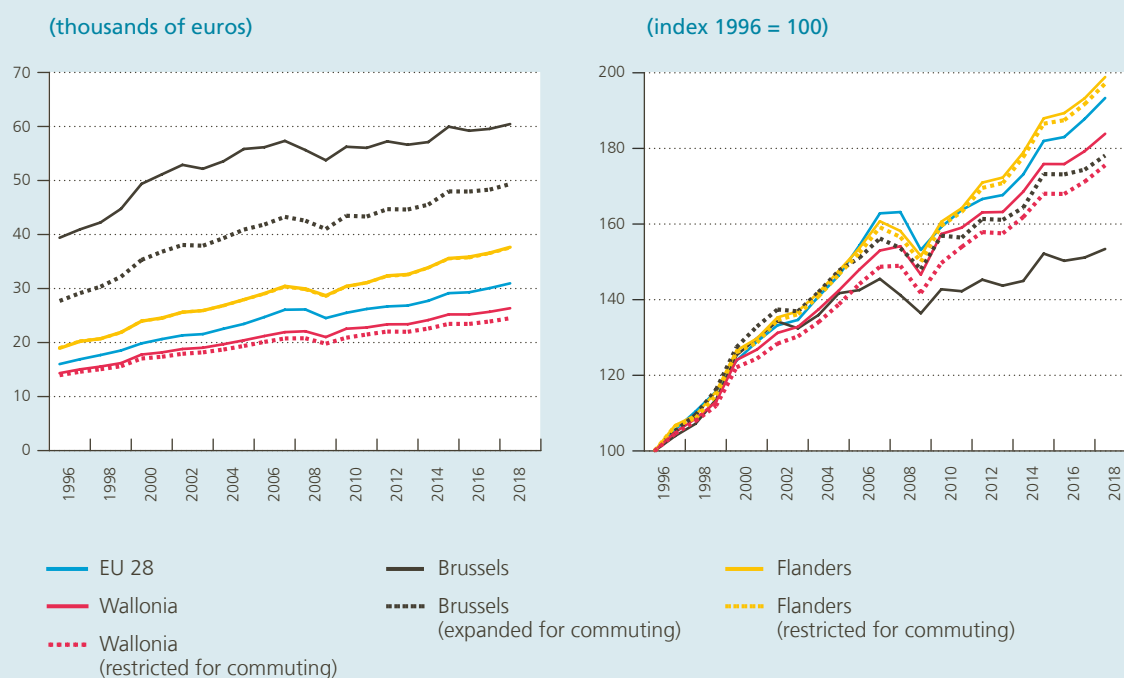
The Brussels-Capital Region (in dark orange) consists of 19 municipalities. It is the smallest TL2 region in our sample. According to the EU-OECD definition of *metropolitan areas* which is based on municipalities (yellow), the commuting zone of Brussels extends far into both the Flemish and the Walloon Region. In Wallonia, for example, it would include Ath and other municipalities in the province of Hainaut as well as Gembloux (province of Namur). Conversely, Leuven and its surrounding municipalities (blue) are not included in the Brussels metropolitan area, since Leuven is considered to form a functional urban area (FUA) on its own.



Eurostat (2018b) defines *metropolitan regions* as NUTS3 (or an aggregation of NUTS3) regions in which at least 50 % of the population lives in a metropole. The metropolitan region of Brussels (light orange) includes the districts of Nivelles (equal to the province of Walloon Brabant in Wallonia), Aalst and Halle-Vilvoorde (both in Flanders).

As (GDP and other) statistics are only available at the NUTS3 level (and not at the municipality level), we use the Eurostat definition of metropolitan regions for the remainder of our analysis.

### Impact of the expanded definition of Brussels on the GDP per capita of the Belgian regions



Source: EC (Ardeco).

Before the expansion, the Brussels-Capital Region has the highest GDP per capita (in PPS) among the three Belgian Regions over the whole period. The GDP per capita of the Flemish Region is higher than that of Wallonia, which is actually below the EU28 average. Wallonia's GDP per capita is also negatively affected by the commuters working in the neighbouring Grand Duchy of Luxembourg. Our expansion of Brussels to attenuate the commuting bias, however, dramatically reduces its GDP per capita, though that figure remains well above the national average. It also reduces the GDP per capita of Wallonia somewhat, as its richest province, Walloon Brabant, is excluded. There is hardly any impact on the GDP per capita of the restricted Flemish Region (without Aalst and Halle-Vilvoorde).



Looking at economic growth since 1996, the most remarkable feature before the correction is the much lower growth rate of the Brussels-Capital Region compared to the other regions. The Flemish Region has the fastest-growing GDP per capita, even slightly outpacing the EU28 average. Economic growth has been lower in Wallonia than in Belgium as a whole. When the Brussels Region is expanded, its economic performance is significantly enhanced, while that of Wallonia, without dynamic Walloon Brabant, worsens. Meanwhile, growth in the Flemish region is little affected by excluding Aalst and Halle-Vilvoorde.

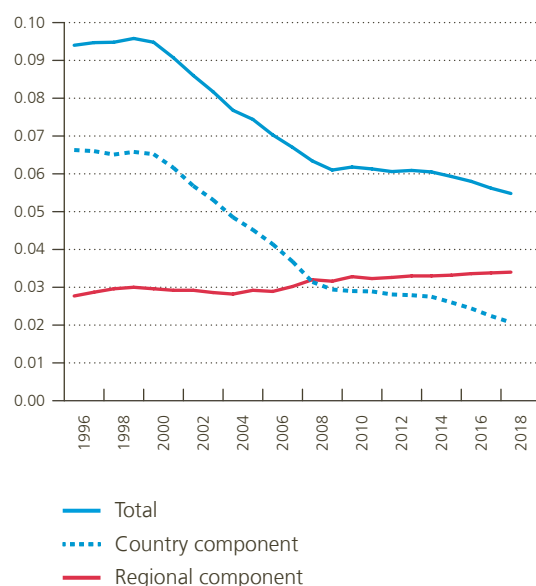
## 3.2 Dispersion

For the analysis of sigma convergence at the regional level, we favour the Theil index instead of the (population-weighted) coefficient of variation, as it allows us to decompose the overall regional income dispersion into a country component and a regional component, the latter showing the intra-regional disparities within each country (Monfort, 2008).

Chart 9

### Dispersion of regional incomes across the EU has decreased due to the decline in dispersion between countries

(population-weighted Theil index of GDP per capita in PPS and its decomposition into country and regional components, EU28 TL2-corrected regions)



Source: EC (Ardeco).

Disparities in GDP per capita have declined across the EU28 regions over the last two decades. This sigma convergence was especially marked in the early 2000s. As happened at the national level, sigma convergence was interrupted during the global financial and European sovereign debt crises, before receiving a new, though more modest, impetus in recent years.



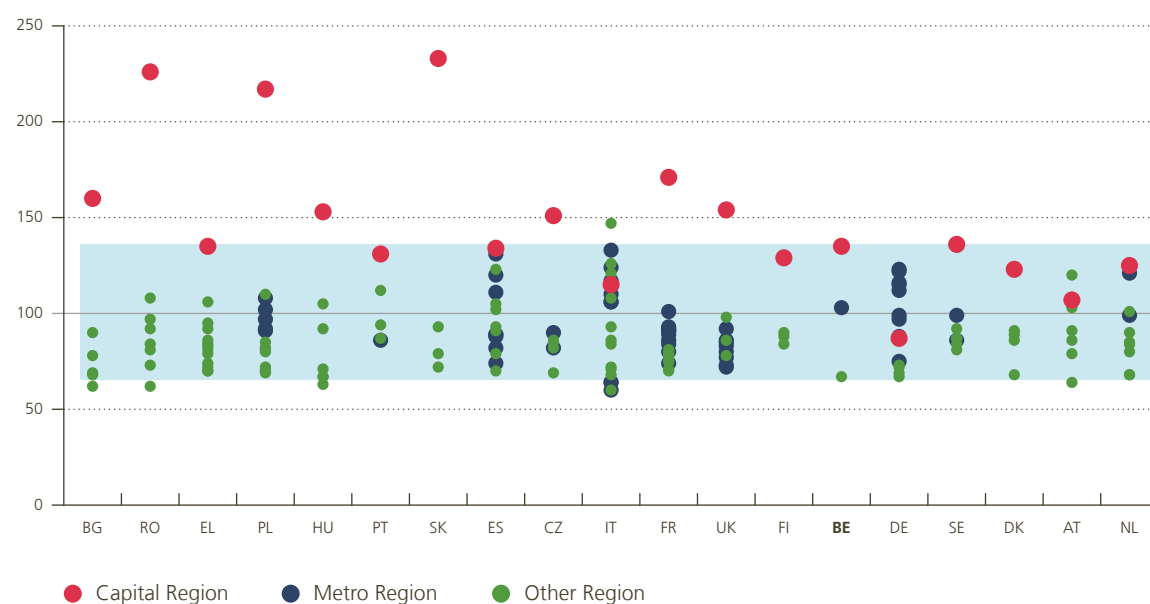
The decline in the Theil index of incomes is fully explained by the country component. As illustrated in the previous section, the dispersion between countries has indeed diminished, while the dispersion within countries has increased somewhat over the 1996-2018 period as a whole.

While a full analysis of regional disparities within individual countries is beyond the scope of this article, in Chart 10 we illustrate the dispersion of GDP per capita for countries with at least three (“TL2-corrected”) regions<sup>1</sup>.

**Chart 10**

**Regional disparities remain substantial within most EU countries\***

(GDP per capita in PPS, national average = 100, 2018e, TL2-corrected regions)



Source: EC (Ardeco).

\* Countries are ranked from the lowest to the highest level of national GDP per capita. The blue-shaded band indicates the income range between the poorest and richest Belgian region.

In 2018, regional income disparities were still substantial in most EU28 countries, be they poor (on the left) or rich (on the right). Typically, the region with the highest GDP per capita is the capital region, the three exceptions being Rome, Vienna and Berlin. In the case of the German capital, its GDP per capita is actually below the country average. In most cases, the capital’s income level far exceeds that of the other regions of the country.

In general, the GDP per capita of the other (non-capital) metropolitan regions lies above the respective national averages. The main exceptions are found in France, the UK, the Southern regions in Spain and Italy, and the North of Portugal (Porto).

The income differences between Belgium’s poorest and richest region after being adjusted to attenuate the commuting bias (Wallonia and Brussels, respectively), are considerable but, when expressed relative to the national average, they are not exceptional compared to other EU countries.

<sup>1</sup> In Annex 4, we provide a similar chart without corrections for the commuting zones of the 12 metropolitan regions. The main conclusions hold.

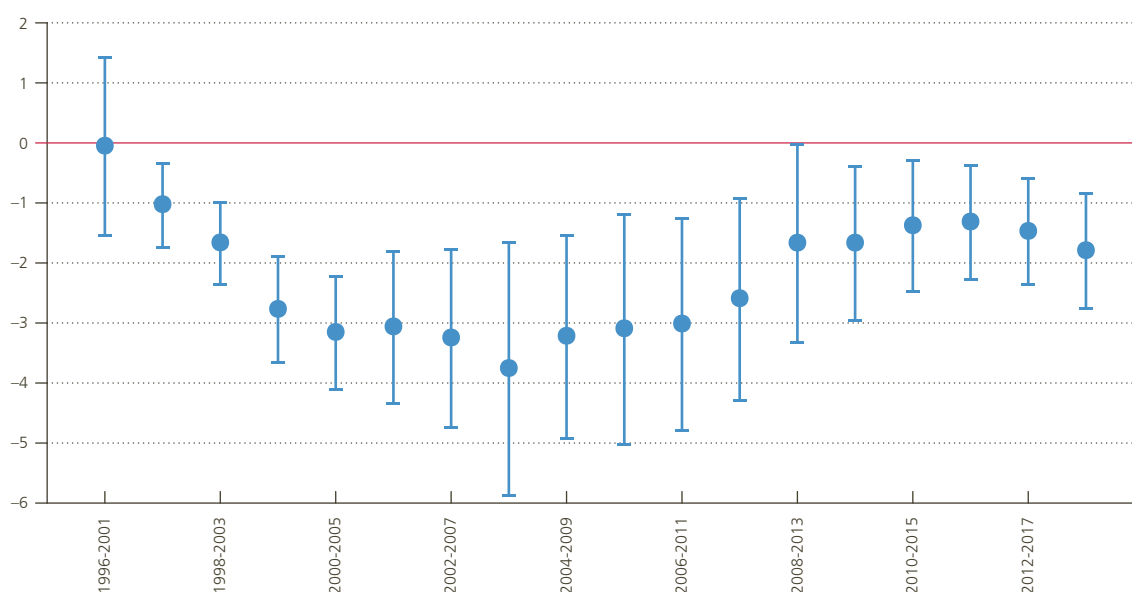
### 3.3 Unconditional beta convergence

As in the section on national convergence, we start the analysis of unconditional beta convergence at the regional level with a chart of beta coefficients estimated from 5-year rolling regressions. The results from this exercise show that there has been significant convergence among the EU28 regions since 1997. As was the case for national convergence, regional convergence was fastest before 2008. Convergence slowed down between 2008 and 2015, before the first tentative signs of a new acceleration reappeared.

Chart 11

#### Regions have converged most of the time across the EU28

(unconditional beta coefficients in % and their 95 % confidence intervals, estimated from rolling OLS regressions for 5-year-ahead growth in GDP per capita in PPS, TL2-corrected regions)



Source: EC (Ardeco).

Also taken together over the whole 1996-2018 period, we find a significant negative beta coefficient, evidence of long-term unconditional beta convergence. As in section 3, we can illustrate this by means of a scatter plot of initial (1996) GDP per capita versus the (1996-2018) change in GDP per capita (both relative to the EU28 average). Regions that were initially poorer than the EU average (GDP per capita below 100) typically grew faster than the EU average (positive values on the y-axis), while richer regions tended to grow more slowly. This relation is captured by the negative slope of the regression line in Chart 12.

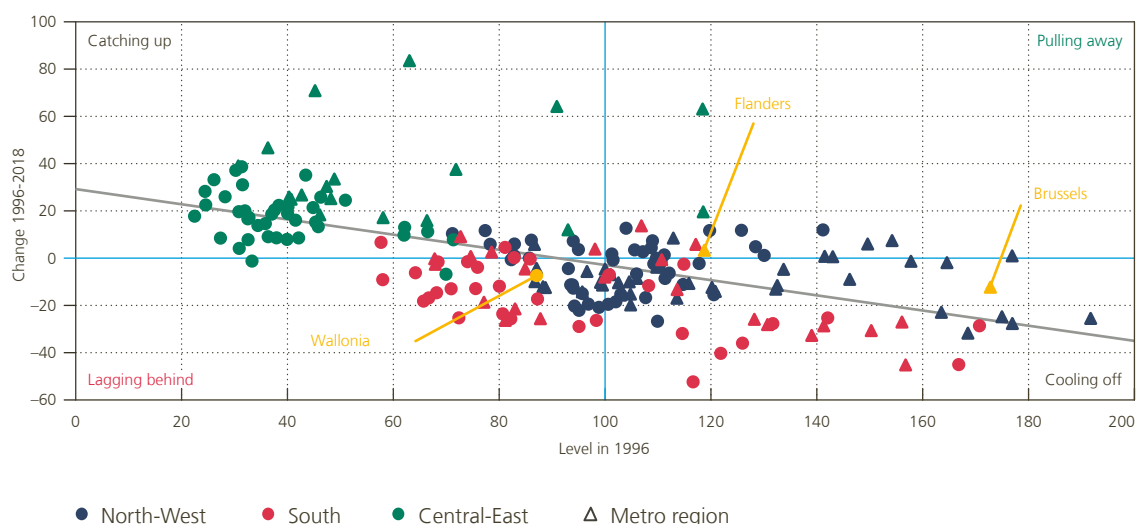
Regions in the upper-left quadrant are *"catching up"*: starting from a worse than average position, they grew faster than the EU average; regions in the upper-right quadrant are *"pulling away"*: starting from a better-than-average position, they still grew more rapidly than the EU average over the period; regions in the lower-left quadrant are *"lagging behind"*: poorer than the EU average initially, and growing more slowly than the EU did; and finally, regions in the lower-right quadrant are *"cooling off"*: richer than the EU average initially, and growing more slowly. Within the catching-up and cooling-off categories, a further distinction can be made according to whether a region is above the regression line, i.e. performing better than what one could expect based on its initial income, or below the regression line, i.e. performing worse than expected. All in all, we thus classify regions along six categories (Chart 13).

The relative position of the regions within the quadrants depends on the period considered and on the definition of the regions. Here, we present the results for our TL2-corrected regions over the whole 1996-2018 period. The results for the TL2 regions (without corrections) are shown in Annex 4.

## Chart 12

### Unconditional beta convergence across EU28 regions over the long term

(change in GDP per capita in PPS over 1996-2018 versus GDP per capita in PPS in 1996, both relative to the EU28 average, TL2-corrected regions)



Source: EC (Ardeco).

Most regions in CEE countries (in green) are classified as catching up with the EU. As highlighted before, they are an important driver of overall EU28 convergence. Often these regions, notably all metropolitan regions (green triangles in Chart 12), are above the regression line, i.e. they recorded higher growth than was expected based on their initial level of income. Bratislava and Prague stand out in particular as they were pulling away fast. The regions catching up less than expected (upper-left quadrant, below the regression line) comprise several non-metropolitan regions (green dots) in Bulgaria, Hungary and Poland (located mostly on the eastern periphery of the EU; see Chart 13).

Southern European regions (in red) are mainly found in the two lower quadrants as their GDP per capita has failed to keep pace with average EU growth. Those lagging behind include the *Mezzogiorno* (Southern Italy) and all Greek regions except Attica (the capital region around Athens). Among the regions cooling off, we find regions in the North and centre of Italy as well as Attica. In most cases, these regions are also below the regression line, meaning that the growth of their GDP per capita has fallen short of expectations on the basis of their initial income level. Spanish regions are found in all quadrants.

North-Western European regions (in blue) are mainly found on the right-hand side of the chart as their level of income was above the EU average in 1996. Among the exceptions are the Länder of Eastern Germany, which are catching up more than expected, and lagging regions in Northern England and various parts of France.

Looking at the three Belgian regions, Flanders (here without Aalst and Halle-Vilvoorde to adjust for the commuting bias of Brussels) is one of just 23 regions that are pulling away. Starting with GDP per capita 19 % above the

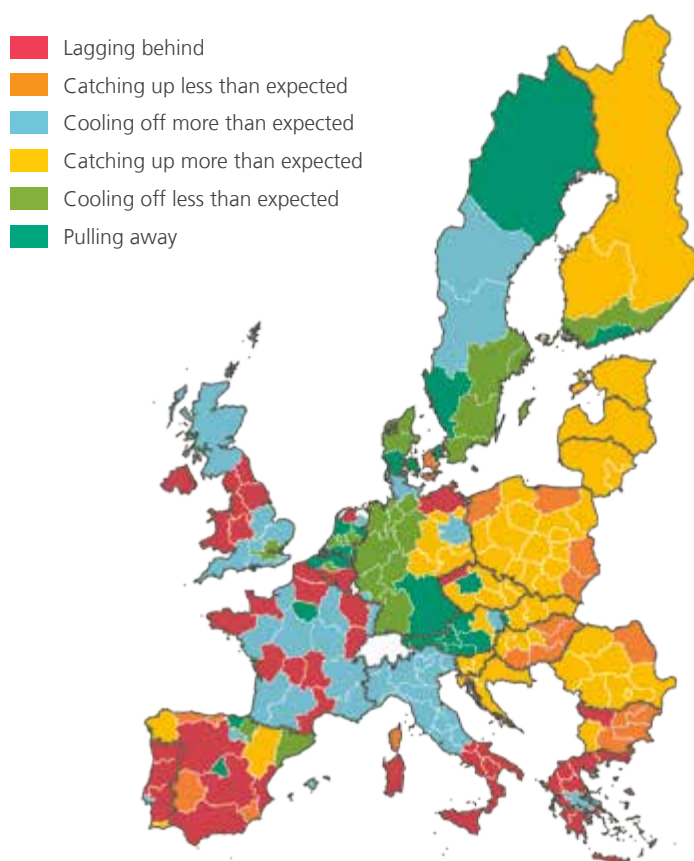
EU average in 1996, its income growth over 1996-2018 was slightly higher than the EU average (3 percentage points in total). Nevertheless, its performance stands out as EU average growth is boosted by the strong performance of regions that are catching up (mainly in the CEE countries). The regions that compare closest to Flanders (in terms of their relative position in Chart 12) include the capital region of Madrid and a number of regions in Western Austria. Only the regions of Salzburg, Copenhagen and North Holland (Amsterdam) clearly outperformed Flanders, with both higher initial incomes and faster growth. Bayern and other capital regions like Paris and Helsinki also belong to the pulling-away category.

Brussels (expanded to its commuting zone) belongs to the regions which are cooling off. Starting from a particularly high-income level in 1996 (173 % of the EU average), Brussels could not keep pace with the EU (growing by 12 percentage points less than the EU over the 1996-2018 period). However, this performance was still better than expected on the basis of its initial level of GDP per capita. Other regions in similar positions (above the regression line) include most Western German Länder, the central provinces of the Netherlands, Northern Denmark, South-Eastern Sweden, Catalonia, Navarra, and (expanded) London.

Wallonia (here without Walloon Brabant to neutralise the commuting bias of Brussels) is lagging behind according to our classification. Starting with a GDP per capita of about 87 % of the EU average, its per capita growth increased by 7 percentage points less than the EU as a whole over the 1996-2018 period. This performance is quite

### Chart 13

**In most EU countries, regions show heterogenous patterns of economic development**



Source: EC (Ardeco).

similar to that of the metropolitan regions of Valencia, Wales and Nord-Pas-de-Calais. Several French regions with an initial level of GDP per capita between 90 and 100 % of the EU figure in 1996 have fallen even further behind than Wallonia over the period considered. Relative to the EU, Picardie, Franche-Comté, Lorraine and Auvergne all lost around 20 percentage points, while Lower Normandy, Brittany, Limousin, Poitou-Charentes and Languedoc-Roussillon all lost more than 10 percentage points. Besides Wales, lagging regions in the UK comprise former mining or industrial regions in Northern England and the West Midlands, as well as Northern Ireland.

The map (Chart 13) clearly illustrates regions' heterogeneous patterns of economic development, even within countries (but without showing the quantitative differences in initial incomes and growth as displayed in Chart 12). Notably, except for the Paris region, the relative position of all other continental French regions has deteriorated significantly, and they are either lagging behind or cooling off more than expected. Similarly, all UK regions have grown less rapidly than the EU but London has been more resilient. This may have contributed to a "geography of discontent" (Dijkstra *et al.*, 2019) and played a role in the results of the Brexit referendum of June 2016. Spain and Germany in particular display great diversity in terms of regional economic development.

### 3.4 Conditional beta convergence

#### *Explanatory variables*

As in the section on national convergence, we extend our regional analysis by including control variables in the regression, thereby moving towards a study of conditional convergence among EU regions, allowing for the possibility that regions tend towards different steady states. Again, we employ only a limited set of key variables commonly used in the empirical literature<sup>1</sup>. We do not aim to come up with an exhaustive empirical model of growth at the EU regional level or to identify causal relationships.

Some of the independent variables that we consider here are similar to those we use in the national convergence regressions: population growth (whose expected sign is ambiguous), the ratio of investment to GDP (with an expected positive sign), and geographical dummies<sup>2</sup> (South, CEE; with North-Western Europe being the base category) to control for possible common shocks and hard-to-model structural characteristics common to these areas. Due to data constraints, however, we use a different measure of human capital in this section, based on the concept of educational attainment, defined as the share of the population aged 25-64 having at least an upper secondary school diploma (with an expected positive sign).

In addition, we consider variables specific to the regional level<sup>3</sup>. First, we add population density. This variable has the advantage of being a continuous measure, contrary to dummies for rural, intermediate and urban regions. Second, we include (time-invariant) dummy variables to indicate whether a region contains a metropolitan area (with a population of more than 500 000), a large metropolitan area (population of more than 1.5 million) or the national capital city (all with expected positive signs). Indeed, capitals and other large cities are often thought to operate as hubs of knowledge, innovation and skilled workers, and to generate agglomeration economies. For example, the concentration of people and firms makes it easier to attract business services and major universities. Complex economic activities also tend to concentrate in large cities (Balland *et al.*, 2020).

1 Annex 5 provides more details on the variables used in the regressions. As in the national-level analysis we abstract from the (long-term) influence of the EU's structural and investment funds.

2 We refrain from introducing country-fixed effects in our regional-level models, as this would fundamentally change the interpretation of the beta coefficient in the regression, to the speed of regional convergence within the country rather than the speed of regional convergence across the EU.

3 Two other variables – the initial share of agriculture in total employment and a dummy for the presence of a large port – were tested but found to add little information beyond the controls already included in the regression. This could be due to the fact that it is mainly in non-metropolitan Southern and CEE regions that agriculture accounts for a relatively large proportion of employment, and that among the 26 regions we identified as having a large port, 22 are already classified as metropolitan regions.

Table 3

## Summary statistics of the regression variables, by category of the TL2-corrected regions

	Lagging behind	Catching up (less than expected)	Cooling off (more than expected)	Catching up (more than expected)	Cooling off (less than expected)	Pulling away	EU total or average
GDP per capita PPS, 1996 (in % of EU average)	83	48	121	55	136	124	100
Change in GDP per capita PPS, 1996-2018 (in % of EU average)	-13	8	-21	23	-9	9	0
GDP per capita PPS, 2018 (in % of EU average)	70	56	100	78	127	133	100
<b>Control variables (1996-2018 average)</b>							
Population growth (in %)	0.1	-0.2	0.4	-0.2	0.5	0.5	0.2
Population density (inhabitants per km <sup>2</sup> )	146	78	182	138	351	284	182
Investment (in % of GDP)	21.6	21.6	21.6	23.3	20.8	23.2	22.1
Higher secondary/tertiary education (in % of population aged 25-64)	59	69	66	83	77	78	72
<b>Dummy variables (number of regions)</b>							
Metropolitan region	16	2	21	19	13	11	82
Large metropolitan region	7	0	9	5	9	6	36
Capital region	1	0	4	9	3	7	24
North-West	19	2	22	8	19	19	89
South	26	4	18	3	2	2	55
Central-East	2	13	0	40	0	2	57
<b>Total number of regions</b>	<b>47</b>	<b>19</b>	<b>40</b>	<b>51</b>	<b>21</b>	<b>23</b>	<b>201</b>

Sources: EC (Ardeco), Eurostat.

Summary statistics of these variables for the six categories of regions we identified earlier reveal some interesting patterns.

Over the 1996-2018 period as a whole, the population has declined in regions which are catching up. In most cases, this concerned CEE regions and was accompanied by above-average GDP growth, resulting in very strong GDP *per capita* growth. Despite emigration, these regions managed to achieve a substantial expansion of activity, thanks mainly to investment and technological progress. On average, limited demographic growth in regions that are lagging behind is due to a decline in the population of some Southern regions, though that decline is less severe than in CEE regions, especially in the aftermath of the global financial and European sovereign debt crises. Other regions saw a combination of both high population growth and GDP growth. This has been the case especially for capital regions all around the continent, such as Warsaw, Bratislava, Madrid, Helsinki and Stockholm. In Belgium, all regions recorded positive population growth<sup>1</sup>.

On average over the period, population density was in fact much higher in richer regions (cooling off or pulling away) than in poorer regions (catching up or lagging behind). Among the latter, those that have caught up at a faster pace are those that had a higher population density. Also, 19 metropolitan regions, mainly in CEE, caught up more than expected (on the basis of their initial level of income).

<sup>1</sup> In the (expanded) Brussels Region, population grew on average faster than in the other two Belgian regions. (Restricted) Flanders also enjoyed above-EU average growth rates for both population and GDP. (Restricted) Wallonia recorded higher than average population growth but below par GDP growth. Both dimensions therefore contributed to its classification as a region which is lagging behind.

Regions that have pulled away or caught up more than expected have the highest educational attainment and investment ratios. Conversely, the regions lagging behind have a significantly lower share of their working-age population with at least an upper secondary school diploma.

### Cross-sectional regression results

Our estimations confirm the existence of *unconditional* beta convergence for our sample of EU regions between 1996 and 2018: running a cross-sectional regression with no control variables yields a negative beta coefficient of  $-1.9$ . The relationship between initial income and subsequent growth over the whole period is highly significant and, according to the R-squared statistic, the initial level of income appears to explain more than half of the variation in growth rates between regions.

**Table 4**

### Cross-sectional regression results

(OLS regression, EU28 over 1996-2018, TL2-corrected regions)

	No control variables	With control variables
<b>Dependent variable</b>		
Average GDP per capita growth (in PPS)		
<b>Independent variables</b>		
Initial GDP per capita	$-1.929^{***}$	$-1.756^{***}$
Dummy for Southern regions		$-0.298$
Dummy for CEE regions		$0.518$
Population growth		$0.236$
Population density		$0.021$
Investment ratio		$0.025^*$
Human capital		$0.016$
Metropolitan region		$0.191$
Large metropolitan region		$0.006$
Capital region		$0.678^{**}$
Constant	$21.430^{***}$	$17.878^{***}$
Number of observations/regions	201	201
Number of countries	24	24
R-squared	0.527	0.768
Adjusted R-squared	0.525	0.756

Sources: EC (Ardeco), Eurostat.

Note: Standard errors (not shown) are clustered at the country level, \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

When the control variables are added to the model, the beta coefficient remains highly significant while the explanatory power of the model improves, as evidenced by the higher value for the adjusted R-squared. The geographical dummies take their expected sign but are found to be not statistically significant. This suggests that much of the observed geographical difference in average growth can be explained by (a combination of) the other control variables. The investment to GDP ratio and human capital both enter the equation with a positive sign (and the former is statistically significant), even though these variables' economic significance is much more modest than that of the initial income level; a one percentage point increase in the investment ratio (human capital) boosts average growth by a mere 2.5 (1.6) basis points per year.

Moreover, our regression points to faster growth in metropolitan regions (though the metropolitan dummy is apparently not statistically significant) and, even more so, in capital regions, suggesting an important role for agglomeration effects. There seems to be an effective premium for regions that include their nation's capital (cf. Alcidi *et al.*, 2018). All other things being equal, capital regions' average annual growth over 1996-2018 is almost 0.7 percentage points higher than growth in other regions. To some extent, the growth advantage of capital regions may relate to the fact that, in CEE, several new countries were created just before our estimation period (the three Baltics, the two Balkan countries and Slovakia), providing a new role for cities transitioning from a regional capital to a national capital. The pre-eminence of a capital premium over a metropolitan premium may be partly due to statistical bias (company headquarters tend to be located in capital cities rather than in other cities and the split of their value added may be imperfect). Nevertheless, genuine economic factors are also at play. More often than not, capital cities are the country's financial centre, the main exceptions being Berlin (vs Frankfurt) and Rome (vs Milan). As evidenced by Coyle and Sensier (2019) for London, an important factor for the better performance of national capital regions compared to other regions may in some cases be the concentration of public investment in the capital.

It is interesting to investigate to what extent the control variables explain the differences between actual income growth and income growth predicted on the basis of initial income only. We illustrate this for the case of Belgium (Box 2).



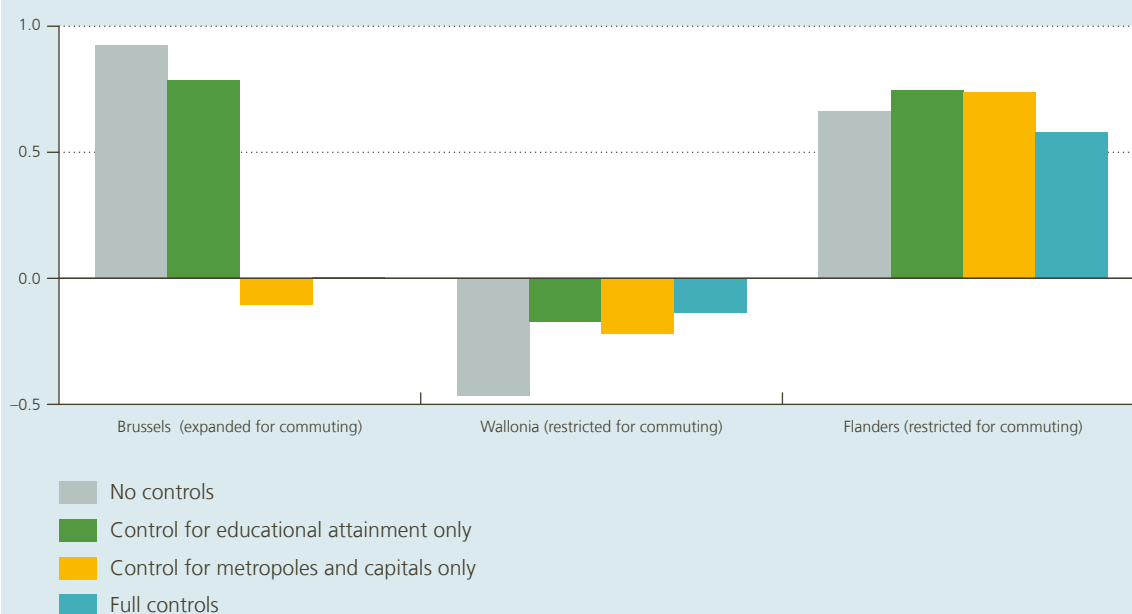
## To what extent do the control variables explain the growth performance of the Belgian regions?

In the chart below, the grey bars correspond, for each Belgian region, after being adjusted for the commuting bias of Brussels, to the difference between the actual income growth achieved over 1996-2018 and the figure that is predicted on the sole basis of initial GDP per capita in 1996.

In the case of Brussels (expanded to adjust for commuting), actual income growth is higher than expected on the basis of its initial income level. As the blue bar is close to zero, this positive differential can be fully explained by the added control variables. Above all, Brussels benefits from being the capital region, as reflected by the substantial difference between the grey and yellow bars. To some extent, Brussels also benefits from the educational attainment of a significant share of its working-age population (difference between the grey and green bars).

### Controlling for educational attainment and metropolises / capitals reduces the difference between actual and predicted income growth

(residuals from various model specifications over 1996-2018)



Sources: EC (Ardeco), Eurostat.

Without Walloon Brabant (to neutralise the commuting bias of Brussels), Wallonia has witnessed lower average income growth since 1996 than expected on the basis of its initial level of GDP per capita (negative value for the grey bar). Our model explains a substantial part of this differential, as indicated



by the difference between the grey and blue bars. First, Wallonia's growth suffers from the absence of a metropole with a population of more than 500 000 within its borders. Second, a relatively large percentage of its working-age population has a low educational attainment.

In the case of Flanders (without the districts of Aalst and Halle-Vilvoorde to neutralise the commuting bias of Brussels), income growth is higher than expected on the basis of its initial level of GDP per capita (positive value for the grey bar). However, the blue bar is nearly as high as the grey bar, meaning that adding our control variables does not help to explain the region's relative over-performance. Flanders benefits from the presence of a metropole (Antwerp); a relatively large percentage of educated working-age population and a relatively high population density. Further analysis is needed to uncover the key factors at play.

The impact of the proximity of Brussels as both a metropole and a capital region on the economic growth of Flanders and Wallonia has not been analysed.

### ***Panel regression results***

For completeness, we have also performed panel regressions as we did for national-level convergence (cf. the specifications outlined in sections 2.2 and 2.3). Again, annual observations are converted into averages over non-overlapping five-year sub-periods.

Our panel estimations confirm the existence of unconditional beta convergence for the EU regions: running the regression with no control variables yields a negative beta coefficient of  $-2.5$  (Table 5).

In this panel regression set-up, the geographical dummy for CEE regions remains significant, even when we add the other control variables. The growth premium for regions including the national capital is confirmed and, in this panel specification, the dummy for metropolitan regions takes a higher positive value and becomes statistically significant (at the 10 % level). The statistical and economic significance of the investment ratio is also higher than in the cross-sectional regression, while educational attainment becomes less significant.

Table 5

**Panel regression results**

(panel OLS regression, 5-year non-overlapping periods, 1996-2018 for EU28, TL2-corrected regions)

	No control variables	With control variables
<b>Dependent variable</b>		
Average GDP per capita growth (in PPS)		
<b>Independent variables</b>		
Initial GDP per capita	-2.454***	-1.668***
Dummy for Southern regions		-0.560
Dummy for CEE regions		1.274***
Population growth		-0.318
Population density		0.064
Investment ratio		0.052***
Human capital		0.011
Metropolitan region		0.295*
Large metropolitan region		0.147
Capital region		0.710**
Constant	27.267***	16.566***
Period dummies	No	Yes
Number of observations	1 005	804
Number of regions	201	201
Number of countries	24	24
R-squared	0.264	0.585
Adjusted R-squared	0.263	0.578

Sources: EC (Ardeco), Eurostat.

Notes: Standard errors (not shown) are clustered at the country level, \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$ .

The model with the full set of control variables is not estimated for the sub-period 1996-2000 as data for the human capital variable are only available from 2000 onwards.

## Conclusion

This article finds evidence of relatively strong convergence of incomes (GDP per capita) across countries and large regions in the EU over the long term (since 1960 for EU15 countries and 1996 for EU28 countries/regions). The catching up of initially poorer Central-Eastern European countries has contributed to sustained convergence since the mid-1990s.

However, the convergence process has not always been smooth. While the EU “convergence machine” has worked most of the time and for most regions, sometimes and for some places it has faltered. Convergence has been strongest during high-growth periods, during the early stages of EU integration among the old member states, and just before and following the accession of the Central-Eastern European countries. Crisis periods were marked by slowing convergence (in the EU28) or even divergence (in the EU15). The global financial crisis and ensuing European sovereign debt crisis in particular heralded a period of severe economic underperformance in much of Southern Europe, undermining overall convergence. There are some tentative signs of renewed, post-crisis income convergence but it is too early to tell whether and when the convergence machine will regain speed, especially in light of the current Covid-19 crisis.

EU-wide convergence of regional incomes since 1996 has benefited from the convergence of incomes between countries, even though within-country income disparities remain substantial and have even increased slightly over time. Capital regions have grown faster on average, thereby contributing to regional convergence across EU countries but also to within-country disparities. Agglomeration effects, such as a concentration of higher-productivity activities and innovation in particular places, have likely played a role here. Our analysis, however, suggests that such effects are less significant for metropolitan regions than for capital regions.

### *What does this mean in terms of policy implications?*

First, convergence in the run-up to the global financial crisis and the European sovereign debt crisis proved to be unsustainable, pointing to the importance of avoiding excessive imbalances and ensuing boom and bust cycles. Completion of the EU integration process and further improvements in the design of the European project, including the completion of the Banking Union and the Capital Markets Union, may also be needed.

Second, investing in physical and human capital can improve growth performance at both the national and regional level.

Third, the observation that, in most EU countries, regions display heterogeneous patterns of development suggests a need for place-sensitive regional policies, tailor-made to the specific situation of each region. Indeed, optimal policy instruments arguably differ for regions that are lagging behind or catching up. They may also differ between capital, metropolitan and non-metropolitan regions, as well as urban versus rural regions. To this end, there is a role for policies at different levels of power. Next to national and regional authorities, the EU can play a role by boosting the efficiency of its cohesion policy.

Convergence was recognised as one of the main objectives when the EU was created. In order for the European project to be successful and gain the support of its citizens, no country or region should be left behind.

## Annex 1

### Variables used in the cross-country regression

	Description	Source
<b>Dependent variable</b>		
Average GDP per capita growth	Average annual growth, over a 5-year period, of GDP per capita, in purchasing power standards (PPS), in %	EC (Ameco)
<b>Independent variables</b>		
Initial GDP per capita	(Natural) logarithm of GDP per capita at the start of the 5-year period, in PPS	EC (Ameco)
Population growth	Average annual population growth, over a 5-year period, in %	EC (Ameco)
Investment ratio	Investment as a percentage of GDP, average over a 5-year period	EC (Ameco)
Human capital	Index of human capital per worker, based on the average years of schooling, linearly interpolated from Barro and Lee (2013) and on an assumed rate of return for primary, secondary, and tertiary education, as in Caselli (2005), average over a 5-year period	Penn World Table 9.1
Trade openness	Exports plus imports, as a percentage of GDP, average over a 5-year period	EC (Ameco)
Government consumption ratio	Government consumption as a percentage of GDP, average over a 5-year period	EC (Ameco)
Inflation	Annual percentage change in average CPI, average over a 5-year period	World Bank – World Development Indicators
Inflation volatility	Standard deviation of the annual percentage change in average CPI, average over a 5-year period	World Bank – World Development Indicators

## Annex 2 – Identification of the twelve TL2 metropolitan regions to be expanded

On the basis of the (EU-)OECD definition, we identify, in addition to the 24 national capitals, 75 metropolitan areas in which the (core) city/cities and commuting zones delimited accurately in terms of municipalities have a population of more than 500 000. These metropolitan areas are listed in the table below. Those in bold are capitals. The metropolitan areas with a population above 1.5 million are “large metropolises”. These are those listed above Helsinki in the table, plus Sofia and Bucharest.

Regional statistics are hard to find at the municipal level. At best, we can find figures for NUTS3 regions. Therefore, we have matched each metropolitan area to its corresponding metropolitan regions, defined by Eurostat as NUTS3 regions (or aggregates thereof) in which 50 % or more of the population lives in a metropole. Their population is indicated in column 3.

For these metropolises, we can also identify the TL2 region(s) where their core cities are located (column 4). Those in grey encompass more than one TL2 region and were therefore expanded, though not necessarily to the whole of the associated TL2 region(s) but to one or more of their TL3 regions.

### List of the 24 capitals and 75 selected metropolitan areas

(population in thousands, ranked in descending order of the 2016 OECD figure)

Metropolitan area	Population in 2016 according to		Corresponding TL2 region	Commuting area
	OECD (metro area)	Eurostat (metro region)		
Paris	12 007	12 135	Ile de France	
London	11 984	14 073	London	South-East; East of England
Madrid	6 633	6 446	Comunidad de Madrid	
Berlin	5 142	5 176	Berlin Land	Brandenburg
Milan	5 101	4 310	Lombardy	
Rome	4 414	4 347	Lazio	
Barcelona	3 970	5 454	Cataluña	
Athens	3 563	3 600	Attica	
Naples	3 418	3 111	Campania	
Manchester	3 320	3 661	North-West	East-Midlands
Hamburg	3 234	3 263	Land of Hamburg	Lower Saxony; Schleswig-Holstein
Warsaw	3 133	2 998	Warsaw	
West Midlands urban area	2 968	2 518	Midlands	
Budapest	2 966	2 997	Budapest	Pest
Munich	2 849	2 864	Bavaria	
Lisbon	2 818	2 817	Lisbon	
Vienna	2 794	2 793	Vienna	Lower Austria; Burgerland
Stuttgart	2 736	2 747	Baden-Württemberg	
Amsterdam	2 717	3 205	North Holland	Flevoland
Frankfurt am Main	2 647	2 661	Hesse	
Brussels	2 629	2 498	Brussels	Flanders; Wallonia
Leeds	2 598	1 728	Yorkshire & the Humber	
Katowice	2 541	2 743	Silesia	

## List of the 24 capitals and 75 selected metropolitan areas (continued 1)

(population in thousands, ranked in descending order of the 2016 OECD figure)

Metropolitan area	Population in 2016 according to		Corresponding TL2 region	Commuting area
	OECD (metro area)	Eurostat (metro region)		
Stockholm	2 269	2 250	Stockholm	
Prague	2 178	2 606	Prague	Stredni cesky
Copenhagen	2 055	2 005	Capital region	Sjaelland
Cologne	1 975	1 981	North Rhine Westphalia	
Lyon	1 951	1 844	Rhône-Alpes	
Glasgow	1 818	1 844	Scotland	
Turin	1 769	2 280	Piedmont	
Marseille	1 751	3 082	PACA	
Valencia	1 709	2 518	Comunidad de Valencia	
Rotterdam	1 680	1 819	South Holland	
Dusseldorf	1 547	1 545	North Rhine Westphalia	
Seville	1 533	1 941	Andalucia	
<b>Helsinki</b>	<b>1 472</b>	<b>1 629</b>	<b>Helsinki</b>	
Krakow	1 408	1 481	Lesser Poland	
Lille	1 345	2 603	Nord-Pas-de-Calais	
Dresden	1 344	1 342	Saxony	
Toulouse	1 328	1 356	Midi-Pyrénées	
Nuremberg	1 324	1 329	Bavaria	
Hanover	1 299	1 304	Lower Saxony	
Porto	1 272	1 721	North	
Bremen	1 255	1 264	Bremen Land	Lower Saxony
Liverpool	1 202	2 031	North-West	
Mannheim-Ludwigshafen	1 174	1 175	Baden-Württemberg	Rhineland Palatinate; Hesse
Bordeaux	1 170	1 576	Aquitaine	
Newcastle	1 167	1 166	North-East	
Gdansk	1 154	1 318	Pomerania	
Antwerp	1 098	1 037	Flanders	
The Hague	1 070	1 075	South Holland	
Thessaloniki	1 055	1 109	Central Macedonia	
Bilbao	1 037	1 134	Basque country	
Palermo	1 033	1 270	Sicily	
Leipzig	1 017	1 022	Saxony	
Göteborg	1 007	1 660	Western Sweden	
Braunschweig / Salzgitter / Wolfsburg	995	996	Lower Saxony	
Poznan	983	1 180	Greater Poland	
Bristol	944	1 131	South-West	
<b>Riga</b>	<b>938</b>	<b>1 006</b>	<b>Latvia</b>	
Lodz	916	1 085	Lodz	
Bonn	914	918	North Rhine Westphalia	
Nantes	907	1 389	Pays de la Loire	
Leicester	881	1 413	East-Midlands	

## List of the 24 capitals and 75 selected metropolitan areas (continued 2)

(population in thousands, ranked in descending order of the 2016 OECD figure)

Metropolitan area	Population in 2016 according to		Corresponding TL2 region	Commuting area
	OECD (metro area)	Eurostat (metro region)		
Utrecht	875	1 279	Utrecht	
Malaga	849	1 643	Andalucia	
Nice	818	1 084	PACA	
Saarbrücken	802	804	Sarre	
Cardiff	780	1 130	Wales	
Strasbourg	775	1 123	Alsace	
Florence	772	1 014	Tuscany	
Saragossa	750	961	Aragon	
Bari	750	1 262	Puglia	
Bologna	745	1 008	Emilia-Romagna	
Brno	723	1 177	Jihovýchod	
Rennes	718	1 056	Brittany	
Ostrava	717	1 211	Moravskoslezsko	
Genoa	713	852	Liguria	
Rouen	694	1 255	Upper Normandy	
Montpellier	672	1 138	Languedoc-Roussillon	
<b>Vilnius</b>	<b>672</b>	<b>805</b>	<b>Sostinės regionas</b>	
Catania	659	1 114	Sicily	
Malmö	658	1 314	Southern-Sweden	
Grenoble	658	1 255	Rhône-Alpes	
<b>Bratislava</b>	<b>642</b>	<b>638</b>	<b>Bratislava</b>	
Murcia	616	1 469	Region of Murcia	
Oviedo / Gijón	605	1 037	Asturias	
Coventry	598	912	Midlands	
<b>Tallinn</b>	<b>576</b>	<b>579</b>	<b>Estonia</b>	
Venice	562	855	Venice	
Granada	556	917	Andalucia	
Vigo	540	944	Galicia	
<b>Ljubljana</b>	<b>537</b>	<b>538</b>	<b>Western Slovenia</b>	
Padua	534	937	Venice	
Verona	514	922	Venice	
<b>Sofia</b>	<b>n.d.</b>	<b>1 682</b>	<b>South-West</b>	
<b>Bucharest</b>	<b>n.d.</b>	<b>2 288</b>	<b>Bucharest-Ilfov</b>	
<b>Grad Zagreb</b>	<b>n.d.</b>	<b>1 245</b>	<b>Continental Croatia</b>	

Sources: Eurostat, OECD.



## Annex 3

### Corrections made to TL2 regions in order to better reflect the commuting zones of metropolises

(switch to TL2-corrected regions)

Name of the metropole	TL2 of the core	TL2 of the commuting area	Action
London	London	South-East	add Surrey, Berkshire, Kent Thames gateway and West Kent
		East of England	add Hertfordshire, Southend-on-Sea, Thurrock, Heart of Essex, West Essex and Essex Thames gateway
Berlin	Berlin (Land)	Brandenburg	add Potsdam, Barnim, Dahme-Spreewald, Havelland, Markish-Oderland, Oberhavel, Oder-Spree, Potsdam-Mittelmark and Tetlow-Fläming
Manchester	North-West	East-Midlands	add South and West Derbyshire
Hamburg	Hamburg (Land)	Lower Saxony	add Harburg and Stade
		Schleswig-Holstein	add Herzogtum Lauenburg, Pinneberg, Segeberg and Stormarn
Budapest	Budapest	Pest	merger
Vienna	Vienna	Lower Austria	add Weinviertel and Wiener Umland (Nordteil and Südteil)
		Burgenland	add Nordburgenland
Amsterdam	North-Holland	Flevoland	merger
Brussels	Brussels-Capital	Flanders	add Halle-Vilvoorde and Aalst
		Wallonia	add Walloon Brabant
Prague	Prague	Stredni cesky	merger
Copenhagen	Hovenstaden	Sjaelland	add Østsjælland
Bremen	Bremen (Land)	Lower Saxony	add Diepholz, Rottenburg, Osterholz, Verden and Delmenhorst
Mannheim-Ludwigshafen	Baden-Württemberg	Rhineland Palatinate	add Ludwigshafen am Rhein, Frankenthal, Neustadt an der Weinstraße, Speyer, Bad Dürkheim and Rhein-Pfalz-Kreis
		Hesse	add Bergstraße

Sources: Eurostat, OECD.

## Annex 4 – Robustness: What if our analysis is based on the (non-corrected) TL2 regions?

Using TL2 regions instead of TL2-corrected regions affects mainly Chart 10 on regional disparities and Chart 12 showing the unconditional beta convergence across the EU28 regions over the long term.

### 1. Regional disparities

As the GDP per capita changes for the corrected regions – both the metropolitan/capital regions that have been expanded and their surrounding regions that have been restricted –, the chart on regional disparities is slightly modified. In particular, the GDP per capita of the regions for which the commuting zone is included is much higher for the (uncorrected) TL2 regions than for the TL2-corrected regions. This is the case for Brussels, whose value jumps from 135 to 170, but this is also notable for Hamburg and other capital regions, notably North Holland (Amsterdam), Vienna, Prague, Budapest and London.

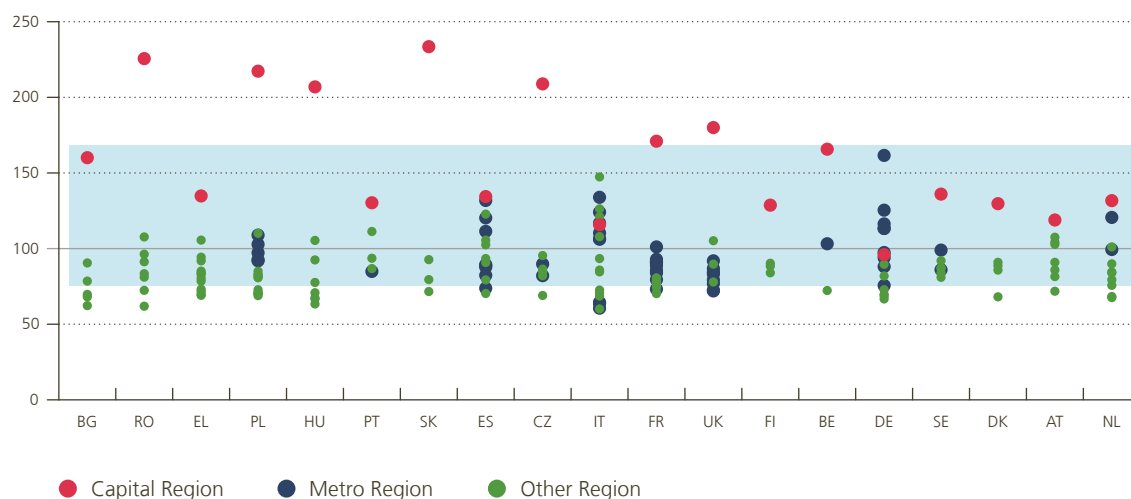
Among the regions with the smallest GDP per capita according to the TL2-corrected definition, Wallonia benefits from the presence of Walloon Brabant to climb from 67 to 72 percent of the national average when we consider the TL2 definition.

However, the main messages hold true when taking the TL2 regions at face value: regional disparities matter, capital regions are usually those with the highest GDP per capita in their country, and regional disparities are not exceptionally large in Belgium relative to the other EU countries.

### Chart

#### Regional disparities

(GDP per capita in PPS, national average = 100, 2018e, TL2 regions)



Source: EC (Ardeco).

## 2. Unconditional beta convergence across EU28 regions over the long term

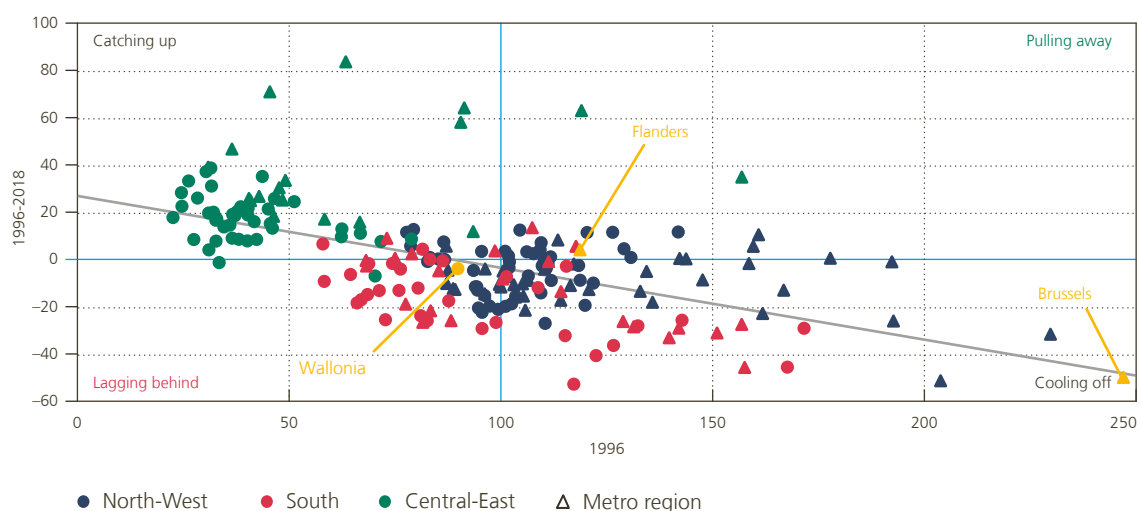
Also here the main conclusions are robust to keeping with the TL2 regions without corrections: there is a negative relationship between the level of GDP per capita in 1996 and its subsequent change over the 1996-2018 period. In most cases, the regions are classified in the same quadrant as when the TL2-corrected regions are used.

The Belgian regions too remain in their respective quadrants. Without corrections, the Brussels-Capital Region (19 municipalities) stands out as the region with the highest GDP per capita in 1996. It is thus no surprise to find it cooling off since then. Starting from an (artificially high) of almost 2.5 times the EU average, its GDP per capita lost 50 percentage points relative to the EU average over 1996-2018, which ranks as the third highest (relative) decline of all 204 TL2 regions. Brussels is now even slightly below the regression line (instead of above it, when corrections for commuting zones are made). While without correction for the commuting bias of Brussels the position of Flanders is hardly affected, that of Wallonia improves when the relatively rich and dynamic Walloon Brabant is not excluded. Starting with a higher initial income (89.8 percent of the EU average), it lost only 3.9 percentage points relative to the EU over the 1996-2018 period.

### Chart

#### Unconditional beta convergence across EU28 regions over the long term

(change in GDP per capita in PPS over 1996-2018 versus GDP per capita in PPS in 1996, both relative to the EU28 average, TL2 regions)



Source: EC (Ardeco).

## Annex 5

### Variables used in the (cross-sectional) regression at the regional level

	Description	Source
<b>Dependent variable</b>		
Average GDP per capita growth	Average annual growth, over the whole period, of GDP per capita, in purchasing power standards (PPS)	EC (Ardeco)
<b>Independent variables</b>		
Initial GDP per capita	(Natural) logarithm of GDP per capita at the start of the period, in PPS	EC (Ardeco)
Initial population density	Population divided by the number of square kilometres	EC (Ardeco) for the population and Eurostat (2016 definition) for the area
Population growth	Average annual population growth, over the whole period, in %	EC (Ardeco)
Investment ratio	Investment as a percentage of GDP, both at current prices, averaged over five years at the start of the period	EC (Ardeco)
Human capital: educational attainment	Share of the population in the 25-64 age group having at least an upper secondary school diploma at the start of the period (2000 being the first available year)	Eurostat based on Labour Force Survey, data available only at the NUTS2 level
Metropolitan region	Dummy for the presence of a metropole (population of more than 500 000)	Own construction based on OECD, Eurostat definitions
Large metropolitan region	Dummy for the presence of a metropole (population of more than 1.5 million)	
Capital region	Dummy for the presence of a (national) capital city	Own construction
<b>Independent variables used in alternative model specifications (results not shown)</b>		
Importance of agriculture in the economy	Share of agriculture in total employment at the start of the period	EC (Ardeco)
Presence of a significant port	Dummy for the presence of a port where the gross weight of goods handled in 1997 exceeds 25 million tonnes	Eurostat

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# First results of the third wave of Belgium's Household Finance and Consumption Survey

M. de Sola Perea \*

## Introduction

In recent years, there has been an increasing effort to complement aggregate economic and financial data with sets of micro data, i.e. information at the individual firm or household level. While aggregate (macroeconomic) data are useful to observe the main trends in the economy, data at more granular levels can help to answer fundamental economic questions such as how vulnerable households are to shocks, or through which channels economic policies work.

The Household Finance and Consumption Survey (HFCS) is a European exercise, coordinated by the ECB and national central banks, sometimes jointly with the national statistical institutes, that responds to the aforementioned effort. Its goal is to build a dataset on household finances that makes European analyses and cross-country comparisons possible. Micro data add a great deal of value to aggregated data. By allowing us to identify differences across households (according to their demographic characteristics, type and level of income, wealth, debt burden, etc.), they make it possible to analyse the distributional impact of economic policy measures and to identify which policies are more effective, or which parts of the population may be at higher risk when the economy faces negative shocks. More generally, this survey contributes to a better knowledge of the Belgian and euro area economies, and of the impact of economic shocks as well as subsequent policy responses.

This article presents the first results of the third wave of the Belgian HFCS, which took place in 2017. The article is structured in five sections. The first presents the survey, the type of information it provides and its main methodological features. The second offers a very brief account of the macroeconomic and financial context around the time the survey was conducted. The third section is devoted to the assets owned by Belgian households, while the fourth focuses on their liabilities. The fifth section examines the distribution of income and wealth across households in Belgium, and the article ends with some provisional conclusions based on these findings.

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## 1. The HFCS

The Household Finance and Consumption Network (HFCN) was created in 2008 by the Governing Council of the European Central Bank (ECB). The HFCN is in charge of the design and implementation of the survey, as well as of analysis and diffusion of the data. At the European level, there have been three waves of the survey since its inception. The first wave of the Belgian survey took place in 2010. Since 2014, it has been conducted every three years.

In Belgium, the organisation of the survey falls under the responsibility of the National Bank of Belgium (NBB), with support from the National Register and STATBEL. Within NBB, the General Statistics and the Economics and Research Department cooperate closely to adapt the European questionnaire to Belgian characteristics, design the sample, and process and analyse the data. The fieldwork is outsourced to a specialist agency by public tender, although it is followed up closely by NBB. The survey is then conducted through face-to-face interviews with households.

For the third wave of the HFCS, 2 329 households replied to the questionnaire. The households contacted are selected randomly according to a stratified sampling design. The stratification of the Belgian population ensures that the survey incorporates to the maximum extent possible the heterogeneity across the country. Stratification criteria take into account the geographical dispersion of two publicly available sets of information: the cost of housing and the net taxable income by municipality, to ensure that households of different wealth and income levels are included.

The results of the different waves of the Belgian HFCS have been published in previous years (see Du Caju (2013) and Du Caju (2016)). The ECB has also made public the results<sup>1</sup>, as well as several reports on the methodological aspects of the survey.

The remainder of this article focuses on the third wave of the survey and comparisons with the results of previous waves. Its goal is to present a first overview of the main results, while more detailed analyses of the data will follow in subsequent publications. As a general remark, it must be kept in mind that survey results are subject to the presence of margins of error which, in some cases, can become quite significant. However, even if there were to be a bias compared with aggregate statistics, the median and average values presented below can be considered as robust parameters that allow us to draw conclusions from these data.

## 2. Macroeconomic and financial context

The third wave of the Belgian HFCS took place in 2017. Demographic questions and questions about assets, liabilities and employment status refer to the moment when the interview with the household took place, while questions on income reflect the preceding year, 2016.

Over those years, the economic recovery was proving robust, both in Belgium and in the rest of the euro area. Growth picked up in 2017 in Belgium, mainly supported by domestic demand, while job creation accelerated. However, this took place against a background of subdued or negative growth in real wages.

<sup>1</sup> See ECB (2020a) and ECB (2020b) for the most recent results

On aggregate, household debt kept increasing as lending interest rates remained at record lows, while the share of loans in arrears declined. Outstanding mortgage loans hit a (then) record high and the growth in property prices accelerated somewhat. The economic recovery and low interest rates seem to have spurred investment in riskier financial assets (particularly investment fund units).

All in all, the Belgian economic environment was favourable in the two reference years for the third wave of the HFCS, particularly compared with the situation in the two previous rounds of the survey (in 2010, in the immediate aftermath of the global financial crisis, and 2014, after the euro area crisis). This context may be useful in interpreting the results presented in the rest of the article.

### 3. Assets

The survey asks households to provide exhaustive information about the assets they own, both their type and estimated value (in the view of the household). Assets are divided into two broad categories: real and financial. This section provides an overview of their distribution and worth.

#### 3.1 Real assets

Real assets include physical goods owned by households, such as real estate properties, vehicles, valuable objects (jewellery, art, collections); self-employment business of households (any activity that provides an occupation for one or several household members) are also included in this category<sup>1</sup>.

Most Belgian households (88 %) declared that they own at least one type of real asset. The most widespread are vehicles (77 % of Belgian households owned at least one in 2017), with a median value of € 7 000 – slightly lower, in real terms, than in 2014. The second most common type of real asset was the main residence of the household: 69 % of Belgian households owned their own home in 2017, with a median value of € 270 000 (3 % higher than in 2014). Since 2010, the share of households owning their home has been roughly stable. In contrast, the ownership rate of other real estate (which may comprise second residences, but also garages, plots of land and properties linked to a self-employment activity of the household) increased by 2.5 percentage points between 2010 and 2017.

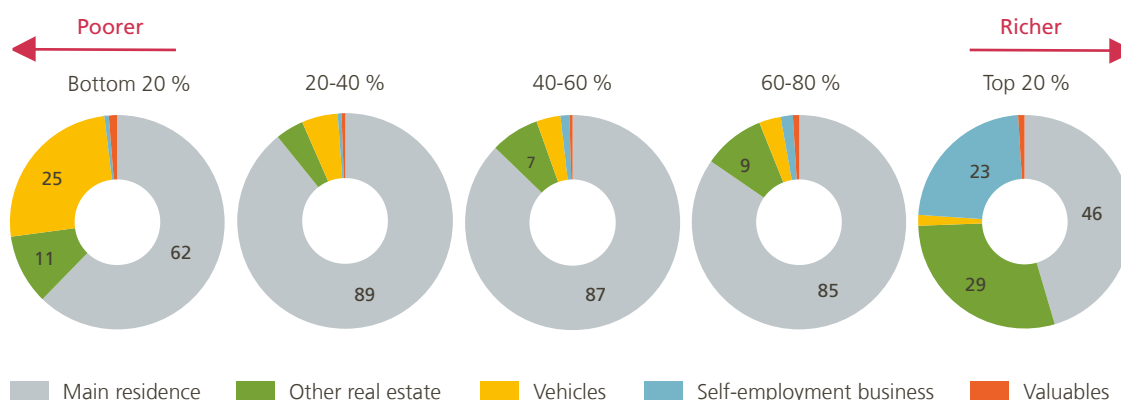
Chart 1 shows the relative importance of each type of asset across net wealth quintiles (i.e. five groups resulting from the division of the distribution of net wealth data into five equal parts; each of them assembles 20 % of the households, sorted from lower to higher net wealth). The figures used to calculate the percentages are the unconditional means for each quintile, i.e. the average calculated assigning a zero value to those who report not having such an asset. This allows us to assess how much each type of asset represents for each group. On the contrary, conditional means (and medians), as we will see below, take into account only those households who report having a specific type of asset, and can instead indicate how much a given asset is worth for a given (average or median) household that reports owning it.

<sup>1</sup> The value of self-employment businesses does not include the value of real estate property linked to these (instead, this is accounted for as “other real estate property”).

Chart 1

## Holdings of real assets by net wealth quintile

(%, unconditional means)



Source: NBB (HFCS III).

For most households, the main residence was the most valuable asset they own (including both real and financial assets). However, ownership is not distributed equally across households: 38 % of households in the lowest income group were owners of their home in 2017, while this share rose to 92 % of the 20 % in the highest income group. Across the net wealth distribution, while 96 % of the richest<sup>1</sup> 20 % owned their main residence, only 3 % of the poorest 20 % households lived in a home they owned. The value of the properties also varied (the median value of homes of the richest households was 73 % higher than that of the poorest). Across age categories, 50 % of the youngest households (below 35 years old) owned their home; for those where the reference person<sup>2</sup> was older than 35, this rate rose to about 72 %, peaking between 55 and 64 years old (75 %). Households where the reference person is unemployed or otherwise not working (for instance due to permanent incapacity) – not being retired – have the lowest ownership rates (32 % for the unemployed; 38 % for other non-working households). Half of the richest 20 % of households also had other real estate properties on top of their main residence (up from 47 % in 2014).

One out of nine Belgian households reported owning self-employment businesses – a 2.5 percentage point increase from 2014. The conditional median value of such activities more than halved between the two waves of the survey. Yet at the same time, the conditional average value of self-employment businesses rose notably. Such trends are not inconsistent with each other: these simultaneous developments may reflect the fact that, in the latest wave of the survey, a higher number of smaller businesses were reported (this could include, for instance, activities which complement the main job of a household member), while the value of bigger businesses increased strongly. Similarly, in this case, it is not clear whether such large businesses had experienced a genuine increase in value over the previous three years, or whether the survey captured their value better. In any case, given that only a small minority of the population own self-employment activities, together with the difficulties inherent in assessing the value of such assets, the uncertainty surrounding the estimates is high (the standard deviation amounted to almost half the median value).

1 For the purposes of this article, “rich” and “poor” refer to net wealth of households, not to income received.

2 The reference person is defined according to the international standards of the Canberra Group. It can be loosely identified with the highest income earner of the household. See UNECE (2011) for more details.

## 3.2 Financial assets

The second category of assets comprises financial instruments held by households, from bank accounts to mutual funds and shares in businesses. The conditional median amount of total financial assets fell noticeably between 2014 and 2017, while the conditional average declined to a much lesser degree, as losses were greater in the lower half of the distribution<sup>1</sup>.

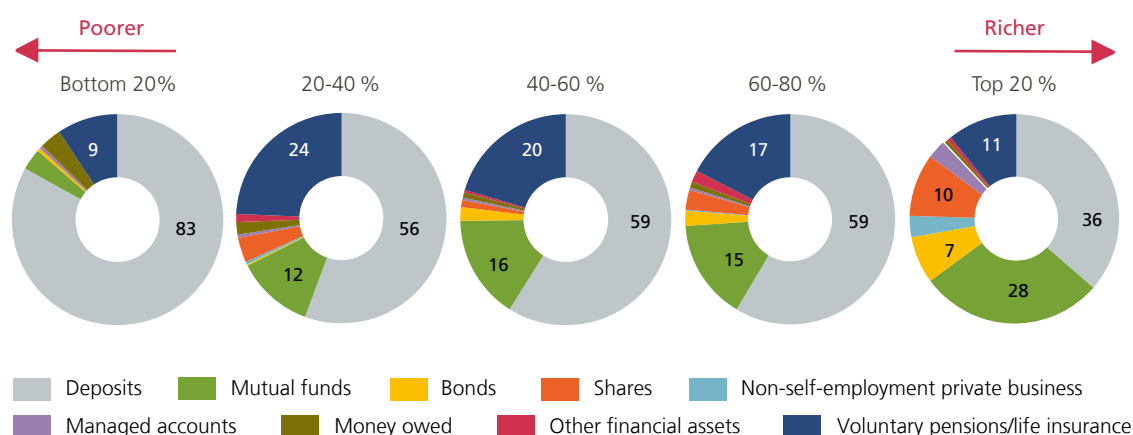
Almost all Belgian households (98 %) reported having at least one type of financial asset in 2017, typically a sight account, with a median value of € 1 600. The next most widespread category was savings accounts (75 % of households), with a considerably higher median value (around € 15 000). The median amount of cash deposited in these two types of accounts decreased, however, compared with 2014.

As well as being the most widespread type of asset, bank deposits (including both types of accounts) were also the single most important financial asset quantitatively: amounts held in them represented almost 68 % of total financial assets on average. Nevertheless, at the extremes of the distribution there were strong differences: deposits amounted to 83 % of total financial assets for the poorest 20 % of households, but to only 36 % for the richest 20 %.

Chart 2

### Holdings of financial assets by net wealth quintile

(%, unconditional means)



Source: NBB (HFCS III).

However, the amounts in bank accounts reported in this survey may suffer from incompleteness, due to possible oversight by households (forgetting to report some secondary accounts, including those of children) or underestimation or under-reporting of the amounts deposited in them. The amount on the sight accounts may also depend on the time of the month when it is reported, i.e. when the survey is taken (household bank deposits may be at their maximum at the end of the month, after wages and pensions are paid, which is also the reference period for national financial statistics). Overall, the survey-derived total volume of deposits in sight accounts amounted to only 49 % of the total as recorded by the national financial accounts (this percentage rose to 76 % for savings accounts).

<sup>1</sup> National financial accounts showed, instead, an increase in households' financial assets between 2014 and 2017. Several reasons can explain this different trend, including the fact that the survey may not reach some of the wealthiest households, the difficulties for households to assess the worth of certain assets, in particular when due to changes in market values, the differences in scope (the household sector is broader in the national financial accounts, including non-profit institutions serving households) or the differences in period of reference (wealth evolves along the year while national accounts give a picture at the end of a year or a quarter) are probably the most determinant.

Table 1

**Ownership and value of household assets**

(in % of households, in € thousands (2017 equivalent) and change between HFCS II and HFCS III)

	Participation rate (in %)			Conditional median				Conditional mean			
	HFCS I	HFCS II	HFCS III	HFCS I	HFCS II	HFCS III	In % change	HFCS I	HFCS II	HFCS III	In % change
<b>Total assets</b>				282.3	278.7	279.9	0.4	416.7	387.3	411.6	6.3
standard deviation				(9.7)	(9.4)	(10.4)		(13.6)	(14.3)	(21.5)	
<b>Total real assets</b>	89.8	88.5	88.3	248.5	262.4	260.8	-1	329 255	335 440	366 087	9
standard deviation	(0.9)	(1.0)	(0.9)	(8.0)	(5.9)	(5.3)		(9.5)	(14.2)	(21.6)	
HMR	69.6	70.3	69.3	282.4	261.7	270.0	3	308.5	283.0	294.9	4
Other RE	16.4	18.5	18.9	196.6	187.4	197.8	6	268.8	296.0	335.6	13
Vehicles	77.2	76.2	77.1	7.0	7.3	7.0	-4	11.2	10.8	11.3	5
Valuables	15.4	12.6	12.7	5.6	6.1	6.8	11	18.7	21.1	21.8	3
Self-employment business	6.6	8.5	10.9	56.5	59.9	24.7	-59	242.4	329.0	403.7	23
<b>Total financial assets</b>	98.0	97.9	97.9	29.9	29.8	25.8	-13	123.6	92.3	90.1	-2
standard deviation	(0.3)	(0.5)	(0.5)	(1.8)	(1.8)	(1.8)		(9.4)	(4.4)	(5.7)	
<b>Deposits</b>	97.7	97.5	97.7	11.3	13.1	11.5	-12	43.0	37.0	39.6	7
Deposits: sight accounts	97.3	97.1	97.3	1.5	1.8	1.6	-11	4.9	5.2	7.5	45
Deposits: saving accounts	76.5	76.6	74.5	13	17	15	-10	49	40	42	4
<b>Mutual funds</b>	17.6	21.0	21.3	23.0	30.1	35.9	19	79.1	102.6	98.7	-4
<b>Bonds</b>	7.5	7.8	2.9	34.8	13.0	22.3	72	213.0	41.3	164.8	299
<b>Non-self-employment private business</b>	0.5	1.0	1.4	218.8	32.6	1.7	-95	332.5	212.9	147.0	-31
<b>Publicly traded shares</b>	14.7	11.0	9.8	5.8	10.5	9.9	-6	75.8	55.1	65.6	19
<b>Managed accounts</b>	0.6	0.6	0.9	40.9	49.0	30.5	-38	123.8	135.3	204.2	51
<b>Money owed to households</b>	7.7	6.7	5.2	2.5	6.6	5.0	-23	20.6	17.4	13.6	-22
<b>Voluntary pension plans / life insurance contracts</b>	43.3	44.4	42.9	22.4	17.5	15.3	-13	41.4	28.1	24.5	-13

Source: NBB (HFCS).

Note: Values in € for 2010 and 2014 are adjusted for inflation relative to 2017.

Recourse to the most sophisticated financial instruments remained low: while around 40 % of households had voluntary pension plans or life insurance contracts (five percentage points less than in 2014), only 21 % (a similar share as in 2014) reported that they owned mutual funds (the median amount invested in these was higher than at the time of the previous wave, though), and investment in bonds, shares and non-self-employment private businesses remained uncommon. However, the very reduced sample of households that own such assets makes the estimates of the amounts subject to considerable uncertainty. This may help explain the strong movements in their conditional median and mean values across waves.

## 4. Debt

Half of Belgian households reported having some sort of debt in 2017, an increase of five percentage points from 2014. The median value of indebted households' liabilities jumped by an even higher amount (31 %) in the same period, reaching € 68 100 in 2017. The median value of mortgage loans, held by 37 % of Belgian households in 2017 (2.5 percentage points more than in 2014), rose by 22 %, to € 100 000. Additionally, more households had mortgages linked to other real estate property (although they remain a minority: 5.2 %, half a percentage point more than in 2014, and two percentage points above the 2010 share), with a strongly rising median value. Over one-fourth of households had other types of debt, a percentage slightly up from those of previous waves, although median values of this type of liabilities trended down.

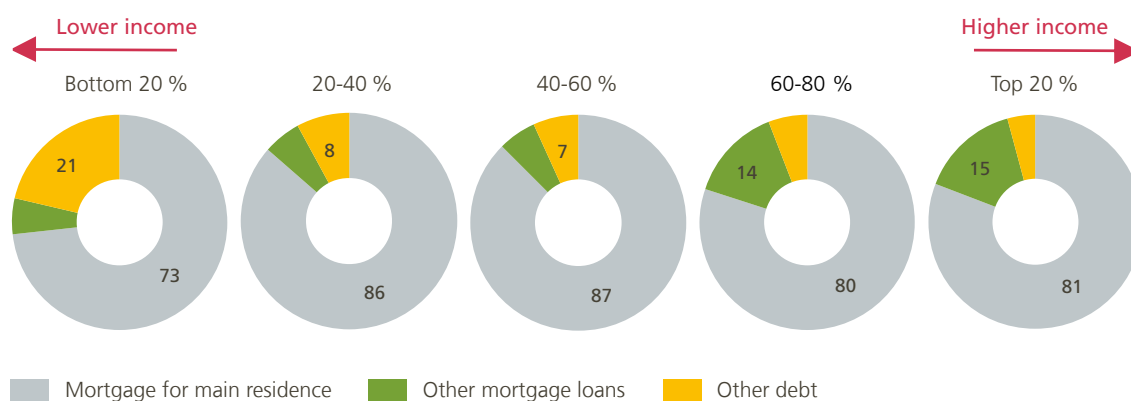
As is the case for assets, debt is not equally distributed across households. Focusing specifically on mortgage loans, there are notable differences between younger and older households (49 % of the households headed by a person younger than 35 had mortgage debt in 2017, compared with 57 % of those between 45 and 54 years old, and only 1 % of those older than 75), as well as between income categories (7 % of the households in the lowest income quintile, compared to 68 % of those in the highest), and across employment status (6 % of households where the reference person was retired, 19 % of those not working and the unemployed, but around 60 % for those working).

Mortgages on the household's main residence represent the most important type of debt across the income distribution. Yet the relative importance is lower for the lowest quintile, due to the reduced share of households that have a mortgage in this group. Other types of debt (consumer loans, for instance) are relatively more important for this category. At the other extreme of the distribution, mortgages on other property loom larger for the 40 % of households with the highest income.

Chart 3

### Holdings of debt by income quintile

(in %, unconditional means)



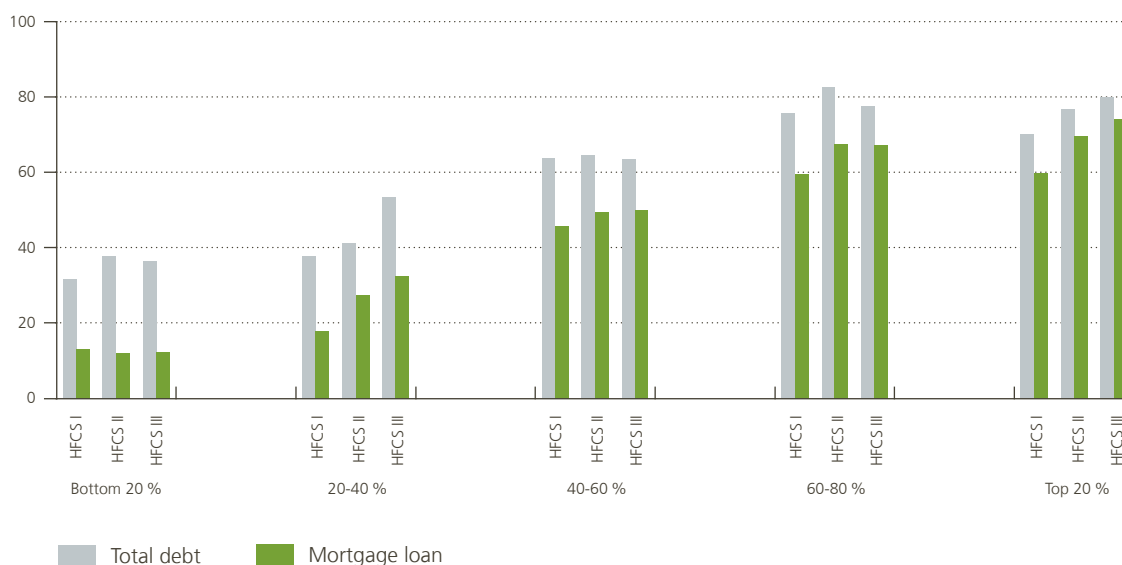
Source: NBB (HFCS III).

Access to debt (and, in particular, to mortgages) is strongly correlated with the income level of the household. This observation holds even when we exclude retired households from the sample (they often have a relatively low income but have repaid mortgages in full). Non-retired households in the lowest income category had a slightly lower probability of having a mortgage in 2017 than in 2010 (for the rest of the income distribution, the probability had, by contrast, increased since 2010).

Chart 4

### Debt participation rates by income quintile

(in %, excluding households where the reference person is retired)



Source: NBB (HFCS III).

Almost one-fourth of Belgian households had applied for credit in the three years before the survey took place (an increase of almost six percentage points over the previous wave of the survey). Of those who applied, 5 % saw their request denied or were granted a smaller amount than asked. 2.6 % of all households did not apply for credit due to perceived credit constraints. In total, adding up these two groups, 3.5 % of Belgian households were constrained in their access to credit in 2017, slightly less than in 2014 and 2010.

Across the income distribution, the top 40 % of households had fewer constraints and had also applied for credit most. Less than 8 % of households in the bottom 20 % had applied for credit between 2014 and 2017 ; for 27 % of these, this resulted in either a refusal or the granting of a lower amount than requested. The share of credit-constrained households was higher among those headed by a person who was unemployed at the time of the survey (15 %), by a person younger than 35 (10 %), and for households in the lowest net wealth quintile (9 %).



## Households' debt burden

The correlation between income and access to credit (and housing loans in particular) may appear, at first sight, as undesirable, in so far as it can be seen as curbing the chances of the households with lower earnings to obtain access to property. However, excessive household debt can be crippling for a household that has insufficient means to repay, and has also been seen as one of the causes of the 2008 great financial crisis<sup>1</sup>.

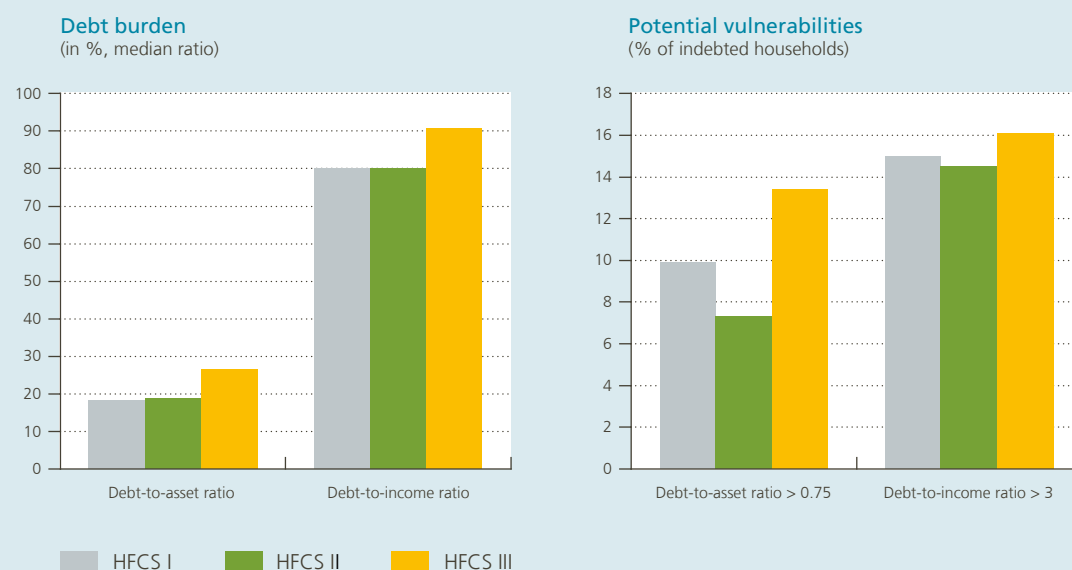
Indeed, a household with elevated debt in proportion to its income and assets is vulnerable to the impact of external shocks (such as job loss), as its repayment capacity could become severely limited. In such a case, the household could be forced to sell the property in order to clear its debt. In an even worse scenario, the shock could affect a larger part of the economy and translate into the sell-off of large number of dwellings due to households' inability to pay back their debts. At the extreme, the sale of the property might not be enough to clear the entire debt – a dramatic circumstance for any individual household. Moreover, if such a situation were to become widespread, for instance following a large and generalised shock, sizeable amounts of unpaid debts could strongly limit the capacity of banks to provide lending to the rest of the economy. For this reason, the ratios between a household's debt and its capacity to repay (as measured by its income on the one hand and the value of its assets on the other) must be carefully monitored.

Between 2014 and 2017, these two relationships worsened somewhat in Belgium. The (median) ratio between debt and total assets rose by almost eight percentage points: in 2017, debt amounted to 26 % of total household assets, up from 19 % three years before. This could indicate that households were obtaining larger loans, relative to the value of their assets, probably because they were able to obtain mortgages with a lower level of assets (smaller savings upfront, for instance). Loosening credit standards enhanced by the low interest rate environment and strong competition among banks in the mortgage market may have contributed to this trend.

<sup>1</sup> See, among others, Mian and Sufi (2014).



## Indicators of debt burden and debt vulnerabilities



Source: NBB (HFCS).

The ratio of debt to income of households also rose between 2014 and 2017. For the median household in 2017, total debt outstanding represented just above 90 % of its gross annual income (this ratio was lowest for the bottom 20 % of the income distribution, and highest for those in the fourth quintile).

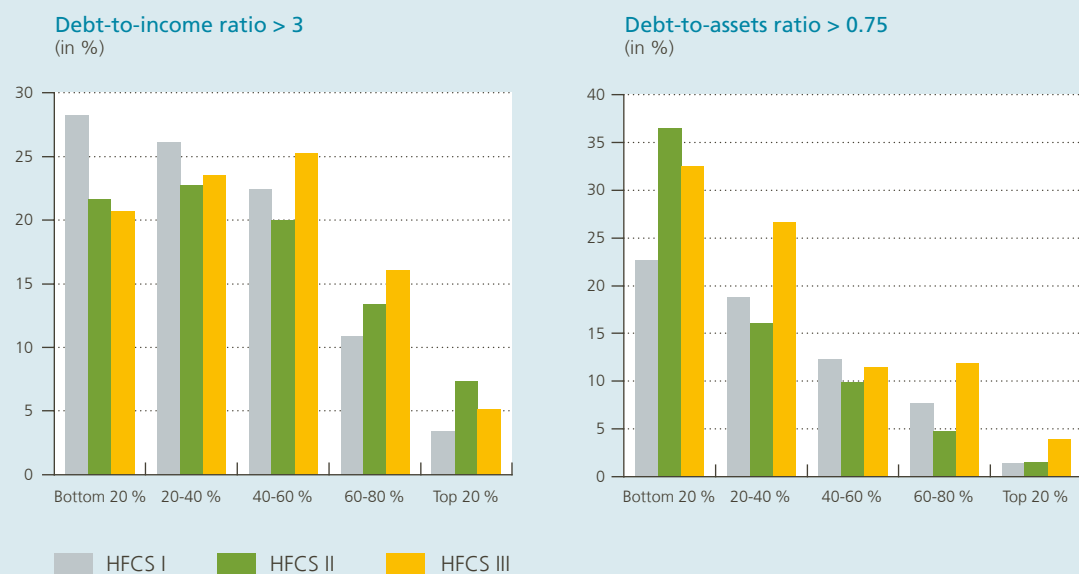
The percentage of households with elevated values of debt relative to their assets or income also rose. In particular, the share of households with debt greater than 75 % of the value of their assets jumped by 4.5 percentage points between the survey's second and third wave, and stood at 13 % in 2017. Regarding the debt-to-income (DTI) ratio, 16 % of the Belgian households (two percentage points more than in 2014) had debt that was at least three times bigger than their annual income<sup>2</sup>. These households could, in principle, be more vulnerable to a shock to their income or the value of their assets, to the extent that this could imperil their ability to manage their debt.

Across the income distribution, the share of households with high debt-to-income ratios increased in the third and fourth quintiles compared with 2014, while it improved for households at the bottom and the top end of the distribution. High debt-to-asset ratios have become more common across the entire distribution, except for the 20 % of households in the lowest income group. The increases have been strongest in the second and fourth quintiles (the highest share of households with elevated DTA ratios remained in the bottom quintile, at one-third of indebted households).

1 For 2 % of households, both indicators were above these threshold values.



## Share of households with elevated debt-to-income and debt-to-assets ratios



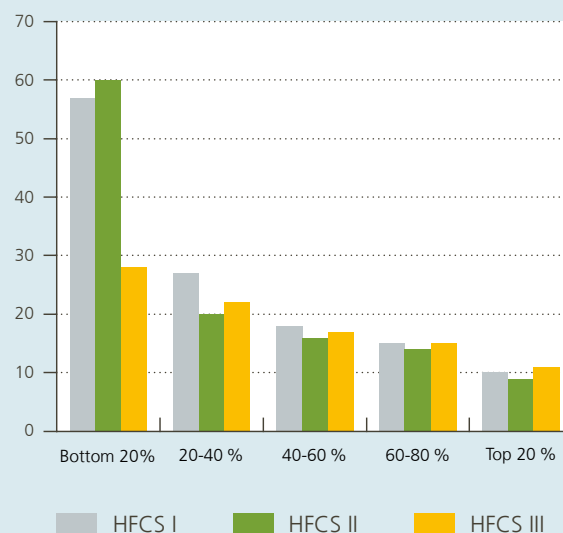
Source: NBB (HFCS).

An additional indicator to assess the burden of debt on a household's repayment capacity is the debt-service-to-income (DSTI) ratio, the proportion between debt payments (including interest rate) and the household's (gross) income. For mortgage loans, the median DSTI ratio rose by 1.6 percentage points between 2014 and 2017, although developments varied across households. For households with the lowest levels of income, the mortgage DSTI ratio fell steeply from the very high levels observed in previous years, moving closer to the ratios of the rest of the income distribution. However, it should be noted that only 7 % of households in this income quintile have a mortgage (i.e. a very reduced sample).



## Median mortgage-debt-service-to-income ratio by income quintile

(in %)



Source: NBB (HFCS).

Note: The figure for the first income quintile in the HFCS I excludes four outlier observations.

The mortgage DSTI ratio increased only very slightly for households in the remaining income distribution<sup>1</sup>. For cases where this was coupled with a higher increase in debt levels than in revenue, this could be explained by more favourable loan terms applied to households – particularly lower interest rates, which can help reduce monthly payments due.

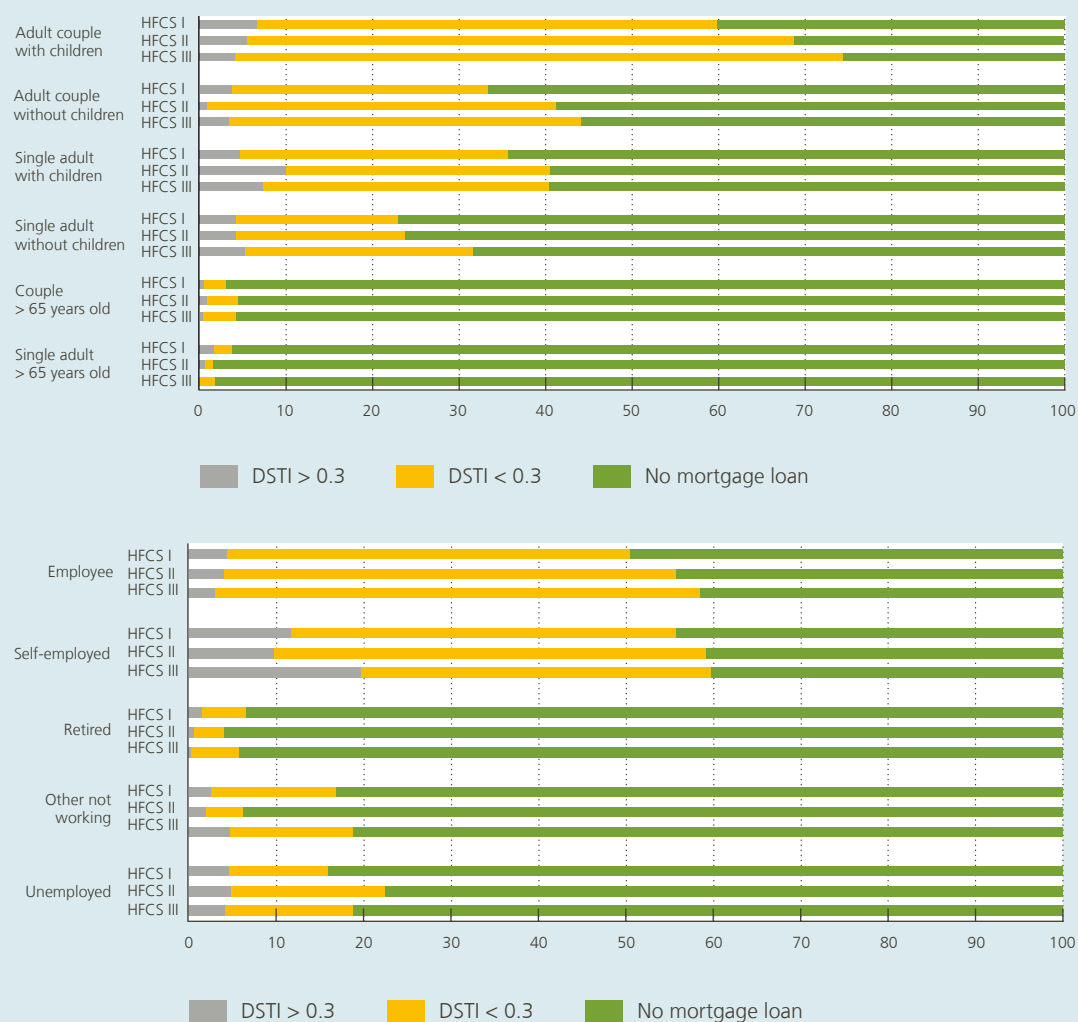
A DSTI ratio above 30 % of gross income was extremely rare in Belgium in 2017. To some extent, this may be due to financial institutions avoiding granting credit when repayment would represent a larger share of a household's income. However, subsequent (unexpected) adverse shocks to households' sources of revenue (e.g. loss of an income-providing household member, unemployment) could push the DSTI ratio higher. Overall, 3 % of households with a mortgage loan were looking at monthly repayments that exceeded 30 % of their (gross) income. The share of households with very high monthly mortgage payments was the most elevated for those where the reference person was self-employed (20 %). Across the income distribution, this share was higher for households in the middle of the distribution (6 %, a two-percentage-point increase since 2014). Per type of household, single adults with children were those whose repayments took over 30 % of their income: this was the case for 7 % of households of this type (40 % of households composed of a single-parent family had a mortgage). This percentage, however, was lower in 2017 than in 2014.

<sup>1</sup> The total debt-service-to-income ratio increased slightly for the 20 % of households in the lower income group between 2014 and 2017, after a sizeable drop between the two first waves of the survey. Despite this rise, it remained lower in 2017 than for the rest of the income distribution



## Mortgage debt-service-to-income ratio per type of household

(% of households)



Source: NBB (HFCS).

## 5. Income and net wealth

### 5.1 Income: trends and distribution

In the context of the robust recovery, rapid job creation and slowing wage increases experienced by Belgian households at the time of the survey, the median annual gross income of Belgian households went up by 1 % in real terms between the second and third waves of the survey (which relate to the years 2013 and 2016 respectively).

The concept of income used within the HFCS refers to the gross annual revenues of the entire household. Recording gross rather than net income facilitates the comparisons across countries: taxes and social security charges are not discounted. Social transfers (such as child benefits), unemployment assistance and other (public or private) transfers are included, whether regular (e.g. child alimony) or one-off (e.g. lottery wins). In principle, then, disposable income would be lower than the figures reported here.

While median incomes for the entire distribution inched up, not all types of households benefited equally. Median income, on the contrary, fell strongly for households composed of four members (–11 %), for those whose reference person's age was between 35 and 44 (–11 %), for those paying mortgages (–4 %), and for those where the reference person was either unemployed (–15 %) or self-employed. All in all, looking at the income distribution, the highest gains have been for the 20 % of households with the highest level of income and for the 40 % with the lowest level. Table 2 provides more details on the evolution of income across household characteristics.

Table 2

**Income and distribution across households**

(conditional median; in € thousands (2017 equivalent) and in % change between HFCS II and HFCS III)

	HFCS I	HFCS II	HFCS III	In % change
<b>Total</b>	<b>38.0</b>	<b>43.1</b>	<b>43.5</b>	<b>0.9</b>
<b>Household members</b>				
1	21.0	24.2	24.7	2.1
2	40.8	45.3	47.4	4.6
3	59.8	62.2	61.6	-0.9
4	69.6	85.2	75.7	-11.2
5	59.4	68.5	68.7	0.4
<b>Age of reference person (ranges)</b>				
16-34	36.1	50.8	49.0	-3.5
35-44	55.1	60.6	53.8	-11.2
45-54	53.0	60.5	58.6	-3.1
55-64	35.4	46.4	48.7	5.0
65-74	29.4	31.9	31.9	-0.1
75 or older	25.8	27.0	26.9	-0.4
<b>Education level of reference person</b>				
Up to lower secondary school	24.9	24.2	24.1	-0.3
Upper secondary school	36.8	41.2	41.3	0.4
University	57.0	61.1	60.1	-1.7
<b>Housing status</b>				
Owners – outright	36.0	40.0	39.7	-0.7
Owners – with mortgage	60.4	69.1	66.2	-4.2
Renters/other	24.6	27.0	26.1	-3.4
<b>Employment status of reference person</b>				
Employee	57.3	60.7	60.2	-0.8
Self-employed	67.8	61.9	56.5	-8.7
Retired	29.1	30.6	30.0	-2.1
Other not working	23.0	16.9	16.3	-3.6
Unemployed	18.9	19.6	16.6	-15.1
<b>Income quintiles</b>				
Bottom 20 %	11.6	16.3	16.9	3.5
20-40 %	24.5	27.6	29.0	4.9
40-60 %	38.1	43.1	43.5	0.9
60-80 %	60.7	64.3	64.7	0.7
Top 20 %	100.6	101.5	107.6	6.0
<b>Wealth quintiles</b>				
Bottom 20 %	20.2	21.4	22.0	3.0
20-40 %	38.1	40.3	42.6	5.7
40-60 %	39.9	45.7	47.6	4.1
60-80 %	53.8	55.2	50.4	-8.6
Top 20 %	57.6	63.2	69.3	9.7

Source: NBB (HFCS).

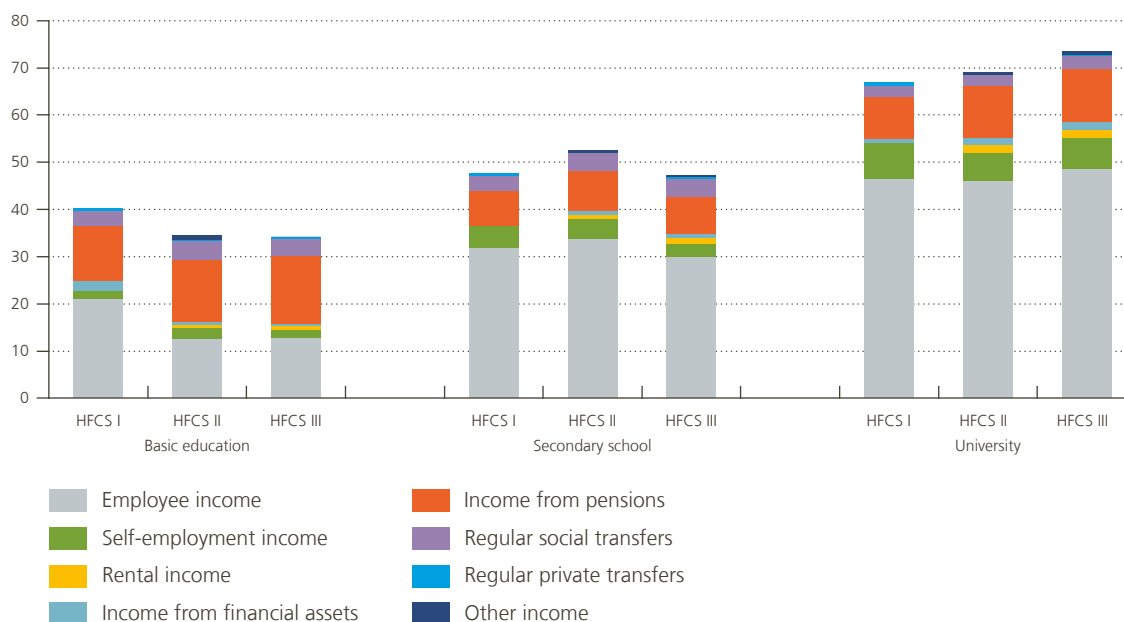
Note: Income in HFCS I was sometimes reported by households as net instead of gross. This may affect the figures and comparison with later waves of the survey. Values in € for 2010 and 2014 are adjusted for inflation relative to 2017.

Chart 5 shows the composition of income by source and by level of education of the reference person.

**Chart 5**

### Sources and evolution of income, by education level of the reference person

(in € thousands (2017 equivalent), unconditional means)



Source: NBB (HFCS).

Note: values in euros for 2010 and 2014 are adjusted for inflation relative to 2017.

The differences across the level of education of the reference person indicate that, for households where that person has a lower education level, pensions are a prominent source of income (that is, it is likely that many of these households consist of retired persons). Employee income (e.g. wages, bonuses, overtime pay, tips) is the most important source of income for the other two groups of households. Compared with pensions and employee income, self-employment income is a relatively minor component for all three groups.

Across age categories, revenue when first accessing the labour market was lower, increased over time until around retirement age, and dropped afterwards. In the years covered by the survey in Belgium, the peak in income seems to be reached when the reference person of the household is between 45 and 54 years old<sup>1</sup>. Between 2014 and 2017, however, the survey points to a small increase in the revenue of households with a reference person older than 55 and younger than 64. This is consistent with the increase in labour participation for that age category observed in the aggregate statistics<sup>2</sup> and the postponement of the retirement age. Income decreased, however, for households where the reference person was in their late thirties or early forties (which seems to be due to a fall in employee income).

<sup>1</sup> The average retirement age in Belgium was 59.9 for men and 59.2 for women in 2014; it rose to 61.7 and 60.5, respectively, in 2017.

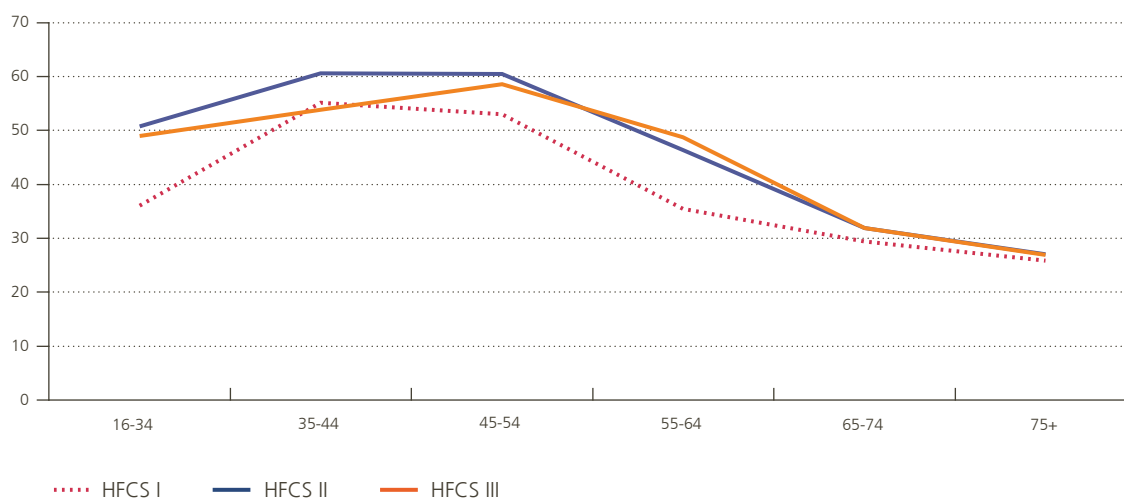
<sup>2</sup> Participation in the labour force of persons older than 55 rose by almost six percentage points between 2014 and 2017, to reach 51 % (for the population as a whole, the rate was 68 % in 2017). See <https://www.nbb.be/en/publications-and-research/employment-statistics-trends/labour-market/participation-rate-age-gender>.



## Chart 6

### Income per age of the reference person

(conditional median; in € thousands (2017 equivalent); age ranges in years)



Source: NBB (HFCS).

Note: Values in euros for 2010 and 2014 are adjusted for inflation relative to 2017.

Just over half of Belgian households indicated that their income exceeded their regular outgoings. For households at the bottom end of the income distribution (the lowest quintile), however, this percentage fell to just below 30 %. Among households where the reference person was unemployed in 2017, it dropped to 20 %. Overall, a higher proportion of households felt able to obtain financial assistance from friends or relatives in case of need: for the entire sample, two-thirds of households thought this was the case for them, although this possibility was again less available to households with lower income or wealth (39 % and 32 %, respectively).

Household surveys are not suited to provide an accurate measure of inequality in a country. One of the main reasons for this is that the wealthiest households and those with the highest income usually do not respond to this type of survey<sup>1</sup>. This implies that inequality indicators are underestimated. Another caveat is that, as mentioned above, the uncertainty and error margins around the value of some kinds of assets or income sources increase when these assets or sources are very uncommon. Keeping in mind these limitations, the survey can still provide some indications of the trends in inequality for the rest of the distribution. The survey also provides a better understanding of the distribution of heterogeneity according to the other dimensions that it covers.

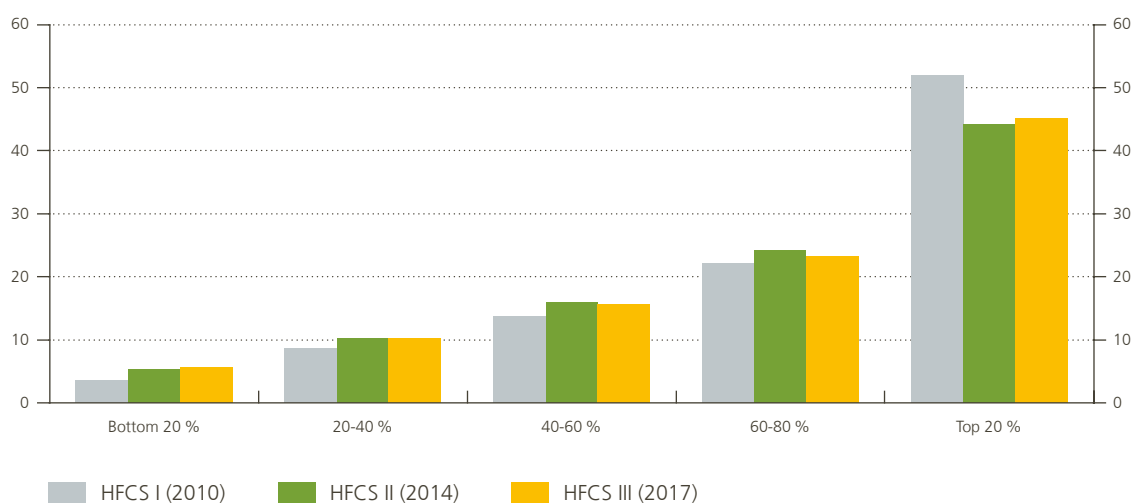
All in all, the distribution of income remained relatively unchanged between the second and third waves of the survey, with the top 20 % of earners taking 45 % of the total gross income. Households in the 90<sup>th</sup> percentile (i.e. whose income exceeded that of 90 % of the country's households) earned 2.5 times the median household income, a share slightly higher than in 2014 (2.4). At the same time, the median household made 2.6 times the amount of households in the 10<sup>th</sup> percentile.

<sup>1</sup> The maximum value for net wealth recorded in 2017 was in the tens of million euros (far below the estimated worth in the billions for the very wealthiest in most countries). These households could also underreport their income or wealth (see HFCS, 2013).

## Chart 7

### Distribution of income across quintiles

(in %)



Source: NBB (HFCS).

Note: Values in euros for 2010 and 2014 are adjusted for inflation relative to 2017.

## 5.2 Net wealth

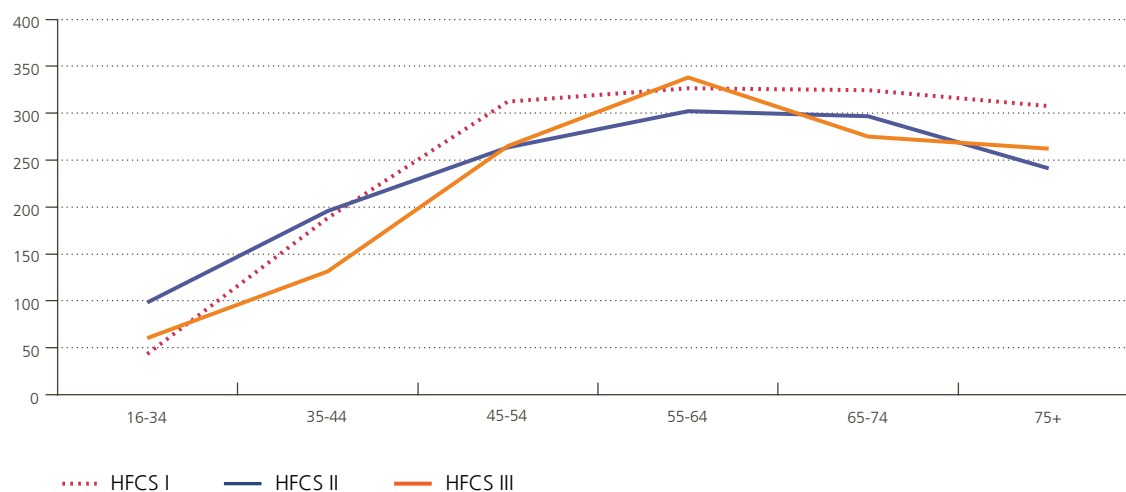
While median income increased between 2014 and 2017, median wealth (the total amount of a household's assets minus its debt) fell (by 6.8%) over the same period. As with income, not all households were equally affected. Net wealth fell more steeply for households where the reference person was unemployed (in fact, it more than halved), where the reference person had attained only a basic education level (by over 40 %), where the reference person was younger than 45 (by around one-third), for households that did not own their home, and for those where the reference person was self-employed. All in all, households with the lowest income in 2017 saw the biggest drops in their net wealth between 2014 and 2017.

As is the case with income, the distribution of net wealth across age categories of the household's reference person seems to fit with the life-cycle theory: net wealth increases with age to peak for households on the verge of retirement, and drops slowly afterwards, as older households dissave (albeit moderately).

Chart 8

### Net wealth per age of the reference person

(conditional median; € thousands (2017 equivalent); age ranges in years)



Source: NBB (HFCS).

Note: Values in euros for 2010 and 2014 are adjusted for inflation relative to 2017.

Negative net wealth was reported by 3.5 % of Belgian households, that is, their debts were higher than the value of all their assets. This percentage was higher for the unemployed (13 %), for households that do not own their main residence (11 %), younger households (8 %), large households (five or more family members; 7 %) and those in the bottom 40 % of the income distribution.

Table 3

**Net wealth across households**

(conditional median; in € thousands (2017 equivalent) and in % change between HFCS II and HFCS III)

	HFCS I	HFCS II	HFCS III	In % change
<b>Total</b>	<b>232.9</b>	<b>228.1</b>	<b>212.5</b>	<b>-6.8</b>
<b>Household members</b>				
1	121.2	132.1	122.3	-7.4
2	312.6	267.2	283.6	6.1
3	269.1	232.5	235.9	1.5
4	305.0	304.4	291.2	-4.3
5	190.8	241.3	230.0	-4.7
<b>Age of reference person (ranges)</b>				
16-34	43.3	98.4	60.3	-38.7
35-44	188.1	195.6	131.6	-32.7
45-54	312.5	263.8	265.0	0.5
55-64	326.8	302.3	338.1	11.8
65-74	324.6	296.7	275.0	-7.3
75 or older	307.8	241.0	262.3	8.9
<b>Education level of reference person</b>				
Up to lower secondary school	184.2	169.1	100.3	-40.7
Upper secondary school	204.0	206.7	167.7	-18.9
University	318.1	313.8	300.0	-4.4
<b>Housing status</b>				
Owners – outright	400.9	362.3	391.1	8.0
Owners – with mortgage	256.6	240.9	232.3	-3.6
Renters/other	8.6	9.5	6.5	-31.8
<b>Employment status of reference person</b>				
Employee	227.1	221.9	202.4	-8.8
Self-employed	422.4	527.9	412.4	-21.9
Retired	330.2	291.0	276.9	-4.9
Other not working	11.4	6.4	10.4	63.8
Unemployed	16.9	8.5	4.0	-53.0
<b>Income quintiles</b>				
Income I	34.8	26.9	10.9	-59.5
Income II	179.1	155.3	155.3	0.0
Income III	216.4	238.6	205.9	-13.7
Income IV	297.3	296.8	263.6	-11.2
Income V	424.4	369.5	418.8	13.3
<b>Wealth quintiles</b>				
Wealth I	3.2	2.3	1.9	-17.5
Wealth II	91.7	99.7	80.0	-19.7
Wealth III	233.4	228.2	212.6	-6.8
Wealth IV	406.3	368.5	363.7	-1.3
Wealth V	797.3	739.4	762.5	3.1

Source: NBB (HFCS).

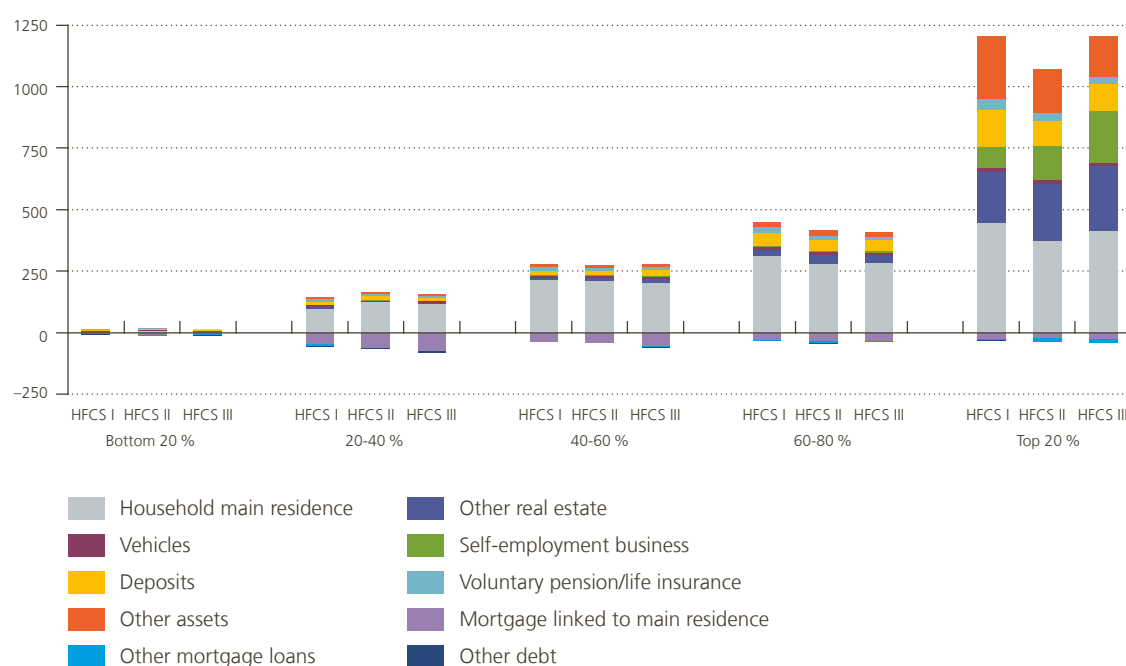
Note: Values in € for 2010 and 2014 are adjusted for inflation relative to 2017.

The distribution of net wealth in Belgium suggests greater inequality than that of income. The poorest households hardly had any assets in their names, while the richest 20 % owned 64 % of the total net household wealth. As mentioned above, for most of the Belgian population, the main residence is the household's most valuable asset, while the mortgage loans associated with it are the main liability. The richest households show a much greater diversification in their assets, to the extent that the value of their homes (while higher in absolute terms than those of the rest of households) represents a much lower proportion of their total wealth. Taken together, other real-estate properties, self-employment businesses and a range of other assets (mainly financial) amounted to about 40 % of their wealth.

**Chart 9**

### Average portfolio by net wealth quintile

(in € thousands (2017 equivalent), unconditional means)



Source: NBB (HFCS).

Note: Values in euros for 2010 and 2014 are adjusted for inflation relative to 2017.

Overall, the distribution of net wealth in Belgium remained relatively stable between 2014 and 2017, although showing a somewhat greater degree of concentration at the top. This observation, however, needs to be nuanced, as the error margins associated with some of the components that seem to underlie this development (in particular, the value of self-employment businesses and a large share of financial assets) are, as mentioned above, quite significant.

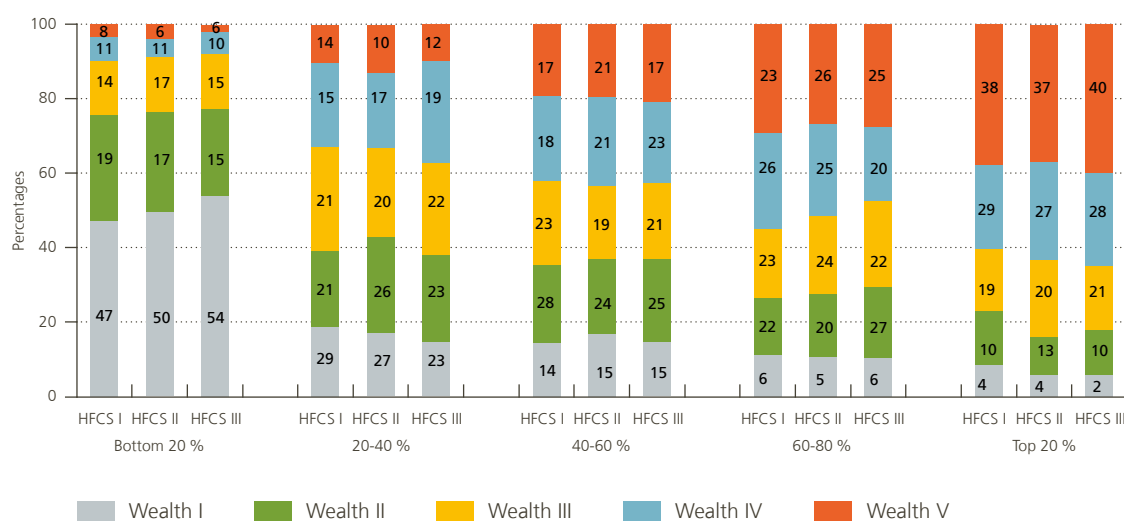
## 5.3 Joint distribution of income and wealth

Household income and wealth are strongly correlated, and seem to have become more so between 2010 and 2017: 54 % of the households in the bottom wealth quintile were also in the lowest income quintile, while 40 % of those with the highest wealth were also earning the highest revenues.

Chart 10

# Distribution of net wealth across income quintiles

(in %)



Source: NBB (HFCS).

In contrast, there were very few households that found themselves at the top of one distribution and the bottom of another. This may happen if, for instance, retired households that have cumulated a high level of wealth receive low pension income. Some young households may also earn high incomes, but have not yet amassed much wealth. However, as the chart above shows, these cases are exceptional.

## How will Covid-19 affect vulnerable Belgian households?

The crisis triggered by the arrival of Covid-19 in Belgium in 2020 will undoubtedly leave a mark on the economy and on households' financial situation. The impact on the latter will depend to a large extent on the magnitude of the shock to available income and wealth. This box attempts to shed some light on how the shock could play out, taking into account the situation of households as indicated by the third wave of the HFCS. Even though the data are from 2017, they may still be informative as to which conditions may make households more vulnerable, focusing, in particular, on the impact on available income.

The Covid-related crisis may cause a negative shock to the earned income of households whose work is disrupted by the lockdown measures (some sectors, such as the hospitality, events and travel industries being more affected than others, such as food retailing). For a given duration of the crisis, the impact will depend on the compensation measures adopted by the public authorities. Despite all the measures taken to support those who have had to stop working, few of them (only those with the lowest wages) will see their loss of income fully compensated, as the amounts provided are capped. Most households (including the self-employed, who may continue to face fixed costs, and households obtaining income from the informal economy) will most likely suffer a drop in income. The demise of a family member due to the disease may also cause an income loss. In some sectors where work demand rises, such as some parts of the food and medical industries, incomes may increase. The negative shock may be large enough to force some self-employment businesses into bankruptcy, with a subsequent fall in wealth. At the same time, price increases, mainly for essentials, and higher consumption linked to the lockdown (electricity, heating and food at home) may also dent households' disposable income. Yet some households – mainly those with higher income – may realise forced savings due to cancelled or delayed expenses.

Thus, despite compensation measures, some households may have to run down their savings or go into debt. One of the categories most affected by the crisis may be households that suffer income loss due to the lockdown and have difficulties saving in normal times: the latter is the case for 40 % of households where the reference person is working. Among those with the lowest income that are headed by a self-employed person (a category that is likely to be severely affected by the crisis), only 21 % of households reported that they were able to save, while 80 % had taken on debt. In the face of a negative income shock, households that do not own their home may also be more exposed (in ordinary times, a large proportion of these have regular expenses that exceed their income).

Households with high DSTI ratios may be also more vulnerable, particularly if they cannot benefit from a moratorium on debt payments and/or they receive only partial compensation for their income loss. As mentioned above, single-parent households exhibit high DSTI and, to the extent that they depend on a single income, they could have more difficulties in smoothing the impact. 6 % of households in the third income quintile – with a median annual gross income of € 43 500 – also have a DSTI ratio above 30 %, as do 20 % of households where the reference person is self-employed.

## Conclusions

This article presents a first analysis of the results of the third wave of the Belgian HFCS, comparing them with those of previous waves. In the context of a continued, though moderate, economic recovery, characterised by falling unemployment and subdued wage increases, the income of Belgian households rose slightly between the second and third waves of the survey. The value of their real estate properties also went up, although the increase was more significant for properties other than the household's main residence. The value of the most widely held financial assets, such as bank deposits and pension or life insurance contracts, fell. Despite the drop in interest rates seen in recent years, riskier, more sophisticated assets that typically come with higher yields remained very uncommon.

Households' debt levels kept rising, driven by both a larger proportion of indebted households and higher borrowed amounts. In terms of outstanding amounts, the most important debt item was the mortgage on the household's home, although non-mortgage debt remained important for households at the bottom of the income distribution, while mortgages on other property also represented a sizeable part of the liabilities of the wealthiest households.

As a consequence, the debt burden increased, although with some heterogeneity. In particular, the ratio of debt to income fell for those households that earn less. This may help them to avoid becoming overstretched in the event of negative shocks to their financial positions. Debt-to-asset ratios rose across the board, possibly driven by eased credit conditions on bank loans. Overall, the share of monthly mortgage loan repayments, including interest, over income stabilised or even decreased, although some groups (in particular the self-employed, younger households and single adults with children) remain vulnerable.

Overall, the distribution of income and wealth remained relatively stable between 2014 and 2017. Over the same period, the survey indicates that the income and wealth distributions became more correlated. However, further analysis and additional data may help to better assess the trends in inequality in Belgium, particularly regarding net wealth.



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For more information about the HFCN and the HFCS:

NBB website: <https://www.nbb.be/en/publications-and-research/study-financial-behavior-households-household-finance-and-consumption>.

ECB website: [https://www.ecb.europa.eu/pub/economic-research/research-networks/html/researcher\\_hfcn\\_en.html](https://www.ecb.europa.eu/pub/economic-research/research-networks/html/researcher_hfcn_en.html).



# What explained the weakness in manufacturing in 2018-2019?

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## Introduction

Global manufacturing confidence indicators reached a peak at the end of 2017 and started to fall thereafter, only to briefly recover at the end of 2019, before the world economy was hit by the impact of the Covid-19 pandemic<sup>1</sup>. The deterioration in manufacturing confidence was even more pronounced in the case of the euro area. While it is not unusual for the manufacturing industry to display a higher degree of cyclicality, the deceleration observed in 2018-2019 was amplified by a number of headwinds, including trade restrictions, heightened uncertainty and the rebalancing of the Chinese economy, as discussed in more detail in section 2. It seems that the euro area, in particular, bore the brunt of these headwinds, although idiosyncratic euro area factors have also been at play. Section 3 discusses the situation in the Belgian manufacturing industry, which remained more resilient, partly reflecting a more favourable (less cyclical) composition effect, but also a relative outperformance of specific industries relative to those in neighbouring countries and the euro area as a whole. Finally, section 4 briefly looks into the divergence between confidence in the manufacturing and services industries that was observed in the course of 2018 and 2019. However, this gap in confidence was largely reversed as a result of the Covid-19 pandemic and the containment measures, as the latter seem to be affecting services more than the manufacturing industry. Since structural factors were driving the weakness in manufacturing as of 2018, this analysis may still be relevant in the post-Covid-19 era. In the same vein, analysing possible spillovers and co-movements between industrial and services sectors remains highly informative.

\* The authors would like to thank P. Butzen, D. Essers, K. Buysse and G. Langenus for their comments and input.

<sup>1</sup> The analysis in this article was conducted ahead of the outbreak of Covid-19 outside China and will therefore be confined to a discussion of events up until the end of 2019.

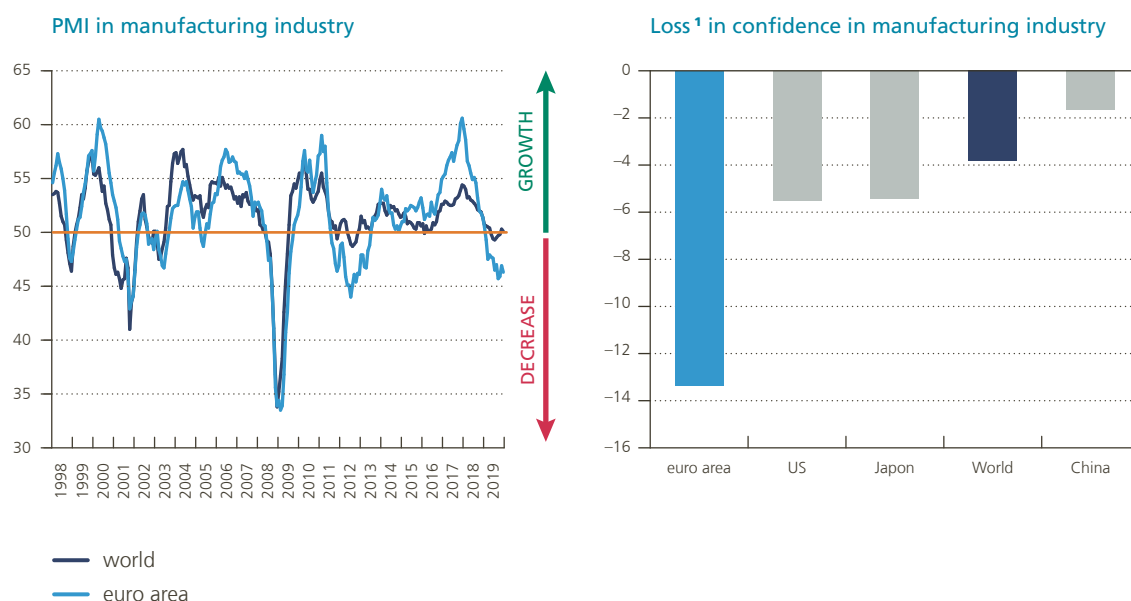
# 1. Manufacturing industry: shifting gears

## 1.1 Early signals coming from soft data

In early 2018, there was some optimism about the global growth momentum, following the broad-based upswing that had begun around mid-2016. Nonetheless, at about the same time, several short-term economic indicators displayed signs of levelling off and started to shift into lower gears. This was most notably the case for confidence indicators in the manufacturing industry, such as the global Purchasing Managers' Index (PMI)<sup>1</sup> that peaked in December 2017 before gradually moderating. The trend was even more pronounced for the euro area, where confidence in the manufacturing industry fell sharply as of early 2018. In February 2019, the euro area manufacturing PMI dipped below the key 50 mark, which is widely believed to indicate the threshold between an expansion or contraction compared to the previous month, and remained in 'negative' territory throughout 2019. This considerable drop of confidence in the euro area was even more remarkable when compared against the deterioration of confidence in other large countries and the world economy. Part of the relatively larger drop in euro area manufacturing confidence may be explained by the fact that the euro area PMI had risen significantly higher than the global indicator in preceding years, though.

Chart 1

**Deterioration of confidence in the manufacturing industry is largest in the euro area**



Source: Markit.

<sup>1</sup> Difference between the highest point of the manufacturing PMI, converted into quarterly frequency, since 2017 and the lowest point since (before end-2019).

<sup>1</sup> The PMI indicator is derived from monthly surveys of senior executives at private sector companies and aims to provide a timely insight into business conditions, tracking sub-indices such as output, new orders and employment. It is generally considered that a reading of 50 signals zero growth, whereas an indicator above (below) 50 would be an indication of an expansion (contraction).

## 1.2 Manufacturing recession also witnessed in the hard data

Obviously, the survey indicators only give an *idea* of the actual developments, through the assessment of respondents as regards what is happening or going to happen to the economy or, in this case, a specific industry. In order to see what has actually been happening, hard data such as the value added generated by the manufacturing industry or industrial production are required. Unfortunately, these are only available with a certain delay. Considering that, to the best of our knowledge, such hard indicators are not readily available on a global level, we will focus on developments in the main economies.

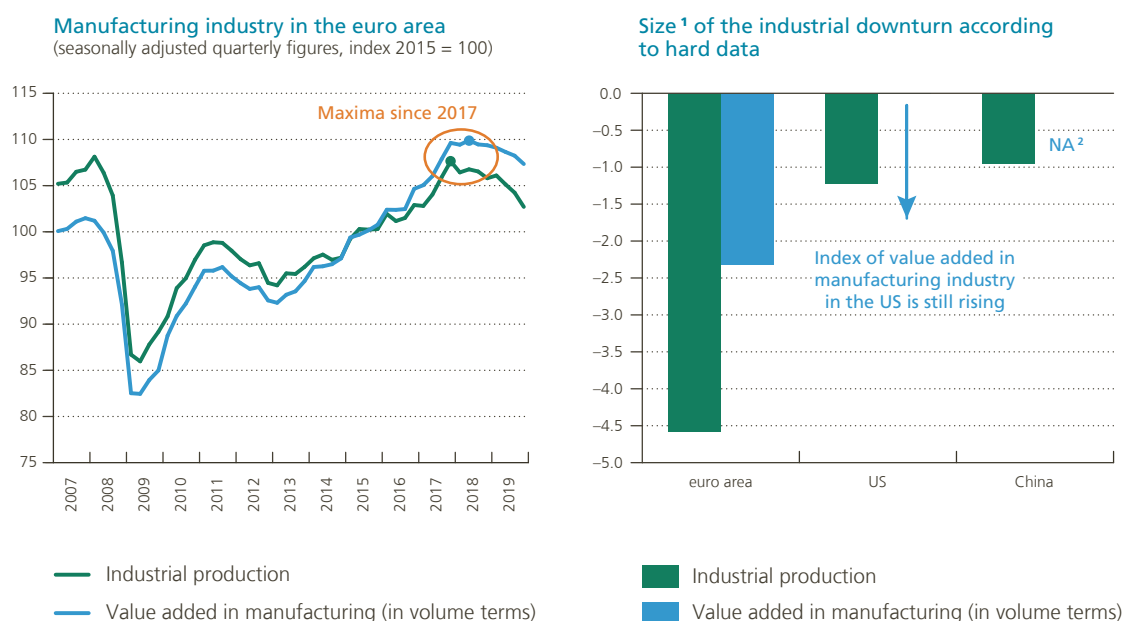
First, the PMI-based conclusion that the manufacturing industry was struggling since 2018, is largely confirmed by the hard indicators. Indeed, in the case of the euro area, both hard indicators, expressed as quarterly indices, reached their peak at about the same time, around early 2018. Value added generated by the manufacturing industry, in volume and seasonally-adjusted terms, has since been shrinking on a quarterly basis. As a result, the euro area manufacturing industry can be considered as being in a technical recession<sup>1</sup> since the second quarter of 2018. In cumulative terms, the industry lost over 2 % of its value added by the end of 2019. The decline that followed the peak was even more outspoken in the case of the industrial production index, as the latter points to a cumulative loss of nearly 5 %.

In addition, the observation that the manufacturing industry in the euro area suffered greater losses than, for example, the United States or China, does not only hold true in terms of soft indicators. A similar picture emerges when comparing the value added generated by the manufacturing industry or industrial production. The industrial production index dropped somewhat in the United States and in China, too, but the losses recorded until the end of 2019 were more contained than in the euro area's case. When it comes to value added in the manufacturing industry, the index in the United States barely dipped and had surpassed its earlier 2018 peak again by the end of 2019.

<sup>1</sup> A technical recession is typically recognised as two consecutive quarters of economic decline.

## Chart 2

Hard data confirm that the slump in manufacturing industry is more pronounced for the euro area



Sources: Eurostat, OECD, Refinitiv (Datastream).

1 Percentage difference between the peak identified for each quarterly index in the course of 2017-2019 and the latest observation (2019Q4).

2 A quarterly index for value added in the Chinese manufacturing industry does not exist.

In the case of the euro area and the United States, data for industrial production are available on a monthly basis and can be broken down by branch, which allows to investigate if certain industries are hit substantially more than others<sup>1</sup>. The difficulties of the European motor vehicle industry over the course of the last year have been well-documented by the press and this industry is indeed characterised by the largest drop in industrial output within the euro area since the end of 2017. However, as shown by the percentage changes compared to the peak level of the overall industrial production index, there are plenty of other branches of the manufacturing industry for which the euro area is showing relatively greater losses than the United States. In fact, one could conclude that the relatively stronger setback in industrial production in the euro area is broad-based across industries.

1 While the overall industrial production index displays the same patterns as value added in the manufacturing industry, the correlation between these two indicators might be much lower for its sub-industries. However, the breakdown of the value added in the manufacturing industry over its sub-industries is only available on an annual basis and data referring to 2019 will only be published when annual national accounts become available, in October 2020.

Chart 3

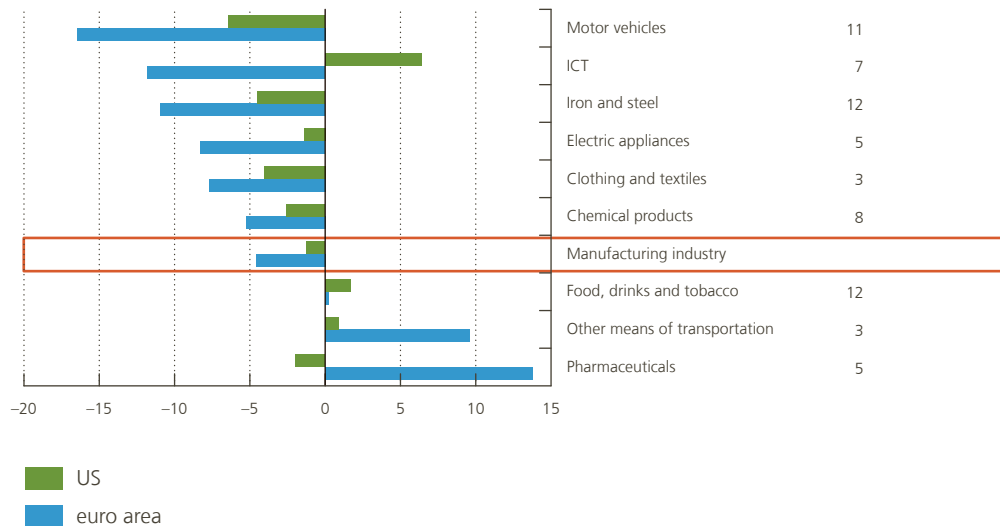
**The relatively stronger setback in industrial production in the euro area is broad-based across industries**

**Industrial production per industry**

(percentage change between peak<sup>1</sup> and 2019Q4, non-exhaustive list of industries)

**Weight in EA industry**

(% of value added in manufacturing industry)



Sources: Eurostat, Federal Reserve.

Note: Results are based on the standard industrial classification of economic activities, which may vary somewhat across countries or zones (NAICS for the United States, NACE for the euro area). Hence, comparisons for the same activity should be made with care, given that definitions could vary somewhat.

1 Percentage changes between 2019Q4 and 2018Q4 (peak for the US) or 2017Q4 (peak for the euro area).

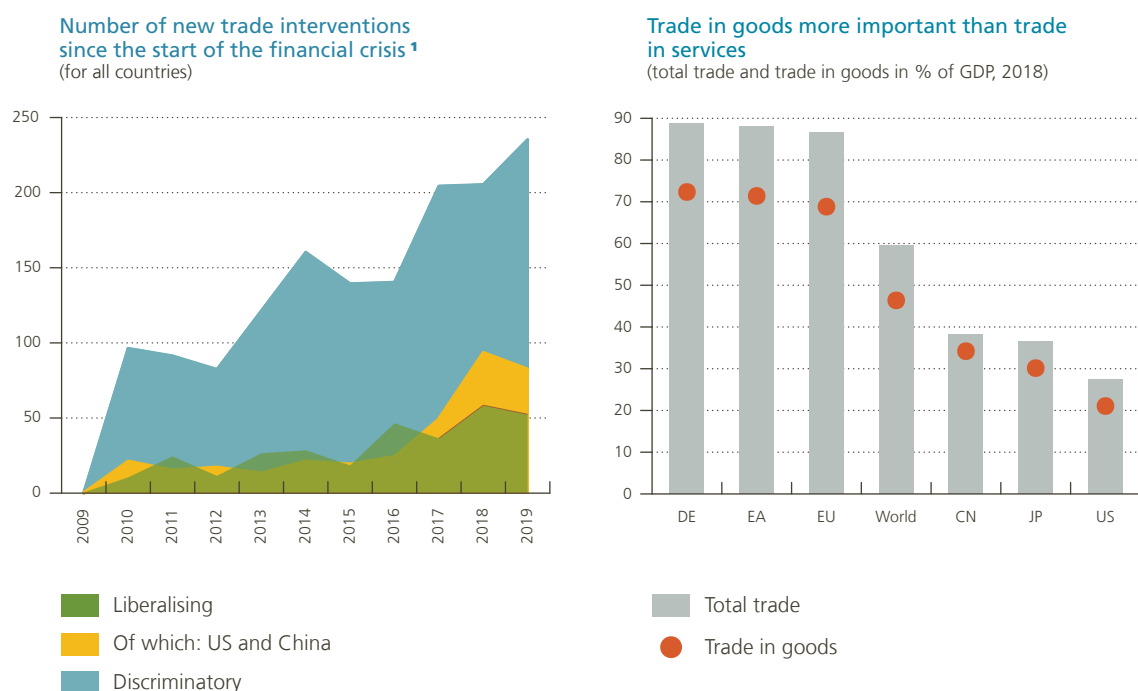
## 2. Causes of the slowdown of the manufacturing industry

The worsening of confidence and the decline in industrial production since the beginning of 2018 did not fall out of the sky: a number of factors induced this development and/or strengthened it when it appeared. The section below outlines a number of these causes and discusses why they had a stronger impact on industrial activity in the euro area than in other regions of the world.

### 2.1 Trade restrictions

Chart 4

**Increase in trade restrictions and protectionism mostly hit the manufacturing industry**



Sources: Global Trade Alert, World Bank.

<sup>1</sup> Implemented government interventions that harm the commercial interests of other countries are classified as "harmful". Implemented government interventions that benefit the commercial interests of other countries are classified as "liberalising".

After the financial crisis, the number of trade restrictions and disputes soared. A major player in this resurgence of restrictive trade policies and a new deglobalisation wave was the United States' government. During his 2016 presidential campaign, the future US President Donald Trump had already been advocating higher trade tariffs and a stronger protectionist stance. After gaining office, the newly-elected President started to impose taxes on imports from China, Mexico, Canada and the EU, to which they all retaliated, strongly increasing the number of discriminatory measures in force around the world. The Trump Administration also withdrew from the Trans-Pacific Partnership Trade Pact in 2017, a striking change from the free trade policies that had governed the exchange of goods for decades, and opened renegotiation of the North American Free Trade Agreement.



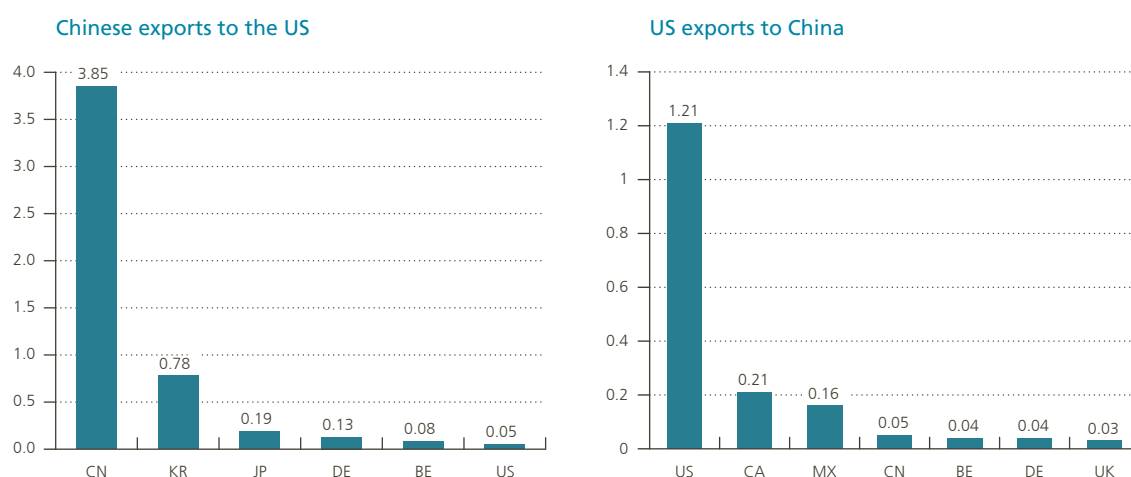
The conflict that attracted most interest in this context was the trade dispute between China and the United States, the world's two largest economies. The Trump Administration began setting new tariffs and other trade barriers on China in 2018 in order to put pressure on the Chinese authorities to change their trade practices which the US felt was unfair. China retaliated strongly, with tariffs ranging from 5 % to 25 % on US goods.

From September 2019 onwards, tensions gradually eased with the prospect of a partial trade agreement between China and the US. Although they reached a deal in December 2019 (the so-called Phase 1 deal), in which China pledged to boost US imports by \$ 200 billion above 2017 levels and strengthen intellectual property rules while the US promised to halve its tariffs, negotiations to tackle the remaining issues are still ongoing and uncertainty around the United States' future stance with regard to trade policy remains high.

## Chart 5

### Direct impact of trade restrictions on economic activity of third countries is limited

(contributions to bilateral trade flows between China and the US, in % of total value added of the country concerned, 2015)



Sources: calculations by the NBB on the basis of the OECD's TiVA-database.

In a globalised world, in which goods are produced along strongly interconnected value chains, spillovers to the manufacturing industry in other countries are likely to occur. Nevertheless, according to calculations using the OECD's world input-output tables, the impact of the trade restrictions between China and the US on economic activity in third countries appears limited: the contributions of the latter to the bilateral trade flows between China and the US never exceed 1 % of those countries' total value added.

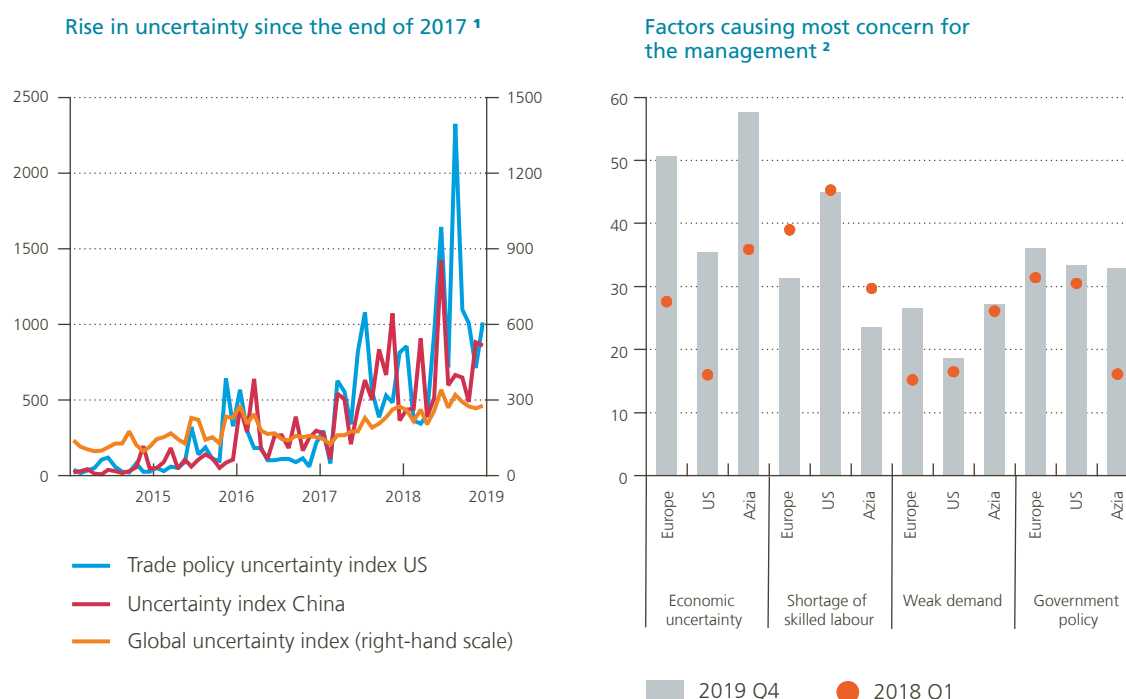
## 2.2 Uncertainty

In spite of the relatively small direct impact on economic activity of the trade partners in the countries imposing trade tariffs, these growing trade restrictions and the renewed sense of protectionism around the world raised uncertainty. An indicator that is often used in the economic literature to measure economic policy uncertainty

is the index by Baker *et al.* (2013)<sup>1</sup>, based on newspaper articles. The trade policy uncertainty indicator for the US and the uncertainty index for China both show large increases in economic uncertainty from the beginning of 2018 onwards. Global uncertainty is also affected, albeit to a lesser extent. Besides trade restrictions, other factors have had their effect on economic policy uncertainty in the euro area and the world at large such as the Brexit negotiations, which did not follow a clear path until the beginning of this year, the change towards a new vehicle emission test standard (see below) and geopolitical tensions.

Chart 6

### Economic and trade policy uncertainty rose rapidly when trade restrictions soared



Sources: Baker *et al.*, Duke Fuqua CFO Global Business Outlook.

1 Normalised indices with an average of 100 over 2000-2018. The global economic policy uncertainty index is a GDP-weighted average of national EPU indices for 21 countries: Australia, Brazil, Canada, Chile, China, Colombia, France, Germany, Greece, India, Ireland, Italy, Japan, Mexico, the Netherlands, Russia, South Korea, Spain, Sweden, the United Kingdom, and the United States.

2 Share of firms citing the factors shown as the most pressing concern of senior management over the past quarter. Based on surveys from March 2018 and December 2019. Firms are allowed to choose more than one factor.

The increase in uncertainty was not only measurable in terms of indicators based on economic news, but several survey measures also reported spikes in economic uncertainty. Duke's CFO Global Business Outlook, for example, requests business leaders to indicate which factors they worry most about. Economic uncertainty was mentioned by a significantly larger share of business leaders at the end of 2019 than in the beginning of 2018. The economic literature (Ebeke *et al.* (2018), ECB (2016), Gulen *et al.* (2016), Drobetz *et al.* (2018)) has repeatedly shown that higher uncertainty causes deferrals or even cancellations of investment, as these decisions are often irreversible and financial means are locked in for some time during their implementation, having an effect on firms' liquidity position.

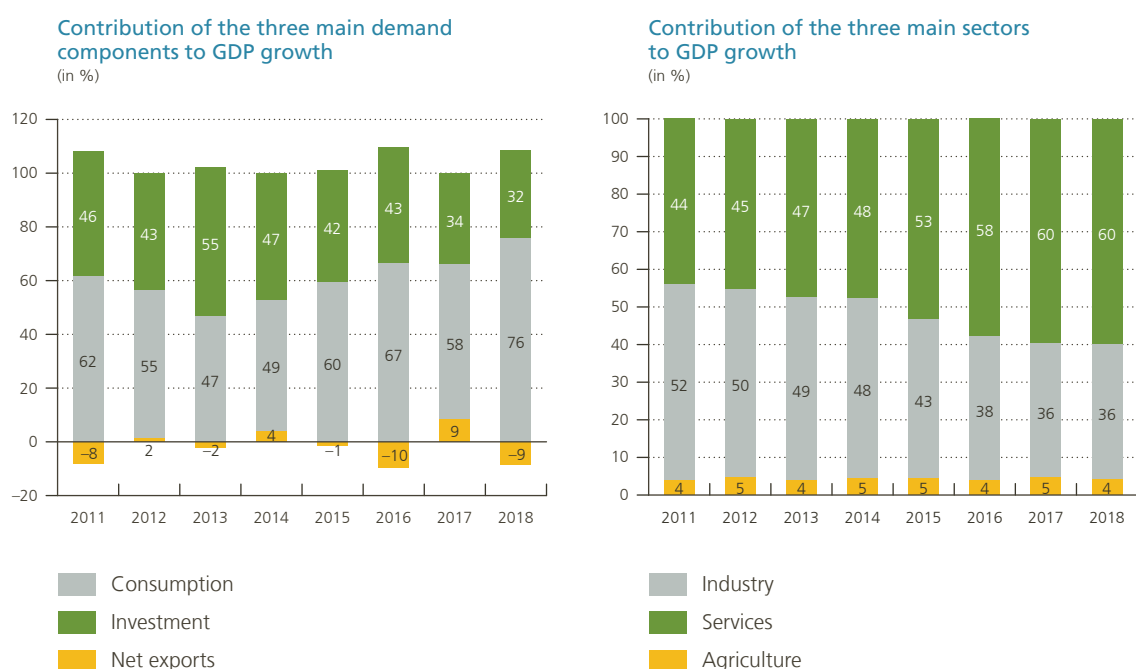
1 See <https://www.policyuncertainty.com/> for latest numbers. Each national economic policy uncertainty index reflects the frequency of newspaper articles in that country which contain a trio of terms pertaining to the economy (E), policy (P) and uncertainty (U) spheres.

Accordingly, the impact of this heightened policy and business uncertainty is apparent in the slowing growth rates of investment in the largest economies since the beginning of 2018, despite record-low interest rates and high capacity utilisation rates. Investment growth has slowed in all large economies since the beginning of 2018. Investment has been shown to be a very trade-intensive component of expenditure (Bussière *et al.* (2013) and Martinez-Martin (2016)), further amplifying the effects of trade restrictions on global trade growth. The disruption to trade, investment and supply chains from rising trade tensions consequently constitutes a direct drag on demand, further adding to uncertainty about economic perspectives and reducing the incentives to invest. This reduced investment demand has affected industrial production in its turn. The slowdown of investment growth also harms supply and weakens medium-term growth prospects for growth.

## 2.3 China rebalancing

Chart 7

**China's rebalancing towards consumption and the services sector slows down its import demand**



Sources: CEIC, IMF.

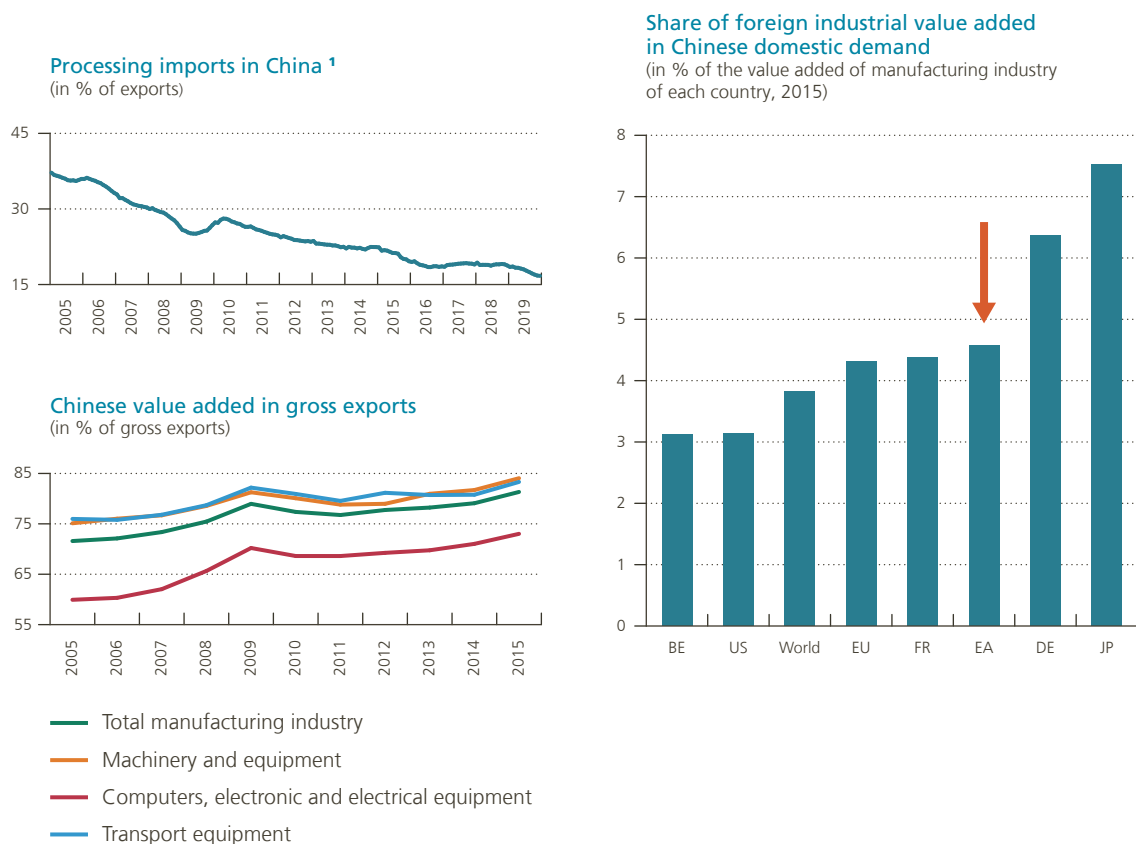
Another important factor leading to a decline in demand for European exports and, consequently, the manufacturing of – particularly intermediate and capital – goods is the rebalancing of China. Since its accession to the World Trade Organisation at the turn of the millennium, China's integration into the global economy had been growing consistently. Before the global financial crisis, China pursued an export-driven growth model, initially specialised in assembly operations. Its impressive export growth was supported by massive investment in expanding industrial production capacity and its underlying infrastructure, for which major imports in capital goods and commodities were required. Nevertheless, over the years, this resulted in large and growing imbalances in spending patterns and its economic structure. Consequently, the Chinese leadership shifted gears in the aftermath of the financial crisis as certain new vulnerabilities had emerged in response to their fiscal and

monetary stimulus programme to address weak demand in collapsing export markets. A bubble in the residential property market, excess capacity in some heavy industries, a rapid increase in corporate and local government debt ratios, uncontrolled expansion of the country's shadow banks and a growing share of less profitable investment had all added to doubts about the viability of the existing growth model. The Chinese government therefore started to advocate a transition to more moderate but also more balanced growth, with a greater contribution from consumption and services. The deliberate steering of the Chinese economy towards more consumption and services-led growth has slowed down overall growth rates, reduced Chinese demand for imported goods and raw materials and moderated investment activity, while the importance of the consumption component has been growing. In recent years, China's government has also been actively supporting consumption growth through its fiscal policy by implementing several tax incentives, supporting disposable incomes. The government's policy shift towards a more services-oriented economy and accommodating monetary conditions have fostered business investment in services as well, while investment in manufacturing has slowed significantly.

Besides China's overall rebalancing towards consumption and services, the Chinese government also launched a new industrial strategy in May 2015 ("Made in China 2025"). The goal of this long-term masterplan for economic and industrial modernisation is to re-establish China as one of the world's top manufacturing powerhouses and a technological leader by 2049. Its intermediate objective is to enhance the innovative capabilities of the country's manufacturing industry and to move China up the value chain by 2025. China wants to raise the domestic value added content in a number of targeted industries by moving into the more sophisticated parts of the value chain with the ultimate aim of replacing China's dependence on foreign high-technology imports and creating Chinese companies that can compete domestically as well as globally (Buysse and Essers, 2019, ISDP (2018), Wübbcke *et al.*, (2016)).

Chart 8

## China's declining import demand hits Europe's manufacturing industry relatively harder



Sources: CEIC, NBB calculations on the basis of the OECD's TIVA database.

<sup>1</sup> "Processing imports" are raw materials and intermediate goods imported for assembly and processing in China, but intended for export products. Expressed as a percentage to exports, this is a proxy for the level of import substitution in China, defined by the IMF in Kang, J.S. and W. Liao (2016), "Chinese Imports: What's Behind the Slowdown?", IMF Working Paper 16/106.

The effects of China's new growth paradigm are clear when analysing the evolution of the import of raw materials and intermediate goods imported for assembly and processing but intended for products destined for re-export. Expressed as a percentage of total exports, this is a proxy for the level of import substitution in China. Processing imports declined from over 37 % of GDP in 2005 to around 17 % by the end of 2019. It should be noted though that China has also lost some competitiveness in assembly activities and the production of less sophisticated goods to cheaper Asian producers due to rising wages at home. At the same time, the share of Chinese domestic value added in total gross exports has steadily grown in all manufacturing industries, with the strongest increase in the manufacturing of computers, electrical and electronic equipment.

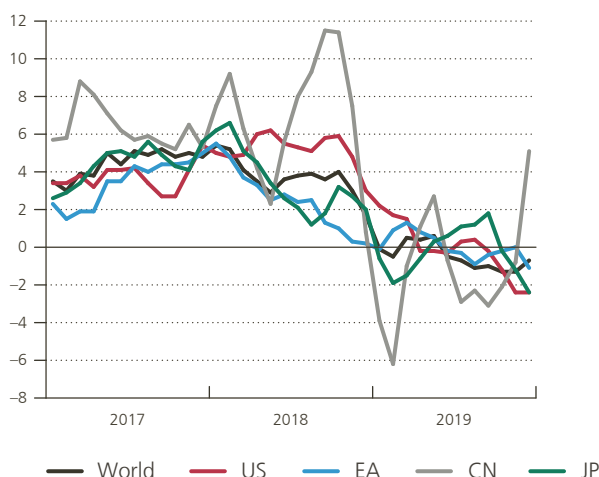
When looking at the world's largest economies, the Japanese and European economies are more vulnerable to China's rebalancing and the import substitution process than the US. The shares of industrial value added contributing to Chinese domestic demand differ quite strongly between the economies studied: more than 6 % of German industrial value added is embodied in China's domestic demand, whereas it amounts to less than 3 % of Belgian industrial value added. The last two examples also show there is large heterogeneity within the euro area countries. The effects of China's rebalancing are therefore also felt in a differentiated way in the different euro area countries.

Chart 9

## The euro area industry is vulnerable to a slowdown in global trade growth

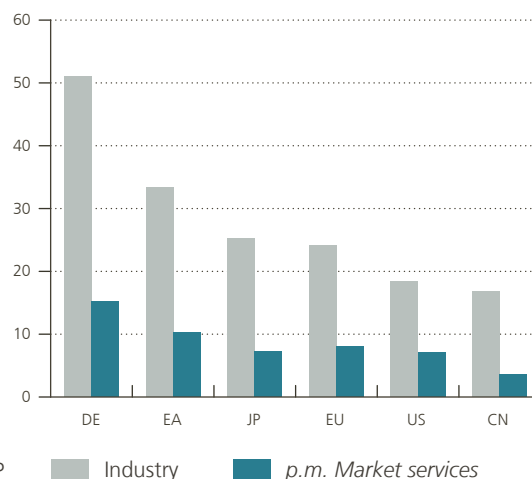
### International trade in goods

(monthly data, 3-month moving average, annual percentage change, average imports and exports, in volume)



### Exports relatively more important for European industry

(share of industry/services destined for export in % of the sector's total value added, 2015)



Sources: CPB, NBB calculations on the basis of the OECD's TiVA database.

All factors cited above have contributed to a significant slowdown in global trade growth. While global trade growth was still at around 5 % at the end of 2017, it had even turned negative by the end of 2019. Moreover, the slowdown in trade growth was particularly strong for vehicles, electronics and capital goods, which are more frequently traded among nations. The euro area economy is more vulnerable to a slowdown in trade than other large economies, as a larger part of its value added is destined for exports, i.e. in the euro area, over 30 % of manufacturing value added compared to only 18 % in the US and 17 % in China.

Moreover, the euro area was hit by several, other idiosyncratic and structural shocks at the same time as global trade growth collapsed, leading to a reinforcement of the shock to the euro area's manufacturing industry.

## 2.4 Idiosyncratic and structural shocks

One of the factors that is discussed most in this context is the remarkable slowdown of the motor vehicle industry in 2018, driven by both supply and demand factors. Although the slowdown in vehicle production was a worldwide phenomenon (see chart 10), and the first of its kind since the global financial crisis, its occurrence can mainly be attributed to two large car-producing countries, namely Germany and China.

Chinese vehicle demand and production shrunk significantly in 2018 caused by the lifting of several tax breaks that had stimulated car purchases and production in the years before. In Europe, the car industry was hit by the rollout of new carbon emission tests (WLTP) in September 2018 for which some car producers had not prepared sufficiently in advance. In addition, several other specific factors affected the motor vehicle sector and created great uncertainty, such as the introduction of low emission zones in many European cities, prompting consumers to adopt a wait-and-see approach. Furthermore, in Germany in particular, the dry and hot summer of 2018 also led to very low water levels in the Rhine, making the transport of car parts and finished vehicles by inland waterways almost impossible.

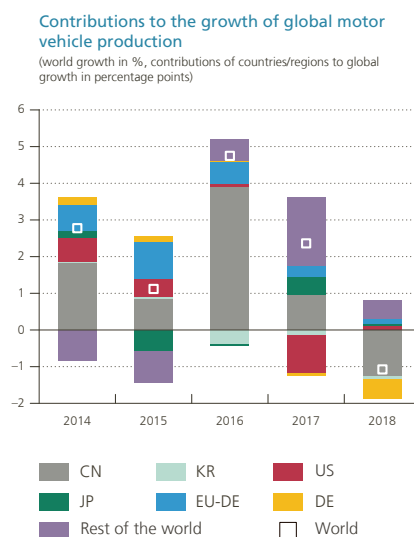
Within Europe, a structural demand shift has also been witnessed over the past few years, characterised by two opposite forces. On the one hand, consumers have chosen more and more electrical/hybrid cars and moved away from diesel cars in the aftermath of the so-called Dieselpgate scandal. This mainly affected the German car industry, which is widely specialised in diesel vehicles. On the other hand, there has been a significant shift in consumer preferences towards SUV-like vehicles, a kind of car Germany is traditionally not specialised in either. Due to these consumer demand shifts, the strong slowdown in vehicle production in Germany in 2018 was partly offset by slight increases in most Central and Eastern European countries, where production is better tailored to changing demand. Nevertheless, considering the size of the German car industry, the overall evolution for car production in the euro area was negative over 2018.

The close integration of the motor vehicle industry in global, strongly interconnected value chains contributed to the spread of the malaise to other countries, industries and even certain branches of the services sector. In the euro area, for example, value added created by motor vehicle production originates from the transport equipment branch of activity (50 %), the services sector (27 %) and several other branches of activity, such as the metal industry (2 %), chemicals and non-metallic mineral products (5 %), among others. Consequently, while the car sector only represents about 6 % of global output, a global input-output framework based on Bems, Johnson, and Yi (2011) suggests that the sector may have subtracted as much as 0.5 of a percentage point from global trade in 2018, once these spillover effects are factored in (IMF, 2019b). The idiosyncratic shocks in Europe were amplified by the slowing global trade growth as a consequence of trade restrictions and rising uncertainty, as well as by the slowing import demand coming from China. This was a double hit for the German car industry, as 75 % of vehicles produced in Germany are exported and both China and the US figure in the top 5 export destinations<sup>1</sup> (Jannsen, 2019).

## Chart 10

### Contributions to growth of global vehicle production

(world growth in %, contributions of the countries/regions to world growth in percentage points)



Source: Verband der Automobilindustrie, International Organization of Motor Vehicle Manufacturers (OICA).

<sup>1</sup> According to Jannsen, exports to the US constitute 11.4 % of total car exports and to China 10.8 % of total car exports.

### 3. Belgian manufacturing staying on track?

In Belgium as well, confidence in the manufacturing industry started to worsen early 2018, but the deterioration was relatively limited compared to that in the euro area or in certain neighbouring countries.

Chart 11

**Belgian manufacturers' confidence deteriorated, but less strongly than in the euro area**



Sources: Markit, NBB.

Note: For Belgium, the graph shows the synthetic confidence indicator for the manufacturing industry, compiled by the NBB on a monthly basis. For the euro area, France and Germany, the PMI in manufacturing is used.

1 This indicator shows the net balance of positive and negative replies.

2 Difference between the highest point of the respective confidence index, converted into quarterly frequency, since 2017 and the lowest point since (before end-2019).

Comparing hard data, such as the overall industrial production index, Belgian manufacturing firms also outperformed those of the euro area, France and Germany. This relatively strong performance may be attributed, on the one hand, to the composition of the Belgian manufacturing industry, which is, to a larger extent than the French or German economies, geared towards branches that are less closely correlated with the business cycle, such as pharmaceuticals and food, drinks and tobacco. Moreover, only 4 % of the value added generated in the Belgian manufacturing industry depends on motor vehicle assembly, which was one of the industries across the euro area that has suffered the greatest drop in industrial production since 2018 (as shown earlier in chart 3).

While the composition effect leaves the Belgian manufacturing industry relatively less exposed to business cycle shocks, a second explanation for its resilience simply lies in the fact that industrial output in these specific industries grew more strongly (or declined less clearly) in Belgium, compared to the euro area and France or Germany.



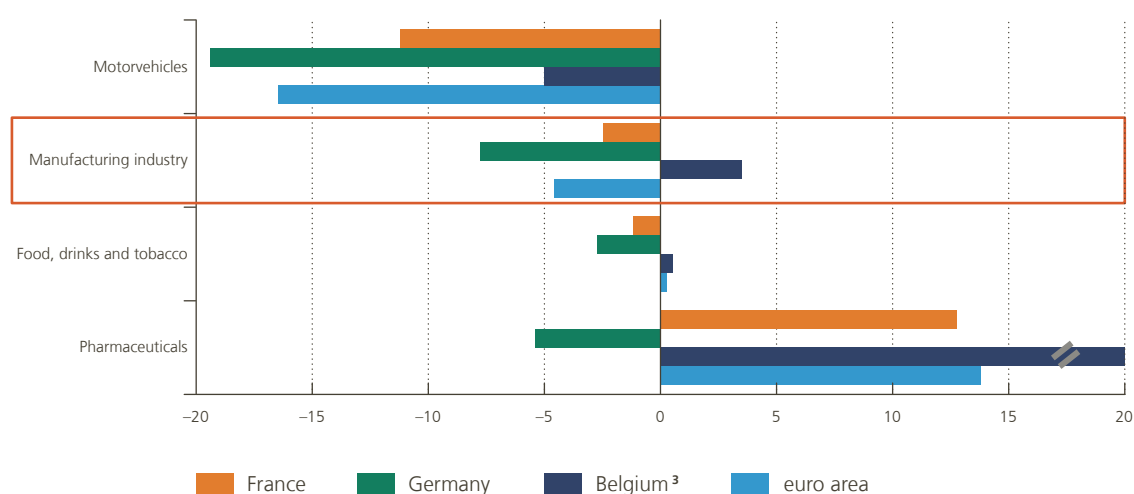
Chart 12

**Belgian manufacturing industry has a more favourable composition and has shown stronger performance in specific sub-industries**

Industry (non-exhaustive list)	Share in manufacturing industry (%) <sup>1</sup>				Correlation with EA GDP growth (%) <sup>2</sup>
	France	Germany	Euro area	Belgium	
Motor vehicles	6	21	11	4	67
Food, drinks and tobacco	19	7	12	15	45
Pharmaceuticals	5	3	5	13	40

#### Industrial production per industry

percentage change between 2017Q4 and 2019Q4, non-exhaustive list of industries



Source: Eurostat

1 In % of value added in the overall manufacturing industry, based on nominal annual figures for 2017 according to A64 classification.

2 Correlation between the volume growth of value added in this industry and volume GDP growth between 1996 and 2017. Calculations refer to the euro area only.

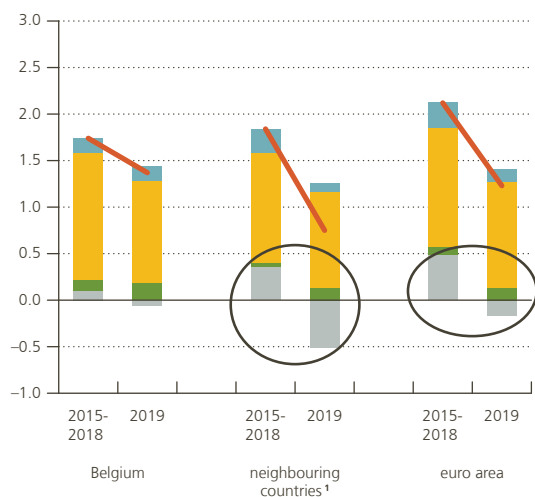
3 It should be noted that the graph does not show a decline for Belgian industrial production since end-2017, because the peak in the index was only found in 2019Q2. The increase in industrial output of "Basic pharmaceutical products and pharmaceutical preparations" has worked out at 76 % since end-2017 but this is not fully displayed on the graph in order to maintain readability. It should be kept in mind that the link between industrial production and value added in this specific sub-industry is found to be rather weak.

All in all, value added in the Belgian manufacturing industry barely slowed down at all in 2019, compared to earlier years. In the neighbouring countries and the euro area, on the other hand, value added in the manufacturing industry clearly declined. In these countries, manufacturing weighed on overall economic activity last year and seems to have been the main culprit behind the slowdown of GDP growth in the course of 2019. While GDP growth in 2019 remained positive in all euro area countries, it slowed almost everywhere in relation to the previous year(s) and most notably in Germany, the country with the largest share of industry in economic activity. As explained in section 2, the weaker international trade growth observed last year put a strain on the manufacturing industry, as it is by its very nature more export-oriented than the services industry. As a result, there is an obvious link between the share of industry in GDP and the observed slowdown in GDP growth among euro area countries. In the case of a worldwide upturn in trade flows, the opposite will most likely be observed as this would bring a relative advantage to those countries with a larger intensity of industrial activity.

Chart 13

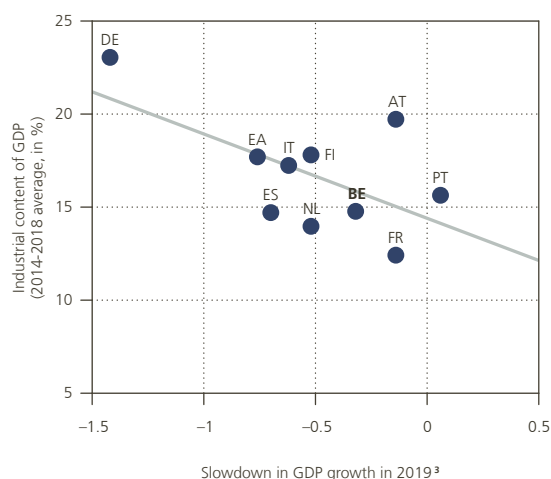
**Belgian GDP growth remained resilient in 2019 as value added in manufacturing barely shrank; other countries with more important industrial activity were hit harder**

**GDP growth and contribution per industry**  
(percentage point contributions to annual real GDP growth, unless otherwise stated)



- Manufacturing industry
- Construction
- Services
- Other<sup>2</sup>
- GDP (%)

**Link between importance of industry and the slowdown in GDP growth**



Sources: Eurostat, NAI, NBB.

1 Weighted average for Germany, France and the Netherlands.

2 Notably the agriculture, forestry and fisheries sector and taxes on products minus subsidies on products.

3 Difference, in percentage points, between real GDP growth in 2019 and the average rate recorded in 2014-2018.

## 4. A tale of two industries

In this section, we will focus on euro area developments, although similar observations could be made for other economic zones. While the manufacturing industry dipped into recession in the course of 2018-2019, an overall economic recession was avoided thanks to the robust expansion of activity in the services industry. An important cause for concern was whether this divergence between the two industries could exist for a protracted period of time or whether the services industry would inevitably be susceptible to negative spillovers from manufacturing. Due to the outbreak of the Covid-19 virus, this question has been largely rendered irrelevant, considering that the impact of the virus and its containment measures are likely to take a heavy toll on both industries.

### 4.1 Pre-Covid-19 resilience of the services industry

The resilience in the services industry over the past few years can be attributed to robust domestic demand, supported notably by consumer spending, in turn boosted by the solid labour market that showed rising wages and a historically low rate of unemployment in 2019. Considering that the services industry is the most important industry in the euro area, a great deal of last year's attention was attributed to developments in this particular industry and whether or not it would be susceptible to spillovers from manufacturing (see, for example, Forsells, Kennedy and Timm, 2019).

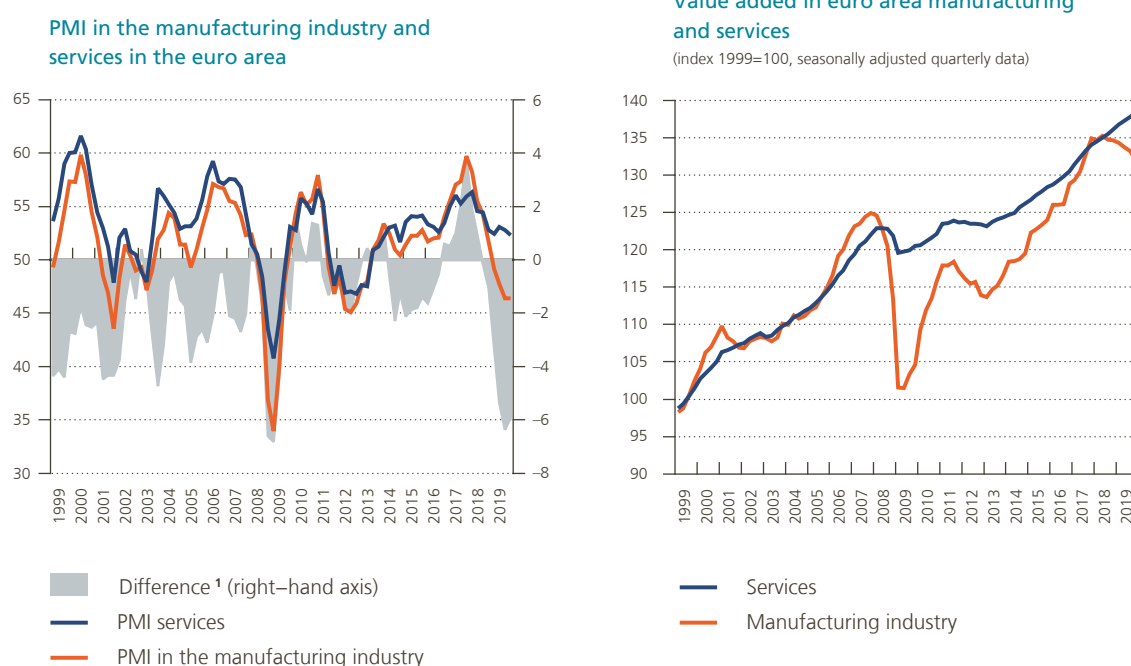
First of all, a certain degree of divergence between developments in the manufacturing and services industry is not uncommon. On the side of soft data, the difference between the PMI in manufacturing and services has amounted, on average between 1999 and 2019, to  $-1.6$  points, suggesting that the outlook for the manufacturing industry generally tends to be somewhat more pessimistic than what is reflected by the confidence indicator in the services industry. In the course of 2019, the difference between the two indicators surged to 6 points, similar to the gap observed during the great recession. However, in 2019, the two indicators were not only diverging in terms of the size of the signal, but also in terms of the signal itself, as the manufacturing PMI dipped into contractionary territory, i.e. below the 50 threshold, while the PMI for the services industry remained fairly constant at a level above 50.

Despite the different signals provided by the two PMI indicators, there were no clear arguments to assume that the gap would close as a result of negative confidence spillovers running from manufacturing to services. For instance, an analysis by Buti et al. (2019) using the European Commission's survey indicators for manufacturing and services finds no lead-lag relationship between these two indicators. Similarly, when calculating the statistical correlation between the euro area PMI indicators in manufacturing and services, we found it was highest for the coincident PMI indicators, i.e. when no lags or leads were assumed.

On the side of hard data, the right-hand side of chart 14 shows the value added in both industries expressed as a quarterly volume index that equalled 100 in 1999. Since then, developments in value added in these two industries were quite similar up to the great recession, when the manufacturing industry was hit to a far greater extent. The industrial recovery in the following years was quite hesitant, with another fallback in 2012-2013, and the manufacturing industry only managed to catch up with services, in terms of cumulative generated value added, by 2017.

Chart 14

A certain degree of divergence between the manufacturing and services industry is not uncommon



Sources: Eurostat, Markit, OECD.

<sup>1</sup> Difference between the euro area PMI in the manufacturing industry and services.

Obviously, the manufacturing and services industry are not completely independent. Businesses active in market services such as transport; information technology and service activities; professional, scientific and technical services; and some administrative and support services may depend on demand coming from manufacturing (Forsells *et al.*, 2019). However, the share of interdependence between the industries remains rather small. According to calculations using the TiVA<sup>1</sup> database, only about 7.5% of the overall euro area's value added is thought to be generated by services provided to the manufacturing industry.

All in all, this section suggests that the initial evidence for direct or confidence spillovers from the manufacturing to the services industry is limited. Nevertheless, at the start of 2020, the relative resilience of the domestically oriented part of the euro area economy was strongly conditional on the ongoing solid performance of the labour market.

## 4.2 Recent events

In the early-2020 observations for the euro area PMI indicators, the manufacturing index seemed to be carefully bottoming out and was moving in the direction of the 50 threshold that would mark growth again. However, as of mid-February, the Covid-19 virus that had initially started in China also spread to Europe and the effect of this on euro area business confidence was reflected for the first time in the PMI reading for March as the

<sup>1</sup> The TiVA (Trade in Value Added) database provides data on international trade, supply chains, component sourcing and global economic integration, using a methodology designed by the OECD and the WTO.

composite index fell to unprecedented lows. Contrary to what had been observed in 2018-2019, the bulk of the pessimism now seems to stem from respondents in the services industry. This is probably the result of the extraordinary measures undertaken by many European countries in order to limit the spread of the virus, which are largely focusing on customer-oriented services. In Belgium, for example, the lockdown ordered by the public authorities as of Wednesday 18 March involves the mandatory closure of restaurants, cafés and other non-essential shops. Moreover, the pandemic is also likely to have an important and possibly long-lasting effect on businesses providing leisure-based activities, as well as those active in the travel industry. Meanwhile, in manufacturing, the PMI index has also fallen back, but less strongly than for services, most likely because a larger share of them were recognised as essential businesses and were allowed to continue operating, as is the case in the food and drinks, pharmaceuticals, chemicals and plastics sectors.

## Conclusion

In the course of 2018 and 2019, the global manufacturing industry struggled, as reflected by confidence indicators as well as by hard data such as industrial production or value added generated by manufacturing. Several international headwinds, such as mounting trade restrictions, heightened uncertainty and the rebalancing of the Chinese economy, were at play and had an impact on international trade flows. With trade consisting mostly of goods, rather than services, the global manufacturing industry was hit more severely than the services industry. Moreover, the euro area manufacturing industry, which is strongly export-oriented, suffered most from the overall slowdown in global trade growth. On top of that, it had to deal with some idiosyncratic factors, as the introduction of new vehicle emission tests as of September 2018 disrupted European car production and sales.

Focusing more specifically on Belgium, it seems that the manufacturing industry was relatively more resilient than that of the euro area as a whole, as its value added barely slowed at all. On the one hand, this performance reflects a more favourable (less cyclical) composition effect, as specific industries such as pharmaceuticals or food and drinks make up a relatively larger share of the overall manufacturing industry. On the other hand, these specific industries also managed to outperform their counterparts in neighbouring countries and the euro area.

When the analysis presented in this article was first conducted, there was still a notable divergence between the euro area manufacturing and services industry, to the advantage of the latter. As described earlier, this could be attributed to the nature of the shock (i.e. trade), as well as the healthy labour market, supporting domestic spending. The outbreak of the Covid-19 pandemic within the euro area as of mid-February 2020 has put an end to this divergence as the containment measures issued by most governments seem to be affecting services more than the manufacturing industry.

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# Drivers of Labour Force Participation in Belgium

K. Buysse

Y. Saks

## Introduction

Belgium is a developed economy where economic growth is based on a relatively small number of highly-productive people. Yet, productivity gains are stagnating while the dependency ratio between the number of persons of non-working age and the working-age population continues to rise.

Raising the activity rate among the working-age population would enable the economy to enhance its growth potential, ease pressure on public finances and thus improve the sustainability of the social security system. And lastly, wider labour market participation is also consistent with the notion of fairness as it ensures better social integration and helps tackle poverty by giving everybody an opportunity to contribute to general well-being, each according to their abilities.

This article is based on the High Council for Employment's 2019 report <sup>1</sup> to which the authors have contributed. The first section gives some stylised facts on the activity rate in Belgium and the Regions. We then concentrate on the 25- to 54-year-old group. The second section examines the drivers of the activity rate using individual data from the labour force surveys <sup>2</sup>. The third part quantifies the labour reserve in Belgium and its Regions. The last part of the article draws some conclusions.

<sup>1</sup> High Council for Employment (2020), *Meer actieven voor een welvarende en inclusieve economie*, Brussels, January.

<sup>2</sup> Results presented in this article are based on microdata from the EU Labour Force Survey. We wish to thank Statbel and Eurostat for the provision of the data.

## 1. Stylised facts on the activity rate in Belgium and the Regions

The activity rate is the share of active people (i.e. those in work or job-seekers) in the population of working age. In all countries surveyed, the changes in the activity rate over the lifecycle display a similar profile: it rises rapidly to begin with, up to the age of 30 years, reaches its peak among people aged between 30 and 50 years, before falling back, with a sharp decline at age 60 or 65.

In Belgium, the activity rate for almost all age groups is below the corresponding average rate for the three neighbouring countries or the rates in Denmark and Sweden. The above mentioned profile by age category can be observed in the three Regions as well. The activity rate in Flanders compares favourably to the average for the three neighbouring countries, especially for the population aged 25 to 54 years. However, for these same age categories, Brussels and Wallonia display relatively low activity rates, 5 to 10 percentage points below the averages in neighbouring countries and the rates recorded in Flanders. For example, the gap in labour market participation between Flanders and Brussels is as large as 12 points among the 25 to 29-year-olds.

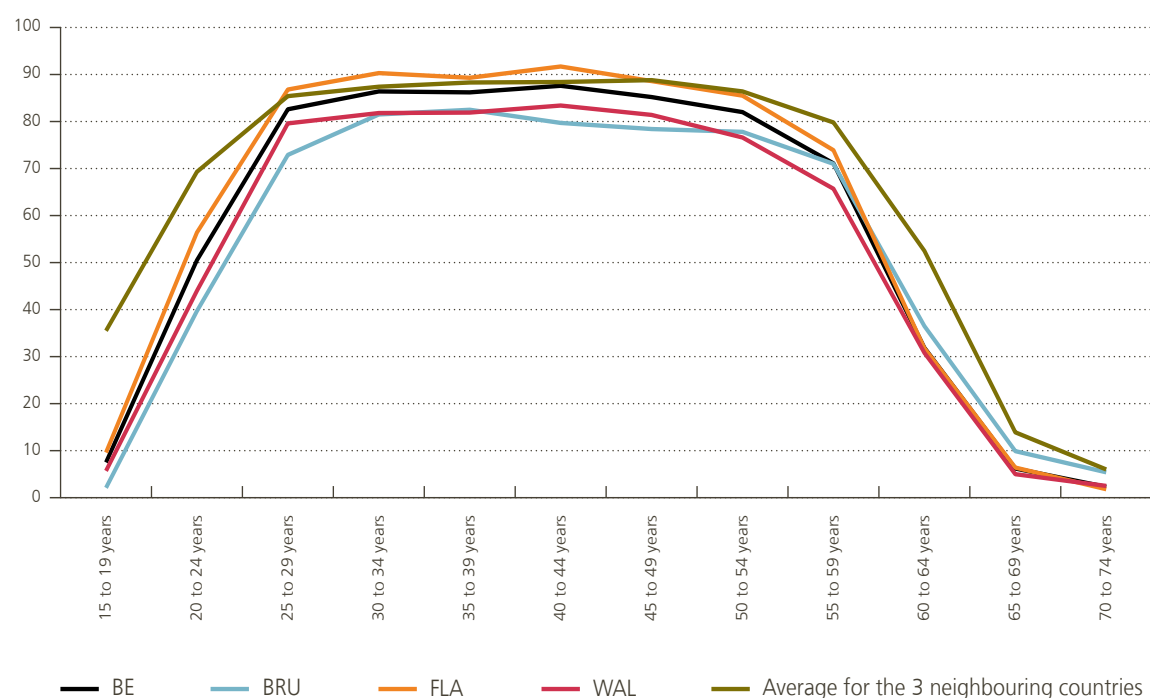
By contrast, the activity rate in all the Regions is considerably lower than in the neighbouring countries, both for young people (15-24) and for those over 55. The peak in the activity rate is shorter in Belgium: activity starts to tail off from the age of 45 years onwards, earlier than in the neighbouring countries.



Chart 1

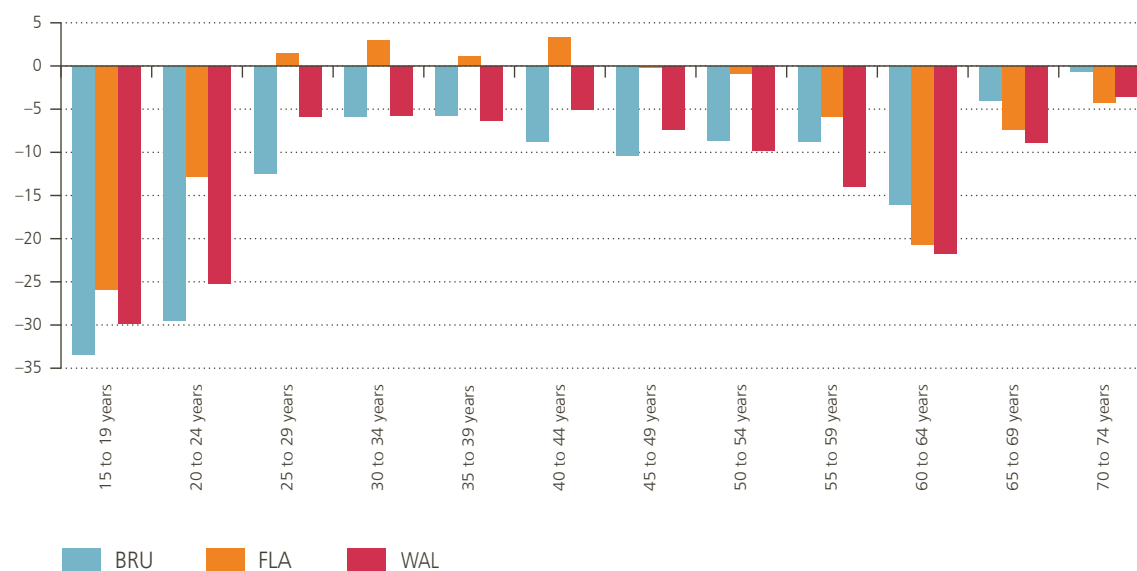
## Labour force participation by age and region

(in % of the corresponding age group, 2018)



## Deviation from the average for the three neighbouring countries

(percentage points)



Sources: Eurostat, Statbel.

Over the last two decades, the activity rate among the population aged 15 to 64 years has risen in almost all the EU15 countries. With an increase of 4 percentage points since 1999, Belgium has followed this upward trend. This has been largely translated into a rise in employment. The gap between the three Regions has nevertheless widened. While the activity rate in Flanders rose by 6.2 percentage points between 1999 and 2018, it has remained virtually unchanged at a low level in the Brussels-Capital Region and has grown only modestly in Wallonia, to the tune of 1.5 percentage points.

The evolution of the activity rate over time differs between age groups. The labour market participation rate among people older than 55 has displayed a sharp increase everywhere, including in Belgium. However, Belgium has always had some catching up to do within this age group. On the other hand, a decline of several percentage points can be observed in the participation rate for young people aged between 15 and 24 years, while the activity rate for the population aged 25 to 54 years only registered a slight increase of 2.5 points between 1999 and 2018.

Given that this article, like most publications, calculates the activity rate as a ratio of the number of people in work or unemployed to the total population in the same age group, it is important to note that the prevalence of part-time work biases any comparison. In fact, its incidence differs from one country to another. Even within the confines of Belgium itself, part-time work is relatively less frequent in Brussels (one in every five workers works part-time there), while in Flanders or Wallonia, the proportion is about one in every four. This finding is only relevant for female employment, as part-time work among men is still fairly marginal in the three Regions.

Large differences in the activity rate between age categories, in conjunction with the working-age population getting older, illustrates just how important it is to raise activity rates. In fact, the demographic peak currently falls within the 50-54 age group at both national level and in Flanders and, to a lesser extent, in Wallonia. Over a 10-year horizon, with no change of policy, the gradual departure of the baby-boomers will tend to push down the average activity rate.

## **2. Determinants of prime-age labour force participation**

The slight decline in labour force participation among young people over the last twenty years can notably be explained by the longer time spent in education nowadays, and this is not specific to Belgium. The differences with countries that have a high activity rate among 15- to 24-year-olds (the Netherlands, Denmark, Sweden, Germany, etc.) are simply due to the fact that the combination of higher education and work is less common in Belgium (High Council for Employment, 2020).

At the other end of the age spectrum, the activity rate among 55- to 64-year-olds has risen significantly, thanks to the regulatory changes tightening the access to end-of-career arrangements (statutory pension, early retirement schemes and similar measures, etc.). The average effective age of retirement in Belgium remains nevertheless one of the lowest among the European countries: in 2018, according to OECD estimates, it was 61.6 years for men and 60.5 years for women.

### **2.1 Drivers of prime-age labour force participation**

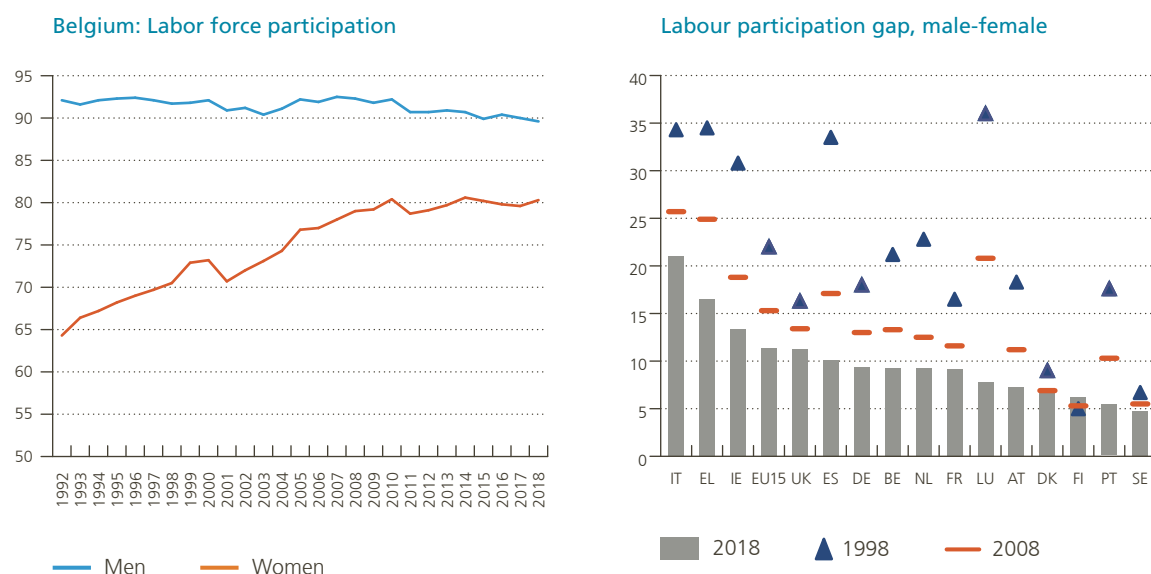
The activity rate is very high among the population aged 25 to 54 years (prime-age group): it reaches almost 90 % for men and just over 80 % for women. Even within this age segment, however, there are wide discrepancies among individuals. Gender, level of education, household situation, age, etc. all influence the decision to participate in the labour market.

The activity rate for 25- to 54-year-olds has grown almost constantly since the 1990s, but this growth is entirely attributable to the increase in the female labour force participation. Difference in the level of participation between men and women persist, even though the gap has tended to narrow in the last few decades. This observation applies to all European countries.

## Chart 2

### Female labour force participation

(in %, ages 25 to 54, percentage points)



Sources: Eurostat, Statbel.

The decision to join the labour market can be understood by applying the framework on the allocation of time within households, developed by Becker (1965). According to this framework, each partner chooses to work either in the household or on the labour market (see Christiansen et al. (2016)). All factors that have an effect on the expected return of household activities relative to what could be earned in the labour market influence the decision to work. Among these, there are the individual characteristics (age, level of education, marital status, number of children, etc.), job opportunities (business cycle, etc.), and also the economic policies in place such as the taxation of labour income, family policies (family allowances, childcare facilities), (in)activity support systems, etc.

One of the driving forces of the female activity rate is the increase in the average level of education: since the beginning of the 2000s, the share of women with a tertiary education degree has exceeded that of their male counterparts in Belgium (in 2018, among the 25 to 54-year-olds, 46 % of all women had a tertiary education degree compared with 36 % of men) and this investment in human capital has encouraged them to enter the labour market. Moreover, the wage gap between men and women has also tended to diminish over time. All other things equal, women continue to be paid less than men, but in Belgium this wage gap (6 %) is small compared to the European average (16 %).

Generally speaking, technological developments, reducing the amount of time devoted to domestic tasks, improved health standards, etc., have also supported higher labour force participation, especially among women. Other factors are related to the structure of the economy and demand for female workers: the expansion of

the services sector, which offers more part-time jobs and numerous activities still largely carried out by women, encourage female labour market participation.

The change in attitudes towards working women also influences their activity rate. Attitudes towards the role of women in society vary over time and between countries and cultures. Under this interpretation, a less conservative gender model would go hand in hand with more female jobs and a more egalitarian vision on the division of tasks within the household. Social standards are not set in stone: if women had a bigger weight in the labour force and/or were better represented in positions of power, gender-related stereotypes could be further eradicated, which would make it easier for more women to work in future generations.

We estimate the probability of an individual aged between 25 and 54 being active based on variables available in the micro-data from the labour force surveys. Here, the focus is on the extensive margin, namely the decision to participate in the labour market or not. We do not model the supply of labour in terms of number of hours. Nor do we take account of certain people who may decide to remain inactive because there is no corresponding demand on the labour market for the number of hours they can offer.

The econometric results are presented in the table below. We use a representative sample of the population aged between 25 and 54 years. This sample has been split into two groups (men and women) and the estimates have been made independently for each gender.

**Table 1**

**Probability of participating in the labour force**

(according to labour force survey data, for 25 to 54-year olds; 2018)

	Men			Women		
	Coefficient	Significance <sup>2</sup>	Probability <sup>3</sup>	Coefficient	Significance <sup>2</sup>	Probability <sup>3</sup>
Reference person <sup>1</sup>	0.5455		89	-1.4529	**	86
Age	0.1229	**		0.1973	***	
Age squared	-0.0017	***		-0.00264	***	
Low-educated	-1.1378	***	73	-0.9343	***	71
High-educated	0.5695	***	94	1.0403	***	95
Brussels	1.1272	***	86	0.2853		77
Wallonia	0.2141		83	-0.0689		79
Partner present in household	1.3994	***	97	0.4036	***	90
Single parent	0.5844		94	0.5232	***	91
Children under 6 years	-0.0535		88	-0.3452	***	76
Children between 6 and 14 years	-0.0379		89	-0.1228	***	83
Children between 15 and 24 years	-0.0663		88	-0.0913	**	84
Non-EU foreign origin	-0.4162	***	85	-0.9637	***	70
Local unemployment rate (Y-1)	-0.1364	***		-0.0818	***	86

Source: Eurostat.

1 Reference: individual age 42 years, medium-educated, living alone, residence in Flanders, born in an EU country (in most cases, in Belgium). The local unemployment rate for the reference is set at 4.4 %, for both men and women.

2 \*\*\*, \*\*, and \* indicate statistical significance at 1, 5, and 10 %, respectively.

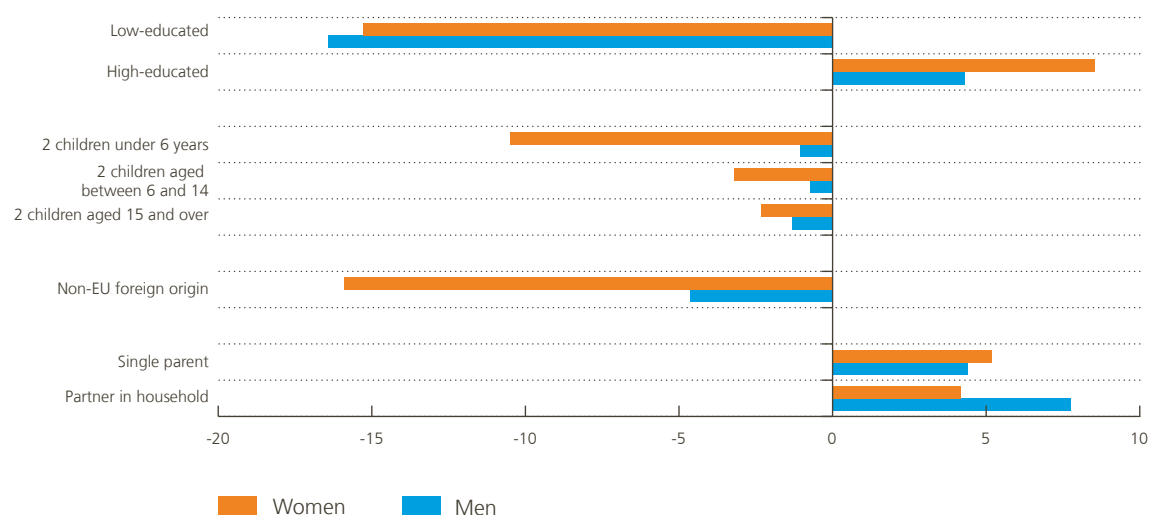
3 Probability of labour force participation in %. For dependant children, the assumptions used in the table are respectively: two children of less than 6 years and no other children; two children aged 6 to 14 years and no other children; two children aged 15 years or more and no other children.

We have modelled the probability of being active on the labour market (that is, being in work or unemployed as defined by the ILO). As we use mainly qualitative variables among our explanatory variables (low/medium/high level of education, Flanders/Wallonia/Brussels, etc.), the constant in the model corresponds to the reference person. Here, the reference is a man (or a woman for the model estimated on the basis of the female sample), medium-educated, living alone, with residence in Flanders, born in an EU country (in most cases, in Belgium). This constant can easily be transformed into a probability of being active. To calculate this probability, we also have to fix the other variables of the model: we set the age of the representative person at 42 and the local unemployment rate at the level recorded in Flanders in 2017 (4.4 %). Given these assumptions, the probability of the reference person being active is 89 % for men (and 86 % for women). The table also gives the probabilities for some other *cases ceteris paribus* compared to the reference person. For example, for people with low education (a lower secondary school qualification, or less) with otherwise the same characteristics, the probability of being active is no more than 73 % for a man (71 % for a woman). The effect of the different explanatory variables is presented in the graph below.

Chart 3

### Changes in the probability of labour force participation by characteristic

(percentage points compared with the reference<sup>1</sup>, 2018)



Source: Eurostat.

1 Reference: individual age 42 years, medium-educated, living alone, with residence in Flanders, born in an EU country (in most cases, in Belgium). The local unemployment rate for the reference is set at 4.4 %, for both men and women.

### ***Educational level effect***

The educational level is one of the principal determinants of the decision to work. The probability of being active drops by more than 15 percentage points for people with no more than a lower secondary degree (low-educated) compared with those who have obtained an upper secondary degree as their highest degree (medium-educated). The gap between those who have obtained a higher education degree (high-educated) and the medium-educated people is 4 points for men and more than double for women (9 points).

### ***Age effect***

The probability of being active increases with age in our sample population of 25- to 54-year-olds. According to our estimate, the activity rate appears to reach its maximum before the age of 40 years, both for men and women, and to gradually decline after that.

### ***Dependency effect***

Among the significant coefficients, the burden of children displays the largest difference between men and women. For women, having children below 6 years old reduces the probability of labour force participation very significantly. For instance, if the household has two children in this age category, the gap compared to a woman without dependent children is 10 points. As expected, the effect is smaller for children aged between 6 and 14 years (3 points) and even less when the children are older (2 points). All these effects are statistically significant. In the case of men, while the family dependency effect seems to have a slightly negative impact (of around 1 point), none of these effects is statistically different from zero. In other words, the upbringing of children within the household apparently rests much more on women, despite societal change, and more specifically, the availability of childcare facilities in our country.

### ***Household type effect***

According to theory, living with a partner is likely to have a positive effect for men and possibly negative for women. With the 2018 survey data for Belgium and the specification used, the presence of a partner in the household has a positive effect on the decision to be active on the labour market both for men and women, with a stronger effect for men.

The single-parent category is also associated here with a higher activity rate compared to an individual living alone. This effect is only significant for women. Intuitively, one would actually expect a negative influence from such a family set-up on the decision to work, if the person can benefit from financial support other than labour income.

### ***Non-European foreign origin effect***

The survey covers the person's country of birth. This dummy variable is equal to 1 when the country of birth was outside the EU28. The foreign origin effect is significantly negative for the decision to participate in the labour market. This effect is very pronounced among women, on the same scale as being low educated. Because we use an additive model, the estimated effects are independent of each other. Low-educated women of foreign origin with family responsibilities cumulate disadvantages and consequently have a much lower probability of being active.

### ***Household income and region of residence effect***

The labour force survey does not contain any information on non-labour household income. We have therefore used the local unemployment rate as a proxy to take it into account indirectly. This variable gives some idea of job (non-) opportunities, which is an important variable affecting the decision to participate in the labour market. To mitigate endogeneity problems, this variable is lagged by one year (in other words, we use the local unemployment rate of 2017, while the rest of our data refer to the situation in 2018).

The local unemployment rate is a gauge of the difficulty in finding job opportunities at the local level and has a very significant effect. The higher the local unemployment rate, the less people are inclined to enter the labour market. Here, the region of residence effect is conditional on this local unemployment rate, as the specification controls for both effects. Since Wallonia and Brussels suffer from higher unemployment than Flanders, a large chunk of the region effects is picked up by this “local unemployment rate” variable. According to the estimates, the coefficients for Brussels and for Wallonia are not significantly different from that for Flanders (which is the reference Region).

In an alternative specification where the local unemployment rate is not included, the age, education level, family status, child dependency and country of birth effects are still quite close to the findings in the baseline presented here. The regional dummies for Brussels and Wallonia become negative and significant.

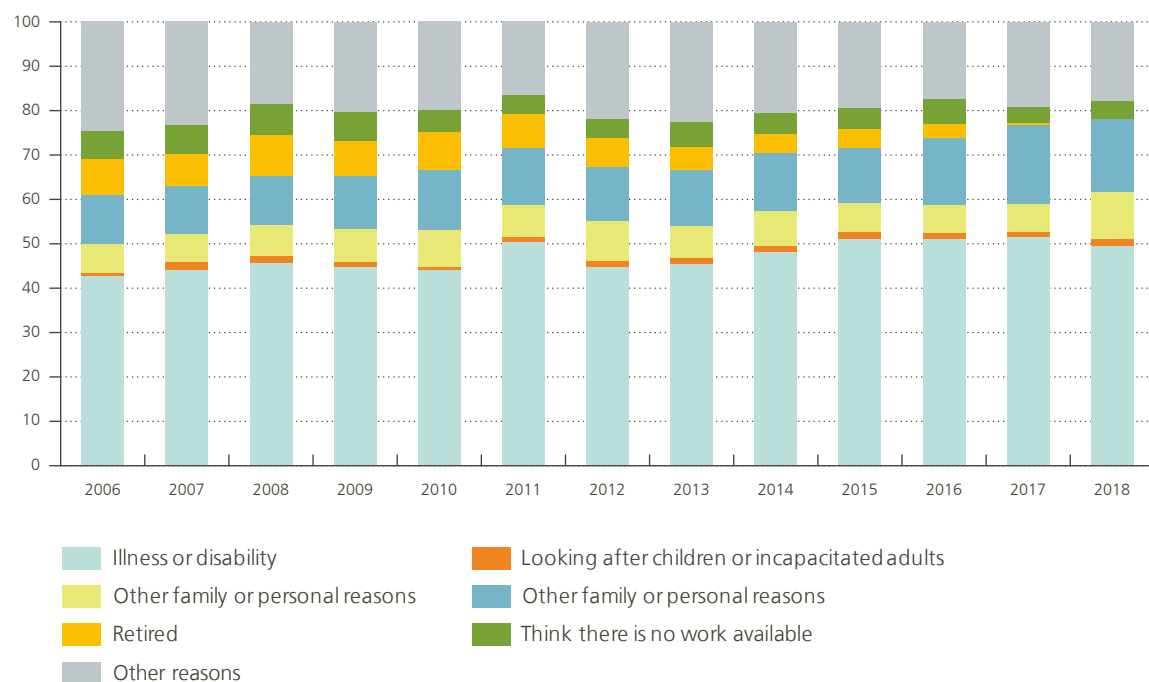
## 2.2 Reasons prime-aged people do not participate in the labour force

People who do not enter the labour market often have different grounds for remaining inactive. In the labour force surveys, people are notably questioned about the reasons why they are not looking for a job. The reasons given are quite different according to gender and age group. For the group of people aged 25 to 54 who declare they are not looking for work, almost one in every two men and two in every three women cite illness or a handicap as a reason for inactivity. This may be due to primary incapacity (short-term sick leave), long-term illness or disability. Family responsibilities are the motivation for one in every five women, while such grounds account for roughly 2 % of the replies for men. Women not looking for a job also often cite family or personal reasons (more than 20 %), compared with 10 % of men.

Chart 4

### Changes over time of the reasons given for not seeking employment

(inactive population aged between 25 and 54: men)



Source: Eurostat.

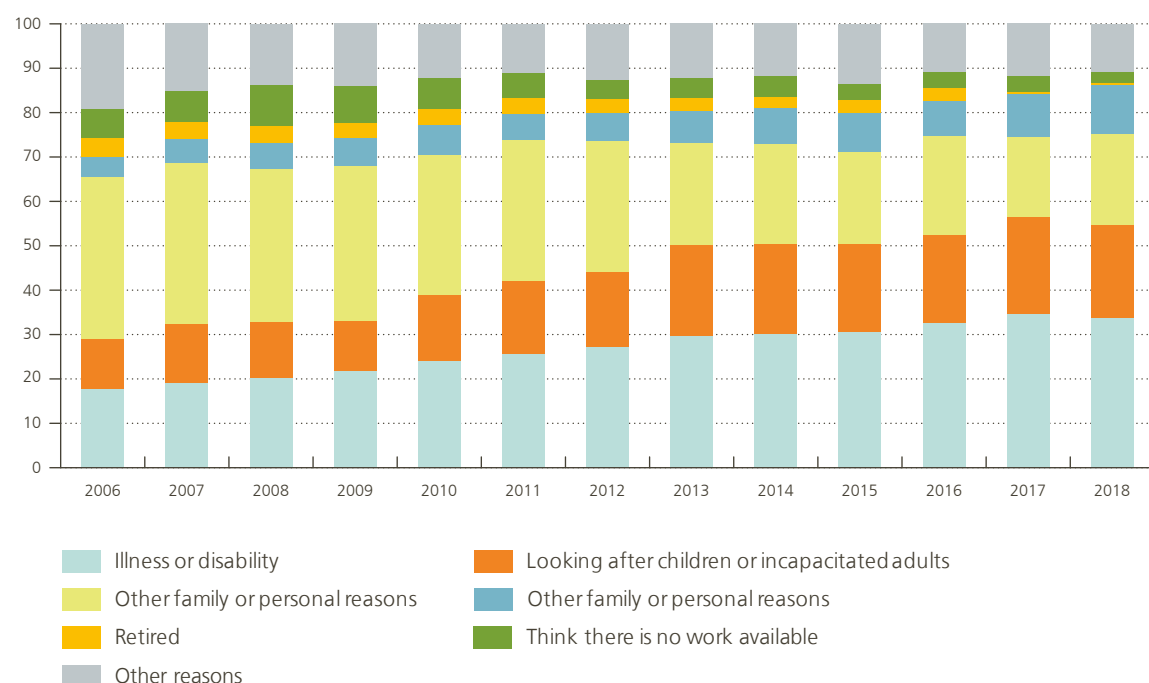
For men aged between 25 and 54 who declare they are not looking for a job, there is a drop in the relative shares of retirement (–6.9 points between 2006 and 2018) and other reasons (which include early retirement). The fraction of men who feel there is no suitable work available for them (discouraged workers) is slightly down. The fluctuations in this category are partly explained by the economic cycle (a net increase from the great recession of 2008, decline from 2012 on).

The share of men aged 25 to 54 years who are not looking for a job because they are in higher education or training has grown (+ 5 points), as have family responsibilities and other family or personal grounds (+ 4.9 points for the two categories together). A rise in the number of people citing illness or disability as a reason has also been observed (up by almost 7 points between 2006 and 2018).

**Chart 5**

### Changes over time of the reasons given for not seeking employment

(inactive population aged between 25 and 54: women)



Source: Eurostat.

For the group of women in the same age bracket who say they are not looking for a job, there is also a decline in the share of retirement (–4 points between 2006 and 2018) and other reasons (including early retirement). The sum of the reasons related to looking after children or adults and other family or personal reasons also declines in relative importance (–6.3 points for the two categories together, other family or personal reasons have fallen, while impediments due to care for children or incapacitated adults have grown). The number of discouraged job-seekers among these women is also down, by 4.2 points.

On the other hand, a steady rise in the number of inactive women participating in higher education or training can be observed (+ 5 points), as well as a very sharp increase in “illness or disability” grounds (+ 16 points between 2006 and 2018).



### 3. How big is the labour reserve in Belgium and the three Regions?

The unemployment rate is traditionally the most widely used yardstick for measuring the under-utilisation of labour. But the growing variety of forms of employment, on the one hand, and the strict definition of unemployment on the other hand imply that an indicator of the available labour reserve can also be constructed on the basis of the labour force survey (LFS). The labour reserve is a wider concept than unemployment: alongside the unemployed, it comprises part-time workers who want to work more hours than they do at the moment, as well as non-active persons who are either willing to work but not immediately available or not actively seeking a job. Such an analysis is primarily relevant at a time when the unemployment rate is at an all-time low, but there is still some margin for raising the activity rate, even among the 25- to 54-year-olds. In the following paragraphs, additional indicators to unemployment are calculated for Belgium and the three Regions in 2018.

#### 3.1 Part-time work and under-employment in this group

According to the definition of employment in the LFS, a person is considered as working when he or she has worked at least one hour in paid employment during the reference week. However, employment does not imply that the labour potential among working people is fully utilised, as it is possible that some part-time or full-time workers in the reference week have worked fewer hours than they are prepared to work. From the perspective of high-quality work, the definition focuses on under-employment among part-time workers who would willingly work more hours in their current job or in another job.

In the last few decades, part-time work has gained importance in many countries, including Belgium. Since 2011, this trend has somewhat levelled off in Belgium and the EU15. In 2018, this work arrangement was a little more common in Belgium than on average in the EU15, (25 % compared with 22.5 % in 2018) or France (18 %), but less widespread than in Germany (27 %) and especially the Netherlands (50 %) which is an outlier for this indicator.

Moreover, the Flemish and the Walloons are more often likely to work part-time than Brussels-based people (26 % and 24 % against 21 %). The possibility of part-time work gives the worker advantages, such as a better work-family-life balance, a lower entry barrier to the labour market for some groups at risk, and more flexibility to better spread the number of hours worked over a longer career. In Belgium, there are also various schemes that encourage part-time work – time credit, career breaks and reduced working hours for particular circumstances – and these schemes are highly popular among employees who are approaching the end of their career and especially among women (Nautet and Piton, 2019).

In line with the increase in part-time work, the variety in part-time work arrangements is also growing, ranging from small jobs (10 or fewer hours in paid work per week) to the more conventional 50 %, 60 %, 80 % and 95 % arrangements (Eurofound, 2017). Companies, notably in the services sector, are demanding wider diversity in working times. Moreover, greater flexibility to adjust the volume of labour through working hours may also be useful for firms operating in cyclically sensitive sectors. However, greater flexibility also poses a risk in that a growing number of part-time workers need to do with fewer working hours per week than they would prefer. This is a case of under-employment.

The LFS makes it possible to estimate the scale of under-employment. All those who declare they work part-time and want to work more hours, regardless of the way in which they would like to achieve this<sup>1</sup>, are regarded as under-employed part-time workers. This concept differs from involuntary part-time employment seeing that not every part-timer who wants to do more hours declares that they are willing to work full-time.

<sup>1</sup> Possible ways in which to work more hours are more hours in the current job, an extra job, another post with more hours or no specific preference.

In 2018, 132 000 part-time workers aged between 25 and 54 years old replied that they would like to work more hours. This corresponds to 3.6 % of employment in the age category in question, lower than in the Netherlands (4 %), the average for EU15 countries (4.1 %) and France (5.2 %) but higher than in Germany (3.1 %). The corresponding under-employment rates for the three Regions are 2.8 %, 4.5 % and 6.4 % in respectively Flanders, Wallonia and Brussels. It is worth noting that the Region where part-time work is most common, namely Flanders, is also the Region with the lowest under-employment among part-time workers, and vice versa for Brussels.

Furthermore, in 2018, around two-thirds of part-time workers who wanted to do more hours were female. For about half of the women in this group, the most important reason is that they cannot find a full-time job or that the job they want to do is only offered on a part-time basis. Working part-time and shorter hours are actually the norm in a few services sectors with primarily “female” jobs, such as domestic services, catering, the arts, and administrative and support services. It is a fact that in the 25-54 age category, more than four out of every five part-time workers are women. Lastly, one in every four under-employed part-time workers have a temporary contract while this is the case for less than one in fifteen other part-time workers.

It is also interesting to know how many extra hours under-employed part-time workers want to work and how this effort would translate into extra jobs with average working time. The LFS makes it possible to calculate the usual number of hours worked per week, as well as the number of extra hours a surveyed person says they would like to work. A few studies (Eurofound, 2017; Bell and Blanchflower, 2018) have already done this calculation for EU Member States. We apply the same methodology to Belgium and the three Regions, for the year 2018 and for the 25- to 54-year-old age category. The usual number of hours per week<sup>1</sup> that the average Belgian employee works is 37. For the group of 132 000 Belgians who work part-time and would be happy to work more, the average usual working week counts 22.7 hours, compared with a desired average working week<sup>2</sup> of 35.4 hours. This implies that, on average, they want to work an extra 12.7 hours a week, which is around one-third of the average working time of a Belgian employee in a normal week. The labour supply corresponding to this under-utilisation of labour is equivalent to 45 000 jobs.

The same estimate can also be established for each of the three Regions. The average number of extra hours sought by under-employed part-time worker is the highest in Brussels (14.4 hours a week), followed by Wallonia (12.7 hours a week), and the lowest in Flanders (11.8 hours a week). These differences between the three Regions are largely attributable to other preferences for the number of target hours<sup>3</sup>. The usual average working time in the three Regions is close to the national average of 37 hours a week. As a result, labour supply in Brussels, Flanders and Wallonia may be enhanced with the equivalent of respectively 9 000, 19 000 and 16 000 jobs when all part-time workers are optimally employed (see table 2).

### 3.2 Inactive people who are willing to work, and either seeking work or available

Besides the group of unemployed and part-time workers who want to work more, there is also limited potential for mobilising people among the inactive for the labour market. A small minority of them declare that they are willing to work, even though they are not part of the unemployed. The definition of unemployment used in the LFS is in fact fairly strict. To be classified as unemployed, a person has to meet various criteria, namely: have had no work during the reference week, be available for a job within the next two weeks and have been actively seeking work over the last four weeks. People who meet only one or two of the listed criteria are considered as

1 Answer to the question how many hours are normally worked. This figure was capped at 60 in the calculation of the average (= maximum among employees) and no account was taken of zero values.

2 Answer to the question how many hours a person would preferably like to work. The question is only asked when a person declares he/she wants to work more. The number of hours preferred was capped at 40 in the calculation, the equivalent of a full-time job.

3 The number of hours preferred per under-employed part-time worker comes to respectively 37, 34.5 and 35.5 in Brussels, Flanders and Wallonia. The number of hours preferred was once again capped at 40 in the calculation.

inactive, even if some show similarities with the unemployed. They are included in the wider definition of the labour reserve. Eurostat distinguishes two categories here.

The first category is made up of job-seekers who are not immediately available for work. The main reasons for not being able to start work immediately (within the next two weeks) are personal and family circumstances (including maternity leave), illness and the completion of studies. Also included in this group are people who already found work but will start their job at a later time. These are mostly people who are on long-term leave (more than three months) from work because they are taking a career break or leave on time credit. Lastly, there are also those who say they are actively seeking work but have taken no further initiatives in the reference month. All in all, this group is small (46 000 people) and is characterised by a strong connection with the labour market and fairly easy transition to employment (or unemployment) once available (Eurostat, 2018).

The second category consists of inactive people who declare that they are prepared to work and available but are not actively seeking work. This is a bigger group (69 000 people) than the former, but the connection with the labour market is weaker here, as 30 % of the people in this group have absolutely no work experience. Furthermore, this group shares several background characteristics with the long-term unemployed and other inactive people, such as low-skilled, foreign-origin, women looking after children or incapacitated adults (Vansteenkiste et al., 2019). Lastly, illness and disability are the most common reasons for inactivity among those aged 45 and over (around 40 % of all cases). For this age group, inactivity appears to be very persistent. In the case of salaried employees who become ill, there have been new administrative measures since 2017 to facilitate their re-integration trajectory.

Both groups together make up the potential labour force reserve among the inactive, accounting for 17 % of the total inactive population aged between 25 and 54, compared with an average of 21.7 % in the EU15. By contrast, the share of the inactive workforce in this age category in Belgium closely reflects the EU15 average (15 % compared with 14.1 %). The lower willingness to work among Belgian inactive people of prime age is attributable to the existence of potentially high entry barriers to the labour market. These entry barriers may take the form of insufficient preparation for the labour market, limited availability, weak financial incentives or a combination of these. The lack of relevant labour market skills as a result of short schooling in combination with little or no work experience is a key factor in Belgium (OECD, 2019). This entry barrier is possibly combined with limited availability for health reasons or a shortage of affordable childcare facilities, and weak financial incentives when an inactive person has access to a replacement income or other sources of income.

### 3.3 The labour force reserve in Belgium and the three Regions in 2018

As explained in the preceding paragraphs, the potential labour supply is not limited to the unemployed, but also lies in a reserve of employable workforces among the employed and the inactive. This additional labour reserve – defined as the sum of under-employed part-time workers (expressed in equivalents of jobs with average working hours) and inactive people willing to work who are either looking for a job but not immediately available, or are available for work but not actively seeking– amount to respectively 32 000, 68 000, 59 000 and 160 000 people in Brussels, Flanders, Wallonia and Belgium.

Table 2

**Unemployment and the additional labour reserve in Belgium and the three Regions**

(in thousands of people, population aged between 25 and 54; 2018)

	Brussels	Flanders	Wallonia	Belgium
Unemployed	54	62	89	205
Additional labour reserve	32	68	59	160
of which:				
Under-employed part-time workers <sup>1</sup>	9	19	16	45
Available, not actively seeking work	13	31	25	69
Job-seekers, not available	10	18	18	46
<b>Total labour reserve</b>	<b>86</b>	<b>130</b>	<b>148</b>	<b>366</b>
<i>p.m. Number of working persons</i>	<i>376</i>	<i>2 204</i>	<i>1 053</i>	<i>3 632</i>
<i>Number of inactive persons</i>	<i>116</i>	<i>291</i>	<i>273</i>	<i>680</i>
<i>Population aged between 25 and 54</i>	<i>546</i>	<i>2 557</i>	<i>1 415</i>	<i>4 517</i>

Source: Statbel.

1 Expressed in equivalents of jobs with average working hours.

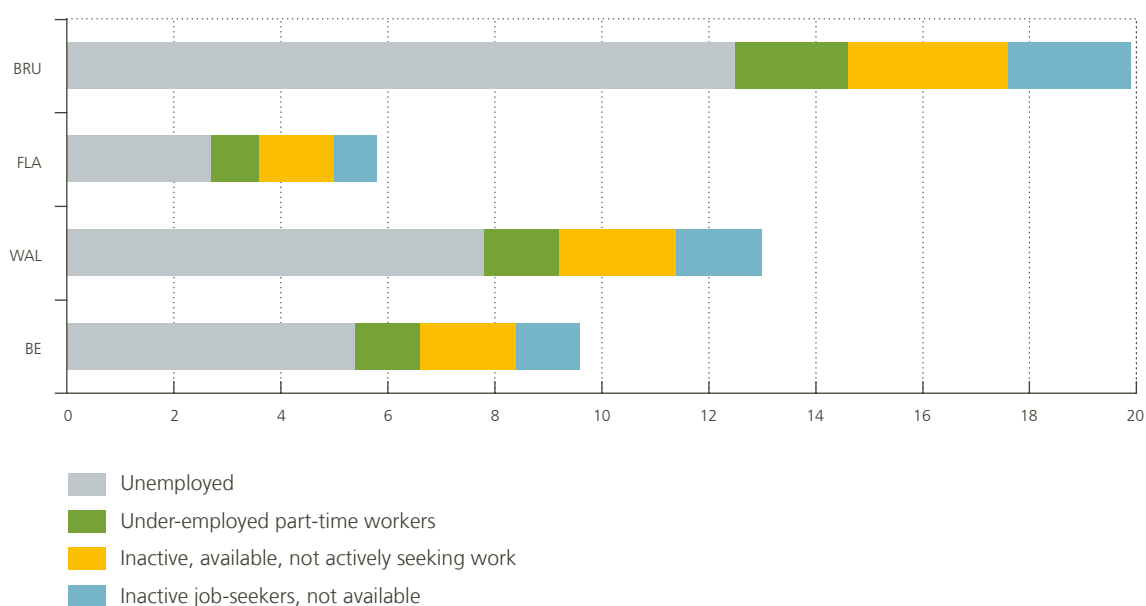
Only in Flanders does the number of people in the additional labour reserve exceed the number of unemployed. In the recent period of strong job creation, workers have in the first place been recruited from the pool of unemployed and only after that from the group of inactive people further removed from the labour market who are no longer looking for a job but are actually available for work.

If all components of the labour reserve are expressed in proportion to the corresponding active population, we obtain the labour reserve rate for Belgium and the three Regions. This labour reserve rate should be interpreted as a wider concept than the unemployment rate and gives a more nuanced perspective on the extent of the labour market tightness.

Chart 6

### Labour reserve rate in Belgium and the Regions

(population aged between 25 and 54, in % of the active population, 2018)



Source: Statbel, calculations by Statbel.

Using the labour reserve rate instead of the unemployment rate accentuates the differences between the three regional labour markets even further. The labour reserve rate varies between 5.8% in Flanders and 20% in Brussels with a middle-of-the-road value of 13% in Wallonia, compared with an unemployment rate of respectively 2.7%, 12.5% and 7.8%. In fact, a higher unemployment rate goes hand in hand with a higher value for each of the three additional indicators for unemployment.

In recent years, the Flemish labour market has become increasingly tighter. In early 2020 just before the outbreak of COVID-19, unemployment was running at an all-time low. Moreover, in the coming decade, population ageing will lead to a big outflow of workers who are currently over the age of 50. Policy makers are therefore facing a major challenge. In the first place, the additional labour reserve among the 25- to 54-year-olds can be used. This indicator is probably an underestimation of the full labour potential among inactive people as no account is taken of those people who could be employed in the future provided that the necessary support and incentives are put in place (students, people on an integration income, those with a disability, young (low-educated) housewives, often of foreign origin). Also, Flanders could draw on the much bigger labour reserves from Brussels and Wallonia, although, here too, practical experience has shown that the previously mentioned entry barriers in combination with insufficient language skills and interregional-mobility-related costs are not to be underestimated (Nautet, 2018). Finally, the young category (15-24-year-olds) and an extension of the careers among those over 55 can also provide a way out.

## 4. Conclusions

This article has shown that there is scope for raising the activity rate in Belgium and in each of the three Regions. For almost all age groups, the activity rate in Belgium is below the average for the three neighbouring countries. The widest gaps are found in the group aged 15 to 24 years and that aged 55 to 64. Flanders is the only Region where the activity rate of the population aged 25 to 54 years bears comparison with the three neighbouring countries. Lower activity rates in the younger age group in Belgium than in the reference countries is due to the fact that the combination of work and studies is less common. For the group aged 55 to 64, the situation has improved over the last twenty years, largely thanks to a rationalisation of end-of-career working arrangements and the adaptation of labour laws to the fact that people are coming on the labour market later on average, while life expectancy has risen continually. However, the average effective age of retirement in Belgium in 2018 was still one of the lowest among the European countries.

The determinants of the decision to participate in the labour market among 25- to 54-year-olds have been examined separately for men and for women. In both groups, the educational level is the main driving force. The probability of being active drops by more than 15 percentage points for people with no more than a lower secondary qualification (the low-educated) compared with those who have obtained an upper secondary school degree. The difference between people who have obtained a higher education diploma and the medium-educated is 4 points for men and reaches more than double for women (9 points). In the vast majority of cases, parenting duties are still borne by women. For these women, having children below 6 years reduces their probability of participating in the labour market dramatically. This effect tails off as the age of the children increases, but stays significantly negative for all ages. For men, on the other hand, effects related to family responsibilities are very limited. For them, the decision to join the labour market is not statistically affected by the presence of children in the household, not even young children. Lastly, being born in a country outside the EU contributes to reducing the activity rate. The negative impact is 5 percentage points for men and more than 15 points for women. Low-educated women, of non-EU foreign origin with dependants in the family consequently run a much higher risk of non-participation in the labour market. The ability to be active also depends on job opportunities at the local level. Both for men and women, the probability of being active declines when the regional unemployment rate is high.

The labour reserve is a concept that covers not just the unemployed, but also inactive people with a profile similar to job-seekers, namely inactive people who are looking for a job but not immediately available for the labour market and people who are willing to work and available, but not actively looking for a job. It also includes people with a part-time job, wishing to work more hours. The labour reserve is a particularly relevant concept when the unemployment rate is low, to get a better picture of the labour force that can be mobilised.

Among the 25- to 54-year-olds, there are 46 000 inactive people who are actively looking for a job (10 000 of which in Brussels and 18 000 in Flanders and in Wallonia apiece) and 69.000 available inactive workers who are not looking for a job (or respectively 13 000, 31 000 and 25 000 people in each of the three Regions). This latter group probably has a weaker link with the labour market, notably because they are older, have had short schooling, are ill or have a disability (Vansteenkiste et al., 2019). Lastly, 3.6 % of people working part-time say they want to work about 13 extra hours per week. The unused labour supply of these under-employed people aged 25 to 54 years corresponds to 9 000, 19 000 and 16 000 jobs respectively in Brussels, in Flanders and in Wallonia; that is, 45 000 extra jobs for the whole country. The gap in unemployment rates observed between the Regions is not reduced when looking at the broader concept of the labour reserve: the pools of unemployed, employable inactive people and part-time workers wanting to work more are all relatively more numerous in Brussels and in Wallonia than in Flanders. It therefore seems important for the Regions that Flanders can dip into the reserves of the others, even though the entry barriers (linguistic skills, mobility-related costs) should not be under-estimated.

The econometric results presented in the paper show that the decision to participate in the labour force also depends on local employment opportunities. For both men and women, the probability of being in the labour force decreases if the unemployment rate in the region is high. Measures taken to avoid an increase in unemployment, even in the context of a severe temporary shock like the Corona crisis, should also prevent a reduction in participation and thus limit long-term damages to the labour market.

Given the importance of education in explaining labour market participation, in 2020, the High Council for Employment will be focusing on job opportunities for the low-skilled.

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# Bank financing for SMEs from 2014 to 2019: effect of changes in the law on lending

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## Introduction

The Law of 21 December 2013, amended by the Law of 21 December 2017, aims to facilitate access to bank finance for small and medium-sized enterprises (SMEs). To that end, it comprises a range of provisions intended to correct any information asymmetries which could affect the commercial relationship between lenders and borrowers by specifying the transparency obligations incumbent on both parties. Thus, firms applying for credit have to supply sufficiently exhaustive data on their financial statements, among other things. For their part, lenders must make available to applicants standard documents corresponding to the various forms of credit which they offer<sup>1</sup>. In addition, a proposed credit agreement has to be accompanied by a brief information document setting out all the characteristics of the contract. The lender must also ascertain the most suitable type of credit, taking account of the firm's financial position at the time of conclusion of the contract and the purpose of the credit. These provisions aim in particular to stimulate competition between credit institutions by making it easier for firms to compare the various options available to them. In the event of a refusal to grant credit, the lender must inform the firm of the essential reasons for that refusal or the factors influencing the risk assessment, and that information must be transparent and comprehensible for the firm. The law also includes an article on the rules for fixing the prepayment penalty which the lender is entitled to demand from any borrowers who decide to repay their loan early. The loan agreement must explicitly mention the amount of the penalty. The latter is determined by a standardised procedure according to a method of calculation defined in a code of conduct, revised in 2018 following changes to the law and agreed between employers' organisations representing the interests of self-employed workers (the SNI) and SMEs (Unizo and the UCM), on the one hand, and Febelfin on the other. For loans for an initial sum of no more than € 2 million, the penalty must not exceed six months' interest. At the time, the financial sector had expressed certain reservations on this last provision, raising concerns of a relative increase in the interest rate on loans to SMEs.

The law also states that its own effects must be reviewed every two years. In that connection, the National Bank is asked to give a "preliminary opinion"<sup>2</sup>. The Royal Decree of 10 April 2016, which lays down the review procedures, also specifies that the Bank shall provide statistical data on the loans concerned by the law.

1 Since 2018, this requirement no longer applies to loans of less than € 25,000, provided they do not comprise a penalty clause and are not covered by collateral or guarantees.

2 An opinion is also requested from the FSMA, the financial dispute mediator OMBUDSFIN, and the organisations representing small businesses.

The aim of this article is to summarise and comment on the various data considered relevant for monitoring lending to SMEs by resident banks, namely data on the volume of such loans, the interest rates applied and the conditions for granting loans. However, the examination of these data is not sufficient in itself to determine whether structural effects emerged following the law's entry into force; it is therefore supplemented by an econometric analysis, which is summed up in the second part of the article. Finally, the conclusion discusses any effects of the law on the dynamics of lending to SMEs.

When this article was written, the data taken into account for the analysis were available up to the end of 2019 for some variables and up to February 2020 for others, i.e. before the eruption of the Covid-19 crisis. That crisis is liable to result in fundamental changes in the situation from the point of view of both credit institutions and firms. The conclusions drawn at the end of this study will therefore need to be reassessed in a few months' time. Meanwhile, we refer interested readers to the specific monitoring by the Bank conducts published on its website as part of the Observatory for Credit to Non-financial Corporations<sup>1</sup>.

## 1. Recent developments in business credit

### 1.1 Volume of bank loans

Lending by resident credit institutions to resident non-financial corporations is usually monitored via two statistical sources, namely the data obtained from bank balance sheets and those obtained from the Central Corporate Credit Register. In principle, the first of these two sources is exhaustive, but it has the disadvantage of only providing information at an aggregate level. This defect is overcome by the second source, which permits a breakdown of the stock of business loans according to the firms' size and their branch of activity. These statistics are compiled using separate collection methods and are based on different definitions<sup>2</sup>: naturally, that gives rise to some statistical variations. It should also be pointed out that the analysis concerns credit used by firms taken into account in the Central Credit Register<sup>3</sup> and focuses on non-financial corporations, thus excluding firms classified in the financial services branch<sup>4</sup>.

Nonetheless, these two sources<sup>5</sup> provide a picture which tallies overall with developments in outstanding bank loans to firms located in Belgium. As illustrated in chart 1, those developments clearly bear the marks of crisis episodes: first, the great recession of 2008 and 2009, and then the sovereign debt crisis which affected the euro area in 2011 and 2012. These two events had a negative impact on both demand for loans and the supply of credit. Lagging somewhat behind the trend in economic activity, the volume of credit used by firms has thus contracted on two occasions in the past ten years: first, between mid-2009 and mid-2010, and then in 2013 or 2014, depending on the data source considered. After that, it began rising again towards the end of 2014, and that expansion accelerated from 2015 to mid-2018, before slowing down up to February 2020.

However, the movements in the total volume of loans mask highly heterogeneous variations according to firm size. In reality, the procyclical character of the trend in credit primarily concerns lending to large firms. The reduction in the total volume of loans during the two crisis periods is almost entirely attributable to them. The

1 [https://www.nbb.be/doc/dq/kredobs/fr/ko\\_home.htm](https://www.nbb.be/doc/dq/kredobs/fr/ko_home.htm).

2 First, the Central Corporate Credit Register is constantly updated by credit institutions, but the data may be revised retrospectively during the twelve months following their submission. That implies that the existing statistics for the period from March 2019 to February 2020 may yet be amended. Next, some transactions regarded as loans under Scheme A are excluded from the Central Corporate Credit Register's statistics: that applies, for instance, to claims resulting from repo transactions in securities. Finally, the criteria for granting loans via an association or syndicate to a counterparty within the association are not the same, as the banks have direct information which is not currently passed on to the Central Corporate Credit Register; that sometimes leads to differences in geographical and/or sectoral classification.

3 Credit used is different from credit authorised, which concerns credit lines made available to firms but not necessarily used in full.

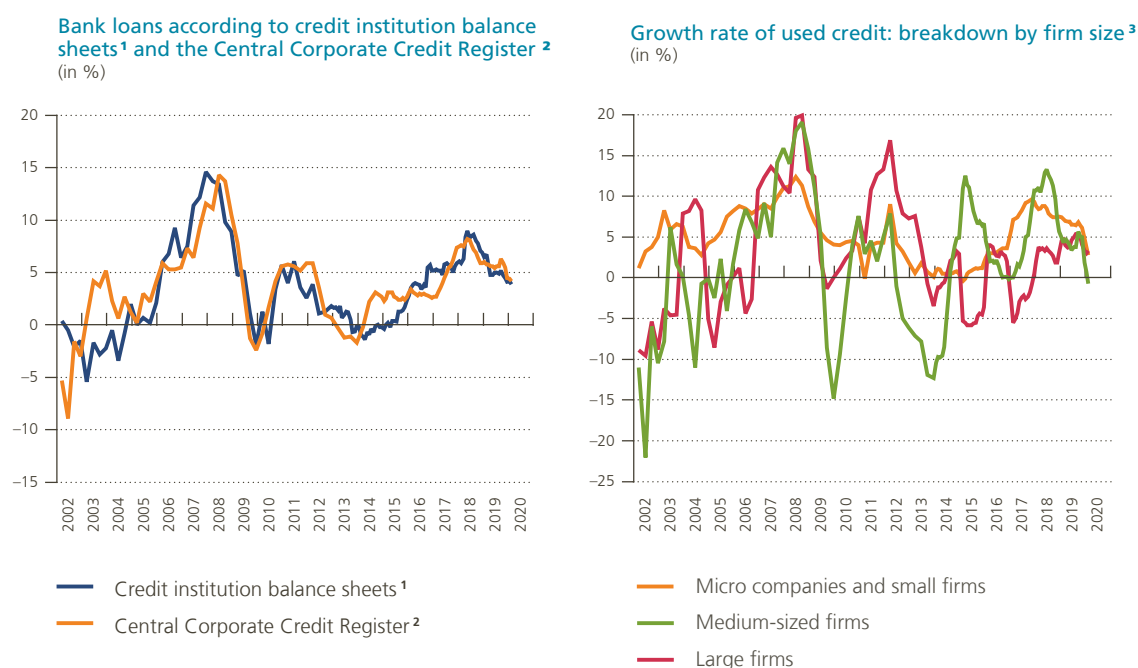
4 More specifically, this concerns the branches under NACE code "K".

5 The period covered ends in February 2020 owing to the availability of data at the time of concluding this analysis.

volume of bank loans contracted by small firms<sup>1</sup> shows much more stable growth. There have been two distinct phases in recent years: (1) an acceleration in the credit expansion rate from 2015 to the end of 2017, (2) followed by a deceleration which persisted up to February 2020 (latest available data). During that same period, the volume of loans to medium-sized firms declined for 12 consecutive months, between December 2016 and November 2017, while lending to large firms remained positive almost throughout the period from 2015 to February 2020.

Chart 1

### Growth rate of bank lending to firms



Source: NBB (Central Corporate Credit Register and credit institution balance sheets).

1 Sum of flows over 12 months in relation to the outstanding total recorded a year earlier.

2 Moving average over 4 quarters of the growth rate over three months, which is then annualised. No account was taken of credit used by firms classified in the financial services sector.

3 Firms using micro models for their annual accounts are considered to be micro companies and firms submitting an abbreviated model are considered to be small firms. Firms submitting full-format accounts are regarded as large or medium-sized according to whether they exceed one or more of the thresholds defined in terms of the number of workers (50 FTE), turnover (€ 9 000 000) and balance sheet total (€ 4 500 000).

For more details, see [https://www.nbb.be/doc/ba/infomail/mail\\_f\\_50.pdf](https://www.nbb.be/doc/ba/infomail/mail_f_50.pdf).

Overall, since the beginning of 2014 – i.e. since the entry into force of the Law of 21 December 2013 on SME financing – the volume of credit used by micro companies and small firms taken as a whole has risen by an annual average of 4.6 % (similar to the rise during 2008-2013 when annual growth averaged 4.8 % for this category of firms), while lending to medium-sized firms expanded by 0.6 % (see chart 2). Although lending to medium-sized firms did increase, the growth rate was much lower than in the six preceding years (2008-2013), when it averaged 7.6 %. Lending to large firms expanded by an average of 4.2 % between 2014 and February 2020<sup>2</sup>, following a 1.3 % rise between 2008 and 2013.

1 In this study, the term “small firms” includes both micro companies (using the micro model for annual accounts) and small firms (filing accounts in the abbreviated format).

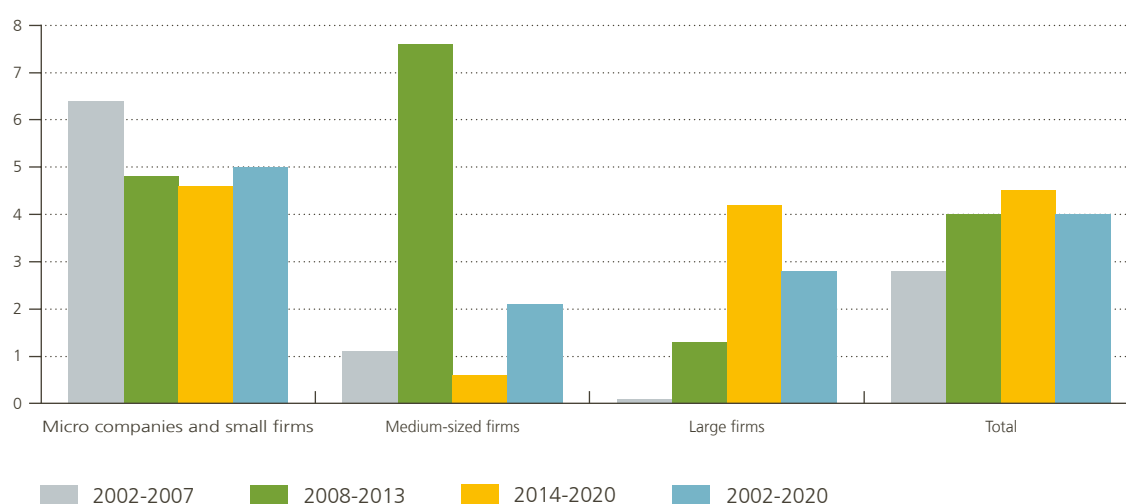
2 In addition, credit developments may vary greatly from one branch of activity to another (see annex 2). For example, in the case of small firms, bank lending expanded faster between 2014 and 2020 in the energy sector, real estate activities and the construction industry. Conversely, growth was slower in the wholesale and retail trade sector. Annexes 1 and 2 provide detailed statistics on credit developments in the various branches of activity and for the different firm size categories.

However, it should be noted that, in view of the procyclicality of the statistical series described here, and more specifically those concerning large firms, descriptive data cannot be used on their own to interpret these developments as being genuinely specific to the period in which the law has applied. For that purpose, we conducted a more detailed analysis using an econometric method which enables us to distinguish between the effects specific to this period and those relating to the changes in the economic environment and borrowing rates. The details are set out in the second part of this article.

## Chart 2

### Annualised growth rate of used credit: breakdown by firm size<sup>1, 2, 3</sup>

(in %)



Source: NBB (Central Corporate Credit Register).

1 No account was taken of credit used by firms classified under financial services.

2 The annualised growth rate is determined as follows: an average is calculated on the basis of the quarterly growth rates/over a three-month period (from January 2013, the date from which monthly data are available). ( $\text{Encours}_t / \text{Encours}_{t-1}^{-1}$ ), disregarding the quarters affected by a break in the series (namely the second quarter of 2012, and the fourth quarter of 2014). This average is then annualised.

3 Firms using micro models for their annual accounts are considered to be micro companies and firms submitting an abbreviated model are considered to be small firms. Firms submitting full-format accounts are regarded as large or medium-sized according to whether they exceed one or more of the thresholds defined in terms of the number of workers (50 FTE), turnover (€ 9 000 000) and balance sheet total (€ 4 500 000).

For more details, see [https://www.nbb.be/doc/ba/infomail/mail\\_f\\_50.pdf](https://www.nbb.be/doc/ba/infomail/mail_f_50.pdf).

## 1.2 Interest rates charged by credit institutions

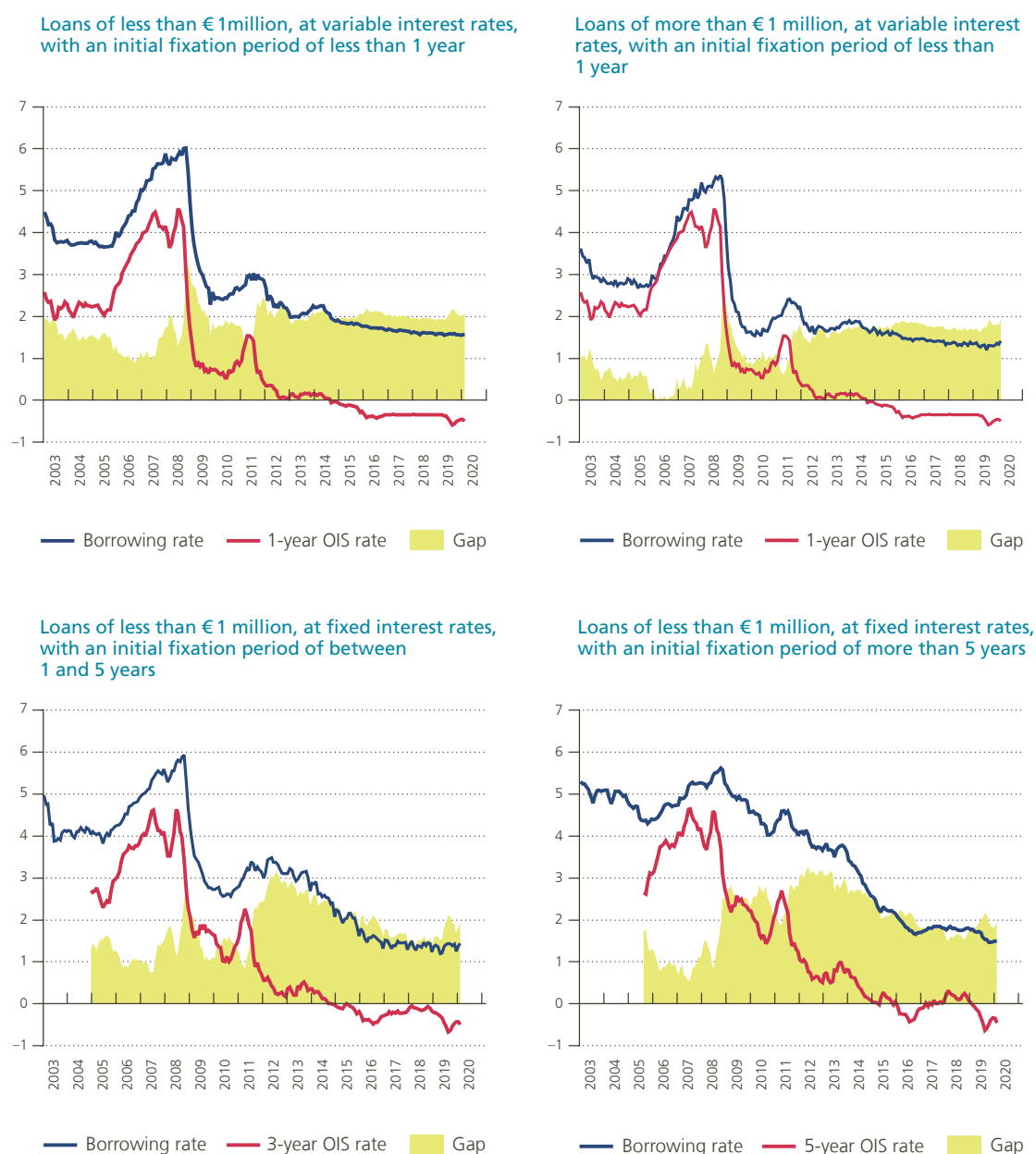
The interest rates charged by banks granting credit to non-financial corporations can be tracked via the results of the MIR (Monetary financial institution Interest Rate) survey. Chart 3 presents the four main series established on the basis of that survey. They are calculated as weighted averages of various types of interest rates<sup>1</sup>, namely variable or short-term rates – for loans of less than or more than € 1 million (i.e. loans with an initial fixed-rate period of less than one year), medium-term interest rates initially fixed for a period of between one and five years, and finally, long-term rates initially fixed for more than five years. In Belgium, the medium- and long-term weighted average interest rates are only established for sums of less than € 1 million (because the volume of these maturities is too small for amounts in excess of € 1 million).

1 For more details on the methodology, go to [https://www.nbb.be/doc/dq/mir/pdf/facteurs\\_en.pdf](https://www.nbb.be/doc/dq/mir/pdf/facteurs_en.pdf).

Chart 3

# MIR rates and OIS rates<sup>1</sup>: breakdown according to the initial fixation period

(in %)



Sources: NBB (MIR survey), Eikon.

<sup>1</sup> Overnight index swap – OIS: the interest rates on loans to prime banks, and consequently an approximation of the rates at which banks can raise finance. Interest rates on short-term loans were compared with the 1-year OIS, rates on medium-term loans were compared with the 3-year OIS and rates on long-term loans were compared with the 5-year OIS.

The movement in these interest rates largely reflects the various monetary policy measures adopted in the Eurosystem. In accordance with the tasks entrusted to it by the Treaty on the Functioning of the European Union, the Eurosystem's primary aim is to maintain price stability. The policy interest rates set by the ECB Governing Council therefore generally mirror inflation expectations. These were revised downwards following the eruption of the economic and financial crisis in 2008, as was the outlook for demand. The Governing Council therefore made substantial cuts in the policy interest rates from then on. Moreover, in setting its deposit facility interest rates at a negative level from June 2014, and establishing its extended securities purchase programme at the beginning of 2015, the Eurosystem tried to encourage portfolio rebalancing in favour of lending and, ultimately, the financing of the real economy. Although the asset purchase programme was suspended in December 2018, it was resumed in November 2019 in order to reinforce the accommodative effects of the interest rates. In addition, the targeted longer-term refinancing operations (TLTRO) also helped to boost bank lending to businesses (and consumers) in the euro area, and similarly in Belgium. These measures maintained favourable credit conditions in the euro area. The first series of targeted longer-term refinancing operations, intended to stimulate lending to euro area credit institutions, was announced in June 2014 and extended over a 2-year period. The second series of operations (TLTRO II) began in March 2016, and the third series (TLTRO III) in March 2019.

These various measures considerably reduced the funding costs of credit institutions in Belgium and in the euro area as a whole. Chart 3 shows these costs according to the OIS rates<sup>1</sup> for maturities similar to those of the weighted average interest rates obtained from the MIR survey. The decline in funding costs, which occurred mainly from the second half of 2008, was not entirely reflected in the borrowing rates that Belgian banks offered to resident enterprises. The gap between these two types of interest rates widened a little further following the new cuts in key interest rates introduced from 2011. However, in the case of loans at variable interest rates (with an initial fixation period of less than one year), that gap stabilised from 2012 at a level close to 2 %. Furthermore, the gap is hardly any greater for loans of less than € 1 million compared to loans of more than € 1 million, which suggests that loans for smaller amounts – typically sought by SMEs – were not affected by a higher interest rate owing to the limit on prepayment penalty.

Medium- and long-term fixed interest rates declined by more than the interbank rates in 2012 and 2013, causing a similar reduction in the gap in relation to the corresponding OIS rate. Spread with respect to the OIS continued to fall, reaching a low point in 2017 before edging back up in 2018 and 2019. During 2019, medium- and long-term interest rates fell to historically low levels, respectively declining to 1.20 % (in April) and 1.46 % (in October), indicating particularly favourable credit conditions for businesses.

### 1.3 Credit conditions

Apart from the accommodative monetary policy, other factors also contributed to the cuts in interest rates charged by banks, and more generally, the easing of the conditions to be met by firms seeking to borrow. As well as interest rates and commercial margins, these conditions include maximum loan amounts/loan periods, as well as the collateral required and non-interest rate charges.

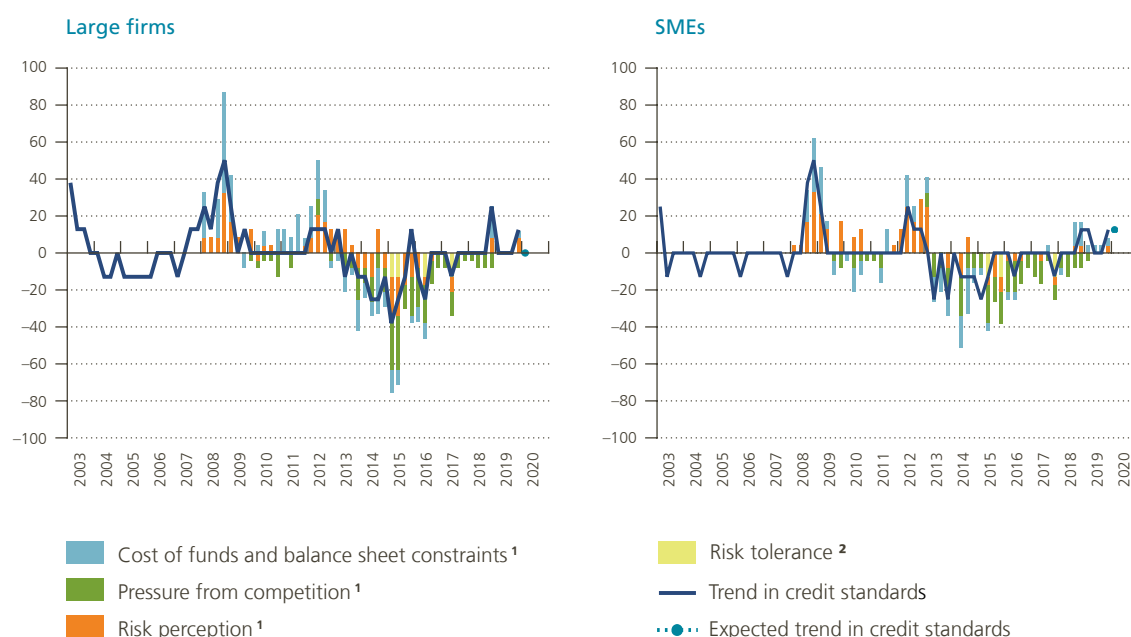
These conditions were tightened initially in 2008, when the economic and financial crisis erupted, and again in 2011-2012 at the time of the sovereign debt crisis; this applied to both SMEs and large firms. According to the results of the Bank Lending Survey covering the four largest credit institutions operating in Belgium, their supply of loans became more limited in 2008 owing to the risks (which they saw as having increased considerably), higher funding costs and tighter balance sheet constraints. This last aspect was connected with the process of balance sheet consolidation and size reduction on which the banks had embarked after the start of the crisis.

<sup>1</sup> Overnight index swap (OIS). This is the interest rate on loans to prime banks.

Chart 4

# Credit standards applied to non-financial corporations: breakdown by firm size

(weighted net percentages <sup>1</sup>)



Source: NBB (Bank lending survey).

1 A positive (negative) percentage corresponds to tightening (easing) of credit conditions or a factor contributing to the tightening (easing) of those conditions.

2 Factor included for the first time in the survey in the first quarter of 2015.

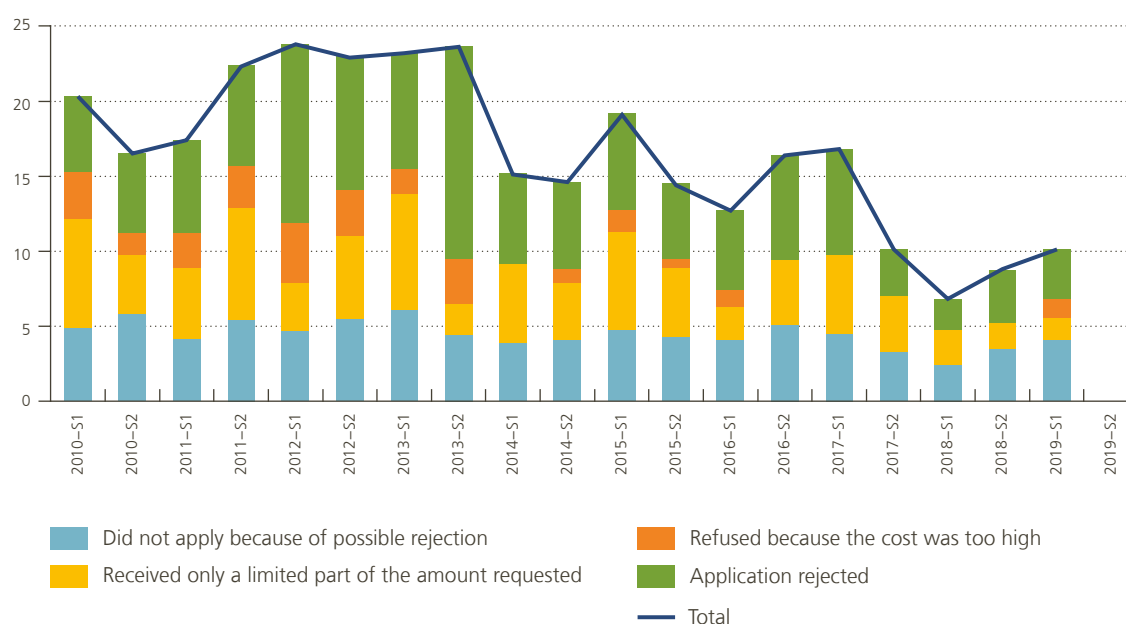
Between the end of 2013 and mid-2018, the successive key interest rate cuts and other monetary policy measures did much to encourage banks to ease their loan criteria. Furthermore, the upturn in economic activity in 2014 and 2015 led to a downward revision of the assessment of credit risk. Finally, the results of the bank surveys primarily reveal an increase in the pressure from competition between 2015 and 2018, prompting the banks to offer more favourable credit conditions for borrowers. These developments are not specific to the Belgian market; a similar picture also emerged in other euro area countries. In 2019, the banks began to tighten their credit conditions for both large firms and SMEs, mainly owing to the deteriorating risk perception in the wake of the slowdown in economic activity.

The generally favourable character of credit conditions for SMEs in recent years is confirmed by surveys among entrepreneurs, such as the Survey on the Access to Finance of Enterprises (SAFE) conducted every six months in the euro area countries. The results of that survey (presented in chart 5) in fact suggest a marked reduction in the obstacles to access to bank loans between the first half of 2017 and in limited approvals the first half of 2018, initially reflected in a decline in rejection rates accompanied, from 2017, by a reduction in limited approvals of loan applications. According to the latest data, the obstacles are still relatively low in historical terms, although they have increased since mid-2018.

Chart 5

### Obstacles impeding access to bank financing for SMEs <sup>1,2</sup>

(percentages of respondents)



Source: ECB (SAFE).

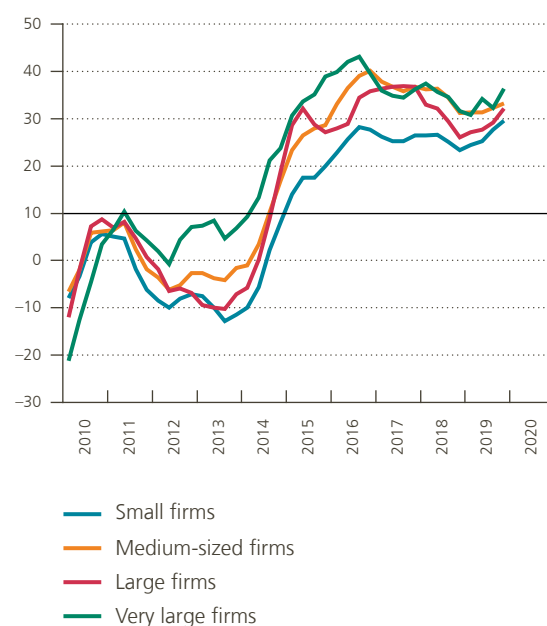
1 Fewer than 250 workers.

2 Proportion of firms not applying for bank credit because of possible rejection, or applying for a loan but only receiving a limited part of the amount requested, refusing credit because the cost was too high, or having their application rejected.

Chart 6

### Firms' assessment of conditions governing access to credit: breakdown by firm size <sup>1</sup>

(balance of the percentages of favourable (+) and unfavourable (-) responses, 4-quarter moving average)



Source: NBB (Quarterly survey of corporate credit conditions).

1 Small = 1-49 workers; medium = 50-249 workers; large = 250-499 workers; very large = 500 workers or more.

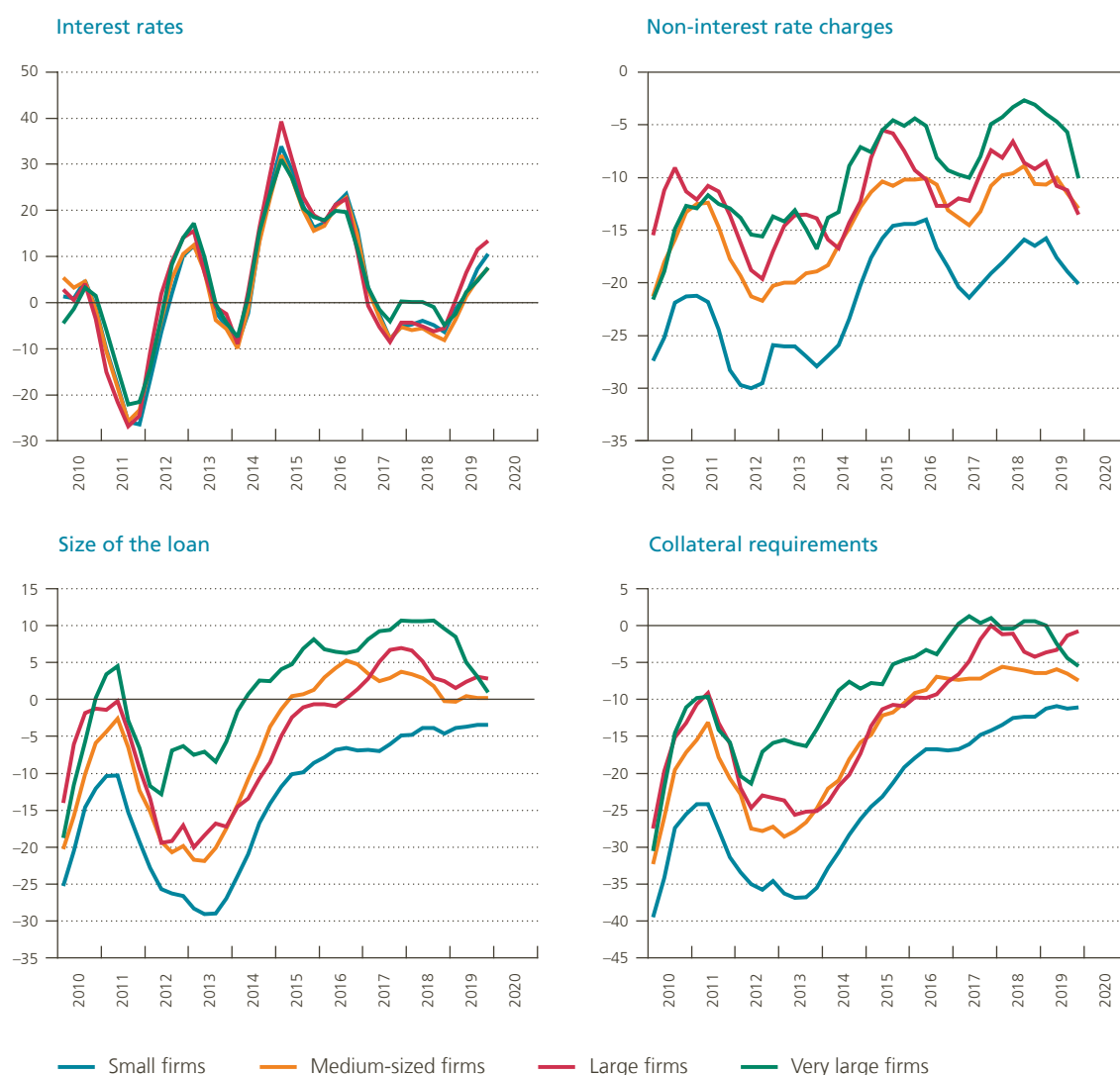


The improvement in credit conditions is likewise borne out by the quarterly survey which the National Bank conducts on a sample of Belgian entrepreneurs (see chart 6). The results of that survey show that the improvement which began in 2013 and persisted up to 2016 (since when, entrepreneurs' satisfaction has generally stabilised at historically high levels) concerned both SMEs and large firms. That improvement was also apparent in the various aspects of loan agreements, be it in terms of interest rates, non-interest rate charges, loan volumes and collateral required from borrowers (see chart 7). SMEs therefore do not seem to have been penalised in any way as regards lending conditions compared to the terms applied to large firms between 2016 and 2019.

## Chart 7

### Firms' assessment of credit criteria: breakdown by size<sup>1</sup>

(balance of percentages of responses reporting improvement (+) or deterioration (-), 4-quarter moving average)



Source: NBB (Quarterly survey of corporate credit conditions).

<sup>1</sup> Small = 1-49 workers; medium = 50-249 workers; large = 250-499 workers; very large = 500 workers or more.

## 2. Econometric analysis

The developments described in the previous section are attributable to a combination of various factors. In particular, the expansion of corporate credit is naturally influenced partly by the movement in interest rates charged by banks. As the descriptive statistics suggest, it may also be greatly influenced by the economic climate via both demand effects and supply effects. Demand effects arise in particular because firms invest more (less) in periods of strong (weak) activity, and because of the procyclicality of their liquidity needs, as purchases of intermediate goods and wage payments move in line with economic activity and employment. In addition, as a deteriorating economic situation is accompanied by an increased credit risk concerning some firms, banks tend to tighten restrictions on those which are struggling, e.g. by imposing higher risk premiums. Regarding interest rate levels and trends, we have seen earlier that they closely track the movement in banks' funding costs, which are themselves determined mainly by the interest rates prevailing on the money market.

As already pointed out, identifying how the Law of 21 December 2013 has affected lending volumes and interest rate levels entails isolating its impact, if any, from that of the other factors mentioned above. However, such an exercise is not easy since that law may influence business credit in various ways: both positively, by strengthening competition between credit institutions, prompting them to adapt their tariff strategies to make them more favourable to borrowers, and negatively, by regulating the fixing of the prepayment penalty, perhaps causing banks to include an excess risk premium in borrowing rates. But these opposing effects are not directly quantifiable on the basis of the data available to the National Bank. The chosen approach therefore consisted in examining developments in business credit and interest rates and identifying divergences compared to what might normally be expected in view of the economic environment and banks' funding costs.

This meant conducting an econometric analysis enabling us to separate any structural changes after the beginning of 2014 – when the law came into force – from cyclical effects measured on the basis of the Bank's overall synthetic indicator and changes connected with the movement in funding costs on the interbank markets, examined by means of the swap rates. Divergences specific to the period beginning in 2014 were assessed with the aid of a binary variable introduced into each model. The various equations take the form of autoregressive distributed lag models. However, the ones relating to interest rates were converted into error correction models in order to take account of any long-term link between the interest rates charged by banks on loans to businesses and the cost of funds assessed according to the swap rates.

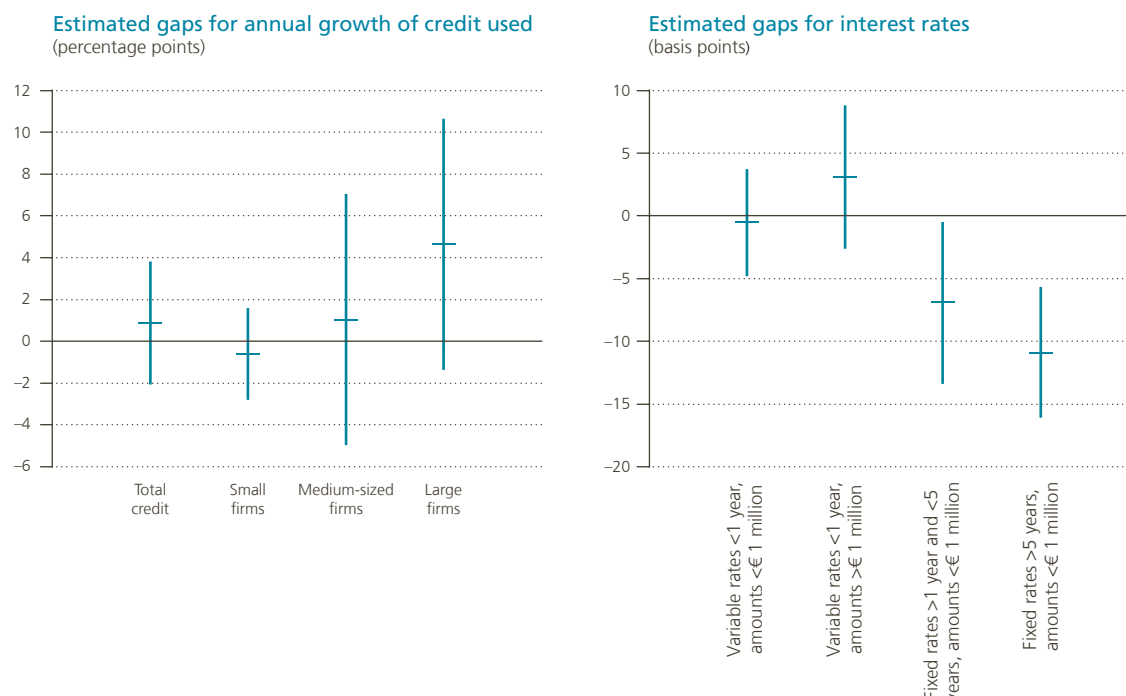
The specifications of the various models are shown in an annex (Annex 3), as are the detailed results of the estimations (Annexes 4 and 5). The model concerning (year-on-year) growth of lending to non-financial corporations is declined in four versions: one for all lending and three others for the various size categories, namely micro and small firms, grouped in a single category, and medium-sized and large firms. The model concerning interest rates was estimated for the four weighted average rates represented in chart 3.

The results obtained (chart 8) do not show any significant structural change in the credit situation that could potentially be linked to the entry into force of the law. In general, the outstanding amount of loans to businesses follows a relatively stable trend although it is actually influenced by cyclical developments to some extent, and after a time lag. As already shown by the descriptive statistics in the first section, the credit used by micro- and small firms is less sensitive to the economic environment than loans granted to larger firms. Moreover, bank loans to large firms seem to be the only ones influenced by interest rate changes, but the impact is not very significant. Part of the reason may be that, unlike most SMEs, some large firms are able to access market financing when the interest rates charged by credit institutions are deemed too high.

## Chart 8

### Average gaps between loans and interest rates compared to their “expected” trend at the beginning of 2014

(effects specific to the period 2014-2020, estimated by means of econometric models and 95 % confidence intervals)



Source: NBB.

Note: The dashes in these charts represent the effects specific to the period from the beginning of 2014 to the final quarter of 2019 (for loans) or to February 2020 (for interest rates). These effects are interpreted as deviations from what the model predicts solely on the basis of the fundamental factors taken into account in the models. The vertical lines represent the confidence intervals. If the value “0” on the y-axis is included in the interval, the associated effect is considered insignificant at a 5 % level.

According to the estimates obtained for models relating to the interest rates applied by banks, those rates are determined mainly by the cost of funds. The results in fact confirm that in most cases these interest rates mirror the trend in the key interest rates and money market rates, except for medium-term interest rates. Moreover, the economic climate does not appear to have a significant effect on most interest rates, at least not during the period covered by the data. However, they did deviate from the trend in money market rates after eruption of the crisis in the second half of 2008.

While borrowing rates continued to fall between the end of 2014 and the end of February 2020, there is no significantly negative effect except in the case of interest rates at more than one year. That change probably reflects a reduction in intermediation margins due to increased pressure from competition, as was also revealed by the Bank Lending Survey (see above), rather than being due to the Law of 21 December 2013.

Finally, an analysis of the gaps between the values predicted by the various models and the observed values (not reported here) also failed to show any temporary effects, as the error terms of the models relating to credit and interest rates for the period commencing in 2014 remained within the usual margins.

# Conclusions

This article reviewed the dynamics of the volume of loans granted by banking institutions operating in Belgium to resident enterprises, and the interest rates and other credit conditions, since the entry into force of the Law of 21 December 2013 on SME financing.

Loans to SMEs – generally less procyclical than the volume of credit used by large firms – increased between 2014 and the beginning of 2020. During that period, the growth of lending to micro-companies and small firms averaged 4.6 % year-on-year, compared to 0.6 % for medium-sized firms. This situation is due partly to the credit supply, which expanded throughout the period, supported by the various measures taken by the Eurosystem to stimulate economic activity. Up to the end of 2018, the expansion of credit was also propelled by rising demand from both SMEs and large firms.

Interest rates on business loans are determined mainly by interbank market rates, which are themselves strongly influenced by monetary policy. For some years now, the Eurosystem's monetary policy has indirectly done much to facilitate access to bank finance for businesses (and households). The measures implemented since 2014 have cut the cost of funds for credit institutions. The latter also have access to loans at advantageous rates via the targeted longer-term refinancing operations. Furthermore, the asset purchase programme made it easier for them to free up liquidity which could be allocated to new loans. Finally, as a result of competition, the reduction in banks' funding costs led to firms being offered lower medium-term and long-term borrowing rates, and caused short-term rates to stabilise at a low level.

According to various surveys, firms have in fact reported that their credit conditions have improved since 2014, and were particularly favourable between 2016 and 2019. However, owing to the increased risks, these conditions were tightened slightly at the end of the period, and that affected all categories of firms regardless of size.

## Annex 1

### Outstanding total of credit used by size and branch of activity

(in € billion, end-of-year data)

	2002	2008	2013	2016	2019
<b>All firms<sup>1,2</sup></b>	<b>68.4</b>	<b>98.4</b>	<b>109.7</b>	<b>117.0</b>	<b>138.9</b>
<b>Small firms (including micro companies)<sup>1</sup></b>	<b>29.3</b>	<b>45.8</b>	<b>54.1</b>	<b>59.2</b>	<b>70.7</b>
of which:					
Manufacturing industry	2.9	3.5	3.4	3.5	4.4
Electricity, gas, steam and air conditioning supply	0.0	0.1	0.2	0.4	0.6
Water supply; sewerage, waste management and remediation activities	0.1	0.2	0.2	0.2	0.3
Construction	3.1	5.4	6.5	7.3	9.0
Wholesale and retail trade; repair of motor vehicles and motor cycles	7.7	10.3	10.8	11.1	12.1
Transportation and storage	1.3	1.6	1.5	1.5	2.0
Accommodation and food service activities	1.4	1.8	2.2	2.3	2.7
Information and communication	0.5	0.8	1.1	1.2	1.4
Real estate activities	5.5	9.3	11.5	13.8	16.6
<b>Medium-sized firms<sup>1</sup></b>	<b>13.1</b>	<b>18.4</b>	<b>24.4</b>	<b>22.2</b>	<b>24.9</b>
of which:					
Manufacturing industry	3.5	3.1	2.8	2.8	3.1
Electricity, gas, steam and air conditioning supply	0.1	0.3	0.7	0.5	0.8
Water supply; sewerage, waste management and remediation activities	0.5	0.5	0.4	0.3	0.3
Construction	1.2	1.9	3.1	2.5	2.9
Wholesale and retail trade; repair of motor vehicles and motor cycles	3.4	3.6	4.5	4.4	4.3
Transportation and storage	1.0	1.3	1.4	1.3	1.5
Accommodation and food service activities	0.2	0.2	0.3	0.4	0.3
Information and communication	0.3	0.2	0.3	0.3	0.4
Real estate activities	1.3	2.7	4.1	3.9	4.6
<b>Large firms<sup>1</sup></b>	<b>19.8</b>	<b>28.1</b>	<b>24.2</b>	<b>27.3</b>	<b>31.5</b>
of which:					
Manufacturing industry	7.4	5.1	4.0	4.3	6.0
Electricity, gas, steam and air conditioning supply	2.1	3.9	5.2	4.0	4.6
Water supply; sewerage, waste management and remediation activities	1.0	1.9	2.4	2.2	2.2
Construction	0.8	1.1	1.3	1.3	1.5
Wholesale and retail trade; repair of motor vehicles and motor cycles	4.8	6.3	5.7	5.9	5.1
Transportation and storage	1.0	1.3	1.6	2.3	2.0
Accommodation and food service activities	0.1	0.1	0.1	0.1	0.1
Information and communication	0.8	0.4	0.3	0.4	0.7
Real estate activities	0.3	0.2	0.2	0.5	0.5

Source: NBB (Central Corporate Credit Register).

1 No account was taken of credit used by firms classified under financial services.

2 The sum of the loans to small, medium and large firms is less than the total credit recorded because some of the loans are made to firms for which no size information is available (because they have not yet filed a balance sheet or are not required to do so).

## Annex 2

### Annualised growth rate<sup>1</sup> of used credit, by size and branch of activity

(in %)

	2002-2007	2008-2013	2014-2020 <sup>3</sup>	2002-2020 <sup>3</sup>
<b>All firms<sup>2</sup></b>	<b>4.0</b>	<b>3.1</b>	<b>4.4</b>	<b>4.1</b>
<b>Small firms (including micro companies)<sup>2</sup></b>	<b>6.4</b>	<b>4.8</b>	<b>4.6</b>	<b>5.0</b>
of which:				
Manufacturing industry	1.9	0.6	3.8	2.8
Electricity, gas, steam and air conditioning supply	18.3	37.5	16.1	20.7
Water supply; sewerage, waste management and remediation activities	2.7	6.9	5.1	5.0
Construction	7.6	6.1	5.6	6.1
Wholesale and retail trade; repair of motor vehicles and motor cycles	3.9	2.3	1.7	2.3
Transportation and storage	1.8	1.3	5.1	3.7
Accommodation and food service activities	5.0	3.9	3.7	4.0
Information and communication	7.9	7.6	4.9	6.0
Real estate activities	8.4	6.0	6.3	6.7
<b>Medium-sized firms<sup>2</sup></b>	<b>1.1</b>	<b>7.6</b>	<b>0.6</b>	<b>2.1</b>
of which:				
Manufacturing industry	-4.9	1.1	0.8	-0.2
Electricity, gas, steam and air conditioning supply	21.7	57.0	1.9	16.7
Water supply; sewerage, waste management and remediation activities	4.4	0.7	-5.5	-2.3
Construction	1.4	8.9	0.7	2.4
Wholesale and retail trade; repair of motor vehicles and motor cycles	-1.1	5.7	-0.1	0.8
Transportation and storage	4.6	10.3	-0.3	2.8
Accommodation and food service activities	1.3	9.5	2.9	3.9
Information and communication	3.8	6.0	3.6	4.1
Real estate activities	8.5	9.4	2.7	5.2
<b>Large firms<sup>2</sup></b>	<b>0.1</b>	<b>1.3</b>	<b>4.2</b>	<b>2.8</b>
of which:				
Manufacturing industry	-6.5	-4.4	8.3	2.9
Electricity, gas, steam and air conditioning supply	41.6	14.1	-0.8	10.5
Water supply; sewerage, waste management and remediation activities	8.7	9.1	0.0	3.5
Construction	4.7	8.9	5.7	6.1
Wholesale and retail trade; repair of motor vehicles and motor cycles	0.2	2.6	-1.7	-0.5
Transportation and storage	3.1	11.2	5.5	6.2
Accommodation and food service activities	22.9	6.1	17.6	16.4
Information and communication	2.2	-2.7	15.1	9.1
Real estate activities	-7.8	79.5	31.9	33.5

Source: NBB (Central Corporate Credit Register).

1 The annualised growth rate is determined as follows: a 12-month moving average is calculated on the basis of the quarterly growth rates ( $\text{Encours}_t / \text{Encours}_{t-1} - 1$ ), disregarding the quarters affected by a break in the series (namely the second quarter of 2012, and the fourth quarter of 2014). This average is then annualised.

2 No account was taken of credit used by firms classified under financial services.

3 Data taken into account up to February 2020.

## Annex 3

### Description of the econometric models and detailed results

The autoregressive distributed lag models describing the relationship between credit growth on the one hand, and bank interest rates and the business cycle on the other, are defined by the following equation:

$$\Delta_4 Cred_t = \mu + \lambda \Delta_4 Cred_{t-1} + \beta i_{t-1} + \sum_{j=0}^3 \gamma_j Conj_{t-j} + \delta_1 D_{2008T3-2019T4} + \delta_2 D_{2014T1-2019T4} + \delta_3 D_{2012T2-2013T1} + \delta_4 D_{2014T4-2015T3}$$

where  $\Delta_4 Cred_t$  represents the growth of used credit compared to the corresponding quarter of the previous year for a category of firms (micro/small, medium or large),  $i_{t-1}$  is the long-term interest rate (corresponding to loans of less than € 1 million with the rate initially fixed for more than five years) and  $Conj_t$  is the state of economic activity measured according to the quarterly average of the Bank's overall synthetic indicator.  $D_{2008T3-2019T4}$  is a binary variable intended to capture structural changes in that relationship which, if negative, could be attributed to the crisis which began in the third quarter of 2008. The second binary variable,  $D_{2014T1-2019T4}$ , is used to assess any structural changes specific to the period following the entry into force of the law on SME financing. The last two binary variables,  $D_{2012T2-2013T1}$  and  $D_{2014T4-2015T3}$  have no economic interpretation. They serve only to absorb statistical breaks due to methodological changes in the compilation of the Central Credit Register's statistics.

In essence, the models used to identify the factors determining changes in interest rates are also autoregressive distributed lag models:

$$i_t = \mu + \lambda i_{t-1} + \beta_0 s_t + \beta_1 s_{t-1} + \sum_{j=0}^9 \gamma_j Conj_{t-j} + \delta_1 D_{2008M6-2020M2} + \delta_2 D_{2014M1-2020M2}$$

Where  $i_t$  now symbolises one of the four interest rates illustrated in chart 3, and  $s_t$  stands for the swap interest rates used as the reference for each of them in that same chart. The other variables are defined in the same way as in the models relating to used credit. Unlike those models, which are based on quarterly data, the model relating to interest rates is estimated on the basis of monthly data. However, it is not estimated as such; it was reformulated as a generalised error correction model in order to take account of the possible existence of a trend link between bank interest rates on loans to businesses and swap interest rates:

$$\Delta i_t = \mu + \lambda^* (i_{t-1} - s_{t-1}) + \beta_0 \Delta s_t + \pi s_{t-1} + \sum_{j=0}^9 \gamma_j Conj_{t-j} + \delta_1 D_{2008M6-2020M2} + \delta_2 D_{2014M1-2020M2}$$

Where  $\lambda^* = (\lambda - 1)$  and  $\pi = (\lambda + \beta_0 + \beta_1 - 1)$ .

The estimates obtained for these two types of models on the basis of the ordinary least squares method are set out in the following tables.

## Annex 4

### Estimated parameters for equations relating to the annual growth of credit used by firms

(ordinary least squares estimates over a period from the second quarter of 2003 to the final quarter of 2019)

Dependent variable: $\Delta_4Cred_t$	All firms	Micro- and small firms	Medium-sized firms	Large firms
$\mu$	-0.713	3.228	-7.243	-7.837
$\Delta_4Cred_{t-1}$	0.619***	0.761***	0.560***	0.422***
$i_{t-1}$	0.772	-0.240	2.112	2.445*
$Conj_t$	0.047	0.029	0.270	-0.018
$Conj_{t-1}$	0.065	-0.031	-0.080	0.263
$Conj_{t-2}$	-0.016	0.045	0.005	-0.133
$Conj_{t-3}$	0.161*	0.038	0.215	0.475**
$D_{2008T3-2019T4}$	0.696	-0.540	4.017*	2.119
$D_{2014T1-2019T4}$	0.886	-0.605	1.037	4.645
$D_{2012T2-2013T1}$	0.413	-1.033	3.603	1.254
$D_{2014T4-2015T3}$	-1.081	-0.818	-4.788**	4.217*
Sum of long-term elasticities of cyclical effects ( $\sum_{j=0}^3 \gamma_j / (1 - \lambda)$ )	0.673***	0.341*	0.931***	1.015***
$R^2$	0.810	0.825	0.714	0.753
Standard error of the regression	1.915	1.427	3.967	3.934
Observations	67	67	67	67

Source: NBB (Central Corporate Credit Register).

\* Coefficient significant at a level of 10 %.

\*\* Coefficient significant at a level of 5 %.

\*\*\* Coefficient significant at a level of 1 %.



## Annex 5

### Estimated parameters for equations relating to interest rates on loans to non-financial corporations

(ordinary least squares estimates over a period from February 2003 to February 2020)

Dependent variable: $\Delta i_t$	Variable interest rates initially fixed for less than 1 year (amount $\leq$ € 1 million)	Variable interest rates initially fixed for less than 1 year (amount $>$ € 1 million)	Rate initially fixed for more than 1 year but less than 5 years (amount $\leq$ € 1 million)	Rate initially fixed for more than 5 years (amount $\leq$ € 1 million)
$\mu$	0.446***	0.158***	0.109	0.214***
$i_{t-1} - s_{t-1}$	-0.258***	-0.151***	-0.027	-0.104***
$\Delta s_t$	0.184***	0.245***	0.237***	0.137***
$s_{t-1}$	-0.019**	-0.015	-0.017	-0.023**
$Conj_t$	-0.003	-0.001	0.000	-0.001
$Conj_{t-1}$	0.007	0.009	0.011*	0.004
$Conj_{t-2}$	0.000	0.001	0.003	0.000
$Conj_{t-3}$	-0.001	0.002	-0.003	0.002
$Conj_{t-4}$	-0.007	-0.010*	-0.005	-0.006*
$Conj_{t-5}$	0.002	0.004	-0.007	0.001
$Conj_{t-6}$	0.002	0.000	0.003	-0.003
$Conj_{t-7}$	0.000	-0.002	0.007	0.002
$Conj_{t-8}$	0.004	0.006	-0.003	0.002
$Conj_{t-9}$	-0.002	-0.002	0.001	0.000
$D_{2008M7-2020M2}$	0.063***	0.086***	0.022	0.085***
$D_{2014M1-2020M2}$	0.005	0.031	-0.069**	-0.109***
Sum of long-term elasticities of cyclical effects ( $\sum_{j=0}^9 \gamma_j / (1 - \lambda)$ )	0.008	0.041***	0.304	0.009
$R^2$	0.608	0.516	0.382	0.433
Standard error of the regression	0.079	0.097	0.110	0.063
Observations	205	205	182	174

Source: NBB (Central Corporate Credit Register).

\* Coefficient significant at a level of 10 %.

\*\* Coefficient significant at a level of 5 %.

\*\*\* Coefficient significant at a level of 1 %.



## Abstracts from the Working Papers series

### **381. *The heterogeneous employment outcomes of first- and second-generation immigrants in Belgium, by C. Piton, F. Rycx, January 2020***

The paper provides a comprehensive quantitative assessment of the relationship between people's migration background and their likelihood of being employed in Belgium. Using detailed quarterly data for the period 2008-2014, the authors find not only that first-generation immigrants face a substantial employment penalty (up to -36 % points) vis-à-vis their native counterparts, but also that their descendants continue to face serious difficulties in accessing the labour market. The employment gap is, ceteris paribus, more pronounced for the first than for the second generation. Yet, intergenerational mobility patterns are found to be quite heterogeneous: although the children of immigrants from the European Union fare much better than their parents, the improvement is much more limited for those from EU candidate countries, and almost nil for the second generation from the Maghreb. The situation of second-generation immigrants with only one foreign-born parent seems to be fairly good. In contrast, it appears that the social elevator is broken for descendants of two non-EU-born immigrants. Immigrant women are also found to be particularly badly affected, especially those originating from outside the EU. As regards education, it appears to be an important tool for fostering labour market integration of descendants of non-EU-born immigrants. For first-generation immigrants, though, it proves to be much less effective overall. Focusing on the first generation, the authors find that: i) access to jobs increases with the duration of residence, though fairly slowly on average; ii) citizenship acquisition is associated with significantly better employment outcomes, for both EU and non-EU-born immigrants; iii) proficiency in the host country language is a key driver of access to employment, especially for non-EU-born immigrants; and iv) around a decade is needed for the employment gap between refugees and other foreign-born workers to be (largely) removed.

### **382. *A Dane in the making of European Monetary Union – A conversation with Niels Thygesen, by I. Maes, S. Péters, May 2020***

Niels Thygesen (born 1934) played an influential role in the process of economic and monetary integration in Europe for nearly five decades. He is particularly known for being a member of the Delors Committee and the first Chair of the European Fiscal Board. As part of a research programme on collecting memories, this paper publishes the results of several interviews with him. His early life offers insightful observations on Danish attitudes towards Europe and on the development of the economics profession in the postwar years (he was close to Nobel Prize laureates Franco Modigliani and Milton Friedman). Thygesen's involvement in the process of European monetary integration really started in 1974 with his membership of the Marjolin Committee (which provided an assessment of the failure of the 1970 Werner Report). Since then, he has been involved in a multitude of committees and initiatives, like the OPTICA groups, the All Saints Day Manifesto, the Trilateral Commission, the Committee for Monetary Union in Europe (an initiative of Giscard d'Estaing and Schmidt) and the Euro50 Group.



## Conventional signs

€	euro
USD	US dollar
%	per cent
e.g.	<i>exempli gratia</i>
et al.	<i>et alia</i> (and others)
etc.	<i>et cetera</i>
i.e.	<i>id est</i> (that is)
n.a.	not available
p.m.	pro memoria
Y-1	year-1



# List of abbreviations

## Countries or regions

BE	Belgium
DE	Germany (W-DE Western Germany)
EE	Estonia
EL	Greece
ES	Spain
IE	Ireland
FR	France
IT	Italy
CY	Cyprus
LT	Lithuania
LU	Luxembourg
LV	Latvia
MT	Malta
NL	Netherlands
AT	Austria
PT	Portugal
SI	Slovenia
SK	Slovakia
FI	Finland
EA	Euro area
BG	Bulgaria
CZ	Czech Republic
DK	Denmark
HR	Croatia
HU	Hungary
PL	Poland
RO	Romania
SE	Sweden
EU	European Union
EU15	European Union of 15 countries (still incl. UK), before the 2004 enlargement
EU28	European Union of 28 countries (still incl. UK)
CA	Canada
CN	China
JP	Japan
KR	Korea

MX	Mexico
UK	United Kingdom
US	United States
BRU	Brussels
FLA	Flanders
WAL	Wallonia

## Other abbreviations

CEE	Central-Eastern Europe
CFO	Chief Financial Officer
COVID	Corona virus disease
CPB	Central Planning Bureau (the Netherlands)
CPI	Consumer price index
DG	Directorate-General
DGS	Directorate-General Statistics
DSTI	Debt-service-to-income ratio
DTA	Debt-to-assets ratio
DTI	Debt-to-income ratio
EC	European Commission
ECB	European Central Bank
EMU	Economic and Monetary Union
EPU Index	Economic Policy Uncertainty Index
ERMG	Economic Risk Management Group
Eurostat	European Statistical Office
Febelfin	Belgian financial sector federation
FPB	Federal Planning Bureau
FPS	Federal Public Service
FSMA	Financial Services and Markets Authority
FTE	Full-time equivalent
FUA	Functional urban area
GDP	Gross domestic product
HFCN	Household Finance and Consumption Network
HFCS	Household Finance and Consumption Survey
HICP	Harmonised consumer price index
HMR	Household main residence
ICT	Information and communication technology
ILO	International Labour Organization
IMF	International Monetary Fund
km	Kilometre
LFS	Labour Force Survey
MIR	Monetary financial institution interest rate



NACE	Statistical classification of economic activities of the European Community
NAI	National Accounts Institute
NAICS	North American Industry Classification System
NBB	National Bank of Belgium
NCPI	National consumer price index
NEO	National Employment Office
NUTS	Nomenclature of Territorial Units for Statistics
OECD	Organisation for Economic Cooperation and Development
OICA	International Organization of Motor Vehicle Manufacturers
OIS	Overnight index swap
OLS	Ordinary least squares
OMBUDSFIN	Ombudsman in financial conflicts
OPEC	Organization of the Petroleum Exporting Countries
PMI	Purchasing Managers' Index
PPS	Purchasing power standard
RE	Real estate
SAFE	Survey on the Access to Finance of Enterprises
SMEs	Small and medium-sized enterprise
SNI	Syndicat Neutre pour Indépendants
Statbel	Belgian Statistical Office
SUV	Sport utility vehicle
TFP	Total factor productivity
TiVA	Trade in value added
TL	Territorial level
TLTRO	Targeted longer-term refinancing operations
UCM	Union des classes moyennes
Unizo	<i>Unie van Zelfstandige Ondernemers</i>
VAT	Value added tax
WLTP	Worldwide Harmonised Light Vehicle Test Procedure
WTO	World Trade Organisation



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