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Contents

Interregional transfers via the federal government and social security

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Introduction

Alongside the provision of public goods and services whereby the government performs its allocative function, the redistribution of resources among residents is a key government objective. That redistribution takes place via government revenues – which also fund public goods – and certain government expenditure such as social security benefits.

This article examines redistribution in Belgium from a territorial perspective. More specifically : what redistribution between the three regions do Belgian public finances generate ? This territorial perspective is interesting because there are significant demographic and socio-economic differences between the regions, and because the regions have ever more policy levers which influence socio-economic developments.

The study describes redistribution via the "transfers with no direct counterpart" from the federal budget and social security. On the revenue side, this concerns taxes and social contributions. On the expenditure side, the main items are social benefits and business subsidies. These transfers are the means whereby the government performs its redistribution function. Note that redistribution between the regions does not take place directly but via transfers from and to a region's residents and from and to business establishments in a region. We also examine how redistribution between the regions is effected via grants from the federal budget to the Communities and Regions.

This article builds on a study published in the Bank's Economic Review in September 2008 (Dury *et al.*, 2008). The methodology applied here is largely the same. However, since the 2008 study more detailed data have become available, permitting a more accurate calculation of the interregional transfers. Furthermore, since 2005 – the latest year examined in the aforementioned study – there have been various developments affecting on the (composition of the) interregional transfers, such as demographic (e.g. population ageing), socio-economic (e.g. increased employment rate) and institutional changes (e.g. the sixth State reform).

The first part of this article explains the methodological aspects of interregional transfers : what is considered an interregional transfer and what is not, and how are they calculated ? The second part shows the results of the calculation of interregional transfers for the year 2019, the most recent year for which data are available, and identifies their main determinants. Finally, part three puts interregional transfers in Belgium into perspective :

how have they evolved over time, how do they compare to similar transfers between provinces, and how large are interregional transfers in other EU countries.

1. Interregional transfers: methodology

This methodological section first explains what is meant by the concept of interregional transfer. A number of choices are made and justified. Next, it explains in detail which distribution keys, based on which data, are used to calculate the transfers.

1.1 Definition of interregional transfers

This study only takes account of transactions which can be regarded as transfers with no direct counterpart. The principal government revenues that meet this condition are taxes and social contributions. Although the government uses those revenues partly for the provision of communal facilities, the considerations in question are indirect. On the expenditure side, this concerns social benefits – such as pensions, sickness and unemployment benefits, etc. – and health care expenditure. A number of business subsidies are also taken into account.

These transactions are the principal means whereby the government performs its redistribution function and organises solidarity within society, as taxes are levied with due regard for the taxpayers' economic capacity, which includes their income level, wealth and household characteristics. In addition, social benefits offer partial protection against the income implications of various social risks which hamper participation in the work process, such as old age, sickness or unemployment. Regional variations in these socio-economic determinants thus lead to redistribution across regional borders.

In contrast, there is a direct counterpart corresponding to other government transactions such as dividends received by the government and proceeds from sales, and the wages which it pays to government staff, purchases of goods and services, investment expenditure and interest charges; these are therefore disregarded[1].

Interregional transfers only result from government transactions which fall within the jurisdiction of the federal government or social security and which take place between the government and residents or companies. Federal grants to the Communities and Regions, most of which are distributed according to the Special Finance Act, are also included in the analysis. Revenue or expenditure which falls within the fiscal competence of the Communities and Regions is disregarded because it does not, in principle, involve redistribution across regional borders. Transactions which come under local authorities are likewise irrelevant in this context.
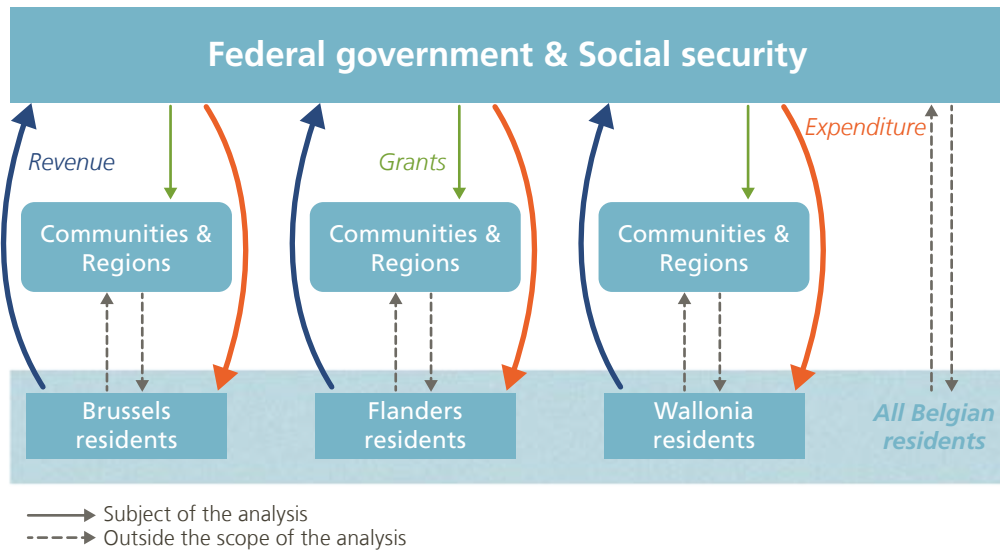
Finally, it should be noted that for practical reasons the analysis is not exhaustive, in the sense that government transfers involving only a small budget and/or for which no reasonable regional allocation key is available are excluded. Their impact on the overall picture of interregional transfers should be very limited. The selected items for the analysis are listed in section 1.2.

To determine whether a particular transaction gives rise to an interregional transfer, the per capita average for a region is compared with the national per capita average. Deviations from the national average give rise to interregional transfers. If the per capita payments made by residents of a particular region to the federal government and social security – e.g. in the form of personal income tax, social contributions or corporation

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1 This exclusion of transactions involving a counterpart is equivalent to making the simplifying assumption that the corresponding flows are distributed among the regions in proportion to their respective populations and therefore do not generate interregional transfers. It should also be noted that the financing of expenditures with no counterpart through fiscal and parafiscal revenues is well taken into account in the analysis.

Figure 1

Conceptual framework

Federal government & Social security

Revenue   *Grants*   *Expenditure*

Communities & Regions   Communities & Regions   Communities & Regions

Brussels residents   Flanders residents   Wallonia residents   *All Belgian residents*

→ Subject of the analysis
---→ Outside the scope of the analysis

tax – exceed the national per capita average, then that region is regarded as paying for interregional transfers via public revenues. Conversely, a region is the beneficiary of such transfers if it contributes proportionately less than would be expected purely on the basis of its share of the population. In regard to payments which households receive from the government, e.g. via social benefits, a region is regarded as paying for interregional transfers if it receives less per resident than the national average. The same reasoning applies to transfers which arise from the award of grants to the Communities and Regions.

The per capita transfers can then be converted to total transfers by multiplying them by the population of each region. The net transfer position of each region is determined by taking together all the interregional transfers effected via public revenues, expenditure and grants. A region is defined as a net payer if its net transfer position

Figure 2

Calculation of the transfers

$$Transfer_{Rev,Reg} = (Revenue\ per\ capita_{Reg} - Revenue\ per\ capita_{Belgium}) \times Population_{Reg}$$

$+$

$$Transfer_{Exp,Reg} = (Expenditure\ per\ capita_{Belgium} - Expenditure\ per\ capita_{Reg}) \times Population_{Reg}$$

$+$

$$Transfer_{Gra,Reg} = (Grants\ per\ capita_{Belgium} - Grants\ per\ capita_{Reg}) \times Population_{Reg}$$

$=$

$$Transfer_{Reg}$$

The sum of the interregional transfers in Belgium is zero

$$Transfer_{FLA} + Transfer_{BRU} + Transfer_{WAL} = 0$$

is positive and as a net beneficiary if that position is negative. The sum of the interregional transfers for the three regions together is equal to zero, by definition.

1.2 Allocation keys

The payments received or made by the federal government are allocated to each region on the basis of an allocation key. Where possible, this study uses allocation keys derived from the regional accounts[1]. The regional accounts methodology has two criteria for the allocation of transactions, namely the counterparty's place of establishment (place of residence criterion) for (redistributive) income transactions, and the place of production (workplace criterion) for production-related transactions. Transactions between the government and households are thus assigned on the basis of the household's place of residence, including the social contributions paid by employers[2]. In the case of transactions between the government and corporations, this is done on the basis of the place where the company operates or creates value. This chosen method is totally consistent with the logic of the regional accounts and also conforms to the institutional logic of the Special Finance Act.

By making use of the detailed regional accounts compiled at the level of the administrative districts, it is possible to use allocation keys with a high degree of precision. In this exercise we mainly use the regional accounts of households for that purpose. For production-related transactions, use is made where necessary of the regional allocation of value added as an approximate key for the place of value creation. Where necessary, these keys are supplemented by additional calculations.

Below is a description of the data sources used to create the regional allocation keys which form the basis of the regional accounts or which result from additional calculations[3].

1.2.1 Revenue

Direct taxes

The income tax levied on households is allocated in the regional accounts on the basis of the personal income tax payable according to the annual tax returns, obtained from the FPS Economy Directorate General of Statistics (Statbel). This allows for a very precise distribution according to the taxpayer's place of residence. The corporation tax is allocated according to the value added created by the sectors comprising non-financial corporations and financial institutions on the basis of the location of the operating unit[4]. It should be noted that the territorial division based on value added is only an approximation for the allocation of the corporate tax liability. A precise distribution would require determination of the taxable profit per establishment unit, for which no data are available.

Indirect taxes

The VAT charged on consumer goods and services is calculated on the basis of the regional consumption expenditure per category of goods and services classified according to COICOP[5] – supplied by the household budget survey – which is linked to the VAT rate per COICOP-category in the national accounts. Excise duty on tobacco and fuel is also allocated in that way.

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1 This study distributes the transactions from the public accounts for the period 1995-2019. The regional allocation of household accounts including consumption expenditure according to the regional accounts is currently available up to and including data year 2018. For the distribution of government transactions for the year 2019, the allocation keys from the regional accounts for the year 2018 were adopted.

2 In studies of this kind, the question arises whether the workplace criterion should not also be applied to income redistribution transactions. For a discussion, see Dury et al. (2008) and for a practical analysis see Decoster and Sas (2017).

3 For a fuller description of the methodology used to compile the regional accounts, see the methodological notes, published at https://www.nbb.be/en/statistics/nationalregional-accounts/methodology

4 Transfers concerning companies with more than one operating unit are allocated according to the location of the operating unit.

5 https://ec.europa.eu/eurostat/statistics-explained/index.php/Glossary:Classification_of_individual_consumption_by_purpose_(COICOP)

The VAT on housing construction is allocated on the basis of information collected by Statbel. For new buildings this concerns the total area of new construction per region; in the case of renovation, the number of renovated dwellings per region is used.

Social contributions

Social contributions are divided into contributions paid by businesses and contributions paid by households. The households' contributions are then further divided between employees, self-employed persons and persons not in work.

Since the employers' social contributions are calculated as a percentage of wages, they are allocated according to the employee's place of residence on the basis of the tax data concerning earned income, derived from personal income tax.

The households' contributions are also a percentage of wages and likewise follow the regional allocation of wages. For the self-employed, the contributions are allocated according to the income in part 2 of the tax returns and classified according to the taxpayer's place of residence. For those not in work, the contributions follow the regional allocation of pensions (see below).

1.2.2 Expenditure

Social benefits

The regional allocation of social security cash benefits is based on information per district of the place of residence of the benefit recipient, made available by the various institutions in the social security sector such as the National Employment Office (NEO), the National Institute for Health and Disability Insurance (NIHDI), the Occupational Diseases Fund, the Business Closure Fund (FFE/FSO), the Federal Pensions Service (FPD) and the National Institute for the Social Security of the Self-Employed (NISSE)[1].

Apart from the various social benefits in cash, health care reimbursements also form part of the social benefits included in the regional allocation. In the national accounts, these reimbursements are regarded as market output purchased by the government and subsequently made available to households. The regional allocation of these social benefits in kind is therefore based on the regional allocation of the government's consumption expenditure. The NIHDI provides details of this expenditure per district, province and region on the basis of the beneficiary's place of residence.

Other benefits for specific target groups, such as the income guarantee for the elderly, allowances for disabled persons and the subsistence benefit are regarded as social assistance. These benefits are allocated on the basis of a geographical breakdown made available by FPS Social Security. In regard to the subsistence benefit, the analysis takes account of the federal government grant to local authorities for payment of that benefit.

Subsidies

The subsidies included in the analysis comprise those relating to service vouchers and the target group reductions granted on employers' social contributions or reductions in payroll tax which must be classed as subsidies according to the ESA 2010[2]. The allocation of subsidies relating to service vouchers is based on information provided by the National Social Security Office (NSSO) concerning the number of workers paid by means of service vouchers. The distribution here is therefore based on the location of the service voucher

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1 The pensions taken into account include pensions for statutory officials who work for the Communities and Regions, and for the local authorities, and for whom budgetary competence is at the social security level.
2 European System of Accounts.

company's operating unit. The target group reduction is also allocated according to specific information made available by the NSSO on employers who are granted a reduction in their social contributions for employing certain target groups. Finally, the payroll tax reductions are allocated by approximation on the basis of value added.

Since the last State reform in 2015, the way in which subsidies paid to businesses affect the regional reallocation has changed. Subsidies relating to service vouchers were transferred in full to the regions. The reduction in employers' contributions for certain target groups was also largely transferred to them, with only a small part being paid out by the NSSO since 2015. Consequently, since 2015 the subsidies at the federal level have consisted primarily of the payroll tax reductions.

1.2.3 Grants

In Belgium, the Regions and Communities receive specific federal government grants for the purpose of pursuing the policies corresponding to their respective powers.

Like the revenue and expenditure described in the preceding sections, the grants give rise to an interregional transfer only if the per capita amount of the region's grants differs from the national average per capita grants.

The methodology used to determine the transfers via grants is an institutional approach based on the Special Finance Act for the Communities and Regions of 16 January 1989, as amended following the various State reforms. The scope is therefore closely linked to the definitions of the powers of the federated entities. For example, at the time of the sixth State reform in 2014, it was decided to devolve the power relating to "family allowances" to the federated entities. Consequently, the amount of the grants was revised upwards while the social security expenditure received by households was cut by the same amount, since the federal government no longer intervenes directly in this connection. Another example concerns the regional additional percentages on personal income tax. The explicit assignment of responsibility for part of that tax to the regions reduced the federal revenues by the amount of the part which now goes directly to the regions (about a quarter of the total PIT). It is therefore important for interregional transfers via grants and via federal and social security expenditure and revenue to be considered as a single entity.

In order to determine the interregional transfers, it is necessary to attribute the various grants to the regions defined by their territories. That is straightforward in the case of grants to the Walloon Region, the Flemish Region and the Brussels-Capital Region. More care is needed in attributing Community grants to a particular area. In the case of Communities unambiguously linked to a region, the attribution is still obvious. This applies to grants to the German-speaking Community, which will be attributed to Wallonia, and grants to the Brussels Community institutions (namely the Common Community Commission or COCOM, the French Community Commission or COCOF and the Flemish Community Commission or VGC), attributed to the Brussels Region. Conversely, specific adjustments are needed in the case of grants to the Flemish Community and the French Community.

For grants to the Flemish Community and the part of the grants to the French Community not concerned by the adjustments described in the next paragraph, the resources were imputed to the regions on the basis of their share of the population and, for Brussels, taking account of the 20/80 apportionment formula specified by the Special Finance Act. That apportionment formula is implicitly based on the assumption that 20 % of residents of the Brussels-Capital Region belong to the Flemish Community and 80 % to the French Community.

A specific adjustment is also needed for grants to the French Community, as it is necessary to take account of the transfers within the French-speaking entities which arise from the "Saint Emilia" agreements. In the wake of the sixth State reform those agreements specify that, from 2015 onwards, the French Community is to transfer some of its powers and part of the corresponding grants to the Walloon Region. This concerns

in particular the powers relating to family allowances, care of the elderly (retirement homes, etc.), health and personal assistance, and the funding of non-academic hospitals (2016). The resources transferred are equivalent to what the French Community receives from the federal government for those powers. They also include the corresponding budgetary accountability arrangements (the transitional amounts and the contributions for the consolidation of the public finances corresponding to the grants, and the contribution to the cost of ageing for civil servants[1]). The grants are also adjusted according to the mechanisms of the Special Finance Act (which takes account of indexation and population changes). In the Brussels-Capital Region, these powers are mostly exercised by the COCOM, and are therefore already taken into account in the grants. In addition, there are the – smaller – transfers from the French Community to the COCOF.

For completeness and to conclude the chapter on methodology, it is worth mentioning a few technical conventions. As stated in the section on expenditure, the notional transfers from the federal government for the pensions of the "civil servants" of the Communities and Regions, included in the national accounts, are recorded here as pension expenditure and are therefore not included in the grants. For the pre-2015 period, the grants include the grant to the German-speaking Community and the Regions' drawing rights which concern getting the unemployed back into work. The grant for investment in the Brussels-Capital Region (Beliris) is also taken into account over the whole of the period. For the pre-2002 period, an adjustment is made to take account of the reform of the Special Finance Act introduced by the Lambermont agreements in 2001[2]. Although this analysis aims to be exhaustive, it disregards a number of smaller grants for which no detailed information is available.

Chart 1

Overview of interregional transfers

(2019, in € million unless otherwise stated)
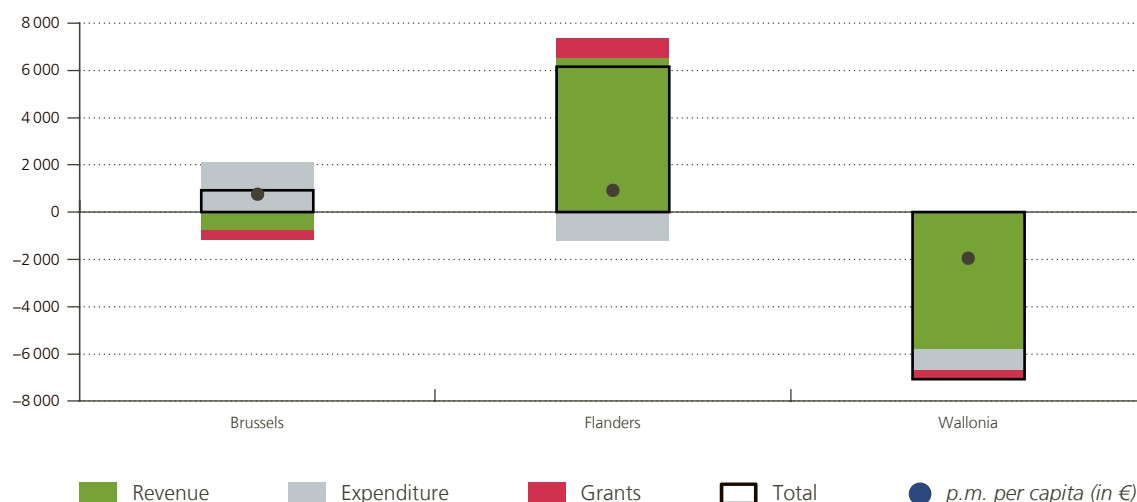
Sources: NAI, NBB.

1 See for example Bisciari and Van Meensel (2012) for more details.

2 The 2001 reform gave the regions greater fiscal autonomy by regionalising the revenue generated by various taxes and the associated powers, such as registration fees, gift taxes and motor vehicle duties. By way of compensation, a "negative" term was deducted from personal income tax. This negative term was retropolated in order to track the interregional transfers via resources resulting from the Special Finance Act during the period 1995-2005. This obviates the calculation of the regional distribution of taxes before 2002, when the taxes were still federal.

2. Result and determinants

2.1 Overview

Every year the federal government and social security collect an average of € 12 900 in revenue per capita in the form of fiscal and parafiscal levies. The amount varies according to the region: in 2019, it was € 11 300 in the Walloon Region (Wallonia), € 12 200 in the Brussels-Capital Region (Brussels) and € 13 800 in the Flemish Region (Flanders). Thus, Flanders residents contribute proportionately more to the federal budget than residents of Brussels and Wallonia. Geographically speaking, the federal fiscal and parafiscal revenues collected from households and businesses therefore imply interregional redistribution which, in 2019, amounted to € 6.5 billion.

Conversely, the federal State spends an average of € 9 000 per person in the form of direct transfers to households and businesses. That figure also varies between the regions: in 2019 it came to € 7 300 in Brussels and € 9 200 in Flanders and Wallonia. Thus, taking account of their number, Brussels residents receive less by way of federal expenditure than their Flemish and Walloon counterparts. In these circumstances, expenditure

Table 1

Details of interregional transfers

(2019, in € million unless otherwise stated)

	Brussels	Flanders	Wallonia
Revenue	**−760**	**6 529**	**−5 770**
Personal income tax	−972	2 528	−1 557
Social contributions	−599	2 944	−2 345
Corporation tax	1 319	715	−2 034
VAT	−438	498	−59
Excise duties	−70	−155	225
Expenditure	**2 079**	**−1 190**	**−889**
Pensions	2 047	−2 241	194
Health care	574	−394	−180
Incapacity for work	155	341	−496
National Employment Office [1]	−181	524	−342
Social assistance [2]	−298	604	−306
Other social benefits [3]	39	50	−89
Business subsidies [4]	−257	−74	331
Grants	**−401**	**823**	**−422**
Solidarity mechanism	−289	607	−318
Excl. solidarity mechanism	−112	215	−103
TOTAL	**918**	**6 162**	**−7 080**
p.m. Total per capita (€)	*759*	*935*	*−1 948*

Sources: NAI, NBB.

1 Total benefits paid on account of unemployment, career breaks or time credit.

2 Includes guaranteed income for the elderly, the income replacement allowance for disabled persons, the payment to the public welfare centres (CPAS) for the subsistence benefit, and the tax credit for low incomes.

3 Includes payments on account of accidents at work or occupational diseases.

4 This category is confined here to payroll tax exemptions, targeted reductions in social contributions, and subsidies paid to service voucher enterprises. For the latter two sub-categories, partly or entirely regionalised since the sixth State reform, expenditure at federal level was very limited in 2019.

with no direct counterpart, paid to businesses and households by the federal government, gave rise to interregional redistribution totalling € 2.1 billion in 2019.

Finally, the federal government made grants to the Communities and regions averaging € 3 900 per capita. That corresponded to € 3 800 in Flanders, € 4 100 in Wallonia and € 4 300 in Brussels. Redistribution via grants thus represented € 800 million in 2019.

Consolidation of the flows implicitly generated via federal level revenue, expenditure and grants provides an overview of redistribution between the regions. In 2019, Flanders evidently made a net contribution of around € 6.2 billion to these transfers. Brussels was likewise a net contributor, in the sum of around € 900 million. These amounts benefited Wallonia, which therefore implicitly received € 7.1 billion in that year. In per capita terms, the contributions of Flanders and Brussels were similar, at € 900 and € 800 respectively. On average, Walloon residents received around € 1 900 via the redistribution effected by the federal government and social security.

These interregional transfers arise from drawing up and implementing a budget with provision for the collection of revenue and the allocation of expenditure, which is central to public policy. By this means, governments redistribute resources among economic agents in order to achieve certain aims, including solidarity objectives. Since the federal rules apply in the same way everywhere, differences between one region and another logically reflect variations in the structure and profile of the resident households and businesses. In fact, the three Belgian regions feature significant demographic and socio-economic disparities which are summarised in the following section.

Chart 2

Demographic specificities and the labour market

(2020)

Age structure of the population
(% of total)

Activity rate
(% 20–64 years old)

Source : Statbel.

2.2 Demographic and socio-economic context

The profile of the Brussels Region is quite distinctive in terms of population by age. On average, Brussels residents are younger than those in Flanders and Wallonia. In Brussels, the under-18 age group represents 23 % of the population, while 64 % are of working age. These two ratios are higher in Brussels than in the other two regions. Consequently, the proportion in the 65+ age group is considerably smaller (13 %) than in the rest of the country. In comparison, the Flemish and Walloon Regions both have fairly similar ratios for the working age population. For the rest, those in the under-18 age group slightly outnumber those in the 65+ age group in Wallonia, while the opposite is true in Flanders.

The labour market situation varies considerably from one region to another. In 2019, the employment rate (persons in work as a ratio of the working age population) in the 20-64 age group stood at 62 % in Brussels, 65 % in Wallonia and 76 % in Flanders. In this last region, the higher employment rate reflects a higher activity rate (labour force as a ratio of the working age population) combined with a lower unemployment rate (unemployed job seekers as a ratio of the labour force). In the other two regions, the activity rates are lower and at comparable levels, though Wallonia's lower unemployment implies that it has a more favourable employment rate than Brussels.

The various dynamics operating on the labour market are logically reflected in the levels of households' primary income per capita specific to each region's residents. That ratio is thus considerably higher in Flanders than in the other two regions. In 2018, primary household income per capita there was 9 % above the national average. Conversely, in the Walloon Region primary household income per capita was 13 % below that average, and in the Brussels-Capital Region the negative gap was 10 %.

The State budget has the effect of smoothing out household income variations to some degree. That redistribution fulfils solidarity objectives between active and retired persons, workers and job seekers, high and low wage earners, etc. It is implicitly reflected in interregional transfers where a geographical approach is adopted, as

Chart 3

Value added, household primary income and household consumption

(2018, in € per capita)
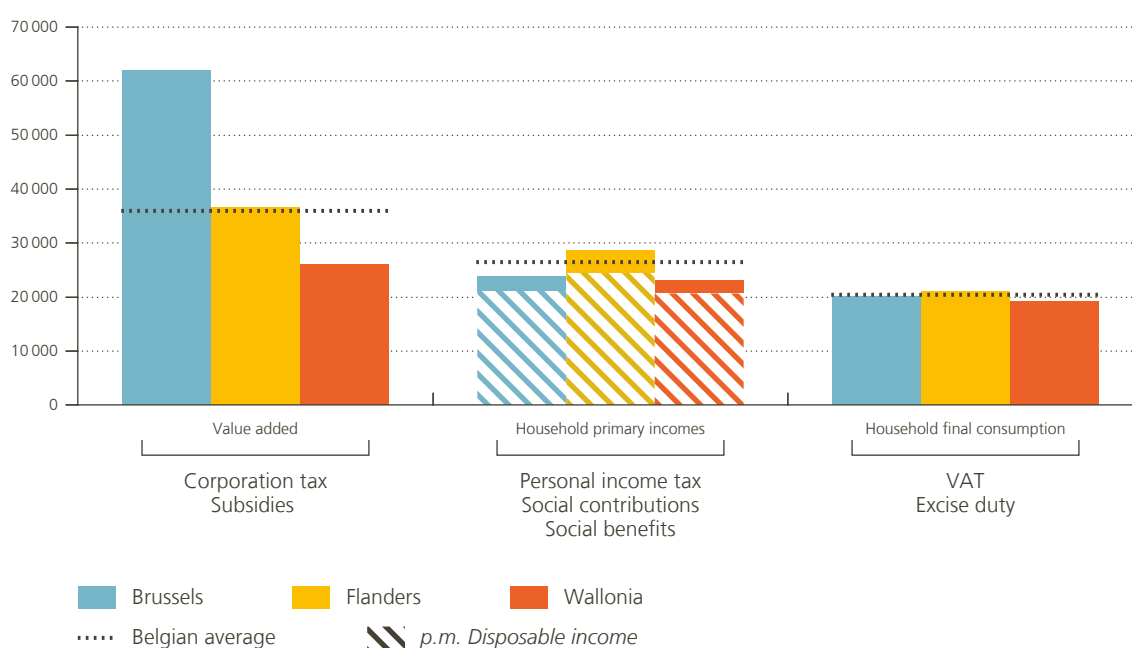
Sources: NAI, Statbel, NBB.

in this article. The impact of taxes and social contributions plus social benefits on the disposable income of households is in fact relatively more favourable in Brussels and Wallonia than in the Flemish Region : while gross disposable income per capita in this last region was still 7 % above the national average in 2018, that gap is smaller than the difference in primary income per capita. The opposite situation applies in the Walloon Region and the Brussels-Capital Region since the negative gaps between disposable income per capita and the national average there are reduced to 10 % and 8 % respectively.

The discrepancies in household consumption expenditure logically reflect differences in disposable income. However, they are less pronounced since some expenditure cannot be scaled down, and that results in a higher savings ratio in Flanders. As in the case of income, these differences will give rise to regional divergences in levels of indirect taxes per capita. More specifically, household consumption expenditure and household investment in the form of new building and property renovation feed into the State budget via value added tax (VAT) and excise duty.

The socio-economic variables discussed so far relate to households and are distributed regionally based on the place of residence of the households. As far as businesses are concerned, it is interesting to look at the value added produced by operating units established in each region. In relation to the population, value added is much higher in Brussels, a region where many business establishments are concentrated, at € 62 000 per capita, against € 37 000 in Flanders and € 26 000 in Wallonia. Here, too, the budget items broken down according to this allocation key will generate implicit redistribution between regions. For businesses, the main budget flows analysed in this study are corporation tax (on the revenue side) and subsidies (on the expenditure side)[1]. The regional distribution of value added clearly differs from the breakdown of households' primary income. First, note that regional primary income is only available for the household sector – not for the corporate sector –, which blurs the comparison between the two concepts. Second, workers commuting from their place of residence in Flanders and

Chart 4

Interregional redistribution via federal revenues

(2019, in € million)
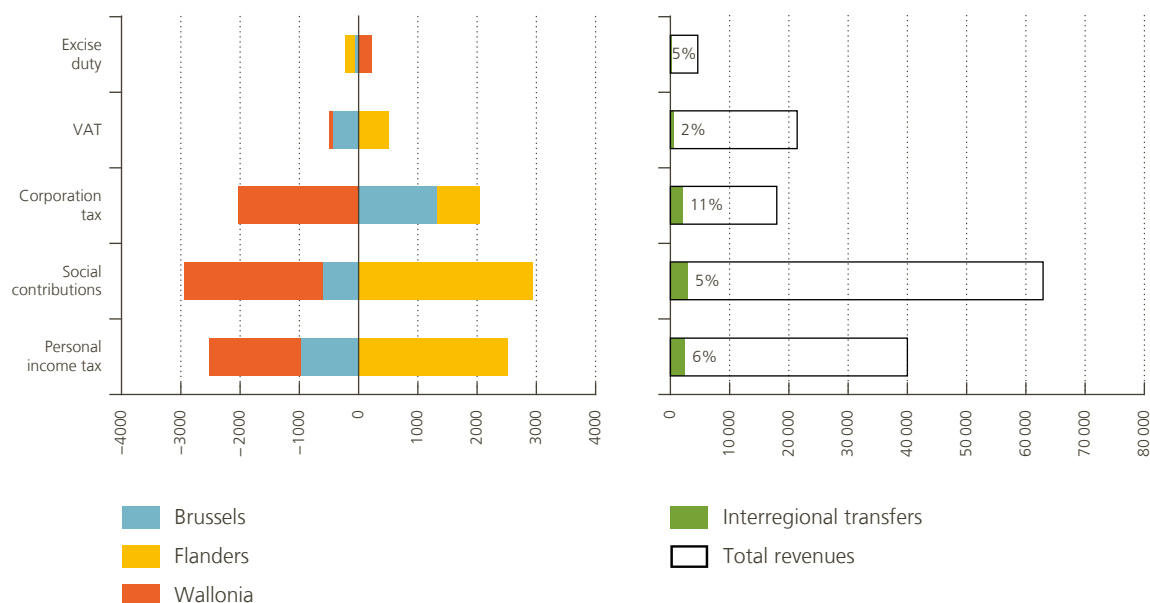
Sources : NAI, NBB.

1 Apart from employers' contributions which are linked to wages so that their distribution is the same as for personal contributions, in line with the worker's place of residence.

Wallonia contribute to (much of) the production created in the Brussels Region, while their income is registered in their region of residence. This raises Brussels' value added while lowering its per capita primary income.

2.3 Revenue analysis

The main sources of fiscal and parafiscal revenue for the federal government and social security are personal income tax, social contributions, corporation tax, VAT and excise duty. Aspects relating to the allocation of that revenue among the regions are discussed in this section.

In regard to the geographical origin of federal revenues, Flanders is a net contributor overall, in favour of the Brussels and Walloon Regions. However, the direction and scale of these flows vary according to the revenue categories, which are reviewed in the following sections.

Social contributions and personal income tax (PIT) are the two largest revenue items in the federal budget, together exceeding € 100 billion. It is therefore logical that these categories give rise to a considerable degree of redistribution between the regions. The average primary income per capita is a good approximation of the basis for calculating both the PIT and social contributions (taking personal and employers' contributions together). That ratio can be broken down into two factors, namely the average number of workers per inhabitant and the average

Chart 5

Employment, the main determinant of transfers via PIT and social contributions

(components of primary income per capita, 2018)
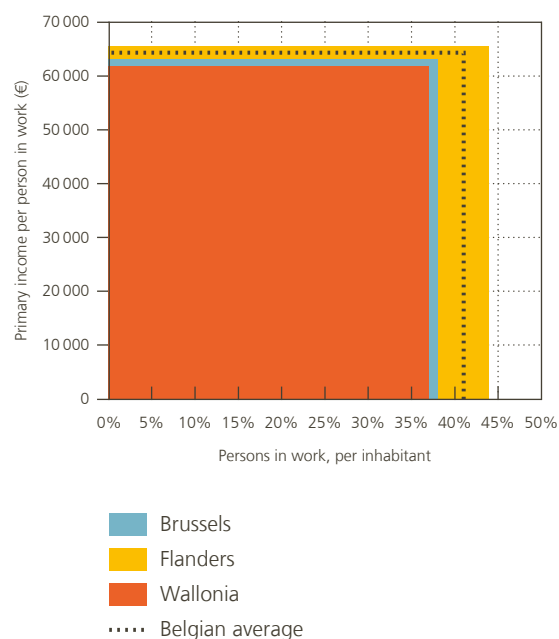
Sources: NAI, Statbel, NBB.

level of primary income per worker. The first factor, a concept close to the employment rate, gives an idea of the situation on the labour market. Flanders clearly performs better in that respect: 44 % of the total population is in work, compared to 38 % in Brussels and 37 % in Wallonia. The second factor reflects the level of remuneration per worker. In that respect, the ranking of the regions is the same but the differences are very small. The product of these two factors determines the worker tax base, which is significantly larger for Flanders residents. Logically, that

results in the Flanders Region making a per capita contribution to PIT and social contributions in excess of the national average. In regard to these revenues, Flanders can therefore be classed as a net contributor to interregional transfers. Conversely, the Walloon and Brussels Regions generate lower than average fiscal and parafiscal revenues, and are therefore beneficiaries of interregional transfers in that respect, with any differences attributable to the level of the employment rate rather than the level of individual remuneration.

In regard to corporation tax, the largest contribution is made by the Brussels Region, which – with its central geographical location and function as the capital of both Belgium and the EU – attracts many businesses. As a result, in per capita terms, the revenue from corporation tax collected in this region is well above the national average. The Flemish Region also contributes to interregional transfers via corporation tax, albeit to a lesser degree. The Walloon Region benefits considerably from these transfers.

In regard to VAT, the Brussels Region is the main beneficiary of transfers from Flanders. Brussels is distinguished primarily by comparatively low expenditure on residential construction investment. Thus, Brussels is home to 11 % of the country's population but represents only 6 % of renovation projects and just 2 % of new building, this latter figure being due to the density of the existing buildings. Owing to the urban character of this region, its car ownership rates are also lower (52 % of households, compared to 84 % in Flanders and 86 % in Wallonia in 2018), which has the effect of lowering per capita VAT receipts.

Chart 6

Interregional redistribution via federal expenditure

(2019, in € million)
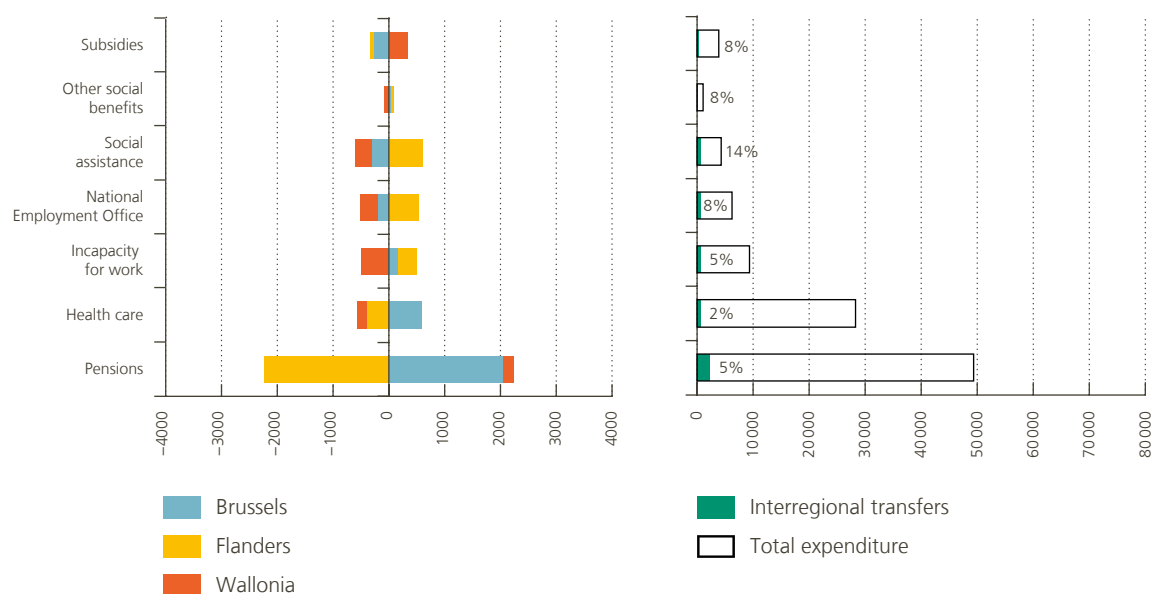
Sources : NAI, NBB.

Interregional transfers via excise revenues are smaller than those generated by VAT revenues. Wallonia is a net contributor because its residents consume relatively more products subject to excise duty, in contrast to the situation in Flanders. Brussels is also a net beneficiary in regard to excise duties, the main reason being the lower expenditure on fuel in the capital.

2.4 Expenditure analysis

In regard to the regional distribution of federal expenditure, the Brussels Region is a net contributor overall, in favour of the Walloon and Flemish Regions. However, the direction of these flows varies from one category

Population structure, a determinant of transfers via pensions

(components of pensions per capita, 2019)
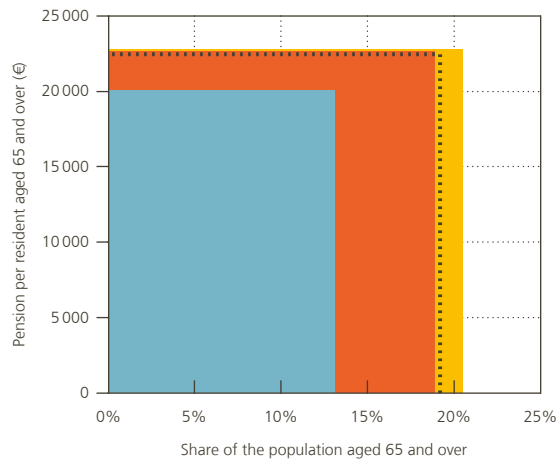
Sources: NAI, Statbel, NBB.

Chart 8

As in the case of pensions, expenditure on health care is concentrated on the elderly

(in € per person)
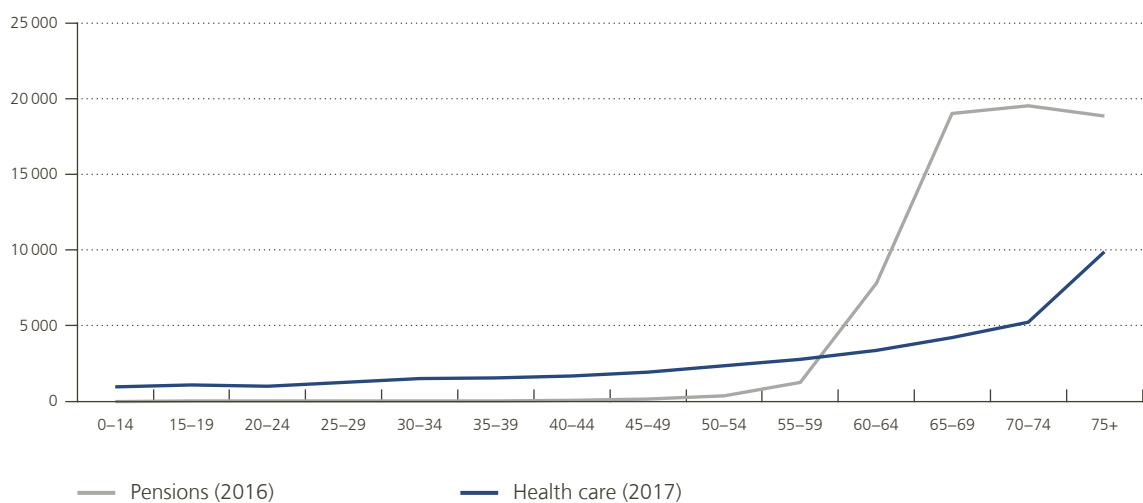
Sources: NIHDI, Social security database (CBSS), NBB.

to another. Those categories are reviewed in the paragraphs below.

On average, Brussels residents draw significantly less by way of pensions than their Flemish and Walloon counterparts. Given the same characteristics, all pensioners are obviously treated equally by the federal government, whatever their place of residence. It is demographic disparities between the regions that are the main determinant of these interregional transfers by way of pension expenditure. In each region, the pensions bill in relation to the number of residents can be broken down into two factors: a volume factor (proportion of the population in the 65+ age group) and a price factor (pension paid per person in the 65+ age group). In both cases, Brussels is clearly in a special position, having a small proportion of elderly persons combined with a lower average pension figure. In Flanders and Wallonia, the average pension amounts are very similar, but Flanders has a higher proportion of pensioners. These two factors together explain why Brussels, and to a lesser extent Wallonia, are net contributors to pension expenditure. Overall, interregional redistribution concerns 5 % of pension expenditure.

Interregional transfers under the heading of public expenditure on health care are comparatively modest since they represent barely 2 % of the federal budget for that item. In this case, the benefits that Brussels residents receive are considerably below the level implied by their share of the total population, in favour of Flemish and Walloon households. Here, too, this peculiarity is closely linked to the fact that the Brussels population is younger than the national average, since health care expenditure is evidently linked to age, as are pensions. The average amount of pensions takes off between the age of 55 and 65 years, after which the per capita expenditure levels out. In the case of health care, the increase in payments is less pronounced, but it begins earlier, accelerates with age, and is accentuated further beyond the age of 75 years, reaching an annual average of around € 10 000 per person.

The allowances paid for incapacity for work (primary incapacity and disability) give rise to net transfers to Wallonia from Brussels and Flanders. That redistribution represents 5 % of the corresponding federal expenditure. These differences are due both to the proportion of persons unable to work and to the average daily allowance that they are paid. In the specific case of disability, Wallonia appears to have higher values for both these ratios. NIHDI points out differences in household composition, with a proportionately greater number of Walloons receiving a higher – family-related – allowance. The disability ratio is also higher in Wallonia, notably on account of a larger proportion of manual workers, who are more vulnerable owing to the nature of their job. More generally, NIHDI mentions that health inequalities are closely linked to individuals' socio-economic situation, determined by factors (level of education, income and employment) which vary between the regions [1].

In the case of unemployment benefits and other allowances paid by NEO (mainly for career breaks and time credit), Flanders is a net contributor while the other two regions are net beneficiaries. This situation clearly reflects the different dynamics operating on the labour market. Indeed, the comparatively low unemployment rate in Flanders is the main factor explaining the regional differences, although its impact is somewhat tempered because the average benefit is higher there than in the other regions.

Social assistance benefits (including the income guarantee for the elderly, the income replacement allowance for the disabled, the payment to the CPAS for the subsistence allowance, the tax credit for low income earners) give rise to net transfers from Flanders to Wallonia and Brussels. For this category of expenditure, with beneficiaries generally on the margins of the labour market, the activity rate which varies between the regions plays a dominant role in the discrepancies. Interregional redistribution represents 14 % of the federal social assistance budget.

We can see that interregional transfers via public expenditure take place essentially through social benefits. The residual expenditure that can be broken down by region includes subsidies. Here, Wallonia emerges as a net contributor in favour of the Flanders Region, and especially the Brussels Region. These implicit flows are probably due to the relatively denser network of businesses in the Brussels Region. However, we should

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1 NIHDI (2012).

mention that a regional breakdown was only possible for part of the subsidies paid by the federal government and social security.

2.5 Analysis of the grants

The regional distribution of the federal government grants to Belgium's other federated entities was described in detail in the first section. Since the grant that each region receives is not based simply on its demographic weight, the Special Finance Act naturally influences interregional transfers.

Taking account of the total resources under the Finance Act, Flanders contributed € 800 million to the interregional transfers in 2019. Wallonia and Brussels each received around € 400 million by way of interregional transfers.

An explicit solidarity mechanism

Among the interregional transfers resulting from grants we can identify the transfers pursuant to the "solidarity mechanism". This mechanism explicitly aims at vertical solidarity between the federal State and the regions where per capita PIT is below the national average. At present, the Walloon Region and the Brussels-Capital Region receive transfers while the Flemish Region receives nothing. The analysis of the interregional transfers therefore reveals an implicit transfer from the Flemish Region to the other two regions, since the amount received by Flanders is, by definition, below the national average.

The solidarity mechanism which has applied since the latest reform of the Special Finance Act is less generous than the pre-2015 version[1].

Since the entry into force of the Special Finance Act in 1989, the Walloon Region has always received interregional transfers by way of solidarity support. In the Brussels-Capital Region, per capita personal income tax revenues have fallen sharply compared to the national average. While the gap was still decidedly positive in the early 1990s, it has systematically diminished, becoming negative from the end of the 1990s and ultimately giving rise to a transfer in favour of the Brussels Region from 2003. The Flemish Region has never benefited from this mechanism, and has therefore always been a contributor.

Other grants

On the subject of grants other than those resulting from the solidarity mechanism, which represent the bulk of the grants, interregional transfers have favoured the Flemish Region and been unfavourable to the other two regions until the sixth State reform that entered into full force from 2015 onwards. As described by Dury *et al.* (2008), "the reason is that, during the transitional period of the Special Finance Act between 1989 and 1999 and during the period following the Lambermont agreements, growing importance was attached to personal income tax revenues in each region for the allocation of these transfers." Flanders, where we have shown that the population's tax base is, on average, larger than the average for Belgium, therefore benefited from the interregional transfers in question, while Wallonia and Brussels were contributors[2].

Conversely, since 2015 the relative position in terms of transfers has been reversed. Flanders is now a net contributor to the said interregional transfers, while the other two regions are beneficiaries. The role played by personal income tax revenues in the allocation of these grants was in fact greatly reduced after 2015. Since the regionalisation of part of the PIT (now excluded from the analysis since it concerns a regional competence), Flanders contributes less to the federal budget via revenues but also receives less in return by way of transfers

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1 This mechanism was adapted at the time of the sixth State reform to avoid the risk of the "poverty trap" which had been identified in the old "national solidarity support system" in force since 1989. In fact, when a Region's PIT declined, the resulting loss for that Region was outweighed by the ensuing gain in terms of solidarity. See for example Bisciari and Van Meensel (2012).

2 Nevertheless, the transfers resulting from the solidarity support system compensated for these positions.

Chart 9

Impact of the Special Finance Act grants on interregional transfers [1]

(in € million)

Resources derived from
the national solidarity
mechanism (a)

Resources derived from
the Special Finance Act
excluding the national
solidarity mechanism (b)

Overall impact of
the Special Finance Act (a+b)

Brussels   Flanders   Wallonia
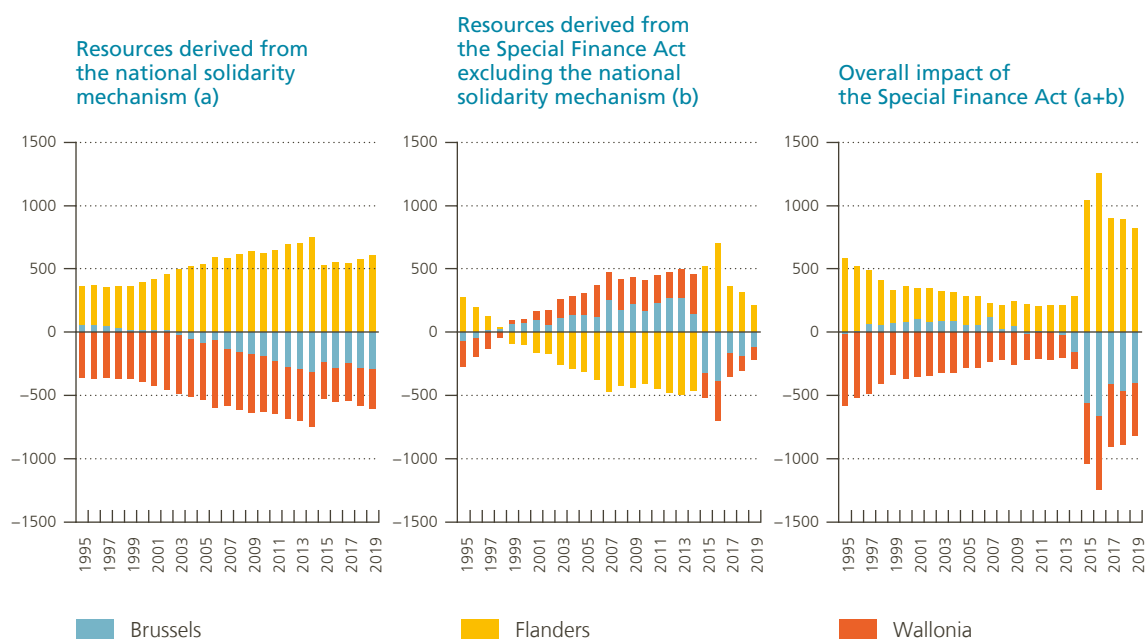
Sources: FPS Finance, NAI, NBB.
1 A positive figure indicates a transfer from the region concerned while a negative figure indicates a transfer to that region.

in the form of grants. By adopting a temporal perspective for all these transfers we can better illustrate these phenomena since various factors tend to offset one another, at least in part (see section 3.1). It is important to bear in mind that the institutional approach adopted requires to take account of the definition of the powers of the federated entities, how that has changed over time, and its impact on the various transfer components in order to analyse the various developments correctly.

Although the other grants do not result from an explicit solidarity mechanism, various implicit solidarity mechanisms nevertheless play a role. That applies primarily to the Community grants under the reformed Special Finance Act, which are allocated partly on the basis of need. That is evident from the use of specific allocation keys (number of children for family allowances, number of elderly for resources connected with support for the elderly, the pupil key for funds earmarked for education), or the introduction of the transitional mechanism to avoid impoverishing the federated entities, though that mechanism is time limited.

3. The analysis viewed in perspective

It is somewhat arbitrary to examine federal revenue and expenditure from a regional angle. As we have seen, the flows identified in the previous section are closely linked to the way in which the State collects and redistributes its resources. In reality, the federal government's tax and social policies are based on the characteristics of households and businesses, and not on their place of residence. In absolute terms, if ad hoc data were available, a similar analysis could equally consider transfers between women and men, young and old, workers and job seekers, the sick and the well, Belgians and foreigners, etc. However, these various angles

Chart 10

Population ageing has reduced the extent of interregional transfers

(in % of GDP)

Net contribution to interregional transfers

Flanders' net contribution to interregional transfers

Brussels
Flanders
Wallonia

Pensions and health care
PIT and social contributions
Other revenue
Other expenditure
Grants
Total
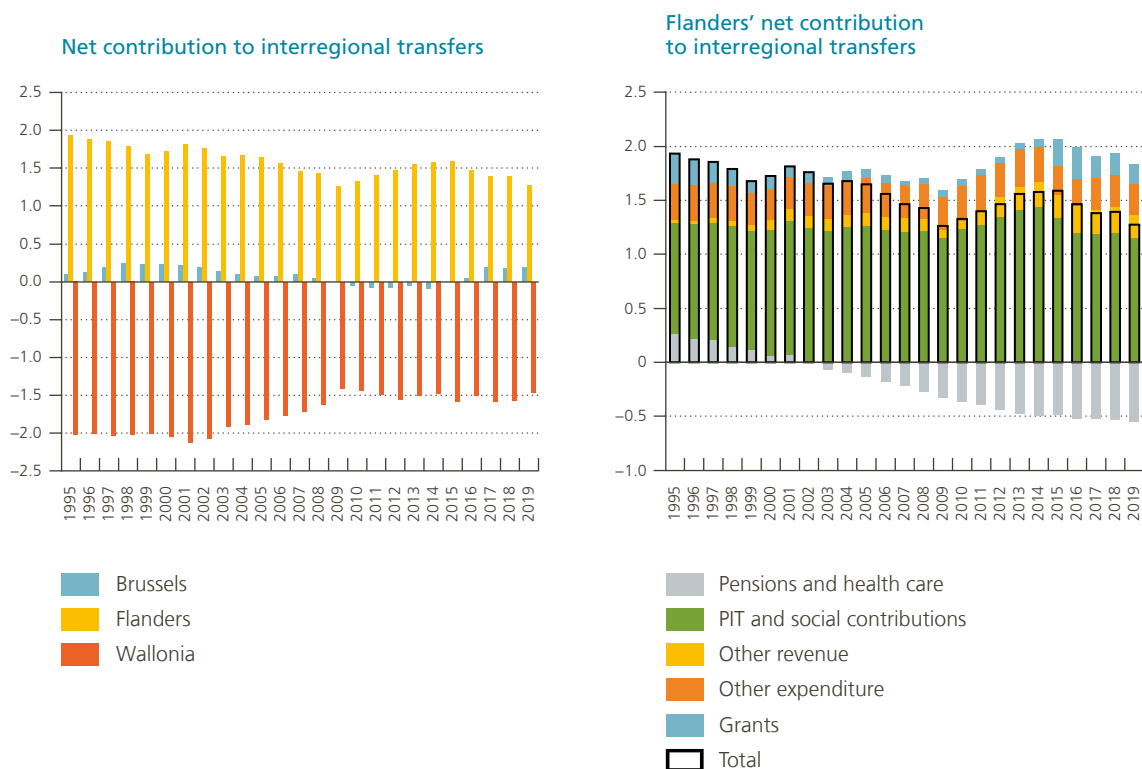
Sources: NAI, NBB.

are beyond the scope of this article. In this section, we shed additional light on the analysis by adopting a triple perspective: first temporal, then interprovincial and finally international.

3.1 Changes over time

The changes in interregional transfers since 1995 reveal that, leaving aside cyclical fluctuations, the transfers have tended to become smaller over the years. To identify the underlying factors, it is helpful if the net contribution made by Flanders over the period as a whole is broken down per category. We then find that the downward trend is explained mainly by expenditure relating to population ageing. The Flemish contribution to pensions and health care thus became negative in 2003 and has become increasingly negative since then.

Another striking point in this historical perspective is the impact of the sixth State reform. Its effect is not visible in the total transfers, which were unchanged from 2014 to 2015, but it can be seen in the breakdown between categories. First, the State reform devolved additional powers to the federated entities, in practice eliminating the previous corresponding transfers via federal expenditure. That applies, in particular, to family allowances, service vouchers and targeted reductions in social contributions. The impact of the latest State reform is also apparent in federal personal income tax revenues, which were cut by the amount which became the regional PIT. These lower contributions have been partly offset since 2015 by federal government grants to the Communities

Chart 11

Interprovincial transfers via the federal budget

(2019, in € million, unless otherwise stated)
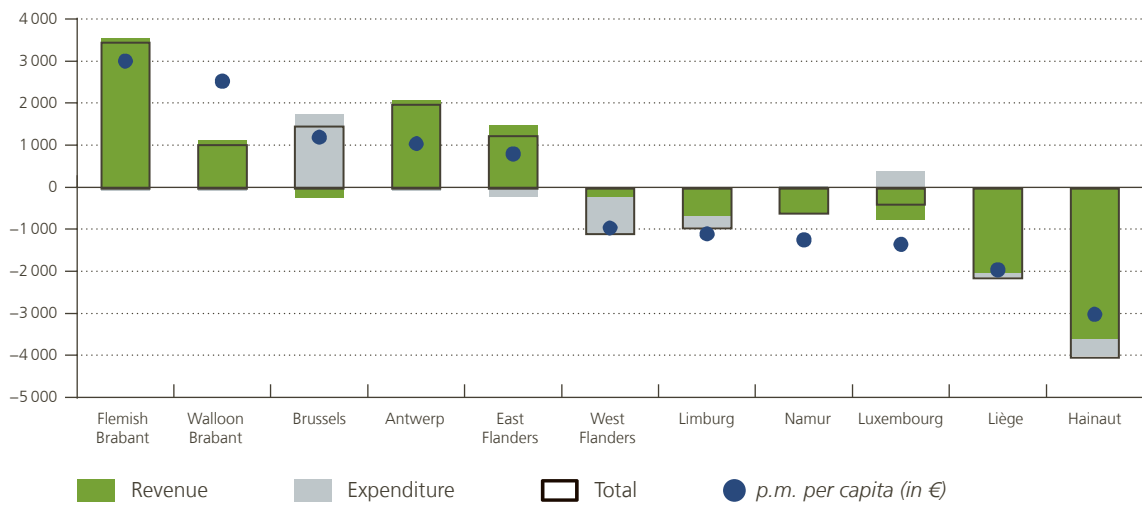
Sources: NAI, NBB.

and Regions under the Special Finance Act. Furthermore, with effect from 2016 the federal tax shift is perceptible via a reduction in taxes and parafiscal levies on labour, which indirectly reduced the interregional redistribution.

3.2 Interprovincial redistribution

In this section, we retain the geographical perspective but take it a step further, to the level of the provinces. However, on that scale it is not possible to apportion the grants paid to the Communities and Regions under the Special Finance Act. On the basis of the available statistics, the provincial analysis is confined to the following categories: personal income tax, social contributions and corporation tax on the revenue side; pensions, allowances for incapacity for work, NEO benefits and payroll tax exemptions on the expenditure side.

In these categories, as in the case of the regional dimension, we can compare each province with the Belgian average, enabling us to chart the implicit interprovincial flows via the federal budget. For full coverage of the national territory, the Brussels-Capital Region is included in the analysis and regarded as an eleventh province, in accordance with the NUTS (Nomenclature of Territorial Units for Statistics) classification level 2.

It is perfectly logical that the implicit interprovincial flows reflect the redistributions already demonstrated at regional level. In fact, the Flemish provinces are joint net contributors while the Walloon provinces are joint net beneficiaries. However, we can identify some specific provincial characteristics which supplement the analysis so far.

Thus, only two of the five Flemish provinces are net beneficiaries in terms of revenue, and hence net beneficiaries for the federal budget as a whole: they are Limburg and West Flanders. In the latter province, pension expenditure plays a major role due to a comparatively high proportion of retired residents. Results for the Walloon provinces vary in regard to the implicit flows relating to expenditure. Conversely, only Walloon Brabant is a net contributor in terms of revenue, including for the federal budget as a whole. Luxembourg, a net beneficiary, is affected

by the number of border residents who work and pay their taxes and social contributions in the Grand Duchy, thereby reducing the fiscal and parafiscal revenues generated by that province.

In relation to population size, the territories of what used to be Brabant form the main basis. The net contribution thus represents € 3 000 per capita in Flemish Brabant, € 2 600 in Walloon Brabant and € 1 200 in Brussels. The rest of the country receives a redistribution from these three entities amounting to some € 6 billion via the federal budget, a similar figure to the contribution of Flanders to the interregional transfers. At the other end of the scale are the provinces of Liège and Hainaut, the latter being a net beneficiary receiving € 3 000 per inhabitant.

3.3 International comparison

A comparison with interregional transfers operating in other European countries may provide a relevant benchmark for assessing the scale of the transfers in Belgium.

To be able to compare Belgium with other countries we limit the analysis to interregional transfers through households and use the regional accounts of households, which are drawn up according to the ESA 2010 harmonised methodology for all EU countries. The regional accounts of households include households' primary incomes and their disposable income, the difference between the two being due to transfers paid to governments in the form of taxes on income and social contributions, and transfers paid by governments in the form of social benefits and other current transfers. Note that this households-based approach provides less complete coverage of the transfers than in the preceding sections on Belgium: it takes no account of any grants to the regions (as in the interprovincial analysis), and it excludes corporation tax, business subsidies, indirect taxes and health care expenditure. However, it is interesting to note that despite these differences the indicators of interregional redistribution obtained at provincial level are consistent with those obtained in the previous section

Chart 12

Compared to other EU Member States, Belgium features relatively low interregional transfers at NUTS 1 level

("Interregional transfers per capita[1] / national primary income per capita" ratio – standard deviation in 2018 in EU countries[2], in percentage points)
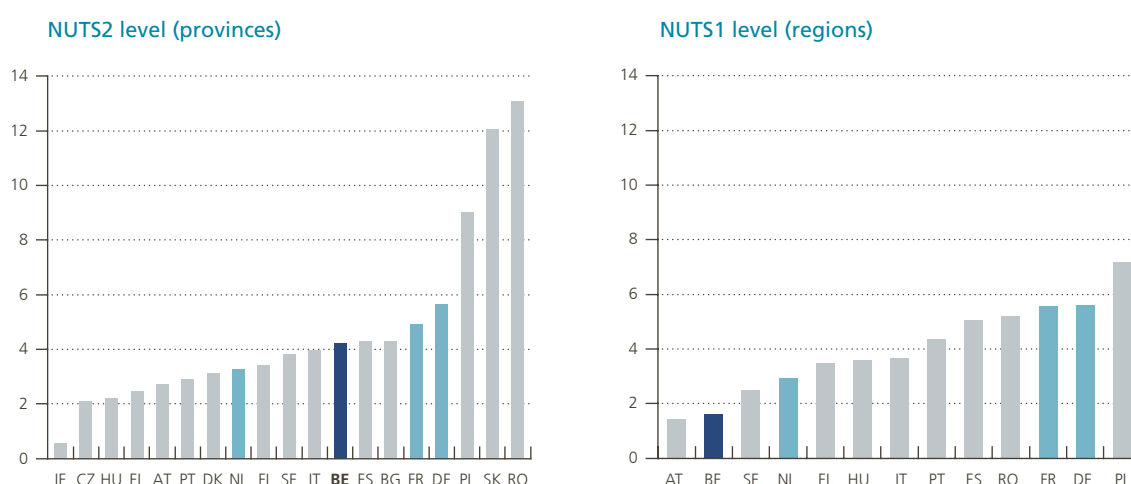
NUTS2 level (provinces)

NUTS1 level (regions)

Source: EC, NBB.
1 Interregional transfers are defined as the difference between the NUTS region and the national indicator for per capita transfers, which is computed as primary income minus disposable income.
2 EU countries with minimum 3 NUTS1 level or 3 NUTS2 level regions are considered.

(except for Brussels, whose position changes from contributor to beneficiary if corporation tax is disregarded). The correlation between the two series is almost 90 %.

The regional accounts are available at various geographical levels. The three Belgian regions correspond to the NUTS 1 aggregation level. The NUTS 2 level which comprises smaller geographical areas corresponds to the ten Belgian provinces plus the Brussels Region. According to Eurostat, in principle the NUTS 1 classification comprises regions with a population averaging between 3 and 7 million. There is therefore no NUTS 1 aggregate for relatively small countries. The NUTS 2 classification corresponds to regions with a population of between 800 000 and 3 million. Another notable point is that for some countries, in contrast to Belgium, these classifications do not correspond to any internal administrative subdivision. That applies, for example, in the Netherlands, Italy, Spain and France where the NUTS 1 aggregate is above the level of the "domestic" regions or provinces. Conversely, in Germany this level corresponds to the level of the federated entities (Länder).

Based on the difference between primary income and disposable income at the regional level, interregional redistribution due to household income taxes, social security contributions and social benefits can be calculated within each country. Anologous to the methodology followed in the rest of the article, interregional transfers are calculated as the difference between the level of redistribution per person in a region compared to that calculated on average for the country. In order to compare the importance of interregional transfers across countries, it is appropriate to scale the interregional transfers per capita to or from each region (in euro), by using the ratio of the interregional transfers per capita to the national primary income per capita in the country. The dispersion of these ratios within a country, measured by their standard deviation, indicates the extent of redistribution within that country, and can be compared across countries.

The analysis of the regional redistribution rate at NUTS 1 level reveals that transfers from one region to another are relatively moderate overall in Belgium. The degree of interregional redistribution turns out lower in Belgium than in most other EU Member States. If we consider the NUTS 2 level (provinces), however, Belgium is ranked in the middle. The interregional transfers are considerably higher in Romania and Poland, but also higher in neighbouring countries Germany and France. For example, in Germany the ratio of transfers per capita to primary income per capita at NUTS 1 level is 5 to 10 % above the national average in Hamburg, Bavaria, Hesse and Baden-Württemberg, while it is about 17 % below the average in Saxony and Saxony-Anhalt, two Länder forming part of the former East Germany. In contrast, in Belgium the Flemish Region is contributing more with a ratio of 4 % above the average, while the Walloon Region – the biggest receiver – is 6 % below the national average.

When looking at the extreme regions in each country, the Bucharest region in Romania and the Warsaw capital region in Poland are the NUTS 2 regions making the largest contribution. Ile de France also emerges as a major contributor region (ranked first in NUTS 1 and fourth in NUTS 2). Saxony in the former East Germany stands out among the leading beneficiary regions. It is also a district of Saxony that heads the ranking at NUTS 2 level, namely Chemnitz, with a deviation of 20 % from the average. The extreme NUTS 1 regions in Belgium (Wallonia and Flanders) turn out to deviate among the least from the national average. At provincial level, the provinces of Hainaut and Flemish Brabant are positioned slightly above the median of our sample.

If we visualise the position of the various NUTS 2 regions on a map of Europe, two main lessons emerge. First, the countries' central regions, i.e. typically those which include the capital, are generally significant contributors whereas the main beneficiary regions are often in a more peripheral location. Also, a number of other regions likewise appear as contributors. Most of them are large metropolises, areas enjoying comparative advantages such as access to an international port, or particularly productive regions. These more prosperous regions are concentrated around an arc extending from the North Sea to northern Italy and passing through southern Germany.

Chart 13

In Belgium, at NUTS 1 level the largest contributor and beneficiary regions exhibit a lower rate of redistribution than in most other EU countries [2]

("Interregional transfers per capita [1] / national primary income per capita" ratio, in %, 2018)

NUTS 1 level (regions)

Main beneficiary region in each country

Region	
Sachsen-Anhalt (DE)	
Régions ultrapériphériques françaises (FR)	
Isole (IT)	
Noroeste (ES)	
Região Autónoma da Madeira (PT)	
Noord-Nederland (NL)	
Macroregiunea doi (RO)	
Norra Sverige (SE)	
Kentriki Ellada (EL)	
Makroregion Centralny (PL)	
Région wallonne (BE)	
Alföld és Észak (HU)	
Südösterreich (AT)	

Axis: 0 −5 −10 −15 −20 −25 −30 −35 −40 −45

Main contributor region in each country

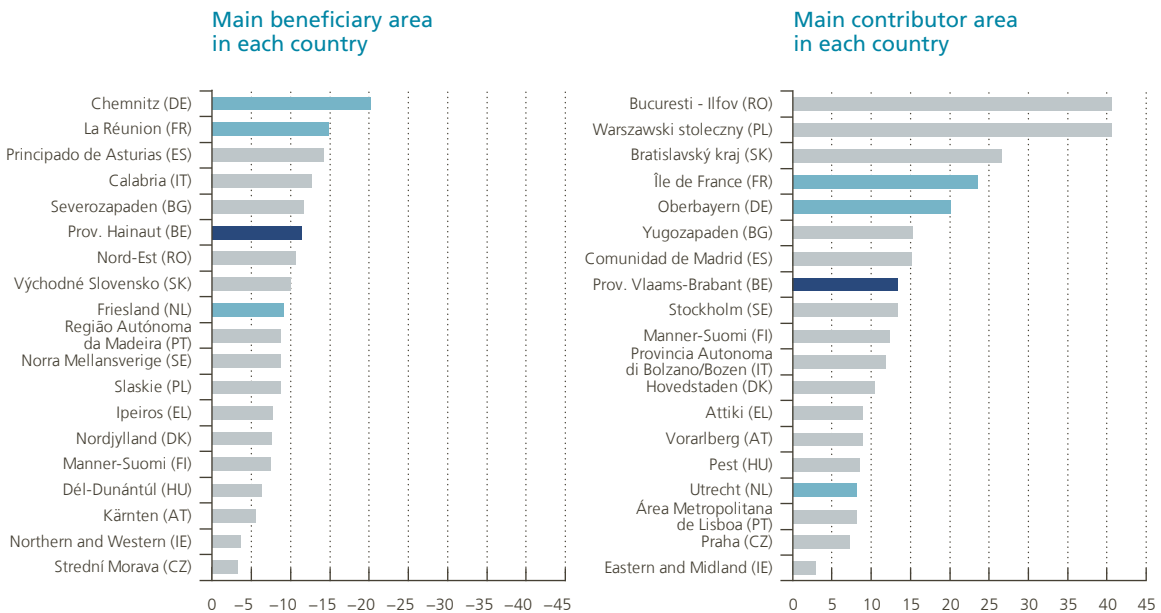| Region	
Île de France (FR)	
Makroregion Województwo Mazowieckie (PL)	
Comunidad de Madrid (ES)	
Macroregiunea trei (RO)	
Hamburg (DE)	
Attiki (EL)	
Közép-Magyarország (HU)	
Nord-Ovest (IT)	
Östra Sverige (SE)	
West-Nederland (NL)	
Vlaams Gewest (BE)	
Westösterreich (AT)	
Continente (PT)	

Axis: 0 5 10 15 20 25 30 35 40 45

NUTS 2 level (provinces)

Main beneficiary area in each country

Area	
Chemnitz (DE)	
La Réunion (FR)	
Principado de Asturias (ES)	
Calabria (IT)	
Severozapaden (BG)	
Prov. Hainaut (BE)	
Nord-Est (RO)	
Východné Slovensko (SK)	
Friesland (NL)	
Região Autónoma da Madeira (PT)	
Norra Mellansverige (SE)	
Slaskie (PL)	
Ipeiros (EL)	
Nordjylland (DK)	
Manner-Suomi (FI)	
Dél-Dunántúl (HU)	
Kärnten (AT)	
Northern and Western (IE)	
Strední Morava (CZ)	

Axis: 0 −5 −10 −15 −20 −25 −30 −35 −40 −45

Main contributor area in each country

Area	
Bucuresti - Ilfov (RO)	
Warszawski stoleczny (PL)	
Bratislavský kraj (SK)	
Île de France (FR)	
Oberbayern (DE)	
Yugozapaden (BG)	
Comunidad de Madrid (ES)	
Prov. Vlaams-Brabant (BE)	
Stockholm (SE)	
Manner-Suomi (FI)	
Provincia Autonoma di Bolzano/Bozen (IT)	
Hovedstaden (DK)	
Attiki (EL)	
Vorarlberg (AT)	
Pest (HU)	
Utrecht (NL)	
Área Metropolitana de Lisboa (PT)	
Praha (CZ)	
Eastern and Midland (IE)	

Axis: 0 5 10 15 20 25 30 35 40 45

Source: EC, NBB.

1 Interregional transfers are defined as the difference between the NUTS region and the national indicator for per capita transfers, which is computed as primary income minus disposable income.

2 EU countries with minimum 3 NUTS1 level or 3 NUTS2 level regions are considered.

Conclusion

Via the federal government and social security budgets, Flanders and Brussels are net payers in terms of interregional transfers, while Wallonia is a net recipient. In 2019, Flanders evidently made a net contribution of around € 6.2 billion to these transfers. Brussels was likewise a net contributor, in the sum of around € 900 million. These amounts benefited Wallonia, which therefore implicitly received € 7.1 billion in that year. In per capita terms, the contributions of Flanders and Brussels were similar, at € 900 and € 800 respectively. On average, Walloon residents received around € 1 900 via the redistribution effected through the federal government and social security. That is due to divergences in demographic and socio-economic characteristics between the various regions.

Flanders contributes primarily via the levies on income from labour, mainly because the employment rate in Flanders is considerably higher than the Belgian average. Flanders is a net recipient of government expenditure since its relatively old population receives more of the pension and health care expenditure. In the past twenty years, transfers from Flanders have fallen slightly by roughly half a percentage point of GDP due to an ageing population.

Brussels, with its relatively young population, is a net payer in terms of age-related expenditure. On the revenue side, Brussels residents are net recipients in terms of the charges levied on labour incomes, in view of their relatively low employment rate. However, this is largely offset by the net contributions to corporation tax, reflecting the high per capita production in the Brussels-Capital Region.

Wallonia is a net recipient of interregional transfers owing to the low employment rate and below-average income levels, which reduce labour income-related levies and increase income-related social benefits. In addition, with output per capita below the national average, Wallonia is also a net recipient via corporate income tax revenue.

Demographic forecasts for the three regions also predict more rapid population ageing in Flanders and Wallonia in comparison with the Brussels-Capital Region in the decades ahead. The contribution of Brussels via age-related expenditure can therefore be expected to rise. In the case of the other main driver of interregional transfers – the employment rate – the picture depends to a greater degree on policy choices. If the federal government and the regional authorities, with ever more levers at their disposal, succeed in driving up employment towards the level prevailing in Flanders, the interregional transfers from Flanders will decline.

A provincial perspective shows that outgoing transfers per capita are highest in centrally located Brussels and the two adjacent provinces, namely Flemish Brabant and Walloon Brabant. The principal beneficiaries are the provinces of Hainaut and Liège.

A European perspective shows that the interregional transfers in Belgium are modest overall at the level of NUTS 1 regions (the 3 regions of Belgium) and average at the level of the NUTS 2 areas (the Belgian provinces).

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The EU budget and the Next Generation EU Recovery Plan: a game changer?

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Introduction

The last decade, the European economy and society have faced several crises and new challenges such as a large inflow of asylum-seekers in 2015 due to the war in Syria and Iraq, the rise of China as a global competitor, climate change and Brexit. After a referendum in June 2016, the UK left the EU institutions on 1 February 2020 and, with the exception of Northern Ireland, it withdrew from the EU Single Market and Customs Union and signed up to a Trade and Cooperation Agreement on 1 January 2021. The EU adapted to these challenges and often developed new instruments and strategies. Namely, it has negotiated – and in some cases concluded – (modernised) Free Trade Agreements with several partners including Canada and Japan, it has reinforced its border management with Frontex and the European Commission led by Ursula von der Leyen has put the Green Deal and the digital transition at the core of its mission.

These developments have found their way into the new Multiannual Financial Framework (MFF) that covers the period 2021-2027. While the negotiations were deadlocked after an unsuccessful European Council in February 2020, COVID-19 started to spread in Europe. The ensuing restrictions and extreme uncertainty led to major turbulence on the financial markets, to disruptions in the Single Market and to an unprecedented drop in economic activity in peacetime. Various policies have been activated to react to this exceptional common shock that had hit certain countries like Italy and Spain sooner and harder than others.

In that exceptional context, the European Council reached an agreement in July 2020 on both a new MFF and a temporary recovery instrument named the Next Generation EU (hereafter the NGEU). The Recovery Plan and the MFF have now been fully endorsed by the European Parliament and their implementation has started.

This article provides an economic reading of the EU budget and the NGEU with a special focus on the Belgian perspective. We investigate whether or not the new budgetary package is a game changer.

The first section of the article is more descriptive by nature and looks at the key features and figures of both the MFF and the NGEU. In the second section, we ask how well the budget and the NGEU will address

several key objectives and challenges : boosting the EU growth potential ; promoting convergence between countries and cohesion between regions : and facilitating the green and digital transition. In the third section, we consider the interactions between the EU institutions and the Belgian economy and general government account.

1. Overview of the EU budget and Recovery Plan

1.1 The EU budget in perspective

The size of the EU budget is traditionally one of the issues at stake in the negotiations between the co-legislators, the European Council (EUCO) and the European Parliament (EP), on the basis of a proposal by the European Commission (EC). The budget hence reflects both the priorities of EU institutions and the national governments ("dual nature", see Lehner, 2020). To avoid yearly difficult discussions, since 1988 maximum ceilings ("commitments") by categories ("headings") of expenditure are determined for a longer period, usually seven years, in Multiannual Financial Frameworks (MFF)[1]. In the remainder of the article, the expression EU budget will be equivalent to the Multiannual Financial Framework (MFF), unless otherwise stated.

The agreement on the 2021-2027 MFF sets the annual commitments at a level just above 1.1 % of the EU's gross national income (GNI). This is slightly higher than the previous MFF in order to compensate for the automatic reduction in EU GNI triggered by the withdrawal from the EU of the UK, a net contributing Member State. Also, the previously off-budget European Development Fund has been included in the MFF. Some other instruments nevertheless remain outside the budget. The size of the EU budget remains very limited compared to that of individual EU countries, which on average spent about 50 % of GNI, and federal models as in the United States where federal spending usually accounts for at least 50 % or so of final public spending (D'Alfonso *et al.*, 2021). Moreover, actual expenditure even tends to be lower than the maximum ceilings defined in the MFF.

As explained in the next section, the humanitarian and economically devastating nature of the pandemic created the momentum for an exceptional additional budgetary response at EU level, the Next Generation EU (hereafter the NGEU), with commitments around 0.75 % of GNI. The NGEU is, however, strongly frontloaded as commitments have to be made before the end of 2023, while payments may last until the end of 2026, with the bulk also expected in the next few years.

Thanks to the NGEU, the size of the total EU spending jumps to over 3 % of EU's GNI in 2021-2022, enabling it to play a macroeconomic stabilisation[2] function for the first time on top of the provision of public goods and some redistribution of resources to reduce regional disparities (Lindner and Tordoir, 2020). Even if the scope of the EU budget remains limited, some of its features can raise its impact (D'Alfonso *et al.*, 2021). The EU actually devotes a larger share of its budget to investment than national governments and the EU budget may represent a significant source of financing for investments realised by national, regional and local governments, especially in the Member States that joined the EU since 2004. Co-financing and innovative financial instruments are also intended to maximise the multiplier effect of the EU budget. Finally, the MFF helps to reap economies of scale in policy areas, notably for transnational programmes of research and innovation.

The budget allows for some flexibility to deal with sudden unexpected events. But this flexibility is not sufficient to deal with major crises, also since the EU budget cannot be in deficit. Limited borrowing is only permitted in a few cases. Hence, when confronted with the 2008-2009 economic and financial crisis and the euro area

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1 Within that framework, annual budgets still need to be approved to set the actual amount of expenditure and to allocate the maximum amounts per heading in detail among the various budget items.

2 The term « stabilisation » is debated, mainly because the EU funds are expected to be spent mainly while the economy is already recovering (Centraal PlanBureau, 2021).

Chart 1

Size of the EU budget in the Multiannual Financial Frameworks

(commitments, in % of EU GNI)

2021-2027 average
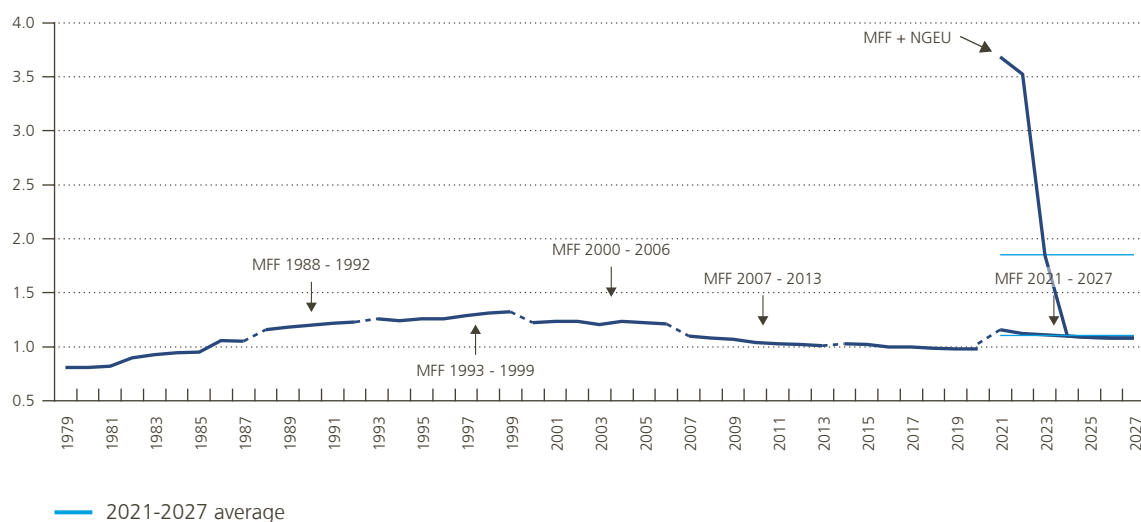
Source : Frogneux V. and M. Saintrain (2013), EC Spring 2021 forecasts.
Because of the uncertainty around GNI due to COVID-19, the figures for 2021-2027 have actually been set in billions of euros and we have divided them by GNI forecasts. For the expected GNI until 2022, we have used the Spring 2021 forecasts and then we have assumed a 3 % annual nominal growth rate.

sovereign debt crisis in 2010, the EU and the euro area reacted by building solutions outside the EU budget : bilateral loans (Greece I package), European Financial Stability Facility (EFSF) and European Stability Mechanism (ESM). Emergency instruments[1] have also been activated to face with the migration crisis and other crisis. To stimulate investments, the EC also called on the European Investment Bank (EIB) for the Juncker Plan. More recently, the borrowing in response to the coronavirus crisis both for the NGEU and for the European instrument for temporary Support to mitigate Unemployment Risks in an Emergency (SURE) had to take the form of specific instruments created outside the MFF rather than within this framework.

1.2 A Recovery Plan : the Next Generation EU

1.2.1 Rationale for the Next Generation EU

The NGEU is a more structural economic policy response of the EU institutions to the COVID-19 crisis, besides the immediate short-term response within the flexibility of the EU budget and new funding streams of three safety nets (SURE, EIB and ESM), the strong relaxation of monetary and prudential policies[2], the activation of both an easing of state aid rules and the general escape clause under the Stability and Growth Pact on the fiscal side, the latter having opened the door to an expansive fiscal policy by the Member States[3].

In April 2020, the seriousness of the economic fallout of the pandemic became clear. The IMF has labelled the economic crisis resulting from the coronavirus as the "Great Lockdown". On 23 April, the EUCO agreed on the

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1 On the flexibility issue, see Sapala M. (2020).

2 See Boeckx *et al.* (2020) for a detailed presentation of the ECB's monetary response to the COVID-19 crisis.

3 More information on the EU reaction to the COVID-19 crisis may be found in box 3 in the NBB Annual Report 2020 but also in many papers, notably a box in the article "The EU budget and its financing : looking back and ahead" from the Deutsche Bundesbank's April 2020 monthly report.

need to establish a common recovery fund, commensurate with the challenge the EU is facing and targeted towards the sectors and geographical parts of Europe hit hardest by the crisis (D'Alfonso, 2020). Heads of State or Government then tasked the EC with analysing the needs and preparing a proposal. On 18 May, the German Chancellor Angela Merkel and the French President Emmanuel Macron proposed the creation of a temporary EU recovery instrument endowed with € 500 billion that would be distributed to governments in the most affected countries in the form of transfers financed by common long-term debt issuance. This decisive statement led the Commission to put forward its own proposal on 27 May for a debt-financed € 750 billion EUR recovery fund (in 2018 prices), split into € 500 billion in grants and € 250 billion in (back-to-back) loans made by the EU (EC, 2020a and b).

The economic rationale for this move is to be found in the deep and uneven recession the EU was going through. While acknowledging extremely high uncertainty surrounding the estimates, the EC projected in Spring 2020 the EU economy to contract by 7.5 % in 2020 before partially rebounding in 2021. This major economic shock, unprecedented since World War II, is symmetric as it hits all Member States, but the intensity of the impact and the capacity to absorb and rebound vary significantly within the EU. Contrary to most other recessions, the shock mostly hit the services sector, in particular the contact-intensive ones and the branches of activity depending on transport and travel, notably tourism. Contrary to the financial crisis where imbalances had accumulated endogenously, the shock was also perceived as exogenous and thus not prone to any moral hazard argument. The shock had also challenged the smooth functioning of the Single Market and the euro area. The necessary conditions for including an element of solidarity, the grant component, in the composition of the fund had been met.

Based on its analysis of the investment gap, both overall and with a view of facilitating the twin green and digital transitions, and an assessment of the corporate equity gap that, if not addressed, would result in insolvencies (EC, 2020c), the EC opted for a bold and comprehensive Recovery Plan "to kick-start the European economy, boost the green and digital transitions, and make it fairer, more resilient and more sustainable for future generations" (EC, 2020a).

1.2.2 A compromise between the different views

On top of issues related to the MFF, discussions on the NGEU have focused on the size of the Recovery Plan, the split between grants (perceived as transfers between contributors and beneficiaries) and loans, its financing and the type of programmes that would be boosted and the Member States' allocation keys for the grants of the Recovery and Resilience Facility (RRF) on which the consensus was that it should be the most substantial budgetary item.

Over these issues, the EC proposed:

- a higher total budget for the Recovery Plan than the Franco-German initiative by adding € 250 billion worth of loans;
- a market financing through loans, which are partly paid back via new own resources (see infra in section 1.4 on revenue);
- a comprehensive set of programmes where money would top up funding managed at the EU level and generating EU value added such as a common Health programme, Horizon Europe (a research fund), Invest EU (an existing instrument used to stimulate investments), a new solvency support instrument aimed at reinforcing equity in viable firms all over the EU, the Just Transition Fund designed to help regions facing the highest costs of decarbonising their economy in the green transition;
- an RRF with funds allocated to national projects and with a priority given to the Resilience part of the RRF as evidenced by an allocation key reflecting the vulnerability of the economies before the pandemic.

The size of the proposed Recovery Plan was seen as commensurate to the size of the shock and helped alleviate turbulence on the financial markets but also as sufficiently balanced to preserve the AAA rating of the EC in order to get the best conditions on the market. The Plan has also been welcomed by most Member States.

However, some EU countries, in particular the so-called "Frugals" (NL, AT, SE, DK joined by FI), would have liked to scale down the Recovery Plan and, especially, the volume of grants. Furthermore, most Member States prioritised the national dimension and preferred to rebalance the funds from EU value added items towards funds where the redistribution of money to Member States was known in advance. Finally, the Member States most badly affected by the pandemic wanted an allocation key of the RRF taking the economic damage from COVID-19 into account.

As a result, the deal reached at the July 2020 European Council in Brussels is a compromise between all these views. As illustrated in table 1, the size of the NGEU has been kept unchanged with respect to the EC proposal but the volume of grants has been reduced by € 110 billion to 390, the volume of loans rising to € 360 billion.

Table 1

The NGEU expenditure

(€ billion, 2018 constant prices)

	EC proposal 27 May	Final decision [1]	Difference
Single Market and Digital	69.8	10.6	−59.2
Horizon Europe	13.5	5.0	−8.5
Invest EU	30.3	5.6	−24.7
Solvency Support Instrument	26.0	0.0	−26.0
Cohesion and Values	610.0	720.0	+110.0
Recovery and Resilience Facility	560.0	672.5	+112.5
of which loans	250.0	360.0	+110.0
of which grants	310.0	312.5	+2.5
ReactEU	50.0	47.5	−2.5
Natural resources and Environment	45.0	17.5	−27.5
Common Agricultural Policy (Rural development)	15.0	7.5	−7.5
Just Transition Fund	30.0	10.0	−20.0
Migration and Border Management	0.0	0.0	0.0
Security and Defence	9.7	1.9	−7.8
RescEU [2]	2.0	1.9	−0.1
Health Programme [2]	7.7	0.0	−7.7
Neighbourhood and the World	15.5	0.0	−15.5
Public administration	0.0	0.0	0.0
Total	750.0	750.0	0.0
of which loans	250.0	360.0	+110.0
of which grants	500.0	390.0	−110.0

Sources: EC, European Council.

1 The final decision of the interinstitutional agreement between the EP and the EUCO delegations did not change the amounts for the NGEU expenditure. It nevertheless included a top-up of €11 billion on the MFF, an agenda for the own resources, a reinforcement of the rule of law provision and a dialogue between the EC and the EP on the implementation of the RRF, especially on the National Recovery and Resilience Plans.

2 In the EC proposal, RescEU and Health Programme were classified under Security and Defence. RescEU has been reclassified under Cohesion and Values later on.

Spending has also been reallocated from various EU value added items (such as the Solvency Support Instrument, Invest EU, Horizon Europe, etc.) to the RRF which concentrates most of the NGEU resources with all the loans (360 billion) and 312.5 billion of grants. The remaining grants are finally allocated mainly to React EU (a top-up for the cohesion policy), the Just Transition Fund and the rural development pilar of the Common Agricultural Policy (CAP).

1.2.3 The Recovery and Resilience Facility, the main component of the Recovery Plan

The RRF is an innovative tool for providing direct financial support to the Member States to step up the implementation of sustainable reforms and public investment. With a view to receiving the grants, each Member State had to submit a National Resilience and Recovery Plan (NRRP) to the EC by 30 April 2021 as a target date and mid 2022 as an absolute deadline. The NRRPs[1] contain the targets and milestones of reforms and investments until 2026. By 19 August 2021, 25 Member States had submitted their NRRPs , the four main euro area economies and Belgium being among the 13 Member States having met the 30 April deadline with at most a one-day delay.

The Commission assesses the NRRPs and prepares a Council Implementing Decision which then has to be approved by the Council within a month. Consistency with the 2019 and 2020 country-specific recommendations, as well as strengthening the growth potential, job creation and economic and social resilience of the Member States and an effective contribution to the green and digital transition are prerequisites for a positive assessment (see 2.4 and 2.5 below). Investment for the green transition and digital transition should amount to at least 37 % and 20 % of the NRRPs respectively. By 6 September, the Council[2] has approved implementation decisions for 18 NRRPs.

Later in the programming period, the payment requests by Member States will be subject to the satisfactory fulfilment of the relevant milestones and targets. In the second half of 2021, the Member States will also receive a pre-financing rate of 13 %. This happened in August for the first countries among which Belgium.

The maximum volume of the loans for each Member State cannot exceed 6.8 % of its GNI.

70 % of the grants will be committed in the years 2021 and 2022 and the allocation key between Member States includes the population to reflect the size of the countries and two indicators of their vulnerabilities : the inverse of GDP per capita and average unemployment rate over 2015-2019. In the allocation key for 2023, the latter criterion is replaced, in equal proportion, by the loss in real GDP observed over 2020 and by the cumulative loss in real GDP observed over the period 2020-2021 and final allocations will be calculated by 30 June 2022.

The RRF Regulation provisionally estimated the grants on the basis of the Commission's autumn 2020 forecast and these amounts have served as a reference for the Member States to draw up their NRRPs.

As a result, Central and Eastern Member States as well as Southern Member States are expected to receive a larger share of grants expressed in percentage of their 2019 GNI (see map) while the RRF grants are less substantial in Northern and Western Member States, notably in Belgium and its neighbouring countries.
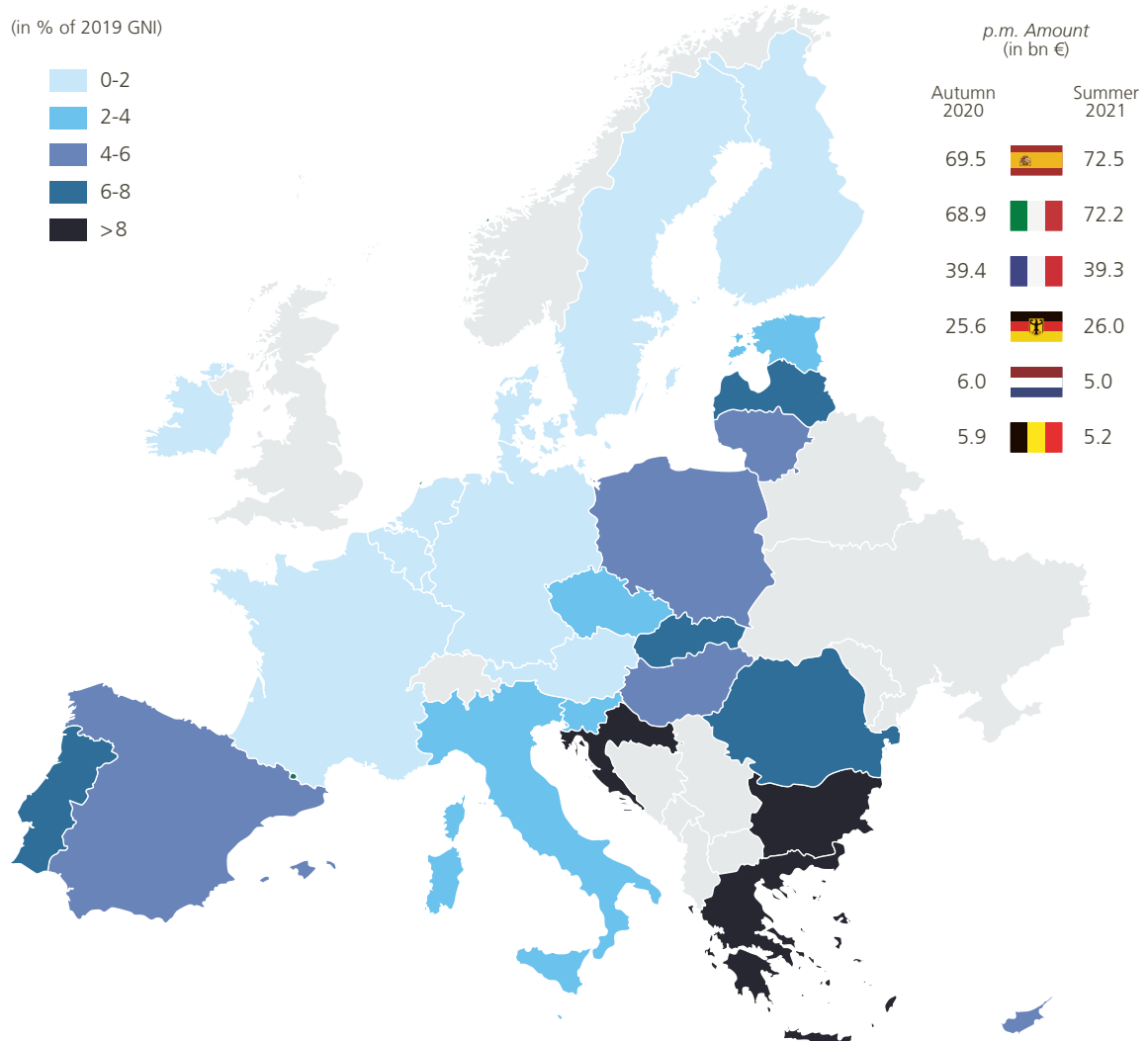
In absolute (and nominal) terms, as the size of population is one of the criteria in the allocation key, big Member States are those that are expected to receive the highest grants, with Spain and Italy (close to € 70 billion each), way ahead of France (close to € 40 billion) and Germany (around € 25 billon). As Belgium has been hit by COVID-19 more than the Netherlands, it should receive nearly as much. Accordingly, the expected € 5.9 billion has been retained as the budget for the Belgian NRRP. In box 1, we show both the impact of adding the COVID-19 economic loss criterion and how uncertain the amounts still are on the basis of the latest economic forecasts published by the EC, those from July (summer 2021 forecasts).

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1 Laggards include the Netherlands where a government still needed to be formed, the reason for which a delay has been granted.
2 A recovery plan for Europe – Consilium (europa.eu).

Chart 2

Central and Eastern European and Southern European countries are expected to receive higher RRF grants in relation to their GNI

(in % of 2019 GNI)

- 0-2
- 2-4
- 4-6
- 6-8
- >8

p.m. Amount
(in bn €)

Autumn 2020		Summer 2021
69.5		72.5
68.9		72.2
39.4		39.3
25.6		26.0
6.0		5.0
5.9		5.2

Source: EC, autumn 2020 and summer 2021 forecasts.

BOX 1

The coronavirus economic damage criterion and underlying uncertainty

Originally, the Commission proposal in May 2020 foresaw only population, the (inverse of) GDP per capita and the pre-pandemic unemployment rate in the allocation key formula for the RRF grants. To various commentators – notably Codogno (2020a) and Darvas (2020) – but also several Member States among which Belgium, it came as a surprise that the economic damage from the coronavirus was not a criterion to allocate the grants for a Recovery Plan created to help alleviating the costs of this atypical crisis generated only by an exogenous shock, i.e. a pandemic.

The original proposal had already been amended ahead of the July 2020 EUCO: the creation of a 30 % tranche for the second allocation in 2023 had been acted and the criterion of economic damage from the COVID-19 crisis had replaced the backward-looking pre-coronavirus unemployment rate.

Introducing in the RRF grants allocation key a criterion related to the economic loss resulting from COVID-19 has benefited some countries (at the expense of others), but the final result is still uncertain

(shares in %)

	Allocation key for the 70 %	Allocation key for the 30 %		
	Fixed	p.m. Summer 2020	Autumn 2020	Summer 2021
DE	7.0	8.0	9.0	9.4
FR	10.4	15.7	14.5	14.5
IT	20.5	22.2	20.3	23.3
ES	20.0	16.8	22.2	24.7
PL	8.5	4.3	3.5	2.6
BG + RO	6.3	6.2	5.5	2.7
NL	1.7	2.1	2.0	1.0
DK + SE	1.8	1.4	0.6	0.5
Baltics + FI	2.6	2.0	1.1	0.6
BE	**1.6**	**1.9**	**2.2**	**1.5**
EL	5.7	3.8	4.1	5.6
CZ	1.5	3.6	3.4	3.0
PT	4.1	4.3	4.0	5.0
HU	2.0	2.1	2.5	1.2
AT	1.0	1.0	1.2	1.5
Others	3.0	2.4	2.4	2.3
SK	2.0	1.6	1.6	0.7
IE	0.4	0.5	0.1	0.0
EU27	**100.0**	**100.0**	**100.0**	**100.0**

▶

Source : EC.
(Groups of) EU Member States are ranked in declining order of population.

When comparing the (fixed) allocation key for the 70 % of the RRF grants (including the unemployment rate before the pandemic) and the allocation key for the remaining 30 % as possibly estimated at the time of the European Council on the basis of the summer 2020 forecasts published by the Commission in early July, France, Germany, Italy, the Netherlands and Belgium were among the countries to gain from this change in the allocation key. In contrast, a country like Spain, despite being badly hit by COVID-19, was expected to record a substantial loss in grants in the second tranche because its structurally very high unemployment rate was no longer accounted for. Some Eastern European Member States like Poland that were less badly affected by the first wave of the pandemic were expected to lose out substantially too.

The relative deterioration of the economy in several countries due to the second wave of coronavirus that hit Europe after the summer of 2020 led the EC to revise its forecasts in autumn 2020 and to raise its prospects of RRF grants for these Member States. This was especially so for Spain but also Germany and Belgium that found themselves at the epicentre of a new wave of infections in October. Accordingly, the share of countries first hit by the pandemic like Italy or France receded somewhat.

The allocation key might still move considerably. So far, only provisional national accounts have been approved and published by Eurostat in April for the year 2020 with a base effect for the loss computed for both years 2020-2021. Also, in its latest summer 2021 forecasts, the Commission revised upwards its estimates for GDP growth for the year 2021 in all countries except Portugal and Finland (where it has been kept constant). According to these figures, all EU countries around the Baltic Sea but also some Eastern EU countries (Romania, Bulgaria and Hungary) and Luxembourg are now expected to get back to their 2019 GDP level in 2021 so they will not benefit from part of the GDP loss criterion (that related to the GDP loss over 2020 and 2021 taken together). This explains the drop in their allocation compared to the provisional allocation made on the basis of the autumn 2020 forecasts. In Ireland, GDP even grew in 2020, so it will not be entitled to receive anything from the 30 % part of the RRF grant.

On the contrary, as the relative economic outlook for the four main euro area Member States has deteriorated, their allocation key is expected to increase somewhat with respect to the grants pre-allocated on the basis of the autumn 2020 forecast. As their economic outlook has brightened more than the EU average, the shares of Belgium and the Netherlands have shrunk. If the summer 2021 forecasts turn out to be right by June 2022, Belgium stands to lose € 0.75 billion of its € 5.9 billion RRF grant.

1.3 Revenue

On the revenue side, the MFF and the Next Generation EU are discussed separately as their nature is different.

1.3.1 An MFF mostly financed by Member States

The MFF is mostly financed by contributions from the Member States. These contributions are to a large extent based on GNI and therefore reflect the economic weight of each Member State. However, in order to avoid excessive contributions from certain Member States, rebates have been granted, first to the UK and then to certain other countries making a net contribution to the budget. The main contentious issue from the revenue side in the talks on the MFF is traditionally this rebate and the negotiations on that issue in the 2021-2027 MFF were no exception to this. The Commission (supported by most Member States) wanted to take advantage of the UK's departure to abolish the rebates received by Germany, the Netherlands, Sweden, Denmark and Austria. These last four Member States resisted forcefully and were even able to obtain higher rebates.

Chart 3

Structure of the EU's revenue

(percentages of the total)
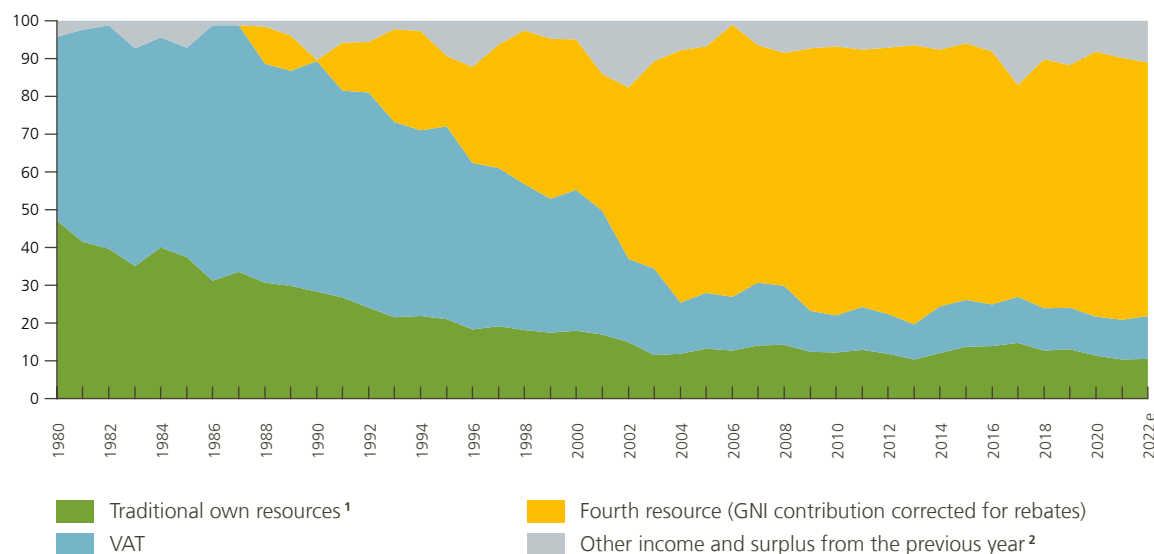
Sources: EC (DG Budget online and draft budget 2022), Butzen *et al.* (2006); own calculations.
1 Customs duties, agricultural levies and sugar levies (minus the compensation which Member States receive for collecting costs).
2 Includes the new national contributions on non-recycled plastic packaging waste from 2021.

The GNI contributions play a balancing role in the budget in that they are adapted to balance expenditure set annually with other revenue. Their growing share since 1988 reflect decreasing revenue from the traditional own resources and the share of VAT allocated to the EU (third resource). This decrease results from the abolition of sugar and other agricultural duties, the reduction of customs duties due to the liberalisation of trade in goods, in particular the expansion of Free Trade Agreements, and the fluctuation of collection costs. Indeed, the Member States' tax administrations are collecting customs duties for the EU and they are receiving for this service a remuneration. The share paid by the EU for these collection costs is an important parameter for those countries trading a lot and/or having major ports (the Rotterdam and Antwerp effects). This share was raised by the July 2020 European Council from the 20 % applied during the 2014-2020 period to 25 % for the 2021-2027 MFF.

The figures for 2021 include the residual contribution due by the UK as stipulated in the Withdrawal Agreement, mainly its contribution to the liabilities taken during its EU membership. From 2021, the figures of other income include a national contribution proportional to the quantity of non-recycled plastic packaging waste estimated at around € 6 billion.

The way an MFF is financed is defined in a legislative act called an Own Resources Decision that needs to be ratified by all 27 EU national parliaments. It foresees a sufficient margin for the Union to cover all its financial obligations and contingent liabilities falling due in any given year. To that end, the Member States agree so-called "own resources ceiling", which are the maximum amount of resources that may be called upon. In the 14 December Council decision, the total resources allocated to the EU to cover annual payments[1] has been raised from 1.20 % to 1.40 % of the sum of all the EU(27) Member States' GNIs.

1 The own resources ceiling for commitments has been set at 1.46 % of the EU's GNI.

1.3.2 The NGEU is first financed by loans

The same Own Resources Decision empowers the EC on an exceptional basis to borrow temporarily up to € 750 billion (in 2018 prices) on capital markets on behalf of the EU (more than € 800 billion in current prices). These loans add to the € 100 billion raised by the EC to finance the SURE programme in response to the COVID-19 crisis. By levying such amounts on the markets, the EU is fast becoming a major player on the capital markets and a major provider of safe assets in euros, thereby reinforcing the international role of the euro. Furthermore, by issuing 30 % of the NGEU funding (€ 250 billion) as green bonds, the EU will manage the largest green bond scheme in the world (Koopman, 2021).

The borrowed money will be repaid from 2028 to 2058. The Member States will reimburse their RRF loans to the EU. The share of the RRF distributed as grants will be repaid via new own resources and, if need be, future GNI compensation by all Member States.

To ensure that the EC will be able to cover all liabilities resulting from the NGEU, as a guarantee, the ceiling for payments[1] has been raised by a further 0.6 percentage point of the EU's GNI, bringing it up to 2 % of GNI. The need to resort to this additional allocation will only be temporary since the relevant financial obligations and contingent liabilities will decline over time as the borrowed funds are repaid and the loans mature. Therefore, the increase should expire when all borrowed funds have been repaid, i.e. by 31 December 2058 at the latest.

In the trialogue, the European Parliament insisted on a roadmap for the introduction of new own resources. This roadmap is seen as legally-binding by the EP but as indicative by the European Council. The new national contribution on non-recycled plastic packaging waste is the first component of it. The EC could also submit proposals for own resources linked to a carbon border adjustment mechanism (CBAM), a digital levy and a revised EU Emissions Trading System (ETS). In July 2021, it introduced a proposal for the CBAM (to be phased in starting on 1 January 2023) and the revised ETS (see section 2.4). However, it has suspended the project of a digital levy due to good prospects of an international agreement to be reached under the auspice of the OECD and the G20 on a tax on multinational enterprises and on a common corporate tax rate of at least 15 %.

By June 2024, the EC is expected to propose further new own resources. Possible candidates are a financial transaction tax, a financial contribution linked to the corporate sector or a new common corporate tax base (D'Alfonso A. *et al.*, 2021). These might enter into force on 1 January 2026.

1.4 Expenditure

Among the main policy areas of the EU, the share of agriculture has steadily declined from one MFF to another. Rural development is resisting the erosion of spending better than direct income support, while export subsidies and price support have been phased out. The share of administration appears to have held steady while that of cohesion policies is quite stable if only the MFF is considered.

If the NGEU is taken into account, the shares of these three policy areas are further reduced, while more resources are devoted to new and reinforced priorities as the RRF is considered by the EC (2021a) as falling under that category.

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1 Similarly, the ceiling for commitments has been raised by 0.6 percentage point of the EU's GNI, bringing it from 1.46 to 2.06 % of GNI.

Looking at the EU budget headings, when we combine the € 1 085 billion from the MFF and the € 750 billion from the NGEU (in 2018 prices), 60 % of the resources for the 2021-2027 period are concentrated on the "Cohesion and Values" heading as it comprises both the RRF and the cohesion policy, to which ReactEU also contributes. 20 % of the means are allocated to the "Natural resources and Environment" heading that comprises the CAP and the Just Transition Fund.

Chart 4

Share of the main policy areas in the Multiannual Financial Frameworks

(in %)
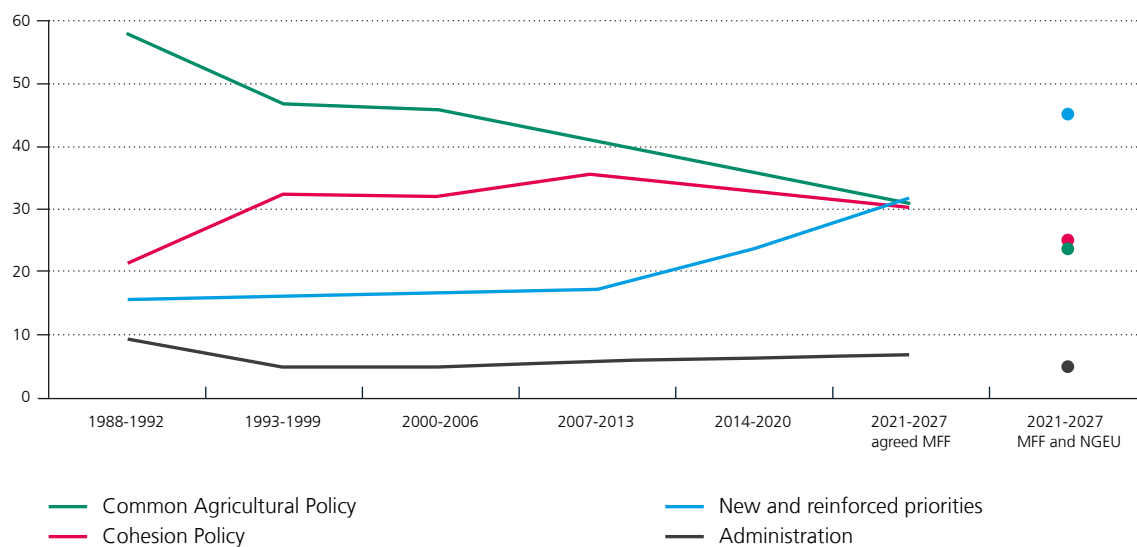
Sources : D'Alfonso A. *et al.* (2021), EC (2021a).

The European Council and the European Parliament also negotiated special instruments to address unexpected events with resources on top of the MFF ceilings. These are mainly resources allocated to pluriannual Funds and Reserves devoted to thematic or non-thematic needs such as the European Globalisation Adjustment Fund, the Solidarity and Emergency Aid Reserve and a so-called Flexibility instrument. As a result of an agreement between the European Council and the European Parliament, the amount for these items outside the MFF has been set at € 21.1 billion. This includes € 5 billion dedicated to a Brexit Adjustment Reserve created upon the request of mainly Ireland and Belgium in July 2020, aiming to counter unforeseen and adverse consequences in Member States and sectors most affected by the UK withdrawal from the EU. Box 2 provides an overview of the main Brexit-related issues in the broader MFF.

Table 2

MFF and the NGEU (definitive figures)

(commitments, € billion, 2018 constant prices)

	MFF	the NGEU	MFF + the NGEU
Single Market and Digital	**136.8**	**10.6**	**147.4**
Horizon Europe	79.4	5.0	84.4
Invest EU	3.8	5.6	9.4
Cohesion and Values	**383.8**	**720.0**	**1103.8**
Recovery and Resilience Facility	0.0	672.5	672.5
of which loans	0.0	360.0	360.0
of which grants	0.0	312.5	312.5
Cohesion policy (+ReactEU)	330.2	47.5	377.7
RescEU	1.1	1.9	3.0
Natural resources and Environment	**356.4**	**17.5**	**373.9**
CAP (Direct payments, etc.)	258.6	0.0	258.6
CAP (Rural development)	77.9	7.5	85.4
Just Transition Fund	7.5	10.0	17.5
Migration and Border Management	**23.7**	**0.0**	**23.7**
Security and Defence	**13.2**	**1.9**	**15.1**
Neighbourhood and the World	**98.4**	**0.0**	**98.4**
Public administration	**73.1**	**0.0**	**73.1**
Total	**1085.3**	**750.0**	**1835.3**
of which loans	0.0	360.0	360.0
of which grants	1085.3	390.0	1475.3
Outside the MFF	**21.1**	**0.0**	**21.1**
Brexit Adjustment Reserve	5.0	0.0	5.0
Total MFF + outside the MFF	**1106.4**	**750.0**	**1856.4**

Sources: EC, European Council, D'Alfonso (2021).

BOX 2

What is the role of Brexit in and around the EU budget?

The net contributing position of the UK towards the EU budget has long been a contentious issue. It was something that motivated the "I want my money back" claim by Margaret Thatcher when she was serving as Prime Minister and the substantial UK rebate that she obtained at the Summit in Fontainebleau in 1984. Despite this rebate, the UK has remained a net contributor when looking only at the budgetary aspects, i.e. disregarding the benefits of EU membership for UK companies, people, banks and financial markets. According to the Deutsche Bundesbank (2020), the UK's net contribution (including customs duties and administrative expenditure) was just under € 10 billion per year on average over the 2014-2018 period. This net contribution was one of the arguments in favour of Brexit during the June 2016 referendum campaign.

The UK left the EU on 31 January 2020, but the Withdrawal Agreement (WA) provided for a transition period until 31 December 2020. During this period, the UK remained in both the EU Single Market and the Customs Union. The UK was therefore still involved in the EU budget until the end of the 2014-2020 MFF, meaning that in practice the UK withdrawal had no impact on the 2014-2020 MFF.

In the agreement on the so-called "divorce bill" within the WA, the UK has committed, as a general principle, to honour its share of the financing of all financial obligations undertaken while being a member of the EU. The UK share is provisionally estimated by the EC (2021c) at 12.36 %.

Articles 136 and 140-147 of the WA identify the areas in which payment obligations are due between the UK and the EU (EC, 2021c). The bulk of the UK obligations towards the EU stem from the "*reste à liquider*" (RAL), the total volume of legal commitments the EU has made to recipients, for which payments will follow mostly in the next three years. For the most part, this relates to commitments made by the EU before 31 December 2020 as part of the 2014-2020 MFF but which have not yet been fully implemented, with payments still to follow. The RAL as of 31 December 2020 has been officially valued for the first time by the EC (2021c) at € 303.2 billion on which the UK is expected to contribute € 35 billion. The other substantial amount making part of the financial liabilities (€ 14.3 billion) stem from the obligations linked to the EU as an employer (i.e. pensions and sickness insurance benefits for retired staff and authorities) as of 31 December 2020.

Taking also other minor items into account, he amount due from the UK to the EU is therefore estimated at € 49.6 billion. As € 2.1 billion are due to the UK by the EU, notably as proceedings from outstanding competition fines, the net receivable from the UK amounts to € 47.5 billion, of which € 6.8 billion are estimated to be paid by the UK in 2021. As a result, around € 40.6 billion is estimated to be paid by the UK after 2021 and will appear on the assets side of the EU balance sheet. The exact level of these future payments is still uncertain as the burdens from contingent liabilities and the revenue shares from fines cannot reliably be estimated.

For the year 2022, the EU budget has retained a provisional UK contribution of € 10.7 billion.

▶

As for the 2021-2027 MFF, the EU-UK Trade and Cooperation Agreement (TCA), reached on 24 December 2020, enables the UK's continued participation in a number of EU programmes and activities, namely Horizon Europe, the Euratom Research and Training programme, the nuclear fusion test facility ITER and the earth monitoring system Copernicus. The UK's participation in the programmes will be that of a third country (as in the case of Norway or Switzerland) and will be subject to a financial contribution. These programmes will therefore receive additional resources from the UK, on top of those stemming from the MFF and, in the case of Horizon Europe, from the NGEU. The precise amount for the contribution in 2022 is not yet known in the initial budget 2022 drafted by the EC.

The departure of the UK, which was a significant net contributor, has created the need to fill the Brexit gap. Before the pandemic, this was one of the main contentious issues that prevented a deal from being reached at the special European Council in February 2020. While the gap was expected to be filled by way of higher revenue from the other Member States and through lower spending, the overall size of the budget has been preserved thanks to higher national contributions (Koopman, 2021).

Finally, the conclusions of the July 2020 EUCO included a new special instrument outside the MFF expenditure ceilings, the Brexit Adjustment Reserve (BAR), to cover at least partially Member States' general government expenditure related to the departure of the UK from the EU Single Market and Customs Union. On 25 December 2020, the day after the TCA was concluded, the EC (2020d) published a proposal for this € 5 billion (in 2018 prices) Reserve to heal the pain of the most badly affected sectors, in particular fisheries, and hard-hit countries. Despite the deal, some EU Member States, notably Ireland, the Netherlands and Belgium, are still expected to suffer bigger economic losses from Brexit than most others (Bisciari, 2019) and fisheries is expected to be especially hit. Compensating this sector was a promise to help the EU countries fishing in the UK Exclusive Economic Zone to accept the TCA.

A deal has been reached between the two co-legislators – the EP and the Council – on 17 June 2021. The regulation already partially endorsed is expected to be adopted by the beginning of October so that a first instalment of pre-financing worth € 1.6 billion will be paid by December. The rest of the € 4 billion pre-financing will be paid in two tranches of € 1.2 billion in both 2022 and 2023. The remaining 1 billion will be made available in 2025. The allocation key between countries for the largest envelope (€ 4.15 billion) will reflect the importance of the volumes traded with the UK. The value of fish caught in the UK Exclusive Economic Zone and the population of maritime border regions with the UK are also considered for the allocation of two marginal ad hoc envelopes (respectively € 0.6 and 0.25 billion). Ireland would be the main beneficiary of the BAR in absolute terms, followed by the Netherlands, France, Germany and Belgium.

2. Five challenges for the EU budget and Recovery Plan

2.1 Boosting growth through the Next Generation EU

The NGEU was designed to help the EU economies recover from the coronavirus pandemic and to spur growth over the medium and long term by fostering resilience to shocks and boosting economic potential.

According to the most comprehensive EC estimate (Pfeiffer et al., 2021), using the Quest model, the NGEU may boost real GDP by 1.2 to 1.5 percentage points relative to a baseline scenario without this EU Recovery Plan.

This peak impact is found in the last year of the implementation period considered : 2024 if the NGEU is assumed to be implemented quickly over only four years or 2026 if it is assumed to be implemented slowly over six years.

These estimates published in July 2021 take into account the impact of cross-border spillovers, i.e. the impact that each NRRP has not only on the domestic economy but also on the other EU Member States' economies through trade and exchange rate channels. The results show that EU-wide GDP effects are around one-third larger when explicitly accounting for spillover effects, pointing to the benefits of a coordinated Recovery Plan [1].

Chart 5

Impact of the NGEU on the EU's real GDP

(percentage point deviation from a no-policy change (no-NGEU) baseline)

Fast implementation (2021-2024)   Slow implementation (2021-2026)

Domestic [1]   Spillover
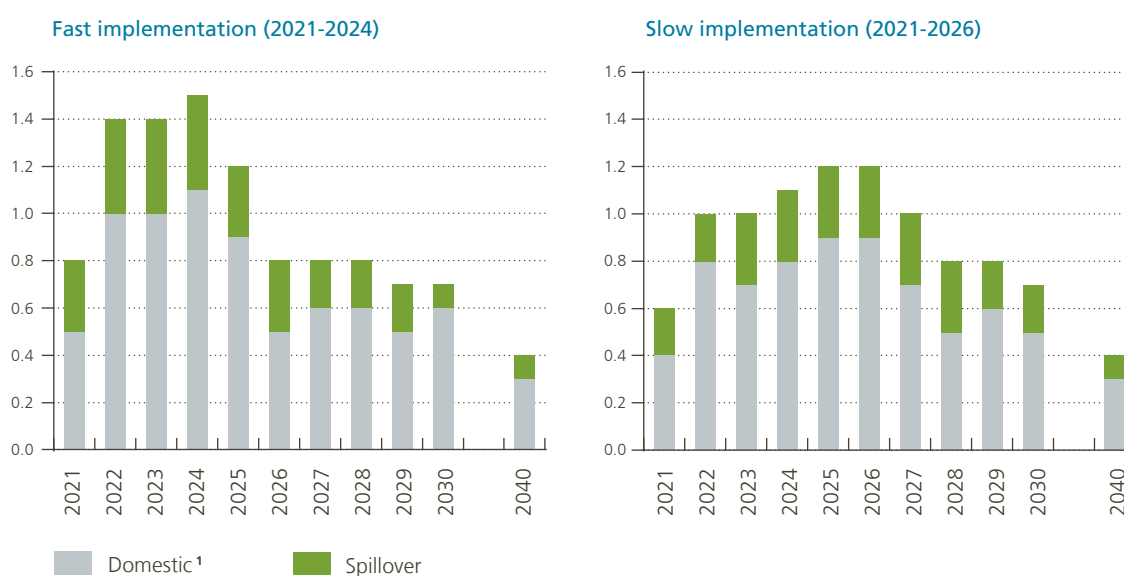
Source : Pfeiffer *et al.* (2021).
1 Domestic displays a synthetic EU-wide GDP (weighted average) obtained by aggregating 27 stand-alone simulations with unilateral stimulus in each country.

The Pfeiffer *et al.* (2021) estimate of the macroeconomic impact of the NGEU on EU activity is lower than in previous EC simulations (2020a and 2020g) performed with the same model for a few reasons, among which :

▪ **a smaller size of the shock.** While previous EC estimates referred to the original package of € 750 billion (in 2018 prices), the July estimate relies on the effective amount of loans requested in the NRRPs submitted before 8 June (€ 166 billion for seven countries, € 122 billion of which for Italy alone) on top of the € 390 billion of grants. But the loan amount is expected to rise as Spain has expressed its intention to apply for loans at a later stage. A lower volume of loans may also be viewed as the NGEU being victim of its success (Codogno, 2020b). Thanks to the mere announcement of the NGEU (together with the ECB's accommodative monetary policy), interest rate spreads (vis-à-vis German Bunds) have been narrowed for most EU sovereigns thereby reducing the financial incentive to take up the NGEU loans. This argument is in itself a gain from the existence of the NGEU that is not accounted for as such in the simulation exercises.

1 In open economies with small grant allocations such as Belgium or Ireland, spillover effects account for the bulk of the GDP impact from the NGEU. These spillovers are often larger than what bilateral trade links would suggest as they are amplified by third-country effects resulting from the trade structure of the model (based on input-output tables and trade in intermediate goods on top of final goods and services). For example, Belgium benefits not only from the direct spillover from higher German demand but also from the increased economic activity of Germany's other trading partners, which requires imports from Belgium to grow.

- **a modelling of the economic mechanisms and dynamics of public investment including lags and delays.** In practice, the positive direct demand-side effects of public investment do not unfold immediately because of time-to-spend delays (not all projects are shovel-ready due to planning and contracting time). Furthermore, the positive supply-side effects of investment materialise later (reducing the short-run multiplier) because of time-to-build lags (government investment is not immediately productive).

Other model features and assumptions, too, might strongly determine outcomes. In the EC simulations, the NGEU funds are assumed to be spent solely on investment which is highly productive (high value for the long-run output elasticity of public capital) and highly additional : all EU grants are used for additional public investment, while EU loans are 50 % additional (the other half being used on general government spending that would have taken place anyway). Likely as a result of all these assumptions, real GDP is found to be significantly higher with the NGEU in the long term too, even in 2040.

Indeed, other institutions had found a similar order of magnitude for the macroeconomic impact based on different macroeconomic models in their baseline (optimistic) scenario : 1.5 percentage points of GDP by 2025 for the euro area according to the ECB (Bankowski *et al.*, 2021) and 1.5 percentage points by 2023 for the EU for the IMF (2020) that only took the RRF grants into consideration. However, these estimates – which correspond to the most optimistic scenarios in the respective studies – also depend strongly on a number of assumptions. The sensitivity analyses performed by these international institutions have confirmed that the macroeconomic impact can be substantially smaller :
- if public spending is used for fiscal transfers instead of productive public investment (Bankowski *et al.*, 2021) ;
- if investment is not additional but would have taken place anyway (EC, 2020g) ;
- if investment is less productive (IMF, 2020 ; Pfeiffer *et al.*, 2021).

Moreover, some observers have expressed their doubts and/or concern about the ability of the EU to deliver such an impact on growth in the short term or in the long term.

An important argument by Gros (2021) is that "money is fungible" which refers to the additionality question : governments may argue in the NRRPs that EU grants will finance public investment, but the question is whether this investment is additional leading to more expenditure or whether it is not, in which case EU money finances investment that would have taken place anyway. In the later situation, the government may use the money saved thanks to the rebranding of investment either to new current expenditure (transfers, etc.) or to cut taxes or to reduce the budget deficit and public debt. The macroeconomic impact would then be very different.

Another highly-debated issue is that of absorption. This concerns the capacity of both the economy and the administration to deal with the investment impetus. Gros (2021) argues that the RRF grants account for a very small share of (national) public expenditure but a very significant share of (national) public investment. For countries receiving a high share of RRF grants such as Bulgaria, Portugal, Croatia, Spain and Greece, their annual public investment should more than double over the next four to six years under the assumption of a 100 % absorption rate and full additionality (Alcidi *et al.*, 2020). This seems to be all the more unrealistic if supply-side constraints appear in the construction sector as it needs to find workers with the required qualifications within a short amount of time.

The absorption challenge is even greater when the MFF and the NGEU are combined. In particular, the NGEU funds need to be absorbed by the end of 2026 which is faster than cohesion funds in the MFF as actual disbursements of the latter can take place with a grace period of two to three years into the next MFF period. In some countries like Italy, green and digital investment has been found to take more time to be implemented than other kinds of investment (Crescenzi *et al.*, 2021). Furthermore, "The fact that the disbursement of the structural and investment funds from the 2014-2020 EU budget has been strongly backloaded will pose an additional challenge. These funds can still be spent within the next two years, which would imply an overlap with

the first years of the NGEU" (ECB, 2021b). Another risk from combining MFF and the NGEU investment is that if public administrations focus their minds on the NGEU, the delays for the MFF 2021-2027 may lengthen and the absorption of these MFF funds may be smaller than in the past. Conversely, other observers (Codogno, 2020b ; Amiot and Broyer, 2021) have also expressed reasons to be optimistic on this absorption issue because the NGEU grants do not have to be co-financed by national or regional governments and are expected to involve less red tape than past regular EU funds.

There has also been a higher risk of wasteful/inefficient spending when rushing to spend quickly at the end of an MFF period. Then, some public investment may be of a lower quality, less efficient and less productive, thus generating a smaller positive impact, if any, on economic activity. In the same vein, we may also mention the risk of misallocation.

The complementarity between public and private investment also matters. The question is to what extent public investment will crowd private investment in or out. In this regard, some analysts like Pietrunti (2021) are more upbeat than the EC when estimating the macroeconomic impact from the NGEU. He reckons a higher fiscal multiplier may be retained for several reasons. First, stimulus in economies with more slack, such as Spain and Italy, tends to have larger multipliers. Second, the impact of fiscal stimulus is larger when interest rates are around the zero-lower bound (or effective lower bound), with little risk of fiscal expansions triggering higher rates which could crowd out private investment. On the contrary, Pietrunti thinks that there may be a crowding-in effect.

To sum up, even if *ex-ante* quantification remains uncertain, the NGEU is expected to have a macroeconomic impact in the short, medium and long term even though simulations have only taken investment into account. In the long run especially, a more substantial positive impact from the NGEU may stem from the structural reforms and from the interaction between reforms and investment, as some reforms, notably in public administration, planning, justice and business environment, are designed to encourage private investment. In order to obtain the hoped-for result close monitoring may be warranted since the track record for implementation and enforcement of structural reforms is not very strong in the EU.

2.2 Convergence between Member States and the COVID-19 crisis

COVID-19 has been a common shock, but with asymmetric effects across countries. It first hit Italy and Spain, the most vulnerable among the large Member States in the euro area, and had a stronger overall impact on countries, including those in Southern Europe, which rely more on tourism. This generated a risk of divergence among EU countries, which could have led to turmoil in financial markets and wider interest rate spreads on sovereign debts. This would have been especially problematic for the euro area as a monetary union. Divergence would also impair the functioning of the Single Market. The NGEU was designed in this context with the aim of supporting the most badly affected countries and thus promoting convergence between EU countries.

Crisis periods are indeed times when convergence between European countries has been most at risk (Bisciari *et al.*, 2020). While convergence has been strong over the long term in the EU[1], crisis periods led to slower convergence (in the EU28) or even divergence (in the EU15). The period following the global financial crisis, in particular, led to severe economic underperformance in Southern Europe, which was translated into slower overall convergence in the EU.

Chart 6 shows how funding under both the MFF and the NGEU has a redistributive effect among EU countries. Central and Eastern European countries have traditionally received a large part of MFF funding, in particular because they qualify for large shares of cohesion funding targeted directly at poorer regions and countries[2].

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1 This result is based on trends since 1960 for EU15 countries and since 1996 for EU28 countries.
2 Much of this funding is allocated based on regional criteria (see section 2.3). This graph incorporates all funding that is allocated to a country, irrespective of whether this allocation is based on national or regional criteria.

Allocation of the NGEU funding, on the other hand, is not only based on the level of GDP per capita, but also on unemployment rates prior to the crisis and output losses during the crisis (see section 1.2) and is more directed towards Southern European countries. Because of this, in absolute amounts, Italy and Spain are now the biggest beneficiaries of the total budgetary package (MFF + the NGEU), ahead of Poland. Nonetheless, when expressed as a share of GNI, the Central and Eastern European countries remain the biggest beneficiaries.

Chart 6

National allocations for both MFF 2021-2027 and the NGEU main categories

2021-2027 allocations
In current prices (billion of €)

2021-2027 allocations
In % of GNI
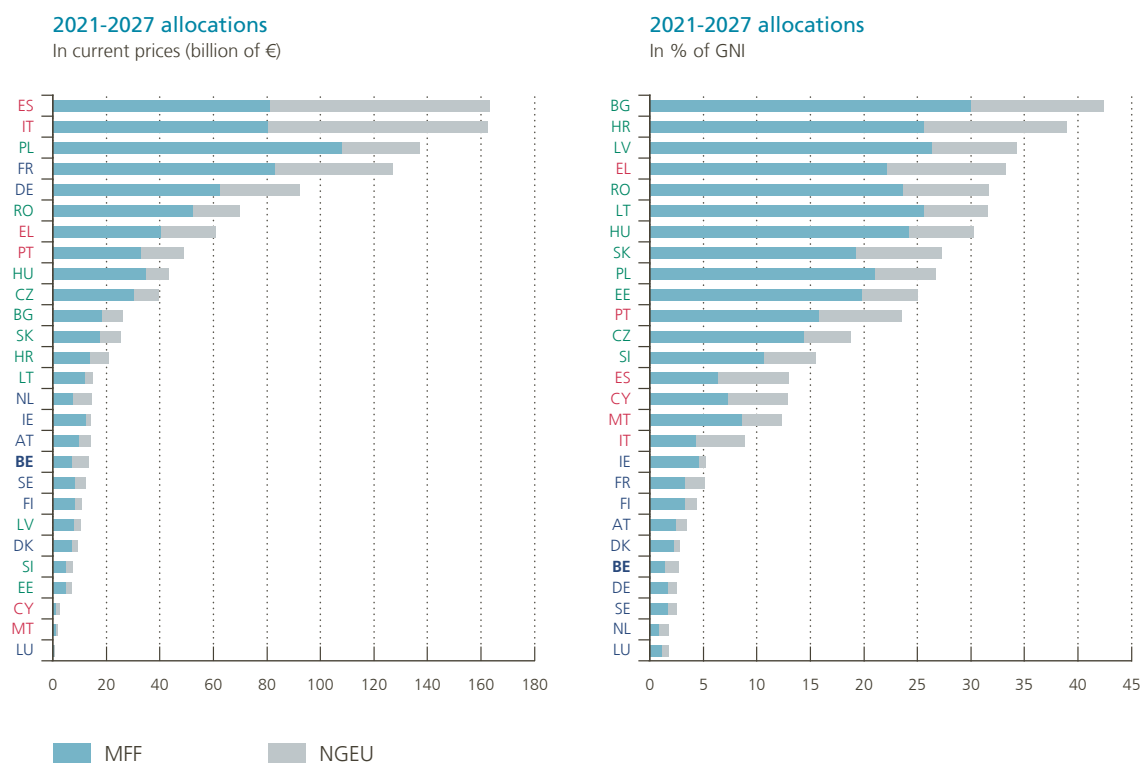
Source: Koopman (2021), calculations based on EC spring forecasts 2021. Colours of country labels reflect their region: "South" (red), "Central-East" (green) and "North-West" (blue).

In their simulations of the impact that the NGEU may have on growth in all 27 EU countries, Pfeiffer *et al.* (2021) assess that, in a fast implementation scenario, the NGEU could boost growth by 2.8 % by 2024 in Southern Europe, against 2.5 % in Central and Eastern Europe and 0.8 % in North and Western Europe[1]. While the exact figures for these growth estimates are subject to substantial uncertainty, they do indicate that the NGEU can contribute to convergence by increasing growth for the countries in the South severely hit by the COVID-19 crisis, and for the lowest-income countries more generally.

Taking into account the estimated impact of the NGEU (and the EU budget), convergence between Member States is now set to continue, despite the COVID-19 crisis: countries which were poorer in 2019 are on average projected to grow the fastest between 2020 and 2022[2]. This is driven mainly by strong growth in Central and Eastern Europe, while some Southern European countries – in particular Spain and Italy – are expected to be

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1 These regional averages are obtained by weighting the national estimates using GDP. See chart 6 for the definition of the "South" (red labels), "Central-East" (green) and "North-West" (blue).

2 The EC spring 2021 projections take into account expenditure under the NGEU for 2021 and 2022. The forecast assumes that about 40 % of RRF financing will be spent by 2022.

among the worst performers. In part, the experience of previous crises is thus repeated as Southern European countries underperform and reduce overall convergence. Nonetheless, the policy response, including the NGEU grants, will most likely soften detrimental effects in both Southern and Central and Eastern Europe, and convergence among European countries can be forecast to continue despite the COVID-19 crisis.

Chart 7

The COVID-19 crisis, as tempered by the policy response and the start of the NGEU, is currently not expected to prevent further convergence across the EU27 [1]

(GDP per capita in PPS; expected change from 2019 to 2022 versus level in 2019 relative to the EU average)
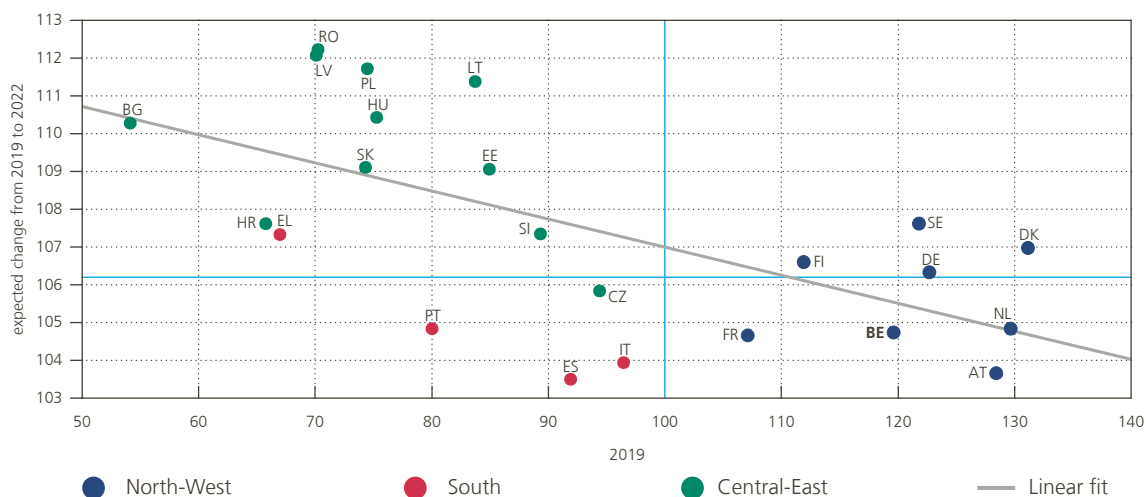
Source: EC, spring 2021 forecasts.

1 As in Bisciari *et al.* (2020a), Luxembourg, Ireland, Malta and Cyprus have been excluded given the presence of large multinational corporate structures and/or an outsized financial sector which distort GDP figures. The graph thus contains only 23 countries, but we refer to EU27 because it is a well-known abbreviation.

2.3 Promoting cohesion by stimulating regional development and reducing regional disparities

Reducing regional disparities is a long-standing priority of the EU. Starting with the Treaty of Rome signed in 1957, programmes have gradually been introduced to strengthen economic and social cohesion between regions in the European Union.

Currently, several programmes constitute so-called "cohesion policy" in the budget. This includes the European Regional Development Fund (ERDF; € 200 billion in 2018 prices), the European Social Fund+ (ESF+, € 88 billion) and the Cohesion Fund (€ 43 billion). On top of this, the NGEU contributes to funding for cohesion policies through the REACT-EU instrument (€ 47.5 billion).

The budgets under these programmes are pre-allocated to countries and regions. ERDF and ESF+ funding depends on whether they fall in the category of less developed (GNI below 75 % of the EU average), transition (GNI 75-100 %) or more developed (GNI above 100 %) regions. For the 2014-2020 period, commitments for ERDF and ESF are estimated to amount to 1,61 % of GDP for less developed *regions*, against 0.31 % and 0.07 % for transition and more developed regions, respectively (Darvas *et al.*, 2019). ERDF is also the main source of financing for the European Territorial Cooperation programme – better known as "Interreg" – which finances projects involving regions of different countries. The Cohesion Fund is available for *countries* whose GDP is less than 90 % of the EU average.
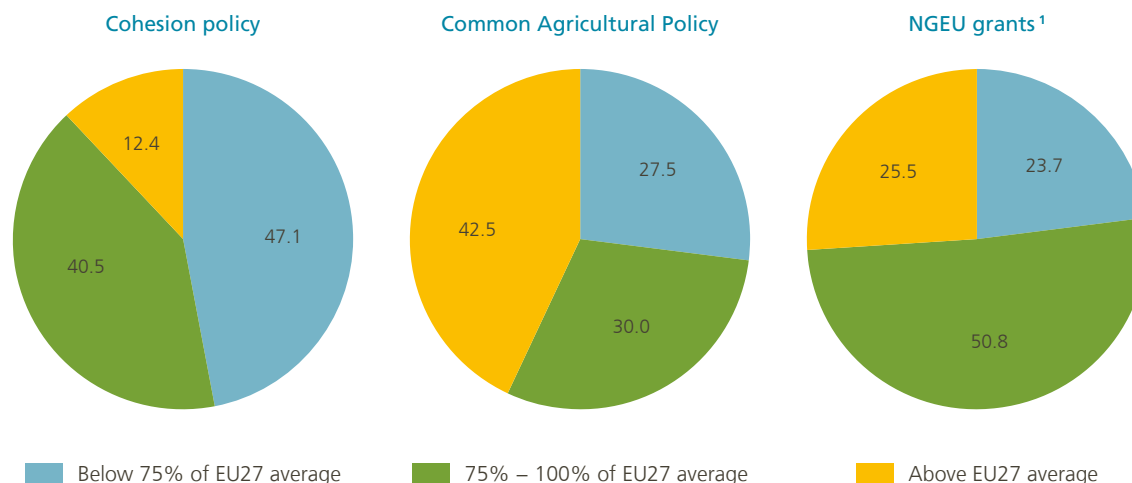
Overall, these allocation rules make cohesion policy the most redistributive part of the budget: 47 % of cohesion policy funding goes towards countries whose GDP per capita is below 75 % of the EU average, against 27 % and 24 % for CAP and the NGEU grants.

Chart 8

Cohesion policy is more redistributive than agricultural policy and the NGEU grants

(share of 2021-2027 funding going to countries with different GDP per capita relative to the EU average)

Cohesion policy	Common Agricultural Policy	NGEU grants [1]

Cohesion policy: 47.1, 40.5, 12.4
Common Agricultural Policy: 27.5, 30.0, 42.5
NGEU grants: 23.7, 50.8, 25.5

■ Below 75% of EU27 average   ■ 75% – 100% of EU27 average   ■ Above EU27 average

Source: OECD (2021).
1 The NGEU grants include RRF, React-EU for 2021 and Just Transition Fund allocations.

Programmes focus on different priorities of cohesion policy. From 2021 onwards, the objectives have been reformulated and instead of 11 thematic objectives, there are now 5 policy objectives that should make Europe: 1) More competitive and smarter, 2) Greener (low-carbon), 3) More connected (mobility), 4) More social (employment, education, skills) and 5) Closer to citizens (local and sustainable urban development).

The Cohesion Fund supports policy objectives 2 and 3, the European Social Fund+ objective 4, and ERDF supports all policy objectives, but 1 and 2 are the main priorities. Depending on whether regions are classified as more developed, in transition or less developed, they need to allocate between 55 % and 85 % of funding towards these two objectives. As the ERDF is the most important Fund, these first two objectives thus carry the most weight.

Cohesion policy remains important in the EU budget. The share of cohesion policy in the budget has declined somewhat with respect to the 2014-2020 budget (from 34 % to 31 %). This overall decline masks a slight increase in the share towards ERDF (from 18 % to 19 %) and a decrease for ESF+ (from 9 % to 8 %) and, in particular, the Cohesion Fund (from 7 % to 4 %). However, if we include the top-up provided by React-EU under the NGEU, the overall budget for cohesion in real terms will be comparable to that of the previous budget.

Although cohesion policy is an important redistributive instrument, the empirical literature that studies its impact on growth is inconclusive. Macroeconomic models do suggest that cohesion funding should have important effects on GDP in low-income regions, but other empirical studies that try to assess that impact are more ambiguous. While some studies do find some positive long-term impact on regional GDP, others find only short-time effects, none at all or even negative effects. This also reflects the fact that these programmes cover a wide variety of projects in different settings. Some studies find that positive results are conditional on the region's characteristics, such as institutional quality, geographical characteristics, initial endowments, or its economic structure (for an overview, see Darvas *et al.*, 2019).

Although they do not fall under the budget's sub-heading "economic, social and territorial cohesion", other programmes in the budget also have a clear regional dimension. In the area of climate, the newly introduced Just Transition Fund (€ 17.5 billion in 2018 constant prices, € 10 billion of which provided by the NGEU) supports regions that have to undergo important changes following the green transition. In the area of agriculture, the European Agricultural Fund for Rural Development (EAFRD, € 85.35 billion, € 7.5 billion of which from the NGEU) supports rural development, with one of its objectives being to "achieve a balanced territorial development of rural economies and communities including the creation and maintenance of employment".

While the cohesion funds under the MFF are in general directly targeted towards regional cohesion, the contribution of the RRF towards regional cohesion is more ambiguous. The national Recovery and Resilience Plans are evaluated by the EC on their contribution to cohesion, but cohesion is only a part of one evaluation criterion[1] and there are no "hard" objectives in contrast to the mandatory minimum shares of spending towards green and digital investment (see sections 2.4 and 2.5).

Additionally, the RRF is allocated to countries and thus not directly to the most vulnerable regions or to those regions most affected by COVID-19. National governments have then to decide on the spending themselves which may have a differentiated territorial impact or, as in the Belgian case, the RRF grants have been shared across the federal government and the governments of the Regions and Communities according to "*rapports de force*" or including also other criteria such as their economic weight (GDP).

As a result, several experts have expressed their scepticism about the contribution of the RRF towards cohesion on the regional level. The top-down orientation, with coordination of the Plan at national level, can lead to overlooking differentiated investment and reform needs in different regions in the same country (Hunter and Pilati, 2021). In actual fact, it seems that involvement of local and regional authorities in preparing the national Plans has in most cases been limited (Cor-SEMR, 2021). If policy makers want to give a more important role to regional cohesion in future financial instruments, it would thus be important to assess the governance and within country distribution of national allocations.

2.4 The green transition

European leaders have recently agreed on the ambitious target to reduce the EU's greenhouse gas emissions by 55 % by 2030 and make it climate neutral by 2050[2]. The European Commission, for whom climate change is a key priority, has proposed in July 2021 a set of legislative proposals – called the "Fit for 55" package – that should help reach these targets. This package, which still needs to be negotiated with the European Parliament and Council, covers a wide range of areas and endeavours to reduce emissions through both carbon pricing (e.g. emission trading in the building and transport sectors) and regulation (e.g. revision of emission standards for new motor vehicles). The budget and the NGEU contribute to this agenda by stimulating investment in climate policies.

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1 The full assessment criterion that includes cohesion reads as follows: "The recovery and resilience plan is expected to effectively contribute to strengthening the growth potential, job creation, and economic, social and institutional resilience of the Member State, contributing to the implementation of the European Pillar of Social Rights, including through the promotion of policies for children and youth, and to mitigating the economic and social impact of the COVID-19 crisis, thereby enhancing the economic, social and territorial cohesion and convergence within the Union."

2 The "Climate law" enshrining these targets has now entered into force following the acceptance by both the Council and European Parliament in June 2021. This raised the emission reduction target by 2030 (compared to 1990) from 40 % to 55 %.

To do so, the EU has committed itself to spending at least 30 % on climate[1], up from a 20 % target in the previous MFF[2]. This target, called *climate mainstreaming* in EU language, applies to total spending under the MFF and the NGEU combined and includes both mitigation and adaptation. Since climate spending under the RRF has a more ambitious 37 % target (see below), the implied climate target for the MFF will in fact be quite close to the 25 % originally proposed by the EC (2018).

Climate mainstreaming (i.e. targeting) can have a meaningful impact on climate spending. For the MFF 2014-2020, which was the first EU budget with such a target, total climate spending actually reached its 20 % target, while the share of climate-relevant spending under the 2007-2013 MFF has been estimated at only about 6 to 7 % by the Commission (D'Alfonso, 2019). Also, an audit by the European Court of Auditors (ECA, 2021) found that the target has led to more and better focused climate action funding in important programmes such as the ERDF and the Cohesion Fund. However, the Court of Auditors added some criticism including that some expenditure is too easily labelled as "climate funding" and that the focus is on planned expenditure instead of actual results (ECA, 2021).

In this respect, the environmental impact of the Common Agricultural Policy is a major concern, in particular as greenhouse gas emissions from agriculture in Europe have not fallen over the last 15 years. In its review of climate mainstreaming, the ECA (2021) found that the CAP had not shown any significant progress in climate-related spending and that labelling funding appropriately would reduce climate funding under the EAFRD by 40 %. As the EC (2021d) expects the CAP to deliver about 38 % of climate-related spending (excluding RRF money), this raises questions about the feasibility of the climate goal. Additionally, the CAP still contains incentives with a negative impact on climate, including widely used direct payments for specific commodities that are climate-harmful, such as subsidies for ruminant cattle, a major source of methane emissions (OECD, 2021).

To better align the CAP with the objectives of the Green Deal, a reform has been proposed by the European Commission, on which a provisional agreement between the European Parliament and Council was reached in June 2021. Under the agreement, 25 % of funding will have to be dedicated to newly established "eco-schemes", which are payments that directly benefit the environment and climate. But Member States will also enjoy increased flexibility and it remains to be seen which exact practices they will fund as part of these eco-schemes. This will influence whether this CAP reform will have a meaningful impact on agricultural greenhouse gas emissions.

Some regions that are disproportionally affected by the green transition will be supported through the newly created Just Transition Fund, whose regulation has been adopted in June 2021. Its objective is to "enable regions and people to address the social, economic, and environmental impacts of the transition towards a climate-neutral economy". Its funding will target regions where the transition will be most costly and is based on criteria such as greenhouse gas emissions of industrial facilities in regions with high carbon intensity, employment in the industry sector in these regions and employment in coal and lignite mining. In practice, 44 % of funding is being given to only three countries (Poland, Germany and Romania). The Just Transition Fund has also been criticised, however, because it supports countries who undergo a slow green transition. Indeed, nearly two-thirds of funding will go to seven countries which do not plan to phase out coal by 2030 (Gündüzyeli and Moore, 2020).

The RRF also contains several provisions to stimulate green investment. Each Member State must allocate at least 37 % of its investment under the programme towards climate action and follow a "do no significant harm"

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1 To track climate spending, coefficients are applied to individual outlays across budget headings in function of their contribution to climate objectives: 100 % for significant contribution to climate objectives; 40 % for moderate contributions; and 0 % where the contribution is zero or insignificant. The specific 37 % and 20 % targets under the RRF for climate and digital funding (see below) are calculated in the same way, with the addition that reforms that support the green or digital transitions can to some extent also contribute towards the target.

2 The new MFF also contains a separate target to spend 7.5 % on biodiversity by 2024 and 10 % in 2026 and 2027, as well as the commitment to develop a new methodology to track biodiversity spending. The European Commission has estimated that biodiversity spending reached 8 % under the previous budgets, but the methodological changes envisaged make this difficult to compare with the new targets.

principle for all investment or reforms, i.e. that they will not do significant harm to any of several environmental objectives concerning climate change, biodiversity, pollution, circular economy and water and marine resources. Additionally, investment needs to be aligned with the country-specific recommendations, which include recommendations on the green transition.

According to the EC, the share of green spending in the NRRPs is well above 37 %. As at 20 July, 2021, 18 plans had been evaluated and found to contain on average 44 % of climate-related measures[1]. Some of this investment could reflect earlier planned investment that has been included in the RRP only to help meet the 37 % target. Additionally, an independent assessment of the plans takes a more critical view and finds that the share of green spending is on average 14 percentage points lower than in the EC's assessment (Green Recovery Tracker, 2021)[2]. While some of these differences are due to different methodology, they are mainly due to choices in classifying expenditures.

The NRRPs are quite well aligned with the broad green investment priorities – the so-called "flagships" – set by the EC (2020f). According to an analysis of 14 NRRPs by Darvas *et al.* (2021), 40 % of green investment goes to the flagship "Recharge and refuel" (sustainable transport and charging stations), 25 % to "Power up" (clean technologies and renewables) and 23 % to "Renovate" (energy efficiency of buildings). Only 12 % goes to other green goals outside of the flagship areas.

The budget under the MFF and the NGEU in itself will not be sufficient to meet the carbon emission targets. To that purpose, the EC (2020e) has estimated that € 350 billion additional annual investment is needed to achieve the 55 % reduction in greenhouse gas emissions by 2030. Even ignoring concerns about additionality, non-take-up of RRF loans and the potential overestimation of green spending, the increase in climate spending on the previous budget would only be around € 51 billion (2018 constant prices) per year, well below the EC's estimates of required investment efforts. Substantial contributions will therefore need to come from the private sector and national governments, including by reinforcing incentives for green investment through adoption of the measures under the "Fit for 55" package and by the InvestEU programme in the budget, which uses guarantees to leverage EU funding and stimulate additional investment. Nonetheless, investment under the budget and the NGEU, together with reforms under the RRF, can be expected to make a meaningful contribution towards reaching the new climate goals. Moreover, the funding of a considerable part of NGEU by green bonds allows to finance investments in green projects which are often more riskier in nature, by a safe asset.

2.5 The digital transition

Along with the green transition, the digital transition is the second of the "twin transitions" that is high on the EU policy agenda. The EC (2021e) has called for a "Digital Decade" for Europe and has set ambitious digital goals to be reached by 2030. These targets include Gigabit broadband internet and 5G coverage for all households, 100 % online provision of key public services as well as targets on the adoption of digital technologies by businesses and the employment of ICT specialists.

Digital investment is urgently needed as Europe is lagging. The EC (2020c) has estimated that there is an annual investment gap of € 125 billion between the EU and its competitors (US and China). The most important areas where investment needs to be stepped up are communication networks, AI and blockchain, and semiconductors/ photonics. As a result, digital adoption rates in the EU are lower than in the US. For example, in the EU, 66 % of manufacturing firms and 40 % of construction firms have adopted at least one digital technology. In the US, these percentages stand at 78 % and 61 %, respectively (EIB, 2020).

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1 This average is calculated as the simple average of the share of green spending in the different NRRPs.
 See Recovery and Resilience Facility | European Commission (europa.eu).
2 This average is based on nine plans which have been assessed by both the EC and the Green Recovery Tracker.

In the MFF, several programmes contribute to the digital transition, sometimes with additional funding provided by the NGEU. Digital Europe is a programme specifically dedicated to the digital transition and will provide funding in the areas of supercomputing, AI, cyber security, advanced digital skills and ensuring a wide use of technologies across society. The digital component of the Connecting Europe Facility will invest in broadband networks. The Horizon Europe programme contains a budget for "Digital and industry" which funds research in different digital domains and EU4Health contains funding for digitalisation in the domain of health. Finally, there is the InvestEU programme, which supports corporate investment in a wide range of domains, including digital infrastructure, technologies and skills.

Also cohesion funding is intended to contribute to the digital transition, as reflected in its policy objectives. For the objective "a smarter Europe – innovative and smart industrial transformation", which is a broad category that can include investment in digitalisation, minimum targets (depending on the level of GDP per capita) exist under the European Regional Development Fund (ERDF). Another objective partly related to digitalisation is "a more connected Europe – mobility and regional ICT connectivity". However, only a small part of funding can be expected to go towards this objective.

Taken together, a wide range of programmes under the MFF support the digital transition. Nonetheless, unlike for the green transition, with the exception of the ERDF, this does not come with a minimum target for digital spending. The programme exclusively dedicated to the digital transition, Digital Europe (€ 6.8 billion, in 2018 constant prices), represents only a very small share of the overall budget and is even 17.5 % lower than the budget initially proposed by the EC (Szczepański 2021). More important programmes, such as EDRF, do consider digitalisation, but not as a specific primary objective.

On the other hand, the RRF does contain an important explicit digital component : each country needs to assign at least 20 % of its investment to the digital domain. Additionally, the required reforms can in some cases also contribute to the digital transformation.

According to the assessments of the NRRPs by the EC, 28 % of spending (as of 20 July)[1], will be allocated to digital investment, well exceeding the 20 % target. This digital investment in the National Recovery and Resilience Plans aligns well with the four digital "flagship" priorities set by the EC (2020f). According to Darvas *et al.* (2021), 37 % of digital investment will go towards the flagship "Reskill and upskill" (education and training to support digital skills), 31 % to "Modernise" (digitalisation of public administration), 25 % to "Connect" (roll-out of rapid broadband services), 3 % to "Scale up" (data cloud capacities and sustainable processors) and only 3 % to other digital investment.

Overall, the digital transition is an objective that is taken into account across programmes in the EU budget, but not with the same importance as the green transition, as reflected by the absence of an overall spending target and a lower target under the RRF (20 % versus 37 % for climate). Additional digital investment in the MFF and the NGEU will only fill a small part of the investment gap identified by the EC. Nonetheless, the budget, and in particular the digital investment under the RRF, will provide some support to the digital transition.

3. Insights for Belgium

This section will investigate the main trends in the transactions between Belgium and the EU institutions since 2000, their impact on Belgian public finances and the main changes that can be expected over the coming years. The transactions include those of the EU budget and from 2021 on those of the NGEU. With respect to

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1 This average is calculated as the simple average of the share of digital spending in the different NRRPs.
  See Recovery and Resilience Facility | European Commission (europa.eu).

the new MFF and the NGEU, information on the transactions of individual Member States with the EU, however, is still partial.

We will first discuss the transactions with an impact on the EU budget balance and/or on the government budget balance. Transactions that only affect the public debt will be discussed briefly at the end of the section.

3.1 Transactions between Belgium and the EU institutions with an impact on the EU budget balance and/or on the government budget balance – a framework

In analysing the transactions between Belgium and the EU institutions, the focus will be on transfers, i.e. payments with no direct counterpart. On the revenue side of the EU budget, it concerns taxes and current and capital transfers from Belgium; on the expenditure side (of the EU budget) it applies to subsidies to enterprises and current and capital transfers to Belgium[1]. This data enables net contributions to or net receipts from the EU budget to be identified, along with the impact of the EU budget on the Belgian general government balance.

Transactions between the EU budget and the EU Member States are registered in the Member States' national accounts. Out of these, the payments with no direct counterpart are reported in a systematic way in table 1b of the ECB's Government Finance Statistics (box 3). We will use this table as a reference in this section as it provides a comprehensive framework to analyze the impact of these transactions on the EU budget balance and the government budget balance.

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1 Other transactions, such as dividends and proceeds of sales accruing to the government, salaries, purchases of goods and services, investment expenditure and interest charges, have a direct counterpart and are therefore excluded here.

Table 1b of the ECB's Government Finance Statistics (GFS)

The table below is based on reporting table 1b of the ECB's GFS and gives an overview of the transactions for each Member State with the EU budget and the European Development Fund[1,2]. The data is consistent with the ESA 2010 public accounts.

The data in this table make it possible to examine, for each Member State, the transfers made by the resident sectors of the economy to the EU budget, and also EU transfers in the Member States. This enables an analysis of the impact of the EU budget on the Member States.

The table shows relevant revenue and expenditure items. Some of these transactions are directly between the EU budget and the Member State's private sector and therefore do not pass through the government

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1 Table 1b is compiled according to the ECB Guideline on government statistics and explained in detail in the Government Finance Statistics Guide (ECB, 2019).
2 Table 1b includes EDF figures since according to national accounts these are part of the statistical sector 'institutions and bodies of the EU' (S.212). In the remainder of the text, we will refer only to the EU budget as the amounts of the EDF are relatively limited.

▶

account, such as custom duties or direct subsidies from the EU budget to companies. Other transactions go through the government and therefore have an impact on the government budget balance (see last column).

Transactions of the EU budget and the European Development Fund (EDF) with Member States

Transaction category	Item number	Impact on the Member State government budget balance?
Revenue of the EU budget and the EDF from the Member State	1 = 2 + 3 + 4 + 8	1 bis = 3 + 4 + 8
Taxes on production and imports	2	No
Current international cooperation	3	Yes
Miscellaneous current transfers and EU own resources	4	Yes
of which : VAT-based third own resource	*5*	*Yes*
of which : GNI-based fourth own resource	*6*	*Yes*
of which : UK rebate	*7*	*Yes*
Capital transfers	8	Yes
Expenditure of the EU budget in the Member State	9 = 10 + 11 + 12 + 13 + 14 + 15	9 bis = 11 + 13 + 15
Subsidies	10	No
Current transfers to government	11	Yes
Current transfers to non-government units	12	No
Capital transfers to government	13	Yes
Capital transfers to non-government units	14	No
Own resources collection costs	15	Yes
Balance of Member State vis-à-vis the EU budget and the EDF (net recipient + , net payer –)	16 = 9 – 1	16bis = 9bis – 1bis

Sources : ECB, NBB.
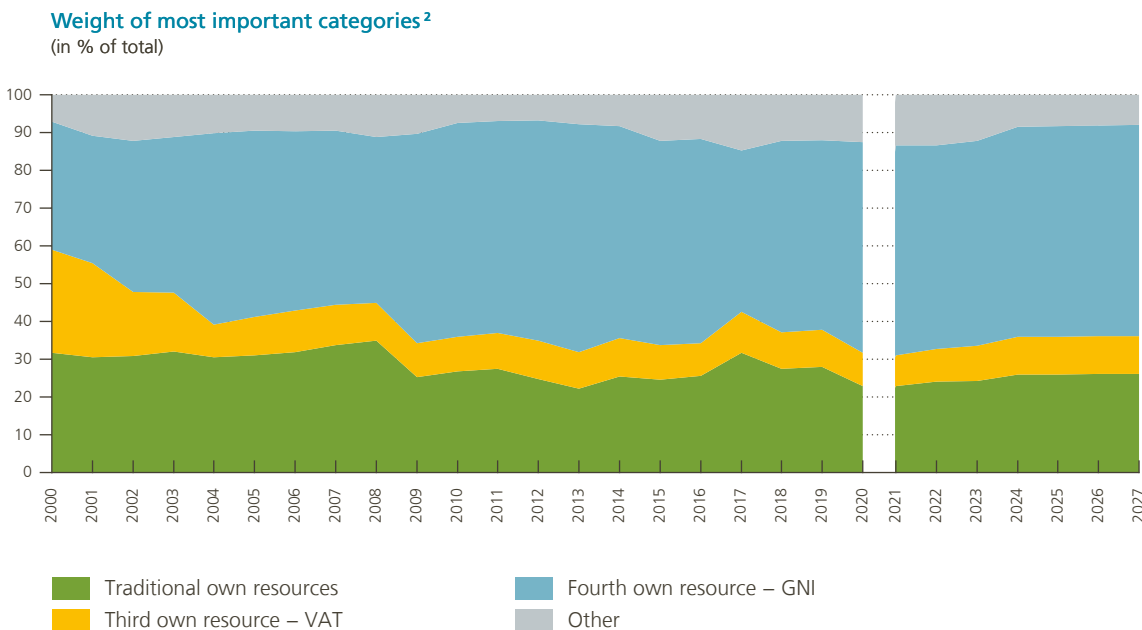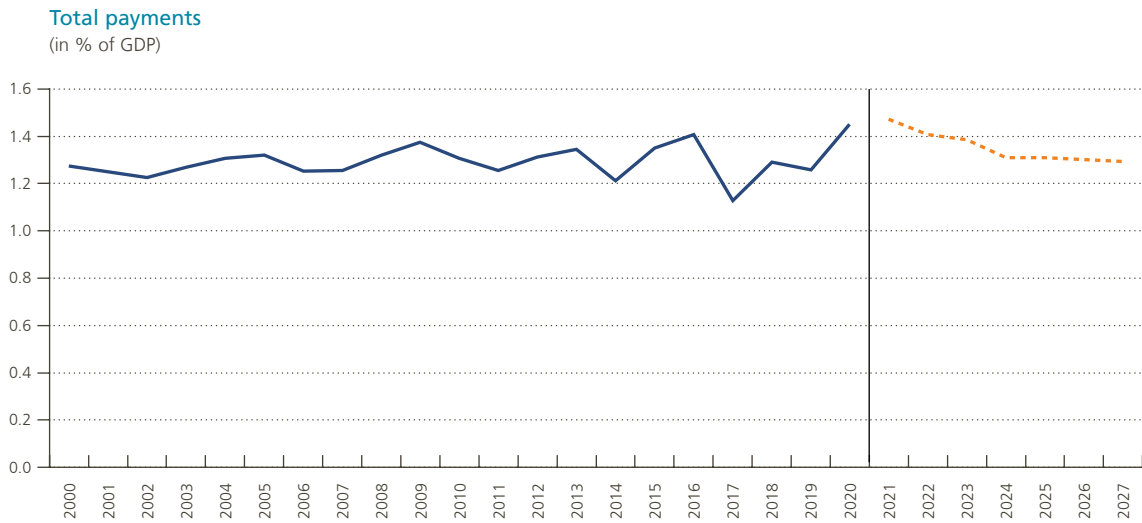
3.2 Payments of Belgium to the EU budget

The total payment of Belgium to the EU budget (item 1 in box 3) averaged 1.3 % of GDP per year over the last 20 years[1]. According to projections based on information from the Permanent Representation of Belgium to the EU, the Federal Planning Bureau and the Study Committee on Ageing (SCA), the total payment would equal on average 1.4 % of GDP per year over the period 2021-2027.

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1 Payments and receipts (see section 3.3) of Belgium are expressed in % of GDP in this section as we are ultimately interested in the impact on the government budget balance.

Chart 9

Payments of Belgium to the EU budget[1]

(actual values for 2000-2020, projections for 2021-2027)

Total payments
(in % of GDP)

Weight of most important categories[2]
(in % of total)

- Traditional own resources
- Third own resource – VAT
- Fourth own resource – GNI
- Other

Sources: FPB, NAI, Permanent Representation of Belgium at the EU, SCA, NBB.

1 The categories in this chart differ slightly from those in chart 3 as they are based on national accounts data. For example, the collection costs are not subtracted from the traditional own resources here.

2 A correction was made to reallocate the contribution to the Single Resolution Fund from the category Traditional own resources to Other.

As for other Member States, the fourth own resource or the GNI-based contribution (item 6 in box 3) is currently by far the most important category, representing more than half of total payments of Belgium. As mentioned in section 1, this category is an 'additional' resource that provides the EU with the revenue required to cover expenditure in excess of the other revenues in any year. The weight of this category increased since 2000 from around 30 % to more than 50 % of the total. This would remain the most important category over the period 2021-2027 and represent some 55 % of the total.

As mentioned in section 1, the growing share of the GNI-based contribution is a reflection of the declining weight of revenue from the traditional own resources [1] (item 2 in box 3) and from the VAT-based own resource [2] (item 5 in box 3), from almost 60 % in 2000 to some 30 % in 2020. Based on the information from Belgium's Permanent Representation to the EU, the relative weight of both categories in total payments should increase slightly over the period 2021-2027.

A last category contains various other payments to the EU budget and represented between 7 and 13 % of the total over the last 20 years. First, this category includes the payment for financial stability to the Single Resolution Fund (SRF). The contributions raised at national level are transferred to the SRF until 2023. Furthermore, this category also includes the UK rebate and other rebates. The UK rebate (item 7 in box 3) disappears in 2021. Finally, next to some other smaller contributions, a new payment is included starting in 2021, namely a contribution based on the non-recycled plastic packaging waste. According to the projections, the relative importance of this "other" category will drop slightly but will remain around 10 % over the period 2021-2027.

3.3 Receipts of Belgium from the EU budget

3.3.1 Data from national accounts

Belgium's total receipts from the EU budget (item 9 in box 3) averaged 0.6 % of GDP per year over the period 2000-2020. The most important category of receipts are the transfers that directly go to enterprises, households and non-profit institutions serving households (items 12 and 14 in box 3), except for subsidies. This includes payments under the European Social Fund (ESF), such as transfers for education and training, and the European Regional Development Fund (ERDF). The relative importance of this category has grown from around 30 % at the beginning of the 2000s to more than 40 % over the last few years. In contrast to the increase in transfers stands the declining importance of subsidies (item 10 in box 3), diminishing from almost 50 % of the total receipts in 2000 to 22 % in 2020. These consist primarily of agricultural subsidies paid under the CAP. There is no comparable information available on direct transfers and subsidies over the period 2021-2027.

The transfers to government [3] (items 11 and 13 in box 3) displayed a strong increase over the same period, reaching almost 20 % in 2020. This category is expected to grow further substantially over the period 2021-2027 under the impulse of receipts to finance expenditure under Belgium's Recovery Plan, totaling € 5.9 billion according to provisional figures as mentioned in box 1. Besides, also receipts from the Brexit Adjustment Reserve are expected over that period in this category. One last category that can be distinguished consists of the own resources collection costs (item 15 in box 3). As already mentioned in section 1.3.1, this is the amount Member States receive to collect taxes on behalf of the EU budget. This represented between 15 and 20 % of Belgium's total receipts from the EU budget over the past years.
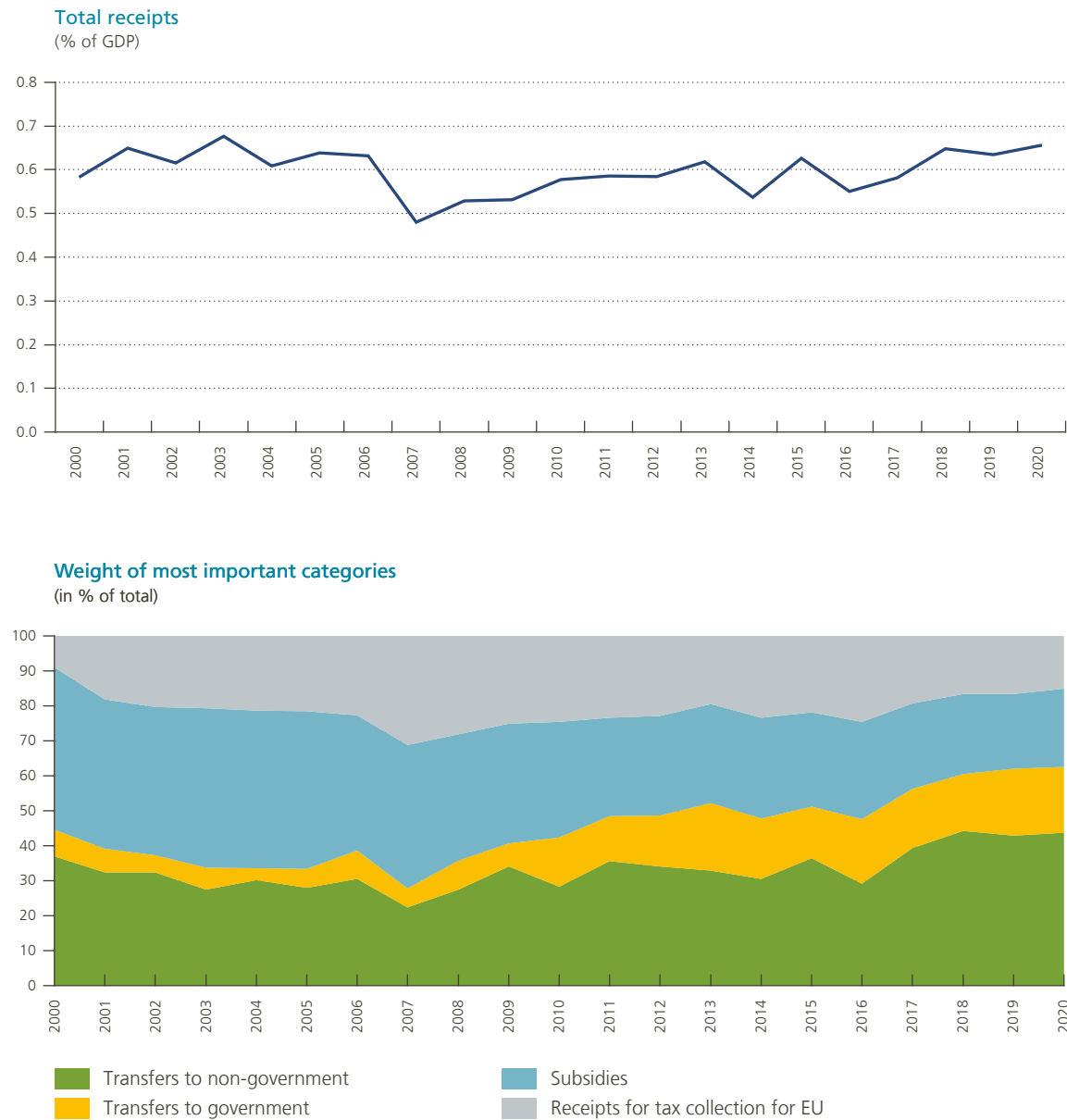
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1 They consist of customs duties, agricultural duties and sugar levies.
2 This corresponds to a percentage levied on countries' VAT bases, calculated in accordance with EU rules.
3 This concerns mainly current international cooperation paid to the regions and communities.

Chart 10

Receipts of Belgium from the EU budget

Total receipts
(% of GDP)

Weight of most important categories
(in % of total)

- Transfers to non-government
- Transfers to government
- Subsidies
- Receipts for tax collection for EU

Sources : NAI, NBB.

### 3.3.2 Data from the Operating Budgetary Balance (OBB)

The total receipts of a country from the EU budget can also be analysed through a functional classification available in the operating budgetary balance (OBB). These data are calculated and published by the EC and show actual payments from the voted budgets.

The OBB data make it possible to study the evolution of the payments by main program and by country. They can slightly differ from the amounts in the national accounts data. Based on data since 2000, the trend in EU

Chart 11

Receipts of Belgium from the EU budget by main policy area

(in % of total receipts)
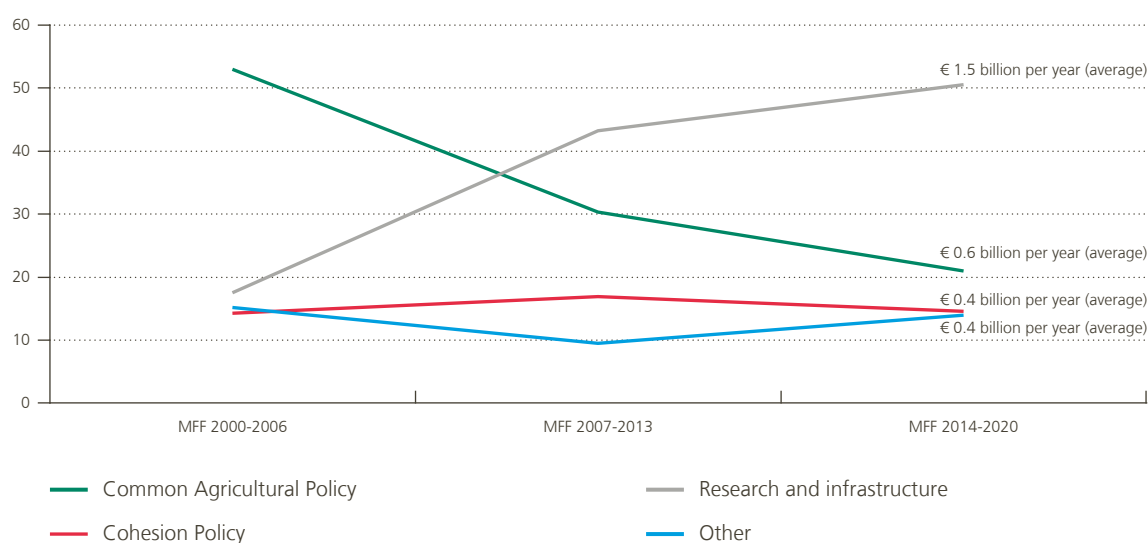
Sources : EC, NBB.

allocations to Belgium by main policy area can be retraced over the last three MFFs[1]. In this article, we consider the main areas agriculture ; cohesion ; research and infrastructure ; and other. This approach also makes it possible to give an indication of the orientation over the next MFF (2021-2027) based on the pre-allocations published by the EC (EC, 2021a).

The main category in the MFF 2014-2020 was research and infrastructure, representing on average € 1.5 billion per year or around 50 % of the total allocations for Belgium, compared to less than 20 % in the MFF 2000-2006[2]. The main programmes under this category from which Belgium receives funding are the Framework Programme for Research and Innovation (Horizon 2020), the Connecting Europe Facility (CEF), which promotes growth, jobs and competitiveness through targeted infrastructure investment, and the EU Programme for Education, Training, Youth and Sport (Erasmus+).

In contrast to this, the relative importance of allocations from the Common Agricultural Policy has dropped sharply from a little more than 50 % in the MFF 2000-2006 to 21 % in the MFF 2014-2020, representing a yearly average of € 0.6 billion. This category consists mainly of payments by the European Agricultural Guarantee Fund (EAGF).

The relative importance of the area of cohesion has remained rather stable. The two main areas for which Belgium receives funding are European territorial cooperation (through Interreg), and the objective Investment for Growth and Jobs (through ESF and the EDRF). Finally, the remaining category of "other" has also been quite stable over the last three MFFs.

1 The category administrative receipts has been disregarded. This includes salaries, pensions of EU personnel and other operational costs.
2 The official name of this category of expenditure in the MFF 2014-2020 is Competitiveness for Growth and Jobs.

3.3.3 Pre-allocations of certain funds in the 2021-2027 EU budget and Recovery Plan

In the Spring of 2021, the EC published pre-allocations[1] by country for some of the main areas under the MFF 2021-2027 and the NGEU (EC,2021a). For the MFF, these figures show that Belgium has pre-allocations for agriculture under the EAGF and the EAFRD over the period 2021-2027 worth slightly more than € 4 billion (compared to pre-allocations of € 4.3 billion over the period 2014-2020). For cohesion policy, a total pre-allocation of almost € 2.7 billion is envisaged. Finally, under the Just Transition Fund, Belgium stands to receive € 80 million.

Under the NGEU, the biggest sums are foreseen under the Recovery and Resilience Facility with € 5.9 billion over the period 2021-2026 (see discussion in box 1). Belgium has also a pre-allocation for the EAFRD of € 14.2 million in 2021 and € 33.9 million in 2022. For the Just Transition Fund, an amount of € 103 million is planned over the period 2021-2027. Under REACT-EU, Belgium is pre-allocated an amount of € 260 million in 2021.

Table 3

Pre-allocations of certain EU funds for Belgium over the period 2021-2027 [1,2]

(current prices in € billion)

	Total (2021-2027)	2021	2022	2023	2024	2025	2026	2027
MFF 2021-2027								
European Agricultural Guarantee Fund	3.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
European Agricultural Fund for Rural Development	0.6	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Cohesion Policy	2.7	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
Just Transition Fund	0.1	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
The NGEU								
European Agricultural Fund for Rural Development	0.1	0.0	0.0	n.a.	n.a.	n.a.	n.a.	n.a.
Just Transition Fund	0.1	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
RRF allocation [3]	5.9	1.0	1.6	1.2	1.1	0.7	0.3	n.a.
REACT-EU	n.a.	0.3	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

Sources: EC, FPB.
1 Not exhaustive in terms of funds as well for the MFF as for the NGEU. For the MFF this represents less than half of the total funds.
2 In commitments.
3 Yearly figures based on Federal Planning Bureau (2021).

3.4 Balance

Subtracting the revenue of the EU budget from the Member State from the expenditure of the EU budget in the Member State as defined in item 16 in box 3 gives the net contribution (negative sign) to or the net receipt (positive sign) from the EU budget.

Belgium displayed a net contribution over the whole period covered, hovering between 0.5 and 0.9 % of GDP without any clear trend. When we take a narrower view and only consider those items with an impact on the

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1 In commitments.

Chart 12

Net contribution (negative sign) or net receipt (positive sign) of Belgium to/from the EU budget and impact on the general government balance

(in % of GDP)

— Net contribution (–) or net receipt (+) of Belgium to/from the EU budget

······ Impact on the general government balance

— *p.m. Net contribution (–) or net receipt (+) of Belgium to/from the EU budget inclusive of EU administrative expenditure in Belgium*
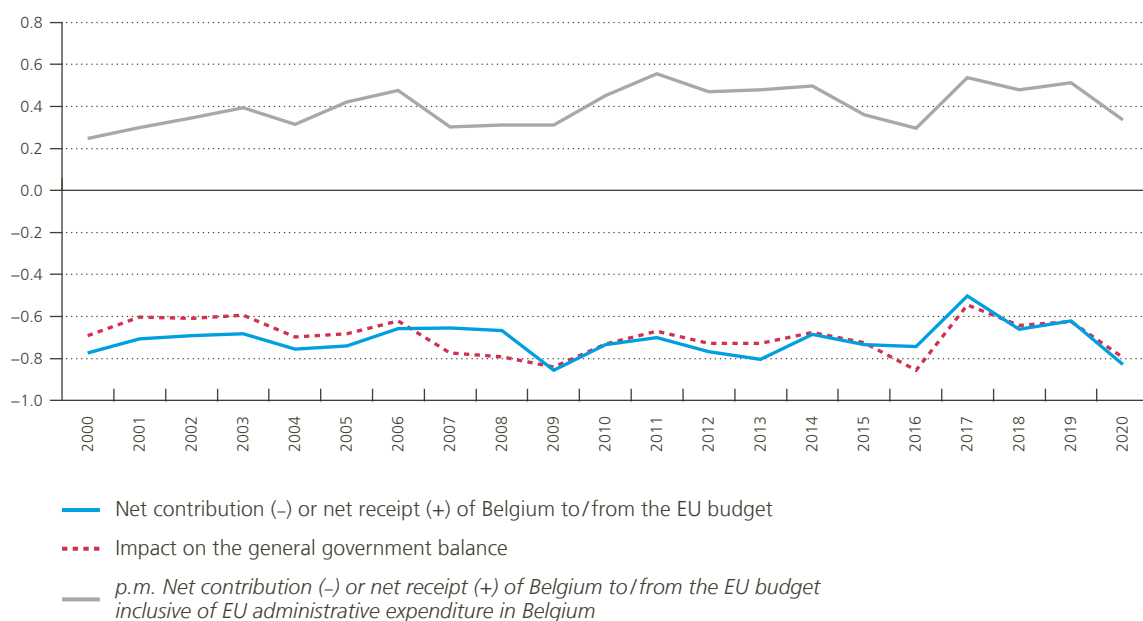
Sources: NAI, NBB.

government balance – i.e. excluding the direct transactions between the EU budget and the private sector (item 16bis in box 3) – the picture remains broadly unchanged. This means that the net contribution is almost completely situated in the government sector.

If we depart from our preferred approach to only consider transactions with no direct counterpart and take on board administrative expenditure by the EU institutions in Belgium, which are very important for the local economy, the resident sectors of Belgium would become a net receiver of roughly between 0.2 and 0.6 % of GDP over the period 2000-2020[1]. However, the salaries of officials paid in Brussels are not spent entirely in Belgium. This argument is particularly valid in the case of pensions, which are largely paid to officials who have left Brussels.

All in all, we can conclude that the impact of transactions of Belgium with the EU budget remains rather limited and stable over time.

Although it is interesting to look at the balance from an accounting perspective, it is important to be aware of the exact content and limitations of it.

The following caveats apply when using these budget balances[2]:

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1 The inclusion of these EU expenditures makes a significant difference for the two Member States which are home to most of the European institutions, namely Belgium and Luxembourg. These two countries then become net receivers from instead of net contributors to the EU budget.
2 Butzen *et al*. (2006), Pilati *et al*. (2020), Asatryan *et al*. (2020).

- the EU is based on solidarity, and not on some "fair return" principle. Any net contribution should also be compared to the broad economic benefits from membership and economic integration which are particularly large for a small open economy like Belgium[1];
- expenditure in one particular Member State may benefit another either directly (e.g. the construction of an airport in Greece by a German contractor) or indirectly by boosting imports;
- EU expenditure in many cases benefits several or all Member States, or address a common public good; it may also generate economies of scale;
- Member States can benefit from financial instruments outside of the budget (EIB, EFSI, ESM, …).

The discussion about how much each EU Member State is getting out of the budget versus how much they are contributing is therefore flawed and has to be put in context.

3.5 Transactions between the EU institutions and Belgium that affect only public debt

Apart from the transactions with an impact on the budget balance which were discussed in the previous sections, Belgium also has transactions with the EU institutions that affect only public debt. Although they have no impact on the budget balance, they are important to give a global view on the transactions between EU institutions and Member States. This section gives a brief overview of the main transactions and outstanding amounts.

On the liabilities side for the Belgian government, the most important transaction with the EU institutions falls under the SURE programme, which was launched in 2020 in response to the COVID-19 crisis. This facility provides EU Member States with a financing option by loans for measures taken to provide temporary employment support and to reduce the impact of the crisis in terms of unemployment or loss of income. The total amount for Belgium came to € 8.2 billion at the end of June 2021. Another important liability consists of loans from the European Investment Bank (EIB) and the Council of Europe Development Bank (CEB). Finally, it is worth mentioning that, like most EU countries, Belgium did not apply for the loan component of the RRF, but only for the grants. On the assets side, different participations of the Belgian government in European institutions can be identified (EIB, EBRD, EMS, …).

Conclusion

The Multiannual Financial Framework (MFF) 2021-2027 and the Recovery Plan the Next Generation EU (the NGEU) may to some extent be seen as a game changer for a few reasons.

First, thanks to the addition of the NGEU, the EU funding will be exceptional in size over the first years of the 2021-2027 period. Indeed, the NGEU instrument complements the € 1100 billion agreed ceiling for the MFF with another € 750 billion (in 2018 prices) to be spent by 2026 at the latest. For the first time ever, the EU budget also intends to play the role of an economic stabilisation function. But it remains very limited compared to that of individual EU countries and federal models as in the United States. Second, by borrowing more than € 900 billion taking also the SURE instrument into account, the EU will become both a significant player on the financial markets and a provider of safe assets in euro, thereby reinforcing the international role of the euro.Third, the NGEU and its major instrument, the Recovery and Resilience Facility (RRF) are not only designed to speed up the EU recovery, but also to spur growth over the medium and long term by stimulating

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1 According to data put together in 2019 by the EC, Member States' benefits from the single market exceeded 6 times their contributions. This is because the single market gives access to 450 million customers and creates opportunities that no EU country can offer on their own. See EC (2019), Pilati *et al*. (2020), In 't Veld (2019).

Member States' investments and reforms. To that end, governments had to submit National Recovery and Resilience Plans (NRRPs).

Estimates by the EC, IMF and the ECB show that the NGEU could boost EU growth potential and increase real GDP by up to 1.5 percentage points by the middle of the decade. However, to achieve such effects on growth, important conditions need to be met: the NGEU funding has to be used for productive investment; it has to fund additional investments that would not have taken place otherwise; and countries need to be able to absorb the inflow of substantial additional resources in a relatively short time span. In the long run, we may expect growth effects to come mainly from the structural reforms, and from the interaction between the reforms and investments.

Fourth, the main part of the NGEU is made up of grants showing some solidarity between the Member States in times of crises. This solidarity is also reflected in the criteria chosen for allocating the RRF between countries as they favour the worst-hit EU economies (in the South) and the poorest and less resilient economies (in the Centre and East).

Consequently, the NGEU may help keeping the convergence between countries going further despite COVID-19, that has been a common shock with asymmetric effects across countries.

Fifth, together with the new MFF, the NGEU may further promote cohesion between the regions in the EU. Thanks to additional funding from the NGEU cohesion policy retains the same budget in real terms as the previous MFF. Cohesion policy, much of which is targeted directly to the most disadvantaged regions, is the most redistributive part of the EU budget.

Finally, both the NGEU and the MFF support the so-called "twin transitions" (green and digital). Investments in both domains are indeed much needed to achieve the new ambitious climate targets (a cut of 55 % in greenhouse gas emissions by 2030 and climate neutrality by 2050) and to increase the use of digital technologies. For the green transition, at least 30 % of the total package (MFF + the NGEU) needs to be used for climate-related spending. A threshold of no less than 37 % is even set for the RRF specifically encouraging the Member States to focus on green investments in their NRRPs. While there is some attention for digital investment in different programs throughout the budget, digital spending does not have a comparable target for the total package and only a smaller 20 % target for the RRF.

Going forward, the success of the NGEU will depend on the implementation. It is a one in a lifetime opportunity for the less resilient countries and/or most affected by the COVID-19 crisis to help remedy their structural problems through investments and reforms. This is the reason why in a next article we intend to further analyse and compare the NRRPs of the main euro area Member States, notably Italy and Spain as they have received the highest absolute amounts of RRF grants. Belgium will also be considered in this comparison. Belgium's NRRP has been drafted on the assumption that it will receive € 5.9 billion of RRF grants from the EU. Based on the summer 2021 EC forecast, Belgium may receive € 750 million less than expected at the autumn 2020 since its GDP developed better than in the other EU Member States.

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Belgian firms and the COVID-19 crisis

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Introduction

Around Mid-March 2020 the Belgian government announced strict lockdown measures to contain the first wave of the COVID-19 pandemic[1]. The totally unprecedented situation had a serious impact on businesses, with stringent health measures, disruption of working conditions, and some activities being forced to close. Firms also encountered a decline in demand from both consumers and businesses, and problems in obtaining goods from their suppliers. Overall, it was an unprecedented shock. Since then, periods of declining infection rates accompanied by the lifting of restrictions have alternated with new waves of infection when measures were imposed[2].

The economic literature comprises several contributions analysing the aggregate impact of the pandemic on various aspects: activity (Barro *et al.*, 2020), value chains (Baldwin and Evenett, 2020, Antràs *et al.*, 2020) and consumption habits (Andersen *et al.*, 2020, Goolsbee and Syverson, 2020)[3]. For Belgium, Coppens *et al.* (2021) describe the situation and trends in Belgium one year after the crisis. However, to the best of our knowledge, there are few descriptive analyses of the situation of individual firms during the COVID-19 crisis. Alfaro *et al.* (2020) analyse the impact on the stock market value of companies. Tielens *et al.* (2020) focus on the liquidity and solvency of Belgian firms during the first two waves of the pandemic. The regular release of the survey conducted by Economic Risk Management Group on a small sample of Belgian firms and self-employed provided already some early but limited and mostly qualitative information about the situation of those firms during the crisis. The purpose of this article is to supplement the existing literature by documenting the heterogeneity of firms' individual situations during the epidemic using data covering the entire population of Belgian non-financial corporations[4].

For the twelve-month period from 1 April 2020 to 31 March 2021 – defined in this article as the crisis period[5] – the value added of the non-financial corporations' sector declined by 8 % compared to 2019[6]. However, that figure conceals very considerable disparities between firms, as they did not all suffer losses, and those that did

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1 The strict rules allowed only a few critical sectors (e.g. agriculture, food manufacturing and distribution, and the health sector) to operate. In other sectors, activity was either closed (e.g. hospitality, cultural and recreational services, education, personal care services) or, where feasible, working from home became compulsory. People movements were severely constrained and limited to what was strictly necessary.

2 See Wikipedia "COVID-19 pandemic in Belgium" for a detailed description of the measures.

3 There is also an extensive literature on the impact of COVID-19 on the labour market (see the many publications by COVID Economics).

4 According to P. Eavis and N. Chokshi, the situation of businesses during the crisis is extremely heterogeneous. See "While the Pandemic Wrecked Some Businesses, Others Did Fine. Even Great", *The New-York Times*, 9/11.

5 The choice of the crisis period is arbitrary and dictated by circumstances. In fact, the crisis started earlier and did not end in March 2021. We do not include March 2020 in the crisis period since that month was only partially affected by restrictions. Furthermore, as some data are only available quarterly, that would have forced us to include the whole of the first quarter of 2020 in the crisis period. We terminate the crisis period on 31 March 2021 because of data availability, as some data on the situation in the first two quarters of 2021 were still missing when this article was written. The choice of a twelve-month period also facilitates the analysis by neutralizing seasonal effects.

6 Provisional figures as at 22/7/2021 (source: NAI).

were not all affected to the same degree. While it is easy to see that a hotel, hairdressing salon or cultural venue was in a much less favourable position than a pharmaceutical company, it is less clear that within a specific activity – such as the restaurant trade – some firms experienced a dramatic fall in turnover while others saw only a small decline, and some recorded increased business.

To provide a comprehensive review of the situation, we use the sales figures in the VAT returns of around 470,000 non-financial corporations (see Appendix A1 for a description of the data). Sales include all domestic and international sales[1]. The population of firms we consider in this paper exclusively covers non-financial corporations. Self-employed workers, non-profit institutions, financial corporations and the public sector are therefore excluded from our analysis. Our population of firms covers almost all branches of activity in the economy[2], from agriculture to personal services, and includes manufacturing industry, construction, trade and business services. Only a few branches, such as financial services, education, public administration and health care[3], are excluded from our analysis.

Over the one-year period from 1 April 2020 to 31 March 2021, just over half of firms suffered a drop in turnover compared to 2019. Based on these figures, the immediate conclusion might be that the crisis drove those firms into the red. That is not entirely true. We can assume that, even if 2020 had been a normal year, some of those firms would have seen their turnover decline in any case. It is obviously impossible to know what would have happened without the COVID-19 epidemic. What we can do is to compare the exceptional crisis situation with the situation in a normal year without any major shock.

Based on such a comparison, we can state that the crisis generated more disparity in firms' performance than in normal times. For a quarter of firms – the best performers – their performance during the COVID-19 crisis was comparable to that of the best firms in a normal year. But for three-quarters of firms, sales performance deteriorated, sometimes very sharply. That is the first stylised fact in our analysis.

This article expresses the disparities between firms via eight other stylised facts that illustrate various aspects of the crisis. Thus, we find that:
- Compared to the 2008-2009 financial crisis, the health crisis had a greater adverse impact on a larger percentage of firms (fact #2)
- The economic repercussions were most severe during the first wave of infections, and the situation in the first quarter of 2021 was mixed: over a quarter of firms were still struggling, while the very good performers were doing well (fact #3)
- Accommodation and food service activities, arts and entertainment, and personal services were the sectors recording the weakest performance, and it was firms in the subsectors subject to the most stringent restrictions on activity that suffered the most (fact #4)
- Firm size had little effect on the median performance level. Conversely, there was much greater disparity among small firms (fact #5)
- There is little difference in firms' performance between the Belgian regions, provinces and districts, although Brussels suffered more and there is greater disparity in the more densely populated districts (fact #6)
- Firms' investment does not appear to have been affected (fact #7).

An 8th stylised fact concerns firms' economic health. If we compare the sales figures with the variable costs, we obtain a mixed picture. 48 % of firms were in the green zone, with sales rising by more than their variable costs during the crisis period. In contrast, 36 % of firms were in the orange zone with a margin which was still positive despite the disproportionate increase in variable costs. Finally, 16 % of firms were in the red with a disproportionate increase in variable costs and a negative margin at the end of the crisis period.

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1 It's worth noting that, when evaluating the financial situation of a firm during the crisis, we do not take into account any federal or regional support that it may have received.
2 Our population of firms covers around 1,775,000 workers.
3 In these branches of activity, business is not accurately reflected in VAT sales.

To conclude the analysis, a 9th and final stylised fact explains the performance of firms in terms of economic or geographical factors. Unsurprisingly, the sector of activity is a key factor explaining performance. The geographical dimension and firm size had less impact. In addition, we estimate that the shock hitting their suppliers or customers was partly passed on to firms. These explanatory factors are significant, and their impact is substantial in quantitative terms.

Firms during the health crisis: 9 stylised facts

Fact #1. The crisis generated greater disparity in firms' performance. For a quarter of firms – those recording the strongest sales growth – performance during the COVID-19 crisis was comparable with the performance of the best firms in a normal year. But for almost three-quarters of firms, sales performance was weaker, with sometimes very substantial reductions.

As stated in the introduction, not all firms suffered a fall in their turnover: the average figure for the economy according to the macroeconomic statistics in fact conceals diverse situations. If we compare the period from April 2020 to March 2021 with the 2019 period, we find that 55 % of firms recorded a decline in sales, while 45 % saw their sales increase. By going into more detail in the analysis, we find that 25 % recorded extreme turnover losses (more than 33 %), 19 % suffered substantial losses (between 10 % and 33 %) and 12 % experienced smaller losses (less than 10 %).

This first finding might make us jump to the conclusion that the COVID-19 crisis penalised 55 % of firms and benefited the other 45 %. That is not the case[1]. Every year, some firms manage to increase their sales while others record a decline. The crucial question here is to establish what percentage of firms suffered a decline in their business which would not have occurred in the absence of any health crisis. Obviously, such an exercise is surrounded by great uncertainty. On the other hand, we can compare firms' performance during this year of the health crisis with the performance of firms in a normal year.

In a normal year[2] – when there was no major crisis – we find that 45 % of firms experience a loss of turnover. That leads us to our first finding. The percentage of firms suffering a loss of turnover increased from 45 % in a normal situation to 55 % during a health crisis. Overall, we can estimate that 10 % of firms recorded a loss of turnover which they would probably not have suffered in a normal situation.

Chart 1 compares the distribution of turnover growth rates in a crisis year (blue curve) and in a normal situation (red curve). It gives a detailed description of the situation, showing the proportion of firms concerned for each variation in turnover. A first finding is that the crisis increased the disparity in performance between firms. In normal times, the curve is much closer to its average and the probability of recording extreme growth rates – in either direction – is much smaller.

On the right-hand side of the chart, the two curves are superimposed: the good performance achieved by about a quarter of firms – the ones recording the strongest growth – was comparable to the good performance of the best firms in a normal year. Conversely, about three-quarters of firms clearly performed less well than in a normal year. During the crisis there was in fact a much larger number of firms recording decidedly negative growth rates (left-hand zone of the chart), whereas in normal times they would record weak to moderate growth rates (central zone of the chart). To sum up, a large proportion of firms recorded weaker performance than in normal times, and the reductions are sometimes very substantial.

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1 In many instances, firms have received support from the federal and regional authorities. This is beyond the scope of this paper.
2 We take our reference year as 2019. It is preferable to use a reference year which is as recent as possible to ensure that the economic fabric is the same as that in the crisis year.

To provide a simple illustration of this shift, we can rank the firms in order of performance and select five pivot firms: the very good performer, the good performer, the median performer, the weak performer and the very weak performer[1]. The idea is to compare the performance of these pivot firms in a normal year with that of the corresponding pivot firms in a crisis year. We are not talking about the same firms. We are comparing different firms that share the same ranking.

Chart 1

Performance of firms compared to the reference situation

(distribution of the change in sales, density)
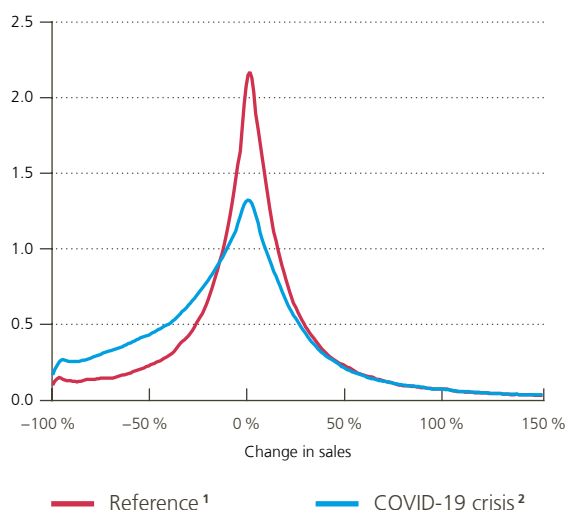
Source: NBB calculations.
1 2019 period compared to 2018 period.
2 Period from April 2020 to March 20201 compared to the 2019 period.
Note: For clarity of presentation, the distributions are truncated at +150 %.

What can we conclude from comparing the performance of firms in a health crisis with that in a normal situation? In the case of good and very good firms, the performance is comparable with that in a reference year, with turnover up by around 20 % and 80 % respectively. Conversely, the performance of the other pivot firms falls short of that of their peers in normal times. The median firm recorded a 4 % decline in its turnover, compared to a rise of 2 % in the reference period. The weak and very weak performers recorded losses of 33 % and 66 % in the crisis period, compared to losses of 13 % and 42 % for corresponding firms in the reference period, i.e. a reduction of more than 20 percentage points.

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1 These pivot firms correspond respectively to p10, p25, p50, p75 and p90 of the distribution. Firm p10 is a very weak performer because it does better than 10% of firms and worse than 90% of firms. Firm p25 is a weak performer, because it does better than 25% of firms and worse than 75% of firms. Firm p50 is the median firm which does better than half of the firms and worse than the other half. Finally, the good and very good performers are firms p75 and p90 respectively. We would point out that other pivot values also make sense, such as p1, p5, p95 and p99, for example. We chose a small number of pivot values arbitrarily by excluding extreme values.

Chart 2

Performance of pivot firms compared to the reference situation

(change in sales)
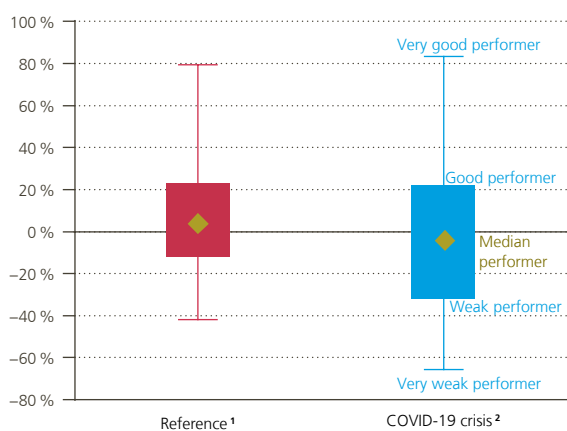
Source : NBB calculations.
1 2019 period compared to the 2018 period.
2 Period from April 2020 to March 2021 compared to the 2019 period.

Fact #2. Compared to the 2008-2009 financial crisis, the health crisis had a greater adverse impact on a larger percentage of firms

A comparison with the 2008-2009 financial crisis is useful for establishing the scale of the economic repercussions of the health crisis. Admittedly, the two crises are very different : one is a health issue, the other was due to severe economic and financial imbalances symbolised by the collapse of Lehman Brothers bank. They also differ in terms of developments over time. While the scale of the health crisis shock was unprecedented outside of the two world wars, the economy nevertheless displayed great resilience in the subsequent quarters and began to return to a degree of normality as soon as the stringent measures were lifted, at least for many sectors of activity. In the case of the financial crisis, the initial shock was smaller, even though it was already exceptional in terms of economic history. However, the financial and economic imbalances which came to light in October 2008 took some time to disappear, particularly in Europe. In addition, the sectors affected are also very different in the two crises. In the case of a classic economic crisis, including the financial crisis, it is generally industry that reacts most strongly to the economic cycle. In contrast, the specific nature of the health crisis implied a greater impact on services, where social contacts predominate.

Comparison of the first twelve months following the eruption of each crisis[1] shows a relatively similar general picture for the growth rate distributions (see chart 3). However, we do find some differences which reflect the exceptional nature of the health crisis. During the financial crisis, 50 % of firms recorded a decline in turnover, compared to 55 % in the COVID-19 crisis, i.e. a 5 percentage point difference. The main difference is seen in the left-hand part of the distribution, where the growth rates are very negative. We find 6 % more firms here during the health crisis than during the financial crisis. An exceptionally large number of firms therefore recorded very sharp decline in their turnover.

1 To compare these two crises, we consider the first twelve months of each crisis, namely April 2020 to March 2021 for the health crisis and October 2008 to September 2009 for the financial crisis. And we compare sales during these twelve months with the sales figures for the latest preceding year (2019 and 2007 respectively). By taking the whole of the preceding year instead of the previous twelve months we avoid pre-crisis periods which may already be partly affected, notably via exports or imports concerning regions already affected by the crisis.

Chart 3

Performance of firms compared to the 2008-2009 financial crisis

(distribution of the change in sales, density)
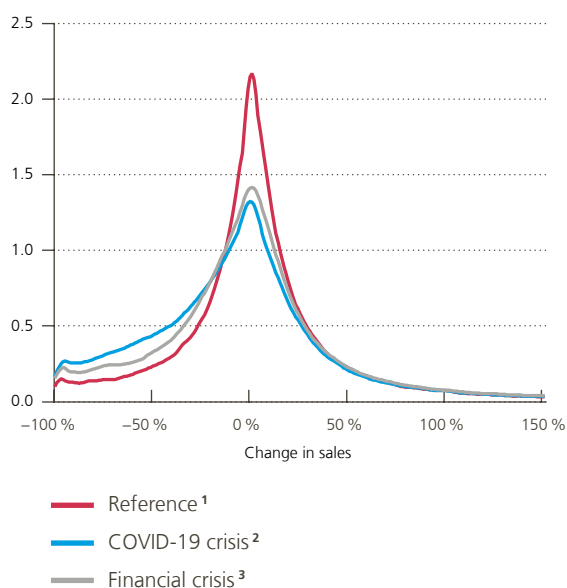
- Reference [1]
- COVID-19 crisis [2]
- Financial crisis [3]

Source: NBB calculations.
1 2019 period compared to the 2018 period.
2 Period from April 2020 to March 2021 compared to the 2019 period.
3 Period from October 2008 to September 2009 compared to the 2007 period.
Note: For clarity of presentation, the distributions are truncated at +150 %.

Fact #3. The economic repercussions of the COVID-19 crisis were most severe during the first wave, particularly in april 2020. The situation in the first quarter of 2021 was mixed: over a quarter of firms were still struggling, while the very good performers were doing well.

Chart 4

Number of COVID-19 hospitalisations in Belgium
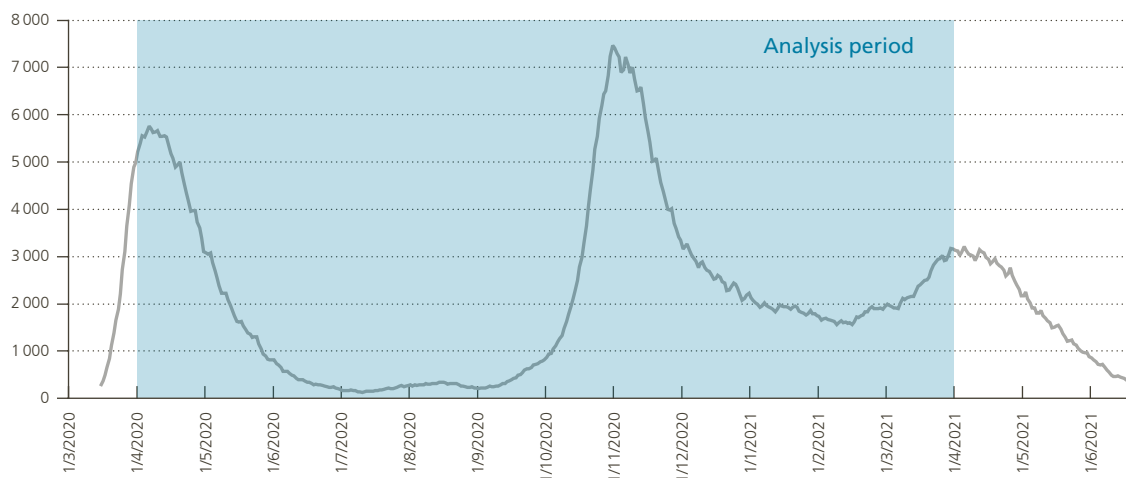
Source: Sciensano.

In April, but also to a lesser degree in March and May, a very large majority of firms suffered a deterioration in their performance compared to a normal situation (see chart 5). In April 2020, the median firm recorded a 27 % decline in its sales (compared to April 2019). Some firms were seriously affected: weak performers recorded a decline of 65 % and very weak performers saw a decline of 89 %. Even among the good performers, the situation was not favourable. Very good performers achieved only 61 % turnover growth. Although that may seem a lot, it is actually very little since very good performers generally achieve growth rates more than 100 %.

The second wave of the epidemic in November 2020 had fewer economic repercussions than the first one, whereas it was no less serious in health terms (see chart 4). The measures for firms were no longer as drastic as those in force during the first lockdown. Many firms were able to continue their activities, even though health measures applicable to workers or customers remained in force. For example, industry and construction adapted to the situation by introducing health protocols. Trade also adapted, with the introduction of systems such as click and collect, online sales, etc.

Very soon – in fact, by June 2020 – the good and very good performers regained growth rates in line with a normal situation. More than a quarter of firms managed to prosper, and they form a group that gained from the COVID-19 crisis.

In contrast, other firms suffered throughout the crisis year, performing less well than in a normal situation. The weak and very weak performers recorded a poorer performance than in normal times in each of the twelve months following the outbreak of the health crisis. The losers resulting from the COVID-19 crisis are found in certain specific sectors. That is the subject of the next stylised fact.

Chart 5

Firms' performance month by month

(change in sales compared to the corresponding month in 2019)
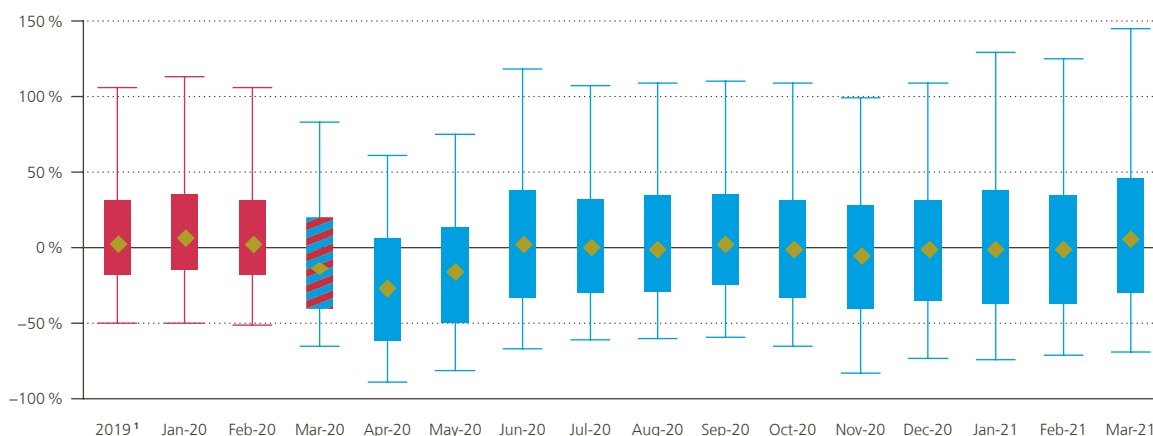
Source: NBB calculations.
1 Compared to 2018.

Fact #4. Accommodation and food, arts and entertainment, and personal services recorded the weakest performance. It was firms in the subsectors subject to the most stringent restrictions on activity that suffered the most. On average, it is estimated that each day of restricted activity reduced turnover by 0.26 %.

To contain the pandemic, the government took several measures, notably to limit contact between people. The service sectors where social contact is at the heart of the business model, such as accommodation and food, arts and entertainment, and the contact professions, were subjected to the toughest restrictions. It is therefore unsurprising that these are the sectors where we find the firms recording the poorest performance. All firms in these sectors were affected, because even good performers recorded low growth rates compared to good performers in other sectors.

In contrast, firms in other sectors were in a better position. In real estate, energy, construction or information and communication, firms recorded relatively high turnover growth.

Finally, the picture is mixed in some sectors. In trade, some sub-branches of activity had some firms performing well (food retailers, for example), while the great majority of firms in other subsectors recorded weak to modest turnover growth (particularly "non-essential" retailers).

Chart 6

Performance of firms by branch of activity

(change in sales[1])
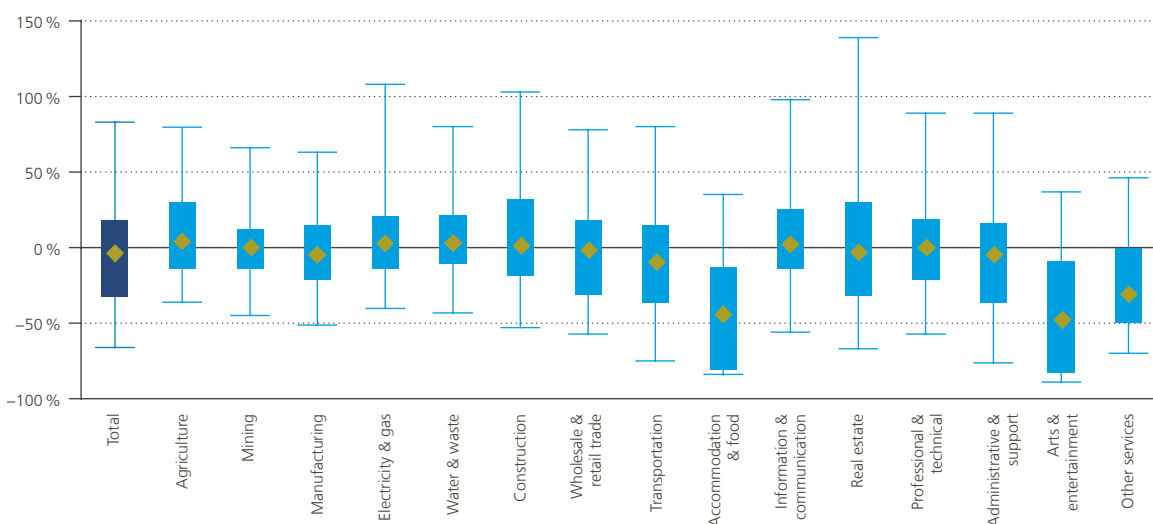
Source : NBB calculations.
1 Period from April 2020 to March 2021 compared to the 2019 period of the corresponding branch.

Firms' performance was evidently influenced by the measures imposed on their sector of activity. For instance, we can establish a close link between the number of days of restricted activity for a sector and the performance of the median firm in that sector[1]. Chart 7 shows this link for all the subsectors affected by the health restrictions. Unsurprisingly, we find firms performing very poorly in the hardest hit subsectors (such as air passenger transport, discotheques and dance halls, the organisation of trade fairs and conferences, baths, saunas and solariums).

We estimate that, on average, each day of (complete or partial[2]) restrictions on activity reduced turnover by 0.26 %[3], i.e. a 2.6 % reduction in turnover for 10 days of restrictions, or a 26 % decline over 100 days.

1 The choice of the median firm is arbitrary, but the link does not depend on that choice. There is still a close link with the performance of any other pivot firm (p10, p25, p75 or p90).
2 For example, nightclubs had to close permanently during the crisis, while restaurants had to close but could still offer take-away services, which is considered here as partial closure.
3 This figure is provided by the coefficient of the variable "number of days of restricted activity" in the regression on the change in turnover.

Chart 7

Link between firms' performance and restriction of activity

(change in sales of the median firm in the subsector of activity[1])

Number of days of restriction of activity

Change = −0.26 * N days of restrictions (R² = 0.39)

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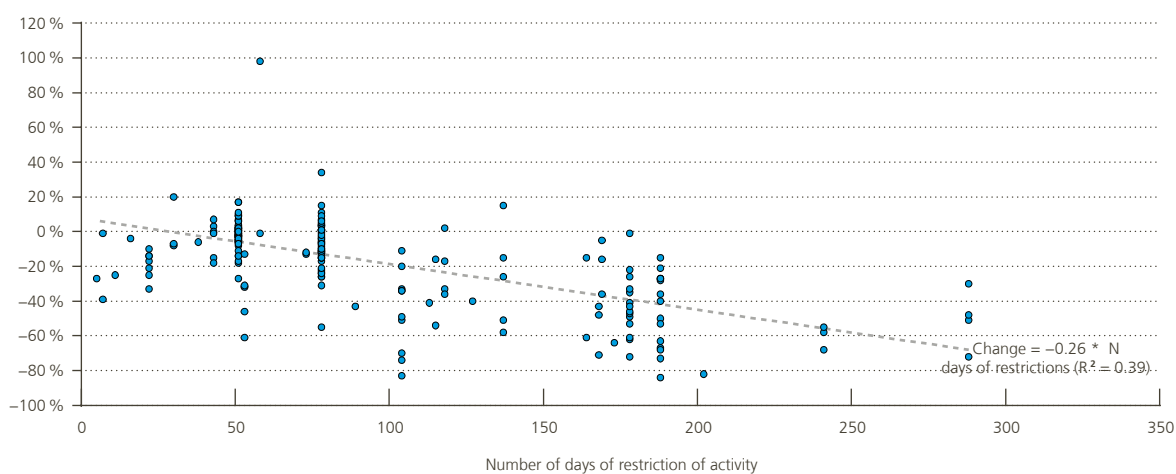
Sources: Federal Public Service Economy and NBB calculations.
1 Period from April 2020 to March 2021 compared to the 2019 period.
Note: the subsectors are defined at a very detailed level (5-digit code), i.e. about a thousand subsectors. The number of days of restrictions is computed at the NACE 5-digit level based on detailed information provided by the Federal Public Service Economy. It covers both full closure and partial restrictions of activities.

Fact #5. Firm size had little effect on the median performance level. Conversely, there was much greater disparity among small firms.

Did small firms suffer more than large ones? Chart 8 shows that, in fact, the performance of the median firms is very comparable across the various size classes[1]. The median change in turnover in the group of small firms is very similar to that for large firms.

While size does not strongly affect the median performance, it does affect disparity. Among large firms, the performance gap between very good and very weak performers was narrow. Among small firms[2] we find some recording an excellent performance but also some performing very badly. Thus, conditionally to record losses, small firms suffered the most. Small firms are therefore over-represented in the extreme performance zones – both very good and very weak. In other words, the situation was much riskier for small firms than for large firms. This result is not specific to crisis time. In a normal year, small firms also display higher disparity in their performance. But it turns out that disparity among small firms was greater during the COVID-19 crisis than usual.

As we have seen in the previous stylised fact, firms in the service sectors such as accommodation and food, arts and entertainment, and the contact professions, suffered the most. Even though these firms are on average small, we find no significant relationship between size and performance. The reason behind this result is that firms in these sectors represent a tiny share of all small firms (see Table 3 in appendix). Most small firms belong to construction or wholesale and retail trade, two sectors that performed relatively well during the crisis.

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1 We use employment in 2019 as a measure of firm size. The result does not depend on that choice, and other measures of firm size (sales, value added, etc.) produce the same result.
2 Even though we exclude self-employed workers from our analysis, many firms have no employment. This size category includes either legal entities created by one or more self-employed workers to operate their business, or legal entities that are part of a group of firms and operate without any employee. For instance, SNCB, Infrabel and HR Rail are three legal entities of the Belgian railways group. In this group, all workers are recorded in HR Rail, so that SNCB and Infrabel have no employment.

Chart 8

Performance of firms by firm size

(change in sales[1])
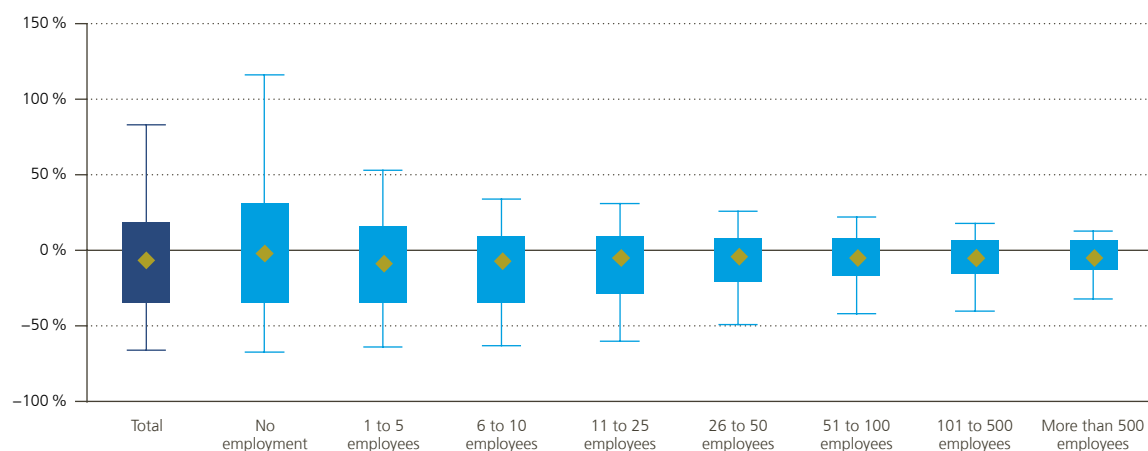
Source: NBB calculations.

1 Period from April 2020 to March 2021 compared to the 2019 period of the corresponding group.

Fact #6. There is little difference in firms' performance between the belgian regions, provinces and districts, although it can be said that brussels suffered more and there is greater disparity in the more densely populated districts.

Chart 9

Performance of firms by province

(change in sales[1])
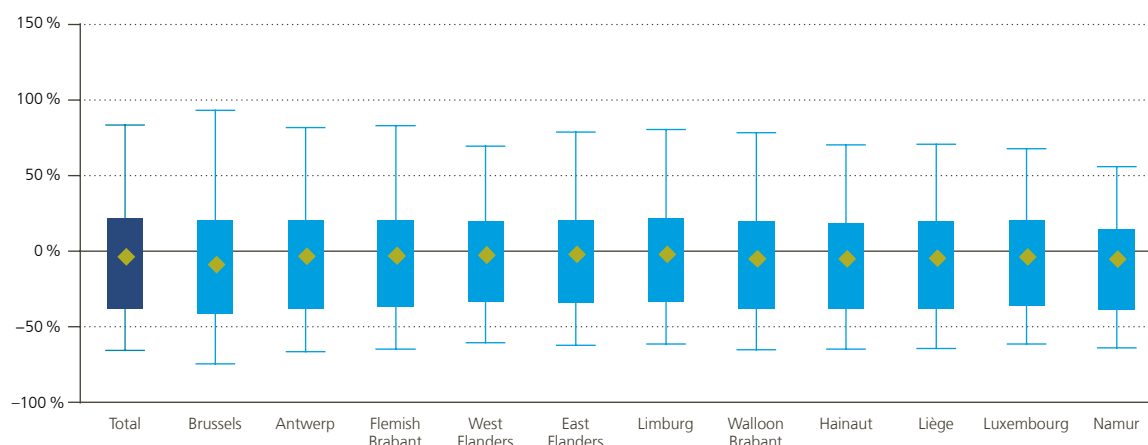
Source: NBB calculations.

1 Period from April 2020 to March 2021 compared to the 2019 period of the corresponding geographical area.

Note: This chart takes account of multi-establishment firms and does not attribute the firm's performance solely to the firm's headquarters (see Annex A1 on the data).

The health crisis has affected all businesses in Belgium because the measures were often imposed nationwide. Should we therefore expect geographical divergences? The simple answer is: not really. The difference between regions or provinces is very small. Firms in the Flemish provinces tend to perform slightly better, but the difference is not very robust (see chart 9). The Brussels Region is a rather special case. The performance of firms there is poorer than in the rest of the country. There is also greater disparity in Brussels. In this region the proportion of firms recording more extreme results – i.e. highly positive or highly negative changes in turnover – was larger than elsewhere.

There are indications of a fall in the number of tourists and commuters in large cities, especially in Brussels. Can we generalise this finding and state that firms in urban centres have experienced less favourable situations than those located in rural areas? It is difficult to answer this question without an analysis in very fine geographical detail, which is beyond the scope of this article. On the other hand, we can explore the link between firms' performance and variations in population density among the Belgium's 43 administrative districts.

This comparison tells us that population density has little influence on the median firm's performance (see chart 10). As in the case of results per province, the median performance is similar from one district to another. Here, too, the difference between districts concerns the size of the disparity. The difference between good and weak performers is greater in the most densely populated districts, such as Brussels, but also Antwerp or Charleroi.

Chart 10

Link between firms' performance and population density

(change in sales, data per district)

- Very good performer
- Good performer
- Median performer
- Weak performer
- Very weak performer
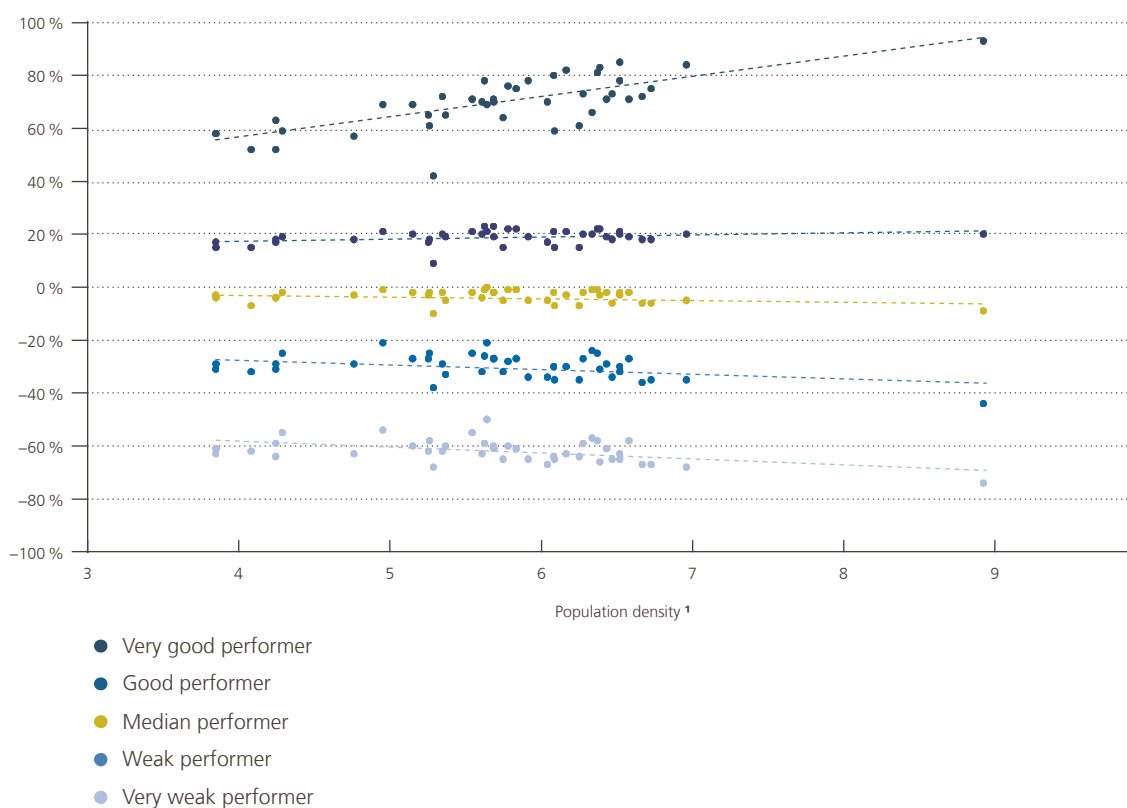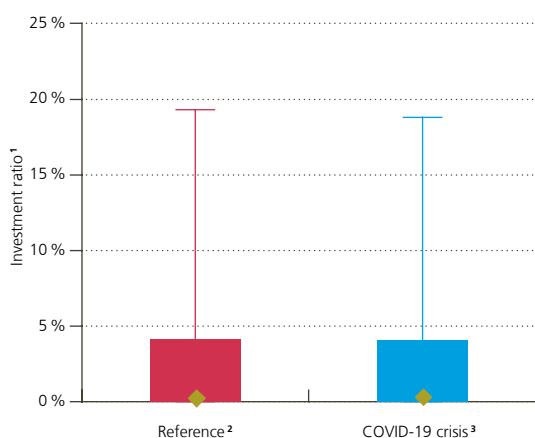
Source: NBB calculations.
1 Density as a logarithm.

Fact #7. Firms' investment has been practically unaffected.

In times of crisis, firms might tend to reduce their investments. The uncertainty might drive some of them to delay their plans, or access to funding sources might dry up for a while. On the other hand, firms might count on the shock being temporary so that it does not cast doubt on their plans for the future. Which story is right?

An initial investment analysis indicates that the distribution of the investment ratio, defined here as the ratio of investment to sales[1], changed very little during the crisis year[2]. It is true that weak and very weak investors – like practically half of all firms – did not invest. But that happens every year. The median investor firm invested a fairly small amount, as was the case in the reference year. And in the crisis year, good investors recorded an investment ratio similar to that in the reference year. Only the major investors seem to have spent slightly less than major investors in the reference year, but the difference is small. This might still have an effect on total investment in the economy, as a few large investments account for a very large share of total investment.

Chart 11

Firms' investment

Source: NBB calculations.
1 The investment ratio for a period is defined as investment in that period divided by sales in 2019.
2 2019 period compared to the 2018 period.
3 Period from April 2020 to March 2021 compared to the 2019 period.

Fact #8. We obtain a mixed picture if we compare the change in firms' sales with the change in their variable costs. 48 % Of firms were in the green zone, with sales rising by more than their variable costs during the crisis period. In contrast, 36 % of firms were in the orange zone with a margin which was still positive despite the disproportionate increase in variable costs during the crisis. Finally, 16 % of firms were in the red zone with a disproportionate increase in variable costs and a negative margin at the end of the crisis period.

1 We use 2019 sales figures because the aim is to focus exclusively on the numerator (investment) and not the denominator (sales) because the crisis affected sales, as demonstrated by the preceding stylised facts. In other words, we use investment in the crisis period divided by sales in 2019 for the crisis year, and investment in 2019 divided by sales in 2019 for the reference year.
2 If investment has been quantitatively unaffected, survey evidence (ERMG) points to a qualitative change in investment as firms reported a change in the type of investment they made during the crisis compared to the pre-crisis period.

In this section, we look at sales and variable costs. Did firms adjust their input purchases and wage bill in line with the change in their sales? After covering their variable costs, were firms left with a smaller margin during the crisis period? This section aims to provide some of the answers[1].

In general, firms modified their input purchases, i.e. the goods and services bought from other firms and used for their sales output. However, that adjustment was very imperfect. Some firms stepped up their purchases by more than the increase in their sales. In general, firms which recorded substantial sales growth were not always the ones also recording large increases in their input purchases. The same applies in the case of firms' whose sales declined.

The imperfect adjustment between the change in sales and the change in purchases sometimes caused a significant shock to value added, defined as sales minus input purchases. The disparity between firms in terms of value added therefore increased during the crisis period, and the gap between good and weak performers widened. The picture is therefore mixed. On the one hand, some firms prospered, recording a rise in their value added which was substantial in some cases. In contrast, other firms recorded a decline in their value added, and in some instances that decline was dramatic. We find more firms in these two extreme situations in the crisis period than in a normal year (see chart 12).

Value added remunerates workers in particular. In our population of firms, around a third of firms have employees[2]. Overall, these firms adjusted their wage bill, notably by resorting to temporary layoffs. This scheme enabled firms to cut their labour costs without necessarily having to dismiss staff.

Chart 12

Input purchases, wage bill, employment and value added

(change during the COVID-19 crisis period compared to 2019)
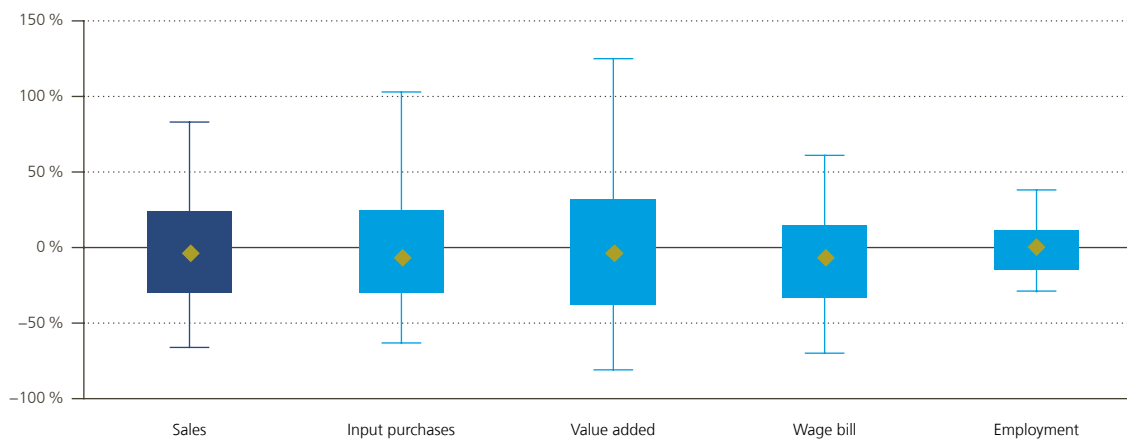
Source: NBB calculations.

How did sales growth compare to the movement in variable costs, which include input purchases and wages? Here, too, the situation is more heterogeneous than in a normal year (see chart 13), resulting in a mixed picture.

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1 It's worth noting that, when evaluating the margin of a firm, we do not take into account any federal or regional support that it may have received.
2 See the discussion on firms with no employment in stylised fact #5.

On the one hand, 48 % of firms recorded a change in sales which was more favourable than the change in their variable costs. While some of them had recorded a positive margin in 2019 (38 % of firms) and others a negative margin in 2019 (10 %), they all saw their position improve. On the other hand, for 52 % of firms, sales therefore grew by less than their variable costs, which means that their margin on variable costs became smaller. For 36 % of firms the margin on variable costs remained positive, even though it diminished. Conversely, 16 % of firms recorded a negative margin on variable costs at the end of the crisis period. A significant proportion of firms are therefore in a precarious position. Some of these firms had already recorded a negative margin in 2019 (5 % of firms), while others saw their position deteriorate from a positive margin in 2019 to a negative margin in the crisis period (11 % of firms).

Chart 13

Margin on variable costs
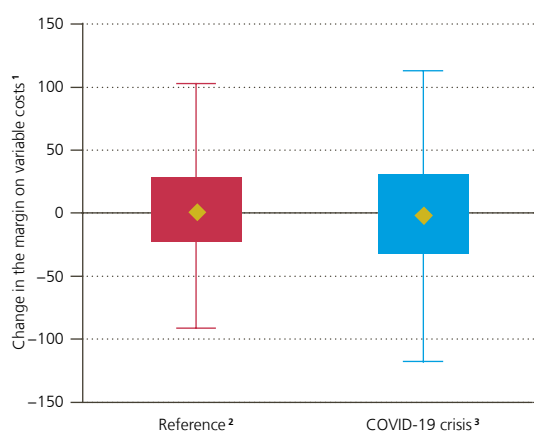
Source : NBB calculations.
1 The margin on variable costs is equal to sales minus input purchases and wages. In € thousand.
2 2019 period compared to the 2018 period.
3 Period from April 2020 to March 2021 compared to the 2019 period.

Fact #9. The sector of activity is a key factor explaining performance. Conversely, the geographical dimension and firm size had less effect on performance. Furthermore, it is estimated that the shock suffered by their suppliers or customers was partly passed on to firms. These explanatory factors are significant and they have a major quantitative impact. Nonetheless, all these variables still leave a substantial part of firms' performance unexplained.

Stylised facts #1 to #6 analysed firms' sales performance by exploring various dimensions such as the sector of activity, firm size or geography. These dimensions were explored one by one. In this section, we try to pinpoint the decisive factors among these various dimensions. In other words, what were the determinants explaining firms' performance ?

Table 1

Explanatory power of the branch of activity, geography and size for firms' performance

(results of regressions of the change in sales)

Variables	Sector	Municipality	Size	Sector + municipality + size	Sector # municipality # size
	(1)	(2)	(3)	(4)	(5)
COVID-19 crisis					
Observations	246 924	246 924	246 924	246 924	246 924
R-squared	0.055	0.006	0.004	0.060	0.226
Reference					
Observations	234 854	234 854	234 854	234 854	234 854
R-squared	0.010	0.003	0.005	0.017	0.189

Source: NBB calculations.

The subsector of activity[1] is undoubtedly a decisive factor (column 1 in table 1). The R^2 of the regression in fact indicates that this variable on its own explains just over 5 % of the change in firms' sales during the COVID-19 crisis. Conversely, as stated in stylised facts #4 and #5, the municipality[2] or firm size had much less influence on performance, as illustrated by their much lower R^2 (columns 2 and 3 in the table).

Does the combination of the three explanatory variables[3] account for the disparity in firms' performance? The answer is yes, but only partly. With the subsector of activity, the municipality of establishment and the size of each firm we can explain 23 % of the observed change in performance. That therefore leaves a large part of the sales shock unexplained. This is not at all unusual, though. In a normal year, these three explanatory variables are not able to explain more than 19 % of the observed variation. Interestingly, the subsector variable has much less explanatory power in reference year. The subsector of activity played a larger role during the crisis, as common shocks within subsector were much higher during the COVID-19 crisis compared to a normal year.

The health crisis and the restrictions on activity did not only affect the firms, they also affected branches of activity upstream (suppliers) or downstream (business customers). For example, take the situation of a restaurant which had to close. How big an impact had the closure of that restaurant on its suppliers or its customers? In general, how were the shocks transmitted via business-to-business relations?

To answer this question, we analysed the impact on firms of the average shock affecting their customers and suppliers[4]. The results are set out in table 2. In the final specification (column 6), we find that almost a quarter of the shock affecting their suppliers and almost half of that affecting their customers was transmitted to the firms. In other words, if the suppliers' sales declined by 10 %, the sales of the firm (the customer of those suppliers) declined by 2.5 %. And the effect was a 4.4 % fall in sales in the case of a 10 % fall in customers' sales. These effects are significant and confirm that a shock can spread throughout all branches of activity, even

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1 The subsector of activity is defined at the most detailed level possible, i.e. the 5-digit level. There are about 800 subsectors in this exercise.

2 There are about 600 municipalities in this exercise.

3 Adding the three variables together does not change the quality of the regression, whereas combining the three variables greatly improves the R^2 of the regression. The reason is that the scale of the explanatory power increases exponentially if we switch from a set of 800 subsectors of activity to a set of around 50,000 possible combinations of the three variables. The adjusted R^2 which is not included in the table is smaller with the combination of the three variables than with only the branch of activity variable. That indicates that it is the multiplication of the explanatory variables that explains the improvement in the R^2 when the variables are combined.

4 All the customers and suppliers of each firm were identified based on the "customer declarations" for VAT, stating all the B2B customers of each VAT-registered firm. On that basis it is possible to identify not only each firm's business customers but also all its suppliers. Since the customer declaration for 2020 is not fully available, the exercise was carried out using the 2019 customer records as the reference.

those whose activity was never restricted (e.g. the supermarket sector or agriculture). A firm immune to the restrictions on activity may have suffered shocks indirectly via its suppliers or customers. In the end, if not all firms suffered a negative impact, the reason is that certain clusters were well protected, notably those in which firms recorded increased sales.

Table 2

Transmission of shocks via suppliers and customers

(results of regressions on the change in sales)

	OLS			IV		
	(1)	(2)	(3)	(4)	(5)	(6)
Supplier shocks	0.103*** (0.003)		0.077*** (0.003)	0.293*** (0.017)		0.255*** (0.017)
Customer shock		0.226*** (0.004)	0.197*** (0.004)		0.516*** (0.017)	0.439*** (0.017)
Sector # municipality # size FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	246 924	246 924	246 924	246 924	246 924	246 924
R-squared	0.274	0.245	0.251			

Source: NBB calculations.

Note: All regressions include a constant and a fixed sector # municipality # size class effect. The supplier (customer) shock is the weighted change in supplier (customer) sales, weighted by the input share (revenue share) of each supplier (customer) in 2019. Only suppliers and customers meeting the necessary conditions for inclusion in our population of firms are considered here (see Annex A1 for details of these conditions). For customers, this means in particular that only business customers, not private consumers, are included. The first three columns present the OLS results. Since shocks affecting a firm's sales have repercussions on the performance of its suppliers or customers, it was necessary to use instrumental variables to control this endogeneity problem. For that purpose, the change in the sales of each supplier j of firm i was instrumented by the average change in the sales of the supplier's sector of activity s_j, excluding the contribution of supplier **j** to sectoral growth, those of the other suppliers or customers connected with firm i belonging to that sector s_j and that of firm i itself if it is also part of sector s_j. The IV results are presented in the last three columns. Since our sample is restricted to non-financial corporations, the coverage of the B2B transactions considered in this exercise varies from one firm to another and may be fairly low for some observations. To allow for that, we weight each individual observation by the share in B2B transactions of the firm covered by our sample. The unweighted regression results are set out in Annex A2. Standard errors in parentheses (*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$).

Overall, the "sector of activity – municipality of establishment – firm size" combination partly explains the performance of firms. In addition, shocks are also transmitted through the trading relations that firms maintain with their customers and suppliers. However, all these factors together only account for part of firms' performance. We can thus argue that some firms responded or adapted better than others even though they share the same economic and geographical characteristics.

Conclusion

This article aimed to explore the contrasting situation of firms faced with the COVID-19 crisis. The approach was to analyse performance in a crisis year – defined as the 12 months from 1 April 2020 to 31 March 2021 – and to compare it with performance in a normal year.

The main finding is that the crisis widened the performance gaps between firms. On the one hand, a proportion of firms – admittedly a minority – prospered, and equalled or even sometimes surpassed the performance that might have been expected of good performers in a normal year. Conversely, other firms suffered. The proportion of struggling firms was abnormally high, and the decline in their sales was abnormally steep. These weak performers are concentrated more in the branches of activity most affected by the restrictions and in small businesses.

In terms of economic policy, the diversity of situations is an argument in favour of specific targeted support. At the peak of the crisis, during the first wave of the epidemic, there was every justification for providing massive unconditional support to all firms. The drastic measures at the time of the first lockdown paralysed a large part of the economy and the watchword was to protect the economic fabric at all costs against a major crisis. Today, the measures are much more specific, and most firms no longer face any impediments to the development of their business. In contrast, some firms are still struggling, particularly those where contact between people is central to the business model. At a time when new waves of infections cannot be ruled out, it is important to allocate the available resources in the best possible way by targeting the support measures on the firms most affected.

We shall continue to analyse the situation of firms in the coming months and years, notably by describing the contrasting developments in the various business categories. Changes in firms' relations with their suppliers and customers will certainly also form the subject of future research.

Annexes

1. Description of the data

The data used in this article come from firms' VAT returns. Those returns to the tax authority are compulsory and enable the State to calculate for each firm the difference between the VAT due and the deductible VAT. Firms are therefore required to pay the balance to the State. The returns state the amount of sales excluding VAT and the VAT charged which must be paid over to the State. As well as sales, the VAT returns also state purchases of goods and services, and purchases of investment goods (and the deductible VAT associated with those purchases). They are extremely reliable for three reasons. First, failure to respect the reporting obligation is punishable by fines. Next, the State can easily verify consistency between the amount excluding VAT and the VAT figure. Finally, firms are also required to report a full list of their customers, permitting a check on consistency between sales and purchases. In view of their quality and exhaustiveness, the VAT data are an essential source of microdata to produce the national accounts' statistics.

Declarants are obliged to submit returns either monthly or quarterly[1], depending on firm size. Data relating to month M or quarter Q are generally available in the month following the end of the period considered. To obtain a monthly profile of sales (see chart 6 for stylised fact #4), quarterly returns are converted to monthly based on the seasonal profile seen in the monthly returns of the other firms in the same subsector (having the same NACE 5-digit code) if a minimum of 10 monthly returns were available. If not, the returns were converted to monthly figures based on a broader definition of the sector of activity (NACE 4-digit code or, failing that, NACE 2-digit code).

Throughout the article, we calculate the change during the COVID-19 crisis as the change between the figure for the period between 1 April 2020 and 31 March 2021, and the figure for 2019. To calculate the monthly changes (see stylised fact #4), each month is compared with the corresponding month in 2019. Thus, to assess activity growth in March 2021, we compare the March 2021 sales figures with the March 2019 sales figures. As a result, we avoid comparing the situation in March 2021 with March 2020, which was already partly affected by the pandemic. The rebound in March 2021 therefore reflects an improvement compared to the pre-crisis period and not an automatic catch-up effect.

None of the analysis in this article is weighted in the sense that all firms have the same importance, regardless of their size. It is totally possible to conduct a weighted analysis. Although that has the advantage of being closer to the macroeconomic analysis, it nevertheless makes the analysis and interpretation more difficult. Furthermore, a weighted approach makes no sense unless all firms are taken into consideration, but in this article, we explore various dimensions (branch of activity, geographical area, firm size etc.) by dividing our sample into sub-groups, making a weighted analysis less relevant. For these reasons we keep to a microeconomic analysis which explores firms' heterogeneity without attaching greater importance to bigger firms. As described in stylised fact #6, a firm's size is in any case not a crucial factor in its performance.

Taking account of the current tax rules, the amounts declared by some firms may include transactions by their subsidiaries in other countries. Those transactions are not always linked to their economic activity in Belgium. The NAI makes individual adjustments to neutralise those transactions. The amounts used in this analysis incorporate those adjustments. The data used for this article are therefore the same as those used by the NAI to draw up the national accounts.

To construct the sample of firms analysed in this, we take the directory of firms used by the NAI as our basis. We selected firms present in the 2018 and 2019 directories, 2019 being the latest available year at present.

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1 Firms with an annual turnover more than € 2.5 million are required to complete a monthly return (except in certain specific sectors where the threshold is € 250 000). Annual turnover is based on sales over the preceding 12 months.

Our analysis therefore excludes businesses set up in 2020 and 2021. While the entry of new firms during the crisis period is disregarded, the analysis nevertheless takes account of the exit of any existing firms. Exiting firms feature a growth rate of −100 %, in the same way as firms obliged to close during the crisis period.

In order to respect the privacy protection rules and to focus on the activity of the private sector, we used only declarants classified by the NAI in the non-financial corporations' sector, S11. This analysis therefore does not consider the situation of self-employed workers (S14), non-profit institutions (S15) and government (S13). We also do not consider the financial corporations (S12).

The declarants are allocated to branches of activity based on the NAI directory, ensuring consistency with the macroeconomic statistics. However, some branches were excluded from our population of firms. The following branches were disregarded: financial services (NACE 64-66), education (NACE 84), public administration (NACE 85) and health care (NACE 86). For these sectors, the amounts included in the VAT returns provide inadequate coverage of the activities.

The geographical distribution of declarants by districts is based on the 5-digit NIS code in the directory. We took account of the specific character of firms with multiple establishments located in different NIS districts. In their case we assigned the firm's performance to each establishment. Consequently, the geographical distribution of performance presented in this article takes account of the performance of establishments whose head office is located in a different NIS district.

In this article we have also used the quarterly NSSO declarations to ascertain changes in employment and labour costs for each firm. These data are likewise of very high quality because they are verified by the authority and used as the basis for calculating contributions [1].

Finally, the econometric analysis presented in stylised fact 9 also uses information taken from the 2019 "customer" declarations. For each firm those declarations contain the full list of its VAT-registered customers. To respect the rules on personal data confidentiality, we only used B2B relations implying two VAT-registered parties, both listed as non-financial corporations in the NAI directory.

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1 Note however that the wage bill covered by the NSSO declarations does not include several labour cost aspects that firms also cover.

2. Unweighted regressions

The table below shows the unweighted results of the regressions presented in table 2 for stylised fact #9.

Transmission of shocks via suppliers and customers

	OLS			IV		
	(7)	**(8)**	**(9)**	**(10)**	**(11)**	**(12)**
Supplier shocks	0.089*** (0.003)		0.078*** (0.003)	0.272*** (0.016)		0.232*** (0.016)
Customer shock		0.172*** (0.004)	0.166*** (0.004)		0.370*** (0.014)	0.342*** (0.015)
Sector # municipality # size FE	Yes	Yes	Yes	Yes	Yes	Yes
Observations	246 924	246 924	246 924	246 924	246 924	246 924
R-squared	0.228	0.234	0.236			

Source : NBB calculations.

Note : All regressions include a constant and a fixed sector # municipality # size class effect. The supplier (customer) shock is the weighted change in supplier (customer) sales, weighted by the input share (revenue share) of each supplier (customer) in 2019. Only suppliers and customers meeting the necessary conditions for inclusion in our population of firms are considered here (see Annex A1 for details of these conditions). For customers, this means in particular that only business customers, not private consumers, are included. The first three columns present the OLS results. Since shocks affecting a firm's sales have repercussions on the performance of its suppliers or customers, it was necessary to use instrumental variables to control this endogeneity problem. For that purpose, the change in the sales of each supplier j of firm i was instrumented by the average change in the sales of the supplier's sector of activity s_j, excluding the contribution of supplier j to sectoral growth, those of the other suppliers or customers connected with firm i belonging to that sector s_j and that of firm i itself if it is also part of sector s_j. The IV results are presented in the last three columns. Since our sample is restricted to non-financial corporations, the coverage of the B2B transactions considered in this exercise varies from one firm to another and may be fairly low for some observations. To allow for that, we weight each individual observation by the share in B2B transactions of the firm covered by our sample. The unweighted regression results are set out in Annex A2. Standard errors in parentheses (*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$).

3. Structure of the population of firms during the crisis

	Numbers of employees								Total
	None	1-5	6-10	11-25	26-50	51-100	101-500	> 500	
Agriculture, forestry and fishing	7 793	1 999	353	312	97	30	9	0	10 593
Mining and quarrying	74	34	19	23	6	2	7	0	165
Manufacturing	13 228	6 491	1 987	2 006	1 104	485	546	110	25 957
Electricity, gas, steam and air conditioning supply	573	70	9	16	10	4	5	5	692
Water supply; sewerage, waste management and remediation activities	548	259	86	110	52	16	14	6	1 091
Construction	46 882	17 466	3 142	2 244	691	226	170	13	70 834
Wholesale and retail trade; repair of motor vehicles and motorcycles	59 600	29 944	5 966	4 350	1 440	428	320	51	102 099
Transportation and storage	8 940	4 193	1 191	1 166	566	216	155	24	16 451
Accommodation and food service activities	16 655	12 712	2 823	1 466	263	52	41	7	34 019
Information and communication	26 235	4 111	827	666	327	128	102	11	32 407
Real estate activities	15 233	3 161	337	194	56	32	13	0	19 026
Professional, scientific and technical activities	93 686	15 518	2 256	1 469	462	210	165	8	113 774
Administrative and support service activities	18 409	5 562	1 022	814	330	172	156	52	26 517
Arts, entertainment and recreation	11 218	2 221	304	217	76	26	14	1	14 077
Other service activities	6 210	3 684	614	312	93	32	14	1	10 960
Total	32 5284	10 7425	20 936	15 365	5 573	2 059	1 731	289	478 662

Source: NBB calculations.

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How do standard and new monetary policy instruments affect the economy of the euro area and Belgium? Estimation challenges and results

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Introduction

How does monetary policy affect the economy? This is a central question in macroeconomics, which a vast range of literature has explored and continues to do so. With respect to the impact of changes in short-term policy interest rates – being the standard monetary policy instrument – a relative consensus has been established, which entails in brief that an unexpected rise in the policy rate results in a hump-shaped temporary decline in economic activity, while the price level decreases persistently. The many studies conducted and the long experience with the policy rate instrument have given central banks a reasonably good understanding of how interest rate changes are transmitted through the economy.

However, over the past decade, policy rates in many advanced economies, including the euro area, have been constrained by the lower bound and central banks have had to expand their toolbox – deploying new measures such as forward guidance and large-scale asset purchases. Instead of seeking to influence short rates, these new measures are geared towards lowering longer rates[1]. By doing so, they ensure that central banks are still able to stimulate the economy and raise inflation towards the objective even when they can no longer cut policy rates. Given that these instruments were very experimental when they were first implemented (i.e. they were labelled "non-standard" or "unconventional"), little was known about their transmission. Identifying and estimating the impact of these new monetary policy instruments has also brought novel challenges, which have (in part) been overcome by innovations in modelling.

Consequently, we now have an indication of how new monetary policy instruments affect the economy, with studies to date generally concluding that they have contributed to the functioning of financial markets and were successful in providing additional macroeconomic stimulus[2]. In light of its strategy review launched in January 2020, the European Central Bank (ECB) also assessed the appropriateness of its new instruments, with the outcome being that policy rates remain the primary monetary policy instrument but that the new measures are also "*an integral part of the toolbox, to be used as appropriate*"[3].

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1 Forward guidance (i.e. central bank communication on the future stance of monetary policy), for instance, primarily works through impacting interest-rate expectations whereby indications that policy will remain accommodative for a period of time reduce longer rates. In contrast, central bank asset purchases work primarily through compressing term and risk premia in longer rates.
2 See, for instance, BIS (2019) for a general overview of the effectiveness of non-standard monetary policy tools and Rostagno *et al*. (2021) for euro area evidence.
3 See the ECB press conference on the outcome of the strategy review by Christine Lagarde and Luis de Guindos on 8 July 2021.

Given that non-standard monetary policy measures are (likely) to become part of the standard monetary policy toolkit, this article aims to provide an overview of the issues involved when estimating their effectiveness and it gives an illustration of their propagation in a vector autoregression (VAR) model using euro area and Belgian data. More specifically, the first section discusses the many challenges that come with documenting the causal effect of monetary policy: it explains why observed changes in policy rates do not automatically represent monetary policy shocks, what identification problem needs to be overcome in a VAR and what kind of additional complications new measures bring. The second section highlights the research efforts that have been made to deepen our knowledge about the effects of monetary policy. It briefly discusses several methods that have been developed to tackle the identification problem in a VAR, paying particular attention to recent innovations. The last section singles out one identification method to empirically illustrate the dynamic impact of the ECB's standard and new monetary policy measures (while controlling for central bank information shocks). The analysis considers standard monetary policy to work via changes in the short rate and new monetary policy measures via changes in the long rate. The results focus in first instance on the transmission in the euro area economy, indicating that an unexpected tightening in both the standard and new monetary policy instruments lowers euro area GDP and prices (to quite a similar degree). The impact of both shocks on the Belgian economy is also briefly assessed; it appears broadly in line with that on the euro area as a whole.

1. The many challenges of documenting the causal effect of monetary policy

This section starts with a general explainer on endogenous versus exogenous changes in monetary policy and the challenge of disentangling the two. It then turns to more technical issues, briefly sketching the identification problem in a VAR and highlighting some additional challenges associated with the identification and estimation of non-standard monetary policy shocks.

1.1 Endogenous versus exogenous changes in monetary policy

Most movements in monetary policy instruments are endogenous: they reflect the systematic reaction of monetary policy to economic circumstances. Central banks typically pursue their price stability objective by conducting a consistent and predictable monetary policy, as this helps private agents to correctly form expectations and contributes to more stable inflation and output. Therefore, the systematic reaction, that is the expected policy behaviour, affects the impact and transmission of all shocks that hit the economy. This systematic behaviour can be captured by a simple policy rule or reaction function. According to the Taylor rule (Taylor, 1993), for instance, the central bank sets the short-term policy rate in relation to the equilibrium rate[1], and in response to observed changes in inflation from its target and in output from its potential level[2]. Note that this notion of the reaction function can be generalised to other monetary policy instruments such as forward guidance and central bank asset purchases.

Monetary policy can also deviate from this systematic rule-based behaviour and surprise economic agents. This reflects the non-systematic or exogenous component of monetary policy (i.e. a "shock"), as it is not related to movements in other variables. Monetary policy shocks do not account for an important share of the fluctuations in the policy instrument, nor do they induce large macroeconomic fluctuations[3]. Their identification is nonetheless of interest as they can inform us about the transmission of monetary policy actions in isolation,

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[1] The equilibrium rate (or "natural" rate) can be defined as the interest rate consistent with output equaling potential and inflation being stable.

[2] Potential output reflects the (hypothetical) level of economic activity that can be obtained through the normal use of available production factors, i.e. without generating inflationary pressures.

[3] For instance, Boeckx et al. (2018) – using the NBB's DSGE model – estimate that standard monetary policy shocks would explain only 7 % of the variations in the short-term interest rate during the period from 1995 to 2012. In contrast, the endogenous response of monetary policy to shocks hitting in the economy, via the estimated Taylor rule, would make a major contribution.

i.e. they give a clean view on the causal macroeconomic effects of monetary policy. Therefore, a lot of the literature has tried to identify monetary policy shocks.

Distinguishing the systematic part from the surprises in the dynamics of the policy instruments is challenging. Structural models are needed to separate exogenous from endogenous changes in monetary policy and to analyse their propagation (via impulse response functions). In this respect, atheoretical vector autoregression (VAR) models (which are the focus of this article) and, more recently, dynamic stochastic general equilibrium (DSGE) models are both widely used. Another complication is that because monetary policy has been conducted in a systematic way in recent decades, true monetary policy shocks might be rare, and thus difficult to extract. In this respect, Ramey (2016, p. 46) soberingly notes that "*It is likely that what we now identify as monetary policy shocks are mostly the effects of superior information on the part of the central bank, foresight by agents and noise. While this is bad news for econometric identification, it is good news for economic policy*".

1.2 The identification problem in a VAR

A VAR model imposes very little theoretical structure on the data[1]. Under this methodology, structural shocks – which represent the exogenous disturbances of interest (such as a monetary policy shock) but which are unfortunately not directly observable – are recovered following a two-step approach, which the following sets out concisely[2].

First, a reduced-form VAR is estimated:

$$Y_t = A_0 + A_1 Y_{t-1} + \ldots + A_p Y_{t-p} + e_t,$$

where Y_t is a vector of endogenous variables (consisting, for example, of output, inflation and the policy rate) and e_t are serially uncorrelated but mutually correlated residuals. The reduced-form VAR relates each variable in the vector Y_t to past values of itself and the other variables in Y_t. Through regressing Y_{it} onto p-lagged values of Y_t, the coefficient matrices $A_0, \ldots, A_p$ and the residuals e_t are obtained. The accuracy of the analysis depends, *inter alia*, on how accurately the selected variables and estimated coefficients describe the systematic response of monetary policy to the economy, i.e. to what extent it captures the "true" monetary policy rule.

The next challenge is then to recover the unobserved structural shocks ε_t of interest, including the monetary policy shock. The VAR assumes that the estimated residuals e_t are a linear combination of the independent structural shocks ε_t:

$$e_t = B_0 \varepsilon_t,$$

where the impact matrix B_0 defines the statistical residuals as linear combinations of the structural shocks. The structural shocks can then be identified by applying identification restrictions on B_0[3]. The task of identifying the structural shock of interest thus comes down to finding the linear combination of residuals that makes up the structural shock. It should be noted that the outcomes of the VAR analysis depend crucially on the additionally imposed assumptions. For the shocks identified through restrictions on B_0 to accurately capture the

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1 In contrast, a DSGE model imposes a fully specified structure on the data. This structure consists of a set of equations, derived from theory, assembled in a consistent way so as to describe the relevant macroeconomic interactions of an economy. Shocks, which are the source of macroeconomic fluctuations in the model, are identified by this theoretical structure (they are called "structural" shocks). When the model is brought to the data, these shocks and the associated impulse responses of macro variables are estimated. An estimated monetary policy rule equation is used to distinguish the systematic component of monetary policy from the unexpected monetary policy shock.

2 For a more comprehensive overview of the identification problem, associated complications and pitfalls, see, for example, Ramey (2016), Stock and Watson (2016), Nakamura and Steinsson (2018) and Rossi (2019).

3 More specifically, note that with (1) the variance-covariance matrix of the residuals being $\Sigma_e = E(e_t e_t')$, (2) $e_t = B_0 \varepsilon_t$, and (3) the structural shocks having an identity covariance matrix $I_n = E(\varepsilon_t \varepsilon_t')$ – meaning that the structural shocks are independent – implies that the variance-covariance matrix of the residuals can be decomposed into $\Sigma_e = B_0 B_0'$. As Σ_e is a variance-covariance matrix, it is symmetric and thus has N*(N+1)/2 unique elements whereas B_0 has N*N unknown entries (with N being the number of variables in the VAR). Consequently, further restrictions are needed to pin down B_0.

true monetary policy shock, the restrictions on B_0 must successfully isolate the monetary policy shock from any other shocks that impact the macroeconomic variables, including the policy rate. In other words, the structural shocks must be uncorrelated, making them exogenous. In many cases, the researcher may only be interested in the effect of a single shock, for example, a monetary policy shock. In general, the other shocks need not be identified to obtain the structural impulse response to that shock. A single shock identification thus requires fewer restrictions to be imposed on B_0 than the full shock identification.

Based on the reduced-form coefficients and the structural shocks, one can then trace the dynamic response of each variable to the identified structural shock.

1.3 Complications when identifying non-standard monetary policy shocks

Like with traditional monetary policy shocks, the endogeneity issue implied by the systematic behaviour of monetary policy complicates the identification of non-standard monetary policy shocks. But identifying and estimating the effect of new measures also brings new challenges. A specific issue that pops up, for example, is how to identify the impact of individual new measures as often different measures were announced at the same time. In addition, new measures (regarding central bank asset purchases, for example) were often pre-announced, making it difficult to precisely identify the shocks. Focusing specifically on the long-term interest rate – which tends to be the more relevant variable that is directly targeted by new monetary policy instruments like forward guidance and asset purchases –, the identification of exogenous changes also proves to be more challenging than when considering the short-term policy rate, as long-term rates are affected by many more variables beyond monetary policy decisions, such as private sector expectations about the future state of the economy and risk premia. The relatively short use of new measures also implies that the number of exogenous shocks that can be identified is limited. Moreover, the effectiveness of the new measures is only analysed at the lower bound, making it difficult to generalise empirical results.

Novel econometric approaches – which are discussed in the next section – can help overcome some of these challenges.

2. Different methods to identify monetary policy shocks in a VAR

This section summarises some of the most popular identification methods, starting with traditional ones through to more recent methods. It is not meant to be exhaustive, though [1]. In general, the methods considered identify the structural shocks within the VAR model by resorting either to economic theory or to outside estimates to constrain the parameters.

A traditional approach to identification is **recursive identification**. This involves directly applying zero contemporaneous (i.e. short-run) restrictions to B_0 which rest on timing arguments about the effect of a given shock on a particular variable within the period. The zero restrictions indicate that shock ε_{jt} does not affect variable Y_{jt} within a period because of some sluggish or institutional feature of Y_{jt}. A popular approach to identify a monetary policy shock in a VAR is to apply Cholesky short-run zero restrictions. Under the Cholesky scheme, the monetary policy variable is typically ordered last, which imposes that the other endogenous variables (e.g. output and inflation) do not respond within the period to the policy shock. Conditional on these timing assumptions, the restrictions eliminate the endogeneity problem, enabling the identification of the monetary policy shock and an estimation of its effects on the economy.

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1 For a broader and more detailed overview, see Ramey (2016), Stock and Watson (2016) and Rossi (2019).

Another identification scheme entails imposing **sign restrictions**. This implies putting certain restrictions on B_0 so the responses of output and inflation to a monetary policy shock, for instance, have certain signs at certain horizons. Uhlig (2005) was one of the first to apply sign restrictions to identify monetary policy shocks. One can also impose **long-term restrictions** whereby certain restrictions on B_0 are imposed so long-term responses have a certain value (typically 0). A classic example is the assumption that only supply-side disturbances permanently affect economic activity (Blanchard and Quah, 1989).

Another approach would be to use information coming from outside the VAR to develop a proxy for the structural shock. The proxy for a monetary policy shock could be obtained using **narrative methods**. Romer and Romer (2004), for instance, created a proxy based upon a careful reading of historical documents pertaining to monetary policy decisions. Alternatively, the proxy can be constructed using **high-frequency financial market data** (a method being pioneered by Kuttner, 2001). As the high frequency of the data enables researchers to focus on a narrow window around monetary policy announcements, it should help ensure that financial market movements within these windows are solely due to (the unexpected part of) the announcements. The obtained proxy can either be treated as a direct observation of the monetary policy shocks, in which case the proxy can enter the VAR directly as an exogenous or endogenous variable, or the proxy can be considered as a noisy measure of the monetary policy shocks – as it might for example contain some measurement error – and thus be used as an external instrument in an auxiliary regression outside the VAR.

As an aside, it is worth noting that VARs are typically estimated using only a handful of variables, assuming that controlling for a few lags of a few variables captures all endogenous variation in monetary policy. This seems highly unlikely to be true in practice as central banks base their monetary policy decisions on a huge amount of data. One way to address this issue is to use a **factor-augmented VAR (FAVAR) model** (initially developed by Bernanke *et al.*, 2005). A FAVAR typically contains over a hundred series, which are in turn captured by a limited number of factors. It thus has the benefit of being much more likely to condition on all the relevant information to identify shocks. The identification of the monetary policy shock is similar, using, for example, Cholesky or sign restrictions.

All methods have their pros and cons, so in practice different identification strategies and models are often used to cross-check the robustness of the obtained results. The empirical analysis in the next section singles out one identification approach – a more recent one which combines high-frequency financial data with sign restrictions.

3. An application

The methodology and model used in this section are based on Jarociński and Karadi (2020), who identify and estimate the effects of standard monetary policy in a Bayesian VAR. In doing so, they account for two types of shocks that result from monetary policy decisons: a standard monetary policy shock and a central bank information shock. The following first describes the conceptual difference between the two shocks and how the identification in Jarociński and Karadi is implemented. The remaining sub-sections present the empirical analysis conducted in this article, first describing adjustments made to the identification of Jarociński and Karadi in order to separate three structural monetary shocks and then discussing the dynamic response of important euro area and Belgian macroeconomic variables to the identified shocks.

3.1 Controlling for the central bank information channel

Monetary policy announcements may not only contain information about changes in the policy instrument (i.e. a monetary policy shock), but also about the central bank's assessment of the economic outlook (i.e. a central bank information shock). Consequently, an unexpected announcement may move agents' and markets' beliefs

because they, on the one hand, learn about the current and future path of monetary policy and, on the other hand, receive new information about the state of the economy. Romer and Romer (2000) were one of the first to present evidence on the central bank's information advantage and the private sector adjusting its expectations following monetary policy actions containing signals of this information.

Jarociński and Karadi also control for the central bank information channel: they do not consider surprises in short-term interest rates around monetary policy announcements as direct observations of the monetary policy shocks because the surprises may (in part) also be due to the central bank's superior information release. Instead, they try to disentangle the variation in high-frequency financial market surprises caused by these two shocks by exploiting the co-movement of surprises in short-term interest rates and stock prices. A monetary policy shock is identified through a negative co-movement as standard theory predicts that a monetary policy tightening lowers stock prices. In contrast, a central bank information shock is identified through a positive co-movement as the central bank communicates a positive assessment of the economy: both interest rates and stock prices move in the same direction.

Jarociński and Karadi add the two high-frequency surprise series (as endogenous variables) directly to a VAR with standard monthly variables. They apply sign restrictions on the high-frequency surprises to identify the two contemporaneous shocks and then trace out the dynamic impact of the two shocks using the Bayesian VAR.

3.2 The model

The baseline Bayesian VAR model used for the empirical analysis in this section identifies three monetary policy shocks: a standard monetary policy shock (working, in the first instance, via short rates), a non-standard monetary policy shock (primarily impacting longer rates) and a central bank information shock. The shocks are disentangled from each other by applying sign restrictions on three high-frequency financial variables and their impact on the euro area and Belgian economy is subsequently assessed.

The baseline VAR specification includes ten variables: three high-frequency surprise variables (the three-month OIS rate, the ten-year German government bond yield, and the euro area five-year inflation-linked swap (ILS) rate) and seven low-frequency (monthly) variables (the three-month OIS rate, the ten-year German government bond yield, the Eurostoxx 50 stock market index in log levels, euro area real GDP in log levels, euro area total HICP in log levels, Belgian real GDP in log levels and Belgian total HICP in log levels)[1]. The VAR has 12 lags, the estimation sample is monthly, starting in January 2000 and running to June 2019 (excluding the COVID-19 period), interest rate surprises are also available as of January 2000 but the inflation surprise series only starts in January 2005 (reflecting the limited availability of ILS data).

The high-frequency interest rate surprises are taken from the "Euro Area Monetary Policy event study Database" constructed by Altavilla *et al.* (2019). The database collects intra-day changes in a selected group of financial variables on monetary policy meeting days of the ECB's Governing Council. The surprises considered are measured over the full monetary event window (implying in a ten-minute window starting 10 minutes before the ECB's publication of the press release and ending about 10 minutes after the President's press conference)[2]. The surprises in euro area market-based inflation expectations are calculated as the daily change in the five-year inflation swap rate on monetary policy announcement days (with data being obtained from Bloomberg). If multiple announcements occur in the same month, the surprises are added up to convert them to a monthly data series. If there were no announcements in a given month, the surprises are set to 0.

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1 For the financial variables in the low-frequency block, monthly averages are considered. GDP series are interpolated to monthly frequency by industrial production excluding construction using Chow-Lin. All variables are seasonally adjusted where appropriate.

2 More specifically, a surprise measures the change in the median quote of the high-frequency variable in the 13:25 – 13:35 window before the press release to the median quote in the 15:40 – 15:50 window after the press conference.

Table 1 presents the sign restrictions applied to the high-frequency surprises to recover the three structural monetary policy shocks that are transmitted during each monetary policy announcement. The central bank information shock captures the surprises in ECB statements (be it with respect to policy rates, forward guidance, asset purchases, etc.) revealing information about the state of the macroeconomy. In contrast, surprises in ECB monetary policy announcements reflecting deviations from the usual reaction function are captured by the standard and non-standard monetary policy shocks.

More specifically, to control for the central bank information channel, the baseline VAR specification makes use of surprises in inflation expectations – thereby following the approach of Andrade and Ferroni (2021) – instead of surprises in the stock market index as proposed by Jarociński and Karadi (see above). The identification principle remains the same, however. Namely, the sign of the co-movement between the price measure and the interest rate enables the information shocks to be distinguished from the pure monetary policy shocks. More specifically, in this analysis, the central bank information shock raises the short rate, the long rate and inflation expectations (as the signal of good news about the future state of the economy lifts expected inflation). Whether or not the shock raises the short-term interest rate more than the long-term rate is left open.

The scatterplots in chart 1 show that surprises in inflation expectations, on the one hand, and short or long rates, on the other hand, quite often move in the same direction (as indicated by the dots in the upper-right quadrant and lower-left quadrant), overall in around 50 % of the selected ECB monetary policy announcements. The positive co-movements are not restricted to any particular period but occur throughout the time period considered.

Chart 1

Co-movement between surprises in interest rates and inflation expectations around ECB monetary policy announcements
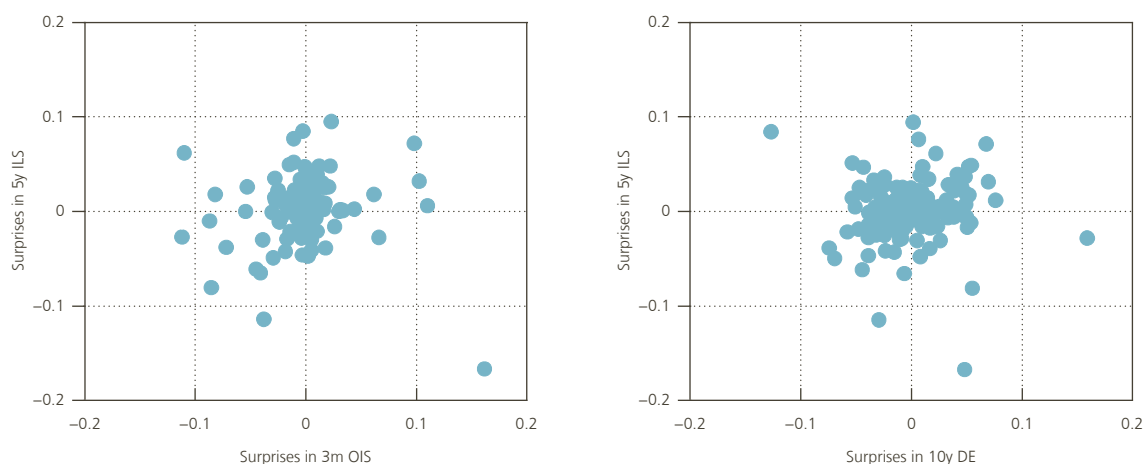
Source : NBB.
Note : Each dot represents one ECB announcement.

In line with Goodhead (2019), for example, the key distinction between a contractionary standard and a non-standard monetary policy shock is the sign imposed on the response of the yield curve (i.e. the difference between the long rate and the short rate). A standard monetary tightening shock pushes up the short-term rate more than the long-term rate (i.e. it flattens the yield curve) and lowers inflation expectations. An unexpected tightening in new monetary policy instruments raises the long-term rate more than the short-term rate (i.e. it steepens the yield curve) and lowers inflation expectations. The three-month OIS rate – instead of a one- or two-year rate – is selected for the traditional monetary policy shock to capture as much as possible surprises in actual rate-setting rather than forward guidance policies, so that it is likely to constitute a pure policy rate shock. Remark that the standard monetary policy shock also reflects the impact of negative interest rate policies.

The German ten-year government bond yield is chosen to represent the safest long rate in the euro area. Note that the non-standard monetary policy shock captures all changes in monetary measures that primarily impact the long rate. It thus, for example, covers the impact of forward guidance[1] and central bank asset purchases. But it also captures the impact of other monetary policy announcements, including those pre-dating the financial crisis and subsequent lower-bound period (given that the sample of high-frequency surprise variables included in the baseline model starts well before the implementation of the new monetary policy instruments). The "non-standard" monetary policy shock should therefore be interpreted more generally, as a summary measure of ECB monetary policy announcements primarily moving the long-term rate[2]. This, in turn, enables a more general reading of the transmission effects of the non-standard monetary policy shock. In addition, the choice to use a summary measure also facilitates the estimation of the model as it can make use of longer time series.

Finally, note that no restrictions are imposed on the responses of the low-frequency variables.

Table 1

Identifying restrictions

	Standard monetary policy shock	Non-standard monetary policy shock	Central bank information shock	Other
High-frequency variables				
3m OIS	>0	>=0	>0	0
10y DE	>=0[1]		>0	0
10y DE − 3m OIS	<0	>0		0
5y ILS	<0	<0	>0	0
Low-frequency variables				
3m OIS, 10y DE, Eurostoxx 50, GDP, HICP				

Source : NBB.
1 Leaving the response of the ten-year German government bond yield unconstrained following a standard monetary policy shock does not significantly alter the results.

3.3 Results[3]

The shocks are plotted in chart 2. There is some increased volatility of the standard monetary policy shock series during the financial crisis of 2008 and the euro area sovereign debt crisis of 2010-2012. In addition, the volatility of the non-standard monetary policy shock increases markedly in 2015, coinciding with the implementation of the ECB's expanded asset purchase programme. But the non-standard shock series also shows variation prior to 2015 and even prior to the start of the financial crisis, supporting its interpretation as a general summary measure of monetary policy announcements primarily influencing the long rate. With respect to specific dates of interest, note, for example, that the ECB's announcement of interest rate forward guidance in July 2013 is primarily interpreted as an expansionary non-standard monetary policy shock and to a much smaller extent as an expansionary standard monetary policy shock. The objective of forward guidance policies being mainly captured by the former shock thus seems to be fulfilled. In contrast, the ECB's unexpected cut in the deposit facility rate

1 Note that this article considers all central bank indications with respect to the future monetary policy stance as forward guidance. The term is thus not limited to rate forward guidance, which has typically been found to have a peak impact on one and two-year interest-rates.
2 The analysis here therefore does not single out the impact of individual new measures. One example of a study for the euro area that separately identifies the financial and macroeconomic impact of negative interest rates, forward guidance and asset purchases is Rostagno *et al.* (2021).
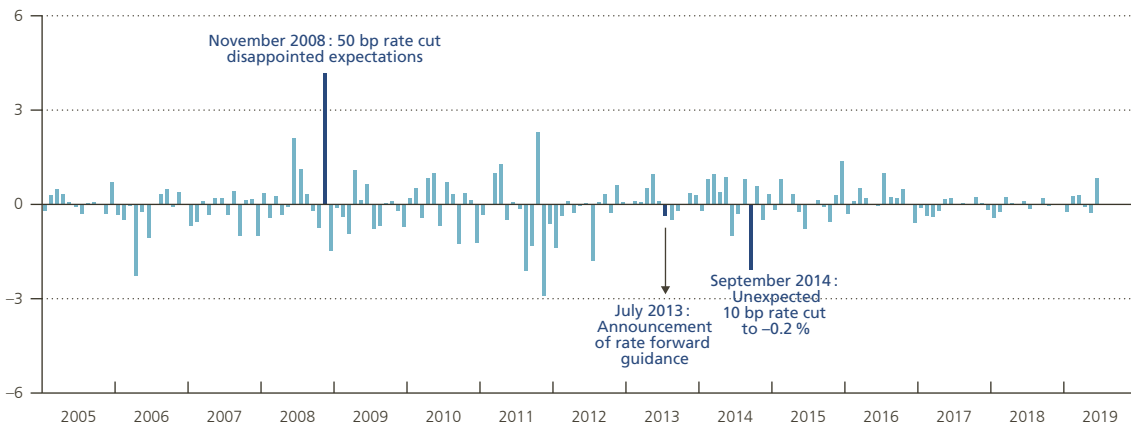3 The results were obtained using Jarociński and Karadi's Bayesian VAR model, applying Sims's dummy observation priors for estimating the VAR parameters. More details on the VAR specification can be found in Jarociński and Karadi.
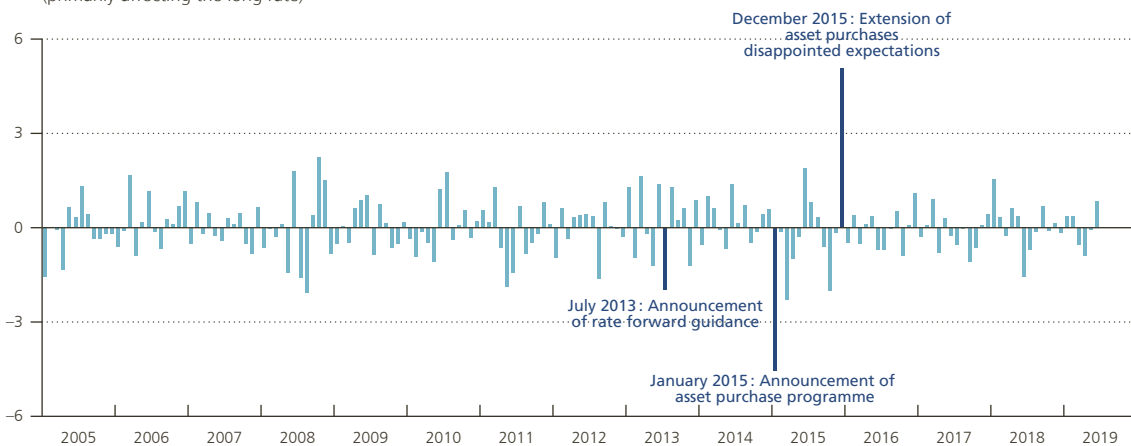
Chart 2

Shock series

Standard monetary policy shocks
(in first instance affecting the short rate)

November 2008 : 50 bp rate cut
disappointed expectations

July 2013 :
Announcement
of rate forward
guidance

September 2014 :
Unexpected
10 bp rate cut
to −0.2 %

Non-standard monetary policy shocks
(primarily affecting the long rate)

December 2015 : Extension of
asset purchases
disappointed expectations

July 2013 : Announcement
of rate forward guidance

January 2015 : Announcement of
asset purchase programme

Central bank information shocks

October 2008 : ECB judges economy
to slow faster than anticipated
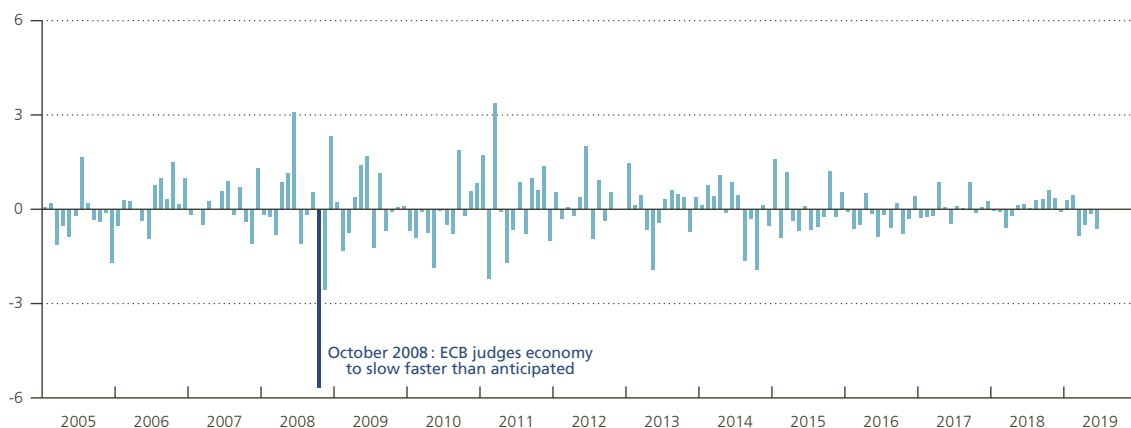
Source : NBB.

to –0.2 % in September 2014 is picked up as a large negative (i.e. accomodative) standard monetary policy shock. Remark also that markets often expected greater stimulus than was actually delivered as is apparent from changes in the high-frequency financial variables moving in the opposite direction of the actual monetary policy stance communicated (see for instance the financial reaction to the ECB's announcements of additional accommodation in November 2008 and December 2015).

Chart 3 displays the responses of the low-frequency variables to the three identified monetary shocks (in blue). In line with the imposed sign restrictions, the standard monetary policy shock primarily influences the short rate while the non-standard monetary policy shock primarily works through the long rate. Stock prices fall on impact following a contractionary non-standard shock; their upward response following a standard shock is counterintuitive, though the response is not significant. With respect to the macroeconomic variables, both monetary policy shocks lower euro area GDP and prices (although the response of the activity variable to standard monetary policy is not significant).[1] More specifically, a non-standard shock raising the long-term rate by 10 basis points has a slightly larger effect on euro area real GDP than a standard shock raising the short-term rate by 10 basis points (for instance, the peak impact is respectively –0.16 % versus –0.11 %); the impact of both shocks on the price level in the euro area is broadly similar, albeit less persistent under the non-standard shock.

Going more into detail, it is worth highlighting two issues, though. First, comparing the impact of the standard to the non-standard monetary policy shocks is not straightforward as both the short and long rate move in response to the two monetary policy shocks, but in opposite directions. For instance, following a non-standard tightening shock, the long-term rate rises temporarily while the short-term rate does not initially respond (in line with the sign restrictions) but then starts falling before rising again. This could reflect standard monetary policy reacting in a systematic way to the non-standard monetary policy shock: an unexpected tightening in policy measures targeting the long rate may cool the economy too much, inducing a counteracting fall in the short rate by the central bank over time.

Second, the impact on the price level appears relatively large (especially compared to the output effects) and occurs quickly. This could be the result of flexible price effects occurring, for instance, via oil prices. Indeed, when total HICP is replaced by HICP excluding energy and food in the VAR analysis, the impact of standard and non-standard monetary policy shocks on the price level is much smaller and occurs more slowly, but it remains negative and very comparable across both shocks.

The dynamic impact of the two monetary policy shocks on the Belgian economy is broadly similar to that on the euro area as a whole, although the decline in the price index in Belgium is at first somewhat stronger (see dotted lines in chart 3). Again, the latter result can be explained by the energy component in the HICP, which tends to be more volatile in Belgium than in the euro area. Consequently, including core HICP instead of total HICP in the model also results in much smaller price-level effects for Belgium (which are, however, not significant) with the price impact of a standard monetary policy shock being in this case somewhat smaller than in the euro area whereas that of a non-standard monetary policy shock remains comparable[2].

The responses obtained for the central bank information shock are consistent with the scenario in which the central bank communicates good news about the demand side of the economy and, in line with its reaction function, tightens monetary policy. Jarociński and Karadi argue that the persistent interest rate rise is in tune with the systematic behaviour of a central bank. Over time, the endogenous monetary policy reaction appears to offset the initial effect of the good news on output but merely neutralise it when it comes to the price level. Note that variables react strongly and significantly to a central bank information shock, more so than to pure monetary

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1 The responses of the macroeconomic variables tend to be in line with those found by Goodhead (2019 and 2021) – whose analyses are most comparable – though the reaction of economic activity to the non-standard monetary policy shock is weaker. In general, the peak impact on euro area output seems indeed to rather fall in the lower half of the range of estimates obtained in the literature (while keeping in mind that comparing the macro-economic effects of non-standard measures between studies is not straightforward given, for example, the differences in the identification of the shocks.

2 Note that in the specification including core HICP, the output effects of standard and non-standard monetary policy shocks tend to be a bit more persistent with peak effects being slightly stronger at almost –0.2 %. Responses are again rather comparable for the euro area and Belgium.

policy shocks. To what extent this strong response reflects the materialisation of the good news projections or merely the causal effect of central bank communication on the economy is not clear though.

In order to assess the relevance of controlling for the central bank information channel when assessing the transmission of monetary policy shocks, estimation results obtained from using the same model but with a two-shock identification – a standard and a non-standard monetary policy shock – are also added to chart 3 (responses in orange)[1]. In line with the findings of Jarociński and Karadi, the responses are qualitatively similar but differ quantitatively (sometimes notably), with the two-shock identification mixing the counteracting effects of pure monetary policy shocks and central bank information shocks. This can be seen, for instance, in the higher persistence of the short rate following a standard monetary policy shock and the more muted (sometimes counterintuitive) responses of stock markets, output and the price level following standard and non-standard monetary policy shocks. Overall, the two-shock identification thus seems to underestimate the effectiveness of monetary policy, stressing the importance of disentangling monetary policy shocks from central bank information shocks – as suggested by Jarociński and Karadi, and Miranda-Agrippino and Rico (2021).

This contrasts with Hoesch *et al.* (2020) and Laséen (2020), who do not find that controlling for the central bank information channel is important when measuring the effects of monetary policy in respectively the US and Sweden. More specifically, Hoesch *et al.* observe that the Federal Reserve's information channel had disappeared around the mid-2000s, possibly due to the improvement in the Fed's communication and transparency.

The analysis conducted here found that the selection of the surprise variable used to identify the central bank information shock does actually matter. When, instead of surprises in inflation expectations, surprises in the Eurostoxx 50 are used to separate pure monetary policy shocks from information shocks, the responses of the low-frequency variables (not shown) differ very little from the responses obtained under a two-shock identification that does not control for the information effect. Moreover, the counterintuitive responses at impact of certain variables under the two-shock identification (in particular following a standard monetary policy shock[2], see again responses in orange in chart 3) do not disappear under the three-shock identification which uses surprises in stock prices. Note that the two surprise variables may not result in the same shock identification, as, for example, the identification using stock market surprises would not *a priori* exclude supply-side shocks inducing a monetary policy reaction. It would wrongly classify a negative supply shock (that depresses the economic outlook and stock prices but pushes up the price level to which the central bank responds by raising its policy rate) as a monetary policy shock. If the central bank were instead to lower its policy rate, the identification (using either of the two surprise measures) would correctly classify it as a central bank information shock.

Apart from the selection of the surprise variable to control for the central bank information effect, the results appear rather robust. The impulse responses do not change significantly when the following variables are replaced: the three-month OIS rate by the one-year OIS rate, the German ten-year bond yield by the German five-year bond yield, surprises in the ten-year German bond yield and the rate itself by GDP-weighted euro area equivalents (implying that results are not confounded by the safety premium on German sovereign bonds) and interpolated GDP by industrial production. Finally, a minor modification in the identification restrictions, i.e. leaving the surprises in the German ten-year bond yield unconstrained following a standard monetary policy shock, does not meaningfully alter the responses.

Summing up, the approach followed allowed to disentangle three monetary policy shocks and to estimate their respective effects on the macro-economy and this in a single model estimated in one step, which is advantageous. The analysis may be prone to some caveats, though, which might be worth keeping in mind when analysing the results. For instance, while the VAR is of medium scale (ten variables are included), it may not capture all the

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1 In practice, this comes down to deleting the inflation surprise series from the high-frequency variables and implementing the same sign restrictions on the interest rate surprises as described in table 1.

2 In this respect, Bu *et al.* (2021) find that the central bank information channel is present in short interest rates but is non-existent in longer interest rates (i.e. with a maturity above five years). So, controlling for it seems especially important when identifiying standard policy rate shocks.

relevant interactions between financial and macro-economic variables through which the non-standard monetary policy measures are transmitted. In addition, the constant-parameter framework assumes a similar transmission of monetary policy shocks before and during the lower bound period, while this might have changed over time. Another point of attention concerns the narrow window over which the high-frequency surprises in the financial variables are measured, namely that it does not allow for the gradual build-up of expectations by financial markets with respect to future monetary policy actions. Indeed, unexpected changes in monetary policy largely occur around scheduled policy announcements, so it is logical to focus on these events when identifying monetary policy shocks. However, changes may also be priced in incrementally as financial markets need time to process and adjust to the monetary policy decisions or as forward-looking markets are anticipating and therefore incorporating future monetary policy decisions before they are actually being announced. As a result, high-frequency surprises in financial variables may underestimate or exaggerate the impact of monetary policy shocks.

Chart 3

Impulse responses of low-frequency variables to a one-unit shock when controlling for the central bank information shock (in blue) and when not (in orange)
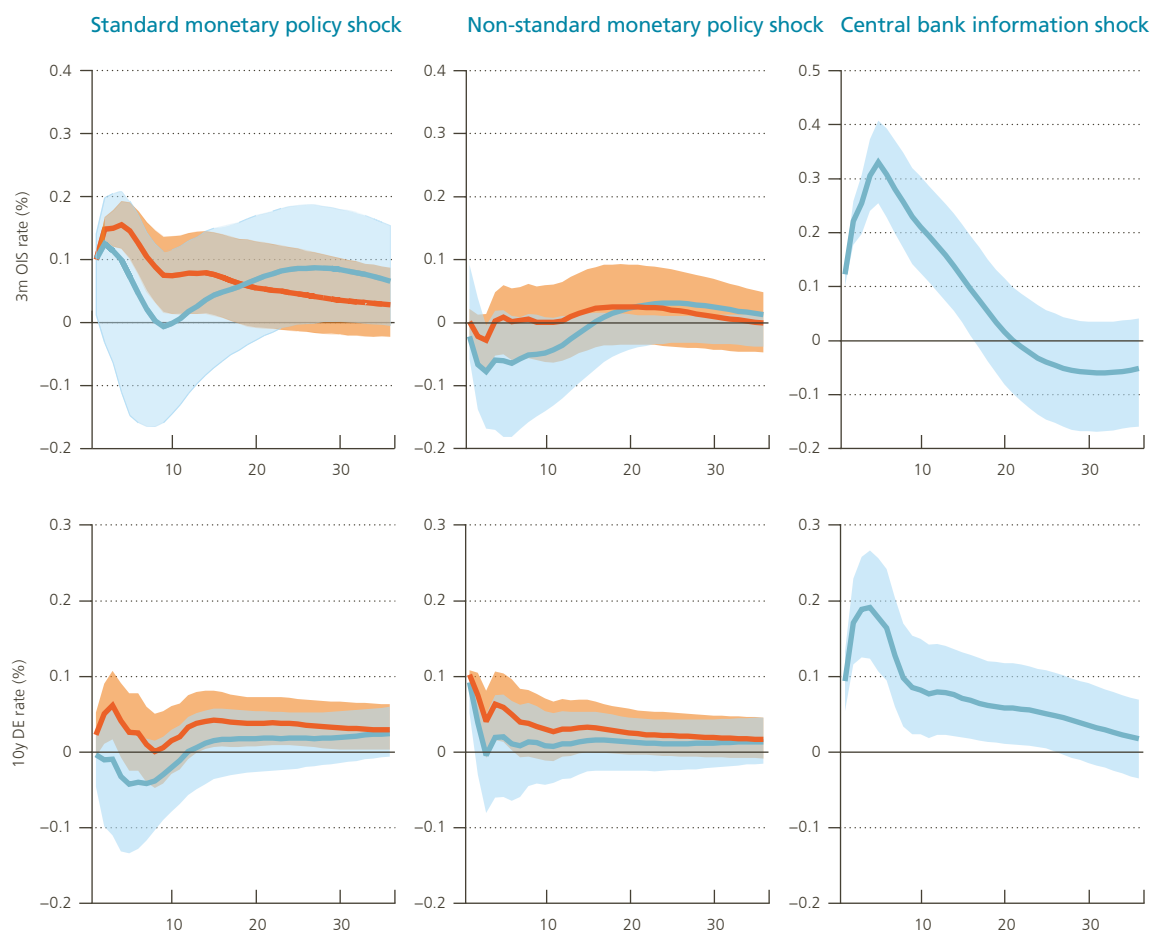
Source : NBB.

Note : The standard monetary policy shock and the central bank information shock are normalised to raise the three-month OIS rate by 10 basis points, while the non-standard monetary policy shock is normalised to raise the ten-year German bond yield by 10 basis points. The credible sets are 68 %. Dotted lines represent the median responses of Belgian output and prices.

Chart 3 (next)

Impulse responses of low-frequency variables to a one-unit shock when controlling for the central bank information shock (in blue) and when not (in orange)
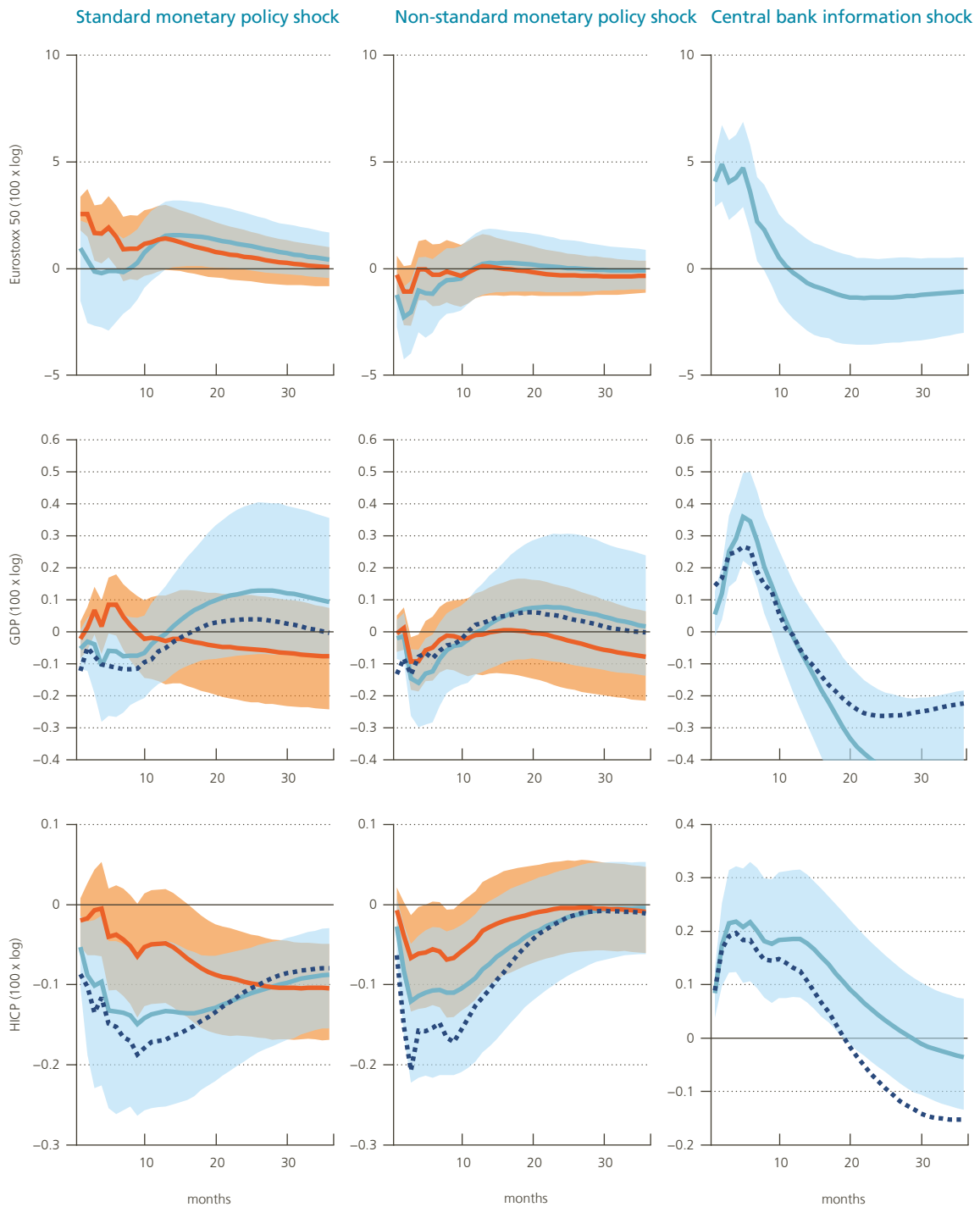

Source: NBB.

Note: The standard monetary policy shock and the central bank information shock are normalised to raise the three-month OIS rate by 10 basis points, while the non-standard monetary policy shock is normalised to raise the ten-year German bond yield by 10 basis points. The credible sets are 68%. Dotted lines represent the median responses of Belgian output and prices.

Conclusion

Estimating the causal effects of monetary policy on the economy is complex. It requires the identification of monetary policy shocks, i.e. policy actions that deviate from the central bank's usual reaction function. Increases in central banks' transparency and systematic behaviour in recent decades may have made the identification of standard monetary policy shocks more difficult. In addition, the introduction of non-standard monetary policy measures brought new identification challenges. Research has developed novel identification methods though, providing necessary insight in the financial and macroeconomic effects of new monetary policy tools and how these compare to the effects of standard central bank policy rate changes. With new measures likely to stay, even being considered part of the standard monetary policy toolbox, research on their effects will remain of interest. Further advances in modelling and econometric techniques can only contribute to deepening our understanding of the propagation of monetary policy shocks.

The empirical analysis in this article studied the effects of a tightening in the ECB's standard policy rate instrument and new measures targeting the long rate (while controlling for central bank information shocks) on the euro area and Belgian economy. To separate the three shocks, a relatively novel identification approach (introduced by Jarociński and Karadi, 2020) was used, combining high-frequency financial market data with sign restrictions in a Bayesian VAR model. Overall, the empirical analysis conducted suggests that non-standard monetary policy measures affect euro area and Belgian macro-economic variables in a rather comparable manner as standard surprises in policy rates.. Results are not always significant, though. The analysis also found that the selection of the high-frequency surprise variable included in the model to clean pure monetary policy shocks for information shocks can be important for identifying the central bank information channel.

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What kind of public expenditure is high in Belgium? A comparison with neighbouring countries

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Introduction

In 2019, total Belgian public expenditure, i.e. primary expenditure plus interest charges, amounted to 52.1 % of GDP compared to an average of 47 % in the euro area. Belgium was thus the country with the third highest expenditure, after France and Finland. This comparatively high level in Belgium dates back several decades. Between 2007 and 2009 the public expenditure ratio increased particularly strongly in the wake of the economic

Chart 1

Public expenditure is high in Belgium
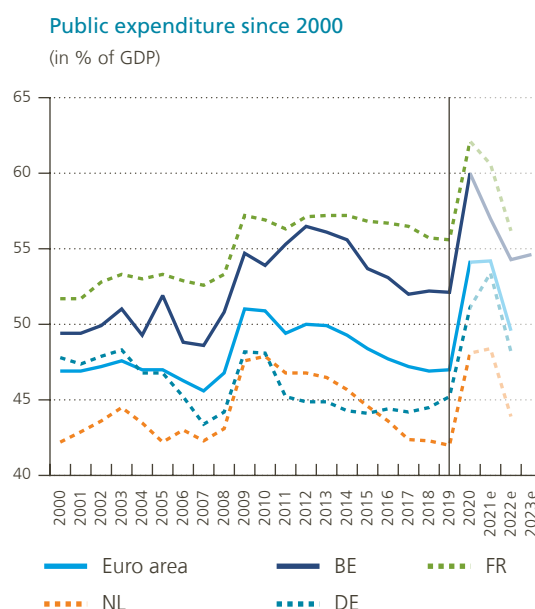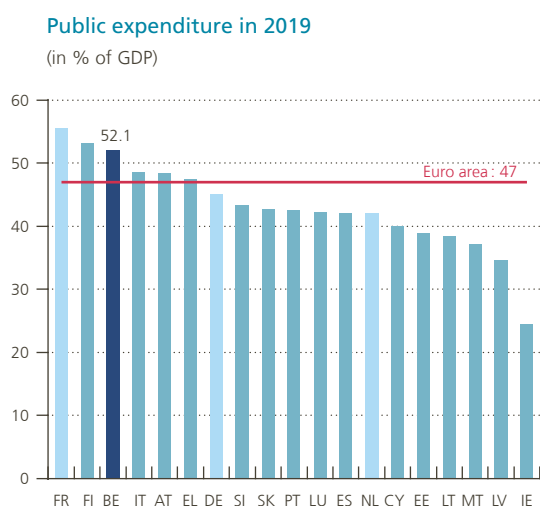
Public expenditure in 2019
(in % of GDP)

Public expenditure since 2000
(in % of GDP)

Sources: EC, NBB.

and financial crisis. While countries such as the Netherlands and Germany subsequently managed to bring their expenditure ratio back down to pre-crisis levels, Belgium was only partially successful in doing so.

The aim of this study is to document the structural finding of high public expenditure in Belgium prior to the COVID-19 pandemic. Following the 2020 health crisis, expenditure once again increased substantially. Another challenge will be to prevent this increase from becoming (partially) persistent.

This study examines Belgian public expenditure in detail on the basis of the classification of public spending by function and sub-function, and by cross-referencing public expenditure classified by function and by type of transaction. It uses the same spending categories in neighbouring countries as a benchmark to define whether the spending is high or not. Further, it pays particular attention to the relative importance of the various government sub-sectors in Belgium in the high spending categories.

This article is divided into five sections. The methodology underlying the analysis is presented in the first section. Next, section 2 offers a general comparison of public expenditure. Section 3 presents an in-depth analysis of certain sub-items of expenditure which are particularly high in Belgium, and at the same time focuses on the relative weight of the various government sub-sectors. Section 4 first draws attention to some empirical studies on public spending efficiency, and then elaborates on elements of the budgetary framework encouraging responsible use of public expenditure. The last section summarises the main conclusions of the study.

1. Methodology

A recent snapshot, an historical perspective and a relevant geographical benchmark

In terms of public spending, the year 2020 – dominated by the health crisis – brought a marked rise in primary expenditure, among other things. Consequently, 2020 clearly deviates from the structural trends in public finances seen in recent years. 2019 better reflects those trends, continuing the pattern of budget outcomes achieved by Belgium in the preceding years. This analysis therefore concentrates mainly on public expenditure relating to 2019, with occasional historical perspectives. The start of the 2000s will be the main historical benchmark because that was the period when primary expenditure began to rise.

Choice of the geographical benchmark is also important as a complement to the chosen reference period. Rather than referring to the average for the euro area or the EU-15 – both fairly heterogeneous in terms of public expenditure and socio-economic situation – the principal benchmark chosen in this study will be the average for the main neighbouring countries, namely Germany, France and the Netherlands. Obviously, there is still some heterogeneity between those countries.

Public expenditure classifications

Eurostat defines two main types of public expenditure classification in the framework of the European System of National Accounts (ESA2010). First, the economic classification by transaction breaks down expenditure according to its nature, namely compensation of employees, subsidies, intermediate consumption, property income paid, social benefits, gross capital formation and other transfers.

Next, the Classification of the Functions of Government (COFOG), developed by the OECD, classifies government spending according to the purpose for which the funds are used. The data are thus divided into 10 "function" groups (general public services, defence, public order and safety, economic affairs, environmental protection, housing and community amenities, health, recreation, culture and religion, education and social protection). There are also various sub-items (see below) for each of the 10 main COFOG categories.

As well as being intuitive, the COFOG classification has the advantage of permitting very accurate comparison of the purposes for which public money is spent via the many categories offered. This study will mainly use this classification by function. The economic classification by transaction will be used occasionally to identify the type of spending concerned by differences found within functions. In this study, another particularly interesting dimension is the cross-referencing of the two types of classification to identify major expenditure items in relation to our benchmark. Of course, total expenditure is the same according to classification by function or by transaction.

Table 1

Public expenditure classifications

By function (COFOG)	By transaction
General public services	Compensation of employees
Defence	Subsidies
Public order and safety	Intermediate consumption
Economic affairs	Property income
Environmental protection	Social benefits
Housing and community amenities	Gross capital formation
Health	Other transfers
Recreation, culture and religion	
Education	
Social protection	
→ Classification according to the purposes for which funds are used	→ Economic classification : according to the nature of the expenditure

Σ expenditure by function = Σ expenditure by transaction

2. Overall analysis

In Belgium, five categories covered 90 % of public expenditure in 2019. Half of public expenditure comprised spending on "social protection" or "health". "General public services", "economic affairs" and "education" represented a comparable share of total expenditure, at around 13 % each.

This section first identifies the COFOG categories and sub-items in which spending is particularly high compared to the average for neighbouring countries. Differences in relation to the benchmark will also be analysed from a historical perspective, compared to the early 2000s. Spending per (sub-)category will also be broken down by government sub-sector. The categories identified as relatively high will be analysed in depth in section 3 of this study.

Chart 2

Half of Belgian public expenditure consists of expenditure on "social protection" or "health"

(breakdown of public expenditure in Belgium in 2019, based on classification by function)
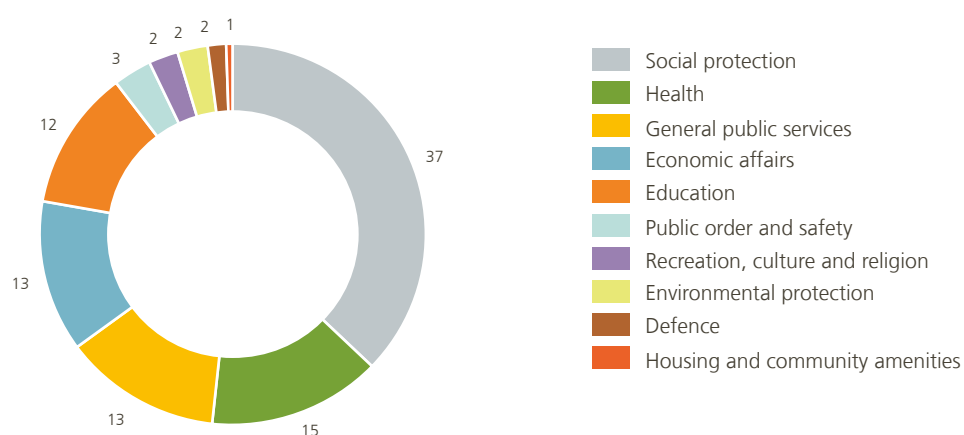
Sources: NAI, NBB.

2.1 The main differences

In 2019, the level of public expenditure in Belgium was 4.5 percentage points of GDP above the average for the main neighbouring countries. Table 2 breaks that difference down for all expenditure categories and sub-items according to the COFOG classification. The darker the background colour (red or blue) the bigger the differences (positive or negative) in Belgium compared to the neighbouring countries. We find that the differences are particularly marked in three COFOG categories, namely general public services (+ 1.8 pp of GDP), economic affairs (+ 2.3 pp of GDP) and education (+ 1.3 pp of GDP).

The corresponding COFOG sub-items do not systematically record higher expenditure. For example, in general public services it is expenditure on executive and legislative organs, financial and fiscal affairs, external affairs, basic research and public debt transactions that is higher. In the case of economic affairs, the main items concerned are general economic, commercial and labour affairs and transport expenditure. In education, most of the positive differences compared to the average for the neighbouring countries concern expenditure on basic education (pre-primary and primary), secondary education, and education non definable by level.

In addition, we also find some COFOG sub-items where the differences are greater without that being true of the whole category in question. Examples include expenditure on pollution abatement as a sub-item of the "environmental protection" function, but also expenditure on family and children as a sub-item of the "social protection" function.

In the rest of this study we focus on positive differences of at least 0.4 pp of GDP compared to neighbouring countries. There are two exceptions to this criterion. First, the COFOG sub-item outpatient services in the health care category is disregarded because the total difference in the COFOG health care category is marginal compared to neighbouring countries. In the social protection category, the differences seen under "old age" (mainly pensions) and those concerning survivors (survivor's pension for the surviving partner) offset one another. These two sub-items were therefore also excluded from the more detailed analysis in this study.

Table 2

Certain types of expenditure are relatively high in Belgium compared to the benchmark

(expenditure differences compared to the neighbouring country average in 2019, in percentage points of GDP)

General public services	Executive and legislative organs	Foreign economic aid	General services	Basic research	R & D	Public debt transactions	Transfers between levels of government
1.8	0.4	−0.2	0.0	0.6	0.0	1.0	0.0

Defence	Military defence	Civil defence	Foreign military aid	R & D
−0.6	−0.4	0.0	−0.1	0.0

Public order and safety	Police services	Fire protection services	Law courts	Prisons	R & D
0.0	0.1	−0.1	−0.1	−0.1	0.0

Economic affairs	General economic, commercial and labour affairs	Agriculture, forestry etc.	Fuel and energy	Mining etc.	Transport	Communications	Other industries	R & D
2.3	2.2	−0.1	−0.2	−0.1	1.0	0.1	−0.2	−0.2

Environmental protection	Waste management	Waste water management	Pollution abatement	Protection of biodiversity	R & D
0.3	0.0	−0.1	0.4	0.0	0.0

Housing and community amenities	Housing development	Community development	Water supply	Street lighting	R & D
−0.3	0.0	−0.2	0.0	0.1	0.0

Health	Medical products, appliances and equipment	Outpatient services	Hospital services	Public health services	R & D
−0.1	−0.5	0.4	0.2	0.0	−0.2

Recreation, culture and religion	Recreational and sporting services	Cultural services	Broadcasting and publishing services	Religious and other community services	R & D
0.1	−0.1	0.0	0.0	0.1	0.0

Education	Pre-primary and primary	Secondary	Post-secondary non-tertiary	Tertiary	Non-definable by level	Subsidiary services	R & D
1.3	0.6	0.4	0.0	0.0	0.5	−0.2	0.0

Social protection	Sickness and disability	Old age	Survivors	Family and children	Unemployment	Housing	R & D
−0.3	0.1	−0.4	0.4	0.4	−0.3	−0.3	0.0

Sources: EC, NAI, NBB.

2.2 Historical perspective

In the past twenty years the difference in relation to the benchmark has more than doubled from 2.1 pp of GDP in 2001 to 4.5 pp of GDP in 2019. However, the historical pattern is variable for the expenditure categories featuring the biggest differentials in 2019. The expenditure category for which the difference in relation to neighbouring countries has increased the most is economic affairs. In 2001, expenditures in this category didn't tower yet above the neighbouring countries' average. The sub-items where the gap has widened the most are general economic, commercial and labour affairs and transport.

Next, expenditure on social protection has also risen steeply. In 2001, the gap between that expenditure and the benchmark was decidedly negative. This was the function category with the most negative differential in relation to neighbouring countries. In Belgium, social protection expenditure was then around 2 pp of GDP lower

than the average in neighbouring countries. Since that time it has risen substantially as the gap in relation to the benchmark was nearly closed by 2019. In particular, expenditure in the sub-items sickness, disability and old age has risen while it has declined in the unemployment category. Despite the rise over the past twenty years, this study will largely disregard that function since the corresponding expenditure is currently hardly any different from that in neighbouring countries.

The positive gap of education expenditure dates back from at least the beginning of the century, and was further broadened. Finally, the gap in general public services, which remains significant, narrowed markedly, which is to do with the sharp fall in interest charges since 2000.

Chart 3

While the gaps in the "economic affairs" and "social protection" categories have become more positive since 2001, the gap in the "general public services" category came down

(deviation from the average for neighbouring countries, in percentage points of GDP)

Sources: EC, NAI, NBB.

Thus, over the past two decades interest charges on the public debt have clearly declined, also in comparison with the neighbouring countries. However, that fall was more than compensated by the steeper rise in primary expenditure than in the neighbouring countries over the same period.

2.3 Breakdown by government sub-sector

In view of Belgium's institutional structure, it is worth examining whether the biggest differences concern the federal government and social security (Entity 1) or whether they occur at the level of the Communities and Regions and local authorities (Entity 2). Chart 3 compares the gap in relation to neighbouring countries for the ten COFOG expenditure categories with the share of Entity 2 in that expenditure.

On average, in 2019 the share of Entity 2 in total government expenditure in Belgium was around 47 %. Two of the three main categories where expenditure exceeds the average for neighbouring countries, namely economic affairs and education, are mainly attributable to Entity 2. A closer look at the sub-items of

expenditure which are relatively higher in relation to the benchmark logically reveals that Entity 2 accounts for all the expenditure on education. The distribution of the differentials in the various sub-items of economic affairs is more balanced between Entities, as we will explore in section 3.1. Entity 2 is also the principal spender on the sub-item "pollution abatement" in the "environmental protection" category. In the case of general services, more than half of the differentials concern the sub-item "public debt transactions", for which Entity I is mainly responsible.

Chart 4

High public expenditure is more attributable to Entity 2

(expenditure differential in relation to neighbouring countries and share of Entity 2 in that expenditure)
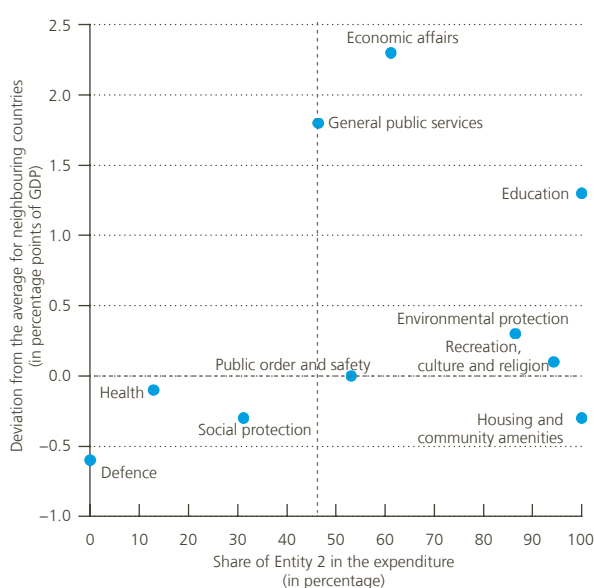
3. Analysis by sub-item

In this section, the large deviations from the average for the main neighbouring countries in 2019 are examined for each sub-item of expenditure. A breakdown of the differentials according to the type of expenditure per transaction is also presented. That reveals whether the expenditure gaps observed in some functions concern relatively higher compensation of employees or investment, for example. Following that cross-comparison, this section describes the changes in the differentials since the early 2000s and the expenditure share of the various government sub-sectors in Belgium. It also presents a series of concrete examples and details specific to the categories examined.

3.1 Economic affairs

In 2019, expenditure on economic affairs in Belgium was 2.3 percentage points higher than the average for the main neighbouring countries. The breakdown for this category in table 3 indicates that only the sub-items comprising general economic, commercial and labour affairs (+ 2.2 pp of GDP) and transport (+ 1 pp of GDP) generated higher expenditure in Belgium. That higher expenditure on general economic, commercial and labour affairs in fact consisted mainly of subsidies, while compensation of employees is the principal factor in the case of the transport sub-item.

Table 3

In the case of expenditure on economic affairs, the differentials are substantial in "general economic, commercial and labour affairs" and "transport"

(breakdown of expenditure differentials in economic affairs in 2019, in percentage points of GDP)

Gap between expenditure on economic affairs in Belgium and the average in neighbouring countries (in percentage points of GDP, 2019)	ECONOMIC AFFAIRS	General economic, commercial and labour affairs	Agriculture, forestry, etc	Fuel and energy	Mining, manufacturing and construction	Transport	R&D	Economic affairs n.e.c
ECONOMIC AFFAIRS	2.3	2.2	–0.1	–0.2	–0.1	1.0	–0.2	–0.1
Compensation of employees	0.7	0.3	–0.1	0.0	0.0	0.5	0.0	0.0
Subsidies	1.5	1.7	0.0	–0.2	0.0	0.0	0.0	0.0
Intermediate consumption	0.2	0.1	0.0	0.0	0.0	0.2	–0.1	0.0
Property income	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Social benefits	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0
Gross capital formation	–0.2	0.0	0.0	0.0	0.0	0.1	–0.2	0.0
Other transfers	–0.1	0.1	0.0	0.0	0.0	–0.1	0.0	0.0

Sources : EC, NAI, NBB.

3.1.1 General economic, commercial and labour affairs

The "general economic, commercial and labour affairs" category covers all policies designed to support economic activity and the labour market. This category includes wage subsidies for businesses (payroll tax exemptions, targeted reductions in social contributions, service voucher scheme, etc.), which represented 55 % of total expenditure on this sub-item in 2019.

Expressed as a percentage of GDP, total expenditure on general economic, commercial and labour affairs has doubled in Belgium since the beginning of the 2000s. Compared to neighbouring countries, the difference is particularly marked in relation to the Netherlands and Germany, where that expenditure diminished over the same period while remaining stable, on average, in the euro area. Around 42 % of expenditure in this category is attributable to the federal government and social security and 53 % to the Communities and Regions.
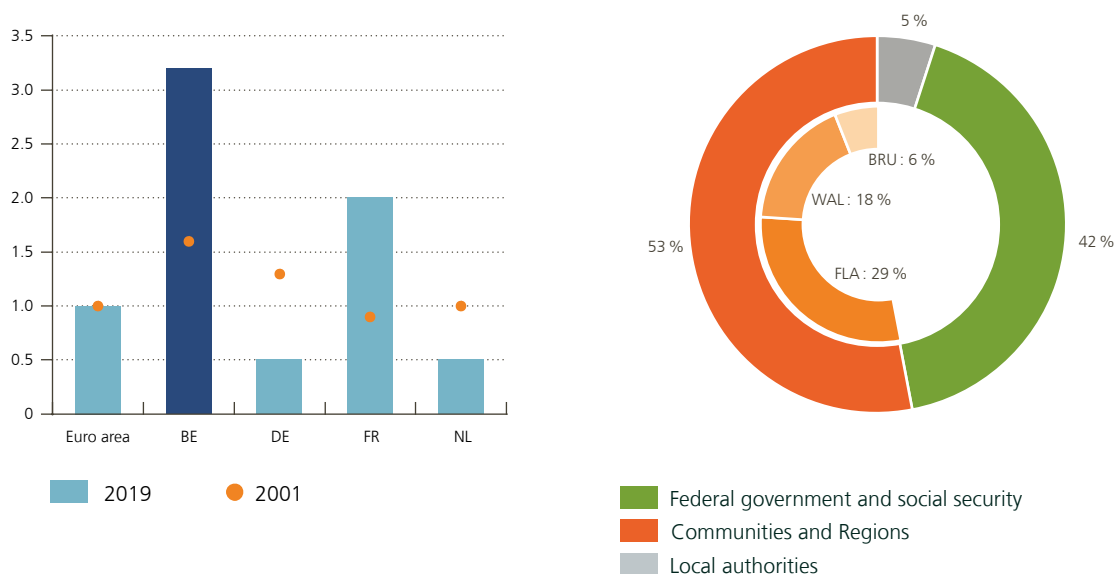
Central Economic Council (CEC) data show that wage subsidies to the private sector represent a much larger share of the wage bill in Belgium than in neighbouring countries. These subsidies have increased substantially since the early 2000s. In 2019 they represented 4.7 % of the wage bill, compared to less than 3 % in France and under 1 % in Germany and the Netherlands. The increase in wage subsidies can explain a large part of the widening gap with the neighbouring countries for spending on "general economic, commercial and labour affairs".

This marked growth since the early 2000s is due mainly to the introduction of payroll tax exemptions (at federal level) and the system of service vouchers (at regional level since 2015). These two schemes represent more than half of wage subsidies in Belgium. Targeted reductions in social contributions (mostly at regional level since 2015) have risen more steadily but nevertheless substantially over the past twenty years. The expansion of other categories of wage subsidies has been more moderate.

Chart 5

Expenditure on "general economic, commercial and labour affairs" is rising

(trend and breakdown per sub-sector of expenditure on general economic, commercial and labour affairs)

2019   2001

Federal government and social security
Communities and Regions
Local authorities

Sources: EC, NAI, NBB.

In Belgium, the first payroll tax exemptions were introduced at the beginning of the 2000s. Since then, each legislature has created new ones and modified existing exemptions. There are currently ten exemptions from payment of payroll tax in force[1]. From a fiscal point of view, the main reductions are the ones relating to night work and shift work and those concerning research and development. These two reasons for exemption respectively represented 51 % and 30 % of the total payroll tax exemptions, which came to € 3.2 billion altogether in 2019.
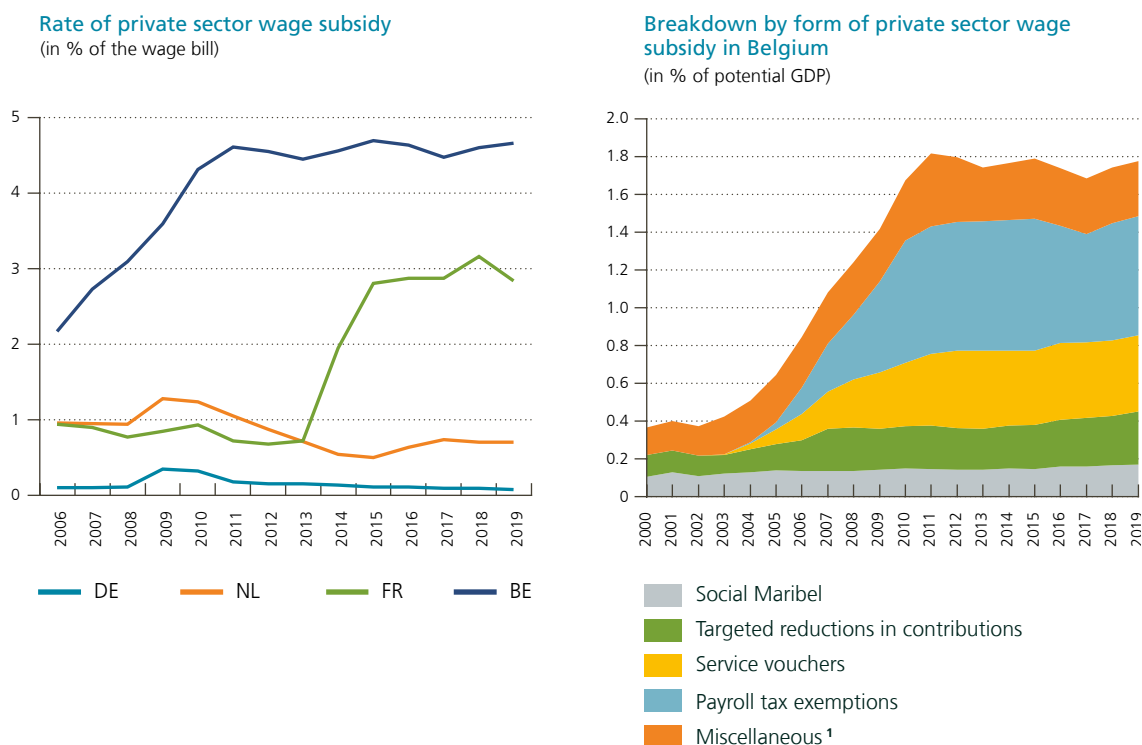
It is important to point out that these apparently generous wage subsidies in Belgium are granted in the context of a particularly heavy burden of taxes and parafiscal levies on labour. There is in fact a degree of offsetting between these two aspects: firms recoup in the form of subsidies part of what they pay to the State in taxes and social contributions.

Such offsetting should not be considered good practice. Instead, the ideal approach would be to embark on an in-depth review of taxes on labour in Belgium – and particularly fiscal and parafiscal levies – rather than regularly adding one or more new layers of wage subsidies or exceptions to the system which thus becomes increasingly complicated. In practice, only a small number of exceptions should be justifiable, preferably targeted in order to allow for significant social externalities that the market does not take into account, such as promoting innovation by supporting research and development activities, and where the means employed are sufficiently effective.

1 The ten payroll tax exemptions concern: overtime; the merchant navy, dredging and towage; research and development; sea fishing; night work and shift work; sportsmen and women; the wage adjustment (or "exemption from the intersectoral agreement: AIP"); areas eligible for aid; new businesses; young workers.

Chart 6

Wage subsidies have increased particularly strongly

Rate of private sector wage subsidy
(in % of the wage bill)

Breakdown by form of private sector wage subsidy in Belgium
(in % of potential GDP)

DE — NL — FR — BE

Social Maribel
Targeted reductions in contributions
Service vouchers
Payroll tax exemptions
Miscellaneous [1]

Source: CEC.
* This category includes job seeker activation, subsidies for contract workers in hospitals and subsidies for the wages of disabled persons.

3.1.2 Transport

The "transport" sub-item covers the budgets allocated to public transport operators (such as SNCB, Infrabel, STIB, De Lijn, TEC), but also public expenditure on the construction, management and maintenance of transport infrastructures (rail, road, water, air). It is important to mention that the SNCB is not part of the public sector whereas the regional transport companies (and Infrabel since 2014) are. Consequently, public expenditure destined for the rail transport company consists mainly of subsidies, while expenditure concerning the regional transport operators takes the form of wages, investment and purchases of goods and services. In that respect, the compensation of employees in the "transport" sub-item is paid mainly by the Communities and Regions (56 %), with federal expenditure here representing 26 %, the remainder coming from the local authorities (18 %).

Expressed as a percentage of GDP, expenditure on transport has risen in Belgium since the early 2000s; that is not the case for the average neighbouring country. In 2019, expenditure on transport in Belgium represented 2.9 % of GDP, compared to an average of less than 2 % of GDP in Belgium's neighbouring countries. Two-thirds of all that expenditure was covered by Entity 2. For this sub-item, it is possible that in neighbouring countries the private sector accounts for a relatively larger share of transport services, as is true of the management of the motorway network in France, for example, or private enterprises operating on the bus network in the Netherlands. The way in which public transport is organised and supplied is not the same in all countries.

One theory that might explain the high budgetary cost of transport in Belgium concerns the extremely dense network of communication routes compared to other countries with a similar or even greater population density.

Belgium also suffers from endemic congestion problems, attributable to the continuing dominance of private cars. These characteristics are connected with the particularly marked urban sprawl in Belgium, whereas urban development is more concentrated in other countries, making it easier and cheaper to organise transport in general, and public transport in particular (Cornille *et al.*, 2017).

Chart 7

Expenditure on "transport" is rising

(trend and breakdown by sub-sector of expenditure on transport)

Expenditure on transport
(in % of GDP)

Breakdown of expenditure on transport by sub-sector
(2019)
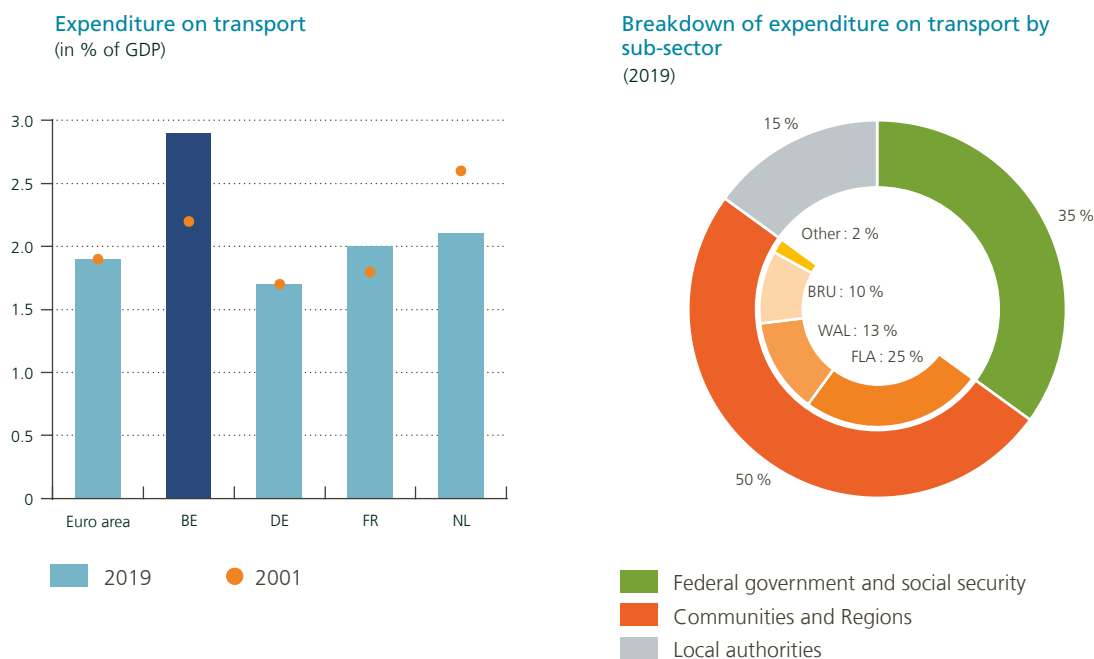
Sources : EC, NAI, NBB.

3.2 Education

Alongside spending on economic affairs, public expenditure on education is also high in Belgium compared to the average for neighbouring countries in 2019 (+ 1.3 pp of GDP). The cross-referenced table (table 4) shows that this higher expenditure on education is attributable essentially to basic and secondary education, but not tertiary education. Compensation of employees (2.1 pp of GDP higher than in neighbouring countries) is the sole factor accounting for these significant differences.

If we take a more precise measure of education expenditure, namely the ratio of expenditure on basic education per child aged between 3 and 11 years, and the ratio of expenditure on secondary education per child aged between 12 and 18 years, it is confirmed that expenditure is higher in Belgium than in neighbouring countries, and higher than the euro area average.

Table 4

In education, expenditure is higher in the case of basic education, secondary education and education non definable by level

(breakdown of education expenditure differentials in 2019, in percentage points of GDP)

Education expenditure differential in Belgium compared to the average for neighbouring countries (in percentage points of GDP, 2019)	EDUCATION	Pre-primary and primary	Secondary	Post-secondary non-tertiary	Tertiary	Non definable by level	Subsidiary services	R&D
EDUCATION	1.3	0.6	0.4	0.0	0.0	0.5	−0.2	0.0
Compensation of employees	2.1	0.9	0.8	0.0	0.1	0.3	−0.1	0.0
Subsidies	−0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Intermediate consumption	−0.1	0.0	−0.1	0.0	−0.1	0.1	−0.1	0.0
Property income	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Social benefits	−0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Gross capital formation	−0.1	−0.1	−0.2	0.0	0.0	0.1	0.1	0.0
Other transfers	−0.3	−0.1	−0.1	−0.0	−0.0	0.0	0.0	0.0

Sources : EC, NAI, NBB.

Higher expenditure on education may also be due to a smaller number of pupils per full-time equivalent teacher. The OECD data reveal that this ratio is relatively lower in Belgium, except in the case of tertiary education. For basic and secondary education, these results are consistent with previous observations showing higher expenditure per pupil. Various explanations are possible : classes in Belgium might be smaller, the number of hours of lessons per teacher could be lower, or the number of hours of lessons per class might be relatively higher. In all cases, a higher number of teachers per pupil is reflected in the average expenditure per child.
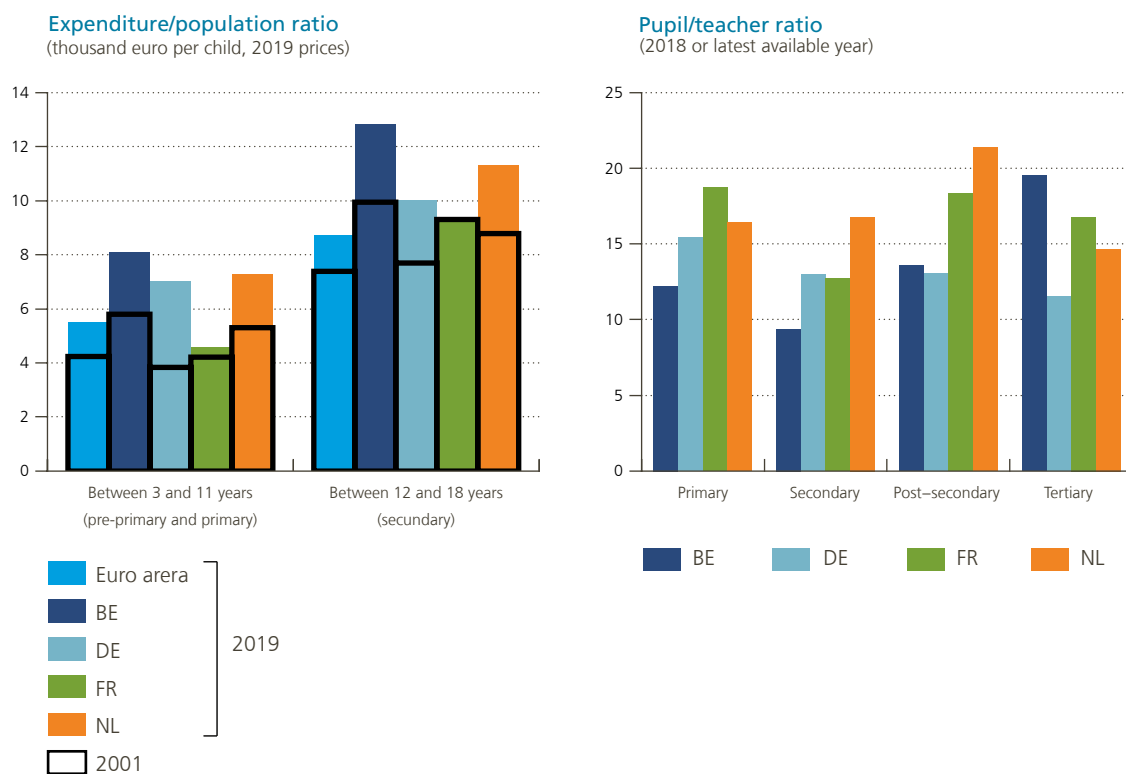
Apart from the budgetary impact of teacher numbers, the relatively high cost of pre-primary, primary and secondary education in Belgium could also be due to such factors as division into language communities, the coexistence of different networks, a high rate of duplication, or compulsory education up to age 18 (Cornille *et al.*, 2017). Another point to mention is that, in 2017, the share of the public sector in primary, secondary and post-secondary non-tertiary education was greater in Belgium (97 %) than in France (91 %), but especially greater than in the Netherlands (88 %) and Germany (87 %). The OECD average was 90 % in 2017 (OECD, 2020).

Allocating substantial budgets to education is a laudable aim since this expenditure is productive and has a beneficial long term impact on economic activity and equalising opportunities. But the funding must also be put to good use. From that point of view it is worth measuring the efficiency of public involvement in this area by comparing the means deployed and the results achieved.

Every three years the OECD conducts the PISA survey of young people aged 15 years. The survey assesses the acquisition of knowledge and skills essential to everyday life in many countries, including Belgium. Analysis of the level of expenditure per young person combined with the PISA survey score tells us more about the performance
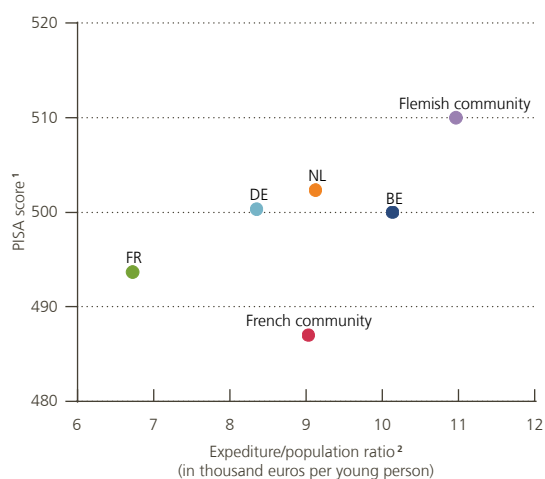
Chart 8

Ratio of education expenditure per child and pupil/teacher ratio

Expenditure/population ratio
(thousand euro per child, 2019 prices)

Pupil/teacher ratio
(2018 or latest available year)

Between 3 and 11 years
(pre-primary and primary)

Between 12 and 18 years
(secundary)

Primary   Secondary   Post–secondary   Tertiary

Euro arera
BE
DE
FR
NL
2019

2001

BE   DE   FR   NL

Sources : EC, NAI, OECD, Statbel, NBB.

Chart 9

The performance of education expenditure is not always commensurate with the amount invested

PISA score [1]

Flemish community
DE
NL
BE
FR
French community

Expediture/population ratio [2]
(in thousand euros per young person)

Sources : EC, IBSA, NAI, OECD, Statbel, NBB.
1 Average scores in reading, mathematics and sciences in 2018. The OECD average for these three dimensions was 488 in 2018.
2 2019 expenditure ratio in pre-primary, primary and secondary education to the number of children aged between 3 and 18 years.

of education systems for a given level of expenditure. In Belgium, in view of the higher public expenditure on basic and secondary education, it must be said that the results achieved are not commensurate with the amount invested (chart 9).

In Belgium, the PISA score is no higher than in the Netherlands and Germany although the expenditure ratio per pupil is lower in those two countries. If we distinguish between the scores per community[1], the differences are greater. With comparable resources, the Netherlands achieves a higher PISA score than the French Community. As regards the Flemish Community, expenditure per pupil is higher (particularly in pre-primary and primary education), but the results achieved are also higher than in the countries considered.

3.3 General public services

The third COFOG category for which the expenditure differential compared to the average for neighbouring countries was particularly marked in 2019 is the general public services category (+ 1.8 pp of GDP). A new detailed table shows the three sub-items responsible for that higher expenditure, namely executive and legislative organs, financial and fiscal affairs, external affairs (+ 0.4 pp of GDP), basic research (+ 0.6 pp of GDP) and public debt transactions (+ 1 pp of GDP). This cross-referenced table shows that the differentials in

Table 5

In general public services, there are large differentials in the sub-items "executive and legislative organs, financial and fiscal affairs, external affairs", "basic research" and "public debt transactions"

(breakdown of expenditure differentials in general public services in 2019, in percentage points of GDP)

Expenditure differential in general public services in Belgium compared to the average for neighbouring countries (in percentage points of GDP, 2019)	GENERAL PUBLIC SERVICES	Executive and legislative organs	Foreign economic aid	General services	Basic research	R&D	General services n.e.c.	Public debt transactions
GENERAL PUBLIC SERVICES	1.8	0.4	−0.2	0.0	0.6	0.0	−0.1	1.0
Compensation of employees	0.6	0.3	0.0	0.0	0.3	0.0	0.0	0.0
Subsidies	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Intermediate consumption	0.1	−0.1	0.0	0.0	0.0	0.0	0.0	0.1
Property income	1.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0
Social benefits	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Gross capital formation	0.4	0.0	0.0	0.0	0.3	0.0	0.0	0.0
Other transfers	−0.2	0.1	−0.1	0.0	0.0	0.0	0.0	0.0

Sources: EC, NAI, NBB.

1 IBSA data enable us to allocate Brussels children to education in the French or Flemish Community on the basis of the number of teachers per community in Brussels: 23 % for the Flemish Community and 77 % for the French Community. In addition, local authority expenditure on education was divided between communities on the basis of the percentage of the total number of teachers working in the French Community (41 %) and the Flemish Community (59 %).

the sub-items executive and legislative organs, financial and fiscal affairs, external affairs and basic research are recorded mainly in compensation of employees. In the sub-item public debt transactions it is property incomes paid (which include interest charges) that account for the whole of the difference in relation to the average for neighbouring countries.

3.3.1 Public debt transactions

The sub-item public debt transactions mainly covers interest charges on the government debt. In 2001, public debt transactions represented just under 7 % of GDP, but by 2019 that ratio had fallen to just over 2 % of GDP. Despite this sharp reduction, which was driven by the fall in interest rates and is more pronounced in Belgium than on average in the euro area and in neighbouring countries, interest charges are still relatively high in Belgium. For example, they represent less than 1 % of GDP in Germany and the Netherlands (chart 10).

These relatively higher interest charges as a percentage of GDP in Belgium are a reminder of the high cost of debt compared to the Netherlands and Germany. In comparison with France, which had a debt ratio similar to Belgium's in 2019, the cost of debt is also greater owing to the higher implicit interest rate. That is due partly to the relatively higher debt maturity in Belgium, which in turn has the advantage of limiting the impact on interest charges of a future interest rate increase.

Chart 10

Although expenditure on "debt transactions" remains high, it has fallen sharply
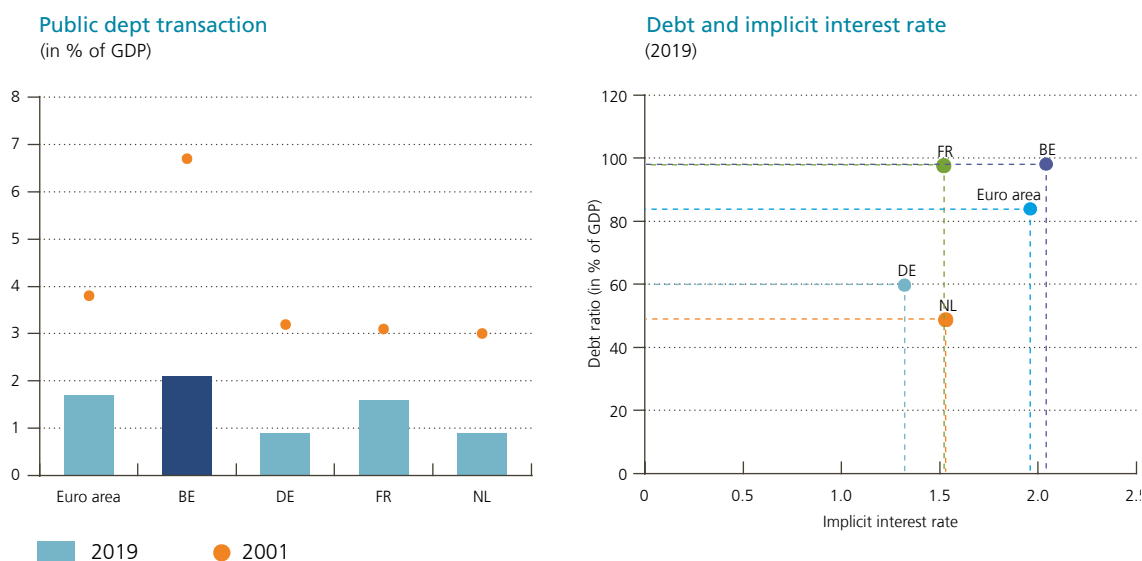
Sources: EC, NAI, NBB.

3.3.2 Executive and legislative organs, financial and fiscal affairs, external affairs

Another aspect of general public services where public expenditure is higher than in neighbouring countries is the sub-item "executive and legislative organs, financial and fiscal affairs, external affairs". This category covers overall State operations including the public services dealing with foreign affairs, domestic affairs and finance, and the running of the parliaments and ministerial offices.

Expressed in 2019 prices, expenditure on operations per capita is relatively stable in Belgium : approximately € 900 per capita, or around € 250 per capita higher than the euro area average. The figure for the Netherlands is similar to the level in Belgium, but the ratios for Germany and especially France are lower. The importance of Entity 1 in this category (around two-thirds of expenditure) is due to the intrinsic nature of the items included. They mainly concern powers specific to the federal government in Belgium.

Chart 11

Expenditure on executive and legislative organs, financial and fiscal affairs, external affairs is still high in Belgium
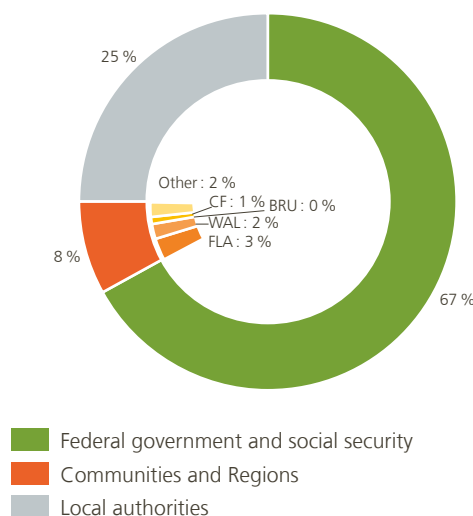
Expenditure on executive and legislative organs financial and fiscal affairs, external affairs
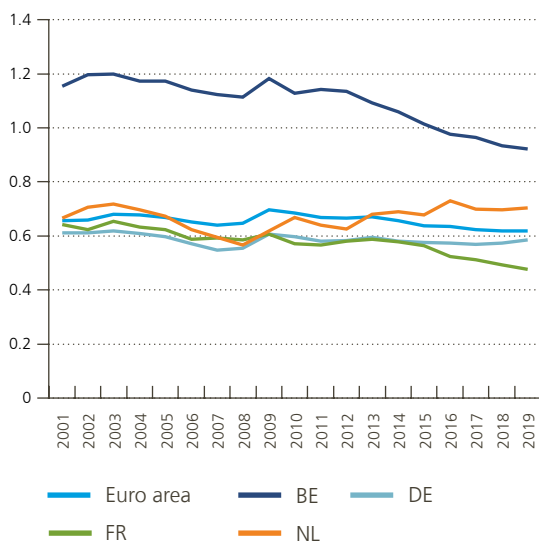(in € per capita. 2019 prices)
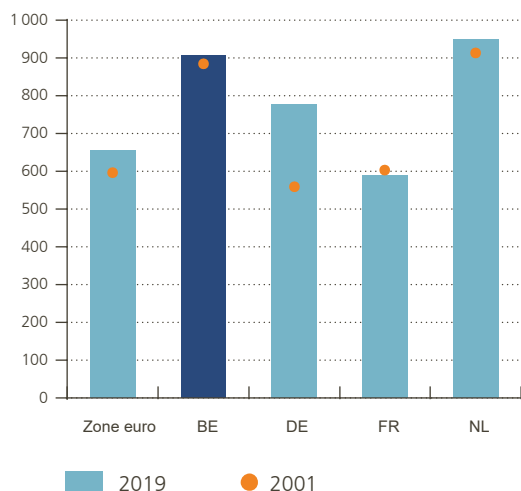
2019 ● 2001

Breakdown of expenditure on executive and legislative organs, financial and fiscal affairs, external affairs
(2019)

Federal government and social security
Communities and Regions
Local authorities

Compensation of employees in executive and legislative organs, financial and fiscal affairs, external affairs
(in % of GDP)

Euro area   BE   DE
FR   NL

Compensation of employees in executive and legislativeorgans, financial and fiscal affairs, external affairs : breakdown by sub-sector
(in % of GDP)

Federal government and social security
Communities and Regions
Pouvoirs locaux
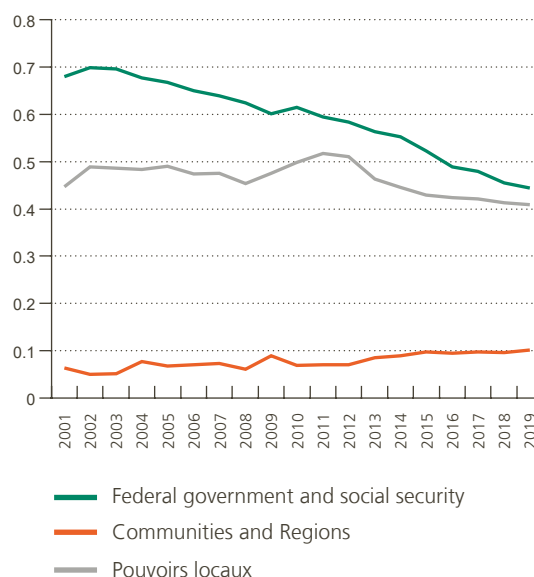
Sources : EC, NAI, NBB.

As already mentioned, compensation of employees accounts for most of the differential in this category. Expressed as a percentage of GDP, compensation of employees for this sub-item clearly deviates from the average for the euro area and the main neighbouring countries. Conversely, the figure has fallen in Belgium since the beginning of 2012. That reflects in particular the cuts made by the federal government during that period. All the same, in 2019 the federal level still accounted for most of the expenditure in this category. In contrast, expenditure on this item by the Communities and Regions is increasing, partly as a result of the transfer of powers in 2015, though it is still fairly marginal. Local authorities also accounted for a large part of compensation of employees in this category. For these latest, it includes part of the compensation of employees of civil servants in the administrations of municipalities, local social services and provinces.
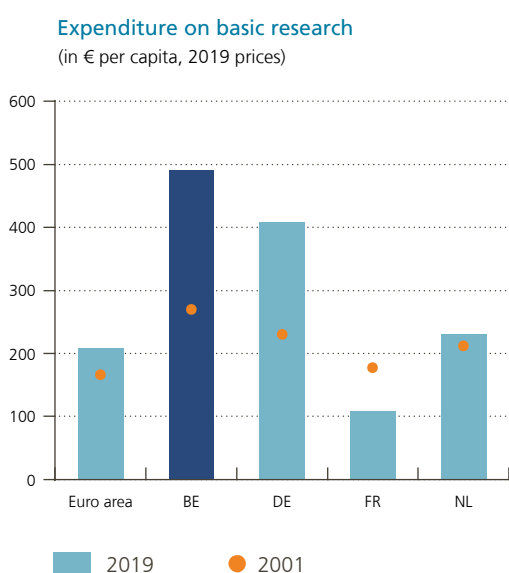
3.3.3 Basic research

Another type of spending that appeared to be higher in Belgium than the average in neighbouring countries is expenditure on basic research. If these budgets are used effectively, this is productive expenditure that benefits society as a whole.

Compared to the early 2000s, per capita expenditure on basic research at constant prices has almost doubled in Belgium to reach nearly € 500 per capita in 2019. That is almost five times the figure for France, where spending on this item has actually fallen compared to the 2000s. It is also double the average for the euro area in 2019. However, it is possible that some expenditure classed as basic research in Belgium may come under applied research in neighbouring countries, so these findings should be interpreted with caution.
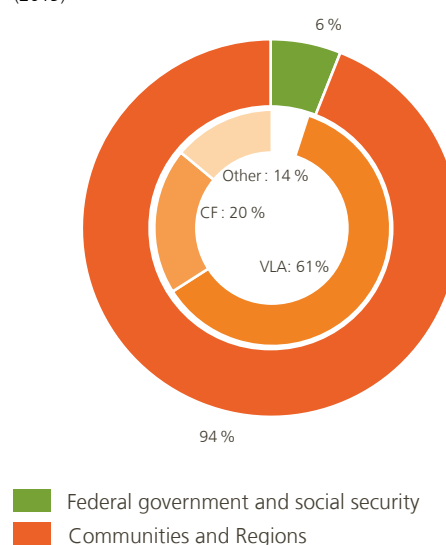
Entity 2 accounts for almost all expenditure on basic research in Belgium. More than 60 % of expenditure on basic research in Belgium takes place in Flanders, and essentially concerns research and development activities in universities.

Chart 12

Expenditure on basic research has risen since 2001

Expenditure on basic research
(in € per capita, 2019 prices)

Breakdown of expenditure on basic research
(2019)

2019   2001

Federal government and social security
Communities and Regions

Sources: EC, NAI, NBB.

3.4 Family and children

Another COFOG sub-item for which expenditure was relatively high (+ 0.4 pp of GDP) in Belgium in 2019 compared to the average for neighbouring countries is "family and children". It mainly covers social benefits such as family allowances, parental leave, maternity leave, paternity leave, etc.
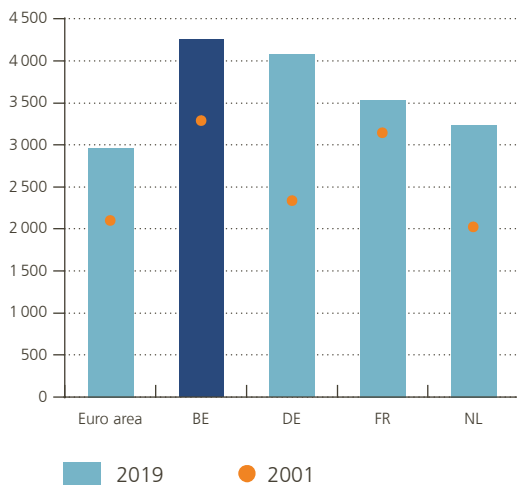
If we calculate the expenditure ratio for "family and children" per young person up to 18 years of age, two findings emerge. First, for Belgium, neighbouring countries and on average in the euro area, expenditure on this category was higher in 2019 than in the early 2000s (at constant prices). Next, in 2019 this item represented around € 4300 per young person in Belgium, which was more than in neighbouring countries (€ 4100 in Germany, € 3500 in France and € 3200 in the Netherlands). The difference is even greater in relation to the euro area average (around € 3000).

Most of this expenditure is attributable to the Communities and Regions, accounting for around 85 % of total expenditure in this category. This high proportion reflects the allocation of powers between levels of government, as family allowances were devolved to the Regions under the sixth State reform.
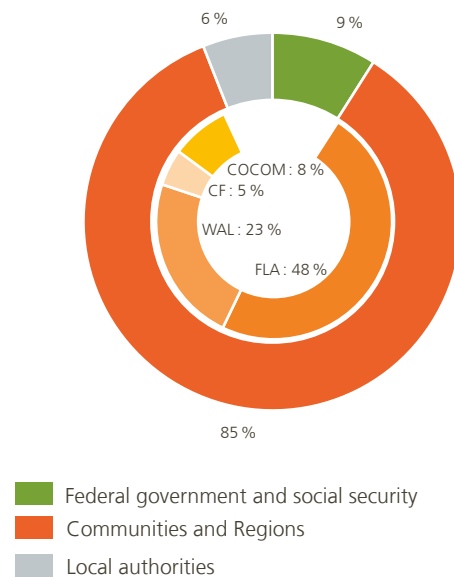
Chart 13

Expenditure on family and children

Expenditure on family and children
(in € per young person up to the age of 18 year, at 2019 prices)

2019   2001

Breakdown of expenditure on family and children by sub-sector
(2019)

COCOM : 8 %
CF : 5 %
WAL : 23 %
FLA : 48 %

Federal government and social security
Communities and Regions
Local authorities

Sources : EC, NAI, NBB.

3.5 Pollution abatement

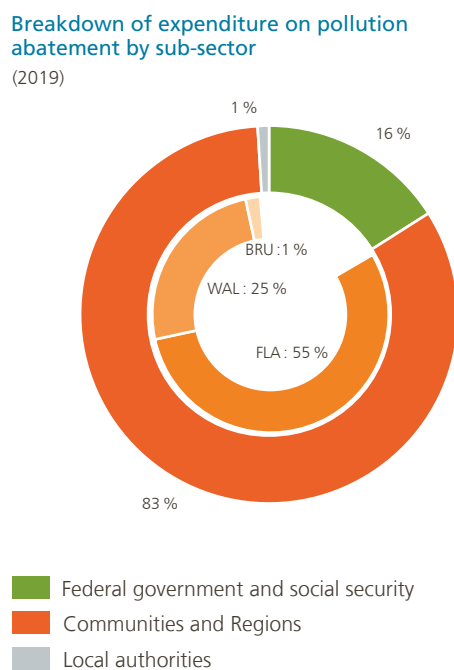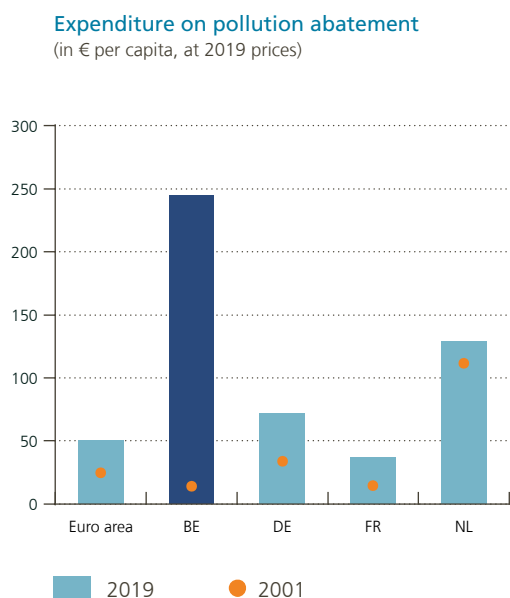To conclude this section, one last COFOG sub-item for which expenditure in Belgium is relatively higher than the neighbouring country average is "pollution abatement" under the COFOG function "Environmental protection".

In the early 2000s, environmental protection expenditure per person was lower in Belgium (around € 14 per capita at 2019 prices) than in neighbouring countries and the euro area. At that time, the Netherlands was

where that spending was higher. In 2019 the situation was very different. Compared to the 2001 per capita figure, that expenditure has risen sharply in Belgium to well above the average for neighbouring countries and the euro area. Subsidies make up almost the whole of that expenditure.

Chart 14

Expenditure on pollution abatement

Expenditure on pollution abatement
(in € per capita, at 2019 prices)

Breakdown of expenditure on pollution abatement by sub-sector
(2019)

Legend:
- 2019
- 2001

- Federal government and social security
- Communities and Regions
- Local authorities

Sources: EC, NAI, NBB.

Most of this expenditure is attributable to the system of green certificates, initiated by the Regions (primarily for the promotion of solar panels) and the federal government (for the support of off shore wind parks) at the beginning of this century, in order to promote the production of renewable energy. Green certificates represented 70 % of the € 2.8 billion spent on this sub-item in 2019.

The green certificate mechanism is statistically similar to a system in which the government grants subsidies to green electricity producers and levies surcharges on electricity suppliers. The subsidies thus find their counterweight in the surcharges levied. In the end, the climate objective of green certificates is thus pursued while preserving, in principle, budgetary neutrality.

While the subsidisation of solar panels massively increased adoption, the efficiency of the system has proven low. Research on the Flemish subsidy system in the period 2006-2012 demonstrates that an upfront investment subsidy instead of future production subsidies would have reduced public expenditure by € 1.9 bn or 51% of the amount spent (De Groote and Verboven, 2019).

Further, we cannot be sure that similar systems in other countries are recorded equivalently in the public expenditure statistics by function.

4. A more detailed assessment of public expenditure is needed

The above expenditure benchmarking exercise shows Belgium's position in relation to a relevant reference point for various expenditure categories. However, this study needs to be supplemented in order to draw more conclusions regarding the advisability of increasing or reducing the expenditure. This section briefly addresses some key aspects of such an analysis. First, the importance of public expenditure efficiency is discussed: does the expenditure achieve the aims in view? Next, the focus is also on the way in which fiscal frameworks can encourage responsible use of public expenditure.

4.1 What is the cost of achieving which aims?

To assess the efficiency of certain public expenditure, it is necessary to conduct specific studies linking expenditure (input) to the objectives (output). This can be done by using macroeconomic data, in the same way as Cornille *et al.* (2017) and to some extent in this article, for expenditure on education, but microeconomic analyses can provide more accurate results. In that regard, this sub-section presents some examples of recent microeconomic analyses specific to Belgium. The brief description of those analyses does not aim to be exhaustive, but rather to illustrate the value of such analyses. There are in fact numerous studies analysing the effects of government measures.

The FPB has analysed the impact of the regional reforms of family allowances on the risk of child poverty (Nevejan *et al.*, 2021). The study shows that the reforms have had little effect on the child poverty risk and that child poverty has hardly been reduced at all compared to the previous situation. The authors consider that it is still possible to target family allowances better in order to combat child poverty.

A report by the Court of Auditors published in 2021 analyses the measure relating to exemption from social contributions for first recruitments. That expenditure is classed as subsidies according to the ESA classification. Since 1 January 2016, entrepreneurs are granted full exemption from employer's contributions for the first worker recruited, with no time limit. This measure encourages entrepreneurs to recruit their first workers, to support employment and to improve business viability. This report reveals that the volume of labour has not risen proportionately to the increase in the budgetary cost of this exemption in recent years. According to the authors, the measure therefore seems less cost-effective than the flat-rate reductions for first recruitments which were in force before the 2016 overhaul. The Court of Auditors therefore recommended assessing whether a time-limited flat-rate reduction would be more appropriate, given that it is more cost-effective. In addition, an FPB study (López Novella, 2021) has also assessed the effects of the first recruitments measure on the survival of small firms and new businesses and the effect of the 2016 reform. According to that study, the measure boosts the chances of survival for these businesses, although the new arrangements introduced in 2016 do not seem to improve those chances.

An FPB assessment (Dumont, 2019) provides robust evidence that the different schemes of partial exemption from payment of the withholding tax on the wages of R&D personnel are effective in stimulating additional R&D activities. However, the stimulating effect of R&D tax credits and the IP-box regime on additional private R&D investment cannot consistently be illustrated. Recently, a comprehensive overview of the effectiveness of tax incentives for R&D was given by Schoonackers (2020). In this study – and based on the existing literature – the author concludes that the choice of policy instrument to be used in fact depends on firms characteristics. Direct subsidies mainly influence the decisions of small or young businesses, whereas tax incentives for R&D seem more beneficial in the case of larger companies. In Belgium, young companies account for only a small amount of R&D expenditure, yet they are the ones which often have the best growth potential. It could therefore be beneficial to rethink the Belgian R&D support systems by focusing more on these young, dynamic companies.

Regarding payroll tax exemptions, used in a growing number of spheres and equivalent to a policy of granting subsidies or reductions in social contributions, another report by the Court of Auditors published in 2019 finds that their aims are not clearly defined and their results are not assessed. It is precisely the lack of specific, measurable aims (e.g. boosting productivity, reducing undeclared employment, encouraging research and development, etc.) that makes it impossible to assess the scheme. Yet assessment is necessary to measure whether the benefits outweigh the costs for public finances, to assess the spin-off benefits and to choose between payroll tax exemptions and other public policy instruments which might serve the same aims.

4.2 A supportive fiscal framework

An appropriate fiscal framework can provide vital support for the continuous assessment of expenditure. Here we focus on two aspects of the fiscal framework for expenditure : spending reviews and expenditure rules.

4.2.1 Spending review

A spending review is a coordinated, detailed analysis of public spending aimed at identifying any efficiency gains or making cuts in non-priority items, because a high level of funding does not necessarily guarantee the quality of goods and services provided by the government. Earlier studies have also drawn attention to scope for improvement in the efficiency of government in Belgium in various spheres (Cornille *et al.*, 2017).

A spending review can contribute to fiscal consolidation objectives, but may also reveal scope for new policies, such as new investment and expenditure to stimulate growth. This is a particularly useful tool if it always forms part of the budgetary process. The European Commission encourages this practice, as spending reviews can help to improve the composition and effectiveness of expenditure in order to respond better to economic and societal objectives (EC, 2020).

Two main approaches to spending reviews are possible (Vandierendonck, 2014). First, a strategic approach that questions the actual use of public funds to finance a policy or a body. Once the strategic approach has been applied, the tactical approach consists in improving the balance between the level of public funding and the results achieved. Most spending reviews are targeted. They cover specific branches of public spending that represent a small proportion of total expenditure.

At federal level, a plan for optimising expenditure and improving the efficiency of public services was launched in 2015 (EC, 2020). Following this exercise, some federal public services were merged, a central procurement agency was set up, and a plan was launched for managing the federal government's real estate assets. After his first experience of a targeted spending review, in 2021 the federal government conducted a new series of pilot projects, the initial conclusions of which are to be taken into account in drawing up the 2022 budget. In Flanders, a first pilot project for a targeted spending review in the service voucher sector was conducted in 2019. The results of that project will be used with the aim of incorporating spending reviews as a structural element of the annual and multiannual budgeting process.

Although it is not a spending review in the true sense, the preparation of a "zero-based budget" shares the aim of improving the management of public spending. This method involves systematically justifying expenditure and revenues according to their usefulness and their relevance during preparation of a budget. The exercise amounts to starting with a blank sheet, in contrast to the traditional procedure which instead consists in allocating amounts specified in the previous year's budget. The Walloon Region, in particular, introduced a zero-based budget programme to be completed in multiple phases, the first having commenced in 2020.

4.2.2 Expenditure rule

In 2011 an expenditure rule was introduced in the EU governance framework as a tool to assess compliance with fiscal rules under the Stability and Growth Pact. The expenditure rule is considered to set limits for the annual change in public spending, which must remain below medium-term potential economic growth. For this purpose, public spending excludes interest charges, the cyclical component of unemployment expenditure and all spending relating to EU-funded programmes.

In practice, a norm is set for each Member State in order to achieve gradual convergence towards the medium-term fiscal objectives (MTOs). If growth exceeds expenditure, spending must then be offset by additional discretionary measures concerning revenues in order to maintain the fiscal balance. This rule is now part of the preventive arm of the Stability and Growth Pact. However, in the wake of the health crisis the European Commission decided to activate the Pact's general escape clause. The spending growth norm, which forms part of the European budgetary framework, was therefore also suspended until 2022.

In Belgium, the national fiscal framework does not currently include any fiscal rule relating to expenditure, other than the norm which specifically governs the real growth of health care expenditure. However, such rules have already been applied at federal level in the past, with some success (Bisciari *et al.*, 2020). At regional level, there is a master plan which was published in October 2020 to set a norm for expenditure growth in Flanders. At federal level, a project to design an expenditure rule for Belgium was recently initiated at "Public Sector Borrowing Requirement" section of the High Council of Finance, in cooperation with the European Commission and the OECD.

5. Conclusion

In 2019, public spending in Belgium exceeded the average in the main neighbouring countries by 4.5 percentage points of GDP. The gap has widened in recent decades despite a sharp fall in interest charges compared to the same countries. If expenditure is broken down by function on the basis of the COFOG classification, we find that both the spending categories which were more the responsibility of the federal government and those which were primarily the responsibility of the regional and local authorities displayed a positive differential, albeit more so in the latter case. The analysis of the COFOG categories and sub-items indicates that spending is relatively high in general public services, economic affairs and education. That is not currently the case for social benefits, although it must be said that over the past 20 years those benefits have risen by 1.5 percentage point of GDP more than the average in neighbouring countries.

The main differences concern compensation of employees and business subsidies, two categories which are not generally among the most productive. In particular, wage subsidies are high in Belgium. In the past 20 years they have risen strongly, and were often introduced to offset the high labour cost and heavy tax burden on labour, in particular. Unless subsidies adjust for significant externalities, such as those concerning the environment or innovation, they risk distorting the allocation of (labour) market resources. In the case of wage subsidies, it is advisable to reform the burdensome, complicated taxation of labour rather than use subsidies to offset it. Also, the relatively higher spending on government operations raises the question whether additional economies could still be made in this area.

This study also shows that expenditure on education, a category known for its prosperity-boosting potential, is substantial. But performance in this area measured on the basis of PISA scores is uneven. It is better in the Flemish Community than in the French Community.

Further, the relatively high level of interest charges compared to neighbouring countries is a reminder of the public spending implications of a high debt.

Obviously, the level of public spending reflects certain choices that society makes in order to boost prosperity. Even in this case it is still important to examine whether the aims are achieved sufficiently, in view of the expenditure involved. One of those aims might be more sustainable growth, for example, via more spending on basic research and pollution abatement, or the expansion of public transport. Governments may also decide to increase some forms of redistribution via family allowances.

It remains essential to place efficiency systematically at the heart of government action so as to avoid any expenditure slippage, in order to create sufficient scope for a dynamic response to future challenges. Future studies are still needed to assess government efficiency so that the spending mix can ultimately be adjusted. Improvements in the fiscal framework, such as the introduction of spending reviews and an expenditure rule, can support the responsible use of public expenditure.

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# The Belgian economy in the wake of the COVID-19 shock

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Introduction

In early 2020, it became increasingly clear that a new coronavirus that first showed up in China was going to become a health challenge on a global scale. On 11 March, the World Health Organization declared the disease that it caused and which was dubbed COVID-19 a pandemic. In addition to recommending soft preventive measures (hand washing, wearing face masks, social distancing, etc.), most countries have also implemented very restrictive lockdown policies with a view to limiting the spread of the virus and to keeping the pressure on the health care system under control. This pandemic and the coronavirus containment measures that were taken have led to the largest decline in economic output in the post-war period.

Chart 1

Multiple lockdown measures have been taken to tackle the COVID-19 epidemic in Belgium
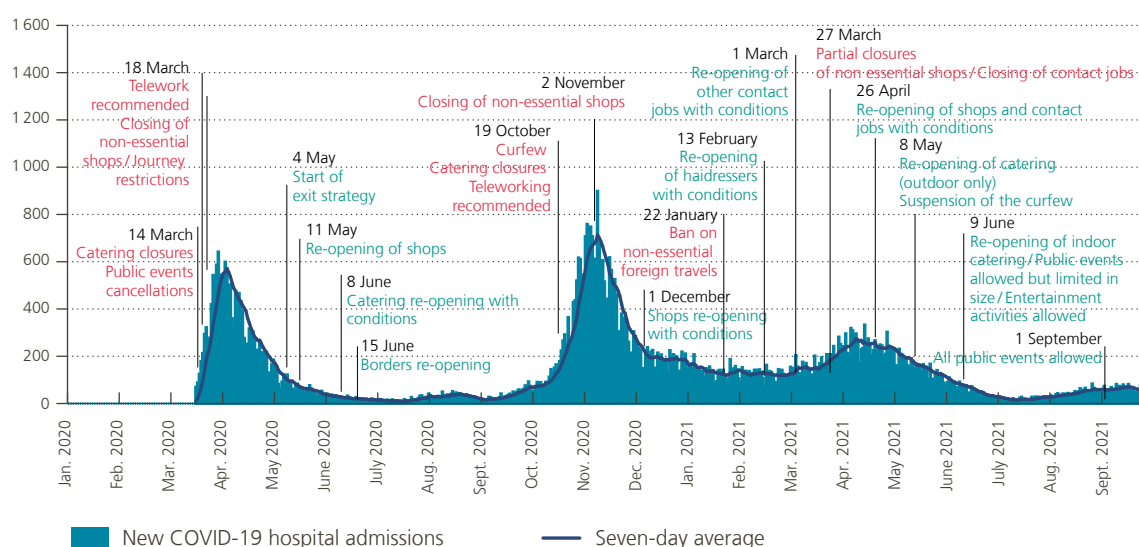
Source : Sciensano.

Belgium was no exception: restrictions were first imposed in mid-March 2020. Bars and restaurants were forced to close first, followed some days later by most non-food shops. There were also severe restrictions on the freedom of movement for people, with journeys essentially only allowed for the purpose of buying food, for going to work, and for medical reasons. Many businesses temporarily scaled down their activities or even suspended them whereas working from home became mandatory where technically possible. In the early stages of the first lockdown, this led to severe disruptions in the economy, including in the manufacturing and construction industries. Even though these industries were not directly targeted by the measures, their activity was disrupted by lack of staff or delivery issues.

The health situation improved after that and the lockdown measures were gradually relaxed at the beginning of May, even though some measures remained in force for certain industries. However, the coronavirus epidemic spread again during the autumn and winter 2020-2021, triggering a new wave of restrictions.

In the spring of 2021, the rapid progress made with the vaccination campaign allowed a stepwise easing of the lockdown. However, infections started to rise again over the summer, even though hospital admissions remained far below previous peaks. In other parts of the world, new lockdowns were implemented despite the progress with vaccination against COVID-19. Hence, a deterioration of the health situation, in particular related to insufficient vaccine acceptance and vaccine effectiveness against new virus variants, cannot be entirely ruled out. At the same time, policies increasingly focus on restricting access to certain activities for unvaccinated people.

This article takes stock of the economic ramifications of the pandemic for Belgium. It is split into two main sections. We first recall the key features of the economic crisis created by the COVID-19 pandemic and then argue that this exogenous shock has been idiosyncratic and asymmetric in many ways. In this connection, we compare the current crisis to the 2008-2009 global financial crisis. Beyond the quantitative impact on GDP, income and employment, the second section explores a number of qualitative changes to the economy that are likely to have a persistent impact, such as wider use of teleworking, greater digitalisation of retail trade, etc.

1. A crisis like no other before: key features

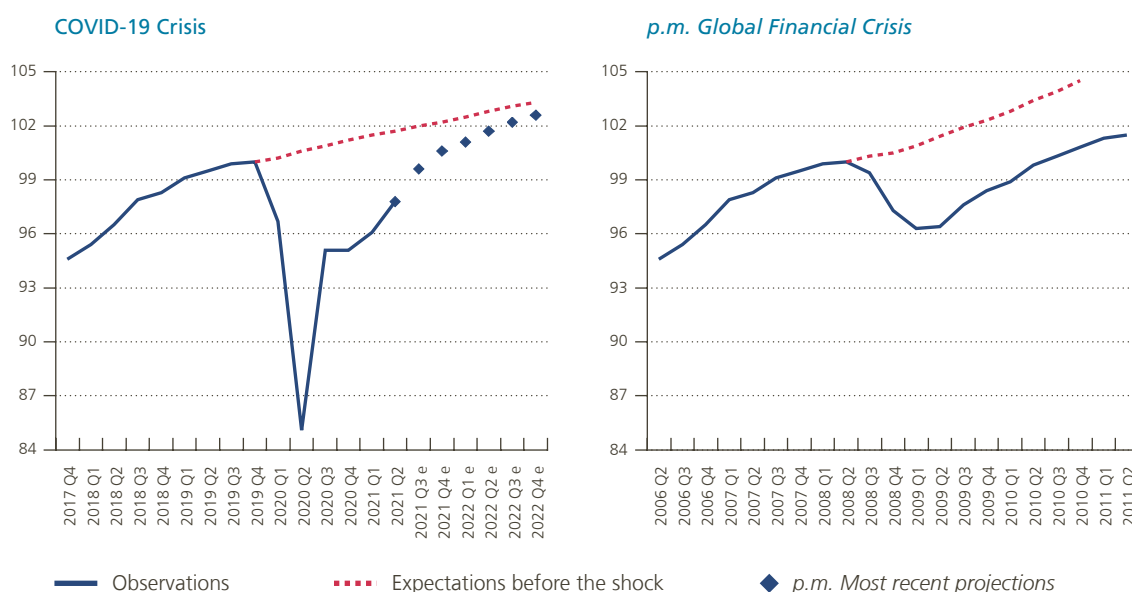## 1.1 A brutal exogenous shock on activity followed by a quick recovery

The COVID-19 pandemic and the ensuing lockdown measures have hit the Belgian economy hard. Contrary to many other recent recessions, the crisis was not brought about by an endogenous imbalance in the economy but was caused by an exogenous shock.

As a result of the Belgian economy's deep integration into international trade, disruptions in supply chains, initially caused by plant closures in China, had already hit the activity of various manufacturing firms before the virus even appeared in Belgium. But the impact was quite limited in comparison with the direct effects of the early containment measures. Even though the first lockdown began about fifteen days before the end of the first quarter of 2020, GDP had already dropped by 3.3 % from the previous quarter, as large parts of the economy effectively stopped operating. The negative effects of the crisis were more marked in the second quarter of 2020: quarterly GDP plummeted by a further 11.9 %. Thanks to the return to normal of the health situation and the relaxing of most lockdown measures, GDP bounced back strongly in the third quarter, increasing by 11.8 %. The second wave of the pandemic and the tightening of the lockdown measures somewhat delayed the recovery, but it did not lead to a genuine decline in activity in the fourth quarter as GDP remained virtually stable, recording a 0.1 % decrease. This is believed to be partly due to learning effects as economic agents gradually adapted to the situation and learned to live with these exceptional circumstances, namely thanks to the health protocols implemented in cooperation with social partners. Both the rapid progress in the vaccination campaign

Chart 2

The downturn due to the COVID-19 pandemic was brutal, but the recovery thereafter was rapid

(GDP in volume, indices, pre-crisis peak = 100)

COVID-19 Crisis

p.m. Global Financial Crisis

Legend: — Observations ···· Expectations before the shock ◆ *p.m. Most recent projections*

Sources : NAI, NBB.

Note : Expectations before the GFC and the COVID-19 crisis respectively correspond to the NBB's June 2008 and December 2019 economic projections, whereas the most recent ones were published in June 2021.

made in 2021 which has enabled a further relaxation of the restrictions and the aforementioned learning effect have had a beneficial effect on economic activity, with GDP rising by 1.1 % and 1.7 % respectively in the first and second quarters. However, the recovery had not been sufficient to offset the previous falls in GDP, leaving GDP level at the end of 2021 Q2 still some 2.2 % below its level prevailing before the start of the pandemic.

All in all, real GDP dropped by 6.3 % in annual terms in 2020 and recovered slightly in the first half of 2021. The decline in economic activity due to the COVID-19 pandemic is the largest annual GDP decrease ever recorded in Belgium since the Second World War. This is significantly larger than the drop observed during the global financial crisis (GFC) when GDP declined by a 'mere' 2 % in 2009 after having risen by 0.4 % in 2008. The crises strongly differ from each other because, unlike the COVID-19 crisis, the GFC mainly originated from financial imbalances and the bursting of the US real estate bubble. In Belgium, this notably led to a slump in external demand and a widespread deterioration in economic sentiment. This difference may explain some discrepancies in those two recessions, and both the duration and the size of the shock are prime examples of this.

While the downturn in 2020 was brutal, the subsequent recovery was rapid and impressive as well. This is largely due to the decisive and large-scale public support measures that protected many households' incomes and kept companies afloat but also to the very nature of the shock. The pandemic brought the economy, or at least a large part of it, to a virtual standstill and the reduced mobility of economic agents has weighed heavily on economic activity (see box 1) but as soon as conditions improved, economic activity resumed quickly. By contrast, the negative impact of the financial imbalances that caused the GFC continued to weigh on economic growth for a longer period of time. The NBB's June 2021 economic projections suggest that economic activity will be back to its pre-pandemic level by the end of 2021. This is about as fast as during the GFC, even though the downturn was much larger. However, some persistent but limited scarring remains, as real GDP is not likely to have caught up to its pre-crisis path by the end of 2022 (see also chapter 2).
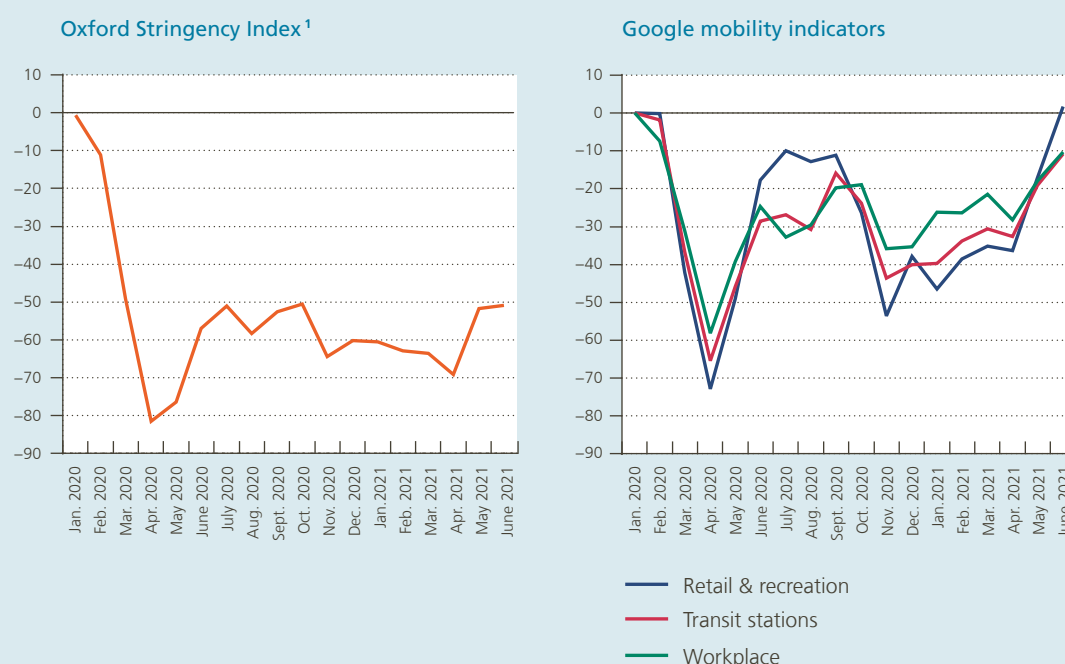
BOX 1

Looking at the GDP decline through the lens of mobility data

The COVID-19 crisis has also affected economic activity through the impact of lockdown on people's mobility. The restrictions are typically measured by using the Oxford Stringency Index (OSI)[1]. It takes the form of a daily composite index of several metrics depicting how stringent are the measures related to workplace closures, stay-at-home requirements, restrictions on mobility, cancellation of public events, etc. The indicator for Belgium declined dramatically from March 2020 onwards, reflecting the strict lockdown measures introduced in the early stages of the pandemic. However, the relaxing of those policies during the course of summer 2020 barely improved the indicator before it moved from almost stable to a further deterioration up to April 2021. Despite the recent relaxation of the restrictions, some remain, and the OSI is still in negative territory.

1 Hale *et al.* (2020).

Mobility has been significantly hindered since the start of the pandemic
(percentage changes relative to the period before the pandemic, monthly averages)

Oxford Stringency Index[1]

Google mobility indicators

— Retail & recreation
— Transit stations
— Workplace

Sources : Google, Hale *et al*. (2020).
1 The index is here inverted to facilitate comparison with mobility indicators.

People's mobility can be analysed using the Google mobility indicators, that are notably constructed using data from navigation apps. They measure movements to distinct locations on a daily basis and compare them to baseline values before the start of the COVID-19 pandemic. Indicators related to (i) retail and recreation, (ii) transit stations and (iii) workplaces are the most pertinent for the purpose of this article. Overall, these indicators depict similar trends since the start of the pandemic. All three plummeted in March 2020 before stabilising and gradually recovering thereafter up to the summer in line with the relaxation of the lockdown measures. They nevertheless declined again in the course of autumn 2020 and remained low during the winter. As in the previous year, the indicators have gradually improved from April 2021 onwards, although from a generally higher initial level. It should be noted that, since the start of the pandemic, all three indicators have remained lower than the pre-crisis baseline, except for the retail and recreation indicator that has slightly exceeded the threshold from end-June onwards. This points to a significant restriction of mobility as a whole.

Along the lines of Ghirelli *et al.* (2021), we track the sensitivity of economic activity to lockdown measures through their impact on people's mobility using econometric regressions and a two-stage approach. The sample is obviously limited, and the lack of recent data makes it difficult to control for the multi-faceted aspect of the COVID-19 crisis, so the findings should be considered as illustrative only. First, the Google mobility index[1] is regressed upon the OSI, to identify how strongly the lockdown measures

1 For the sake of convenience and as the three aforementioned indicators point to similar trends, we make use of an average of those three indicators in quarterly terms.

Restrictions on mobility and voluntary changes in it weighed on economic activity

(decomposition of changes in GDP, % deviation from pre-crisis level)

Changes in mobility related to the restrictions
Volontary changes in mobility
Other factors
GDP
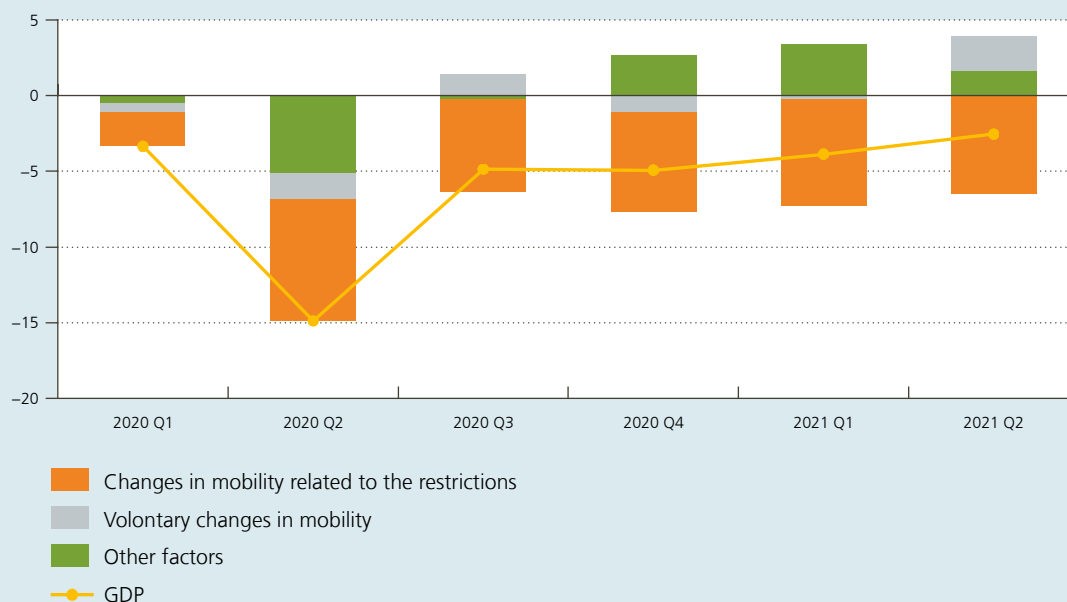
Sources: NAI, own computations.

have directly affected mobility. The regression results indicate the expected significant and negative relationship. The unexplained part, i.e. the regression residuals, can be considered as the voluntary change in mobility.

In a second step, we regress GDP upon the Google mobility index. To do so, GDP-level data from the national accounts are transformed into a percentage deviation from the pre-crisis level. As expected, the regression results indicate a positive relationship between activity and mobility. The estimated coefficient is furthermore significant. The unexplained part here can be interpreted as all factors other than mobility that influenced activity between 2020Q1 and 2021Q2.

Combining the results of both regressions enables us to break down GDP variations into changes in mobility, either due to restrictions or on a voluntary basis, and other factors. It appears that the losses in output can be mostly traced back to the lockdown measures, through their effect on people's mobility. This impact was particularly heavy in the second quarter of 2020 during the first lockdown. Voluntary changes in mobility have had a much smaller impact on activity which was negative or positive depending on the quarter (and the health situation at that time) and depending on compliance with restrictions imposed by the governments. Activity has obviously been affected by other factors too, which, depending on the quarter, may be explained by fluctuations in world trade or learning effects, for instance.

Looking at the demand components of GDP, past experience suggests that private investment is more sensitive to business cycles than private consumption. In addition, private investment typically reaches its low point later and takes longer to recover post-crisis (NBB, 2010). This pattern was discernible in the GFC when the downward movement in private investment was spread over a period of five consecutive quarters before temporarily recovering for a quarter and then falling again and stabilising thereafter. Overall, private investment fell by 11.6 % between the second quarter of 2008 and the first quarter of 2010. The decline was obviously due to the sharp collapse in (external) demand and the related under-utilisation of production capacity in the manufacturing industry, coupled with the high uncertainty about the outlook for the future. In fact, private investment only exceeded its pre-crisis level in 2014, i.e. 25 quarters after the start of the recession.

On the contrary, private consumption dropped by only 1.6 % over three consecutive quarters in 2008-2009. The decline was thus less marked and shorter than for private investment. Households reduced their consumption mainly owing to precautionary savings in response to the great uncertainty regarding the impact of the GFC on employment and their financial situation. This was also reinforced by the deterioration of public finances as this carried the risk of higher taxation or limits on social benefits in the future. However, private consumption reached the pre-crisis peak faster, after only one year, and its growth has thereafter remained positive.

Consumption and investment behaved completely differently in the COVID-19 crisis. First, private investment fell sharply by 22.2 % over only two quarters. Remarkably, the recovery of private investment was faster and stronger than during the GFC. The pre-crisis level was nearly reached by mid-2021 and recent projections clearly point to a steady growth in this demand component over the next quarters and years. This suggests that the sharp fall in the spring of 2020 was mainly due to the mechanical effects of the lockdown, which also weighed on the construction industry and deliveries, but also that firms have generally kept investing throughout

Chart 3

Private consumption remained hampered by the successive epidemic waves while investment recovered smoother

(indices, quarterly data in volume adjusted for seasonal and calendar effects, pre-crisis peak = 100)

Private investment

Private consumption

GFC — COVID-19 — June 2021 projections
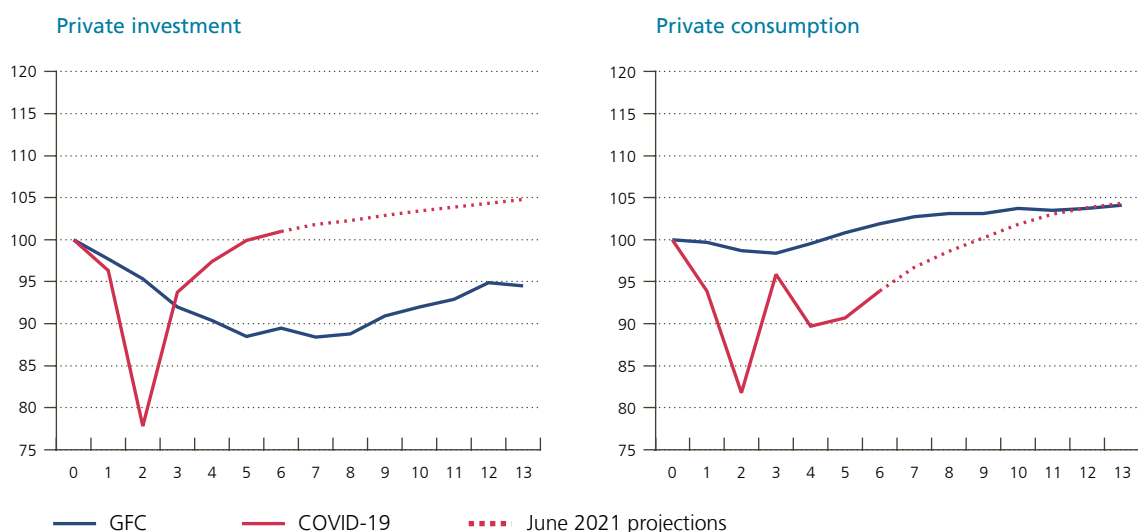
Sources: NAI, NBB.

Note: Pre-crisis peak (denoted by 0 on the horizontal axis) corresponds to 2008 Q2 for the GFC and to 2019 Q4 for the COVID-19 crisis.

the crisis, despite the huge uncertainty (NBB, 2021a). The ERMG surveys[1] indicated that large firms have shifted investment towards IT and digitisation (see section 2 of this article). Private consumption, on the other hand, plummeted by 18.2 % in the first half of 2020. Even though the initial shock also lasted only two quarters, the recovery of this demand component has been much more erratic. This is due to the successive relaxing and tightening of the lockdown measures since the start of the pandemic (notably including multiple restrictions/closures regarding non-food shops, contact jobs, bars and restaurants). According to the NBB's most recent projections, it may take until early 2022 for private consumption to reach its pre-crisis level.
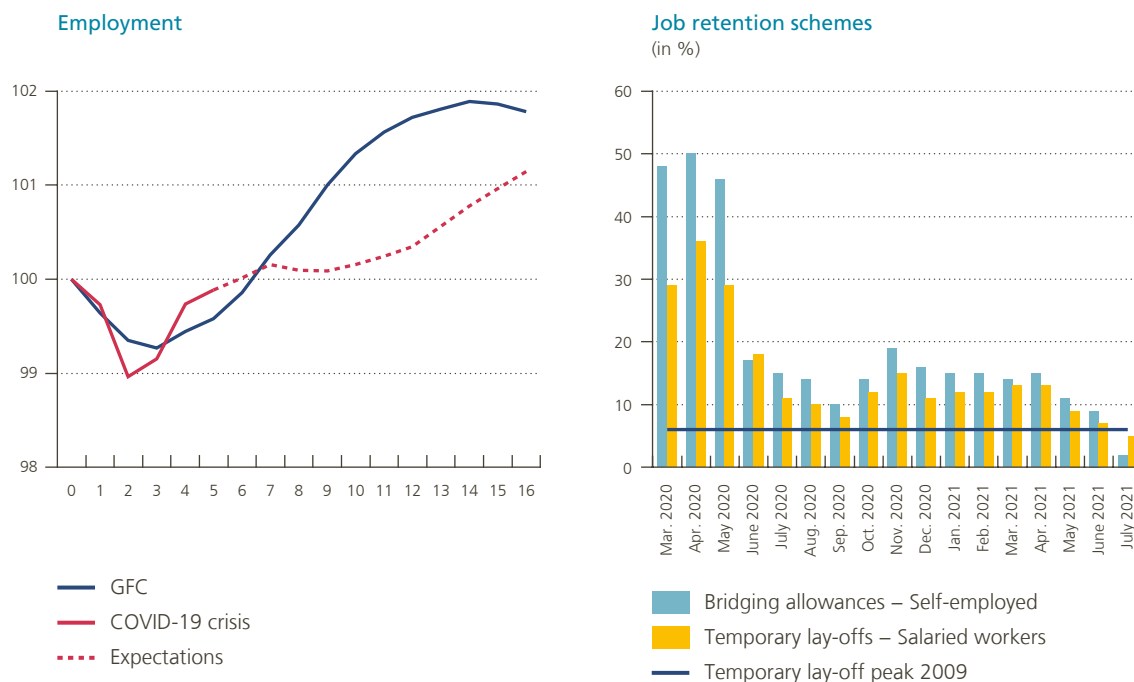
1.2 Limited impact on the labour market

Compared to the brutal shock to economic activity, the labour market has been particularly resilient. Since the beginning of the crisis, the temporary lay-off and bridging schemes have been simplified and extended to respond to the economic and social emergency faced by employees and self-employed people who were forced to stop working. In April 2020, almost 40 % of employees in the private sector, i.e. over one million people, received temporary unemployment benefits. This is five times higher than the peak observed during the GFC, when the maximum number of people receiving a temporary unemployment benefit was 230 000. On the self-employed side, around 400 000 workers have made use of the bridging right, i.e. one in two. In July 2021, the figures were almost back to normal with 148 000 temporarily laid-off employees and 15 500 self-employed people on bridging rights. Another resilience factor has been the widespread use of teleworking. Where feasible, it has enabled companies to continue to operate and workers to keep their jobs and incomes.

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1 The ERMG (Economic Risk Management Group) was set up by the Belgian government with the notable mission to monitor the impact of the coronavirus pandemic on businesses, economic sectors and the financial markets. As part of the ERMG's work, the NBB, the FEB/VBO and several federations representing enterprises and the self-employed (BECI, Boerenbond, NSZ, UCM, UNIZO, UWE and VOKA) have joined forces to periodically conduct large-scale surveys among firms established in Brussels, Wallonia and Flanders.

Chart 4

Limited impact on the labour market and widespread use of job retention schemes

(Employment: quarterly data of domestic employment, index[1], Job retention schemes: number of persons in the schemes as a percentage of the corresponding employed individuals, self-employed for bridging allowances and salaried workers for temporary lay-offs)

Employment

Job retention schemes
(in %)

Legend — Employment:
— GFC
— COVID-19 crisis
···· Expectations

Legend — Job retention schemes:
■ Bridging allowances – Self-employed
■ Temporary lay-offs – Salaried workers
— Temporary lay-off peak 2009

Sources: FPS Social Security, NAI, NEO, NBB.
1 t0 = 100 = pre-crisis level (2008Q4 for GFC and 2019Q4 for COVID-19).
Note: Expectations are based on NBB's June 2021 projections. At that time, the last available data was from 2021Q1. In the meantime, employment statistics for 2021Q2 are available (but not presented in the chart to avoid harmonisation issues) and show an even more positive pattern than expected with a quarter-on-quarter increase of 0.7 % against 0.1 % expected.

Temporary lay-offs, bridging rights, financial support for businesses, teleworking and the moratorium on bankruptcies all helped to contain job losses in 2020. According to national accounts data, in net terms, domestic employment has only contracted by 800 people over the past year. Although this balance seems particularly favourable given the scale of the shock, it should be remembered that, before the health crisis, the Belgian economy was recording net job creations of around 70 000 per year, which gives a more accurate measure of the impact on the labour market.

The resumption of economic growth and the continuation of a number of employment support measures implied a rise of 45 000 jobs in the first half of 2021 and this trend is expected to continue in the second half of the year. Taking into account the risk of bankruptcies catching up, employment growth is likely to be less dynamic in 2022 before picking up again in 2023.

1.3 A very asymmetric shock

The shock of the COVID-19 crisis exhibited a very asymmetrical pattern both when looking at firms and individuals, which distinguishes the current period from what is usually observed in times of economic crisis.

1.3.1 Certain industries/firms hit more than others

Another specific feature of the COVID-19 crisis compared to other recent recessions is that services have been more heavily affected than the manufacturing industry that is usually more sensitive to business cycles. Services in the broadest sense have been dealt the biggest blow because this kind of activity generally requires close contacts between people. Value added in the services sector in the second quarter of 2021 was in fact 3.3 % below its pre-crisis level. However, the impact of the pandemic also significantly differs across sub-sectors. For instance, value added in real estate activities, as well as in information and communication, has already exceeded the level prevailing before the start of the crisis while this was not necessarily the case in other sub-sectors. This is particularly true in wholesale and retail trade, transport, catering and accommodation, where value added in 2021Q2 was still 7.5 % below the level reached in 2019Q4. The most spectacular initial drop was recorded in the category "other service activities" which notably include the arts, entertainment and recreation sector that had to shut down several times and for very long periods. It is also worth noting that value added declined as well in the branch related to health and welfare, essentially owing to postponement of operations and consultations unconnected with COVID-19, so as to reserve sufficient capacity in intensive care units for patients infected with this new virus.

The construction industry was severely hit by the first wave of the epidemic, but it recovered strongly afterwards. Since then, the value added of this industry has ranked among the least hit in Belgium and already in the second quarter of 2021 it exceeded the level prevailing prior to the crisis. This industry is a good example of the aforementioned learning effects as it was strongly hampered by the measures taken at the beginning of the crisis, notably the social distancing between workers and thanks to the gained experience and the protocols to minimise the contamination risks, the construction sector has more easily dealt with the subsequent waves of the epidemic.

The manufacturing industry was also heavily affected by the first epidemic wave. This was mainly due to weak demand, both domestic and foreign. Disruptions in international supply chains, as well as difficulties in securing sufficient staff to continue operations, also contributed to the drop in activity. The recovery in the third quarter was pronounced and, unlike other main branches of activity, it did not stop or significantly slow down afterwards, so the value added in manufacturing industry in the second quarter of 2021 was almost 4 % higher than its pre-crisis level.

The economic and financial crisis in 2008-2009 first propagated through a slump in international trade and therefore displayed very different features from the COVID-19 crisis. This has directly hit the more export-oriented branches of activity which are mainly part of the manufacturing industry. Value added there had already declined by 2.9 % in 2008 before falling again in 2009 by 5.9 %. This is more pronounced than in the context of the COVID-19 pandemic. The services sector was also affected by the GFC but the impact was less direct and mainly took place through intermediate consumption links with industrial activities, so that value added only declined by 1 % in 2009 while it still rose by 1.7 % in 2008.

The shock was also asymmetric in terms of employment. Regarding salaried workers, net job losses have been concentrated in a few branches in 2020. Both in terms of the number of people affected and the percentage of employment, the losses were highest in the hospitality industry (–9.2 % of the workforce) and in administrative and support services (–5.9 % of employment, mainly agency workers). Contrary to what was observed during the GFC, job losses in the manufacturing industry were limited to 1.2 % in 2020, and there were even net job creations in the construction sector (+2 %). The arts, entertainment and recreation services rank among the worst-hit industries. With most major events being cancelled, and non-professional sports activities interrupted

Chart 5

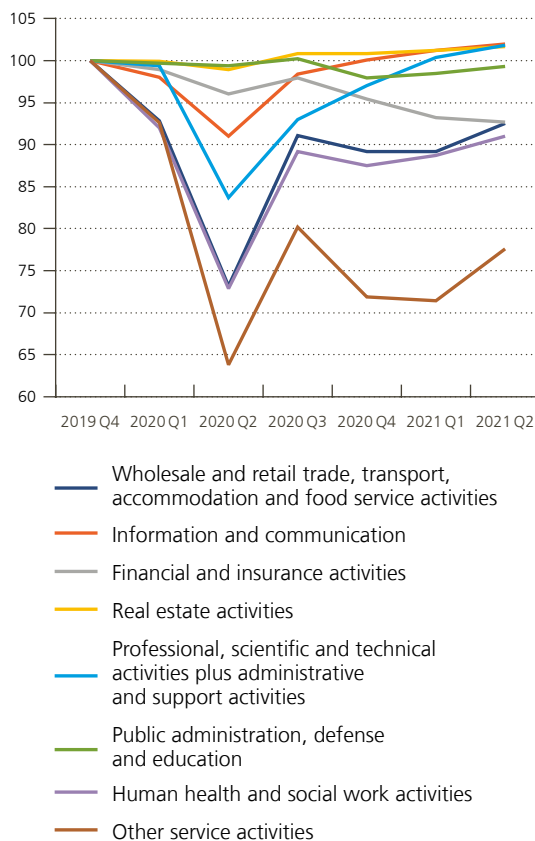**Services have been heavily affected even though industry is usually more sensitive to business cycles**

Value added in the Belgian economy

(annual % changes, data in volume)

	GFC			COVID-19	
	2008	2009	...	2020	2021[1]
Manufacturing industry	−2.9	−5.9		−4.1	12.5
Construction industry	1.1	−1.7		−4.7	13.0
Services	1.7	−1.0		−6.5	5.0
of which:					
Market services[2]	1.7	−1.4		−6.6	6.4
Non-market services[3]	1.8	−0.2		−6.1	1.6
p.m. GDP	*0.4*	*−2.0*		*−6.3*	*6.7*

Value added in services during the COVID-19 crisis

(indices 2019 Q4 = 100, data in volume adjusted
for seasonal and calendar effects)

— Wholesale and retail trade, transport, accommodation and food service activities
— Information and communication
— Financial and insurance activities
— Real estate activities
— Professional, scientific and technical activities plus administrative and support activities
— Public administration, defense and education
— Human health and social work activities
— Other service activities

Source: NAI.
1 First half of 2021.
2 Trade, transport and hospitality industry, information and communication, financial and insurance services, and real estate and business services.
3 General government and education, and other services, including the arts, entertainment and recreation sector.

during the two lockdowns, temporary lay-offs were running very high, involving 50 % of all employees. Although compared to the corresponding quarters of the previous year, employment did not fall in the first two quarters of 2020, national accounts figures indicate a 3 % loss of jobs in the third quarter and 6.5 % in the fourth quarter. The financial sector is special. Thanks to the extensive use of teleworking, temporary lay-offs have remained limited, but job losses have nevertheless continued to be recorded as a result of the restructuring process in place for several years now. In key sectors such as health and retail, the COVID-19 crisis has, on the contrary, implied an extra workload for the staff. Measures have been taken to facilitate the hiring or temporary replacement of absent workers.

People with a temporary or atypical employment contract were most notably confronted with job losses as these contracts are typically the first to be discontinued in crisis times and are more frequently used in the worst-hit industries. Based on Labour Force Survey (LFS) data for 2020, the number of people with a temporary employment contract declined by 7.8 %, against a decrease of 0.4 % for the number of permanent contracts.

Thanks to the introduction of the coronavirus bridging right and the various federal, regional and local support measures, employment of self-employed people unexpectedly increased by 14 000 in 2020. However, during the GFC and the subsequent euro area sovereign debt crisis – self-employment figures had already appeared not to be sensitive to cyclical fluctuations and did not show any net job losses. This is a Belgian specificity, since the euro area, on average, recorded a decrease in the number of self-employed people in 2020 and during the GFC. The structure of self-employment in Belgium explains this phenomenon : more self-employed are highly educated and in liberal or managerial professions. Note that, prior to the COVID-19 crisis, the upward trend observed in Belgium was already in contrast with the euro area average.

The COVID-19 impact has also differed by firm size. According to the ERMG surveys, the self-employed and smaller firms reported the most severe loss of turnover due to the pandemic. This is partly due to the composition of the hardest-hit branches of activity because the self-employed and smaller businesses tend to be more numerous in sectors such as catering and accommodation, non-medical contact professions, non-food retail, etc. However, the composition effect does not explain everything as, within a given industry, smaller firms tend to have suffered the largest revenue losses. This may suggest that smaller companies typically have more problems adjusting their operations to the lockdown measures. The self-employed and smaller businesses have also had to deal with greater liquidity issues. This is in sharp contrast with the GFC recession when larger firms tended to be greatly affected as the shock was transmitted through external demand and therefore mainly affected exporting companies and the industrial sector in the first instance[1].

1.3.2 The effect of the pandemic is also heterogenous among groups of people

Due to its asymmetric impact on industries, the COVID-19 crisis has more heavily affected certain groups of the population in terms of employment and income loss. While some were not impacted at all, owing to the possibility of working from home or being employed in a vital sector, others were confronted with temporary lay-offs, job losses, reduced activities or limited job opportunities, causing financial distress for certain households.

As young people (aged 15-24), the low- and middle-educated and people of non-EU origin are employed proportionally more through temporary or atypical employment contracts and are overrepresented in the worst-hit industries, they were the most affected by the consequences of the COVID-19 crisis on the labour market[2]. Not only were these profiles referred more often to the temporary lay-off scheme, but the share of people remaining in employment also contracted most sharply for these sub-populations in 2020. Some also faced more limited job opportunities than usual, and therefore their options for a transition from unemployment or inactivity in 2019 to employment in 2020 were reduced.

Young people are often the first to be laid off or are struggling to find a job during recessions. Temporary employment contracts are often used at the start of a career, which makes them more vulnerable to fluctuations in economic activity. Although young people are the first to be (re-)hired when the economy picks up, it should be noted that research has shown that an unemployment spell at the start of a career could potentially have long-term negative implications on employment or wage prospects at the individual level (see, for example, Gregg 2001, Gregg and Tominey 2005, Cockx and Picchio 2011, and Scarpetta *et al.* 2010). In addition, opportunities to work as a student, which primarily concerns this age group, were few and far between during the lockdowns. People younger than 30 were also strongly represented in the temporary lay-off scheme[3].

Low- and middle-educated citizens were hit harder due to their overrepresentation in the industries that are sensitive to the business cycle as well as in those affected by mandatory closures. Moreover, they often hold

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1 See also Dhyne and Duprez (2021) for a deep analysis of Belgian firms during the COVID-19 crisis.

2 For more information see CSE/HRW (2021).

3 Please note that up to and including 2020 people in the temporary lay-off scheme are considered to have remained in employment as their employment contract was not terminated. However, as of the first quarter of 2021, the long-term temporarily laid-off (over three months) are no longer considered by Statbel as being employed, although their employment contract has not been terminated. Depending on their answer whether they are actively looking for a new job, they are either considered as unemployed or inactive on the labour market.
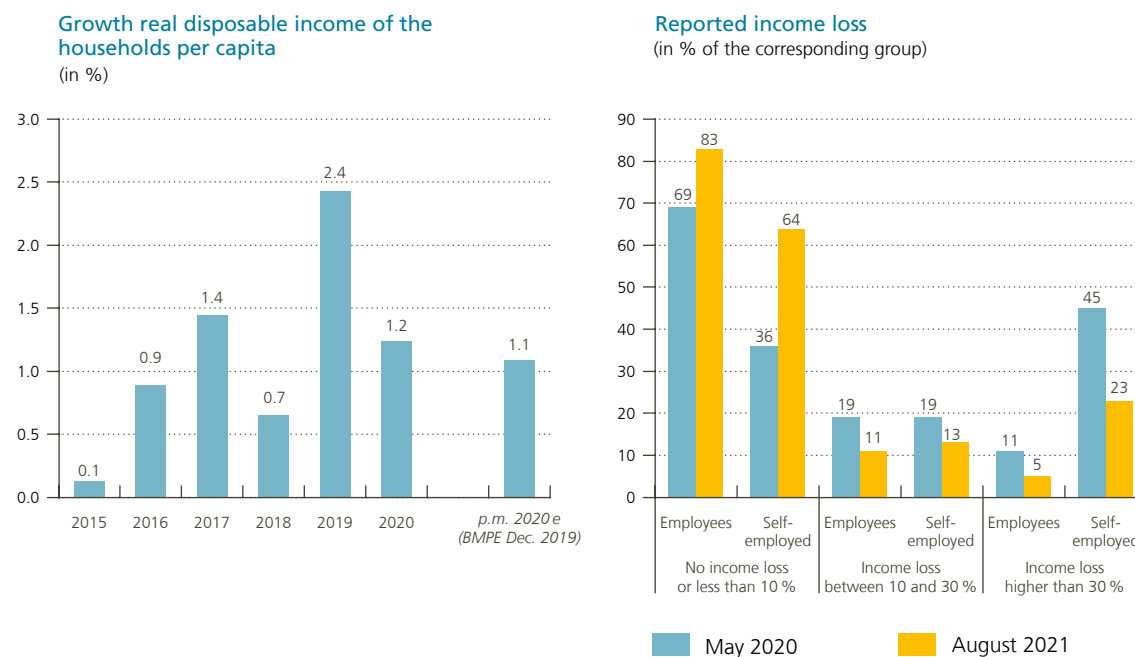
positions which are less compatible with working from home. Compared to the highly educated, both the low- and middle-educated categories have seen a larger increase in the number of people that have transitioned from employment to unemployment or inactivity in 2020. As they are more often placed in the temporary lay-off scheme, low-educated workers could have a higher risk of job loss once the support measures come to an end. The middle-educated population faces another challenge as a higher number of people who were unemployed or inactive remained so in 2020. It is a feature that is not very evident for the low-educated population and not at all noticeable for the higher-educated population. The COVID-19 crisis seems to have amplified the polarisation on the labour market, limiting employment opportunities for middle-educated workers and/or increasing competition from the higher-educated for hirings.

People born outside the EU not only suffered more job losses, but they also became to a larger extent inactive on the labour market in 2020 than people of Belgian origin. Not only did they face a fiercer competition than before the crisis for similar jobs as more people had to search for a (new) job, but they were also confronted with more obstacles in their job search. This was especially the case during lockdowns where public employment offices had to close physical locations, as a significant proportion do not master certain digital skills and/or a native language that are often required for using online job tools. As a consequence, the gap in terms of employment between people born in Belgium and non-EU foreign-born citizens increased in 2020 to 20.3 percentage points, against 18.6 pp in 2019.

It should be noted that these profiles have lower incomes, making them financially more vulnerable. Saks (2021) has shown that being young, low-educated or born outside the EU are characteristics that tend to have a negative effect on the size of the salary. On top of that, wages in the worst-hit industries are below the private sector average. Based on the Structure of Earnings Survey (SES), the average gross wage for a full-time employee working in the hospitality sector was 27 % lower than the private sector average in 2018.

Chart 6

The impact on household income has on average been limited, but some households are more badly affected

Growth real disposable income of the households per capita
(in %)

Reported income loss
(in % of the corresponding group)

■ May 2020   ■ August 2021

Sources: FPB, NAI, NBB, NBB Consumer Survey – Special Questions on COVID-19, Statbel.

Considering the brutal impact of the COVID-19 crisis, the 1.2 % growth in household real disposable income per capita in 2020 is remarkable. The trend is expected to continue in 2021, the Bank's June projections forecast an increase of real disposable income per capita of 0.9 %. The COVID-19 crisis did however influence the composition of the disposable income of households, the share of replacement incomes (net social transfers) rose considerably, compensating the loss of income from employment. The rise in household disposable income at aggregate level nevertheless concealed the vulnerability of some households. The COVID-19 related questions in the NBB's consumer survey show that while a large majority said they had encountered only a limited income loss or none at all, some respondents indicated that they have suffered a big income loss (> 30 %) on account of the pandemic. In August 2021, this was about 4 % of all respondents, which is about one-third of the proportion at the start of the crisis. Income loss appears to depend largely on employment status as the share of self-employed that report only a limited or no income loss (< 10 %) is considerably smaller than that of employees. The self-employed also tend to report larger income losses than employees, the share of self-employed that report an income loss higher than 30 % is 4.5 times larger than the share of employees that said they had suffered a severe income loss in August 2021. This difference was even more pronounced at the onset of the crisis.

Moreover, it is mainly those households which cannot accommodate a persistent income shock that suffered an income loss during the COVID-19 crisis. Temporary lay-offs, discontinuation of (temporary) employment or limited job opportunities were concentrated among groups with lower income levels and among those with limited saving buffers. Data from the Household Finance and Consumption Survey for 2017 (see also box 6, NBB 2021a) show that only 66 % of the households in the lowest income quintile can cover one month of their basic expenditure with their savings buffer, against 81 % for the entire population. This percentage drops to 50 % if the savings buffer must cover expenditure for three months and to 39 % if the income shock lasts six months. The same survey also indicates that households in which at least one person is employed in one of the worst-hit industries, such as hospitality or arts, entertainment and recreation services, tend to have lower saving buffers. An NBB survey carried out in May 2020 confirmed that income loss was concentrated in the least well-off households, who also cited smaller savings buffers.

Although several measures have been taken to limit the income shock such as increasing the replacement rate under the temporary lay-off scheme, (double) bridging rights for the self-employed or freezing the gradual tapering of unemployment benefits, even a limited income loss can become challenging for low-income households. On top of that, not all sub-populations confronted with an income loss are entitled to compensation from social security. Not all forms of temporary employment give access to social security, due to the nature of the contract (for example, student work) or because the time worked was too short to claim a social benefit, while some have lost their (additional) income through the informal economy.

The ongoing COVID-19 crisis has triggered such a financially distressing situation for some households that they have had to rely on welfare or other assistance channels. As is evidenced by the aforementioned NBB survey in May 2020, while mortgage payment holidays were more often requested by richer households, owing to the higher homeowner rate among them, the lowest-income households tended to be more likely to seek help from public social assistance centres (OCMW/CPAS). These centres have seen an increase in people demanding assistance, the number of persons benefiting from any kind of support increased significantly over the course of 2020. The number of persons on social assistance allowance was systematically higher in 2020 than before the outbreak of the pandemic. Based on survey data, this remained the case in the first half of 2021 although a decline of the (expected) number of recipients can be observed as of April 2021[1]. While the increase in the number of people receiving a social assistance allowance tended to be more gradual, demand for other forms of social assistance rose sharply over the second half of 2020; this was especially the case for debt mediation, food aid, other financial support and non-urgent medical assistance. This could indicate that the ongoing COVID-19 crisis has continued to affect some households while their (limited) financial reserves are running out, forcing them to seek supplementary assistance on top of their (lower) income (WG SIC, 2021). The overall

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1 Please note that this decline could be influenced by a seasonal effect as the number of recipients over the past few years has tended to decline or grow more slowly in the period between May and September.

Chart 7

Increased demand for (financial) support provided by social assistance centres

(number of recipients)

Number of persons that demanded
social welfare assistance

Detail of other forms of social assistance
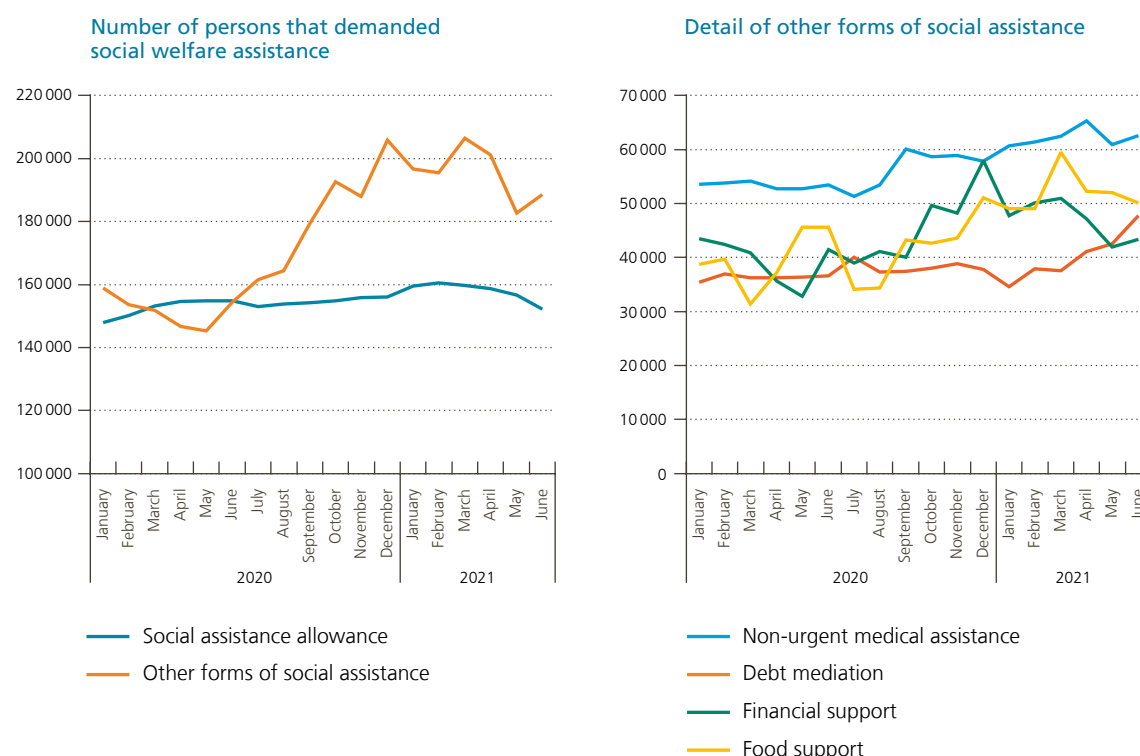
Source : "Enquête Sociale Impact Covid-19" PPS SI and Working Group Social Impact COVID-19.

demand for other forms of social assistance also exhibits a decline starting from spring 2021, with financial support returning to its pre-crisis level while other forms such as the demand for debt mediation or food aid continue to increase or remain at a significant higher level. Not only has aid provided by social welfare centres increased, but private initiatives that provide food aid such as food banks have also reported an increase in demand since the start of the crisis (see COVIVAT 2020a).

The higher demand for support could be an indication that the COVID-19 crisis has exacerbated the poverty risk. Since the social assistance allowance is lower than the poverty threshold (COVIVAT 2020b), a higher number of recipients or a longer period of dependency on this as well as other forms of social benefits (for example, unemployment benefits where the minimum is also below the poverty threshold) would therefore contribute to an increase in the poverty risk (Barrez and Van Dam, 2020).

Early estimates by Eurostat, based on EU-SILC[1], indicate that although the decrease in the median disposable income in Belgium, estimated to be in the interval between 0 and 4 %, was significant, global poverty risk in Belgium did not change significantly in 2020. However, the estimate for the risk of child poverty (for those younger than 18 years) exhibits a statistically significant increase, while a sharp decline is obtained in income poverty risk for those aged 65 and older, as pensioners were generally not affected financially by the COVID-19 crisis. Note that a change in median disposable income also affects the poverty threshold, which is defined as a percentage of median income.

1 European Union Statistics on Income and Living Conditions.

2. Which changes are likely to be persistent?

The COVID-19 pandemic has profoundly affected the economy, but its impact is not limited to the initial or short-term effects on activity, employment, or incomes. In *quantitative* terms, the initial negative shock should be largely offset by a strong rebound and economic scarring may turn out to be quite small in the end. As regards the labour market, the few job losses, the still strong labour demand, and the measures to support employment all served to limit the increase in unemployment to 17 500 people in 2020. The latest available data from the National Employment Office (NEO) show a return to a level equivalent to the average observed in 2019, but for those who are still under the temporary lay-off scheme, there is a risk of shifting to classical unemployment when the measure comes to an end. That said, data are pointing towards a rise in structural unemployment as the number of job-seekers unemployed for more than a year has risen significantly in 2021 (+20 000 compared to 2019). This is challenging since the share of long-term unemployed is already high in Belgium and the country does not perform well in terms of labour market reallocation, especially for this group.

Turning to firms, the number of bankruptcies so far has been very low (mostly thanks to the substantial government support, as well as the legal but also effective moratoria on bankruptcies) and the perceived bankruptcy risks have declined over time, as can be seen from the ERMG surveys. While those risks remain high in the worst-hit industries, such as hospitality, events, retail and travel, it should be stressed that the creation of new firms has been strong since the beginning of 2021[1]. Even if shifts between industries may materialise, the pandemic's overall quantitative impact on supply is expected to be limited.

However, the COVID-19 crisis has also brought some *qualitative* changes to the economy that are likely to have a more lasting impact and this section focuses on those changes. In a number of areas, the crisis has accelerated certain trends that were already discernible before the pandemic. We have clustered the main qualitative changes in three different markets in which non-financial corporations and households are involved: the market for goods and services (section 2.1), the market for factors of production (section 2.2), and the real estate market (section 2.3). In the first one, firms sell the result of their production to households and derive income from these operations. In the second one, households use their labour force or their capital and derive income from their activity and business operations. In the real estate market, both sectors are buying and selling but they are also renting and leasing. The analysis below reflects our current judgment, but some caution is clearly warranted in interpreting these ongoing developments.

2.1 Market for goods and services

During the COVID-19 crisis, the lockdown measures significantly hampered the functioning of markets for goods and services, mainly through closures and restricted access to physical shops. Industries directly hit by these measures, such as non-food retailing, the non-medical contact professions, the hospitality industry, arts, entertainment and recreation services, all suffered from severe disruptions in their activities. The COVID-19 crisis has had a strong negative impact on many firms' revenues, which has jeopardised their short-term liquidity position and, in turn, their financial health (Tielens, Piette and De Jonghe 2021).

Confronted with these restrictive measures, companies and households have adapted or had to adapt their behaviour and habits to the new situation. For firms, changing customer needs, in particular for remote interactions, have prompted (a diffusion of) innovation and increased investment in digitalisation. In the April 2021 ERMG survey, most of the companies questioned – especially the larger ones – reported a decline in

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1 The number of first registrations for VAT between February and May 2021 were higher than observed for that month on average between 2017 and 2019 and, despite a significant number of de-registrations, the population of VAT-registered units has increased (Statbel, August 2021).

Chart 8

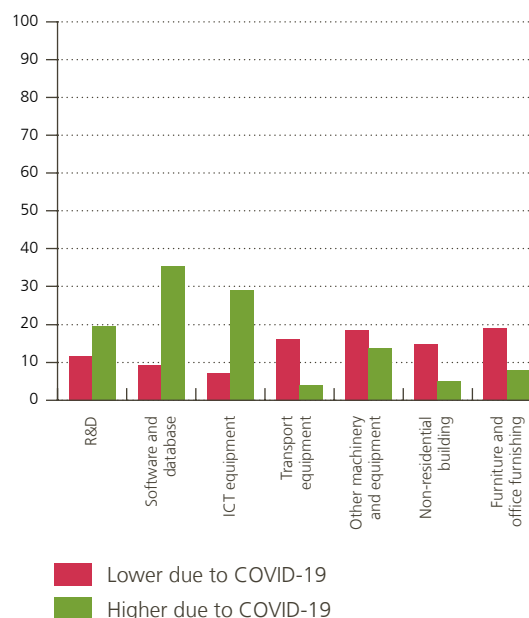**The COVID-19 crisis has accelerated the adoption of digital technologies by companies**

Do you expect the COVID-19 outbreak to
increase the use of digital technologies
in the long term?
(in % of responding firms, multiple categories are possible)
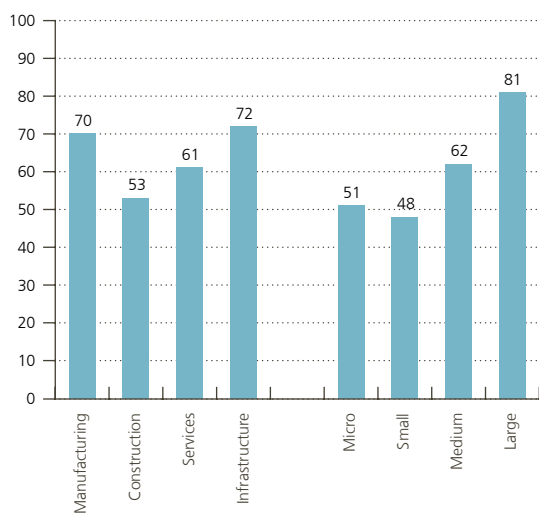
Large companies: investment categories that
are lower/higher in 2021 due to COVID-19
(in % of responding firms of more than 50 employees,
multiple categories are possible)

Left chart values (percentage):
- Manufacturing: 70
- Construction: 53
- Services: 61
- Infrastructure: 72
- Micro: 51
- Small: 48
- Medium: 62
- Large: 81

Right chart categories: R&D, Software and database, ICT equipment, Transport equipment, Other machinery and equipment, Non-residential building, Furniture and office furnishing

■ Lower due to COVID-19
■ Higher due to COVID-19

Source: European Investment Bank, ERMG survey.

investment in office buildings, furniture and transport equipment, while investment in ICT equipment, software and databases was found to be on the rise.

In the 2020 European Investment Bank (EIB) investment survey[1], two-thirds of Belgian companies questioned reported greater use of digital technologies as the main long-term impact of the COVID-19 crisis on their investment. This trend is common to the different industries, something which may suggest a broad-based acceleration of digitalisation. The need to work and interact with customers or colleagues remotely is likely to have been a trigger for the faster adoption of new digital technologies.

In that respect, many firms (particularly in retailing) have boosted their investment in e-commerce technologies during the COVID-19 crisis mainly because physical interactions intended to sell a product were forbidden, restricted or less used by some customers. The ERMG survey in June 2021 investigated the change in the (expected) use of various sales channels. In the retail industry, the use of online sales channels was said to be much greater than before the crisis, and this trend was expected to persist in the coming two years. The share of firms using mobile applications as a sales channel was expected to be five times as high as in the pre-crisis period, at 9 % of all firms within two years, while the use of online marketplaces was expected double to 12 % and the use of the firm's own online store and social media projected to increase by half to 60 %. Remarkably,

1 The EIBIS Survey is an annual survey on investment and investment finance conducted by the European Investment Bank among companies in the EU. In 2020, the survey was carried out between May and August.

the proportion of retailers selling through brick-and-mortar shops or sales representatives was expected to stay constant over the same period, suggesting that online channels would supplement rather than replace the more traditional ones.

The COVID-19 crisis has not only affected what companies produce and how they sell goods and services, but it has also affected the interactions between businesses. During the crisis, many firms have been faced with severe supply chain disruptions. In addition, the fast recovery has created a scarcity in a broad range of commodities and intermediate goods, while also putting pressure on transport links, thus exacerbating supply issues. In the May and June 2021 ERMG surveys, among firms that depend on supplies, half of the respondents stated that their supplies were moderately or seriously affected. Companies also reported that the supply issues led to a steep rise in input costs and might create a temporary loss of turnover and a loss of customers. Despite these wide-ranging issues, the surveyed companies seemed reluctant to consider reshoring or nearshoring their supply chains. They said they only planned to marginally change their suppliers' location over a two-year horizon. Typically, companies were turning more towards other mitigating strategies including higher inventories or more supplier redundancy.

Turning to the consumer side, the COVID-19 crisis on average has not had any significant impact on the *ability* of most households to spend, but it may have affected their *willingness* to spend for several expenditure categories and the composition of the expenditure basket could have changed. In this connection, the COVID-19 households survey conducted in July 2020 by the NBB showed that nearly nine out of ten respondents reported a change in their habits during the first lockdown directly linked to the impossibility of specific types of spending in traditional shops. Moreover, 77 % of them were intending to keep those new consumption habits in the aftermath of the crisis. A key change is the increased use of digital services for shopping, entertainment and work. Second, the survey respondents also mentioned a rising use of local purchases or a reduction in unnecessary purchases, which is more likely the result of a sea change in consumer preferences (endogenous for the consumer). The context has led some consumers to reassess their own behaviour and, in some cases, to consider alternative ways of spending. This trend may result in some rebalancing in the consumption basket – for instance in favour of local produce – but not necessarily in a reduction or an expansion of total spending.

2.2 Market for factors of production

In the market for factors of production, households are the factors owners and are in possession of their labour forces and capital means, while firms are buying those factors of production to produce. The flows of *capital* from households to non-financial corporations are a secondary issue in this section and the labour market therefore represents the key topic.
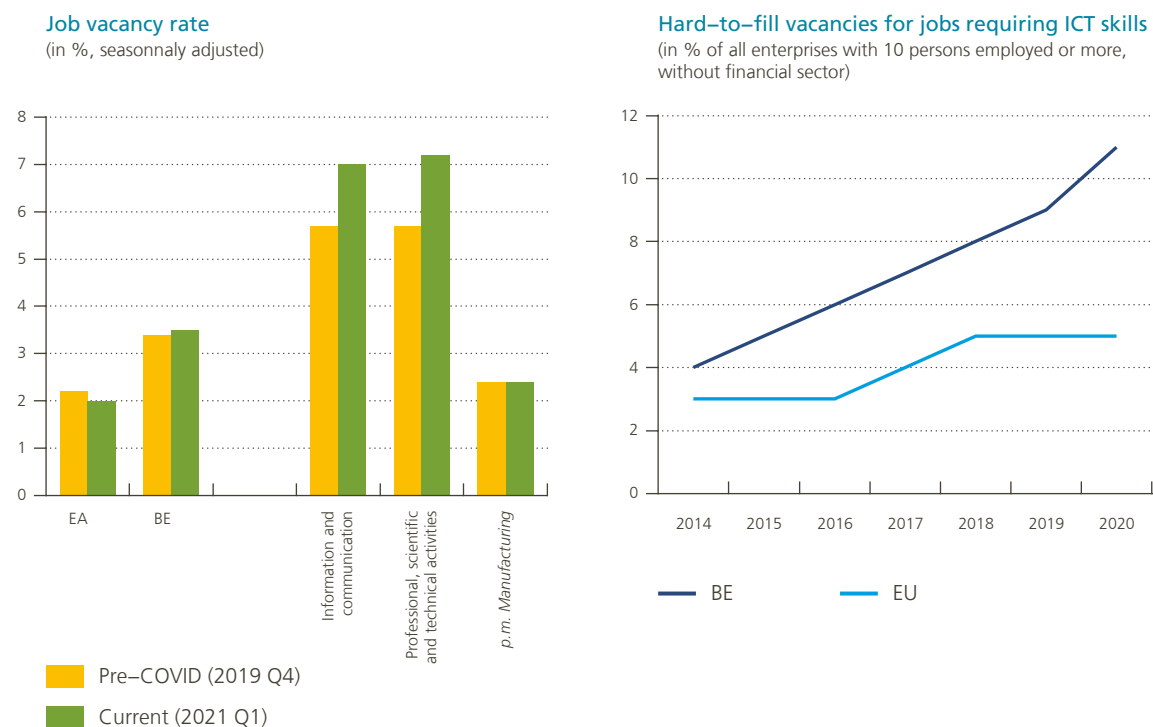
2.2.1 Labour shortages and digital skills

The COVID-19 crisis and the requirement to keep social distances has implied wide use of digital tools by firms and by workers. As a result, labour demand for jobs requiring ICT specialist skills rose from 14 % of all enterprises excluding the financial sector in 2019 to 18 % in 2020[1]. Among those firms, 6 out of 10 have difficulty in filling those vacancies. Those hard-to-fill vacancies in ICT arose in an already strained labour market. For several years, Belgium has had a higher vacancy rate[2] than the euro area average and only small variations were observed in 2020 in parallel with the lockdowns and less restrictive periods. In the first quarter of 2021, the latest available data, it again reached 3.5 %, which represents no less than 141 500 potential jobs. The resulting tensions are present in all three Regions, although they are highest in Flanders.

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1 Figures based on the Eurostat survey on ICT use and e-commerce in enterprises.
2 The job vacancy rate is defined as the share of the number of job vacancies among the total number of jobs (occupied and vacant).

Chart 9

An upward trend in demand for digital skills accentuated by the crisis and combined with labour market shortages

Job vacancy rate
(in %, seasonnaly adjusted)

Hard–to–fill vacancies for jobs requiring ICT skills
(in % of all enterprises with 10 persons employed or more, without financial sector)

Pre–COVID (2019 Q4)

Current (2021 Q1)

BE   EU

Acute labour shortages are therefore present in the Belgian labour market. Although some trends may have been accentuated by the health crisis, labour shortages often concern occupations that are structurally in short supply. More precisely, this applies to skilled occupations such as engineering and science, IT and communication, health care and education, but also less skilled ones such as craftsmen in food, transport and logistics, catering and trade, and construction[1]. The industries experiencing the greatest recruitment difficulties are professional, scientific and technical activities (with a job vacancy rate of 7.2 %), information and communication (7 %), administrative and support service activities (6.9 %) and construction (4.8 %).

On the supply side of the labour market, the COVID-19 crisis is bound to affect the Belgian working-age population (15-64 years), mostly through border and travel restrictions weighing on migration flows. The Federal Planning Bureau (FPB) estimates that the restrictive measures caused a 50 % drop in migration flows in 2020. This effect is more pronounced for immigrants from countries outside the EU, as restrictions for intra-European travel have been softer. For the coming years, the FPB assumes a controlled evolution of the epidemic in 2021 involving the implementation of the vaccination plan and measures to contain the epidemic. Based on these assumptions, in 2021, immigration will still be 25 % lower than in a scenario without COVID-19 and the working-age population would be reduced somewhat. The resumption of migratory flows and the expected recovery will boost growth of the working-age population, as immigrants are more likely to be younger.

1 Those occupations are defined by Regional Public Employment Services (Actiris, Forem, VDAB) every year, the full list is available on their website.

The COVID-19 crisis only had a limited impact on the labour participation rate, which dropped from 69 % in 2019 to 68.6 % in 2020. Before the pandemic, however, this rate was expected to rise to 69.9 % in 2020 according to the NBB's December 2019 projections. One should note that the over-55 age groups did not experience any fall in the participation rate, which suggests that policies aimed at limiting early exit from the labour market continue to bear fruit. The National Bank's current projections indicate a positive development for the coming years with the participation rate gradually returning to its 2019 level by 2023.

Meeting the growing demand for labour and tackling the reduced working-age population would imply the activation of people who are more likely to be inactive and/or who have more difficulty in finding a job. Those groups are composed of people of non-EU origin, people aged 55 or over and those aged between 15 and 24, as well as women, albeit to a lesser extent. Across the board, those who will find it most difficult to get a job will be those with a low level of education. Employment opportunities for the low-educated are diminishing, especially as they increasingly face competition from middle-educated workers in a context of employment polarisation. In this respect, the school drop-out rate is an indicator of the inflow of low-educated people (8.1 % of 18-24 year-olds in 2020). The situation has improved in recent years in all three Regions of the country, but the health crisis and the expansion of distance learning could increase the risk of delay or even drop-out. This is particularly true for children from disadvantaged families who have lacked access to technology and a supportive learning environment.

In view of the large number of high-skilled job opportunities, Belgium ranks relatively well regarding its share of highly- educated people (48.5 % of people aged from 25 to 34 had a tertiary education level in 2020, which is 6 percentage points higher than the European average). However, the orientation of academic studies is also a key determinant of the probability of being employed. Profiles requiring training in science, mathematics, statistics and information and communication technologies as well as in engineering, industry and construction are and will continue to be increasingly in demand in the future but too few students are involved in those fields.

As shown above, firms are demanding more and more digital skills and they are becoming essential for everyone, even in everyday life. Access to continuous training is the key to getting or updating digital skills and to facilitating the transition to emerging professions. Yet, according to the LFS, in 2019, less than one in ten people aged 25-64 had taken part in a training course in the four weeks prior to the survey. There has been no significant improvement over the last ten years in Belgium, and the COVID-19 crisis has even further reduced the share of people who have completed training courses in 2020. Workers with a low level of education, who could greatly benefit from training, particularly in terms of digital skills, are the least likely to use it.

2.2.2 A change in working arrangements

The year 2020 was also characterised by massive recourse to working from home. During the lockdowns, remote work was made compulsory or strongly recommended wherever possible, becoming the norm for many white-collar workers. This not only enabled companies to continue operating, but also meant that employees could keep their jobs and incomes. Over the years, LFS data have shown a slow upward trend in the share of people working from home. While the technology to work remotely and its adoption are not new, the very widespread aspect had never been experienced before 2020, when on average one in every three workers (salaried or self-employed) was on remote working. While monthly figures vary just as lockdowns and reopening of the economy, the latest data seem to indicate more persistence in the use of teleworking. By May 2021, 43 % of total employment was remote. This is also what emerges from the ERMG survey, where 36 % of surveyed firms indicated that they would use teleworking more intensively in the future.

Remote working was not feasible in all industries, but it was largely used in the information and communication sector, financial and insurance activities, education, professional, scientific and technical activities, but also in public administration, all industries where teleworking was already more widespread before the health crisis. Even within these industries, access to teleworking is not homogeneous for all workers. According to Statbel's LFS data, it is more widely available to highly-educated workers. In terms of occupations, directors, managers

Chart 10

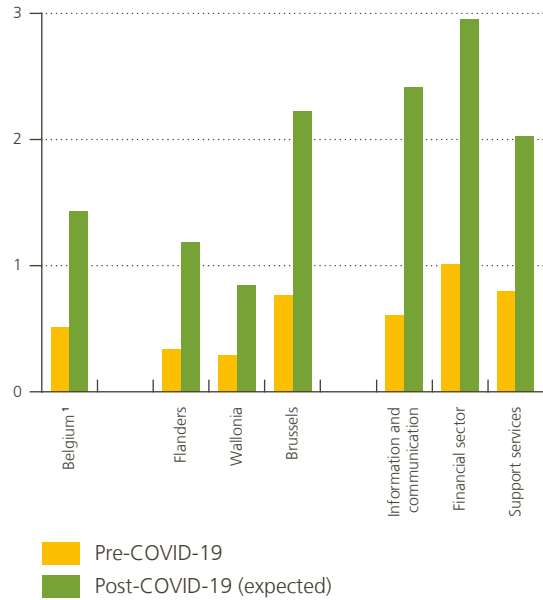**Intensive use of teleworking is likely to persist in the future**

Evolution of teleworking
(employed persons working from home sometimes or usually, in % of total employment)

- —— Annual data
- ····· Monthly data
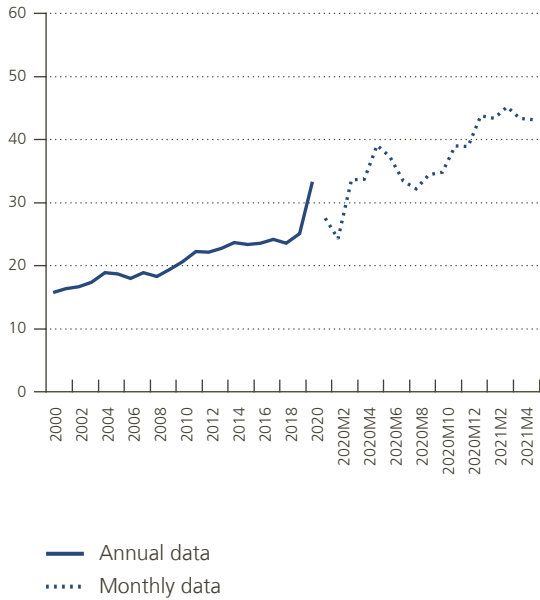
Average number of remote days per week
(weighted averages based on staff size, excluding self-employed)

- ▮ Pre-COVID-19
- ▮ Post-COVID-19 (expected)

Sources : Statbel, ERMG surveys.

and professionals made the most use of it : 62 % of them were teleworking, compared to less than 2 % of middle- and low-educated workers in elementary occupations.

Teleworking is generally considered to be advantageous for workers as it offers more flexibility and saves commuting time. As an illustration, the average distance travelled by commuters working in a Region other than their home Region is 20 km for Brussels workers, 30 km for Flemish workers and 43 km for Walloon workers[1]. It also eases mobility around congested areas and helps to rationalise the space available to companies. The Federal Planning Bureau[2] has carried out an analysis measuring the impact of a voluntary increase in teleworking. It shows that inbound commuting in the Brussels-Capital Region would decline by more than 23 %. Non-work trips would increase, but these would mainly be short trips around the home Region and during off-peak hours.

A large share of workers want to keep the teleworking option in the future and would prefer a more flexible working model. According to a survey conducted by McKinsey[3], 52 % of employees would favour a hybrid model, combining on-site and remote work (against 30 % before COVID-19) and 11 % want to work full-time from home (against 8 % before COVID-19). Moreover, almost 30 % of employees said they would be likely to change jobs if they had to go back fully on-site in the aftermath of the pandemic.

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1 See Duprez and Nautet (2019).
2 See Laine and Daubresse (2020).
3 Global employee survey made between Dec 2020 and Jan 2021 among 5 043 full-time employees who work in corporate or government settings around the world. See McKinsey (2021), "What employees are saying about the future of remote work" for more information.

However, some associate the upsurge in teleworking with concerns about isolation of the worker, who could lose social interaction and the sense of belonging to his/her company. Teleworking requires a dedicated place to work at home and some digital skills. For others, this type of organisation implies more stress related to the feeling of being perpetually reachable and available, especially in times of crisis[1,2]. Working from home could also be a source of discomfort (ergonomics, no clear separation between private and professional life, ambiguity of expectations, etc.). This study also shows that the productivity gains induced by teleworking are linked to its frequency and these gains are attenuated beyond two days per week or 50 % of working time. From the companies' perspective, it is associated with a perception of productivity loss: almost half of all company managers questioned in the December 2020 and January 2021 ERMG surveys considered that remote working is associated with a lower productivity. The most frequently cited reasons are the following: fewer ideas exchanged, less networking and lack of a suitable working environment at home. Aware of the difficulties of remote working, firms are opting for a hybrid model: partly on-site and partly remote. According to an ERMG survey in March 2021, the number of teleworked days for the entire private sector should increase for the average employee from 0.5 day a week before the crisis to 1.4 days a week after the crisis and the latter figure is expected to exceed 2 days in the Brussels-Capital Region and the industries more concerned by remote working.

Nevertheless, this type of hybrid model not only requires setting the number of days a week to be worked remotely but also determining what work is better done in physical presence than virtually, and vice versa; how will meetings work best, how to manage projects, are physical meetings required and how often; how communication/sharing experience between those who are on-site and those who are teleworking is ensured; is leadership communication as effective when workers are off-site; how to avoid a two-tier system in which people in the office are better evaluated and/or rewarded?[3]. Teleworking requires a dedicated legal context. Collective labour agreements are currently being negotiated between social partners across many industries and companies.

2.2.3 Well-being and labour participation

The COVID-19 crisis has also had a negative impact on the mental health of workers. The survey conducted by Sciensano between 2 and 9 April 2020 showed that 23 % of questioned adults suffered from anxiety and 20 % from depressive disorders. This compares with 11 % and 10 % respectively in the 2018 health survey.

This negative impact on mental health can have a prolonged effect on labour market availability. According to the National Institute for Health and Disability Insurance (RIZIV/INAMI), 78 330 people were suffering from depression and 33 402 from burnout in 2020. These figures have been steadily rising in recent years, with an acceleration in 2020 for burnout cases. The risk is also greater for people who were already in burnout before the health crisis and who have not been able to return to the office. Returning to work is likely to be even more difficult afterwards, which may increase the number of people on long-term disability.

In terms of well-being and labour market participation, women have been particularly affected by the crisis. Even though they are increasingly active in the labour market, they still bear the brunt of domestic tasks. In 2016, 89 % of women were taking care of children on a daily basis, compared to 75 % of men and it is still mostly women who reduce their working hours or take career breaks to look after children. The differences are even more pronounced for household chores, as 81 % of women are doing those tasks every day, while this is the case for only 33 % of men[4]. The health crisis has amplified the imbalance in the sharing of roles, as women have taken on most of the extra work, particularly in terms of childcare, due to the closure of schools and nurseries during the initial lockdown. From May to September, parents had the possibility of applying for

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1 Legislation was passed in 2018 to ensure that companies do not allow new technologies to interfere with rest and holiday time or the work-life balance.
2 See also Hansez, Taskin and Thisse (2021).
3 See McKinsey (2021) "It's time for leaders to get real about hybrid".
4 Eurostat data.

part-time 'corona' parental leave and this option was predominantly used by women (at 70 %). However, the short-term effect of reducing labour market participation could become persistent, due to the importance given to work experience. Mothers could have lower career and income prospects than they would have had without this restriction.

In September 2020, a study for the European Parliament[1] sounded a more positive note as it shows that men also devoted more time to household tasks and their children during the lockdown, although to a lesser extent than women. It is hoped that this wider role for fathers may lead to permanent changes in attitudes. The effect is likely to be greater in families where there has been a shift of burden from the woman to the man if, for example, the mother was working in an industry considered as essential during the crisis (e.g. health). Due to the composition of employment (with more women in contact jobs), there is a higher proportion of men among teleworkers. However, with the health crisis, women's share has increased significantly: in the first half of 2021, almost 46 % of women telework compared to 41 % of men (LFS data).

Remote working could also make it easier for women to reconcile career and parenting, by avoiding the need to opt for a reduction in working time. Nevertheless, it could also be a risk in that they will be perceived as being more available for domestic and childcare tasks. Within their households, it could actually exacerbate the imbalance in task-sharing. In the workplace, women may be perceived as being less committed to their work, with repercussions in terms of career and salary. Therefore, teleworking should not be considered as a substitute to accessible and affordable childcare and flexible working hours.

2.3 The real estate market

Finally, the behavioural changes brought about or accelerated by the COVID-19 crisis also have an impact on the real estate market. Again, the impact is asymmetric for residential and commercial real estate markets, as well as specific segments of these markets being affected differently.

Activity in the residential real estate market fell sharply owing to the pandemic and its consequences. Over the whole year 2020, the number of transactions on the secondary market fell by 18 % in comparison with the previous year. The lockdown measures directly affected real estate activity as they notably included restrictions on on-site visits, which obviously hampered the smooth functioning of the market. The decline in activity was also partially due to the significant tax reform that came into force in the Flemish Region on 1 January 2020 which scrapped tax deductibility of mortgage loans[2]. Early estimates regarding the first quarter of 2021 point to a very strong recovery in real estate activity, suggesting a return to normal after the unprecedented shock of the past year.

While activity was subdued, residential real estate prices rose by 5.8 % in 2020. This is the most buoyant growth recorded since 2010. However, prices in other European countries also surged, and even faster in the Netherlands (+7.6 %) and Germany (+ 7.8 %) for instance. In addition, the strong price increase may partly reflect pandemic-related composition effects. While the NBB price index for the residential real estate market corrects for shifts in broad dwelling types (houses, villas, apartments) and districts, it is not a hedonic price index: changes in key quality characteristics (exact location, size, construction or renovation year, presence of a garden, etc.) are not distinguished from 'pure' price growth.

There are indeed indications that the pandemic has affected demand for certain housing characteristics. Damen (2021) analysed the transactions concluded in the Flemish Region[3] by ERA estate agents and argues

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1 https://www.europarl.europa.eu/RegData/etudes/STUD/2020/658227/IPOL_STU(2020)658227_EN.pdf.
2 This tax reform generated anticipation effects at the end of 2019, with a significant increase in the number of transactions, as some households still wanted to benefit from the mortgage tax allowance and brought forward planned purchases.
3 The Flemish Region accounts for 62 % of all real estate transactions concluded in Belgium between 2010 and 2020.

that changing dwelling characteristics can partially explain the rise in house prices in 2020. First, the dwellings bought were on average 2 % larger than in 2019. That can reflect a change in people's preferences due to the lockdowns, not least because they are probably easier to get through when living in larger homes and the wider use of teleworking also requires more space to work at home. Second, flats with outdoor spaces have become more popular since they were on sale for a much shorter period on average than flats without such spaces, whereas it was the opposite in 2019. As an outdoor space makes an apartment more expensive, all other things equal, this is also likely to have pushed up prices. Third, prices of flats at the coast rose faster, possibly reflecting higher demand for second properties in Belgium at a time when it was harder to travel abroad for holidays. Finally, the health crisis did not lead to an exodus to rural and suburban areas in 2020 as price pressure was once again stronger in urban centres. According to real estate professionals, demand there was higher for houses with (larger) gardens, especially due to the pandemic and the related lockdowns.

All in all, the pandemic appears to have shifted demand towards more expensive dwellings. It is unlikely that these effects will continue to fuel price growth in the near future if this shift appears to be structural. However, the evolving standards (e.g. a larger dwelling to accommodate more work from home) may have made housing permanently more expensive. Households' preferences for more expensive housing are nevertheless limited by their ability to acquire it, particularly via bank credit.

The COVID-19 crisis has also affected the Belgian commercial real estate market. The large drop in stock market returns of Belgian real estate investment trusts (REITs) in March 2020 suggests that markets were anticipating a significant downward price correction for commercial real estate (NBB, 2021b), and definitely illustrated the considerable uncertainty that suddenly materialised at the earlier stage of the crisis. However, market expectations gradually picked up afterwards and returns have on average recently exceeded their pre-crisis levels.

Chart 11

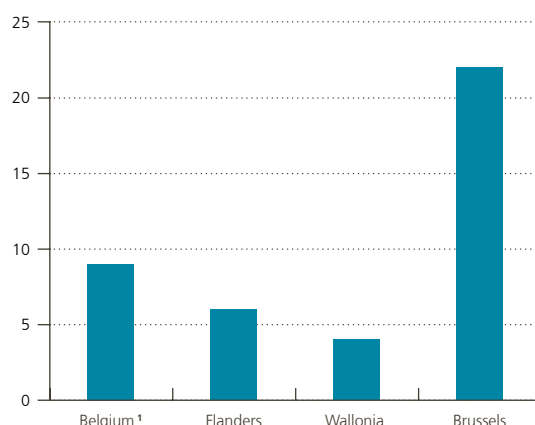**The COVID-19 crisis has had a qualitative impact on both the residential and commercial real estate markets**

House prices compared to other countries
(annual % changes)
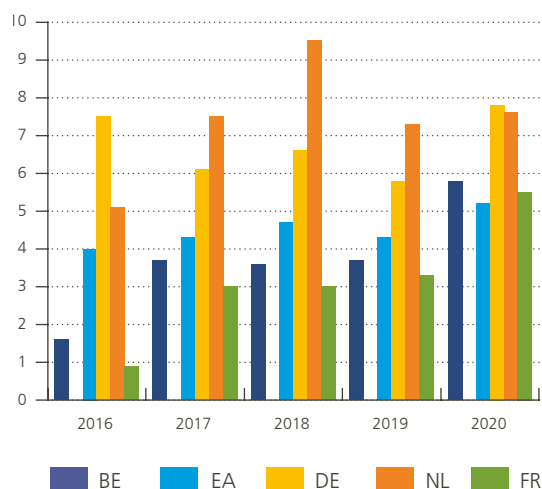
Reduction in office space per employee in the next five years compared to the pre-COVID-19 situation
(in %, weighted average based on staff size, excluding the self-employed)

Sources : OECD, ERMG surveys, NBB.
1 Average, weighted by the number of private sector employees in the industries.

In this case too, the pandemic effects turned out to be asymmetric and differed according to the sub-sector of the commercial real estate market. The markets for offices and retail spaces are still way below their pre-crisis level, while returns on industrial properties have bounced back rapidly and strongly.

The office market has undoubtedly been affected by the increase in working from home. The pandemic clearly acted as a catalyst in this particular case in the sense that there was already an underlying trend reducing the office space needed in companies to host staff (Manceaux and Van Sante, 2011). In the March 2021 ERMG survey, Belgian firms said they expected a 9 % reduction on average in their office space per employee in the coming five years compared to the pre-crisis situation. The reported decline was clearly linked to remote working : it was on average higher for the industries that planned to make greater use of working from home in the near future, such as banking and insurance, support services, as well as information and communication. The expected drop was clearly more pronounced in the Brussels-Capital Region (–22 %). Moreover, public institutions have also announced their intention to significantly reduce their average office space.

The retail industry has been hit hard by the containment measures. The restrictions on access to most non-food shops put huge pressure on the retail space market, especially through the growing prospect of rent arrears and loss of rental income for property owners. Moreover, as previously mentioned, the crisis has also accelerated the use of e-commerce. While this is not likely to replace traditional brick-and-mortar shops, demand for physical store spaces is not expected to rise.

On the other hand, the logistics industry has benefited from various consequences of the COVID-19 crisis, i.e. the boost in e-commerce, additional demand for storage space from the food and pharmaceutical sectors, and higher stocks as a mitigation strategy to deal with disruptions in global supply channels (NBB, 2021b).

Conclusion

The COVID-19 crisis has affected the daily lives of almost all households and has had an initially immense impact on the Belgian economy (as nearly everywhere else in the world). Compared to previous crises, it is a unique event due to the exogenous nature and the size of the shock, as well as to the number of governmental measures taken to support the economy.

On the quantitative level, the shock should however be absorbed much more rapidly than initially feared : the Belgian economy has seen a solid recovery since last summer. This was mostly due to the strong resilience of private investment and learning effects that reduced the impact of the new lockdown measures that were introduced after the summer of 2020. The labour market has been hardly affected by the crisis : job losses have been very limited.

Despite the short-lived macroeconomic impact and the limited shock to the labour market, one should keep in mind that the changes were very asymmetric. On the one hand, at the sectoral level, companies specialised in services as well as smaller companies have endured greater financial difficulties. On the other hand, at the household level, even if the average risk of poverty has not risen significantly, recourse to social assistance other than financial allowances (such as debt mediation or food aid) has increased sharply since the onset of the crisis. The financial impact of the COVID-19 crisis has remained limited for most firms and households but has been devastating for a very small share of them.

Society is (or will be) gradually waking up from the COVID-19 crisis and its "induced-coma", but segments of economic life could be significantly and permanently transformed by the crisis. Mostly, these are qualitative aspects of the economy and the crisis has acted as a catalyst or an accelerator of a pre-existing trend. Digitalisation, for example, has been given an unprecedented boost, both in terms of the widespread implementation of

teleworking and the greater use of online sales channels. Many workers have become accustomed to working from home, which offers the possibility of a better work-life balance but also opens the door to increased psycho-social risks. These developments have led to a reorientation of the corporate investment and have further boosted demand for IT-specialised worker profiles. In the real estate market, demand has undergone a qualitative change, with private individuals now favouring larger properties or properties with an outdoor space and companies reducing their demand for office space.

Those qualitative changes have been very sudden, and the political or legal framework has not (yet) had time to tame this new reality. In some areas, policies should evolve accordingly : e-commerce, working from home or a hybrid model, town planning (fewer offices), social security for new types of work, education (STEM, digital skills), labour market reforms, etc. In each of the latter areas, the rules of the game may be up for a rethink, considering that there will not necessarily be a return to the past way of doing business and that "post-COVID" economic agents might not behave in the same way as before.

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The issuance of debt securities by Belgian non-financial corporations

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Introduction

Against the backdrop of the low interest rate environment that followed the global financial crisis, corporate debt has been expanding in Belgium like in other euro area countries. Belgian non-financial corporations' (or NFCs) consolidated debt (excluding intra-group loans) rose from 51 % of GDP in 2010, to 67.2 % in 2020. This increase has been partly driven by debt securities, such as money market instruments, medium-term notes, and corporate bonds, issued mainly by large companies. Debt securities now account for 21.5 % of that debt. Whilst developments in bank lending are being closely monitored by prudential authorities, less attention has been devoted so far to the drivers of debt security issuance and the risks associated with these liabilities. Furthermore, favourable financing conditions may lead some firms with weaker balance sheets to increase their leverage through bond issues[1]. While the related risks are alleviated by the corporate sector's current low debt servicing burden and by its overall strong liquidity position, some bond issuers might face difficulties in servicing their debt in the event of a business cycle downturn and/or a sudden rise in interest rates.

The goal of this article is twofold. First, it aims to identify and profile Belgian firms that issue debt securities, with a focus on their main characteristics in terms of financial health. For the sake of conciseness and to conform with the literature, we refer to Belgian corporate debt security issuers simply as "bond issuers"[2]. Second, it investigates possible risks linked to debt security financing. The literature generally concurs that most bond issuers are financially solid entities with, on average, a stronger balance sheet position than firms without bond market access. However, some studies have pointed out that access to bond markets might encourage debt-loading and heightened leverage. For this reason, negative shocks to fragile bond-issuing corporations could be particularly threatening for some firms and for financial stability in general.

This article is structured as follows. The first section reviews the developments in the issuance of debt securities by Belgian firms over the last decade. We link changes in the aggregate amount of debt outstanding to recent macrofinancial developments. In the second section, we look at the population of Belgian bond issuers, describe their characteristics, and discuss their importance for the Belgian economy. In section three, we identify

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a relatively small pocket of risk among Belgian bond issuers, mainly borne by entities that do not belong to the traditional financial system, such as investment funds. While most Belgian bond issuers enjoy comfortable levels of debt sustainability, it appears that a few of them may potentially face a situation of financial distress. In section four, we suggest that a firm can find itself in a situation of weak debt sustainability for two reasons: low profitability or leveraging strategies. These firms could face difficulties in the event of an increase in funding costs or a drop in corporate revenues. In addition, we also highlight some mitigating factors limiting the risks faced by most Belgian bond issuers. The last section concludes.

1. Recent developments in Belgian corporate debt issuance

Issuance of debt securities by Belgian non-financial corporations has grown over the past decade. The upper-left panel of chart 1 shows that their total stock of debt securities, as recorded in the financial accounts statistics, expanded from € 27 billion in 2010 to € 65 billion in 2020. The trend in Belgium is comparable to the one observed in the euro area taken as a whole. Indeed, the aggregate Belgian and euro-area-wide NFC debt securities-to-GDP ratio rose by, respectively, 7 and 5 percentage points, settling at 14 and 15 % of GDP by the end of 2020.

To shed additional light on the developments of corporate debt in Belgium, we exploit a novel granular dataset on debt securities issued by Belgian NFCs from the NBB's Securities Settlement System (NBB-SSS)[1,2]. As can be seen from the upper right-hand panel of chart 1, the NBB-SSS data covers a large portion of the total stock of debt securities issued by Belgian NFCs. Compared to financial accounts statistics, NBB-SSS data allows to explore additional granular information of corporate debt at the security level, such as the type of instrument chosen by issuers, the cost of debt, and a more detailed maturity breakdown. Between 2010 and 2020, the NBB-SSS data included information on 11 615 debt securities issued by 124 Belgian NFCs. Using this data, we can appreciate that the increase in corporate debt securities is especially pronounced in the 5 to 10 and 10 to 20 years segments (upper right panel of chart 1).

During the global financial crisis (GFC) in 2008 and 2009, bond issuers in the euro area as well as in the United States substituted bank loans for debt securities. Stress in the banking sector prompted banks to cut their credit supply. Bond issuers responded by turning to debt securities, while many bank-dependent borrowers faced difficulties in getting access to credit (Adrian, Colla and Shin, 2013; Becker and Ivashina, 2014; Crouzet, 2018; De Fiore and Uhlig, 2015; Altavilla, Darracq Pariès and Nicoletti, 2019). In the aftermath of the GFC, tighter macroprudential regulations were introduced to boost the banking sector's resilience. To comply with higher capital requirements (imposed by the Basel III reform), banks had to adjust their credit supply, especially in the transition phase towards higher capital ratios (BCBS, 2019, 2021). This decline in bank credit supply might also have caused substitution effects in favour of corporate debt securities. Going forward, we note that the long-run effect of Basel III on the bond and bank loan mix could be ambiguous, as better capitalised banks should be able to provide more stability in credit supply, making bank loans more attractive.

The low/negative interest rate environment has also contributed to the build-up of NFC debt. With the onset of the GFC, central banks around the world lowered their policy rates and extended their toolkits to unconventional monetary policy measures. Combined with the downward trend in the natural rate of interest, expansionary monetary policies resulted in a decline in interest rates to historically low levels. In June 2014, when the euro area economy was still recovering from the European sovereign debt crisis, the ECB introduced its negative

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1 For sample construction, we considered NFCs following the S.11 classification by Belgium's National Accounts Institute.

2 The NBB-SSS is a clearing system that enables the processing of transactions on both the primary market (on which new securities are issued) and the secondary market (on which financial instruments already in circulation are exchanged). Data from the NBB-SSS is available back to 2010, hence the period of study used for this article.
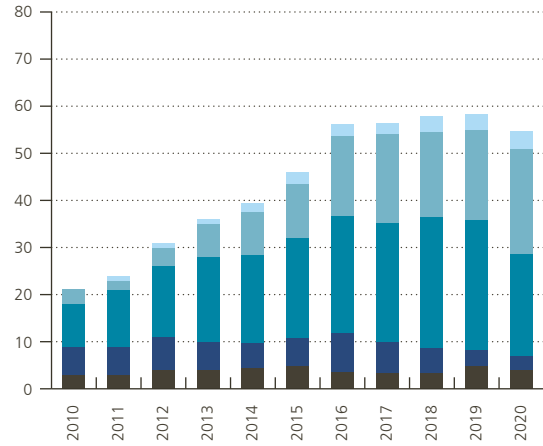
Chart 1

Outstanding amount of debt securities issued by Belgian non-financial corporations

Short- and long-term debt securities
(financial accounts statistics)
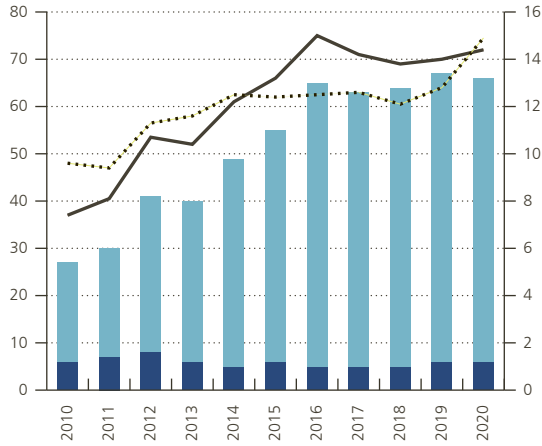
- ■ Short-term debt securities [1] (€ billion, lhs)
- ■ Long-term debt securities (€ billion, lhs)
- — Total (% GDP, rhs)
- ···· *p.m. Euro area total (% GDP, rhs)*

Breakdown by instrument and maturity
(NBB-SSS data, € billion)

- ■ Up to 1 year } Money market instruments
- ■ 1 to 5 years
- ■ 5 to 10 years } Bonds and medium-term notes
- ■ 10 to 20 years
- ■ More than 20 years

Types of rates
(NBB-SSS data)
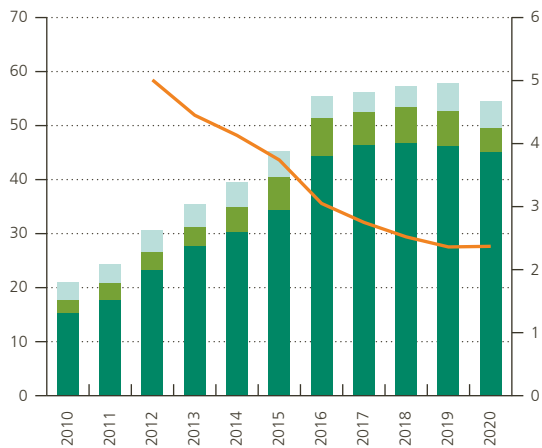
- ■ Fixed rate (€ billion, lhs)
- ■ Variable rate (€ billion, lhs)
- ■ Zero coupon (€ billion, lhs)
- — Average interest rate on fixed-rate securities [2] (%, rhs)

Eurosystem eligibility
(NBB-SSS data, € billion)
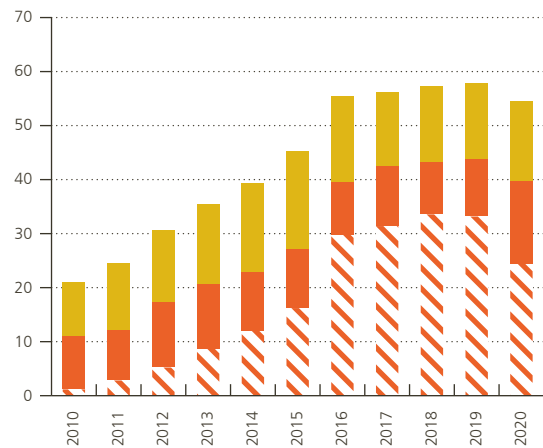
- ■ Eligible as collateral for Eurosystem credit operations
- ▨ of which eligible in the context of the corporate sector purchase programme (CSPP)
- ■ Not eligible

Sources: ECB, Eurostat, NBB.
1 Debt securities with an original maturity of one year or less or repayable on demand.
2 Weighted average using outstanding amounts as a weighting basis.

interest rate policy by lowering its deposit facility rate below zero. The low/negative interest rate environment triggered search-for-yield effects which contributed to the rise in (risky) corporate debt, especially in emerging market economies (Abraham, Cortina and Schmukler, 2020). In Belgium, we document a preference of issuers for fixed interest rates against the backdrop of the low interest rate environment (chart 1, lower left-hand panel). Moreover, as can be noted from the upper right-hand panel of chart 1, some Belgian NFCs were able to lock in low interest rates by issuing fixed-rate long-term debt securities.

Central banks' asset purchases have also induced portfolio rebalancing effects in favour of (riskier) corporate debt securities. These asset purchases imply that a significant fraction of (sovereign) bonds are held by central banks, reducing the stock of bonds available to private investors, and prompting them to raise their demand for corporate debt securities. Moreover, in March 2016, the ECB decided to implement a corporate sector purchase programme (CSPP) directly targeting investment-grade euro-denominated debt securities issued by NFCs established in the euro area. The CSPP caused a drop in yields – for both eligible and non-eligible issuers – and an increase in corporate bond issuance (see Zaghini, 2020; Pegoraro and Montagna, 2021; and the references therein). The lower right-hand panel of chart 1 shows that, since the start of the programme, there has been a marked increase in the outstanding amount of CSPP-eligible debt securities issued by a limited number of Belgian NFCs[1].

Finally, it is important to note that the trends described above are not specific to Belgium. As just explained, these developments were driven by global macrofinancial factors, which had a similar impact on the NFCs debt security market in the euro area (ECB, 2019) and in the rest of the world (Çelik, Demirtaş and Isaksson, 2019; 2020). However, specifically Belgian factors are also at play. For example, the marked increase in Belgian NFC debt securities in 2016 was mainly driven by an issuance by AB Inbev, one of the world's largest brewery companies, to raise funds on the capital market to finance an acquisition.

2. Which firms issue debt securities?

In this section, we use the granular NBB-SSS securities data to identify Belgian firms that make use of debt security financing and evaluate their importance for the Belgian economy. To explore their characteristics, we aggregated the NBB-SSS data at individual firm level and matched it with firm-level information from the annual accounts of companies from the Belgian Central Balance Sheet Office. As a means of comparison for bond issuers, we kept data on the universe of Belgian NFCs. Additionally, to account for firms' access to bank lending, we integrated the matched dataset with data from the Central Corporate Credit Register. Table 1 presents a summary breakdown of the dataset for 2019.

As can be noted from table 1, bond-issuing firms account for only a residual fraction of the total number of Belgian firms. Most bond issuers in our dataset are large firms, as they account for a high share of Belgian NFCs' total employment and total fixed assets. The second column of table 1 shows summary statistics for firms that do not issue bonds but that rely on bank credit to finance their operations. Bank-dependent firms represent a much larger share of small and medium-sized enterprises (SME). The final part of table 1 shows that virtually all bond issuers in our sample are part of a Belgian or multinational group. This means that funds collected through the issuance of debt securities by these corporations established in Belgium are not necessarily used to finance domestic activities.

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1 At the end of 2020, the Eurosystem held securities issued by 13 different Belgian companies within the framework of the CSPP. Most of them are classified as NFCs according to the methodology followed by Belgium's National Accounts Institute.

Table 1

Share of firms issuing debt securities in the Belgian economy

(data for 2019)

	Firms issuing debt securities	Firms borrowing from banks	Other firms
Number of firms	96	313 720	116 254
of which: large enterprises [1]	47	1 229	452
Share (%) in total...			
number of firms	0.0	72.9	27.0
employment	6.4	71.6	21.9
tangible fixed assets	11.3	69.9	18.8
intangible fixed assets	17.6	60.5	21.9
financial fixed assets	31.5	39.0	29.4
used bank credit [2]	5.7	94.2	0.1
authorised bank credit [2]	10.1	89.9	0.0
Percentage of firms...			
with a balance sheet total equal to or greater than € 100 million	87.5	0.3	0.3
part of a group	94.8	19.5	17.2
in difficulty [3]	7.3	16.3	20.0
whose total debt rose over the last five years, of which...	59.4	38.0	28.0
increased both their debt securities and their bank credits	21.9	–	–
increased their debt securities and decreased their bank credits	19.8	–	–
decreased their debt securities and increased their bank credits	11.5	–	–
decreased both their debt securities and bank credits	6.3	–	–

Source: NBB.

1 According to the definition set out by the European Commission (Recommendation 2003/361/EC), an enterprise is considered large if it employs at least 250 people or if its turnover is greater than € 50 million or if its balance sheet total exceeds € 43 million.

2 Only loans granted by resident banks to resident non-financial corporations are considered.

3 A firm is considered to be "in difficulty" if it meets at least one of the three following conditions: (1) its accumulated losses (minus the reserves) exceed half of its subscribed share capital (including share premium and revaluation surpluses) unless it is an SME aged less than 3 years, (2) it has defaulted on a bank loan or (3) it is a large enterprise whose debt-to-equity ratio has been greater than 7.5 and whose interest-coverage ratio (defined as EBITDA divided by ordinary financial charges) has been below 1 for the past two years. This definition is an adaptation, devised under the constraint of data availability, of that of the "undertaking in difficulty" as set out by European Commission Regulation No. 651/2014.

An initial overview of the data suggests that bond issuers are healthier than firms relying on bank credit. In 2019, about 16.3 % of bank-dependent firms could be categorised as "in difficulty" [1]. In contrast, during the same year, only 7.3 % of bond issuers were in a similar situation.

The institutional design of the public debt market explains why larger firms are more likely to issue debt securities. Producing the information required to issue debt securities is complex and implies substantial fixed costs. Big firms are relatively more efficient at producing this information (Fama, 1985; Nakamura, 1993) and can exploit economies of scales associated with their larger financing needs (Krishnaswami *et al.*, 1999). Moreover, debt securities issued in large lots are more liquid and can enjoy the benefits of a lower liquidity premium. In contrast, as documented in the European Commission's report on the European corporate bond market, SMEs often lack

1 We follow the European Commission's definition to classify undertakings in difficulty.

the legal, tax and financial expertise or knowledge of the bond market. The positive correlation between firm size and debt security issuance is well documented in the empirical literature (see Kale and Meneghetti (2011) for an extensive review of the literature).

Agency problems between lenders and borrowers explain why safer borrowers are more likely to issue debt securities, while relatively riskier firms use more bank loans. Theory predicts that firms perceived as safe – with good reputation, tangible assets pledged as collateral, and well-capitalised – can access the debt security markets (Diamond, 1991; Holmstrom and Tirole, 1997). For other firms, lenders might find it difficult to assess their ability to repay a loan (adverse selection problem) and to ensure that they do not engage in activities that could be detrimental to debtholders (moral hazard problem). Banks mitigate these problems by engaging in screening and monitoring activities (Diamond, 1984; Repullo and Suarez, 2000). By pooling investor resources, banks build expertise and avoid any duplication of effort and associated free-riding problems in the screening and monitoring processes. As informed lenders, banks are thus more likely to finance viable projects and to prevent opportunistic behaviour by borrowers that might otherwise harm creditors. After a loan is granted, they are also more likely to make the right renegotiation decision to avoid liquidation of potentially viable firms in times of temporary distress (Berlin and Mester, 1992). In this context, theory predicts that riskier borrowers who require screening and monitoring or value the option to renegotiate loans in time of distress should opt for bank loans (Bolton and Freixas, 2000). The empirical literature tends to back those predictions. Proxies for borrower quality, such as profitability and share of fixed assets, tend to correlate with debt security issues (Houston and James, 1996; Johnson, 1997; Denis and Mihov, 2003).

Table 1 also shows that bond issuers have a large share in authorised credit. Of the € 178 billion of total credit authorised in 2019 by resident banks to resident NFCs, 10.1 % was assigned to bond-issuing firms. The share of credit that is used by these corporations is substantially lower than that used by bank-dependent firms. Overall, thanks to additional credit lines from banks, Belgian bond issuers can count on diversified sources of funding.

Particularly after the recent institution of central bank asset purchase programmes, part of the literature has focused on whether NFCs with access to bond markets substitute bank financing for debt security financing (Betz *et al.*, 2019). Table 1 shows that, between 2014 and 2019, about 22 % of bond issuers have increased their financial debt by relying on a mix of bank loans and debt securities. Over the same five-year period, a similar share (20 %) of issuers has increased their debt securities and decreased their bank credits, whereas only 12 % have favoured bank loans over bonds. Among those increasing their financial debt, five firms were issuing bonds eligible for the CSPP. All these five issuers have increased their reliance on bond financing and reduced their bank credits. This is in line with the findings of De Santis *et al.* (2018), who document the substitution effect for CSPP-eligible companies.

3. Are there pockets of risk among bond issuers?

Although there is consensus in the above-mentioned literature that bond issuers are safer than firms that do not issue bonds, some studies have found that less capitalised (i.e. more leveraged) firms tend to favour debt security financing over bank credit[1]. For example, Faulkender and Petersen (2006) find that US firms with access to bond markets have a statistically and economically higher leverage ratio, even after controlling for other firm characteristics, such as size and riskiness, that could influence demand for debt. They conclude that bond market access eases firms' financial constraints, which might otherwise limit leverage.

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1 This is in line with the stylised fact that size is also one of the most robust determinants of leverage (Frank and Goyal, 2009), indicating that large firms might increase their leverage by exploiting their better access to bond markets.

Chart 2

Financial health of firms issuing debt securities vs other borrowing firms : distributions of a selection of financial ratios

(indicators calculated for firms with a balance sheet total equal or larger than € 100 million, data for 2019)
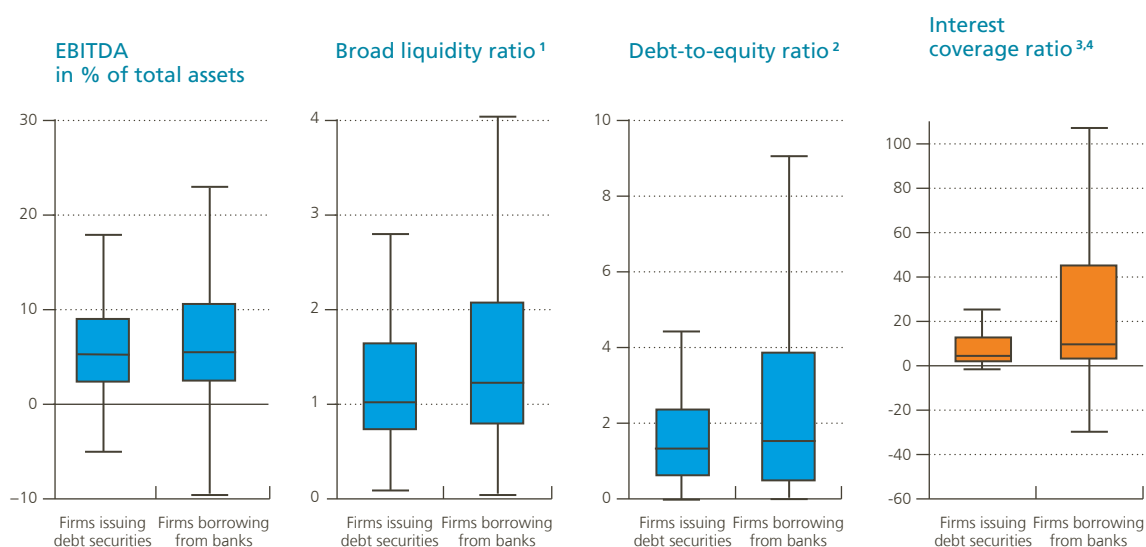
Source : NBB.

Note : The distributions of the three indicators considered in this chart are presented in the form of box plots. The lower and the upper limits of the boxes correspond to the first and the third quartiles of the distribution, respectively. The bar within the box stands for the second quartile, i.e. the median, of the distribution. The extremities of the "whiskers" represent the minimum and the maximum values of the distribution once outliers are disregarded.

1 The broad liquidity ratio is defined as the sum of stocks, receivable at up to one year, current investment and cash, divided by debt at up to one year.

2 Negative values (due to negative equity resulting from losses carried forward) are excluded from the data sample.

3 The interest coverage ratio is calculated as earnings before interest, taxes, depreciation and amortisation (EBITDA) divided by interest charges. This ratio is calculated only for firms paying interest charges.

4 These two distributions are coloured in red to indicate a statistical difference (at 5 % significance level) between issuers of debt securities and bank-dependent firms according to two statistical tests carried out with matched sub-samples of firms (see text for precise description of how sub-samples are constructed). The two tests are : (1) the sign test for the equivalence of medians across sub-samples, (2) the Kolmogorov-Smirnov test for equivalence of distribution.

Given these findings, we analyse the difference between comparably sized bond issuers and bank-dependent firms in terms of several indicators of firm health. We are interested in answering questions such as : are the profitability and leverage of bond issuers and bank-dependent firms of similar size substantially different ? And, considering their total assets, do bank-dependent firms and bond issuers have similar levels of liquidity and debt sustainability ?

To make the most of the timeliness and relevance of our analysis, in this section, we consider only the most recent annual accounts data available and, therefore, restrict our analysis to 2019. We construct two comparable sub-samples of firms. The first sub-sample includes bond issuers, whereas the second has bank-dependent borrowers, i.e. firms that rely solely on bank credit as their source of external financing. To make the two sub-samples comparable, we matched each bond issuer with a bank-dependent borrower in order to minimise the relative difference in total assets. The matching procedure yielded the two sub-samples, each with 92 firms.

We tested how the median firm in the two sub-samples differed across a series of corporate characteristics, including profitability, liquidity, leverage, and debt sustainability. In addition to testing differences across the median of the two sub-samples, we conducted the Kolmogorov-Smirnov test for equality of distribution of the two subsamples (see Kolmogorov, 1933 ; Smirnov, 1933 ; and Conover, 1999).

According to the statistical tests, we could not reject the null hypothesis that our median bank-dependent firm and median bond issuer had the same level of EBITDA (earnings before interest, taxes depreciation and amortisation, as a percentage of total assets). Similar results were found for the broad liquidity ratio and the leverage ratio. Furthermore, the statistical tests could not detect any difference in the distribution of these financial indicators across the two matched samples.

The box plots in chart 2, depicting the population of large Belgian enterprises with more than € 100 million in total assets, support the findings of the statistical tests with a visual representation. However, it is worth noting that the financial health indicators are more dispersed for bank-dependent firms than for bond issuers[1]. In particular, the lower quartile of bank-dependent firms has lower EBITDA (as a % of total assets) than the corresponding quartile of bond issuers. This concurs with the literature backing the financial soundness of corporate bond issuers.

The statistical tests carried out with the matched sub-samples brought to light significant differences between the median interest coverage ratio (ICR) of bond issuers and that of bank-dependent firms. ICR is defined as the ratio of EBITDA to interest expenditure and, as such, is used as an indicator of debt sustainability. The last panel of chart 3 shows that bond issuers have a relatively lower ICR than large bank-dependent firms. According to the Kolmogorov-Smirnov test, differences in ICR also hold across probability distributions. Taken together, the statistical tests and the box plots indicate that some firms issuing bonds in Belgium have lower debt sustainability than firms of similar size relying solely on bank credit.

At the macro level, comfortable ICRs mitigate the risk of high leverage. However, we observe a wide dispersion of ICRs, with some bond issuers in less comfortable positions. In our sample, low ICRs can be primarily ascribed to the higher interest expenses of these issuers. Compared to bank-dependent firms, some bond issuers pay higher interest charges relative to their total assets and revenues. Overall, this indicates that there are some bond issuers with a combination of low profitability and high leverage. In the remainder of this section, we explore these cases in more detail.

We classify Belgian bond issuers into four buckets according to their average ICR over 2018 and 2019[2]. Because we focus on the lower part of the distribution, which could represent potential pockets of risks, we group all firms with comfortable levels of ICR (i.e. above the median levels) into a single bucket. We then sort the remaining firms into three categories.

First, we consider firms with ICRs below 1 as firms "at imminent risk of distress". These firms are currently unable to service their debts with their income and must take on more debt or dispose of assets to avoid default. The IMF also uses this threshold to identify the most vulnerable firms in its Global Financial Stability Report (IMF, 2019). Second, we consider firms with ICRs between 1 and 2 as firms "potentially at risk of distress". For these firms, adverse shocks to earnings or interest charges could cause financial hardship. A threshold of two is also commonly used in other studies identifying firms at risk (ECB, 2017; de Almeida and Tressel, 2020). Lastly, we classify firms with below average yet reasonable ICRs between 2 and 5 in a third category.

In December 2020, 12 % of bond issuers fell into the "at imminent risk of distress" category. The debt securities outstanding of these issuers totalled € 600 million, which is a marginal part (1 %) of the total outstanding amount of corporate debt securities issued by Belgian NFCs. The second category of bond issuers, classified as "potentially at risk of distress", could hinder some pockets of risk. Panel 1 of chart 3 shows that these firms account for 14 % (€ 7.8 billion) of the outstanding amount of debt securities issued by Belgian NFCs. An unexpected large shock to interest rates or profits could potentially put these issuers at risk.

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1 The higher dispersion of bank-dependent firms could be attributable to the larger sample used to construct the box plots. To control for differences in sample size, we rely on matched-sample statistical tests.

2 We use two-year averages to mitigate the influence of temporary movements in ICR. We use 2018 and 2019 data to limit the impact of COVID-19 on our results.
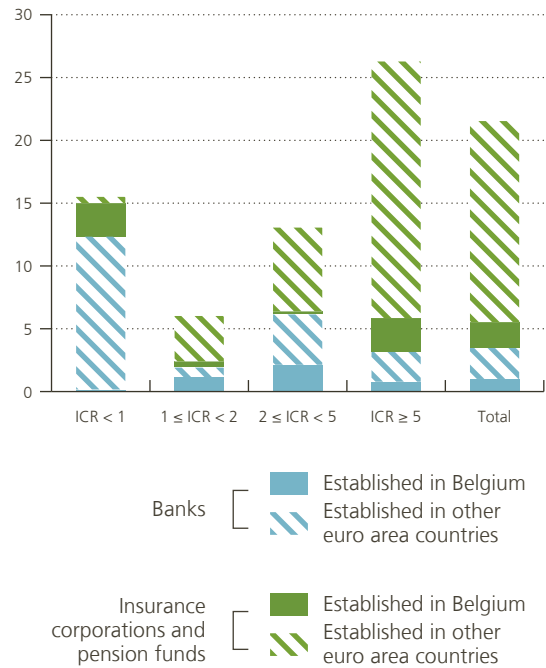
Chart 3

Sustainability of Belgian bond issuers' debt and exposure of their counterparts

Breakdown by level of debt sustainability [1]
(% of total, data for the end of 2020)

Share of debt securities held by Belgian and euro area banks, insurance corporations and pension funds [2]
(% of total by level of debt sustainability [1], data for the end of 2020)

Legend:
- Share in the outstanding amount of debt securities
- Share in the number of issuers

- Banks — Established in Belgium
- Banks — Established in other euro area countries
- Insurance corporations and pension funds — Established in Belgium
- Insurance corporations and pension funds — Established in other euro area countries

Source: ECB, NBB.

1 The level of debt sustainability is proxied by the average of the interest coverage ratio (ICR) over the years 2018 and 2019. The interest coverage ratio is calculated as earnings before interest, taxes, depreciation and amortisation (EBITDA) divided by interest charges.

2 Holdings data comes from the ECB SHS database. The data covers securities holdings by financial and non-financial holders from all euro area countries, as well as non-euro area holders of securities issued by euro area issuers held in custody with euro area financial institutions. Due to limited data availability, the chart does not include holdings by the Eurosystem.
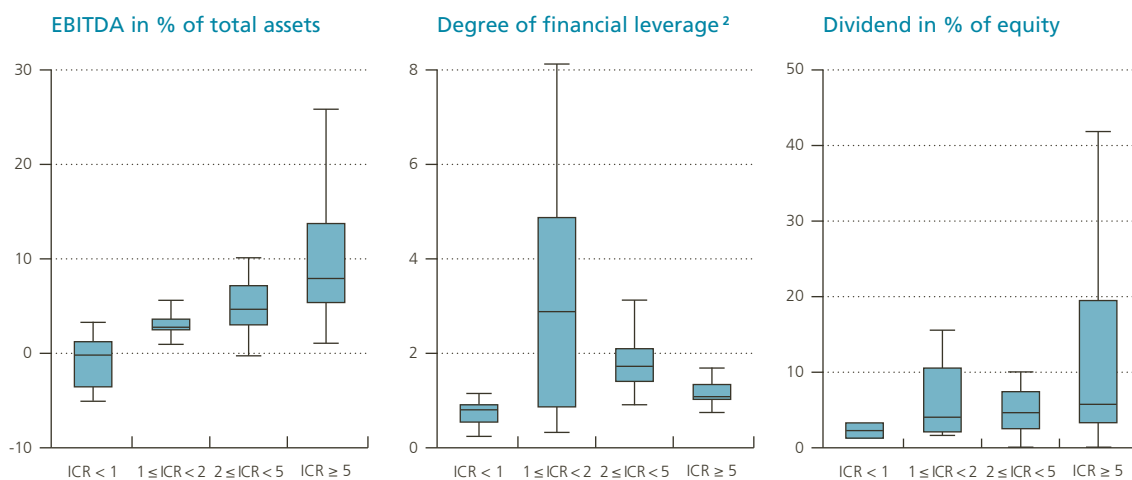
Thus, debt securities of firms "at imminent risk of distress" and "potentially at risk of distress" account for a limited share of Belgian NFCs' total corporate debt. However, for financial stability purposes, it is worth monitoring the bearers of these risks. Panel 2 of chart 3 presents the holdings of corporate debt securities by Belgian and euro area banks, insurance companies and pension funds, according to ECB Securities Holdings Statistics (SHS) [1]. According to this data, about 16 % of the amount of debt securities outstanding "at imminent risk" and 6 % of that "potentially at risk" is held in these traditional financial sectors. By construction, the remaining portion of risky debt can be largely attributed to investment funds, which are mostly located outside the euro area. Overall, the exposure of the Belgian and the euro area traditional financial sectors (credit institutions and insurance companies) to risky Belgian corporate debt securities is, therefore, quite small.

1 See NBB (2019) for additional details on the SHS database. Due to the limitations of the dataset used in the context of this study, we are not able to report on the Belgian debt securities held by the Eurosystem. It must also be mentioned that this data does not include holdings held in custody outside the euro-area or participating non-euro area countries (Bulgaria, Czech Republic, Denmark, and Romania).

Chart 4

Profitability of debt securities issuers and leverage effects, by level of debt sustainability[1]

(data for 2019)

EBITDA in % of total assets   Degree of financial leverage[2]   Dividend in % of equity

Source: NBB.

Note: The distributions of the three indicators considered in this chart are presented in the form of box plots. The lower and the upper limits of the boxes correspond to the first and the third quartiles of the distribution, respectively. The bar within the box stands for the second quartile, i.e. the median, of the distribution. The extremities of the "whiskers" represent the minimum and the maximum values of the distribution once outliers are disregarded.

1 The level of debt sustainability is proxied by the average of the interest coverage ratio (ICR) over the years 2018 and 2019. The interest coverage ratio is calculated as earnings before interest, taxes, depreciation and amortisation (EBITDA) divided by interest charges.

2 The degree of financial leverage (DFL) is an elasticity that measures the sensitivity of the earning (before tax) per share with respect to changes in earnings before interest and taxes (EBIT). In other words, it is the ratio of the percentage change in earnings per share to the percentage change in the EBIT. Formally, $DFL = \frac{d((EBIT-I)/\#shares)/((EBIT-I)/\#shares)}{dEBIT/EBIT}$, where "$I$" and "$\#shares$" stands respectively for the interest charges and the number of shares and d symbolises the derivative with respect to the EBIT. This expression can be simplified as $DFL = EBIT/(EBIT - I)$.

4. On the risks of higher leverages

The analysis presented in the previous section shows that some bond issuers are characterised by a heavier debt burden, in the sense that their debt servicing absorbs a large part, if not the entirety, of their revenue. A further examination of the firm-level data suggests that such a situation can arise for at least two different reasons.
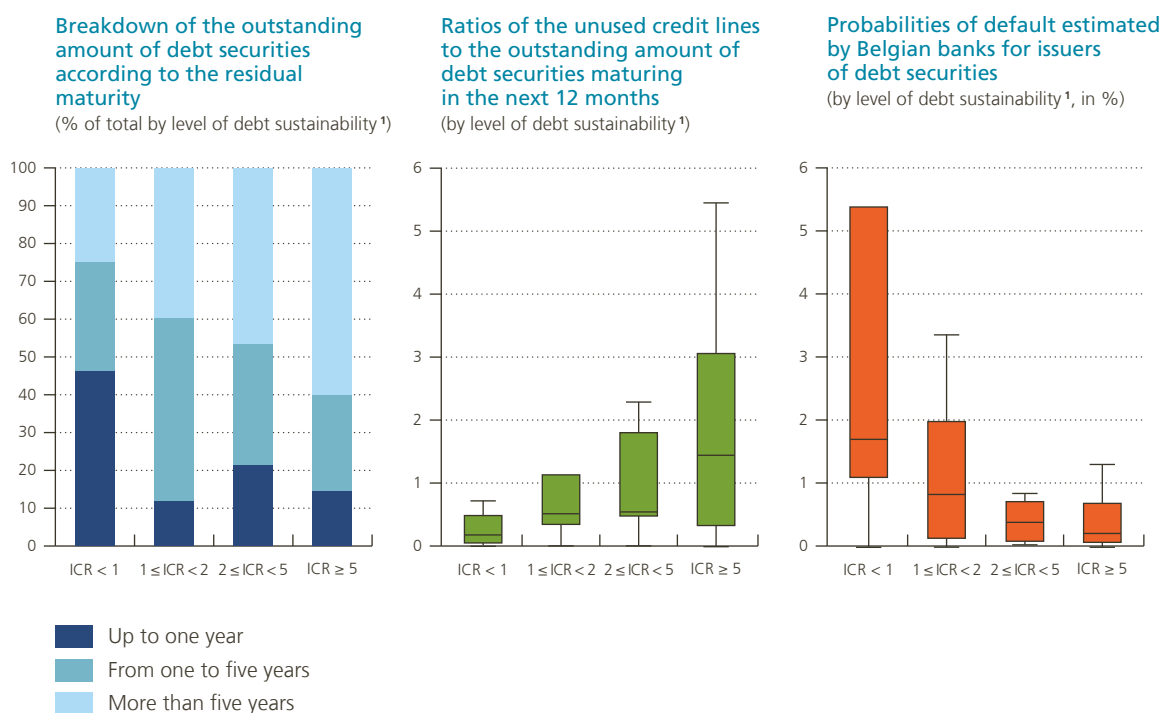
The first and most trivial reason is low profitability. As illustrated by the left-hand panel of chart 4, about half of the businesses "at imminent risk of distress" incurred operating losses during their last accounting period (2019).

The other reason is the leveraging strategy pursued by other firms, such as those considered, according to our classification, "potentially at risk of distress". These firms seem to borrow funds through the debt security market to inflate the earnings distributed to shareholders. Thanks to the leverage effect, the latter can actually benefit from higher income when revenue rises, whereas the income of debt security holders – like that of lenders in general – is limited to the payment of the interest agreed contractually. As evident from the middle panel of chart 4, the degree of financial leverage (DFL) is relatively high among firms with an ICR between 1 and 2, compared to those classified in other ICR buckets. For instance, in this group, the median DFL is equal to 2.9, which means that, if the median firms' earnings before interest and taxes rise by 1 percentage point, the earnings per share that can be distributed to its shareholders increases by 2.9 percentage points. This is substantially more than the median DFL of better performing firms, which exhibit overall higher profitability

Chart 5

Residual maturity, rollover risk coverage and probabilities of default

(data for 2019)

Breakdown of the outstanding amount of debt securities according to the residual maturity
(% of total by level of debt sustainability [1])

Ratios of the unused credit lines to the outstanding amount of debt securities maturing in the next 12 months
(by level of debt sustainability [1])

Probabilities of default estimated by Belgian banks for issuers of debt securities
(by level of debt sustainability [1], in %)

Legend:
- Up to one year
- From one to five years
- More than five years

Source: NBB.

Note: The distributions of the two indicators considered in the middle and the right panels are presented in the form of box plots. The lower and the upper limits of the boxes correspond to the first and the third quartiles of the distribution, respectively. The bar within the box stands for the second quartile, i.e. the median, of the distribution. The extremities of the "whiskers" represent the minimum and the maximum values of the distribution once outliers are disregarded.

1 The level of debt sustainability is proxied by the average of the interest coverage ratio (ICR) over the years 2018 and 2019. The interest coverage ratio is calculated as earnings before interest, taxes, depreciation and amortisation (EBITDA) divided by interest charges.

ratios and higher ICRs. In that way, some of the firms that may be considered vulnerable based on their debt servicing costs, are able to distribute dividends comparable to those of more profitable companies.

While such a strategy is beneficial for shareholders in good times, it might also cause a debt servicing issue when turnover declines, for instance, during a business cycle downturn or in the event of an interest rate shock that is not accompanied by any expansion in earnings. The latter case concerns, more specifically, maturing debt that must be rolled over by new debt, on which higher interest rates must be paid. In such conditions, the financial health of firms that are already having difficulty in meeting their interest payments is likely to further deteriorate. Put differently, the potential risk of distress identified for levered firms with a low ICR ratio could materialise.

However, two factors might allow bond issuers to mitigate rollover risks arising from a sudden upsurge in interest rates, namely 1) the use of long-term financing instruments with fixed rates and 2) the availability of alternative financing sources. As mentioned in section 1, the bulk of debt securities outstanding have been issued with a maturity of more than five years. From the residual maturities reported in the left-hand panel of chart 5, it appears that only a limited fraction of the debt securities issued by those NFCs with high ICRs must be redeemed in the next 12 months. In addition, as the middle panel of the same chart illustrates, many of these firms have credit lines put at their disposal by banks that cover either a large share or the entirety of the debt securities maturing within the year. These credit lines might, for instance, be helpful to reduce refinancing costs in the

event of a temporary interest rate hike, like the one observed on the bond market in March 2020, in the early days of the COVID-19 crisis[1]. This fallback solution does not seem available, or at least not to the same extent, to firms exposed to a potential risk of distress and, even less so, to those running a more imminent risk due to their current debt burden. Moreover, these firms generally appear to be less reliable in the eyes of banks, which estimate these companies' probabilities of default to be higher than those of borrowers with more comfortable ICRs. These firms tend to have a larger fraction of debt securities maturing in the short or medium term.

Conclusion

By identifying and profiling firms issuing corporate debt securities and by investigating possible risks linked to funding sources, this article documents recent trends in debt security financing by Belgian NFCs.

The outstanding volume of debt securities issued by Belgian NFCs has increased over the last decade. Belgian NFCs tend to issue debt securities with long maturities and fixed interest rates. A large fraction of the outstanding amount of these securities is eligible as collateral for the Eurosystem credit operations and in the context of the CSPP. These trends are largely consistent with those observed in the euro area.

Only a very small number of Belgian NFCs actually issue debt securities. However, due to their size, these firms account for a significant share of the Belgian economy. Bond issuers are generally large, have relatively sound financial health, and are often part of a corporate group structure. Moreover, many of them can count on a diversified source of funding.

Some bond issuers are riskier than others. Compared to similar-sized bank-dependent firms, certain issuers have weaker debt sustainability level (as measured by their ICR). This pocket of risk consists of just a few firms, whose debt accounts for only a small share of the total outstanding amount of debt securities issued by Belgian NFCs. The risk is borne by non-bank financial institutions, mainly located outside Belgium.

Firms can find themselves in a situation of weak debt sustainability for two reasons : either due to low profitability or due to leveraging strategies. These firms could face difficulties in the event of an increase in funding costs or a drop in corporate revenues. Most Belgian NFCs tend to issue debt securities with long maturities and fixed interest rates, and, in almost all cases, they have access to bank credit lines, which can be used to mitigate their rollover risk. However, for the small group of Belgian bond issuers that are burdened by higher debt and, consequently, face a more acute risk of distress, such mitigating factors are more limited.

1 Between 25 February 2020 and 25 March 2020, average interest rates on investment-grade corporate bonds rose by 150 basis points in the euro area, according to data compiled by Refinitiv.

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Abstracts from the Working Papers series

401.   The return on human (STEM) capital in Belgium, by G. Bijnens, E. Dhyne, July 2021

Whilst overall productivity growth is stalling, firms at the technology frontier are still able to capture the benefits of the newest technologies and business practices. This paper uses linked employer-employee data covering all Belgian firms over a period of almost 20 years and investigates the differences in human capital between highly productive firms and less productive firms. The authors find a clear positive correlation between the share of high-skilled and STEM workers in a firm's workforce and its productivity. They obtain elasticities of 0.20 to 0.70 for a firm's productivity as a function of the share of high-skilled workers. For STEM (science, technology, engineering, mathematics) workers, of all skill levels, we find elasticities of 0.20 to 0.45. More importantly, the elasticity of STEM workers is increasing over time, whereas the elasticity of high-skilled workers is decreasing. This is possibly related to the growing number of tertiary education graduates and at the same time greater difficulty in filling STEM-related vacancies. Specifically, for high-skilled STEM workers in the manufacturing sector, the productivity gain can be as much as four times higher than the gain from hiring additional high-skilled non-STEM workers. To ensure that government efforts to encourage adoption of the latest technologies and business practices within firms lead to sustainable productivity gains, such actions should be accompanied by measures to increase the supply and mobility of human (STEM) capital. Without a proper supply of skills, firms will not be able to reap the full benefits of the digital revolution.

402.   Unravelling industry, firm and host-region effects on export behaviour of international new ventures and established exporters, by I. Paelman, S.A. Zahra, J.W.B. Lang, July 2021

While an extensive strategy literature seeks to explain differences in firm performance, little is known about how much firm, industry and host regions matter in explaining heterogeneity in export behaviour. The international entrepreneurship literature has highlighted that firm-, industry- and host-region-level factors shape export behaviour, yet more research is needed about their relative contribution. The authors decompose the variance of export behaviour of 4 982 Belgian SMEs during the 2006-2014 period. Results indicate that firm effects account for the largest part in the variation of export behaviour, followed by industry and host-region effects. However, host-region effects matter more for INVs whereas firm effects matter more for established exporters. There are no substantial differences in industry effects among either sample of firms. The study contributes to the literature on variance decomposition and international entrepreneurship.

403.   When trust is not enough: Bank resolution, SPE, Ring-fencing and group support, by M. Dewatripont, M. Montigny, G. Nguyen, August 2021

This discussion paper investigates the differences existing between the Single Point of Entry and the Multiple Point of Entry resolution models and links this question to the issue of support that bank subsidiaries can expect from their parent companies both in resolution and in normal insolvency proceedings. Given that parental support remains imperfect in these two resolution models, the paper concludes that existing safeguards aiming at preserving the corporate interests of subsidiaries remain necessary and justified. The paper then identifies potential avenues that could be further explored to reinforce the support model and thereby reduce incentives to adopt ring-fencing measures.

Conventional signs

%	per cent
bn	billion
e.g.	*exempli gratia* (for example)
e	estimation
et al.	*et alia* (and others)
etc.	*et cetera*
i.e.	*id est* (that is)
p.m.	*pro memoria* (token entry)
pp	percentage point

List of abbreviations

Countries or regions

BE	Belgium
DE	Germany
EE	Estonia
EL	Greece
ES	Spain
IE	Ireland
FR	France
IT	Italy
CY	Cyprus
LT	Lithuania
LU	Luxembourg
LV	Latvia
MT	Malta
NL	The Netherlands
AT	Austria
PT	Portugal
SI	Slovenia
SK	Slovakia
FI	Finland
BG	Bulgaria
CZ	Czech Republic
DK	Denmark
HR	Croatia
HU	Hungary
PL	Poland
RO	Romania
SE	Sweden
EA	Euro area
EU	European Union
EU15	European Union of 15 countries (still incl. UK), before the 2004 enlargement
EU27	European Union of 27 countries
EU28	European Union of 28 countries (still incl. UK)
UK	United Kingdom
US	United States

BRU	Brussels
FLA	Flanders
WAL	Wallonia

Abbreviations

Actiris	Regional public service for employment in Brussels
AI	Artificial intelligence
B2B	Business-to-business
BAR	Brexit Adjustment Reserve
BCBS	Basel Committee on Banking Supervision
BIS	Bank for International Settlements
BMPE	Broad macroeconomic projection exercise
CAP	Common Agricultural Policy
CBAM	Carbon Border Adjustment Mechanism
CBSS	Crossroads Bank for Social Security
CEB	Council of Europe Development Bank
CEC	Central Economic Council
CEF	Connecting Europe Facility
CF	Communauté française (French Community)
COCOF	French Community Commission
COCOM	Common Community Commission
COFOG	Classification of the Functions of Government
COICOP	Classification of Individual Consumption According to Purpose
COVID-19	Coronavirus disease-19
COVIVAT	Corona Research Consortium for Income Distribution and Social Effects (*Corona Onderzoeksconsortium voor Inkomensverdeling en Sociale Effecten)*
CPAS/OCMW	Public social assistance centre
CSPP	Corporate sector purchase programme
DFL	Degree of financial leverage
DG	Directorate-General
DSGE	Dynamic stochastic general equilibrium
EAGF	European Agricultural Guarantee Fund
EARFD	European Agricultural Fund for Rural Development
EBIT	Earnings before interest and taxes
EBITDA	Earnings before interest, taxes, depreciation and amortisation
EBRD	European Bank for Reconstruction and Development
EC	European Commission
ECA	European Court of Auditors
ECB	European Central Bank
EDF	European Development Fund
EFSF	European Financial Stability Facility
EFSI	European Fund for Strategic Investments
EIB	European Investment Bank

EIBIS	EIB Investment Survey
EP	European Parliament
ERA	Electronic Realty Associates
ERDF	European Regional Development Fund
ERMG	Economic Risk Management Group
ESA	European System of Accounts
ESA2010	European System of National and Regional Accounts 2010
ESF	European Social Fund
ESM	European stability mechanism
ETS	Emissions Trading System
EU	European Union
EUCO	European Council
EURATOM	European Atomic Energy Community
Eurostat	European Statistical Office
EU-SILC	European Union Statistics on Income and Living Conditions
FE	Fixed effects
FFE/FSO	Occupational Diseases Fund/Business Closure Fund
Forem	Regional public service for employment and professional education in Wallonia
FPB	Federal Planning Bureau
FPS	Federal Pensions Service
FPS	Federal Public Service
G20	Group of Twenty
GDP	Gross domestic product
GFC	Global financial crisis
GFS	Government Finance Statistics
GNI	Gross national income
HICP	Harmonised index of consumer prices
IBSA	*Institut Bruxellois de Statistique et d'Analyse*
ICR	Interest coverage ratio
ICT	Information and communication technology
ILS	Inflation-linked swap
IMF	International Monetary Fund
IT	Information technology
ITER	International Thermonuclear Experimental Reactor
IWEPS	*Institut wallon de l'évaluation, de la prospective et de la statistique*
MFF	Multiannual Financial Framework
MS	Member State
MTO	Medium-term fiscal objective
NACE	Statistical classification of economic activities of the European Community
NAI	National Accounts Institute
NBB	National Bank of Belgium
NBB-SSS	National Bank of Belgium's Securities Settlement System
NEO	National Employment Office
NFC	Non-financial corporation
NGEU	Next Generation EU

NIHDI	National Institute for Health and Disability Insurance (RIZIV-INAMI)
NIS	National Institute of Statistics
NISSE	National Institute for the Social Security of the Self-Employed (INASTI/RSVZ)
NRRP	National Recovery and Resilience Plan
NSSO	National Social Security Office
NUTS	Nomenclature of Territorial Units for Statistics
OBB	Operating budgetary balance
OECD	Organisation for Economic Cooperation and Development
OIS	Overnight indexed swap
OLS	Ordinary least squares
OSI	Oxford Stringency Index
PISA	Programme for International Student Assessment
PIT	Personal income tax
PPS	Purchasing power standard
RAL	*Reste à liquider* (amount outstanding)
R&D	Research and development
REACT-EU	Recovery Assistance for Cohesion and the Territories of Europe
REITs	Belgian real estate investment trusts
RRF	Recovery and Resilience Facility
SCA	Study Committee on Ageing
Sciensano	National public health institute of Belgium
SES	Structure of Earnings Survey
SHS	Securities Holdings Statistics
SME	Small and medium-sized enterprise
SNCB	*Société nationale des Chemins de fer belges* (Belgian National Railway Company)
SRF	Single Resolution Fund
Statbel	Belgian Statistical Office
STEM	Science, technology, engineering and mathematics
STIB	*Société des Transports Intercommunaux de Bruxelles*
SURE	Support to mitigate Unemployment Risks in an Emergency
TCA	Trade and Cooperation Agreement
TEC	*Transport en commun*
TFP	Total factor productivity
VAR	Vector autoregression
VAT	Value added tax
VDAB	Flemish Public Service for Employment and Professional Training
VGC	Flemish Community Commission
WA	Withdrawal Agreement
WG SIC	Working Group Social Impact Covid-19

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