

Economic and financial
developments



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1.1 Fewer disruptions in supply chains but higher and more volatile energy and commodity prices

After a resurgence at the beginning of the year, the COVID-19 pandemic gradually faded into the background, with China being the main exception in this respect. In the winter of 2021-2022, the Omicron variant caused a sharp, albeit short-lived, spike in infections. A high vaccination rate in Europe and the United States helped limit the impact of the resurgence on the overall public health situation – and by extension on the economy – although absenteeism due to illness increased sharply. Almost everywhere, the remaining mobility restrictions were gradually eased and eventually lifted after the Omicron wave. China, however, initially maintained its zero-COVID policy: local outbreaks were systematically tackled

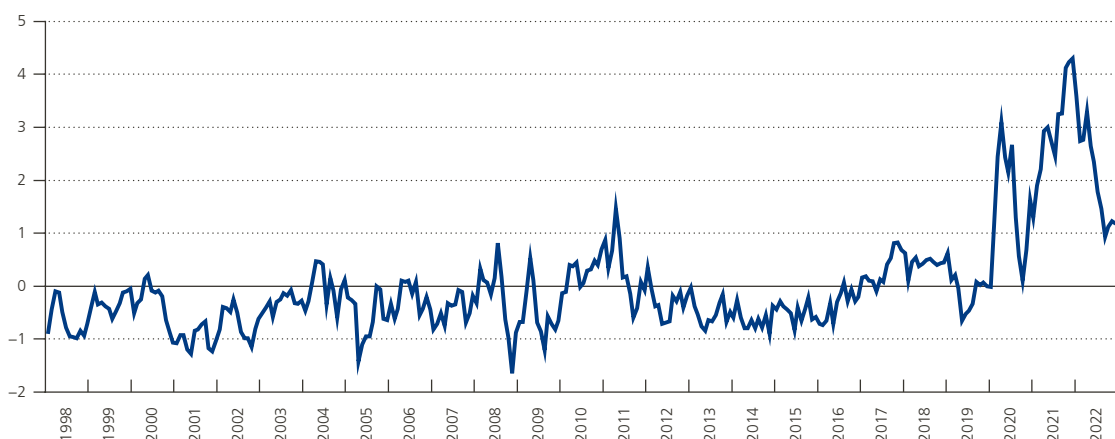
through testing on a vast scale and strict lockdowns. Major Chinese cities were largely cut off from the outside world, sometimes for weeks at a time. The repeated lockdowns impaired economic activity in China and led to rising social tensions and protests across the country. This prompted the Chinese authorities to abandon their zero-tolerance policy in early December, despite infections having reached record levels.

International supply chain pressures eased but remained high for most of the year, due in part to further supply shocks. Supply chain disruptions, including longer delivery times and higher

Chart 1.1

International supply chain pressures eased but remained high throughout the year

(composite index,¹ standard deviations from the mean over 1998 to 2022)



Source: Federal Reserve Bank of New York.

¹ The Global Supply Chain Pressure Index (GSCPI) integrates transportation costs (for maritime transport and airfreight) and components of the PMI indices (delivery times, backlogs and purchased stocks) for the euro area, the United Kingdom, the United States, Japan, China, South Korea and Taiwan. The PMI components have been adjusted for demand effects.

shipping rates, reached all-time highs at the end of 2021. In addition to the faster-than-expected recovery in demand for (durable) consumer goods, these problems were caused by various supply bottlenecks, such as shortages of raw materials, intermediate inputs (e.g. semiconductors) and adequate personnel, as well as a lack of recent investment in the expansion of port infrastructure. These mismatches between supply and demand played a significant role in the acceleration of inflation in 2021. In the early months of 2022, the acute disruptions in supply chains gradually subsided, but the lockdown of several Chinese cities and Russia's invasion of Ukraine caused tensions to flare again. The periodic imposition of mobility restrictions at Chinese ports and other economic hubs seriously disrupted production and created logistical barriers whose impact extended far beyond China. Russia's invasion of Ukraine and the sanctions imposed in response in turn profoundly disrupted certain value chains, such as in the automotive industry, as it became impossible to import certain raw materials and components from Ukraine (e.g. electrical wiring harnesses) or Russia (e.g. nickel and palladium, used in vehicle batteries and catalysts). Over the year as a whole, pressures in most supply chains eased significantly, but remained much higher than before the pandemic. This easing was only partially attributable to changes in logistics infrastructure and the relaxing

of restrictions in China. The slowdown in global growth certainly also played a role (see below).

Russia's invasion of Ukraine on 24 February 2022 marked the beginning of a major new crisis with serious humanitarian, geopolitical and economic consequences. Firstly, the war unleashed a humanitarian disaster. There have been thousands of civilian casualties, millions of Ukrainian refugees have fled abroad or to other parts of the country, and damage to homes, hospitals, schools, roads, public institutions and other types of civilian infrastructure has disrupted society. In addition, the invasion exacerbated pre-existing geopolitical tensions. In response, the EU and its allies adopted several packages of sanctions, building on measures in place since Russia's annexation of Crimea in 2014. Access by Russian banks to Western financial markets and services was restricted, the foreign exchange reserves of the Russian central bank were frozen, and restrictions on exports to Russia of military, high-tech and critical goods and services were systematically expanded. European imports of raw materials from Russia, including timber, iron, steel, cement, coal and seaborne crude, were progressively restricted, with the G7 introducing a price cap on shipments of the latter to the rest of the world. Russia responded to these sanctions with retaliatory measures, in particular restrictions on pipeline gas exports to Europe, implemented in successive waves.

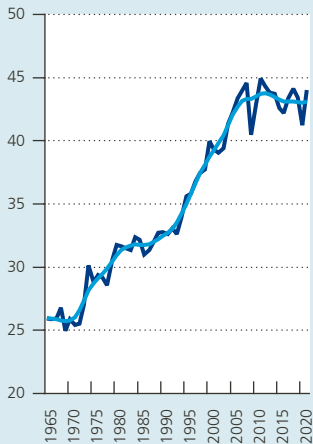


Do geopolitical tensions herald an era of deglobalisation?*

The pace of globalisation had started to slow even before the pandemic and Russia’s invasion of Ukraine. From around 1990 until the global financial crisis of 2008, global value chains (GVCs) – which refer to international production sharing – grew very rapidly. After this period of hyperglobalisation, the share of global trade involving GVCs stalled. Factors conducive to the international fragmentation of production, such as the ICT and transport revolutions, the opening up of large labour pools in Eastern Europe, China and India, and multilateral trade liberalisation, started to wane. Some major trading nations, particularly the US and China, have turned inwards and consequently the share of domestic value added in their exports has increased. However, GVCs remain essential to economic activity and employment, especially for smaller, highly internationally integrated economies such as Belgium, whose exports largely depend on value added produced elsewhere. Commodity-producing countries, such as Russia, mainly play a key role in the upstream segment of value chains. Any disruption or obstacle affecting their exports can create serious problems further downstream, in various related chains.

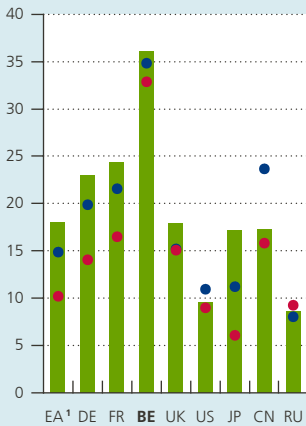
GVCs remain an essential part of the world economy, although they are no longer growing in importance

Trade involving global value chains (percentage of total trade)



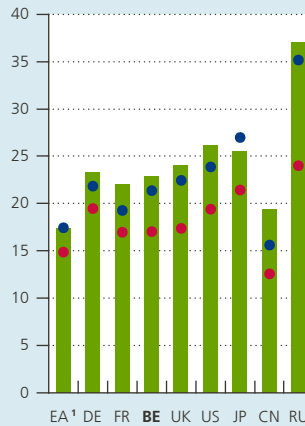
— Annual figures
— Trend

Backward participation in global value chains (percentage, share of foreign value added in gross exports)



● 1995 ● 2005 ■ 2018

Forward participation in global value chains (percentage, domestic value added in foreign exports as a share of gross exports)



Sources: ECB, OECD and WIOD.

1 For the euro area aggregates, value added traded between Member States is considered domestic.



GVCs have proved relatively resilient to recent shocks, but rising geopolitical tensions could lead to reconfigurations.

When the coronavirus pandemic broke out, goods trade initially fell more sharply in sectors that relied heavily on GVCs, but subsequently picked up more vigorously in these sectors. Apart from longer-lasting disruptions in certain industries, such as the automotive industry, global production and supply chains appeared to adapt fairly well overall to the asynchronous nature of the lockdowns. Nonetheless, value chains remained under intense pressure in 2022, following further shocks caused by China's zero-COVID policy and Russia's invasion of Ukraine. Recent surveys show that multinationals are trying to make their supply chains more resilient to such shocks. However, firms have so far preferred to revise their inventory management strategies and diversify their supplier base rather than resort to extensive nearshoring or reshoring, i.e. transferring previously offshored business operations to countries that are closer to home or repatriating activities. Western firms doing business in Russia, on the other hand, seem to be taking steps to reduce their exposure. These run the gamut from a total withdrawal or a temporary halt or reduction of activity to the postponement of new investments in the country. Increasing geopolitical tensions between the US and China over semiconductors and related technologies are also prompting various companies to reconsider their activities in China and/or their relationships with Chinese suppliers. The long-term effects of these developments on the (re)organisation of GVCs are not yet known. Although massive deglobalisation appears unlikely at this stage, international trade and GVCs will certainly be subject, due to geopolitical considerations, to more prudent risk management and possibly also greater regionalism and friendshoring in the coming years.

Europe, too, is becoming increasingly aware of the trade-offs posed by international economic integration.

Alarmed by, amongst other things, a lack of medical equipment at the start of the pandemic, a shortage of electronic chips in the automotive industry during the economic recovery and the more recent interruption of Russian gas supplies, the European authorities and institutions are increasingly paying policy attention to national security concerns and strategic sectors. In this context, it is necessary to consider, on the one hand, the objectives of cost optimisation and moderation of consumer prices and, on the other hand, security of supply. The disadvantages of exposure to various external demand and supply shocks as a result of international trade and the integration of companies on a global scale must moreover be weighed against the advantages of such integration in terms of diversification possibilities and protection against local shocks. For its part, the EU has announced an open strategic autonomy (OSA) agenda, the fundamental objective of which is to develop its capacity to act autonomously where and when appropriate while continuing, where possible, to cooperate with international partners. The OSA agenda includes various regulatory, structural and budgetary initiatives, such as the identification of interdependencies and risks affecting value chains for critical goods and services, a common framework for screening foreign direct investment, a European industrial policy, a revised trade policy and a proposal for a European Chips Act.

* Based on Buysse, K. and D. Essers (2022), "Are we entering an era of deglobalisation?", NBB, *Economic Review*.

Russia’s invasion of Ukraine generated tremendous price shocks and volatility in energy and other commodity markets. In Europe, the impact on the gas market was unprecedented.

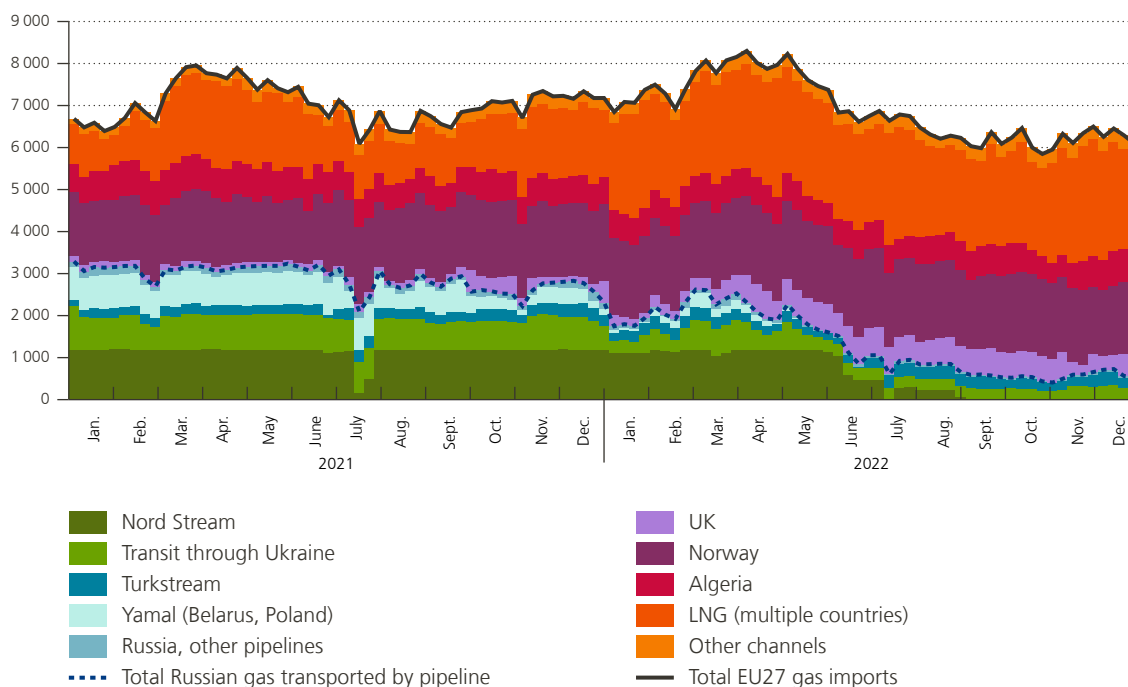
By 2021, the faster-than-expected recovery of demand had come up against a shortage of energy and other commodities, which significantly pushed up prices. At that time, the price of European gas had already been boosted by, amongst other factors, the planned phase-out of gas extraction in the Netherlands and repair works on gas facilities in the UK and Norway. In 2022, gas prices broke new records – reaching highs of over €300/MWh in August, more than twenty times the level seen in 2019, before the pandemic – and displayed unprecedented volatility in the wake of Russia’s invasion of Ukraine. The latter caused considerable uncertainty about the continuity of gas supplies to Europe. In mid-June, Gazprom reduced supplies to Germany via the Nord Stream 1 pipeline to 40 % of capacity and then cut them altogether at the end of August for an indefinite period. As a result, by the end of the year, gas imports by pipeline from Russia



Chart 1.2

European imports of Russian pipeline gas were gradually but drastically reduced

(million cubic metres per week)



Sources: Bruegel and ENTSOG.

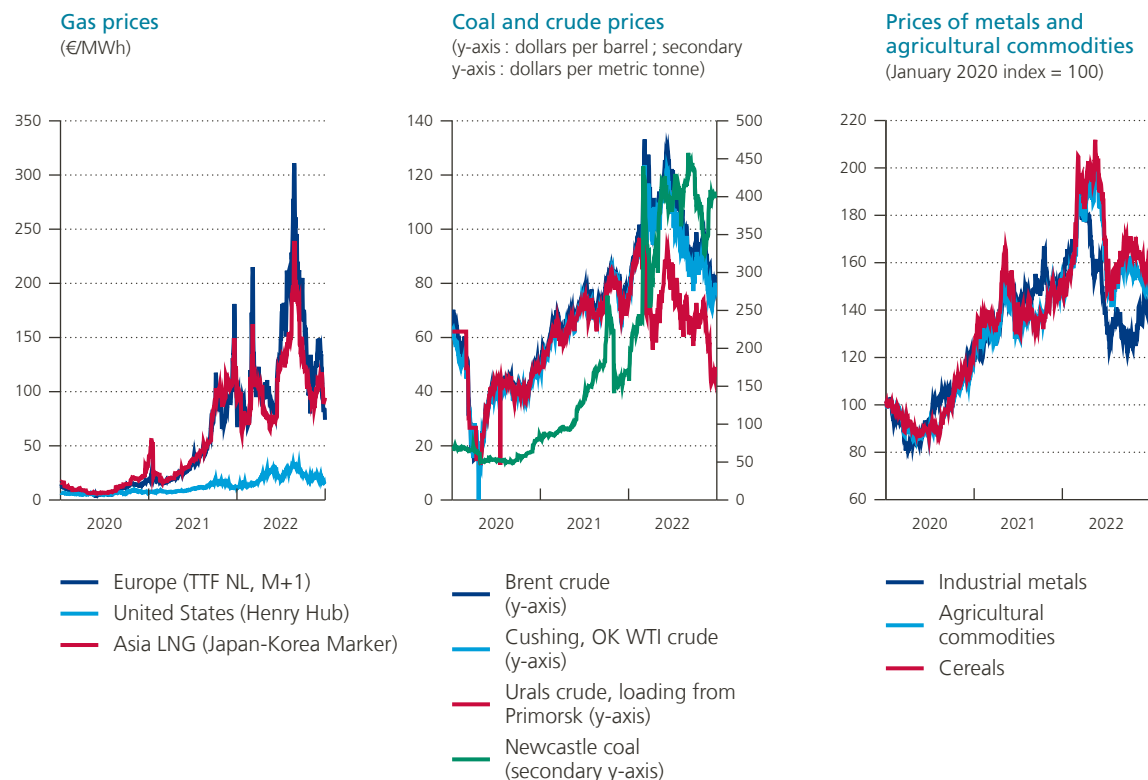
had fallen to around one-sixth of their pre-invasion level. In addition to the decrease in Russian gas supplies, the rush to stockpile gas in time for winter also contributed to the price surge. When it became clear that winter stocks were being built up faster than expected, gas prices fell considerably, although they remained well above levels seen in previous years. Prices for supplies in the coming years were still significantly higher.

High European gas prices had substantial spillover effects on the markets for other energy commodities as well as on electricity prices. Europe partially made up for the reduction in Russian pipeline gas supplies by importing more liquefied natural gas (LNG), mainly from the US, Qatar and Nigeria. More non-Russian oil and coal were also imported. As a result of this increased demand, most LNG, oil and coal prices rose in the rest of the world. However, the price differential between the benchmark values for gas traded in

Europe (TTF) and in the US (Henry Hub) widened further than in 2021. This wide price divergence reflects a continuing fragmentation of the global gas market and is the result of logistical constraints on both sides of the Atlantic: the US cannot liquefy and ship enough gas to meet the additional demand in Europe, while the capacity of European LNG regasification facilities is limited. In addition, a fire at a major LNG terminal in Texas prevented the export of large quantities of gas from June. On the other hand, the Asian benchmark for LNG cargo prices (Japan-Korea Marker) followed European benchmark gas prices, given Europe’s increased weight in global LNG demand and weaker demand in Asia (particularly China). Record gas prices also pushed up European electricity prices. It was indeed often necessary to resort to relatively expensive gas-fired power plants to meet European electricity demand, especially as cheaper means of electricity generation in Europe faced a number of problems. France was forced to temporarily shutter a large number of its nuclear

Chart 1.3

Energy and other commodity prices have been affected by exceptionally large shocks



Sources: Bloomberg, Goldman Sachs, Refinitiv and S&P.

power plants, while an extreme drought in the summer months hampered hydropower generation and the cooling of thermal power plants. Moreover, the supply of water to German coal-fired power plants could not be ensured owing to the low level of the Rhine. Finally, Europe's solar and wind power capacity proved insufficient to make up for lower energy production from other sources.

International food and industrial metal prices also reached new highs as a result of Russia's invasion of Ukraine. After dipping during the pandemic, global commodity prices rebounded some time before the invasion; the latter caused severe disruptions in the production and supply of foodstuffs from Ukraine and Russia, including for grains, such as wheat, barley and maize, and vegetable oils. Due to the Russian blockade of Ukrainian Black Sea ports, millions of tonnes of grain harvested the previous year were initially prevented from reaching their final destination. The embargo threatened food security in emerging markets and low-income countries in Africa and Central Asia. Temporary export bans and controls in other economies, combined with higher fertiliser prices (resulting in turn from higher energy prices and restrictions on Russian and Belarusian exports), further exacerbated these problems. It was

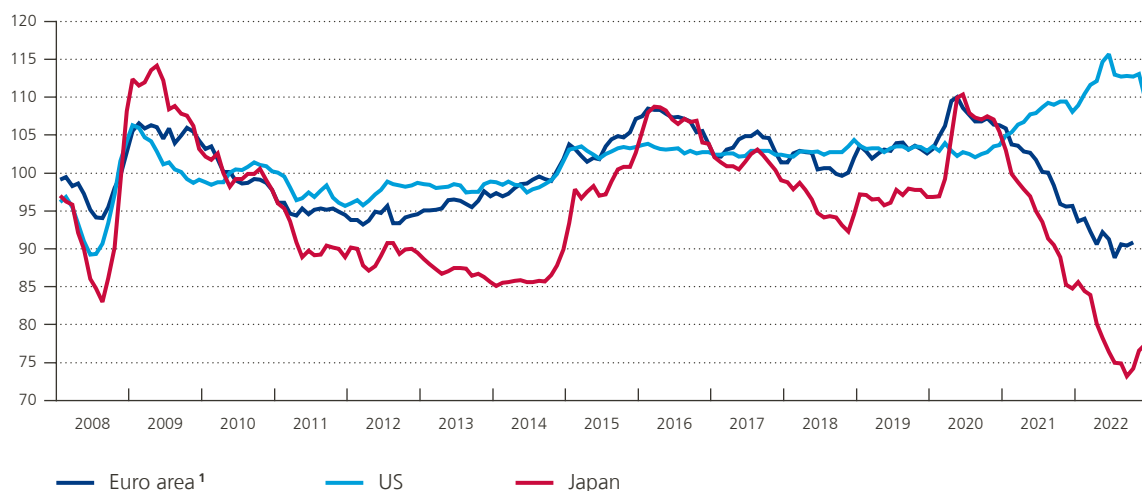
not until the summer of 2022 that food prices fell considerably, partly as a result of a Russian-Ukrainian agreement to resume grain exports through the Black Sea and good grain harvests elsewhere in the world. Prices of industrial metals such as copper, aluminium and nickel reached record highs at the beginning of the year, owing to fears of war-induced shortages and sanctions on Russia, but subsequently eased as demand, particularly from China, fell.

Although some historical parallels can be drawn, the current energy crisis differs in several ways from the crises of the 1970s. In 2022, the combined energy expenditure (oil, gas, coal and electricity) of advanced economies rose to a level, expressed as a percentage of GDP, only seen in the wake of the two prior global oil shocks. Compared to these earlier crises, the recent price hikes are more pronounced, more persistent and more broadly based, with the surge in gas and electricity prices weighing more heavily. Another difference is that, in 2022, the energy intensity (energy consumption per unit of real output) of advanced economies was only about half that of the 1970s. In addition, the energy mix has changed significantly over the years, mainly in terms of a substantial decrease in oil and coal dependence.

Chart 1.4

Terms of trade deteriorated significantly in the euro area and Japan, while the United States benefited from an improvement thanks to its position as a net energy exporter

(ratio between export and import prices, 2010 index = 100)



Sources: Bank of Japan, BLS, Eurostat and Refinitiv.

¹ For the euro area, only trade with non-member countries is taken into account.

The energy crisis has had a widely varying macroeconomic impact on the main economic blocs.

As a major net importer of energy – in particular costly piped gas from Russia and LNG – the euro area faced a historically severe deterioration in its terms of trade, which started in 2021 and continued into 2022. In the euro area countries, current account balances deteriorated sharply, even with the dampening effect of high prices on energy consumption. In this regard, the widening deficit in the energy trade balance was a crucial factor. Even Germany's traditionally large current account surplus was almost completely wiped out in the summer months. In several southern EU Member States, the impact of the energy crisis on

the current account balance was partially mitigated by the post-pandemic recovery of the tourism sector. In Japan, the sharp depreciation of the yen contributed to a dramatic deterioration in the terms of trade. In contrast, the United States witnessed a clear improvement in its terms of trade thanks to its position as a net exporter of both gas and oil, particularly in the first half of 2022. However, the US current account balance remained structurally very negative, due to highly dynamic domestic demand and the dollar's role as the main global reserve currency. In emerging economies, the situation was more nuanced, with substantial differences between net importers and exporters of energy and other commodities.

1.2 A global surge in inflation, the magnitude and duration of which exceeded expectations

In the major advanced economies, inflation continued to rise, reaching its highest level in 40 years, except in China. Successive shocks led to a return of inflation in 2021, which worsened in 2022. Time and time again, monthly inflation figures exceeded expectations. The persistence of these shocks also contributed significantly to keeping inflation at elevated levels for longer than expected and its gradual broadening to more categories of goods and services. By September, over 50% of the goods in the consumer price index (CPI) basket

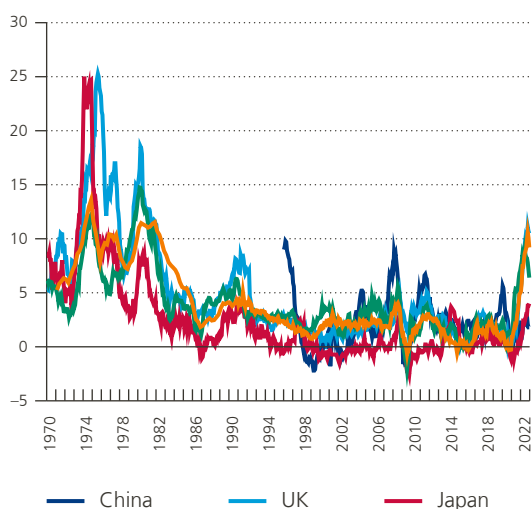
had registered price rises of more than 6% in the US, the UK and the euro area, indicating that firms were increasingly passing on higher costs (for raw materials, intermediate inputs and labour) to sales prices. Towards the end of the year, a fall in energy and food prices, coupled with an easing of supply chain bottlenecks, brought some relief, resulting in lower inflation almost everywhere.

While inflation in the US was more demand-driven, in the euro area, the UK and Japan it

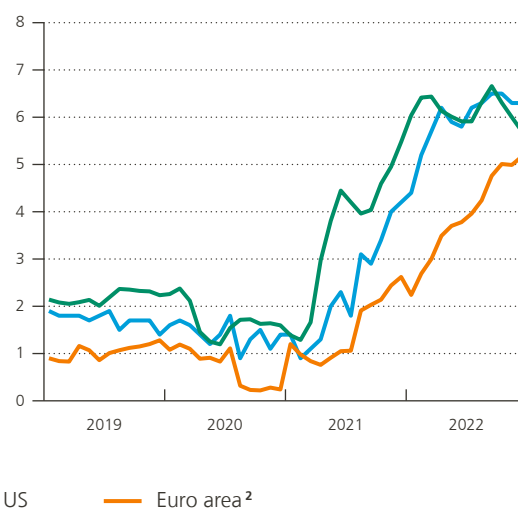
Chart 1.5

Headline and core consumer price inflation¹ rose further in 2022

Inflation reached its highest level since the oil shocks of the 1970s
(monthly data, annual % growth)



Core inflation substantially exceeded the 2% target everywhere
(monthly data, annual % growth)



Sources: BIS, BLS, ECB and ONS.

1 Core inflation: the CPI excluding food and energy in the US and excluding energy, food, alcohol and tobacco in the UK and the euro area.

2 Inflation data through 1990 Q4 are based on ECB quarterly figures and, thereafter, on monthly data from the BIS.

was fueled primarily by the energy price shock.

In the United States, core inflation rose much earlier than in the euro area and also contributed more to consumer price inflation. Private demand in the US rebounded much more vigorously than in other economies due to generous government support packages between March 2020 and March 2021. This led to a sharp acceleration in demand for consumer durables when the economy partially reopened in 2021, which was met with a slow adjustment in supply, resulting in strong price increases. When the last of the pandemic-related restrictions were lifted in 2022, demand for (contact-intensive) services surged, leading to further price increases due to staff shortages. As explained below, the tightening of the labour market and the associated increase in wages occurred earlier and more sharply in the US than in the euro area. Conversely, the supply shock impacting energy markets, particularly the gas market, was much larger in the euro area and the United Kingdom than in the United States. Energy was thus initially the main driver of inflation in the euro area and the UK, although the rising cost of energy (as well as labour and other inputs) was gradually passed on to the prices of other

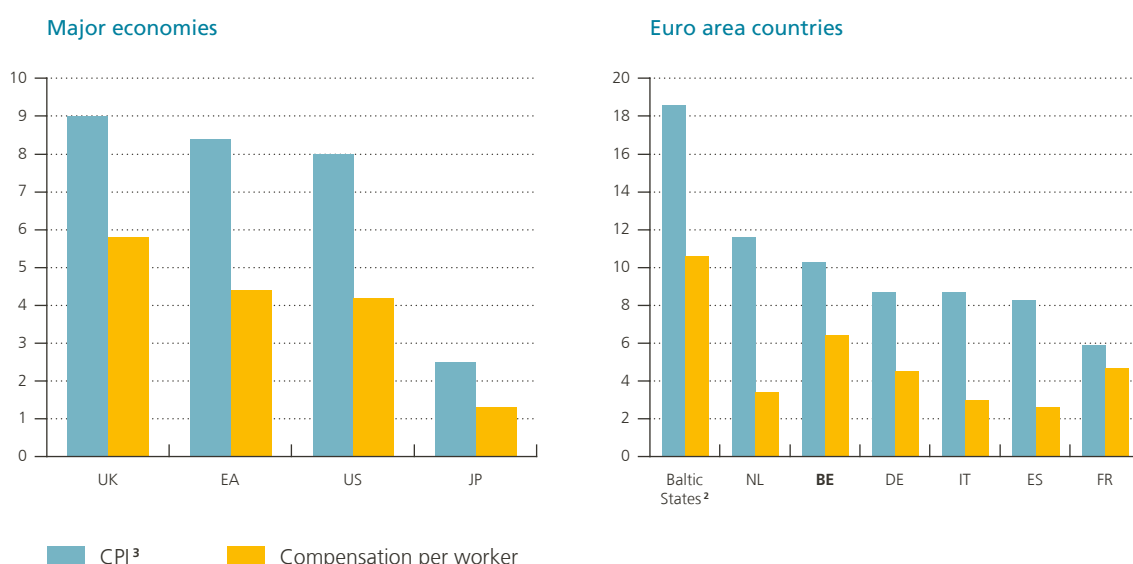
goods and services. The energy price shock was also responsible for the surge of inflation in Japan, with values – for the first time in many decades – well above the 2% threshold. Finally, the sharp depreciation of the euro, the pound sterling and the yen against the US dollar led to an even steeper rise in import prices in these economies, while in the US import prices fell from July onwards.

The pace of inflation in the various euro area countries was extremely uneven, with annual values ranging from just under 6% in France to around 18.5% on average in the three Baltic States. Several factors explain this heterogeneity. The weight of food and energy in the consumption basket varies from one country to another, depending on consumer spending patterns. Electricity price increases also fluctuated widely depending on country-specific differences in the energy mix, the structure of energy contracts, the market position of local energy producers, and existing and new government measures (see section 1.5 for more information). With regard to the latter, some governments opted for price caps and reductions in VAT

Chart 1.6

Inflation and labour cost increases¹ varied across countries

(annual average, percentage change)



Sources: BLS, EC, Eurostat, OECD, ONS and the Statistics Bureau of Japan.

1 Estimates for 2022: EC (autumn) for the euro area and its Member States, OECD (Economic Outlook 2022/2) for other countries.

2 Weighted averages for Estonia, Latvia and Lithuania, weighted by nominal GDP in 2021.

3 CPI for the US, UK and Japan, HICP for the euro area and its Member States.

and excise duties to limit the impact of the shock on households and businesses. These country-specific characteristics also play a role in determining the speed at and extent to which higher energy prices are passed on to consumers. The very high inflation in the Baltic States, for example, reflected the weighting of food and energy in their consumption baskets, combined with a high degree of dependence on oil and (Russian) gas. At the other end of the spectrum, notably in France, the capping of electricity prices and the regulation of gas prices are estimated to have depressed inflation by three percentage points, not to mention the fact that its oil and gas dependency is much lower.

Nominal wage growth lagged behind inflation in various countries, exerting downward pressure on purchasing power. The heterogeneity of inflation across countries was also reflected in nominal wage growth. This is not surprising, since wages usually follow price increases with a certain time lag. The Baltic States thus reported on average the highest wage growth. Differences in wage dynamics are also partly due to the fact that labour market shortages and institutions and the composition of employment by sector vary from country to country. An automatic wage indexation system, such as that in place in Belgium, accelerates the transmission of price increases to wages.

1.3 The global economy started the year in high spirits which then subsided

While the strong recovery which kicked off in 2021 initially continued into the following year, new shocks significantly slowed global growth, which amounted to 3.4% for 2022. A full return to life as normal after the winter led to a strong rebound in demand for contact-intensive services. Forced saving during the pandemic due to lack of consumption opportunities also supported spending. As the year wore on, however, the persistent rise in inflation led increasingly to a fall in household

purchasing power and higher costs for businesses. In particular, a sharp rise in the prices of basic necessities, such as food, fuel and electricity, forced lower-income groups to postpone less essential purchases. Government support measures in some countries only partially offset the rising energy costs of households and businesses. The heightened uncertainty caused by geopolitical tensions and higher financing costs resulting from the tightening of central bank policy in response to rising inflation prompted companies

Table 1.1

GDP of the main economies

(percentage change in volume compared to the previous year)

	2020	2021	2022	<i>p.m.</i> Contribution to world growth	<i>p.m.</i> Share of world GDP ¹
Advanced economies	-4.4	5.4	2.7	1.1	42.0
of which:					
United States	-3.4	5.9	2.0	0.3	15.7
Japan	-4.6	2.1	1.4	0.1	4.1
Euro area	-6.3	5.2	3.4	0.4	12.0
United Kingdom	-9.3	7.6	4.1	0.1	2.3
Emerging economies	-1.9	6.7	3.9	2.3	58.0
of which:					
China	2.2	8.4	3.0	0.6	18.6
India ²	-6.6	8.7	6.8	0.5	7.0
Russia	-2.7	4.7	-2.2	-0.1	3.1
Brazil	-3.9	5.0	3.1	0.1	2.3
World	-3.0	6.2	3.4	3.4	100.0
<i>p.m. World trade</i>	<i>-7.8</i>	<i>10.4</i>	<i>5.4</i>		

Sources: ECB and IMF.

1 As defined by the IMF and calculated on the basis of purchasing power parities (2017 version).

2 For India, the growth figures cover the fiscal year, which starts in the second quarter of the calendar year.



around the world to scale back their investment plans. These factors also contributed to a steady erosion of consumer and business confidence. Trade followed the path taken by the global economy, with almost all countries facing sluggish export demand by the end of 2022 and most ending the year with weak economic growth in the fourth quarter.

Differences in growth across major regions and countries over the past year were, to a large extent, attributable to heterogeneous exposure to the abovementioned factors. Food accounts for a larger share of household budgets in emerging economies than in advanced ones, making the former more vulnerable to supply problems affecting specific crops such as wheat and maize. In contrast, growth has remained at a reasonable level in most Asian countries. The latter, which mainly consume rice – the price of which has risen substantially less – often have energy price regulation mechanisms and fuel subsidies and are less economically dependent on Russia. In the emerging economies of Central and Eastern Europe, the opposite is true, due to their geographic proximity to Ukraine and resulting

vulnerabilities related to trade, energy supply and an influx of refugees. At the other end of the spectrum, commodity exporters had wind in their sails in the first half of the year but were subsequently obliged to contend with faltering global demand. Gas exporters in particular benefitted from Europe's search for new suppliers.

Western sanctions damaged the Russian economy and put severe pressure on its financial system, but a complete collapse was avoided. The Russian central bank intervened quickly by introducing capital controls and raising its key interest rate sharply for a short period to support the ruble. The reduction in gas deliveries to Europe was partially offset by an increase in gas prices. In addition, countries that did not adopt sanctions, such as Turkey, India and China, were willing to buy more Russian oil. On the other hand, domestic demand suffered serious setbacks, while the production structure shifted to a war economy.

In China, the zero-COVID policy and a further slowdown in real estate activity significantly

weakened economic growth. The Chinese authorities firmly maintained their zero tolerance policy towards the virus. Repeated lockdowns undermined consumer and business confidence and depressed both consumption and business investment. These effects were partially offset by new investment in infrastructure. On the other hand, the number of real estate companies facing financial difficulties continued to grow, leading to a rapid build-up in handover delays. This situation caused great concern amongst buyers who had already made down payments and discouraged new buyers. As a result, the number of new construction projects shrunk by almost 40 % in the first three quarters and property prices stagnated. In order to put a halt to this negative spiral, the financial authorities temporarily eased credit standards for mortgages and for loans to real estate companies.

In the advanced economies, the slowdown started in the US earlier than elsewhere, constraining economic growth. The US economy contracted slightly in the first half of the year before rebounding in the third quarter (only to lose momentum again at the end of the year). The sluggish growth in the first six months of the year was due to the depletion of stocks and increased imports of consumer durables against a backdrop of continued robust consumption. The direct impact of Russia's invasion of Ukraine on the US economy was limited, as the US is a net exporter of gas and wheat. Nonetheless, stubbornly high inflation and the associated rapid tightening of monetary policy gradually slowed demand, particularly affecting interest-sensitive components such as housing investment.

The euro area and the UK were more exposed to the negative fallout from Russia's invasion of Ukraine due to their geographic proximity to the war zone and their dependence on imported fossil fuels. Nevertheless, growth in the euro area exceeded expectations in the first half of the year. Demand for contact-intensive services picked up sharply after the last pandemic-related health measures were lifted in early spring and was a major driver of growth through the summer. Savings accumulated during the pandemic partially offset the loss of purchasing power caused by price increases. Business investment, imports and exports also held up well in the first half of the year. Although the decline in household purchasing

power remained limited on average thanks to the support measures adopted by Member States, rising inflation and uncertainty, eroding confidence and weakening global demand weighed on the various components of growth in the second half of the year. The result was a marked slowdown at year's end.

Economic developments in the UK were similar to those in the euro area. The strong growth dynamics of 2021 continued into the first quarter of 2022, but economic activity then slowed rapidly, declining in the second half of the year despite governmental support measures. Global factors were compounded in the summer by a government crisis that undermined public confidence in institutions. These successive shocks prevented the UK economy from fully recovering from the coronavirus pandemic in 2022.

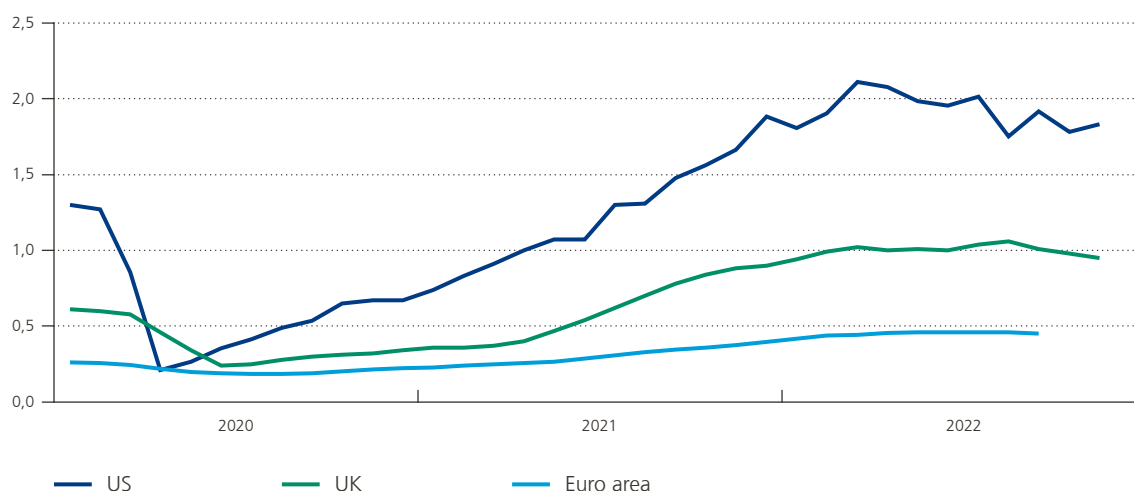
Tight labour markets in advanced economies supported consumption but hampered supply-side expansion, particularly in labour-intensive services. Despite the slowdown in growth, employment held up very well in the US, the UK and the euro area, and unemployment rates fell to their lowest levels in years. The strong recovery from the coronavirus crisis was accompanied by increasing pressure on labour markets. The number of job vacancies rose significantly as the economy reopened, while the impact of the pandemic on unemployment remained limited. In the euro area and the UK, the shock was cushioned by the use of furlough schemes, while in the US the effects proved to be short-lived as laid-off employees were quickly rehired. However, not all workers returned to the labour market after the pandemic, far from it. To date, the employment rate on the other side of the Atlantic and in the UK is still slightly lower than it was before the pandemic. This could be due to a deterrent effect amongst the over-55s, many of whom retired, and to greater inactivity for health reasons. On the other hand, the employment rate in the euro area rose somewhat over the same period as did the number of people over 55 in employment. These positive developments have helped to mitigate the fall in household purchasing power due to inflation.

In 2022, consecutive shocks widened growth differences between euro area Member States. On the one hand, the end of the acute phase of the

Chart 1.7

Labour markets were significantly tighter in 2022 than on the eve of the pandemic

(ratio between the number of job vacancies and the number of unemployed)



Sources: BLS, Eurostat and ONS.

pandemic boosted countries that depend heavily on tourism. A summer season without pandemic-related restrictions translated into strong demand for contact-intensive services in the second and third quarters, leading to a sharp rebound in tourism and leisure. In particular, this allowed the countries in the southern periphery of the euro area to grow more strongly than others. The relatively large expenditures funded by the Recovery and Resilience Facility (RRF) also contributed to this growth. On the other hand, Member States with a substantial industrial base were penalised two-fold in 2022 by persistent delays in supply chains and significantly higher production costs. As mentioned above, supply chain pressures remained very high for an extended period due to repeated lockdowns in parts of China and Russia’s invasion of Ukraine. Companies more highly integrated into global value chains were particularly affected. Starting in the summer, the most energy-intensive sectors, such as chemicals and metal and mineral production, were hit hard by the sharp rise in energy costs. Apart from these energy-intensive sectors, industrial output was generally resilient. Many companies in fact were able to introduce energy-saving measures.

Some Member States displayed particular vulnerability due to a high degree of dependence

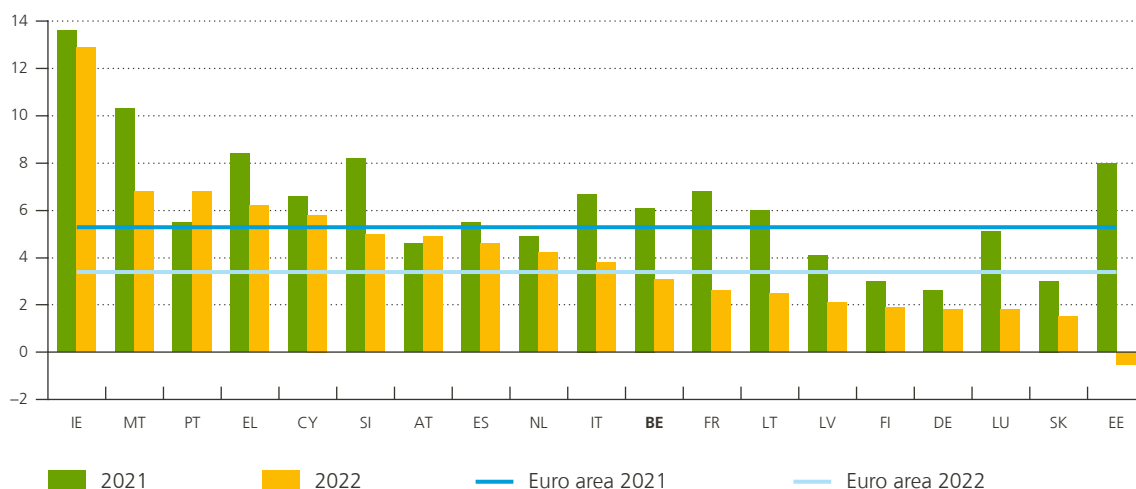


on Russian gas. Countries are by no means all in the same boat when it comes to dependence on various energy sources and the availability of alternatives. Although European energy markets are partially

Chart 1.8

New shocks widened the growth gap between euro area Member States

(real GDP growth, annual %)



Sources: ECB and NBB.

integrated, capacity constraints and other bottlenecks affecting gas and electricity networks led to disparities in wholesale prices. Germany, Italy, Central and Eastern Europe and the Baltic States were particularly affected due to the relatively high importance of Russian gas in their energy mix. In these countries, companies with gas-based production faced enormous challenges.

Finally, the shock caused by Russia’s invasion of Ukraine and the resulting sanctions against Russia had varying effects on the Member

States through the trade channel. The sanctions and ensuing international payment problems severely disrupted trade with Russia, while the war complicated trade with Ukraine. Russia and Ukraine are not major trading partners of most Member States, with the exception of the Baltic States and Cyprus for services. The heightened attention paid to the consequences of geopolitical tensions also revealed an additional vulnerability, namely high dependence on trade with China, especially for Germany, where 7.5 % of total exports are intended for the Chinese market.

1.4 Central banks intervened forcefully almost everywhere, leading to a tightening of financial market conditions

After more than a decade of accommodative monetary policy, central banks around the world began an accelerated process of normalisation, as inflation proved stronger and more stubborn than expected. Since 2007, central banks around the world have taken extraordinary measures to mitigate the economic impact of various crises (the global financial crisis, the European sovereign debt crisis and the COVID-19 pandemic), which not only brought policy rates close to their effective floors but also inflated their balance sheets. Central banks were faced with the highest inflation rates seen in decades due to a very strong recovery in the wake of the pandemic, with signs of overheating in some economies, coupled with supply shocks. The speed, strength and persistence of inflation caught both central banks and the markets off guard. Indeed, the impact of the rapid recovery and the fact that the supply shocks were initially thought to be temporary meant that central banks did not react immediately. However, when it became clear that the significant price increases were persistent and widespread, central banks in both advanced and emerging economies sped up the process of normalising monetary policy in order to avoid the emergence of second-round effects and a de-anchoring of inflation expectations which could generate self-fulfilling dynamics. This process is being carried out in a relatively synchronous manner worldwide.

Nevertheless, the pace of normalisation varies across regions. Dissimilarities in the origin, severity and persistence of inflation across countries led to differences in the initiation and pace of this process. Exogenous shocks to the global economy – such as Russia’s invasion of Ukraine, waves of COVID-19 and supply chain bottlenecks – have affected areas

and their economic prospects to varying degrees. Against this backdrop, several central banks decided to adopt a “meeting-by-meeting” approach based on the data.

The Bank of England took a historic step by starting to sell off bonds. After ceasing, in March 2022, to reinvest the proceeds from maturing bonds, the Bank of England began selling off bonds in November 2022. It thus became the first G7 central bank to take steps to actively reduce the size of its balance sheet. Indeed, faced with a tight labour market and substantial upward pressure on domestic costs and prices, the Bank of England announced in July 2022 its intention to start selling off bonds as from October 2022. However, following the announcement of the mini-budget and the ensuing high volatility in the gilt market, it was forced to postpone this plan by one month. In addition, the policy rate was raised on several occasions starting in December 2021, each time by 25 or 50 basis points, taking it from 0.25 % to 3.5 % by December 2022.

The Federal Reserve stopped quantitative easing. In light of the US economy’s progress in terms of employment and the significant rise in inflation, the Fed began to curb its asset purchases in November 2021, before halting them entirely in March 2022. Starting in June 2022, the US central bank also began to reduce the size of its balance sheet by ceasing to reinvest all maturing Treasury and agency mortgage-backed securities. Simultaneously, the Federal Reserve raised its policy rate for the first time in March 2022, and again several times, by 50 or 75 basis points, bringing the federal funds target rate to a range of 4.25 % – 4.5 % in December 2022. These 75-basis-point rate hikes were the largest increases since 1994.

The ECB started normalisation later. In the euro area, the ECB kicked off its normalisation process in December 2021, with an announcement that it would end purchases under the pandemic emergency purchase programme (PEPP) at the end of March 2022. At the same time, the ECB decided to temporarily increase purchases under the PPA to ensure a smooth transition after the end of the PEPP; however, a resurgence of inflation in 2022 prompted it to do so for a shorter period and to stop purchases as of 1 July 2022. In December, the ECB announced that it would start to reduce its balance sheet in March 2023 by not reinvesting the proceeds from maturing securities. This will result in a reduction of, on average, €15 billion per month through the end of June. Finally, the ECB started raising its key interest rates in July 2022, later than other central banks. Since then, there have been several rate hikes, bringing the deposit facility rate to 2% and the main refinancing

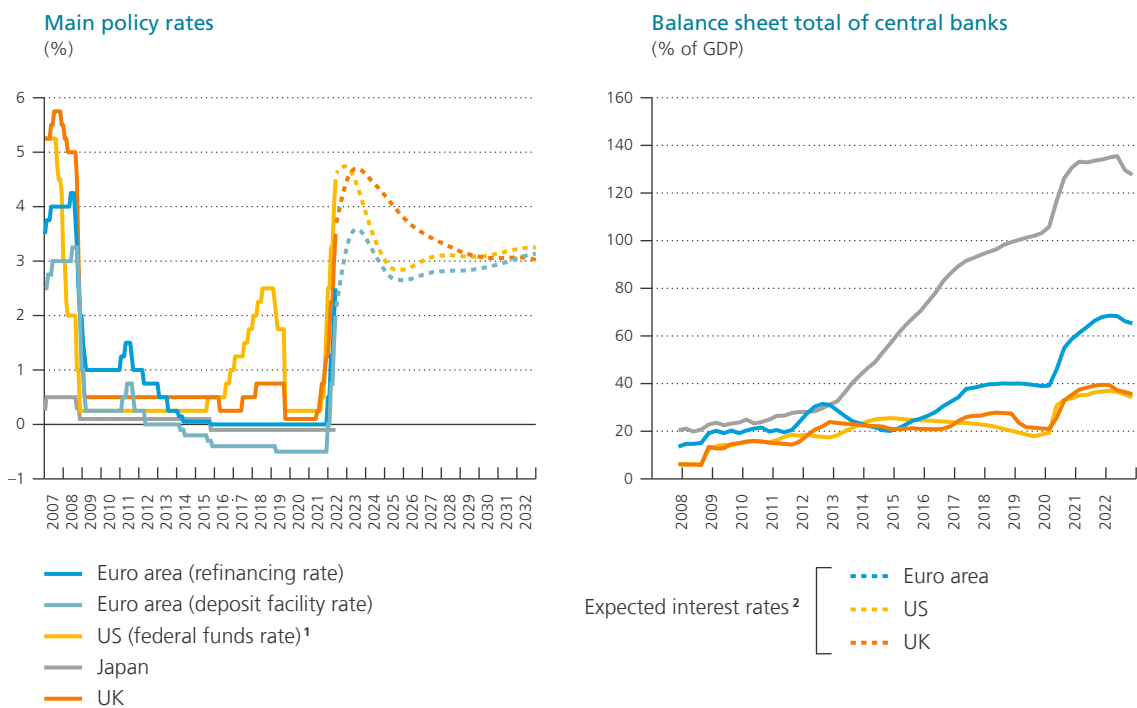
operations rate to 2.5% in December 2022 (for more information, please see chapter 2).

The Bank of Japan continued to pursue an ultra-accommodative monetary policy. With relatively more moderate headline and core inflation rates than elsewhere, the Bank of Japan decided to maintain its -0.1% rate on deposits and purchases of Japanese government bonds so as to cap the ten-year yield on the latter at 0.25%. However, at the end of December, it surprised the markets by relaxing its tight control on ten-year Japanese government bond yields “to improve market functioning”, while remaining keen to ensure “accommodative financial conditions”. The Bank of Japan will now tolerate a fluctuation of these yields between -0.5% and 0.5%.

Emerging economies also had to tighten monetary policy to curb inflationary pressures, with

Chart 1.9

After more than a decade of accommodative monetary policy, central banks around the world began a process of accelerated normalisation due to higher and more persistent inflation than expected



Sources: Bank of England, ECB, Eurostat and OECD.

1 Upper bound of the target range.

2 Rate expectations at the end of December.

the exception of China, Turkey and Russia in particular. The central banks of Brazil and Mexico were amongst the first to start tightening monetary policy in March 2021. They continued to do so in 2022, raising their policy rates several times. However, the Central Bank of Brazil decided to change course in September 2022, basing its decision on the fact that the objective of bringing inflation close to the target over a relevant horizon had been achieved. In contrast, in order to revive the economy, which had been affected by pandemic-related lockdowns and a property crisis, the Chinese central bank decided in 2022 on a surprise cut of several key rates. In addition, the reserve requirement was lowered in November 2022 for the second time that year to facilitate the provision of new loans. Likewise, in response to government pressure to stimulate growth, employment and exports despite double-digit inflation, the Turkish central bank cut its policy rates four times starting in August 2022. In November 2022, however, the bank's Monetary Policy Committee announced that it had decided to end the cycle of policy rate cuts. In Russia, after an emergency rate hike in the aftermath of the invasion of Ukraine and the imposition of Western sanctions, the central bank lowered its policy rate on several occasions, justifying these decisions with reference to lower risks to financial stability.

The normalisation of monetary policy in the major economic blocs led to a sharp rise in sovereign bond yields, breaking the pattern of very low yields that had prevailed for several years. The raising of policy rates by central banks in advanced economies, together with expectations of further inflation and hence future policy rate hikes, resulted in a rapid rise in sovereign bond yields throughout the year. Despite a marked upward trend, sovereign bond yields were very volatile, even more so than at the height of the pandemic. This reflected the high degree of uncertainty surrounding inflation trends, growth forecasts and monetary policy implications. Long-term interest rates rose steeply for the first time between March and June based on expectations that central banks would step up their fight against rapidly rising inflation. In July, the bond markets briefly eased as recession fears intensified and expectations of an earlier reversal of the monetary policy cycle in advanced economies increased. As soon as the Federal Reserve and the ECB, amongst other central banks, confirmed their determination to maintain price stability, as required by their mandate, interest rates started to rise again. In the last months of the year, bond yield volatility increased further as market liquidity deteriorated. In the euro area, interest rate spreads between southern member countries and Germany started to widen again as



from April, although flexibility in the reinvestment of maturing bonds of various countries purchased under the PEPP and announcement of the new transmission protection instrument (TPI) in July allowed a disorderly widening of these spreads to be avoided. As longer-term inflation expectations remained relatively stable from the end of March onwards, increases in nominal rates were also reflected in a rise in ex ante real interest rates (which returned to positive territory in the US and the euro area). Unlike the situation in other advanced economies and in keeping with the country's yield curve control policy, the rise in bond yields in Japan remained very limited. Bond yields surged only at the end of December, when the Bank of Japan widened the tolerance range for long-term government bond yields.

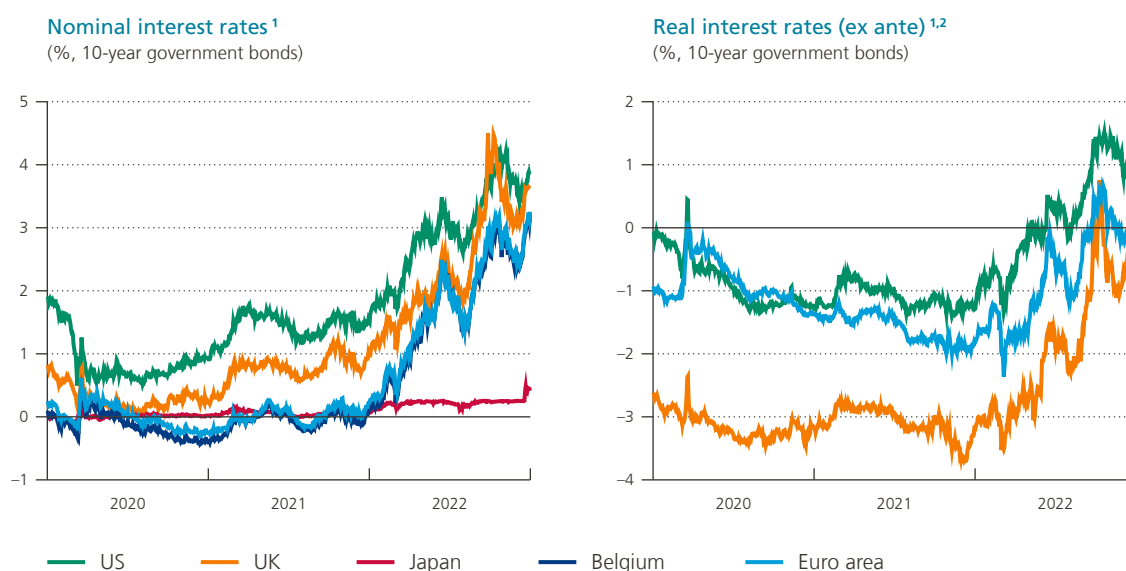
Rising sovereign yields in advanced economies, combined with a general increase in risk aversion, drove up financing costs for governments in emerging economies, as well as for businesses and households. Aside from the effect of higher risk-free interest rates, emerging markets saw risk premiums on their US dollar-denominated external bonds rise again, after easing in 2021, to levels close to those that prevailed at the time of the sell-off in

March 2020, at the height of the pandemic. This increase in financing costs was driven almost entirely by the most vulnerable economies. Nonetheless, the outbreak of a systemic crisis has so far been avoided and only a handful of governments of small economies have defaulted or had to restructure their external debt. Nominal interest rates on local-currency government bonds of emerging countries also rose, although often less than domestic inflation. Monetary policy differences between the United States and China, as well as the sharp appreciation of the dollar, led to significant outflows of foreign capital from the Chinese bond market up to November. Corporate bond yields were also hit hard by monetary policy tightening and heightened risk aversion. Smaller companies, which often find it more difficult to pass on higher production costs to consumers, and companies with lower credit ratings were particularly affected. Finally, mortgage rates in advanced economies rose sharply, from 1.3 % to 2.9 % between December 2021 and November 2022 in the euro area and to over 7 % in the US in November 2022.

Against the backdrop of rising interest rates, sovereign bond markets in advanced economies became sensitive once again to the risks

Chart 1.10

Monetary policy normalisation pushed up sovereign bond yields considerably



Sources: Eurostat and Refinitiv.

1 The aggregate for the euro area is the GDP-weighted average.

2 Nominal 10-year interest rates less expected inflation derived from swap contracts hedging inflation risk for a period of ten years.

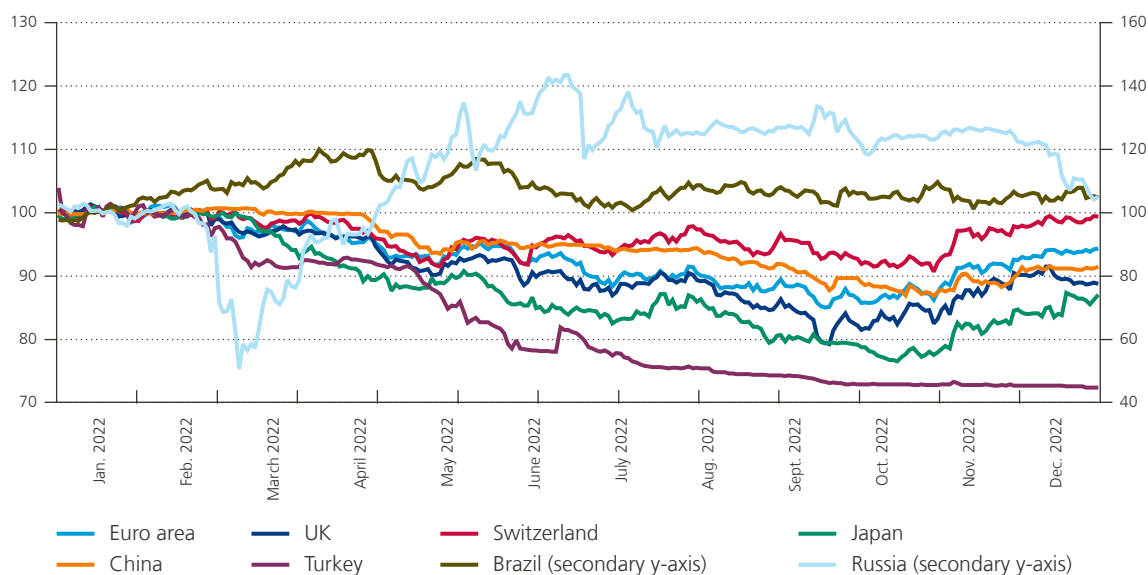
associated with rapid debt accumulation. The reaction of financial markets to the announcement of a “mini-budget” by the newly formed UK government in September is evidence to this effect. In the absence of a credible medium-term budgetary plan, the combination of an energy price guarantee for households and businesses and further stimulus measures raised concerns amongst investors that fiscal discipline was lacking. As a result, the financial markets adjusted their expectations for inflation and interest rates upwards, leading to a fall in the value of financial assets. The pound sterling depreciated to near parity with the US dollar. Long-term gilt yields rose so much that pension funds saw the value of their collateral melt away and were obliged to sell off their holdings *en masse* to meet their liquidity needs. To stabilise the markets, the Bank of England announced its intention to make targeted purchases of long-dated UK government bonds. This communication led to a recovery of the pound and a gradual decrease in the risk premium on gilts. In addition, several of the previously announced fiscal measures were withdrawn, a new prime minister took office and a new, more credible budgetary plan was unveiled in mid-November. This combination of factors ultimately dispelled the perception of heightened risk associated with UK sovereign bonds.

Foreign exchange markets were marked by a historically strong dollar and wide fluctuations in exchange rates. The US dollar appreciated significantly against almost all other currencies between April and November, reaching its highest level in nominal terms in two decades. Contrary to what is usually observed, it was the currencies of advanced economies, rather than those of emerging markets, that often lost the most ground to the greenback. These exchange rate fluctuations were largely due to the relatively rapid (expected and carried out) tightening of monetary policy in the US and the resulting interest rate differentials with other countries, the tremendous energy price shocks, which penalised energy importers but from which the US (along with other energy exporters) benefited, and weak growth prospects for the EU and the UK. The year as a whole was marked by exceptionally high volatility in the foreign exchange markets. Although the sharp depreciation of the Japanese yen and the pound sterling was more spectacular, the euro also lost substantial value against the dollar and, at the end of 2022, stood 7% lower than at the beginning of the year. Some Latin American energy-exporting countries, including Brazil and Mexico, which had already started to proactively raise their policy rates,

Chart 1.11

Almost all currencies lost ground to the US dollar

(bilateral exchange rates against the dollar, January 2022 index = 100)



Source: Refinitiv.

saw, on the other hand, their exchange rates appreciate against the US dollar. The Russian ruble also appreciated, very strongly moreover, after having plummeted following the invasion of Ukraine. This turnaround was due to a significant policy rate hike by the Russian central bank early on, several foreign exchange interventions, continued strong export earnings from energy and other commodities, and curbed imports owing to sanctions. The Turkish lira's multi-year depreciation trend continued in 2022, against the backdrop of further interest rate cuts by the Turkish central bank.

Higher interest rates and risk aversion, as well as weaker growth prospects, weighed heavily on the equity markets. Overall, 2022 was a poor year for equity markets. The major US and European stock markets saw their strong 2021 results largely wiped out, despite a catch-up towards the end of the year. Rising interest rates lowered the present value of future corporate cash flows, which had already suffered from the downward revision of medium-term growth forecasts. On the other hand, the UK and

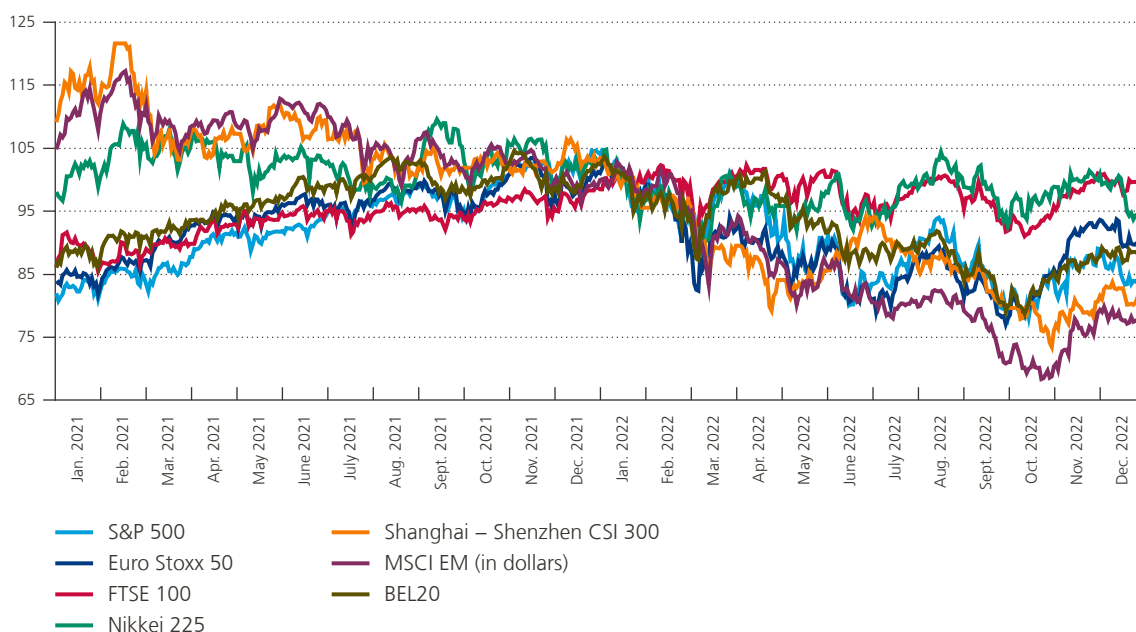
Japanese stock markets, which had recovered only moderately following the pandemic in 2021, continued to fluctuate at the level they had reached at year's end, at least in local currency terms. In most emerging economies, equity markets suffered from increased risk aversion and, in China in particular, a worsening growth outlook. The main exceptions were a number of energy exporters and Turkey, where equities protected local investors from exorbitant inflation. At industry level, the riskier stocks of real estate and technology companies lost the most value, while stock prices of energy producers benefited from rising energy prices.

The past year was also a turbulent one for the inherently more volatile crypto-asset markets. In May, one of the most popular stablecoins, Terra, collapsed following an investor exodus, while in November, the crypto exchange FTX filed for bankruptcy, following which a criminal investigation was launched. Both events sent shockwaves through the crypto-asset world. Bitcoin lost around 60% of its value against the dollar in 2022.

Chart 1.12

Stock markets performed poorly in 2022

(January 2022 index = 100)



Source: Refinitiv.



1.5 Governments face a delicate balancing act

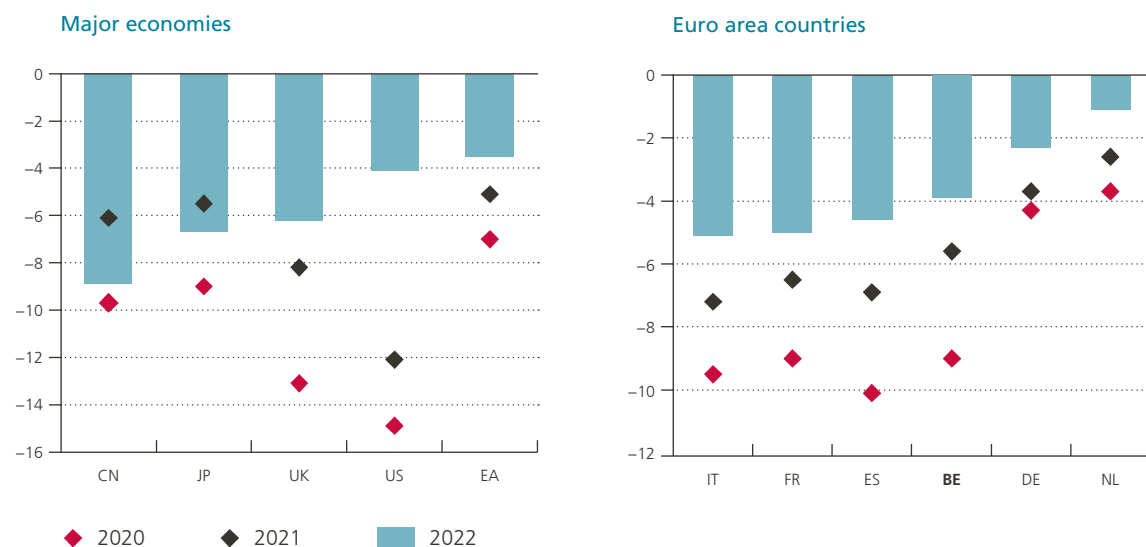
After having widened considerably in 2020 as a result of the pandemic, public deficits in most advanced economies continued in 2022 on the path of improvement down which they had started in 2021. In 2021, this progress was due to the reopening of the economy and the mechanical effect of activity levels returning to close to normal compared to the low point reached in 2020, when many industries came to a standstill during lockdowns. In addition, many support measures triggered by the COVID-19 pandemic could be partially or totally discontinued, depending on the sector. In 2022, real GDP continued to grow in most economies, labour markets were resilient and

the remaining COVID-19 restrictions were lifted in most countries. The shrinking of the deficit was most noticeable in countries such as the United States, which during the pandemic had used large-scale discretionary measures, in the absence of automatic stabilisers, and introduced substantial stimulus packages. It should also be noted that new legislation, such as the Chips and Science Act and the Inflation Reduction Act, provides for the spreading of investments over a ten-year period. In Europe, deficit reduction has been held back by, amongst other factors, Russia's invasion of Ukraine and measures to limit the impact of inflation on households and businesses.

Chart 1.13

Deficits shrunk again in most countries

(percentage of GDP)



Sources: ECB (December) for the total euro area, EC (autumn) for the euro area countries, IMF (October) for China, NAI-NBB for Belgium and OECD (December) for other advanced economies.

In Japan and China, deficits widened again in 2022. In Japan, the government was only able to relax pandemic-related support measures as from the second quarter and then sought, like other countries, to limit the loss of income for households and businesses as a result of the energy shock. The Chinese authorities, for their part, stepped up investment in infrastructure, particularly at the local level and in state-owned enterprises. The extensive COVID-19 testing carried out as part of the government's zero-tolerance policy also strained public finances.

In the euro area, however, general government borrowing requirements remained excessive in countries with public debt exceeding their GDP. Indeed, in France, Italy, Spain and Belgium, the deficit ranged from about 4% to 6% of GDP in 2022, i.e. close to or more than one percentage point above the 3% reference value stipulated in the Protocol to the Maastricht Treaty. Such deficit levels which would normally be considered excessive, were however tolerated under the European governance framework, as the general escape clause of the Stability and Growth Pact was still in force and in fact will continue to apply in 2023. In Germany and even more so in the Netherlands, deficits had returned to well below 3% of GDP by 2022.

Public deficits could have shrunk further but for Russia's invasion of Ukraine and the return of inflation. In particular, public finances in European countries were dragged down by direct costs related to the war, support measures for households and businesses to help them cope with the energy shock and inflation, the ramp-up of investments under the Next Generation EU recovery plan (both loans and investments from own budgets) and higher interest expenses. Across the euro area, interest expenses rose – by 0.1 percentage point of GDP – for the first time since 2012. In France and Italy, they rose by 0.4 percentage point. This reversal of trend was also evident in the implicit interest rate on public debt. However, this increase was more limited than the rise in interest rates on the securities markets as only a small proportion of borrowings is refinanced each year, with governments seeking to extend the maturity of their debt.

Direct support for the war had limited budgetary impact in Western European countries but a greater impact in Eastern European countries and

Germany, which provided more military assistance and humanitarian aid and offered temporary protection to a larger share of the four million Ukrainians who fled the conflict.

Support measures for households and businesses in response to the energy shock were substantial in European countries. Although international comparisons are difficult, the measures were on a larger scale in the euro area (accounting for around 1.2% of GDP for 2022) than in other major economies, as the shock was more severely felt in Europe.

A wide range of measures was put in place. In the EU, these measures were in line with recommendations by the European Commission, with the toolkit gradually expanded. As from 2022, France favoured direct price intervention in the form of a cap on gas and electricity prices. The substantial budgetary cost of this measure was offset by taxation of the windfall profits realised by electricity producers on energy sources other than gas, in particular nuclear and renewables. This tax raised more revenue in France than in the other main euro area countries in 2022. Indirect tax cuts provided significant support to households and/or businesses in all countries, although to a lesser extent in Germany. In 2023, Germany is expected to mainly provide temporary transfer payments to households and companies for energy consumption. In Spain, the main measures adopted in 2022 consisted of a 20-cent-per-litre fuel rebate for the benefit of petrol stations and suspension of a 7% tax on electricity production.

In the euro area, these measures have, since 2022, weighed most heavily on Italian public finances. While this may be surprising given that the country has little fiscal space, it can be explained by Italy's heavy dependence on (Russian) gas and the holding of early parliamentary elections in September. In addition to reducing indirect taxes, Italy has focused on transfer payments to households, especially pensioners, as well as corporate tax credits for gas and electricity consumption.

Measures disrupting price signals were more dominant, in terms of magnitude, than those targeting income. According to the EC typology, price measures have a direct impact on the marginal cost of energy consumption by households and/or

businesses. They therefore distort price signals and reduce the incentive to limit energy consumption or increase energy efficiency. Yet they accounted for about two thirds of the budgetary funds earmarked for support measures at EU level. In the short term, these measures slow down the pace of inflation but, by boosting demand, could make it more persistent in the medium term, thereby complicating the task of monetary policy.

In 2022, measures not targeting households and businesses most affected by energy and inflation shocks moreover accounted for more than 70% of the total cost to public finances. These included in particular reductions in indirect taxes, VAT and excise duties on fuel, electricity and gas.

Although public debt started to decline in most countries in 2021, it nevertheless remained at a

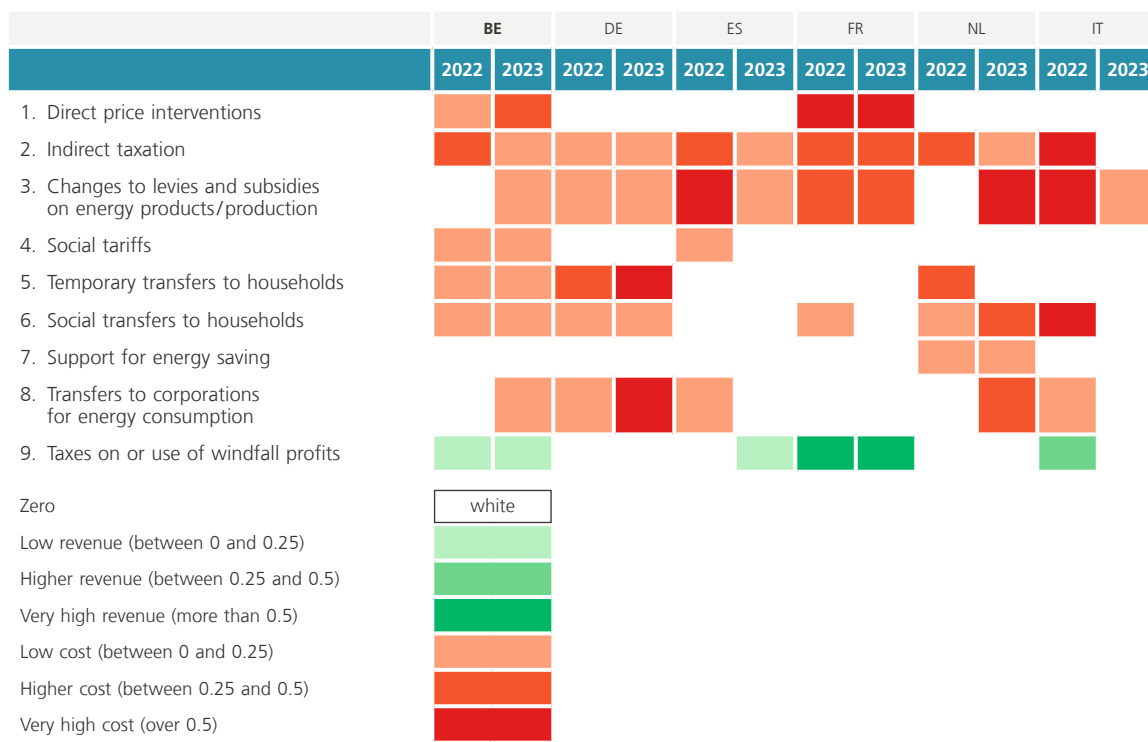
higher level in 2022 than before the pandemic.

Indeed, the pandemic pushed up the public debt ratio in 2020, owing to a combination of widening deficits, exogenous factors that increased the debt without affecting the budget balance, and a sharp decline in GDP. In 2021, thanks to a denominator effect in the opposite direction, the return to more normal activity levels enabled an initial fall in the debt ratio, facilitated by a reduction in (primary) deficits. In 2022, the debt ratio continued to decline, mainly due to high nominal GDP growth, with lower real growth being offset at the EU/euro area level by a faster rise in domestic inflation as reflected in the GDP deflator. In the euro area, a decrease in primary deficits also facilitated debt reduction.

Unlike in other major economies, the public debt ratio increased in China and Japan, mainly due to rising deficits.

Table 1.2

Euro area governments adopted various types of support measures in response to the energy shock¹



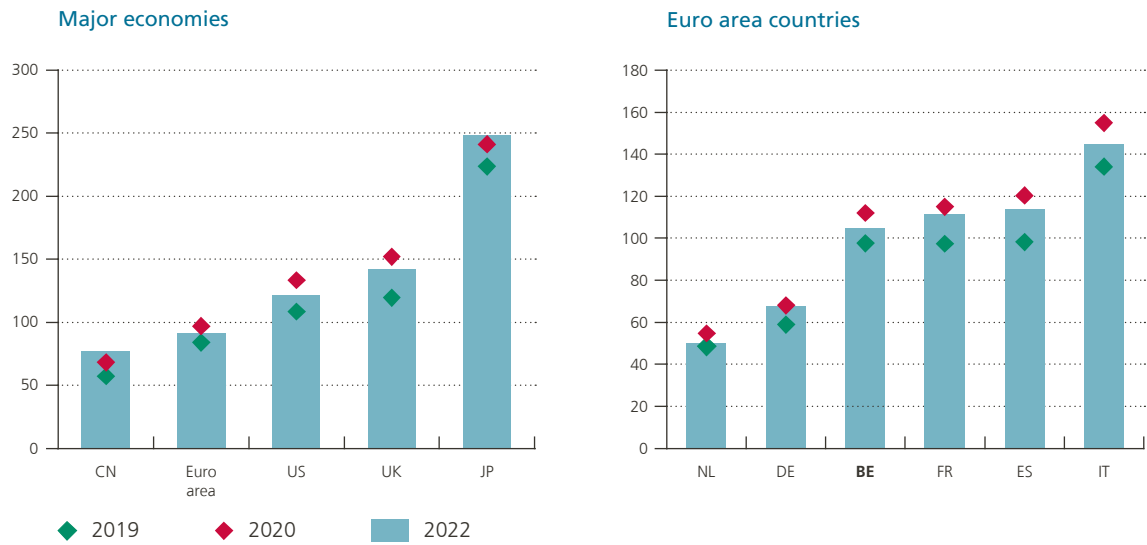
Source: EC (autumn).

¹ Measures announced before 31 October 2022, expressed as a percentage of GDP.

Chart 1.14

Public debt has declined in most countries since 2020 but remains at a higher level than before the pandemic

(% of GDP)



Sources: ECB (December) for the total euro area, EC (autumn) for the euro area countries, IMF (October) for China, NAI-NBB for Belgium and OECD (December) for other advanced economies.





2. Monetary policy in the euro area

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2.1 Acceleration of monetary policy normalisation

Annual inflation in the euro area reached on average 8.4% in 2022, the highest level since the creation of the Economic and Monetary Union. For the best part of the year, the rate of price rises gained pace: while it had been 5.1% back in January, it neared the 11% mark in October before falling back to 9.2% at the end of the year. Skyrocketing energy prices were largely responsible for this inflation and accounted for roughly half of it. Still, all major categories of goods and services recorded historic price rises and contributed to the escalation of inflation.



The rise in inflation was due to both supply shocks and monetary policy

The rise in inflation was initially caused by supply shocks, more specifically in relation to energy. Supply chains were unable to absorb the sharp increase in demand after the lockdown measures were lifted, and the situation was exacerbated by Russia's invasion of Ukraine in February, which notably disrupted the supply of energy and commodities. As a net energy importer, Europe – unlike the United States – was hit very hard by a deterioration of its terms of trade. The United States had to contend with a demand shock triggered by a much bigger fiscal stimulus implemented in the wake of the COVID-19 crisis than in Europe, which gave rise to higher domestic inflation.

Although monetary policy was not the cause of the sudden surge in prices, it fostered an environment conducive to the spread of inflation.

The measures taken during the pandemic, such as the Pandemic Emergency Purchase Programme, led to extremely accommodative monetary policy. These monetary policy measures – as well as those of a fiscal and macroprudential nature – were necessary to prevent the euro area economies from collapsing. At the same time, the monetary policy stance shored up inflation by keeping the cost of financing the economy as a whole at a low level for an extended period of time. Likewise, it contributed to the depreciation of the euro against the US dollar and other currencies in 2021 and during the first half of 2022, which also brought about higher import prices, especially energy prices denominated in US dollars.

Inflation spread rapidly. On the one hand, measures of core inflation hit new records. Some of these exclude the most volatile price categories.

The yardstick normally used by the European Central Bank (ECB) leaves energy and food products out of the total price index. It went up from 2.3 % in January to 5.2 % in December. Depending on the excluded components, the range of inflation measures at the end of the year ran from 5.2 % to 7.9 %. On the other hand, under pressure from production costs, inflation rates for almost all categories of consumption turned positive and more similar in magnitude in 2022. For instance, roughly nine product categories out of ten posted an inflation rate above or equal to 2 % at the end of the year, while prices for almost one third of all products recorded increases of 8 % or more. Apart from energy and food prices, this was also the case for prices of services (especially travel and accommodation) and non-energy industrial goods (such as furnishings, maintenance materials and small domestic appliances).

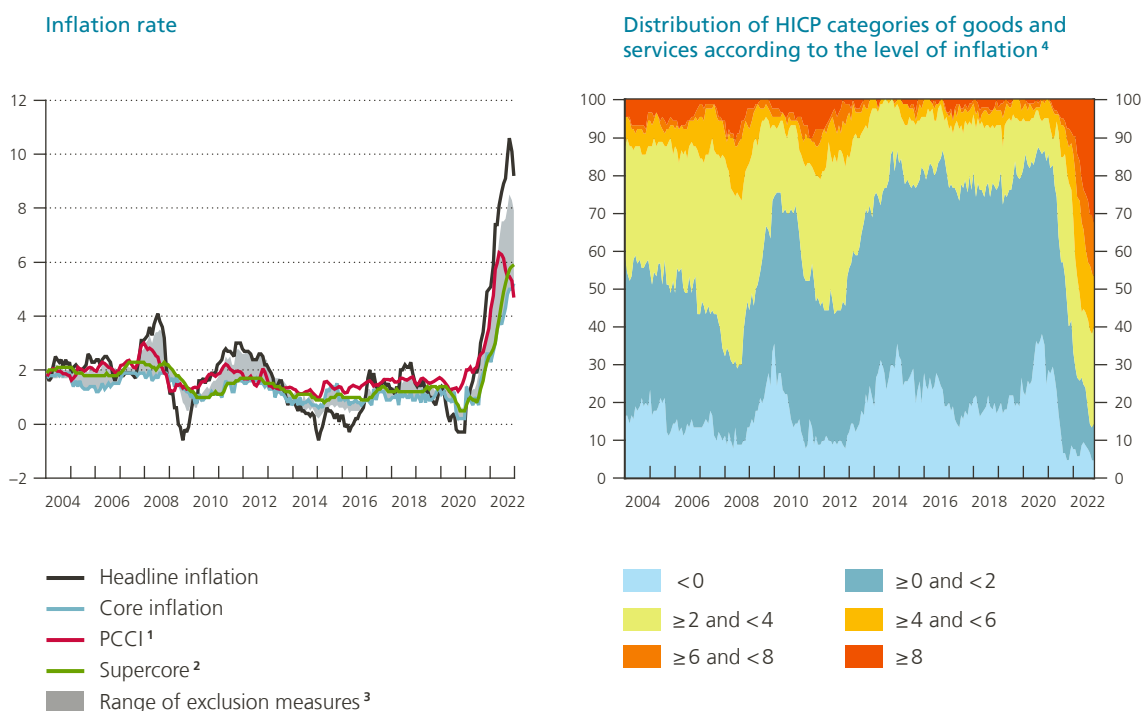
Monetary policy response gained traction during the course of the year

As the supply shocks were initially thought to be temporary, the monetary policy response to rising inflation in the euro area was not immediate. Determining the causes of inflation is crucial to defining the appropriate monetary policy response. When the effects of a supply shock are considered to be only short-lived, as was the case at the beginning of the post-COVID-19 recovery, monetary policy may look through the rise in inflation. In the case of a negative supply shock that tends to push prices and production in opposite directions, the central bank has to find a compromise between curbing inflation – with the attendant risk of causing a contraction in the economy – and supporting

Chart 2.1

Inflation is no longer solely linked to energy and now has a wider base

(in %)



Sources: ECB and Eurostat.

1 The PCCI (Persistent and Common Component of Inflation) measure is designed to take account of the persistent and common component of inflation rates for all euro area countries and sub-headings.

2 The “supercore” index is based on non-energy and non-food HICP items that are sensitive to the business cycle, measured by the output gap.

3 Measures that permanently remove certain volatile sub-components and temporarily remove certain large isolated price changes.

4 Based on the four-digit Classification of Individual Consumption According to Purpose (COICOP).

economic activity – by accepting a (temporarily) higher inflation rate. This dilemma is illustrated by the constant revisions of the quarterly macroeconomic projections compiled by the Eurosystem in 2022: average inflation over the period 2022-2023 was revised upwards at each forecasting round, while GDP growth over the same period was revised downwards. The United States did not face the same dilemma as the inflation it was dealing with was more demand-driven. In this case, monetary policy can be further tightened to counter the demand effects on both inflation and economic activity.

Another reason for the Governing Council's initially slow response in the face of accelerating inflation was the need to meet forward guidance conditions. In order to align this guidance to the ECB's new strategy published in July 2021, three conditions had to be met before the Governing Council could start raising its key interest rates. First of all, inflation had to reach its 2% target well before the end of the ECB's projection horizon, which is two to three years. Secondly, to prevent monetary policy from reacting to a brief surge in inflation, the inflation target had to be reached sustainably for the rest of the projection horizon. Thirdly, core inflation had to have risen enough to be compatible with a stabilisation of inflation at 2% over the medium term. Moreover, forward guidance suggested that these conditions could lead to a transition period during which inflation would be slightly above target. In June 2022, the Governing Council felt that these three conditions had been met.

But the effects of the supply shocks turned out to be more persistent than expected, which sped up the monetary policy response designed to align supply and demand at a level compatible with the desired price dynamics, notably to avoid the de-anchoring of inflation expectations and a wage-price spiral. As inflation continued its upward trend, the persistence of the supply shock effects became clear. Global value chains continued to be affected by the war in Ukraine and the restrictions associated with various coronavirus waves, leading to fears of a drop in growth potential. Likewise, there was a risk of the supply of energy and certain raw materials being jeopardised in the medium term. Ultimately, inflation that lasts longer than initially forecast risks triggering a surge in inflation expectations and, in turn, a wage-price spiral. More specifically, rising inflation expectations – which are therefore no

longer anchored around the central bank's target – can generate self-perpetuating inflation dynamics. Then monetary policy has to come into play, ideally preventively, to keep the inflation outlook at 2% over the medium term. If the monetary policy response is insufficient, greater tightening will be necessary later on, which could trigger high economic costs. The American experience of the 1980s is a good example in this regard.

While energy inflation slowed and supply bottlenecks were largely cleared up in the second half of the year, the euro area shifted towards a more domestic type of inflation, notably fuelling fears of a wage-price spiral. According to the latest Eurosystem projections, core inflation should remain above 2% until 2025, reflecting in particular labour market tensions and accelerating wage growth to compensate for inflation. Core inflation is nevertheless expected to fall back from 4.2% in 2023 to 2.4% in 2025, against a backdrop of dwindling upward effects related to supplychain bottlenecks and the reopening of the economy.

The labour market situation and wage dynamics point to the risk of a wage-price spiral. The labour market once again proved resilient in 2022, with a historically low unemployment rate of 6.7% on average and a record proportion (3.1%) of vacancies to total jobs. In this context, workers are more likely to demand pay rises to offset their loss of purchasing power. Although nominal wages had been rising since the end of 2021, rampant inflation lopped 5% off real wages between the third quarter of 2021 and the same period of 2022. In particular, the negotiated wage index, compiled by the ECB for the euro area, showed an average rise of 2.8% over the first three quarters, a rate above the long-term average (2.1%).

The Governing Council followed inflation expectation indicators closely

Financial market inflation expectations rose sharply in the short term, but have remained relatively well anchored in the longer term. These expectations are drawn from financial market derivatives (inflation-linked swaps). Inflation expectations one year ahead mainly reflect the latest inflation figures and the recent rise in wholesale energy prices. They peaked at more than 8% in August 2022 before

dropping back afterwards. On the other hand, inflation expectations two years ahead have remained much closer to the 2 % mark and only exceeded the 3 % threshold very briefly in 2022. They reacted to the tightening of monetary policy, falling back to around 2 % as soon as the prospect of a rise in interest rates became clear. In the longer term, inflation expectations are above all a measure of the credibility of the ECB's monetary policy. While the level of 2.5 % reached by long-term expectations – covering a five-year period starting in five years' time – in the first half of the year was worrying, they fell back once the monetary policy response became more definite.

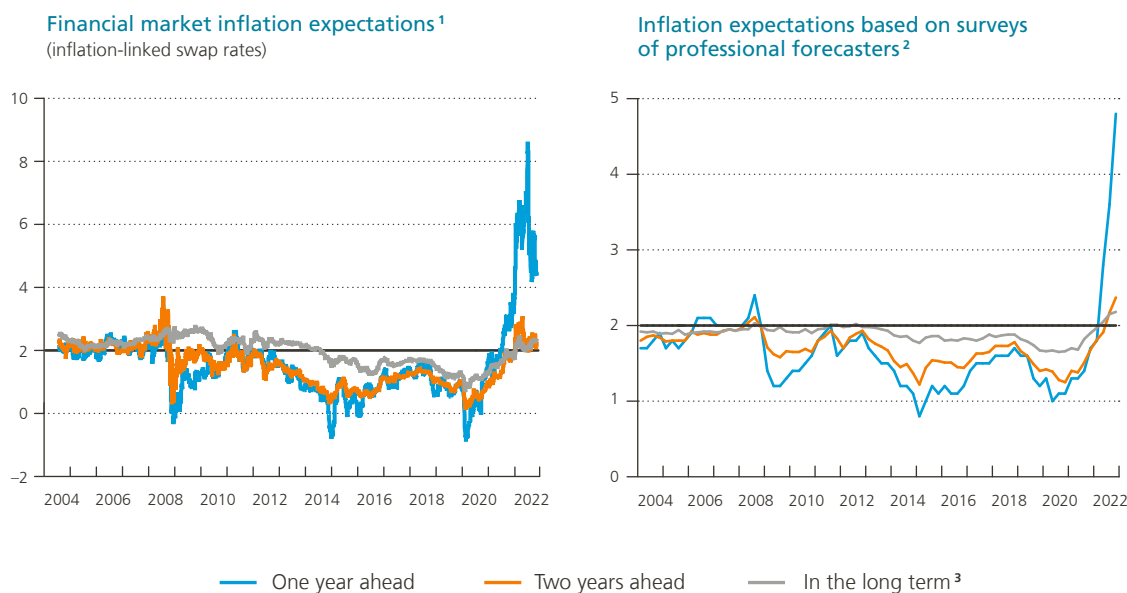
Surveys of professional forecasters confirmed the inflation expectations dynamics. The ECB conducts a quarterly survey amongst professional forecasters. The fifty or so respondents are experts who use different forecasting methods. According to this survey, the rise in one-year-ahead inflation expectations gained pace in 2022. In the fourth

quarter, they were close to 5 %. A surge in inflation expectations two years ahead was also observed, although the level remained closer to 2 %. The inflation projections compiled by the Eurosystem's services and published in December were in line with these expectations (6.3 % on average for 2023, 3.4 % for 2024 and 2.3 % at the end of the projection horizon in 2025). In the long term, which is about five years ahead, inflation expectations also showed a considerable increase, rising from 1.7 % in mid-2020 to 2.2 % at the end of 2022. In addition, the ECB carries out a survey every six weeks of thirty-odd monetary analysts. While the inflation expectations emerging from this survey were close to those revealed by the survey of professional forecasters, they also referred to a longer horizon, or that over which the effects of all shocks will vanish. For purposes of this survey, this can be interpreted, for the sake of simplicity, as around ten years. According to the survey, long-term inflation expectations remained anchored at 2 %.

Chart 2.2

Short-term inflation expectations rose sharply but longer-term expectations have remained relatively well anchored at 2 %

(in %)



Sources: Bloomberg and ECB.

1 Financial market inflation expectations are drawn from inflation-linked swaps. Apart from inflation expectations, the fixed rates for these swaps contain risk premia for inflation.

2 Averages of the aggregate probability distribution.

3 Long term refers to a five-year forward rate five years ahead for the financial markets and a horizon of more or less five years for the professional forecasters.

Nevertheless, consumer surveys and the distribution of survey responses revealed a risk of the de-anchoring of inflation expectations.

Every month, the ECB conducts a survey in which it gathers information on the expectations of some 14 000 consumers in the euro area. According to this survey, the median inflation rate expected at a three-year horizon was relatively high and stood at 3 % in December 2022. In addition, the distribution of responses to the surveys of professional forecasters showed that the number of respondents predicting an inflation rate well above 2 % over the long term was up in 2022. Distributions can also be estimated around market expectations from inflation options. These also pointed to an increase in the expectation of seeing high inflation in future.

2.2 Monetary policy measures

Appraisal of the sources of inflation in the euro area and the persistence of inflation evolved throughout the year, which explains why the measures taken to normalise monetary policy were sped up. In the original context of the economic recovery and the upward revision of inflation forecasts, the Governing Council announced in December 2021 the discontinuation of net asset purchases under the Pandemic Emergency Purchase Programme (PEPP) and a gradual tapering of the pace of asset purchases (Asset Purchase Programme – APP).

Net asset purchases under the PEPP were discontinued at the end of March 2022, while those under the APP were gradually reduced and came to an end on 1 July. As far as the APP is concerned, no end date for net asset purchases was originally set (in December 2021); it had been planned to continue these purchases as long as necessary to reinforce the accommodative impact of the policy rates. But the steady rise in inflation and inflation forecasts meant that the gradual tapering of the pace of net purchases, initially quarterly, became monthly (in March 2022). As the medium-term inflation outlook had not weakened, it was decided (in June) to stop net asset purchases altogether. Nonetheless, the reinvestment of redemptions of securities held under both the PEPP and the APP continued for the rest of the year.

The discontinuation of net asset purchases was followed by a rise in key interest rates

When it decided to stop net asset purchases under the APP, the Governing Council also announced that the forward guidance conditions had been met and that interest rates would be raised. In June 2022, when the Eurosystem's inflation forecast for 2024 (the end of the projection horizon)

exceeded the 2 % mark, the ECB changed the tone of its communication on interest rate policy, deeming that the forward guidance conditions had in fact been met. The ECB then signalled its intention to put up policy rates as early as the Governing Council meeting at the end of July and that a gradual but sustained rise in rates was to be expected. This decision stuck to the announced sequencing, which involved stopping net asset purchases just before starting to raise key interest rates.

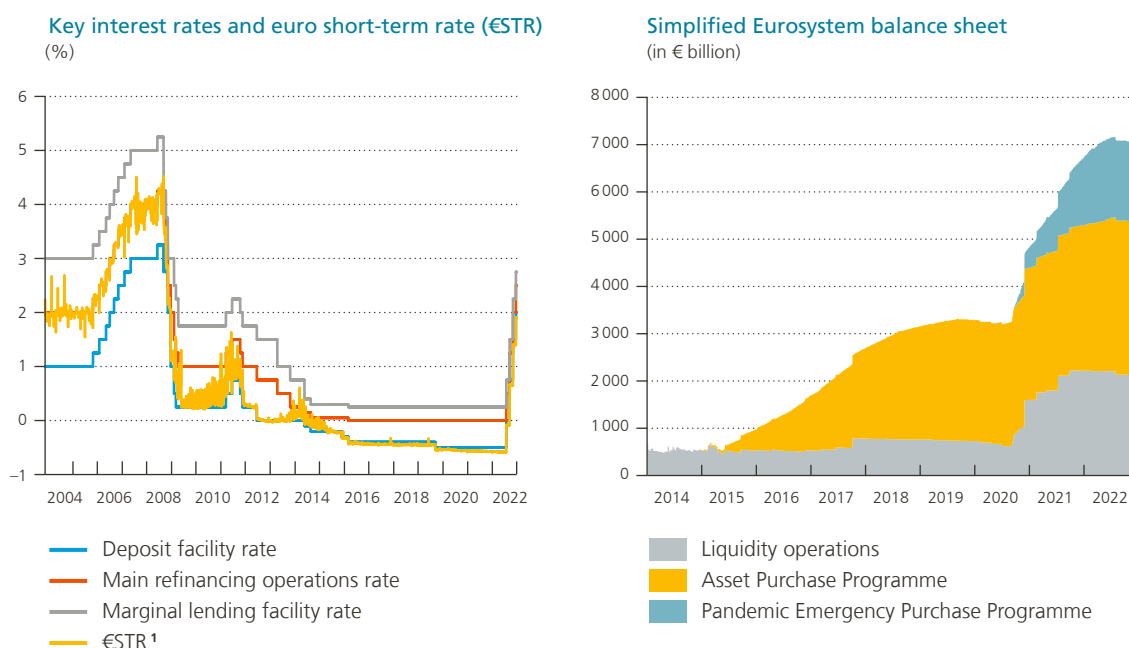
The ECB's policy rates were raised several times, each time substantially, starting in July.

The first interest rate hike was 50 basis points. As inflation was still much too high and expected to remain above target for an extended period, the normalisation of interest rates continued, with increases of 75 basis points in September and October and 50 basis points in December. As surplus liquidity reserves held with the Eurosystem were still considerable, short-term money market rates were still evolving in a floor system, meaning they were determined by the deposit facility rate, i.e. the overnight rate banks receive for the funds they deposit with the ECB. The euro short-term rate (€STR) – the overnight money market rate – effectively remained close to this rate, albeit a few basis points below (given that the €STR takes account of banks' transactions with financial institutions that do not have access to the ECB's deposit facility). Owing to these successive rate hikes, at the end of the year, the deposit facility rate had been raised to 2 %, while the €STR had reached 1.9 %. Furthermore, the main refinancing operations rate – the rate at which banks can borrow funds from the ECB for a week – was raised to 2.5 % and the overnight marginal lending rate went up to 2.75 %.

It was also decided to set the remuneration for reserves required to be held by banks with the Eurosystem at the ECB's deposit facility rate and

Chart 2.3

Key interest rates were raised and the Eurosystem's balance sheet started to shrink



Source: ECB.

¹ Until 1 October 2019, the €STR was estimated by subtracting 8.5 basis points from the euro overnight index average (EONIA).

no longer at the main refinancing operations rate. This decision aligned remuneration for mandatory reserves to current conditions on the money markets, as evidenced by the proximity of the €STR rate to the deposit facility rate.

Furthermore, the Governing Council decided to lift the specific conditions governing TLTRO III operations and adjust the interest rates applicable to these operations. During the pandemic, the interest rate on TLTRO III operations – the third series of targeted longer-term refinancing operations – was index-linked to an average of the key interest rate applicable for the entire duration of the operation, on top of which specific conditions in force until June 2022 made it possible to reach a financing rate of –1%. However, the financing rate has been index-linked since 23 November 2022 based on the average applicable key ECB interest rates from that date onwards. The Governing Council also decided to offer banks three additional voluntary early repayment dates. These measures were intended to ensure consistency with the broader monetary

policy normalisation process by contributing to the normalisation of banks' funding costs and reinforcement of the transmission of policy rate rises to bank lending conditions. The recalibration also removed deterrents to early voluntary repayment of funds borrowed under TLTRO III. The impact of TLTROs on the Eurosystem's balance sheet was less significant in 2022 owing to early redemptions. Banks repaid a total of €796 billion in November and December.

Bond portfolio reduction plans announced

Since the reduction in the portfolio of assets was an integral part of the normalisation process, the Governing Council decided to no longer fully reinvest the proceeds from assets reaching maturity. From a monetary policy viewpoint, a balance sheet contraction and a rise in policy rates are imperfect substitutes. The former has a much greater effect on long-term rates, while conventional interest rate policy tends to influence

short-term rates. Consequently, a balanced combination of the two is justified to bring inflation back down to the 2% target over the medium term. In December, the Governing Council decided to scale down the APP portfolio as from March 2023 by not fully reinvesting the proceeds from redemption of maturing assets. This compression will work out to €15 billion a month on average through the end of the second quarter of 2023, after which the pace will be gradually adjusted. As far as the PEPP is concerned, reinvestment is expected to continue at least through 2024.

2.3 Transmission of monetary policy measures to financing conditions

Monetary policy measures are fed through to the economy with time lags that differ depending on the variables. The influence on market expectations and financial market conditions is generally quite rapid, as seen following previous announcements of monetary policy normalisation and the implementation of measures. On the other hand, decisions take longer to feed through to the real economy.

Transmission has been quite smooth on the money markets, albeit with some turbulence on the secured loan market

Fluctuations in the €STR reflect deposit facility rate rises. The ECB's key interest rate changes are initially passed through to short-term money market rates. More specifically, the €STR is the implicit operational objective of the ECB's interest rate policy. This rate effectively serves as a reference for overnight indexed swaps whose fixed rates are considered to be risk-free. This swap rate curve therefore defines the monetary policy stance, not only in the short term but also in the longer term, insofar as it reflects policy rate expectations.

Despite the sound transmission of monetary policy to the €STR, tensions emerged on the secured loan market, which would have been even more pronounced had the Eurosystem not adjusted the interest rate ceiling in place for the remuneration for government deposits. Rates for different types of secured loans neither immediately nor fully reflected rises in the deposit facility rate. This lack of transmission could be attributed to several factors explaining the scarcity of high-quality liquid assets given as

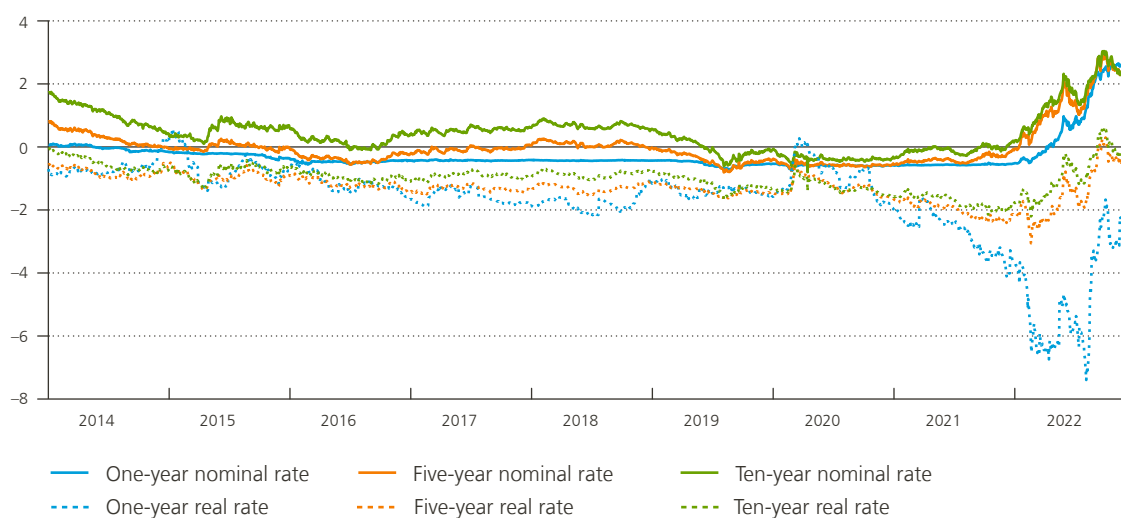
collateral. On the one hand, demand for collateral rose: the rise in interest rates eroded the value of collateral, meaning that, for the same nominal amount of secured loans, more securities were needed, while growing volatility on the markets also served to tighten up collateral requirements. On the other hand, the supply of bonds available on the market was lower as the Eurosystem had accumulated a hefty volume of sovereign debt under its asset purchase programmes. This scarcity of collateral would have been even worse had the ceiling of 0% applicable to the remuneration for government deposits been maintained, as governments would then probably have sought to invest these deposits on the money market – against collateral, at least in part – with a view to obtaining a positive return. So as to not exacerbate these tensions, the Governing Council decided on 8 September 2022 that the ceiling applicable to remuneration for government deposits would temporarily (until 30 April 2023) remain at the deposit facility rate or the €STR, whichever was lower.

As the normalisation of monetary policy had been widely anticipated, long-term risk-free nominal interest rates turned positive again at the end of 2021 and continued to rise thereafter. For example, the ten-year rate exceeded the 2% mark in September 2022 and reached 2.5% on average in December. Real interest rates – that is, nominal rates adjusted for inflation – remained negative for a long time. In September, long-term real rates started to fluctuate around 0%. But in view of the still very high short-term adjustment for inflation, short-term real rates remained clearly in negative territory, although at a gradually less pronounced level at the end of the year, after having plunged below the –7% mark in August.

Chart 2.4

Risk-free nominal interest rates turned positive, while real rates approached zero¹

(in %)



Sources: Bloomberg and Refinitiv.

¹ Risk-free rates are approximated by using overnight €STR indexed swap rates. Inflation compensation is measured by rates for inflation-linked swaps.

The spread between sovereign and corporate bond yields and risk-free rates remained generally contained

Overall, sovereign bond yields closely followed movements in risk-free rates, even though some signs of limited fragmentation emerged.

The spread between the weighted average ten-year yield on sovereign bonds and the risk-free rate remained close to zero throughout 2022. Movements in risk-free rates – which reflect expectations of future changes in monetary policy rates – were therefore passed on almost entirely. However, some country-specific dynamics widened the dispersion of sovereign spreads. For example, the Italian spread rose from around 100 to 150 basis points between the beginning and the end of the year. At the same time, the German spread turned even more negative, widening from roughly –25 to –40 basis points, partly due to high demand for German bonds to be used as collateral for borrowings on the money market.

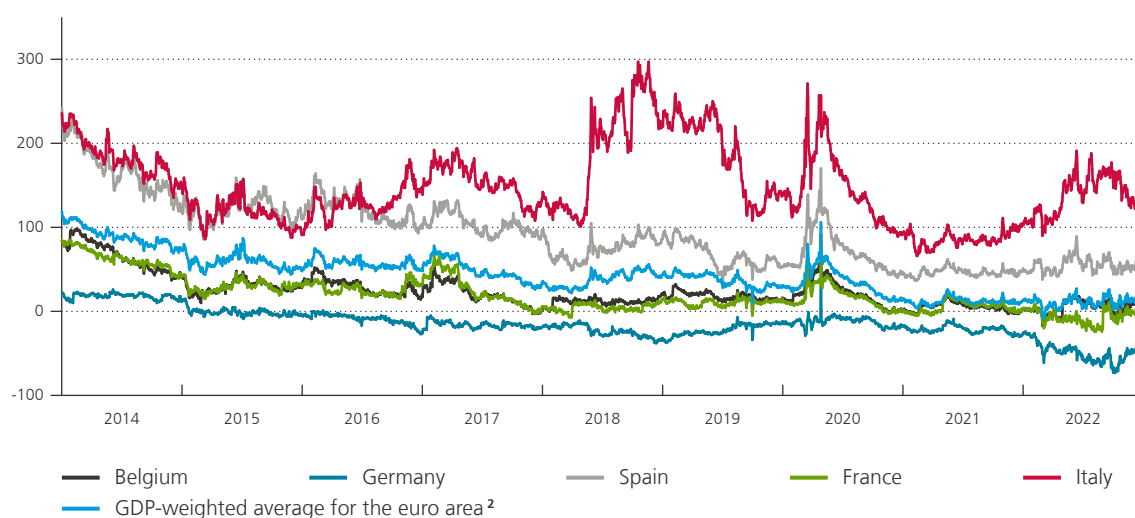
The fragmentation of financing conditions was curbed, partly thanks to announcements regarding the exercise of flexibility in PEPP reinvestments and the creation of a new instrument, the

transmission protection instrument (TPI). These announcements were made after an *ad hoc* meeting of the Governing Council on 15 June 2022, while the TPI was further outlined at the regular meeting of the Governing Council in July. Flexibility in PEPP reinvestments means that the assets held can be reinvested in a more flexible manner over time, between asset categories and jurisdictions, so as to support a smooth transmission of monetary policy. In the case of public sector securities purchases, the benchmark for allocation between jurisdictions remains the Eurosystem capital key. As for the TPI, this enables the ECB, under certain conditions, to buy up financial securities to counter “disordered and unjustified market dynamics that constitute a serious threat to the transmission of monetary policy in the euro area”. Countries that can benefit from bond purchases under the TPI must conduct sound and sustainable fiscal and macroeconomic policies. In any event, the purchases will be stopped if there is a lasting improvement in transmission or on the basis of an assessment attributing persistent tensions to the country’s economic fundamentals. The TPI differs from the PEPP mainly in the fact that its activation does not depend on the evolution of the pandemic. It is also worth noting that outright monetary transactions (OMT) are still part of the Eurosystem’s toolbox.

Chart 2.5

The weighted average of ten-year sovereign bond yields closely followed risk-free rate movements, although the yield spread by country widened slightly

(spread over the risk-free rate, basis points)¹



Source: Refinitiv.

¹ The risk-free rates are approximated by the 10-year €STR overnight indexed swaps.

² The weighted average takes account of the following countries: Germany, France, Italy, Spain, the Netherlands, Belgium, Austria, Portugal, Finland, Ireland and Greece.

Further down in the monetary policy transmission chain, spreads between corporate bond yields and risk-free rates varied but on the whole remained moderate. These spreads widened temporarily following Russia's invasion of Ukraine and then took off again just before the summer, under the influence of monetary policy normalisation, especially the discontinuation of net purchases of corporate bonds. In the second half of the year, fears of the economy going into recession once again temporarily accentuated yield spreads.

Bank financing costs also rose. Bank bond yields continued their sharp upward trajectory. On the other hand, rates on new deposits by non-financial corporations and households rose only very slightly and were still at a low level at the end of 2022. The average rate on deposits by households (which includes short-, medium- and long-term deposits) and non-financial corporations stood at 0.5% in December. At the end of the year, outflows from overnight deposits and inflows to term deposits were observed in several euro area countries, signaling an active portfolio decision by firms and

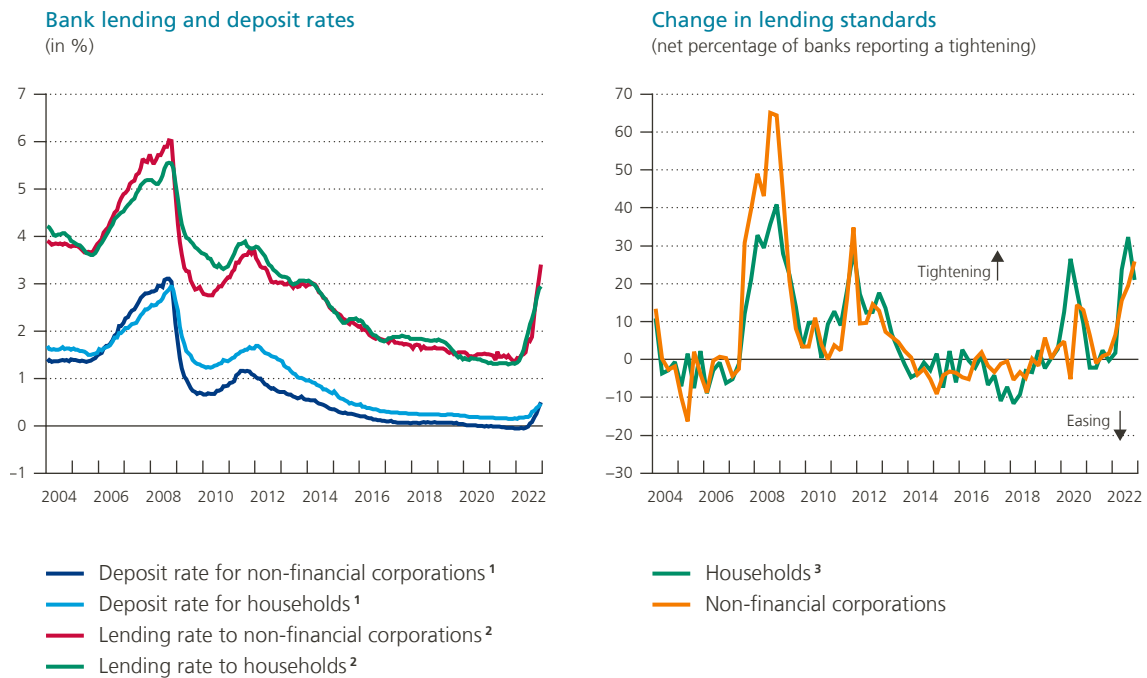
households to take advantage of the growing positive spread between the interest rates on term deposits and sight deposits.

Bank loans became more expensive

Bank interest rates on loans to households and businesses rose rapidly and steadily. The aggregate interest rate on bank loans to households and businesses reached, respectively, 2.9% and 3.4% in December 2022, while these rates had been around 1.3% and 1.4% at the beginning of the year. This noticeable increase in bank lending rates in relation to their financing costs (deposit rates in particular) reflected the beginning of a return to normal bank margins.

Chart 2.6

Bank lending rates rose and lending standards were tightened



Source: ECB.

1 Average interest rate on new deposits weighted by corresponding volume of outstanding amounts.

2 Average interest rate on new loans.

3 Mortgages only.

In line with rising borrowing costs, lending criteria were tightened for both non-financial corporations and households. The findings of the Eurosystem Bank Lending Survey indicate the reasons for this. In the context of an economic slowdown and given fears of a recession, it was above all the higher perception of risk and the reduction of banks' risk tolerance that impacted the tightening of conditions for lending to businesses and households. While the net tightening observed in 2022 was comparable to that seen during the COVID-19 crisis, it was much

less marked than during the global financial crisis. Moreover, the survey points to a drop in household demand for loans for house purchases in 2022, mainly due to the rise in interest rates but also owing to a loss of buyer confidence and property market prospects. On the other hand, demand for business loans continued to rise for the best part of 2022, boosted by working capital borrowing requirements (related to such things as higher production costs and an increase in stock levels caused by the slowdown in demand).

2.4 Monetary policy in a time of uncertainty

The economic situation and outlook remain highly uncertain, which complicates the task of establishing inflation forecasts and drawing the consequences therefrom for monetary policy.

As monetary policy influences inflation with a time lag, it is based primarily on inflation expectations, hence the need for accurate forecasts. However, over the last few quarters, there have been substantial forecasting errors. These errors can be explained by either the economic shocks that repeatedly impacted inflation or the limitations associated with the structure of the macroeconomic models on which expectations are based. For instance, the models have difficulty capturing regime changes and the consequences of rare events such as wars, pandemics and financial crises.

In this context, while monetary policy rates are clearly on the rise and the Eurosystem's balance sheet has started to shrink, the exact path of monetary policy is not known.

Conceptually, the normalisation of conventional monetary policy implies a return to policy rates at the natural equilibrium rate (r^*), which is the rate that keeps economic activity at its potential and inflation at the central bank's objective. Yet this natural rate is not observable and estimates of it are unclear: there are wide confidence intervals surrounding the estimates, which also depend on the model used. In view of the uncertainty as to the equilibrium rate, this benchmark alone cannot be used to set monetary policy response. Moreover, the reduction in the Eurosystem's balance sheet is also part of the normalisation process. The size and composition of the balance sheet depend on the system in which interest rate policy is implemented. A floor system – in which short-term rates remain close to the deposit facility rate – requires that central banks maintain a critical level of liquidity reserves with the ECB. This system differs from a corridor-type system, which is characterised by scarce liquidity reserves and the development of short-term money market rates

more or less in the middle of a corridor defined by policy rates; in the ECB's case, these are the deposit facility and marginal lending rates.

In the second half of the year, the focus was on the fact that Governing Council decisions would be taken meeting-by-meeting based on the latest available data.

Shortly after the forward guidance conditions had been met, it was effectively decided to adopt a meeting-by-meeting approach. Forward guidance had become less relevant as it could rapidly turn out to be binding in view of the high degree of economic uncertainty. Moreover, the Governing Council decided that policy rate decisions would be data-dependent. However, so as to avoid raising interest rates too much, monetary policy decisions cannot be based solely on observable inflation figures, which point to an inflation rate well above target. The transmission of monetary policy to the real economy takes time, and the full effect of the measures taken in 2022 may only reach the economy once inflation is on a downward path or close to target. At the other extreme, relying solely on inflation expectations runs the risk of under-reacting as these tend to show inflation returning to the 2% target.

The Governing Council took the view that interest rates would have to be raised further, significantly and at a steady pace and also decided to scale down the APP at a measured and predictable pace.

The ECB's policy rates are the main instrument by which the Governing Council determines the direction of monetary policy. They will be set at sufficiently restrictive rates to ensure that inflation returns as soon as possible to the 2% target over the medium term. The pace of the APP portfolio reduction will be regularly reassessed to ensure that it remains consistent with the overall monetary policy strategy and stance, so as to preserve smooth market functioning and maintain firm control over short-term money market conditions. Between now and the end

of 2023, the Governing Council will also revise its operational framework for steering short-term interest rates, which will provide information on the ending of the balance sheet normalisation process.

The choices of other policy-makers also determine the course of inflation

Effective monetary policy requires consistent decisions in various fields, in particular macroprudential and fiscal policies. Like monetary policy, these policies influence aggregate demand and therefore inflation. The impact of monetary policy measures can thus be reduced, or even offset, by more flexible fiscal and macroprudential policies.

Macroprudential policy will have to deal with increasing financial stability risks in an uncertain economic climate. If rates are raised too much or too quickly, the cost of private and public debt could rise to the point at which debt servicing and new borrowing are compromised, which could in turn trigger an unfavourable financial accelerator. That being said, persistently low interest rates – especially in real terms – may encourage excessive risk-taking, possibly leading to the creation of bubbles in some market segments, such as shares or the property

market. Monetary policy can however take these risks into account as financial stability is a necessary prerequisite for price stability.

While monetary policy and fiscal policy were mutually supportive during the pandemic, the new macroeconomic environment requires a different combination to effectively tackle inflation. These two types of policy quickly managed to get the economy out of the deep recession that the pandemic had plunged it into, by countering the sharp drop in demand and preventing a downward price spiral. The ECB set up the PEPP and proposed new targeted longer-term refinancing operations. But because inflation has since taken off and become rampant, monetary policy has had to change course. Fiscal policy, for its part, has shored up demand via job retention programmes and general support measures at national and European levels.

Not only would excessively flexible fiscal policy lead to a faster rise in interest rates, but it would also increase the risk of fragmentation in the euro area. With high budget deficits supporting aggregate demand and thus inflation above target, monetary policy-makers have no choice but to further raise policy rates in order to dampen inflation. Moreover, the sustainability of public debt could be called into question if interest rates were to be



raised rapidly and sharply. In this case, lenders would request dissuasive risk premiums, thereby further tightening financing conditions for governments. The turbulence the United Kingdom faced last year was a good reminder that governments need to credibly commit to running responsible fiscal policies and, more generally, that an inconsistent policy mix can destabilise a country's economy.

The fiscal support measures designed to protect the economy from the consequences of high energy prices should be temporary, targeted and designed so as to preserve incentives to reduce energy consumption. More particularly, it is necessary to protect the most vulnerable households and businesses from the energy price shock, while encouraging potential growth and energy independence via public investment and structural reforms. Yet in the face of the energy crisis, there has been widespread implementation of non-targeted measures, with governments resorting to cuts in indirect taxation, subsidies or energy price caps.

Against a backdrop of skyrocketing energy prices, the question arises as to how to share the burden of the deterioration in the terms of trade between companies, workers and the government. For net energy importers, the rising cost of energy leads to a general impoverishment of the population. Governments can try to mitigate the impact on the most vulnerable segments through the use of targeted policies. For their part, companies try to protect their profit margins and workers their purchasing power through wage bargaining. In an extreme scenario in which companies attempt to keep their unit profit margins unchanged, any reduction in household purchasing power will lead to a drop in demand for firms' products. At the other extreme, maintaining full purchasing power threatens the ability of firms to raise sufficient funds to carry out their investment projects and, ultimately, jeopardises their survival, to the detriment of employment and well-being. Wage negotiations are closely linked to actual and expected inflation. Central banks are thus keeping a close eye on developments in this area.



3. Inflation, indexation and wage costs

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3.1 Inflation reached its highest level since the 1970s

General price increases and inflation are a normal, even desired, phenomenon. Persistent general price decreases are in fact bad for the economy. Indeed, if consumers expect goods and services to become cheaper, they will delay purchases. Of course, the pace of price increases should be moderate and predictable, which is why the ECB aims for 2 % annual variation in consumer prices over the medium term. The consumer price index measures the change in the price of a representative basket of consumer goods and services. Inflation corresponds to the percentage difference between the level of the consumer price index for a given month and its level for the same month a year earlier.

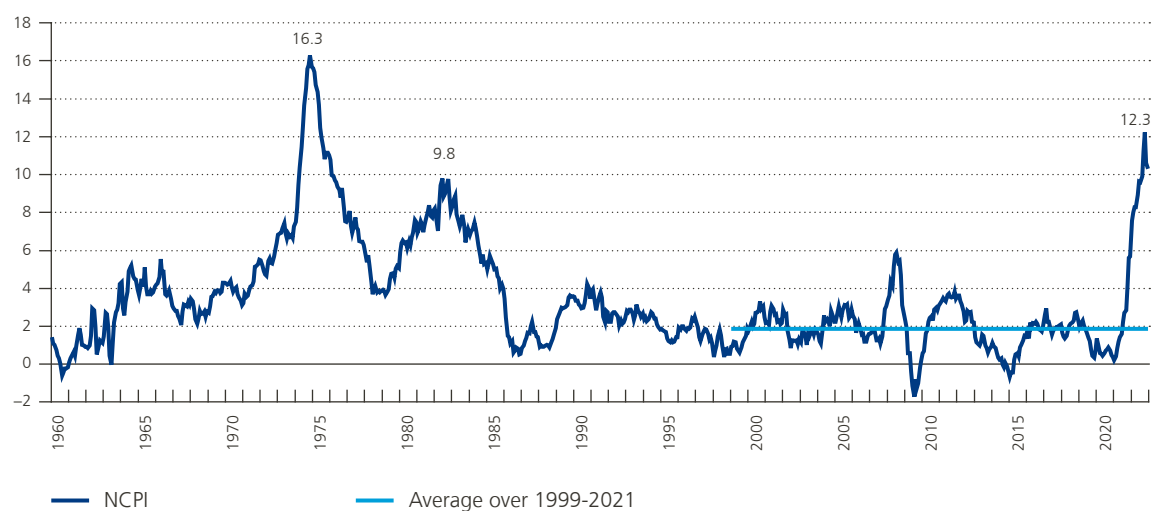
Between the introduction of the euro in 1999 and the end of 2021, inflation in Belgium averaged 1.9 %. This was the case for both of the consumer price indices used in Belgium, namely the national consumer price index (NCPI) and the harmonised index of consumer prices (HICP).¹ The former,

¹ Although the methodology used for these two indices is broadly comparable, there are some differences. Thus, the weighting system differs in that the HICP is based primarily on the national accounts, whereas the NCPI is derived mainly from the Household Budget Survey. Similarly, the winter and summer sales are included in the HICP in the months in which they take place (January and July), whereas the NCPI spreads them out over six months. Another difference is that, for the category of heating oil, the HICP takes into account the current month's prices, whereas a weighted average of rates for the past twelve months is used by the NCPI, based on annual bills effectively paid by consumers.

Chart 3.1

Inflation in Belgium

(annual percentage change in the national consumer price index)



Source: Statbel.

which has existed since 1920, is important for wage formation in Belgium since it is used to derive the health index,¹ which serves as the basis for indexation (see below). The second was created at European level in 1997 for the purpose of having a comparable measure of inflation between all countries in the euro area, each of which applies a harmonised method to measure inflation. The euro area HICP serves as a reference for the ECB's monetary policy.

As measured by the NCPI, inflation in 2022 averaged 9.6%, its highest level since the 1970s.

In that decade, inflation in Belgium peaked at 16.3%, in November 1974. In the 1980s, inflation reached its highest level in June 1982, at which time it was 9.8%. These two spikes in inflation were mainly the result of soaring oil prices. The October 2022 spike, at 12.3%, therefore exceeded that of the 1980s. Prior to that, the cost of living had not risen at such a rate since June 1975.

As in the 1970s, high inflation in 2022 was largely due to the international context.

As explained in chapter 1, the recovery of economic activity in the wake of the COVID-19 pandemic led to a sharp rebound in demand, while bottlenecks in production chains disrupted supply. Russia's invasion of Ukraine led not only to a further surge in international energy prices but also to higher prices for non-energy commodities. By the end of 2022, input prices had fallen sharply again, but cost increases were weighing on companies, leading them to raise their sales prices further.

Initially, inflation was mainly driven by the energy component

A breakdown of total inflation by component shows that energy was the main contributor to the surge.

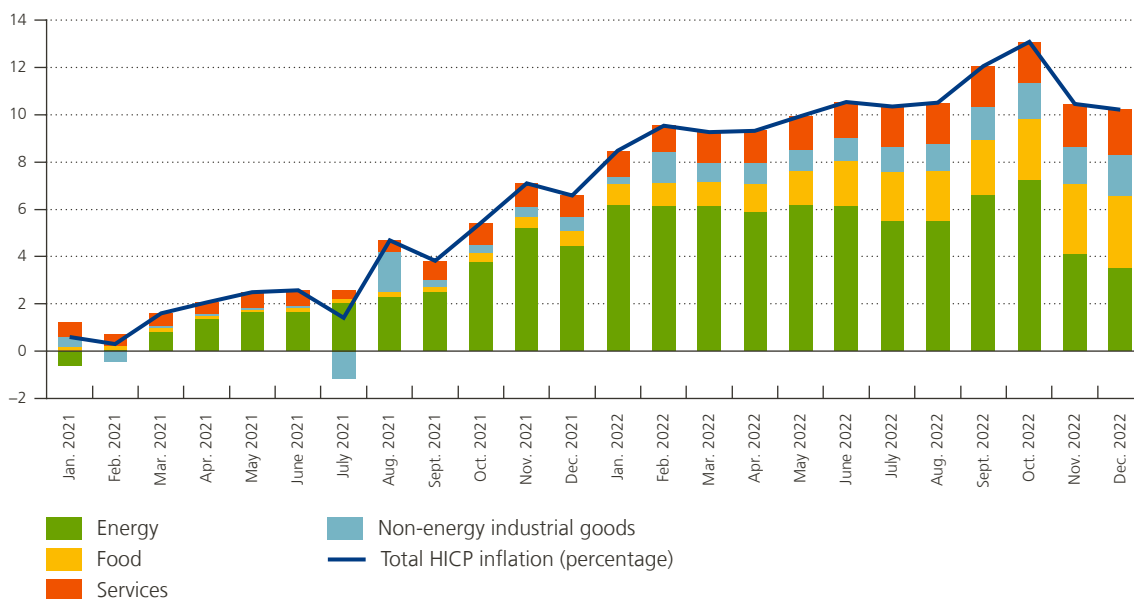
As measured by the HICP, energy inflation amounted to 57.9% in 2022. While the galloping inflation of the 1970s and 1980s was primarily due to the oil crisis, the main drivers today are gas and electricity. Gas inflation amounted to 109.2% and that of electricity to 57.1%. The wholesale prices of these two components have in fact risen considerably

¹ The health index corresponds to the national consumer price index excluding motor fuels, alcoholic beverages and tobacco.

Chart 3.2

Total HICP inflation and contributions of the individual components

(percentage contribution; total inflation as a percentage)



Source: Eurostat.

since 2021. They peaked at the end of August 2022 and then began to drop. This movement is reflected – albeit with a time lag – in falling consumer prices for gas and electricity since November 2022.

Without government measures, energy inflation would have been even higher in 2022. The various measures that were adopted to make household energy bills more affordable in the short term exerted a downward influence, of just under two percentage points,¹ on total HICP inflation. On the one hand, certain measures were adopted for a fixed period; these will remain in effect until at least² 31 March 2023. For example, the VAT rate on electricity was lowered from 21 % to 6 % as from March 2022, with a similar reduction following for gas in April. In February 2021, the social tariff³ was extended to approximately one million households, whereas previously only around 500 000 households had been eligible for it. At the end of March 2022, excise duties on diesel and petrol were cut by 17.5 euro cents per

litre. However, since September 2022, when prices fell below the pre-agreed threshold of € 1.7 per litre, the excise duty on petrol has been gradually ratcheted up. On the other hand, the government granted certain one-off allowances, such as a heating allowance of € 100 per household with an electricity contract (to cushion the rising cost of heating, regardless of the source) and an oil allowance of € 300 per household heated with oil. The enlarged group of households eligible for the social tariff also benefited from a one-time energy bill credit of € 80. In addition, the federal authorities granted a discount (the “basic energy package”) of € 135 and € 61 on gas and electricity bills, respectively, for the period from November 2022 to March 2023. Not all households qualify for the basic energy package, however: for households with income above a certain ceiling⁴ (around 20 %), a portion of the discount will be recovered through

1 Own estimates.

2 The government agreed on 6 February 2023 to reform the taxation of energy bills and to phase out the extension of the social tariff.

3 The social tariff is defined by the FPS Economy as an advantageous tariff for electricity and natural gas. It is identical throughout Belgium, regardless of the energy supplier or network operator. Quarterly price increases are regulated and limited.

4 The ceiling corresponds to net taxable income of € 62 000 per year for a single person and € 125 000 for a couple. This amount is increased by € 3 700 per dependent.

Table 3.1

Inflation by component in Belgium and neighbouring countries

(annual percentage change in the HICP)

	2019	2020	2021	2022	Average for three neighboring countries
Total (HICP)	1.2	0.4	3.2	10.3	7.9
Energy	-0.8	-11.0	22.4	57.9	34.2
Food	1.3	2.6	0.9	8.3	8.7
Core inflation	1.5	1.4	1.3	4.0	3.8
Services	1.8	1.8	1.6	3.8	3.2
Non-energy industrial goods	1.0	0.7	0.8	4.2	4.9
<i>p.m. National consumer price index</i>	1.4	0.7	2.4	9.6	–
<i>Health index</i>	1.5	1.0	2.0	9.3	–

Sources: Eurostat and Statbel.

their tax return. Also, households with a fixed-rate energy contract concluded before October 2021 and those that qualify for the social tariff are ineligible. This measure is therefore partially targeted.

While support measures reduce energy bills for consumers in the short term, they have less tangible side effects. Firstly, such measures do not increase purchasing power in the long term. While they clearly allow household energy bills to be lowered in the short term, they are accounted for in the

inflation rate. They thus drive inflation down, meaning indexation is also lower than it would have been but for these measures (see below). Secondly, price reductions (such as the lowering of the VAT rate) offer consumers less incentive to restrict consumption than one-off payments granted independently of consumption (e.g. the basic energy package for electricity and gas or the heating oil allowance). The first type of measure reduces the price of energy itself, while in the case of the second, the cost of additional consumption is unchanged.

BOX 2

The importance of measuring inflation. Has inflation in Belgium been overestimated in the context of rising energy prices?

Only new electricity and gas contracts for the current month are taken into account when calculating the consumer price index. This principle follows the logic of the “rules” applicable to the consumer price index, which measures the change in the prices of goods and services purchased during the current month. Taking into account only the prices of new contracts to compile the gas and electricity component of the consumer price index is therefore also in line with Eurostat recommendations. In other words, fixed-rate contracts concluded in the past are not included in the consumer price index for the current month. This means that growth in real household expenditure is overestimated when there is a surge in energy prices.

The method described above, used by the Belgian Statistical Office (Statbel), is followed in many other euro area countries. However, there are some exceptions. For example, for some fixed-rate contracts, Germany uses an average for the last 12 to 36 months, precisely to take into account current contracts liable to have a term of one to three years. Knowing that many households have a fixed-rate contract associated with lower rates pre-dating the energy crisis, one may ask whether inflation has been overestimated, particularly in Belgium.

In the case of the harmonised index of consumer prices, which is used for the ECB’s monetary policy, it can be argued that taking into account the prices of only new contracts is in principle justifiable. After all, through its interest rate policy, the ECB aims to influence current market prices of goods and services. However, the Dutch statistics office (CBS) believes that this methodology leads to an overestimation of inflation in the event of a rise in energy prices and that the current formula (based on new contracts only) is therefore imprecise. In October 2022, it announced that it would introduce a new method in mid-2023, one that includes energy prices in the measure of inflation, precisely in order to take into account running contracts. It will henceforth rely on detailed data for all contracts (both running and new) with different energy suppliers.



In Belgium, the method used to calculate the national consumer price index also affects wage formation as this index is used for indexation (see below). The automatic indexation of wages and social benefits is intended to protect purchasing power. However, there is currently most likely a mismatch between the change in household consumption prices and the change in prices for a representative basket of new goods and services.¹ The indexation of wages and benefits is based on the latter, whereas in order to preserve purchasing power, the price component of real expenditure growth should actually be taken into account. The published inflation rates overestimated the latter in 2022, leading to overcompensation for the average household.

The opposite reasoning holds true when prices fall. That being said, it can be assumed that the underestimation of real household expenditure growth when prices fall is less than the overestimation that occurs when prices rise. This is because when prices fall, consumers with a higher fixed-rate contract are more likely to switch. However, the fact that many energy contracts provide for a fixed annual fee, to be paid in full regardless of whether the consumer switches after less than a year or not, makes a switch less attractive. In addition, the proportion of fixed contracts has declined dramatically as suppliers no longer offer them in times of high, volatile prices.

¹ This is at least what the CBS has shown for the Netherlands by comparing the new method to calculate electricity and gas inflation (which takes into account both new and existing contracts) with the current method (which takes into account only new contracts). However, a similar study has not been conducted for Belgium. The impact in Belgium is probably more limited, as there are relatively more variable-rate contracts, with prices regularly adjusted (on a monthly or quarterly basis) to the market situation.



Energy inflation in Belgium exceeded the average across its three neighbours. Measured in accordance with the HICP, energy inflation in 2022 averaged 57.9% in Belgium, whereas it was “only” 34.2%¹ in neighbouring countries. Yet this average masks major disparities. Energy inflation in the Netherlands, for example, outstripped that in Belgium, peaking at 70.5%. On the other hand, the country’s largest neighbours – Germany and France – recorded relatively lower energy price increases, of 34.7% and 23.8%, respectively. The low figure for France can be explained by the fact that the government capped the prices of gas and electricity. In Germany, the low inflation rate was mainly the result of a correction applied by the German statistics office (Destatis) to take into account running contracts, which was not done in many other countries (see box 2 for more

information). In short, energy largely accounted for the inflation differential between Belgium and its three neighbours.

Domestic inflation also rose gradually

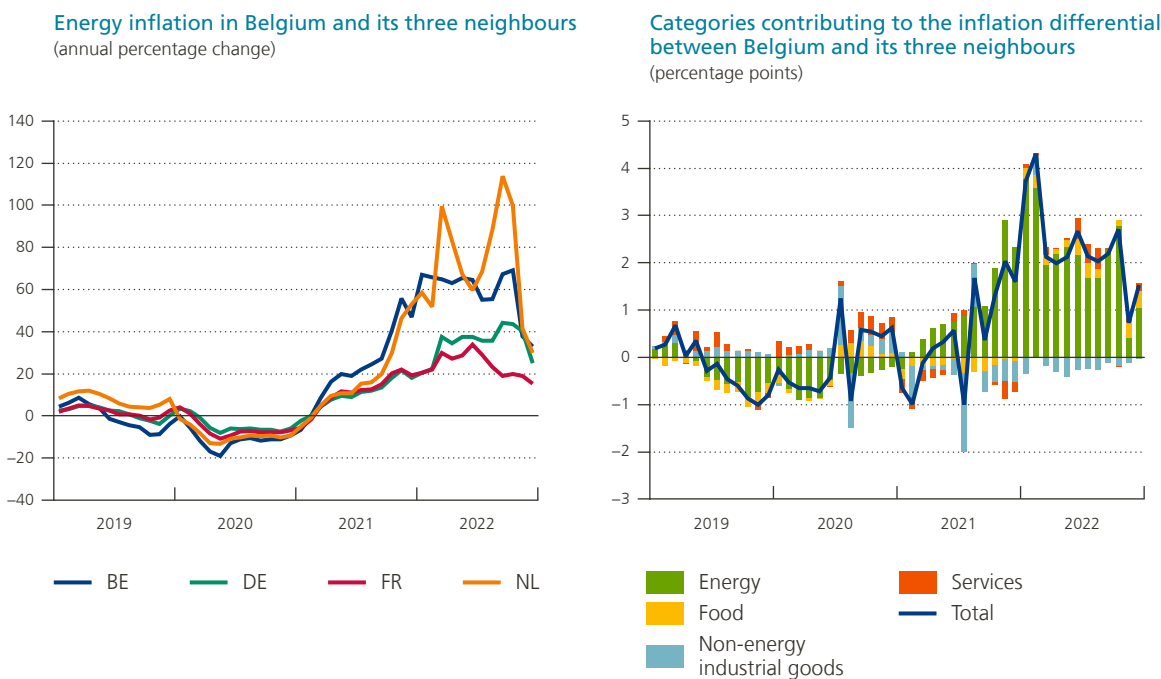
While the initial shock was external, the surge in inflation in 2022 was increasingly driven by domestic factors. Although the contribution of energy inflation to headline inflation remained substantial for the year, it gradually declined. On the other hand, food inflation and core inflation (i.e. total inflation excluding energy and food, thus including non-energy industrial goods and services) gradually rose. Higher input and labour costs² (see below) weighed heavily

1 The average across the three neighbouring countries was calculated using the HICP weights per country, i.e. in accordance with the economic importance of the individual country. Germany and France thus weighed much more than the Netherlands in this average.

2 This refers to both wage increases that have already been carried out and those expected in the future.

Chart 3.3

The inflation differential between Belgium and its three neighbours was due almost entirely to energy



Source: Eurostat.

on companies, leading to further increases in sales prices and the spread of inflation. In other words, the initial external shock spread through indirect and second-round effects, with inflation increasingly becoming an internal phenomenon. By analogy with an ECB analysis,¹ core inflation is broken down into categories based on import intensity.² Categories with lower import intensity are often services, for example those provided by doctors, hairdressers, educators, etc. Certain non-energy industrial goods are also identified as having low import intensity, such as stationery and drawing materials and carpets and other floor coverings. All food and energy categories are highly exposed to external shocks; agricultural and energy commodities determine, for example, a substantial proportion of final consumption prices.

1 ECB (2022), "A new indicator of domestic inflation for the euro area", Economic Bulletin, Issue 4/2022.
 2 The ECB identified these categories based on input/output tables for the euro area; we assume these categories are the same for Belgium.

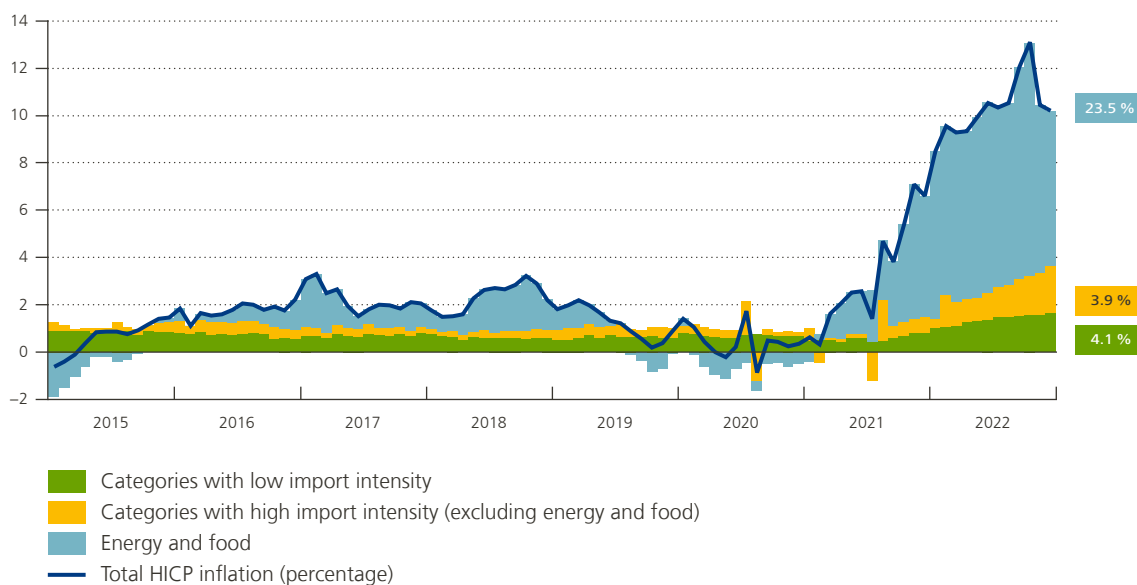
Chart 3.4 shows that inflation in categories with low import intensity is also on the rise.

In 2022, core inflation thus averaged 4%. This was well above the average of 1.5% recorded between 1999 and 2021. In 2022, core inflation in Belgium's neighbours was 3.8%, just 0.2 percentage point lower than in Belgium. Second-round effects – caused by a diffusion of inflation from external to domestic sources – are much more likely to occur in Belgium. Wage indexation is effectively guaranteed by the 1996 law (amended in 2017) on the promotion of employment and the preventive safeguarding of competitiveness (the Competitiveness Act). Higher inflation therefore automatically leads to higher wage costs. In addition, various prices – especially for services – are index-linked, such as rent, public transport tickets and certain insurance contracts. This wage and price indexation threatens to make inflation (more) persistent in Belgium, hence the increased need to be attentive to the risk of a wage-price spiral.

Chart 3.4

Decomposition of inflation based on import intensity¹

(contribution of the various categories in percentage points; average inflation for the three categories in 2022 is indicated in the small boxes on the right, expressed as a percentage)



Sources: ECB, Eurostat and own calculations.

1 The categories are those identified by the ECB in 2022 as having high or low import intensity for the euro area.

Households were not all faced with the same price increases

The consumer price index is based on an average household. The expenditure categories are weighted based on the spending habits of an average household. In reality, however, these vary greatly from one household to another. Consumption depends, for example, on the geographical location (region and city/country) as well as the income and composition of the household. It appears, for instance, that Walloon households consume less gas but more heating oil than Flemish households. Expenses such as gas and electricity are also relatively more substantial in the total consumption expenditure of households with lower incomes. More generally, a low-income household spends a larger share of its budget on basic needs such as rent and heating, while a household with higher income spends more on cultural activities and eating out.

Households in the lower income quartiles that are ineligible for the social tariff therefore experience above average inflation.¹ This is because they have to spend relatively more on gas and electricity, two categories in which inflation soared over the course of the year. They therefore face higher inflation than the published figure. Most households in the lowest quartile nevertheless qualify for the social tariff, certainly since its extension. The social tariff (or its extension) is therefore an effective measure to support vulnerable households. Of households that are ineligible for the social tariff, those with the highest income experience the lowest inflation, the main reason being that gas and electricity make up a less significant share of their total expenditure.

¹ See also Capéau, et al (2022), "We zitten allemaal in dezelfde storm, maar niet in hetzelfde schuitje", Leuvense economische standpunten 2022/192, March 2022.

Tableau 3.2

Comparison of the official weights of the national consumer price index and the weights by income quartile in 2022

(in %)

		Total NCPI	< Q25	Q25 – Q50	Q50 – Q75	> Q75
CP01	Food and non-alcoholic beverages	17	16	17	16	17
CP02	Alcoholic beverages and tobacco	3	3	3	3	2
CP03	Clothing and footwear	6	4	5	5	6
CP041	Rent	8	16	10	6	2
CP0451	Electricity	3	5	4	4	3
CP0452	Gas	2	4	3	2	2
CP0453	Heating oil	1	1	1	1	1
CP071	Purchase of vehicles	7	2	4	8	7
CP07221	Diesel	2	1	2	2	2
CP07222	Petrol	2	2	2	2	2
CP08	Communications	4	4	4	3	3
CP09	Recreation and leisure	9	7	8	9	10
CP10	Education	1	0	0	1	1
CP11	Hotels, cafés and restaurants	8	5	7	8	10
CP12	Miscellaneous goods and services	9	11	12	10	10

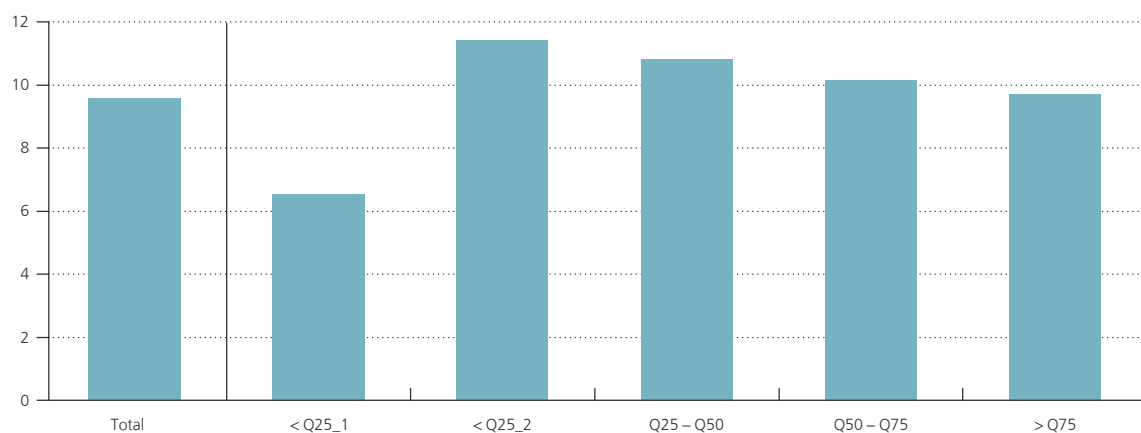
Sources: Statbel and own calculations.

¹ The weights shown in the "Total NCPI" column are the published weights for 2022. These are the weights for an average household. The weights per income quartile are own calculations based on the Household Budget Survey 2018, with updated prices. In order to come as close as possible to the Statbel method, a few categories (included in the Household Budget Survey but not in the NCPI) were excluded from our own calculations of weights. These are imputed rent, prostitution, drugs and some types of insurance.

Chart 3.5

Published inflation and inflation by income quartile in 2022

(annual percentage change, average for 2022)



Sources: CREG, Statbel and own calculations.

For the calculation of inflation by income quartile, a differentiation was made only in the weights. In other words, the published price indices of the various categories were used (for an average household), except for gas and electricity. For these, a large group (around 20% of households) was considered to benefit from the social tariff. We assumed they were all in the lowest income quartile, in other words, that 80% of the population in the lowest income quartile qualifies for the social tariff. But in reality, this figure is overestimated. The extended group eligible for the social tariff since February 2021 is indeed in the lowest income quartile, but households that had already been entitled to it (and still are) are not necessarily in this quartile. This is because the initial eligibility conditions for the tariff related not only to income but also to the receipt of certain benefits.

<Q25_1 = the 80% of households in the lowest income quartile that qualify for the social tariff

<Q25_2 = the 20% of households in the lowest income quartile that do not qualify for the social tariff

Q25-Q50 = the second income quartile

Q50-Q75 = the third income quartile

>Q75 = the highest income quartile

3.2 Automatic indexation aims to preserve household purchasing power

The system of automatic indexation generally protects Belgian households against a sharp rise in the cost of living, such as that observed in 2022. Both wages and social benefits are indexed. Belgium has a long history of automatic wage indexation, which has been applied in almost all industries since the Second World War. Unlike in many other European countries, this system was not abolished in the wake of the oil shocks of the 1970s and the period of high inflation in the 1970s and 1980s.

This means that Belgium, together with Luxembourg,¹ Malta and Cyprus (albeit only in part), are the only countries in Europe that still have automatic wage indexation. Over the years, however, various adjustments have been made to the system, such as the introduction of the health index.

¹ In Luxembourg, wage indexation, which had been scheduled to take place in the summer of 2022, was postponed until the spring of 2023.



Indexation does not fully protect purchasing power

Since 1994, indexation has been based on the health index, i.e. the national consumer price index excluding alcohol, tobacco, petrol and diesel. In this way, increases in excise duties and, at least partially, the effects of oil shocks are excluded from the indexation mechanism, so that the labour cost for companies is not influenced by these types of price rises. Energy components such as gas, electricity and heating oil, on the other hand, are included in the health index, meaning the current spike in inflation is largely reflected in wages and social benefits. In 2022, however, inflation as measured by the health index remained slightly lower than that of the total NICP, largely because fuels – a category in which inflation amounted to 23.5% in 2022 – are excluded.

Indexation takes effect with a time lag, as it is not the health index itself that is applied but rather the smoothed health index. This corresponds to the four-month moving average of the health index and is intended to make it possible to exclude temporary price shocks. On the other hand, this causes an additional delay.

Different indexation mechanisms apply

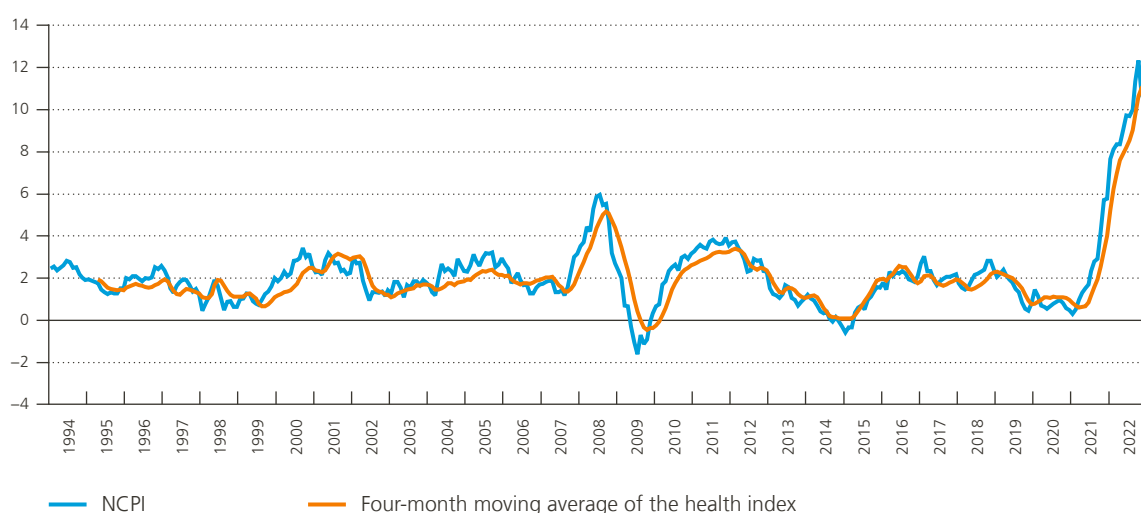
Public sector wages and social benefits are indexed when the smoothed health index exceeds the trigger index. The latter is a threshold exceeding the previous threshold by a predefined percentage. For the public sector, this is 2%. When the smoothed health index exceeds the trigger index applicable to the public sector (i.e. when it increases by 2%), social benefits are increased by 2% one month later and wages and salaries of public sector workers are increased by 2% two months later. The trigger index was crossed no fewer than five times in 2022, meaning public sector wages and replacement incomes were adjusted to the rising cost of living relatively quickly. In the private sector, the timing of wage indexation varies depending on the applicable joint committee.

There is no uniform indexation mechanism for private sector employees. Consequently, the pass-through of inflation to wages is slower for some groups than for others. Historically, indexation mechanisms have often been associated with the ability of industries to adjust their prices. In recent

Chart 3.6

Wages and social benefits are adjusted to the smoothed health index

(annual percentage change)



Sources: Statbel and NBB.

The health index was introduced in 1994. Here, the first data point is April 1995, the first month in which the annual change in the smoothed health index could be calculated.

years, however, this link has become somewhat more tenuous, notably due to the creation of the auxiliary joint committee for employees (JC 200). This joint committee can be used by almost all industries and covers the most employees by far.

In the private sector, wages are indexed either on the basis of a trigger index or at specific points in time.¹ About half of all private sector employees see their wages adjusted when a given trigger index is crossed. This system, which is comparable to that applicable in the public sector, helped preserve purchasing power to a large extent in 2022. Almost all other employees in the private sector benefit from indexation at specific points in time, the frequency of which varies – annually, every six months, quarterly or monthly.

The wages of a large proportion of private sector employees (40 %) are only adjusted to the cost of living once a year. As indexation is usually in January for a majority of these employees, just over one million had to wait until January 2023 to see their pay adjusted to the high inflation recorded in 2022. Their income then rose by as much as 11 %. Unlike those who benefit from frequent indexation or indexation linked to a trigger index, these employees suffered a greater, albeit temporary, loss of purchasing power in 2022.

1 The trigger index is not necessarily set at 2 %, as in the public sector.

In addition, the share of wages that is index-linked differs depending on the applicable joint committee. Some index-link only (sector-level) minimum wages,² others only scale wages³ (thereby possibly guaranteeing maintenance of the difference between scale wages and actual wages) or full wages. However, firms are free to look beyond the industry rules defining the minimum level of indexation to be respected.

Not all employees are entitled to automatic wage indexation. Within some joint committees, such as those for public credit institutions (JC 325) and the liberal professions (JC 336), there are no formal rules governing indexation. However, employers that fall under these committees are free to conclude an agreement on automatic indexation. The self-employed do not benefit from automatic indexation either. In order to maintain their purchasing power, they are obliged to raise their prices, which is not possible to the same extent in all industries.

Finally, it should be noted that the personal income tax brackets for 2023 (2022 income) were adjusted for indexation to a much lesser extent than the average percentage by which gross wages and benefits were indexed. In net terms, this implies an additional loss of purchasing power for 2022 earnings. This issue is discussed in more detail in chapter 6.

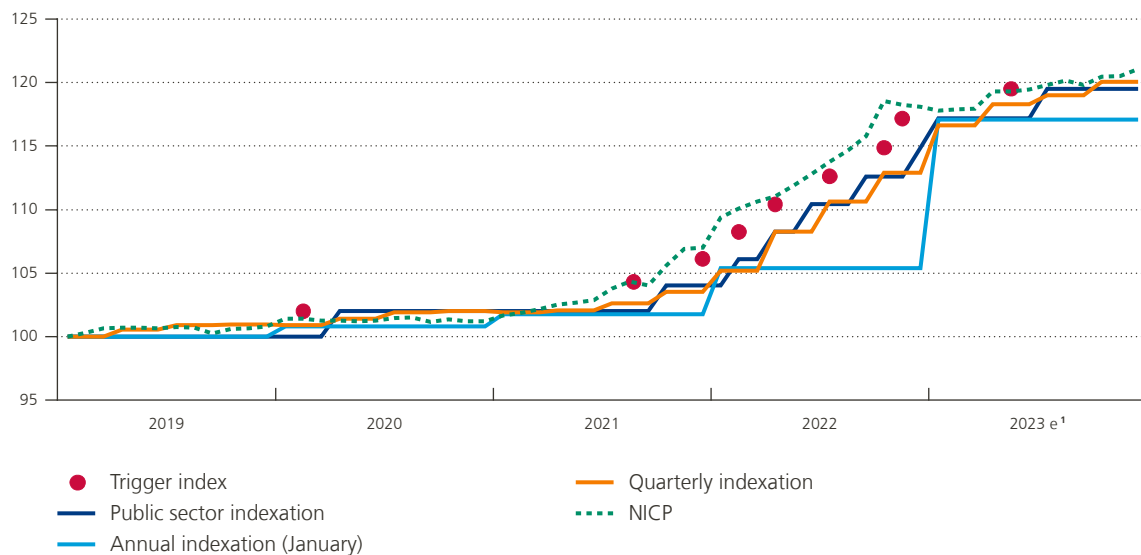
2 Indexation applies, for example, only to the national minimum wage according to the sector-level agreements of Joint Committees 140 (transport and logistics) and 329 (socio-cultural sector).

3 The minimum wage in effect in the industry based on the job classification and seniority with the employer.

Chart 3.7

The timing of the pass-through of inflation to wages depends on the indexation mechanism applicable at industry level

Consumer price index and wage indexation
(January 2019 index = 100)



Share of different indexation mechanisms in the private sector
(in %)

Indexation mechanism	Percentage of employees ²	Number of employees ²
Trigger index	48.2	1 462 279
Periodic indexation		
Annually	40.3	1 222 182
<i>In January</i>	33.3	1 000 030
Every six months	2.5	74 301
Every four months	0.3	8 603
Quarterly	5.6	169 904
Bimonthly	1.6	47 210
Monthly	0.6	19 327

Sources: FPS ELSD, Statbel and NBB.

1 Mechanical update of the Bank's autumn 2022 projections.

2 Private sector employment covered by joint committees, situation in the first quarter of 2022.

3.3 Indexation does not provide the same degree of protection to all households

Automatic wage indexation protects the purchasing power of the average household to a large extent, but not necessarily that of each individual household. The degree of protection depends, amongst other factors, on the household's consumption profile, especially in the event of a highly concentrated price shock for certain goods and services, such as the recent surge in gas and electricity prices. For example, it has been shown above that lower-income households which are ineligible for the social tariff experience higher than average inflation. Indexation is based on the inflation rate of the average household's consumption basket. Insofar as incomes rise along with the health index, they rose less than real expenditure for low-income households, meaning the compensation these households received in 2022 was insufficient, leaving aside other possible factors. Furthermore, low-income households are relatively more likely to rent and, therefore, are exposed to rent indexation (see chapter 5). Home ownership is indeed more prevalent amongst higher-income households, for which indexation effectively lowers mortgage payments (if they have a fixed-rate mortgage). In addition to income, other household characteristics are relevant; for example, there are fewer gas contracts in Wallonia than in Flanders, and expenditure on motor fuels is largely dependent on place of residence.

Moreover, sectors with the highest wages generally – but not always – have more favourable indexation mechanisms. In the ten industries with the highest average wages,¹ there is often an agreement in place (concluded at the level of the joint committee) to adjust wages on the basis of a trigger index (e.g. the petrochemical and pharmaceutical industries and the airline sector) or frequently (e.g. every two months for employees in the financial services sector and every month for petrochemical blue-collar

workers). When faced with sustained inflation, such mechanisms allow for a relatively rapid adjustment of incomes. A smaller number of joint committees for the most highly paid workers in Belgium, including the insurance sector, index wages only once a year. In the event of a sharp acceleration in prices, these workers face a temporary loss of purchasing power until the time of indexation. The situation is less clear-cut when it comes to industries at the other end of the spectrum. For example, the lowest average wages, paid in the hotel and restaurant industry are adjusted only once a year, while in some low-paying industrial sectors indexation is carried out quarterly. In the retail sector, on the other hand, wages are adjusted on the basis of a trigger index.

The amount of indexation is also a factor that determines whether this mechanism provides sufficient protection. Automatic indexation systematically pushes up gross wages by a certain percentage. The absolute increase is therefore higher for more highly paid workers. As a result, the amount of indexation for those with the lowest incomes may not be sufficient to cover the rise in the cost of the consumer basket. Conversely, the amount by which higher incomes are indexed may exceed the increase in the cost of living, meaning, assuming an unchanged consumption profile, the excess can be saved. Whether these additional savings constitute “pure overcompensation” depends on future price developments. If prices remain high, deferred consumption expenses will indeed require a larger budget than before the energy crisis.

¹ Ranking established by Statbel based on the Structure of Earnings Survey.

The interaction between support measures, inflation and indexation is complex

Measures that target certain groups push inflation down to a level it would not otherwise have reached. They thus lead to a general lowering of indexation, even if they do not apply to everyone. The social tariff (and its extension) is an example of such a measure. Statbel takes this tariff into account when calculating the consumer price index for gas and electricity. This means that the price that the index takes into account is a weighted average of the social and regular tariffs. The weighting of the social tariff increased from about 10% prior to its extension to around 20% thereafter. The extension therefore compressed total inflation and slowed growth in the health index, despite the fact that not everyone in the population benefits from the social tariff. Another example is the heating oil voucher: this aid lowers the energy bills only of households that heat with oil but curbs indexation for everyone. On the other hand, measures such as the reduction in VAT both lower the energy bills of all households and curb indexation.

In summary, automatic indexation and government measures have not resulted in a homogeneous preservation of purchasing power in the current context: some households have been overcompensated, while others have been undercompensated or not compensated at all. The main effects of indexation are detailed above, but in reality the interaction between the various factors at play is complex. It is therefore not an easy task to determine which groups of households are sufficiently compensated and which are not. For example, gas and electricity occupy a more important position in the cost structure of low-income households, meaning automatic indexation – which is based on an average expenditure profile – is often insufficient to offset the increase in their expenditure. The various support measures introduced by the government (such as the social tariff) have nevertheless helped to shore up the purchasing power of these households. On the other hand, high-income households are feeling the price shock less, as gas and electricity account for a smaller share of their consumption expenditure, while their income is, in most cases, sufficiently indexed to cover the increase in expenditure, if not more. This “advantage” is, however, offset (in part) by support measures (including those for which they are



Table 3.3

Interaction between indexation, government measures and purchasing power protection: main channels in the current context

At the macroeconomic level		
<ul style="list-style-type: none"> Health index (some products are excluded from the total NICP) and its smoothing (leading to a delay in indexation). Generally applicable measures, such as a lowering of the VAT rate. These curb inflation and therefore indexation but only help to preserve income in the short term. Inflation measure: only new energy contracts are taken into account. Real expenditure is therefore overestimated. Indexation is based on this measure of inflation. 		
At the household level		
Consumer spending	Indexation mechanism	Energy contract
<p>1. Income level</p> <p>The increase in wages is more marked for those with high incomes than for those with low incomes in absolute terms, allowing the former to save more.</p>	<p>1. Timing of indexation</p> <p>Some indexation mechanisms temporarily lead to a greater loss of purchasing power (e.g. for households with wages only indexed once a year).</p>	<p>Households that concluded a fixed-rate energy contract before October 2021, for example, have seen barely any increase in their energy costs. Measured inflation therefore overstates the actual increase in their expenditure.</p>
<p>2. Composition</p> <p>Energy accounts for a greater share of expenditure of low-income households (at least those ineligible for the social tariff), but other characteristics are also important (e.g. place of residence).</p>	<p>2. No applicable indexation mechanism</p> <p>Not everyone is entitled to automatic wage indexation (e.g. the self-employed).</p>	
<p>3. Measures</p> <p>Measures that are not generally applicable (such as the heating oil voucher and extension of the social tariff) lower indexation for all, while not everyone benefits.</p>		

Source: NBB.

ineligible), which temper indexation. A recent study¹ examined the interaction between, on the one hand, government measures designed to reduce energy bills and, on the other hand, indexation, by income decile, during an energy shock such as the current one. It showed that these measures neutralise the loss of purchasing power – as indexation is based on average inflation – for the lowest incomes while limiting overcompensation² for the higher-income deciles.

1 Capéau, et al. (2022), "Een tweesnijdend zwaard: de wisselwerking tussen koopkrachtmaatregelen en indexering", Leuvense economische standpunten, 2022/198, December.

2 The study concluded that when the depreciation of savings is taken into account, those with higher incomes are not necessarily overcompensated. The "excess" income that is saved when indexation exceeds the increase in expenditure induced by the rise in prices will be spent later, either in an environment characterised by lower prices (in which case there is indeed overcompensation) or in one in which prices remain high (in which case the overcompensation will be cancelled out).

3.4 Indexation drives up wage costs and widens the gap with Belgium's main trading partners

There was unprecedented growth in wage costs in 2022

Gross wages jumped by almost 6 % in 2022, primarily as a result of indexation. Real collectively negotiated wage adjustments in the private sector averaged 0.4 %, mainly due to increases in the health care sector and certain key occupations following the pandemic. The negative contribution of wage drift was of the same magnitude. This mainly reflected

a normalisation in the number of furloughed employees and the return to work of people earning below-average wages. The increase in flexi-jobs may also have influenced this development. As the health index started to rise sharply in 2022, wage indexation in the private sector was the main component of gross wage formation. As explained above, due to interaction of the various indexation mechanisms, a substantial share of the increase in the health index in 2022 will only be visible from 2023 onwards, for

Table 3.4

Wage costs

(data adjusted for calendar effects; percentage change compared with the previous year, unless otherwise stated)

	2019	2020	2021	2022 e
Hourly wage costs in the private sector	2.1	5.2	0.0	5.5
Gross hourly wages	2.3	4.6	0.5	5.5
Collectively agreed wages ¹	2.5	1.7	1.4	5.9
Real agreed adjustments	0.7	0.6	0.4	0.4
Indexation	1.8	1.0	1.1	5.4
Wage drift ²	-0.2	2.9	-1.0	-0.3
Employer social security contributions	-0.2	0.6	-0.5	0.0
<i>p.m. Hourly wage costs in the private sector based on the economic definition³</i>	2.0	4.2	-0.2	5.9
Hourly wage costs in the public sector	2.3	3.2	2.3	5.9
of which: Indexation	1.5	1.5	1.0	7.0
Hourly wage costs in the economy as a whole	2.1	5.0	0.4	5.5

Sources: FPS ELSD, NAI, NSSO and NBB.

1 Wage increases negotiated within joint committees.

2 Increases and bonuses granted by firms above those provided for by collective labour agreements concluded at the inter-professional and sector levels; wage drift due to changes in the structure of employment and measurement errors; contribution to the change in wage cost, in percentage points.

3 Based on the economic definition, wage costs do not correspond to the national accounts data but rather include reductions in contributions for target groups and wage subsidies, meaning this definition better reflects the real wage cost of companies.

example in industries where indexation takes place in January. In the public sector, where the 2 % trigger index is the sole applicable mechanism, the indexation component reached 7 % in 2022.

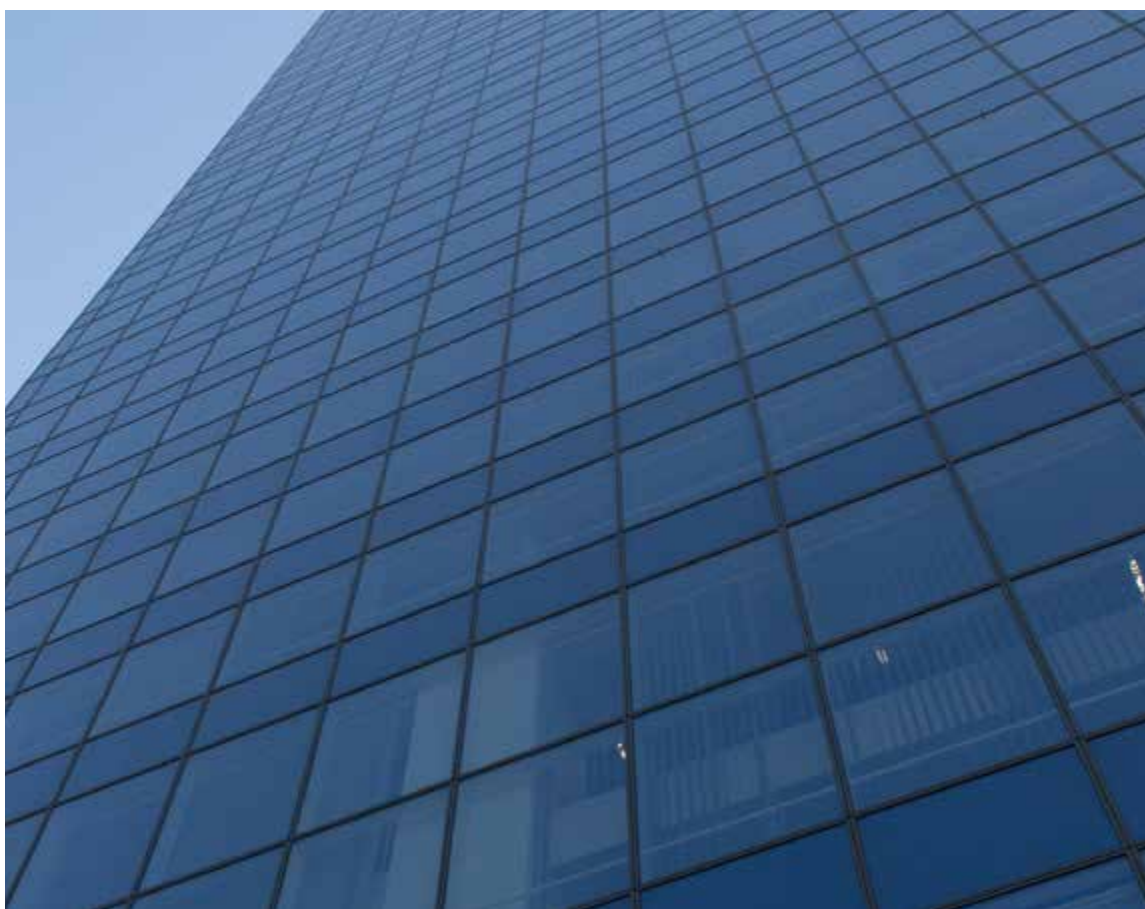
These developments resulted in an unprecedented increase in wage costs for companies, which reached 5.5 %, the highest value recorded since 1996 and more than two and a half times the historical average (1996-2019). Social security contributions grew at a slightly lower rate than the wage bill. In addition, some of the support measures introduced during the pandemic were discontinued, leading to an even more rapid rise in wage costs in 2022 based on the economic definition, which takes wage subsidies into account.

In order to help businesses, the government temporarily reduced social security contributions, but the effect of this measure will be marginal compared to the increase in costs. To soften the blow of soaring input costs and the effect of

indexation on the wage bill, the government decided to grant companies an exceptional 7.07 % reduction in employer social security contributions for the first two quarters of 2023. While this will provide some relief, the wage bill will nevertheless rise substantially compared to 2022.

Automatic indexation and regulated wage negotiations go hand in hand

A system of automatic wage indexation is only sustainable if its effects on cost competitiveness are taken into account. That's why, in Belgium, real wage increases are negotiated in the framework of the 1996 Competitiveness Act, as amended in 2017. As Belgium is a member of the Economic and Monetary Union, slippages in competitiveness can no longer be corrected through exchange rate fluctuations. A more rapid rise in the production costs of Belgian companies will lead, all other things being equal, to a fall in Belgium's relative competitiveness.



Under normal circumstances, the strict framework governing the setting of real wage increases prevents a prolonged slippage in competitiveness. By setting a maximum limit for real wage adjustments, the law aims to ensure that the rise in wage costs, brought about by indexation, remains in line with the development of wage costs in Belgium's three main neighbours. Negative real collectively negotiated adjustments are not, however, possible.

The viability of the Competitiveness Act is being tested by the current large-scale inflationary surge, which originated in a deterioration of the terms of trade. Soaring prices for energy products, which Belgium is obliged to import, are leading to a collective impoverishment, the burden of which should be equitably shared by the various economic agents. Due to the automatic indexation of wages, however, this external shock was initially absorbed almost entirely by firms. Box 3 in chapter 4 illustrates that automatic indexation, through its impact on the cost competitiveness of Belgian firms, constitutes a vulnerability of the Belgian economy in the event of a deterioration in the terms of trade.

Faster growth of wage costs in Belgium has created, yet again, a wage gap

The cumulative wage gap between Belgium and its three main neighbours (Germany, France and the Netherlands) has widened again since the end of the health crisis. Based on information available in September 2022, the CEC ¹ estimated that the wage gap, which had been eliminated in 2019, had risen sharply in 2022 and would reach 5.7 % by 2024, flirting with the record levels observed in 2007-2008.

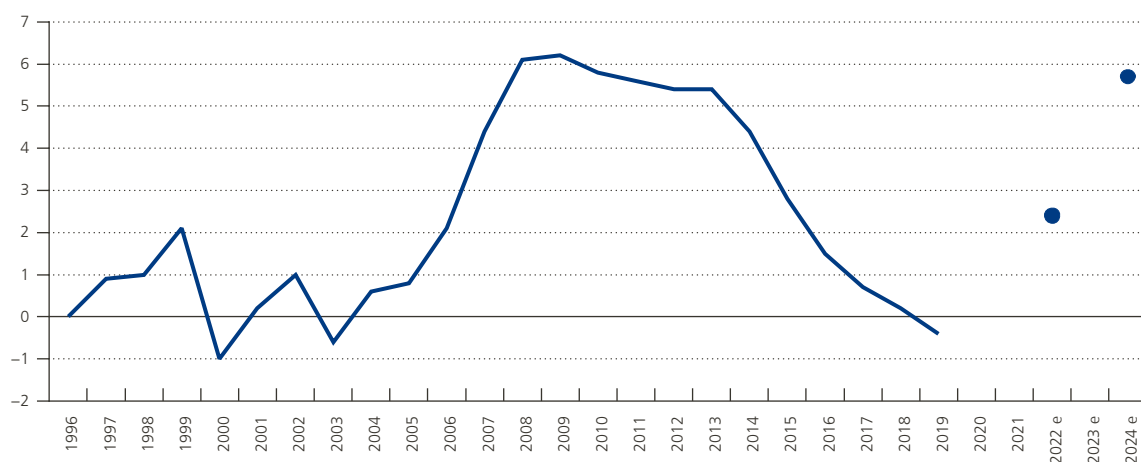
The Eurosystem's projections, which were completed on 30 November, also point to a deterioration in the wage gap over the period 2022-2023. Indexation is a key contributor to the widening of the gap in this period, although it is expected to shrink somewhat in the coming years due to a degree of catch-up in employee purchasing power in neighbouring countries and wage moderation in Belgium imposed by the 1996 Competitiveness Act.

¹ Central Economic Council (2022), Technical Report 2022 of the Secretariat, Brussels, October.

Chart 3.8

Belgium's hourly wage cost gap jumped in 2022¹

(percentage difference¹ accrued since 1996 in the private sector)



Source: CEC.

¹ Compared to Belgium's three main neighbours, weighted averages based on the relative importance of the respective country's GDP.

No real collectively negotiated increases for the next two years

Given the negative maximum available margin for 2023-2024 as calculated by the CEC, there is no possibility to grant real negotiated wage adjustments during this period. Based on the current (positive or negative) wage gap, the CEC assesses at the end of each even-numbered year the maximum margin available for real collectively negotiated wage adjustments, by comparing average projections of wage costs in Belgium's three main neighbours with indexation projections for Belgium. The maximum available margin is then calculated based on this difference, taking into account a correction factor and a safety margin of at least 0.5%. As the latest result was negative and indexation is guaranteed by the Competitiveness Act, actual collectively negotiated adjustments can only be zero for the period 2023-2024. In the absence of an inter-professional agreement on this point, the wage standard for 2023-2024 will be set by means of a royal decree.

A purchasing power bonus, benefiting from attractive tax and social security treatment, can be negotiated at company level. Companies are free to negotiate their own collective labour agreement. Company-level agreements can go beyond the adjustments set at industry level but must still respect the wage standard. However, some collective bonuses and allowances explicitly fall outside the scope of the Competitiveness Act. For example, the so-called "corona bonus" allowed employees of companies that performed well during the pandemic to receive extra pay. The percentage of employers that distributed such a bonus to all or some of their employees varied greatly from one industry to another: more than 75% did so in the manufacturing industry, while this figure was less than 20% in the hospitality, tourism, and cultural and leisure sectors. In the 2023-2024 wage negotiations, the government gave companies that turn a profit the opportunity to grant a purchasing power bonus of up to € 500 over this two-year period, or € 750 if the company is very profitable. The success of these schemes is largely due to their tax and social security treatment. Indeed, the bonus, paid in the form of consumption vouchers, is tax free for the employee and tax deductible for the company. In addition, the employer social security contributions due on these amounts are much more favourable than for ordinary remuneration.

The current inflationary context accentuates existing challenges for wage formation

According to economic theory, real wage increases are driven by productivity gains. The sharp rise in hourly wage costs in Belgium would not necessarily be harmful to firm competitiveness if it were accompanied by an equivalent increase in apparent labour productivity. However, this is not the case. Productivity growth, measured at the macroeconomic level, fell again in 2022. This decline contributed to higher unit labour costs in the private sector, which rose 6.7% according to the economic definition. In fact, the economy as a whole was marked by a general increase in unit labour costs.

Negotiations at sector level normally allow wage increases to be adjusted to the realities of the sector. In addition to determining real wage adjustments at sector level, these negotiations cover many other aspects, including job classifications, working time and the applicable indexation mechanism. It is also at this level that the sector minimum wage, an important source of wage differentiation in Belgium, is set.

At firm level, the determinants of productivity and wage cost appear to be relatively aligned. Employment income is the most direct mechanism through which the benefits of productivity gains are transferred to workers. According to Coppens and Saks (2022),¹ the effects of the determinants of real labour productivity, such as the level of educational attainment of employees and the size or capital intensity of the firm, are of the same sign and similar magnitude as those of these variables on the wage bill of Belgian firms, indicating a relative alignment between productivity and wage costs in real terms. Similarly, firm-level collective labour agreements do not give rise to a significant productivity-pay gap.

The lack of a margin for real wage adjustments in the coming years limits to some extent the possibilities for wage differentiation between employers. Under normal circumstances, the maximum margin available for real wages can be allocated in a differentiated manner between sectors.

¹ Coppens, B. and Y. Saks (2022), "Wage differentiation in Belgium: is there a role for productivity?" NBB, *Economic Review*, September.

Thus, better performing sectors can grant higher real increases. This possibility does not exist in the current context as negative real wage adjustments are not possible. This downward rigidity continues to be a hindrance for struggling firms.

The possibility of wage demands and inflation feeding each other and creating a wage-price spiral, thus contributing to the persistence or even acceleration of inflation, is a concern shared by all countries currently facing high inflation and tight labour markets. According to international studies, even in the absence of explicit indexation, nominal wages are gradually catching up with price developments. This pass-through to wages is even more rapid and substantial when indexation policies exist. In some countries, these policies apply

only to minimum wages, which mechanically leads to the increase of certain sector-level minimum wages in order to maintain differentiation. In Spain or Italy, collective labour agreements may also include a clause designed to maintain purchasing power. The Belgian system of automatic indexation has institutionalised this link, which in the current context creates a competitiveness gap with neighbouring countries. The system, as it is currently designed, does not allow companies to modulate wage increases based on their specific exposure to the energy shock or the magnitude of personnel costs in their cost structure. The allocation of wage increases over time can only be adapted at sector level, through indexation mechanisms that depend on the joint committees. This rigidity, for both employees and firms, reveals the limitations of the system of wage formation in Belgium.





4. Economic activity and the labour market in Belgium

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4.1 Soaring energy prices impoverished the Belgian economy

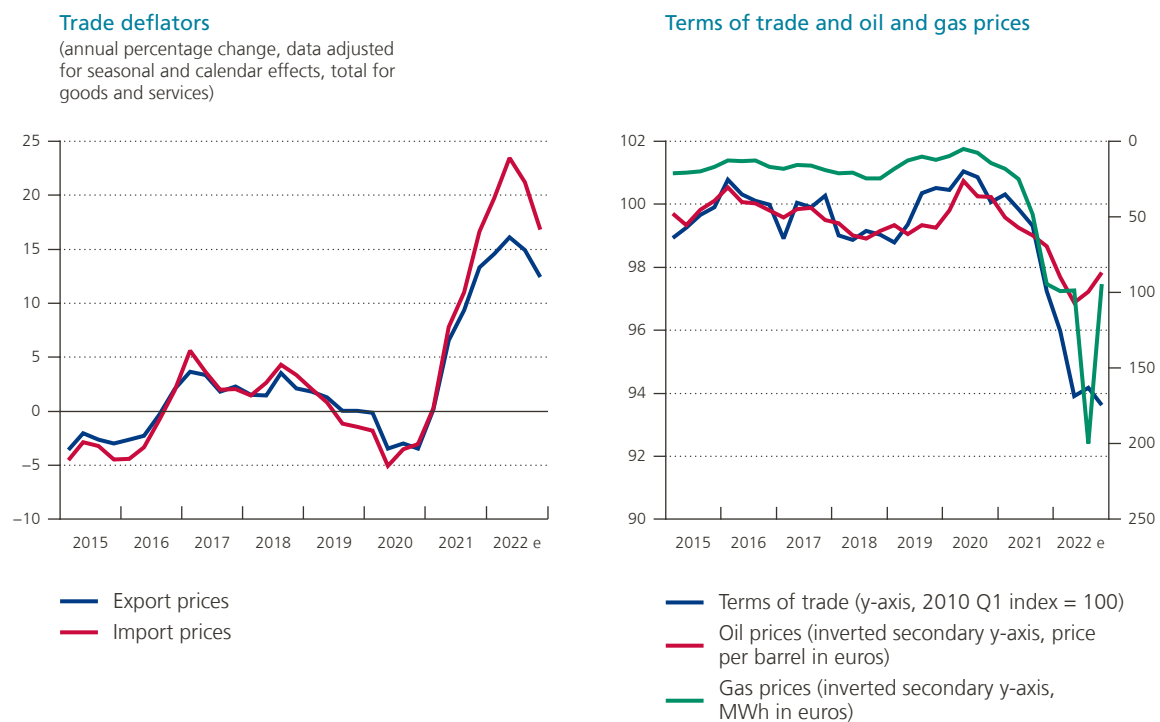
Belgium's terms of trade deteriorated

Higher prices for energy and raw materials pushed up import prices to a much greater extent than export prices, with the former reaching historic levels. Thus, since the second half of 2021, against the backdrop of the post-pandemic economic recovery combined with the need for importing countries to replenish their gas reserves, there

has been a sharp rise in the prices of raw materials and energy, particularly oil and gas. Russia's invasion of Ukraine in early 2022 further exacerbated this upward pressure on prices, which reached historically high levels. For Belgium, like any net energy importer, this upturn in energy prices translated into a deterioration in its terms of trade, defined as the ratio between the export price index and the import price index. These rose by 14.4 % and 20.1 %, respectively, in 2022 compared to 2021, thereby worsening

Chart 4.1

The sharp increase in energy prices worsened Belgium's terms of trade



Sources: NAI, Refinitiv and NBB.

Belgium's terms of trade by around 4.7% on an annual basis, largely due to the negative effect of higher prices for imported energy.

The negative income effect generated by the deterioration in the terms of trade made Belgium significantly poorer in relation to the rest of the world. Due to the rigidity of short-term demand for imported energy, maintaining import volumes at higher prices led to a transfer of purchasing power from Belgium to the rest of the world. The fall in the value of the euro, in particular against the US dollar, also weighed on the terms of trade as such imports are mainly denominated in dollars. The negative income effect resulting from this transfer of purchasing power to the rest of the world is estimated to have been approximately 5% of GDP on average for the first three quarters of 2022. The energy component was the main explanatory factor for this impoverishment in relation to the rest of the world. However, the loss of disposable income was not due solely to rising energy prices; other components also influenced the terms of trade, including the prices of a large number of commodities such as raw materials, food, metals and certain chemicals. The prices of these commodities rose considerably on the international markets, thus contributing to the increase in import prices.

This loss of income in relation to the rest of the world was not unique to Belgium and had occurred in the past. The country's main trading partners, and the euro area as a whole, also suffered from a loss of income compared to countries with energy sources they could extract and export to non-producing countries. But the negative income effect was particularly pronounced in Belgium, due in particular to the higher energy content of imports. From a historical point of view, past energy shocks also led to an impoverishment of the Belgian economy vis-à-vis foreign countries. Nonetheless, according to the available historical data, the 2022 shock appears to have generated a more substantial loss of income vis-à-vis the rest of the world than previous ones.

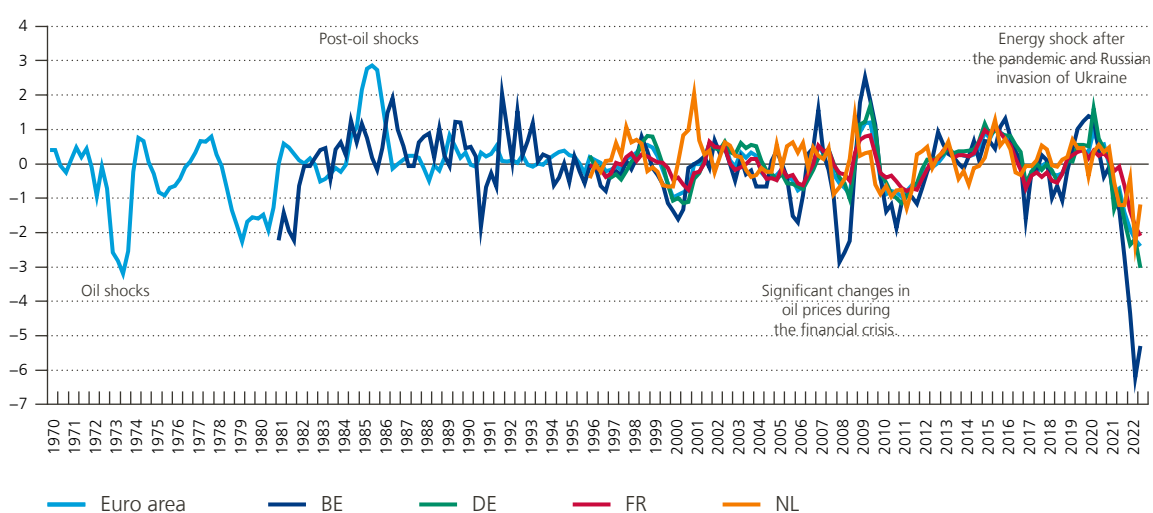
The current account balance deteriorated to a substantial deficit

The increase in the net energy bill also exacerbated the deterioration in Belgium's current account balance, which posted a deficit of more than 4% of GDP in 2022. The trade deficit related to energy products in fact widened under the influence of a significant price effect linked to the increase in the cost of these products, more specifically gas

Chart 4.2

A considerable transfer of income to the rest of the world, higher than that of neighbouring countries

(impact as a percentage of GDP, unless otherwise stated, latest data 2022 Q3)¹



Sources: ECB, NAI and NBB.

¹ The income effect of the terms of trade was calculated by weighting variations in export prices and import prices by their respective values and is expressed as a percentage of GDP.

imports; indeed, the weight of energy products is relatively lower in exports than imports. Belgium's net energy bill vis-à-vis the rest of the world more than doubled in two years, reaching around 4.4% of GDP on average over the first nine months of 2022, compared with 1.8% for the corresponding period in 2020 and 3.1% in 2021. Compared to a less economically troubled period than the past three years, i.e. 2017 to 2019, the average increase in Belgium's net energy bill was around 1.8% of GDP.

The trade balance of goods excluding energy products also worsened and contributed to the shift from a current account surplus to a deficit. The initial surplus of goods excluding energy products was gradually reduced over the course of 2022. One reason for this was the downward trend in surplus medicinal and pharmaceutical products due, in particular, to a decline in the export of COVID-19 vaccines in the second quarter of the year, for the first time since they were marketed internationally. The import and storage of a new drug for the treatment of COVID-19, along with the import of vaccines against diseases other than COVID-19 in the second half of the year, also influenced this trend. The net trade balance in chemical and pharmaceutical products therefore worsened in 2022 and led to a deterioration in the current account balance.

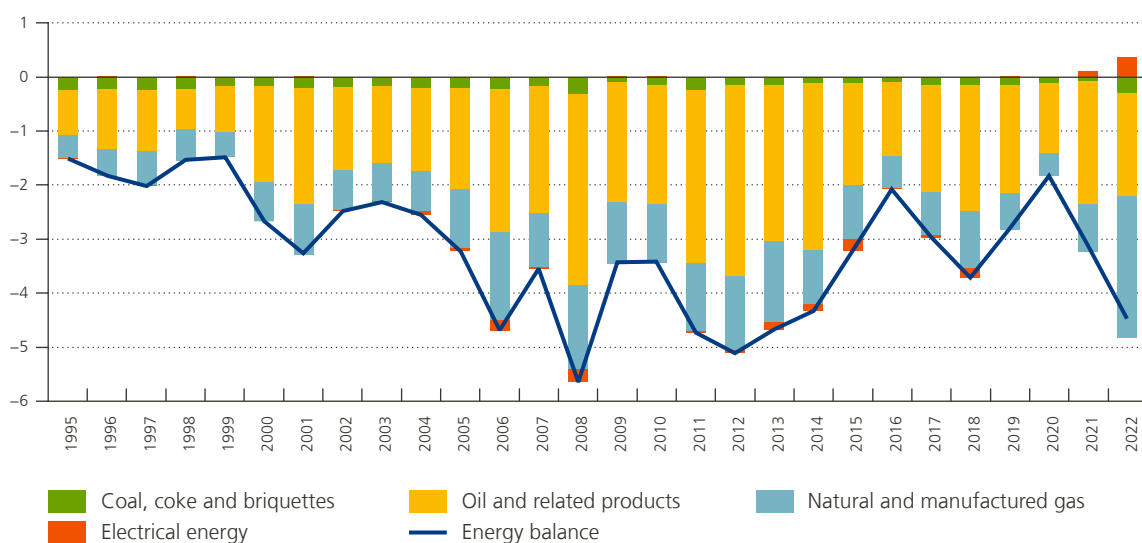
The net trade deficit in goods was not offset by the balance of trade in services, which remained close to equilibrium. This situation was mainly due to the return to a trade deficit in travel services with foreign countries more in line with that observed during the pre-COVID-19 period and therefore wider than during 2020 and 2021, when the pandemic imposed heavy restrictions and constraints on travel opportunities.

The sanctions adopted against Russia had only limited impact on Belgium's trade. The year was also marked by European sanctions against the Russian Federation following its invasion of Ukraine. However, trade between Belgium and Russia is relatively limited; over the period 2017-2019, it accounted, on average, for only around 0.9% of Belgium's exports and 1.8% of its imports of goods and services. While Belgian exports to Russia gradually fell under the effect of these sanctions, imports initially remained on an upward path. This was mainly due to the nature of the goods imported into Belgium from Russia and a price effect. Indeed, energy products and specific goods, such as diamonds, were the main contributors to this growth in Belgian imports, especially in the first half of the year for the latter. This was due to the fact that the prices of these goods increased considerably, although, in volume

Chart 4.3

A significantly higher energy bill

(in % of GDP, first nine months of the year)

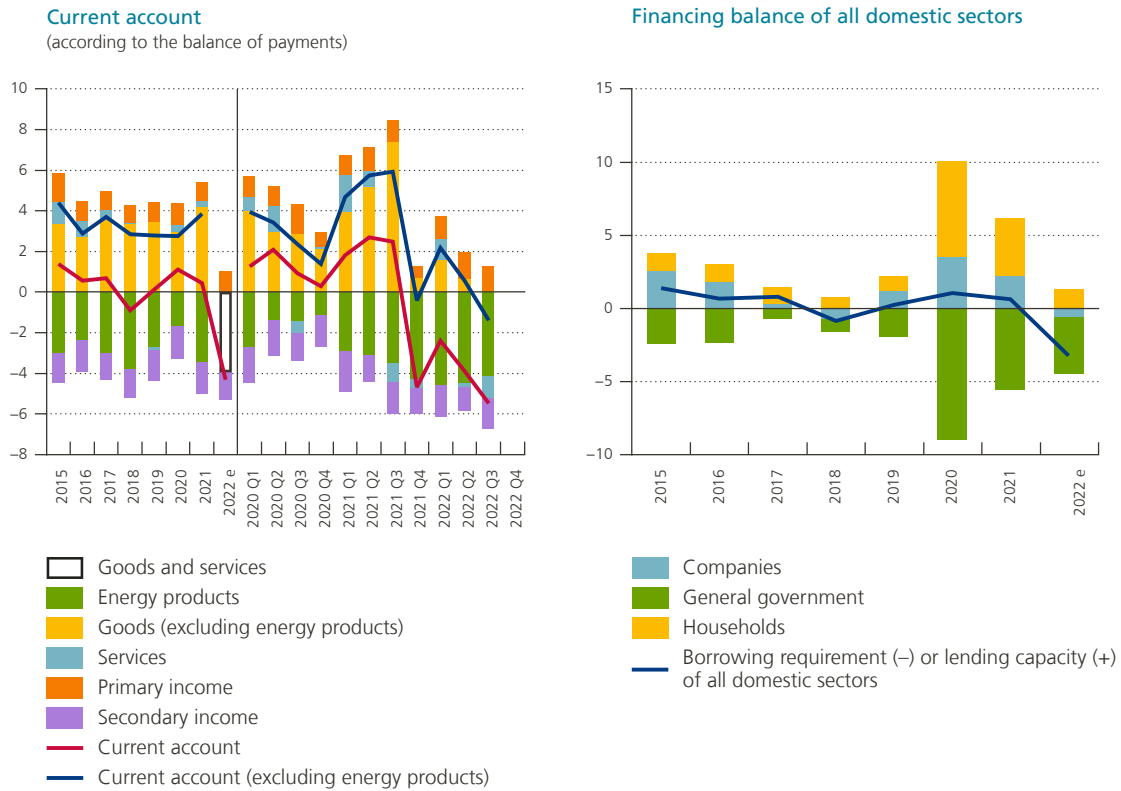


Sources: NAI and NBB.

Chart 4.4

A current account surplus and a financing capacity that deteriorated and moved into negative territory

(in % of GDP, unless otherwise stated)



Sources: NAI and NBB.

terms, weaker growth was recorded over this same period.

As with the current account deficit, a significant borrowing requirement emerged for the Belgian economy in relation to the rest of the world. The recently recorded lending capacity of the Belgian economy turned into a borrowing requirement of over 3% of GDP. Corporate lending capacity deteriorated to a limited borrowing requirement. Companies increased their investment expenditure, expressed in nominal terms, more than the income from their business activity rose. At the household level, as in the previous year, financing

capacity was reduced. In fact, household savings shrank considerably compared to 2021, further to an increase in final consumption expenditure, as wage indexation only compensates for inflation with a time lag, while their investment in housing, expressed as a percentage of GDP, remained relatively stable year over year. Finally, general government financing needs were less than in the two previous years, while remaining substantial from a historical perspective. Primary expenditure, expressed as a percentage of GDP, was in fact lower, due in particular to a reduction in public investment which largely offset the fall in taxes and social security contributions expressed as a percentage of GDP.

Energy shock: assessment of the effects on Belgian purchasing power and competitiveness using a dynamic macroeconomic model

Isolating the impact of rising energy prices on an economy is inherently difficult, but a macroeconomic model can help. This is what this box attempts to show, focusing specifically on two ways in which Belgium differs from other countries in the euro area.

Two specific features of the Belgian economy proved to be particularly critical during the recent spectacular, unexpected and prolonged rise in gas and electricity prices. First, in Belgium, international energy prices are passed on faster and more forcefully to consumers – at least in terms of the energy component of the harmonised index of consumer prices (HICP) – than in the euro area as a whole (characteristic C1 below). Second, Belgium is one of only three (small) countries with automatic wage indexation. The pace of indexation varies depending on the applicable collective bargaining agreement, but it is applied to almost all employees and benefits recipients within one year (characteristic C2 below).¹ Chapter 3 covers this process in detail. Characteristic C1 noticeably magnifies the significance of characteristic C2.

Higher energy prices expose Belgian consumers to a greater loss of purchasing power than their neighbours, while indexation shields workers and benefits recipients against a loss of real income. Indexation shifts the burden of inflation to employers (and the social security system). Compared to other European countries, in Belgium, energy prices affect production costs for the latter both directly, through the share this component represents in their inputs, and indirectly, since wages are driven up by indexation. This indirect channel, which is specific to Belgium, leads to a worsening of the competitiveness of Belgian companies on both domestic and foreign markets. The associated losses in market share are accompanied by a reduction in demand for labour hours which, in turn, affects the disposable income and purchasing power of Belgian households.

These characteristics of the Belgian economy necessarily amplify the dynamic reaction of the nominal side of the economy, but their effect on the real macroeconomic side is more ambiguous. Indeed, characteristics C1 and C2 exert potentially opposing effects on domestic and foreign demand. To study and measure the relative extent of the Belgian economy's reaction compared with that of the euro area, the shock must first be isolated. A representation of the complex and dynamic interactions between the real and nominal components in an open economy in the euro area is then needed. Such an analysis requires a general dynamic equilibrium model to simulate the impact the energy price shock would generate if it were the only one affecting the Belgian and euro area economies. Such a simulation is, by definition, different from a forecast, which tries to take into consideration all exogenous forces to which the economy is subject. The following analysis therefore excludes other current economic factors such as the post-COVID-19 recovery and the associated excellent performance of the labour

¹ It should be noted that macroeconomic theory unanimously concludes that, in real terms, automatic indexation acts as a stabiliser in the event of a demand or monetary policy shock but amplifies the volatility of macroeconomic variables following supply or terms of trade shocks, such as an imported energy price shock. On this topic, see Appendix 4 of the NBB's study of June 2012 on indexation.





market. This may explain why actually observed Belgian consumption was better than that suggested by the simulations presented here.

The NBB's BEMGIE (Belgium in a Macroeconomic General International Equilibrium) model, which bases its projections on Belgian and euro area macroeconomic data, has the characteristics required to study this issue. In the proposed simulation, wholesale energy prices rise exogenously in accordance with the dynamics observed between the first quarter of 2021 and the second quarter of 2022. They subsequently return to their long-term level by dropping by 5% per quarter, in line with the dynamics of these prices on the futures markets. The HICP energy indices in Belgium and the euro area move as observed until the second quarter of 2022 then react to changes in wholesale prices, each in accordance with its own estimated dynamics. The following figure shows the difference, in percentage points, between the reaction of selected Belgian variables and their euro area equivalents. This means that the negative reaction of a variable to a shock does not necessarily correspond to an effective fall in this variable, but rather that the reaction in Belgium is below that in the euro area (for example, lower growth in GDP than in the euro area after the energy shock). The blue line represents this difference for the central simulation, namely the actual situation in which characteristics C1 and C2 are active. The red line corresponds to the "identical reaction of HICP energy" counterfactual (only



characteristic C2 is active) and the green line to the “no automatic indexation in Belgium” counterfactual (only characteristic C1 is active). The dotted blue line combines both counterfactuals (with characteristics C1 and C2 deactivated).¹

As expected, the central simulation (solid blue line) reveals higher consumer price inflation and a greater slowdown in growth in Belgium. The direct effect of characteristic C1 fuels the wage-price spiral through characteristic C2. The relative increase in the Belgian hourly wage translates into an additional cost for businesses, which they gradually pass through to their prices on the domestic and international markets. Not only does this effect fuel inflation in consumer prices, but it also affects the competitiveness of Belgian firms in the eyes of both Belgian consumers and foreign importers as shown by the relative trade balance dynamics. The resulting greater fall in real activity in Belgium harms employment. This factor, combined with stronger inflationary pressure, contributes to a more significant reduction in consumption and therefore in real GDP.

If consumer energy prices reacted in the same way in Belgium as in the euro area (red line), the initial inflationary shock would be smaller as would the loss in purchasing power. The wage-price spiral caused by automatic indexation would certainly still be present, but its starting point would be lower. The decline in real consumption is much less noticeable in this counterfactual, although the competitive disadvantage remains. In this case, it is essentially domestic demand that shores up real GDP and makes it possible to wipe out half the initial difference with the euro area.

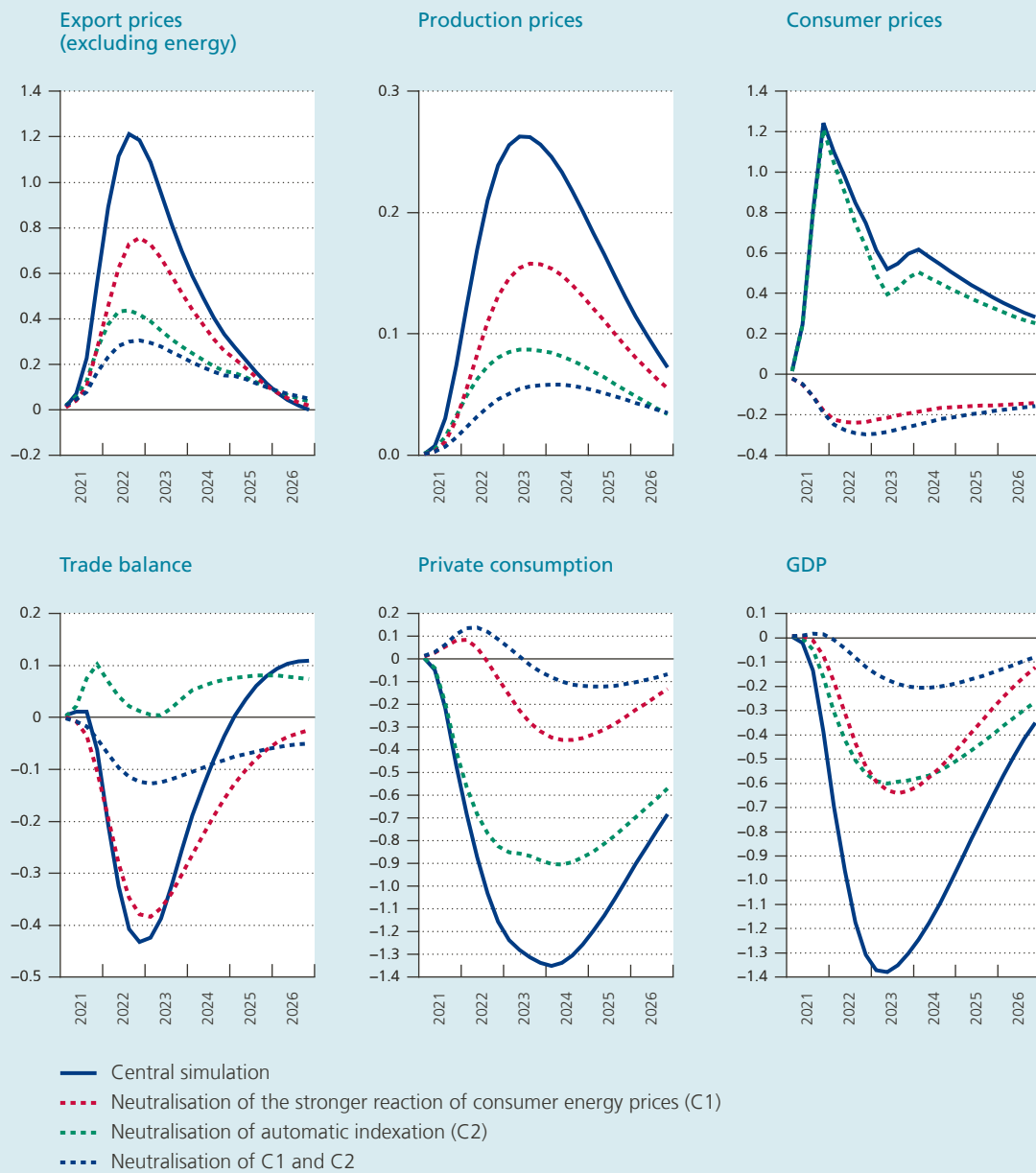
On the other hand, if automatic indexation were to disappear from the Belgian landscape (green line), the initial inflationary shock would remain, but its spread to sales prices would be tempered, thereby eliminating most of the competitive disadvantage. In this case, it is mainly foreign trade that drives real GDP and reduces the initial difference with the euro area, by nearly half.

Unsurprisingly, the combination of the two counterfactuals – by neutralising both the “stronger reaction of consumer energy prices” and “automatic indexation” – minimises the difference in price and GDP reactions in Belgium and the euro area (no more than 0.3 percentage point). The value of this exercise is that it quantifies the effect of each of the selected Belgian characteristics and the associated transmission channels. Each accounts for half of the more negative reaction to the shock by Belgian real GDP. The more pronounced and faster pass-through of international energy prices to consumers (characteristic C1) essentially leads to higher inflation combined with a greater contraction in domestic demand. Automatic wage indexation (characteristic C2) has a greater effect on firm competitiveness and the associated decline in the trade balance.

This exercise emphasises the effects of the interaction of characteristics C1 and C2 of the Belgian economy. It illustrates that an inflation measure based on a price index calculated for “new goods and contracts” rather than the “average cost of living” (see chapter 3) can give a biased picture of the effects of an energy shock on household purchasing power and moreover will have a greater effect on firm competitiveness through the automatic indexation channel.

¹ For each simulation involving automatic indexation, its institutional counterpart, i.e. the 1996 Competitiveness Act, is also activated. This is done by assuming an absence of wage increases above indexation for a period of three years from the initial shock.

Reaction differences (expressed as a percentage deviation) of selected Belgian variables compared with the euro area following an energy price shock as observed between Q1 2021 and Q2 2022



Sources: NBB and own calculations.



New Keynesian models, such as BEMGIE, are based on the assumptions that (i) agents have perfect information (apart from the occurrence of unexpected shocks) and (ii) based on this information, they construct their expectations rationally. Under these assumptions, it appears that automatic indexation does not support consumption after a price shock on the international energy markets; the gain to households in terms of hourly wages is lost in terms of hours worked and expected future dividends.

4.2 The economy proved resilient

A strong first half-year was followed by a weaker second half

The post-COVID-19 recovery continued in the first two quarters. GDP grew by 0.6% and 0.5%, respectively, quarter-on-quarter, mainly due to growth in market services. In the early months of the year, the economy benefited from a clear improvement in supply-side constraints, particularly the supply issues that had hampered activity since the summer of 2021. However, Russia's invasion of Ukraine at the end of February reignited these pressures and led to an increase in input costs. The economic repercussions of the war nevertheless had a heterogeneous impact on the Belgian economy, with the most significant effects being reported by business sectors that depend to a greater extent on energy inputs or food products.

Soaring energy prices put the economic recovery under pressure in the second half of the year. Indeed, quarterly GDP growth slowed to 0.2% in the third quarter and to 0.1% in the final quarter. The shock of the energy crisis therefore remained far removed from the record slump recorded in 2020 due to the COVID-19 pandemic. Rather than resulting in a sudden and complete shutdown of economic activity, it depressed growth through a reduction in household purchasing power and a substantial increase in the costs faced by companies. A third of respondents to a survey conducted by the Bank indicated that they had deliberately cut production or reduced the provision of services since September in order to limit the effects of the energy shock on their profit margins. Energy-intensive firms reported more significant falls. In addition, galloping inflation and lingering uncertainty surrounding the inflation forecast led to

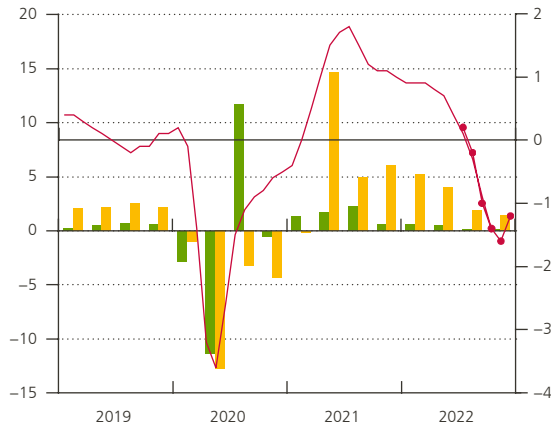


Chart 4.5

Recovery slowed during the second half of the year

Change in real GDP and business sentiment

(data adjusted for seasonal and calendar effects)



GDP (y-axis)

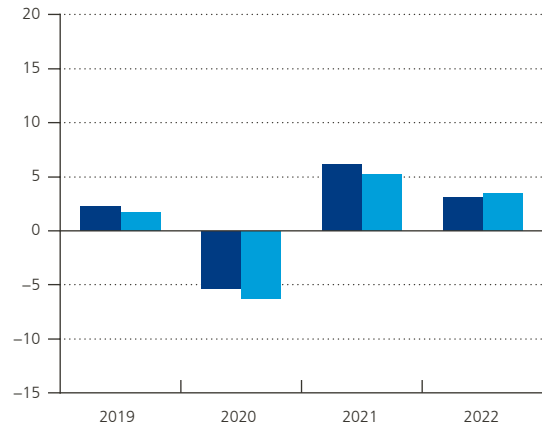
- Percentage change compared to the previous quarter
- Percentage change compared to the corresponding quarter of the previous year

Overall synthetic curve¹ (secondary y-axis)

- Smoothed series
- Gross series

Real GDP growth

(percentage change compared to the previous year, data adjusted for seasonal and calendar effects)



- Belgium
- Euro area

Sources: ECB, NAI and NBB.

¹ Balance of normalised replies for the period 1995-2022.

a substantial worsening of business sentiment, with the Bank’s indicator on this subject showing a marked deterioration, especially since the summer.

In 2022, real GDP grew by 3.1 % compared to the previous year. Growth therefore stalled somewhat after having exceptionally reached 6.1% in 2021, although it should be recalled that this followed the sharpest economic decline recorded since the end of the Second World War. Nonetheless, economic activity remains above its pre-pandemic levels and the recovery was stronger than that following the 2008-2009 global economic and financial crisis. The Belgian economy proved particularly resilient in the face of the energy shock and growing uncertainty on the part of both households and companies. Furthermore, growth in Belgian GDP was similar to that of the euro area as a whole, albeit about 0.3 percentage point lower.

Services remained the main driver of growth, while the manufacturing industry was hampered by skyrocketing energy prices

The effects of the cost crisis faced by companies in 2022 varied depending on the business sector. While rising wages have a broad and relatively uniform effect on the Belgian economic fabric, soaring energy costs take a particularly heavy toll on activity in more energy-intensive sectors, namely the manufacturing industry and, to a lesser extent, the building industry.

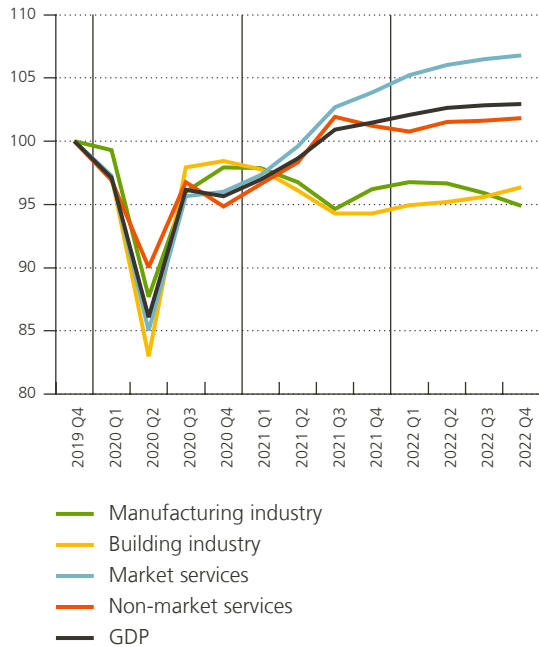
The manufacturing industry started the year off well, but quarterly growth of real value added started to fall as from the second quarter of 2022. In the first quarter, industry benefited from a gradual resolution of the supply chain problems that

Chart 4.6

Market services were the major driver of growth

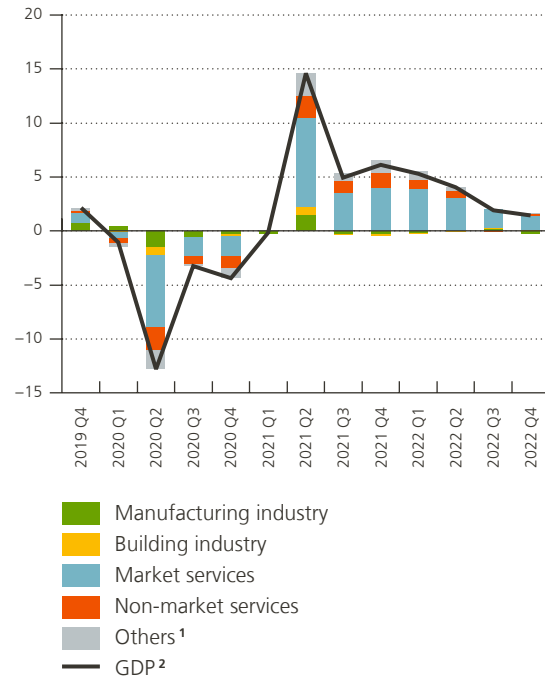
Change in real value added

(2019 Q4 indices = 100; data adjusted for seasonal and calendar effects)



Contributions to annual growth of real GDP

(percentage points, unless otherwise stated; data adjusted for seasonal and calendar effects)



Sources: NAI and NBB.

1 Notably "agriculture, forestry and fisheries" and taxes on production, excluding subsidies.

2 Percentage change compared to the corresponding period of the previous year.

had significantly impacted the previous year. However, Russia's invasion of Ukraine temporarily re-erected these barriers to economic activity, while the sharp rise in prices, especially for energy, in the subsequent months further undermined the good performance at the start of the year. According to a survey carried out by the Bank in October, nearly half of industrial companies questioned reported that they had intentionally cut, and sometimes even temporarily suspended, production in the previous month in order to protect their margins in the face of rising costs. In addition, although the significant fall in gas prices from the record levels reached at the end of August brought some respite, it was not enough to reverse the trend in industrial activity. In total, value added in the manufacturing industry fell slightly by 0.3% in 2022 and is consequently still below its pre-pandemic level. Nonetheless, the near stabilisation of

activity compared with 2021 masks certain disparities between sectors, particularly with regard to sensitivity to higher energy prices. For example, the metal industry, which is highly energy-intensive, saw its value added fall sharply in the span of a year, while the coking, refining and nuclear industries obviously benefited.

Although real value added in the building industry increased steadily in 2022, it remained below the peak recorded prior to the COVID-19 pandemic. Like the manufacturing industry, the building industry is particularly sensitive to supply flows. Therefore, it, too, benefited from the easing of supply constraints at the beginning of the year, with value added growing by 0.7% in the first quarter. Subsequently, growth in the building industry slowed, falling to 0.3% and 0.5% in the second and third quarters, respectively, before accelerating sharply

once again in the last quarter. The surveys organised by the Bank identified this sector as one of those most affected by rising costs in 2022. Furthermore, interest rate hikes and higher prices for materials undoubtedly reduced the attractiveness of building and renovation works over the course of the year.

Finally, the services sectors, particularly market services, saw their value added grow more quickly in 2022. Due to its prominence in the Belgian economy, the market services sector was the main driver of growth. In general, service-related activities are relatively less vulnerable to supply-side constraints, meaning the supply issues that re-emerged during the year had only a slight impact on the sector's performance. In addition, the sector as a whole did not appear to be unduly affected by skyrocketing energy costs.

Growth was mainly supported by household consumption expenditure and investment in housing

In 2022, growth in GDP was mainly driven by households, through private consumption and investment in housing, while business

investment slumped. The energy shock resulted in an impoverishment of the Belgian economy, the extent of which varied between sectors. On the one hand, household purchasing power weakened, although nominal incomes benefitted from automatic indexation. In this regard, it should be noted that there is a time lag in how this protection mechanism compensates for inflation as well as disparities between households. On the other hand, companies faced a substantial rise in costs due to the surge in input prices, including energy, as well as rapid wage increases as a result of indexation.

In this context, although it remained positive, the contribution of domestic demand to growth slowed significantly, falling from 5.1 percentage points in 2021 to 1.9 percentage points in 2022. Private consumption, which accounts for around half of GDP in Belgium, climbed by 4.1 %, while growth in housing investment stood at 2.1 %. Conversely, business investment, which represents approximately 20 % of GDP, shrank by 2.1 %. This was also the case for general government investment, which fell by 6.7 %, while public consumption increased by 1.4 %.

The contribution of foreign demand remained positive, despite a slight weakening compared to

Table 4.1

GDP and main expenditure categories

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

	2018	2019	2020	2021	2022 e
Private consumption	1.9	1.7	-8.3	5.5	4.1
Public consumption	1.6	2.2	0.0	4.8	1.4
Gross fixed capital formation	3.0	5.0	-5.1	4.9	-1.7
Housing	1.5	5.1	-7.1	7.9	2.1
Businesses	2.4	5.6	-5.4	3.9	-2.1
General government	10.2	1.6	0.1	5.2	-6.7
<i>p.m. Final domestic expenditure</i> ¹	2.1	2.6	-5.6	5.2	2.0
Change in stocks ²	0.4	-0.7	-0.3	0.4	0.8
External balance of goods and services ²	-0.7	0.4	0.4	0.7	0.3
Exports of goods and services	1.1	2.4	-5.0	11.3	4.5
Imports of goods and services	2.0	2.0	-5.6	10.7	4.1
GDP	1.8	2.2	-5.4	6.1	3.1

Sources: NAI and NBB.

1 Excluding changes in stocks.

2 Contributions to the change in GDP compared to the previous year, in percentage points.

the previous year. Belgium's foreign trade remained dynamic until the last quarter of the year. During the first part of the year, Belgium followed the trend observed in global trade, which was driven by a combination of strong demand, the easing of supply chain bottlenecks and the lifting of COVID-19 restrictions in most countries. However, at the end of the year, import and export growth contracted considerably

due to the slowdown in global trade in an inflationary context. The loss of momentum in activity also impacted the development of Belgium's trade flows at the end of the year. In total, for the year as a whole, trade in exported and imported goods and services grew by 4.5% and 4.1%, respectively, therefore making a positive, albeit limited, contribution to the growth of the Belgian economy.

4.3 A particularly dynamic labour market showed a few signs of slowing in the second half of the year

In 2022, the labour market continued the strong post-pandemic recovery started the previous year. However, a number of indicators show that it is also under pressure from high energy prices, which is likely to slow job creation.

The labour market continued its strong recovery, adding a record number of jobs

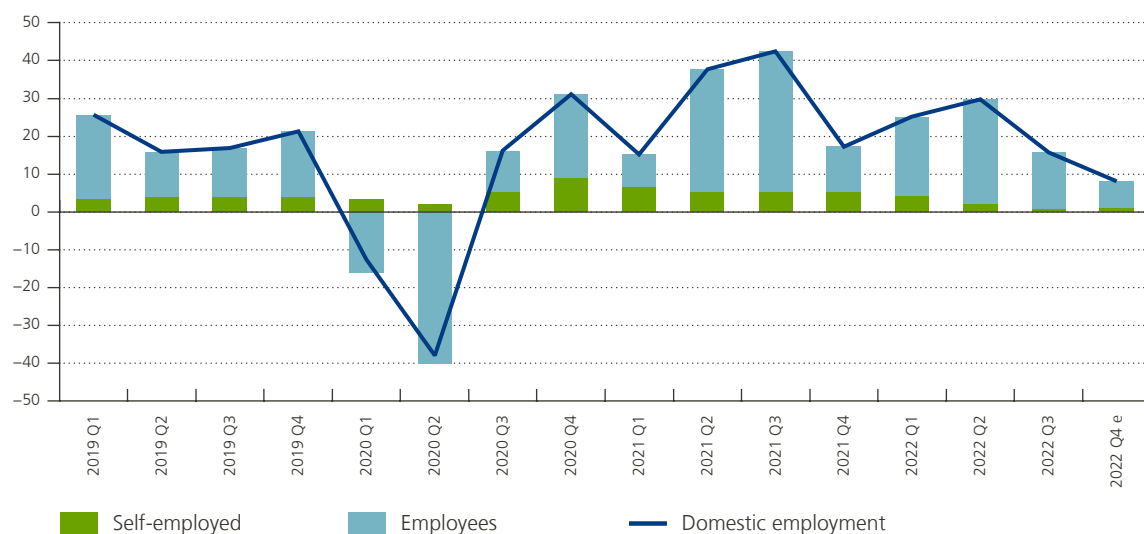
The net number of jobs added to the Belgian economy stood at 101 000 in 2022, the largest increase since measurements began in 1953. This was

due to highly dynamic job creation with the addition of no fewer than 86 000 employees and 15 000 self-employed in net terms. For the self-employed, the increase was comparable to that of previous years. The strong performance in the first three quarters of 2022 can also be attributed to the continued economic recovery in the first quarter and the fact that there is usually a time lag in the labour market's reaction to developments in economic activity. The employment rate for persons aged between 20 and 64 rose from 70.6 % in 2021 to 71.8 % during the first nine months of 2022, while it had been 70 % in 2020. The average number of hours worked almost returned to its pre-pandemic level after a marked decline in 2020.

Chart 4.7

The labour market was very dynamic for the second year running

(seasonally adjusted data, changes in thousands of people compared to the previous quarter)

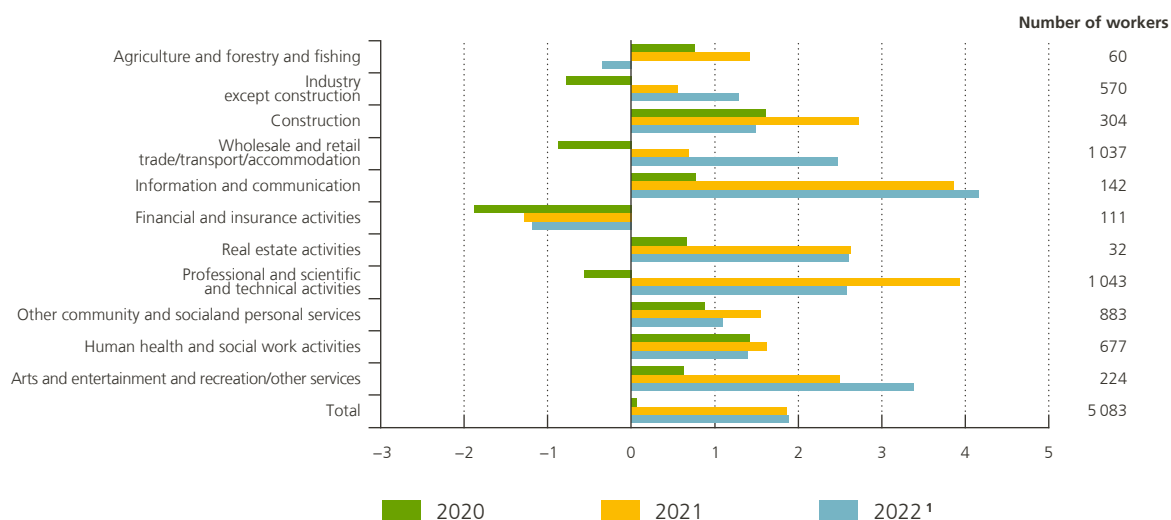


Sources: NAI and NBB.

Chart 4.8

Employment increased significantly in almost all sectors

(percentage change compared to the previous year; number of workers in 2022, in thousands)



Source: NAI.

1 Average for the first three quarters.

However, the recovery did not benefit all Regions equally. The employment rate in Flanders (76.6%), which is the highest of the country’s three Regions, grew by a further 1.3 percentage points, while that of Brussels improved by three percentage points, but still stood at only 65.2%. In Wallonia, 65.6% of the working-age population is employed, a percentage barely higher than that seen in 2021.

This improvement led to the creation of jobs in almost all sectors. Employment grew in all sectors with the exception of agriculture, forestry and fisheries, and financial services, where the number of jobs had been falling for several years. The most significant increases were recorded in information and communication as well as cultural and recreational activities and other services. The trade, transport and hospitality sectors, which employ one in five workers, expanded strongly in 2022 after a lacklustre performance in 2021. For its part, the manufacturing industry made up for its 2020 job losses through more robust job creation than that observed in 2021. The recovery was more modest in the building industry than in 2021, in particular due to rising prices, supply problems and labour market shortages.

Despite sustained job creation, certain groups have not yet made up for the backlog that accrued during the pandemic. Although the employment rate of highly skilled workers aged 20 to 64 exceeded the pre-pandemic level by one percentage point in the first three quarters, that of low- and medium-skilled workers in the same age bracket remained one percentage point lower. This was due to the fact that, unlike more highly skilled workers, low- and medium-skilled workers still had a higher unemployment rate than before and a lower participation rate. Young workers moreover did not benefit sufficiently from the recovery, and their employment rate remains slightly lower than prior to the pandemic, whereas that of higher age categories has increased. Nevertheless, the overall employment rate is now higher than before the COVID-19 crisis as young workers represent only a minority of the active population, while the share of highly skilled people – who make up nearly half the working-age population – continues to rise.

The number of self-employed also continued to rise but, in almost all sectors, at a more moderate pace than that seen in 2021 and with barely any increase after the third quarter. There were significantly more bankruptcies in 2022 compared

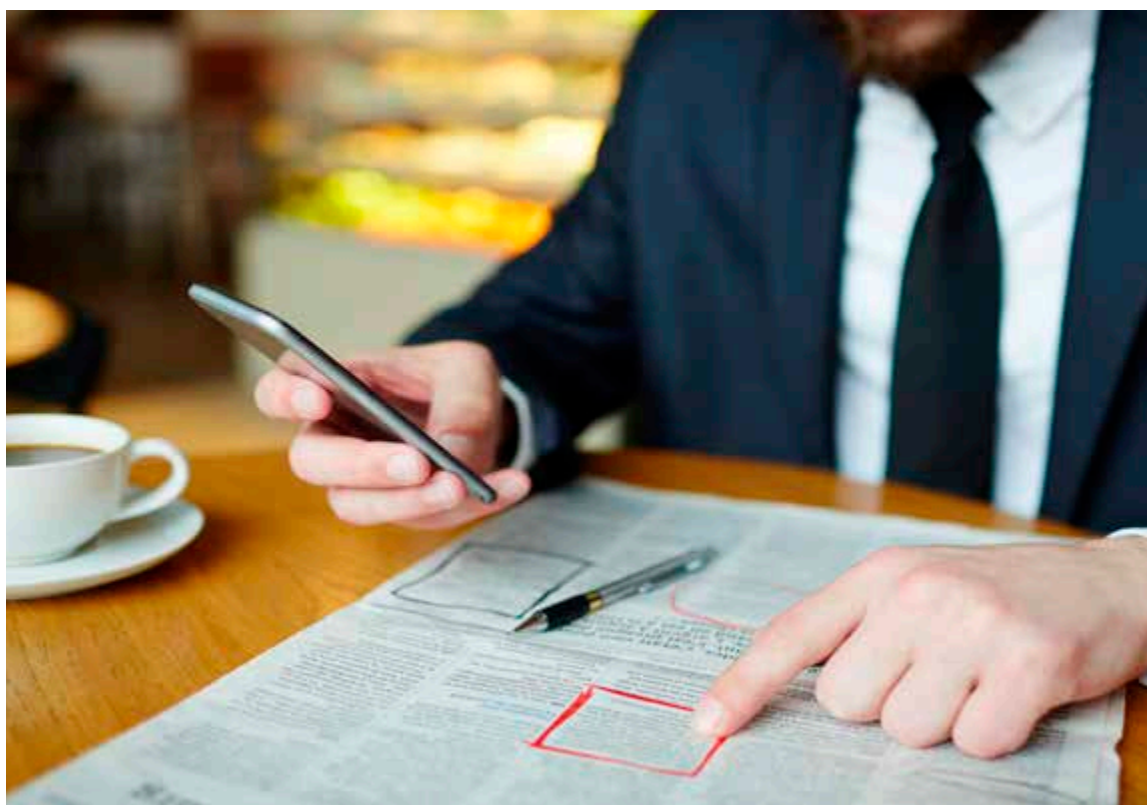
to the exceptionally low level recorded in 2021. However, the feared “catch-up” did not materialise in 2022. Both the total number of bankruptcies and the resulting job losses remained slightly lower than in 2019, the year before the pandemic, which also contributed to strong net job creation in 2022.

A strong labour market also led to an unprecedented labour shortage. The job vacancy rate (i.e. the ratio of vacancies to the total number of filled and unfilled positions) stood at 5% in the second quarter, which corresponds to 214 000 unfilled jobs. This rate was particularly high in several sectors: 9.1% in information and communication and 7% in hospitality, business services and building. There were also differences between Flanders (5.6%) and Wallonia and Brussels (approximately 4%). The job vacancy rate therefore exceeded the EU average (3%) in all three Regions. This labour shortage has a twofold effect on employment. On the one hand, unfilled positions are missed opportunities to create new jobs. On the other hand, employers may decide to postpone lay-offs due to fear of being unable to find staff later on in a structurally tight labour market, a phenomenon called “labour hoarding”. This could also have contributed to the strong employment figures observed this year.

Flexi-jobs, the number of which rose sharply in 2022, could help to alleviate shortages. In the second quarter, nearly 100 000 people resorted to this type of work, which represents an increase of 67% compared to the corresponding period in 2021. Just over half these positions are in the hospitality industry, but retail businesses, such as bakeries and supermarkets, also offer such jobs. Flexi-jobs provide both a partial solution to staff shortages and additional income to workers, who must prove they are at least 80% employed by another employer or retired to be able to access them. Eleven percent of such jobs are held by persons aged 65 and over. However, where they supplement an existing job, these positions do not contribute to raising the employment rate.

Several signs pointed to a labour market slowdown as from the end of the year

Despite the good performance of the labour market in 2022, it has started to feel the effects of the energy crisis. In November 2022, the number of hours of temporary work, which had been falling



since the second quarter of the year, was down 11 % year over year. Employment expectations, as measured by the Bank's business survey, also pointed to less optimism at the end of 2022 than in the first half of the year. This trend was observed in both the manufacturing industry, which suffered the most from high energy prices, and trade. In the building industry and business-related services, expectations remained positive, but less so than previously.

After falling sharply, unemployment figures also indicated that the labour market was slowing.

Due to the post-pandemic recovery, unemployment continued to fall in 2022, as it had in 2021. The harmonised unemployment rate was thus 5.6 % over the first three quarters of the year, after peaking at 6.3 % during the pandemic. Although this rate fell in all Regions, there were major disparities. In Flanders, the unemployment rate fell to 3.2 % and evolved towards frictional unemployment (i.e. unemployment due to people transitioning from one job to another) which also explains the difficulty filling vacancies. In Wallonia and the Brussels-Capital Region, the unemployment rate was nearly three to four times higher than in Flanders.

The improved unemployment figures gradually eroded, and the number of registered unemployed persons exceeded that of the previous year as from September 2022.¹ In this regard, there was a significant difference between the short- and long-term (more than one year) unemployed. During the recovery in 2021, the number of short-term unemployed fell rapidly. However, the number of long-term unemployed continued to grow and only began to fall in late 2021. At the end of 2022, this scenario was reversed as the number of long-term unemployed continued to decline, while a flood of newly unemployed workers led to an increase in short-term unemployment.

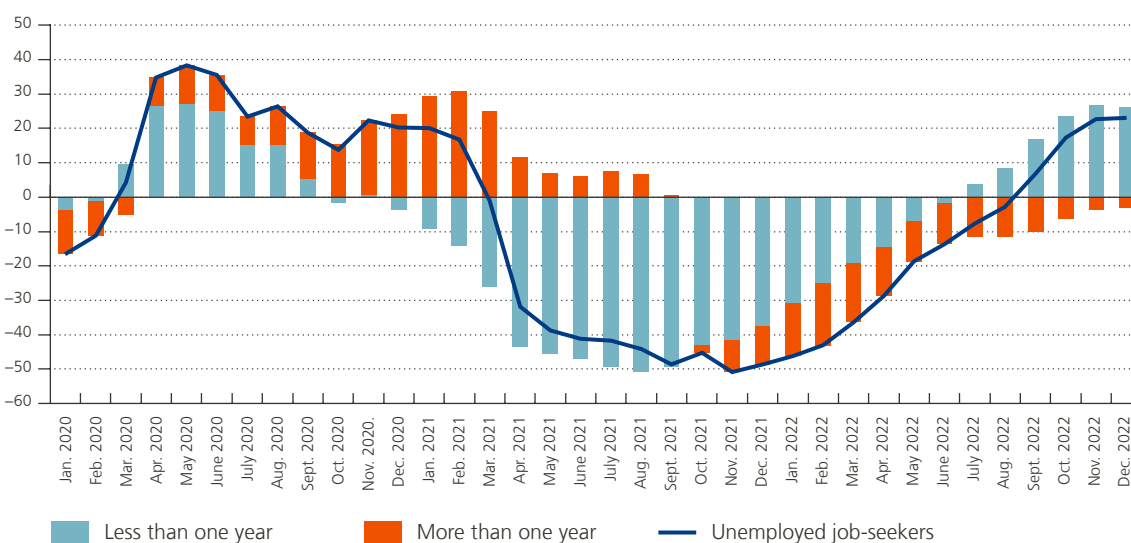
Recourse to furlough (or temporary unemployment) schemes, which took off during the COVID-19 pandemic, gradually normalised in 2022. In 2020, a hitherto unprecedented number

¹ This was partly due to an administrative change in Wallonia in January 2022, which meant that a larger number of people were considered unemployed. That being said, a similar trend was observed in the other Regions. In both Brussels and Flanders, this fall came to an end and unemployment figures were higher in November 2022 than a year ago.

Chart 4.9

The fall in the number of unemployed came to an end

(changes in thousands of people compared to the corresponding month of the previous year)



Source: NEO.

of 1 245 000 workers were covered by such schemes, due to their expansion as well as shut-downs in various sectors. This more flexible model, which was later extended following Russia's invasion of Ukraine, came to an end in June 2022, although provision was made for transitional arrangements. As in 2021, reliance on furlough schemes abated continuously in 2022. In July and August 2022, approximately 87 000 individuals were on furlough, representing a rate slightly higher than that of the summer preceding the pandemic. In the first half of the year, certain sectors still had more furloughed staff than usual, particularly the hospitality industry, the arts sector, cultural and recreational activities and trade.

The energy crisis led to another extension of the furlough scheme, to help protect a series of jobs during the crisis, but it has been relatively little used to date. This extension, in effect from October 2022 to March 2023, does not allow for as much flexibility as during the pandemic – for example, notifications must once again be made in advance – but furloughing is more readily available for energy-intensive companies. In the final months

of 2022, approximately 20 000 workers¹ applied for the scheme every month. Thus, the total number of furloughed workers (116 000 in November) remains limited for the time being and not comparable to that of the COVID-19 period.

Given the slowdown in the Belgian economy recorded in the second half of 2022, staff shortages are expected to ease. In the third quarter of the year, the number of vacancies fell by 1.4 % and the job vacancy rate dropped from 5 % to 4.9 %. This slight decline affected all Regions and most sectors, while shortages in the manufacturing and building industries continued to worsen. Even if it were to fall further in the coming quarters, this would remain a structural problem for the Belgian economy, as explained in more detail in chapter 7.

¹ Between its introduction in October and the end of December, 69 000 workers notified their potential reliance on the scheme. However, this does not mean that all these workers will eventually use it.

4.4 Households continued to consume, to the detriment of their savings

Accelerating inflation affected real household income

Household purchasing power, measured by the change in real gross disposable income, fell in 2022. This fall was mainly attributable to the sharp rise in inflation, more specifically the energy component. In nominal terms, household gross disposable income jumped by 7.9%, the strongest increase in the last two decades. This was obviously directly related to wage increases, particularly hourly wages, which benefitted from automatic indexation, along

with an increase in the number of hours worked. Furthermore, property income continued to climb in a rising rate environment. Transfers by households, mainly consisting of taxes, increased significantly, stimulated by the good performance of the labour market in 2022 and job growth. It is also important to note that deferred tax indexing led to bracket creep and thus higher taxes on at least 0.3% of household disposable income. However, government transfers rose significantly, partly due to the various forms of aid granted to households during the energy crisis.

Table 4.2

Determinants of household gross¹ disposable income, at current prices

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

	2018	2019	2020	2021	2022 e	<i>p.m.</i> <i>In € billion</i> 2022 e
Gross primary income ²	3.3	3.2	-2.6	5.8	9.4	303.3
Gross wages ²	3.8	3.8	-2.2	6.1	10.3	207.4
Gross operating surplus and gross mixed income	2.9	2.6	-1.0	4.3	7.6	66.8
Capital income ³	0.9	0.4	-8.5	7.3	7.7	29.0
Current transfers received	3.0	3.4	12.9	0.0	7.5	126.9
Current transfers paid ²	3.3	0.9	0.5	4.5	11.5	113.0
Gross disposable income	3.2	4.1	2.2	3.8	7.9	317.2
<i>p.m. In real terms⁴</i>	1.2	2.6	1.3	1.3	-0.8	-
Savings rate ⁵	11.5	12.3	20.5	17.0	12.9	-

Sources: NAI and NBB.

1 This is disposable income before the deduction of depreciation (consumption of fixed assets).

2 Excluding social security contributions payable by employers.

3 This is the difference between income received from other sectors and that paid to other sectors.

4 Data are deflated by the household final consumption expenditure deflator.

5 In % of disposable income in the broad sense, i.e. including changes in supplementary pension entitlements further to the conduct of a professional activity.

Although automatic wage indexation helped to mitigate the impact of the energy crisis on household incomes, which were adjusted to reflect inflation, it did not offer total protection.

More specifically, there is a time lag in indexation for a large number of workers in the private sector. For one third of them, indexation only occurs in January, for example. This means that some workers only saw their salaries indexed in 2023 rather than in 2022, the year in which inflation was rising (see chapter 3 for more information). Furthermore, other types of support measures, such as discounted prices for certain goods, in particular through a reduction in the VAT rate, or specific assistance based on household income level, complement indexation and provide assistance that is potentially more direct. In the euro area, the policies introduced to protect household purchasing power were generally based on such forms of assistance, with automatic wage indexation remaining an exception.

However, the above-mentioned developments should be viewed with caution, as the macro-economic concept of purchasing power may be sensitive to national accounting methodological

specificities and the measurement of change in consumer prices. This is notably the case with the omission of running gas and electricity contracts and the inclusion of only new contracts, which led to an overestimation of energy expenditure in 2022. Consequently, for the average household, automatic indexation overcompensated for the genuine increase in expenditure (see chapter 3 for a more detailed analysis).

Households continued to consume and to invest in housing

Private consumption continued to grow in 2022.

The annual growth rate of 4.1% was largely due to the rebound observed after the second quarter. Households clearly consumed more as the winter came to a close and the remaining health-related restrictions were lifted in shops and the hospitality sector. A share of their consumption expenditure was thus not in fact possible earlier. At the same time, there was a marked decrease in household confidence. Initially, this was mainly due to the war in Ukraine. Subsequently, surging energy prices and the

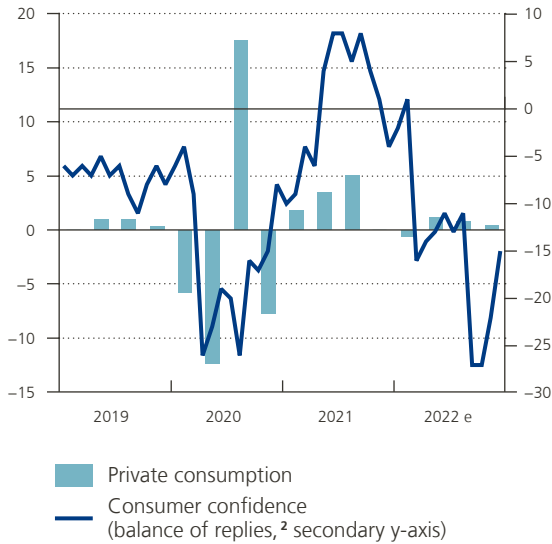


Chart 4.10

An uncertain climate gradually impacted private consumption, including that of households with the highest income levels

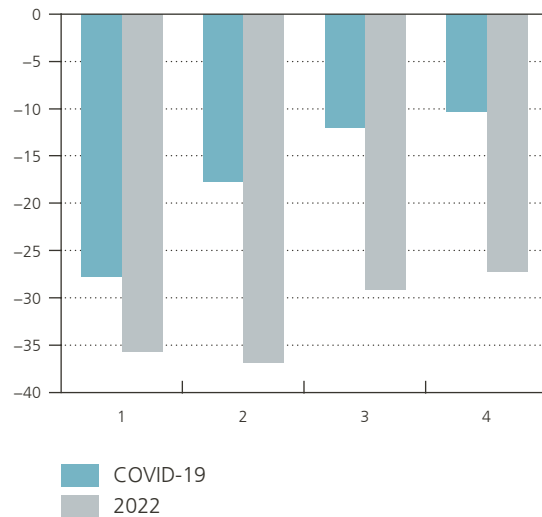
Private consumption and consumer confidence

(percentage change compared to the previous quarter, unless otherwise stated; data adjusted for seasonal and calendar effects)



Intention to make a large purchase per quintile of income¹

(average monthly confidence indicator scores,² data adjusted for seasonal and calendar effects)



Sources: EC, NAI and NBB.

1 The x-axis represents income quintiles, from the lowest (1) to the highest (4). The COVID-19 series corresponds to the average over the period 2020-2021.

2 The consumer confidence indicator reveals the balance of replies, i.e. the difference between the percentage of positive replies and the percentage of negative replies.

resulting rampant inflation led to another significant fall in consumer confidence, which nevertheless recovered towards the end of the year. It was in this uncertain environment, in October 2022, that the Bank’s confidence indicator fell to a low comparable to that recorded during the COVID-19 pandemic and growth in private consumption, although still positive, began to gradually slow. Nonetheless, private consumption proved resilient, in that the obvious deterioration in consumer confidence did not translate into a fall in consumption, as was the case during the pandemic two years earlier.

In order to offset, at least partially, the contraction in their purchasing power, households drew on their savings. The saving rate stood at 12.9% in 2022, just over four percentage points below the previous year’s level. Nevertheless, it remained somewhat higher than before 2020 and the COVID-19 pandemic, an event that prompted forced

saving. It should be noted that this forced saving was mainly by the most affluent households, which were less affected by the economic consequences of the pandemic. The European Commission’s survey data also point to a greater reticence to make large purchases by households with income below the median. Compared to the situation observed during the COVID-19 crisis, the energy crisis and high inflation had a greater effect on the consumption of high-income households.

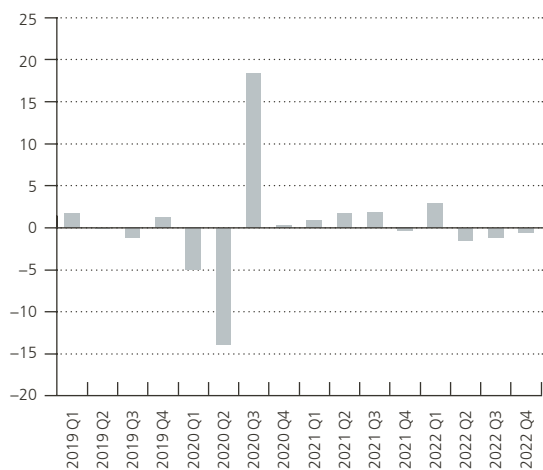
Household investment in housing was also up over the year, by 2.1%. But this growth was the result of a highly dynamic first quarter, as residential investment then declined. This development took place alongside the rise in interest rates, which gradually reduced the attractiveness of real estate. The weighted average interest rate on new mortgages increased steadily, rising from 1.5% in January to 2.7% in November 2022. In addition, an increasingly

Chart 4.11

Rising interest rates and increasing prices for building materials weighed on residential investment

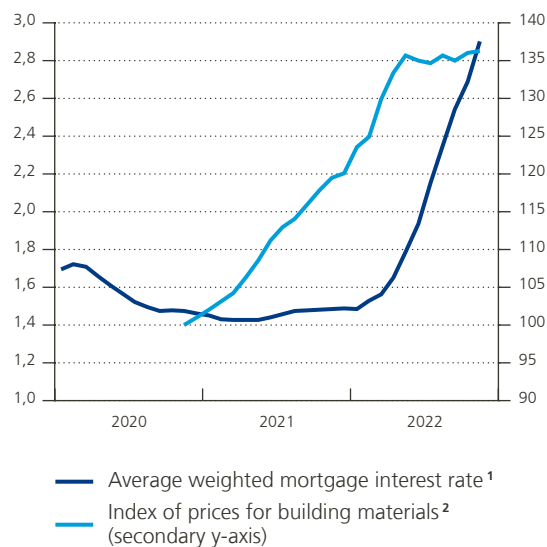
Housing investment

(percentage change compared to the previous quarter, data adjusted for seasonal and calendar effects)



Mortgage rates and construction costs

(percentage, unless otherwise stated)



Sources: Arch-Index, NAI and NBB.

1 For new mortgages.

2 November 2020 index = 100.

uncertain climate and resulting decline in consumer confidence most certainly dampened the appetite for bricks and mortar.

Construction costs, in particular the price of materials, climbed considerably in 2022. Having jumped by 13.5% between December 2021 and November 2022, these costs also grew faster than dwelling prices over the same period. The apparent profitability of investments in new housing or renovations, which together represent the largest share of residential investment, therefore declined.

4.5 Corporate profit margins came under pressure from soaring costs

At the macroeconomic level, corporate profit margins increased

According to the national accounts, the gross operating surplus of non-financial corporates, i.e. the income they generate through their activity, rose by 14 % in 2022. This trend was driven by higher sales volumes – in both the domestic and export markets – and a widening of gross margins.

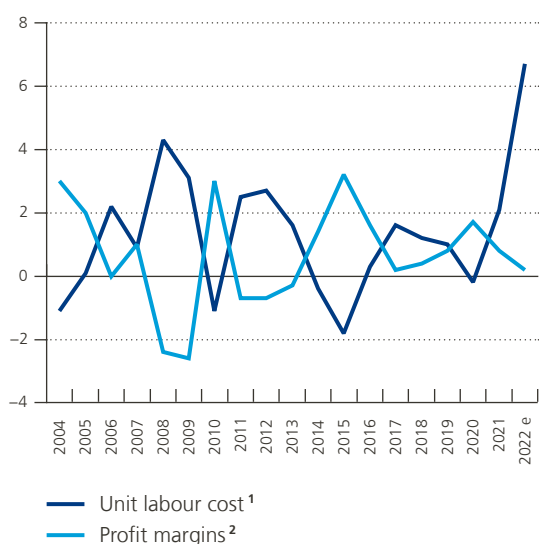
However, at the macroeconomic level, the growth in the gross operating surplus masked a worsening situation for firms over the year. Indeed, this growth was partially due to the spillover effect into 2022 of the previous year's good results.

In 2022, companies faced a substantial rise in costs. On the one hand, soaring energy prices had a direct adverse effect on corporate profits, the extent

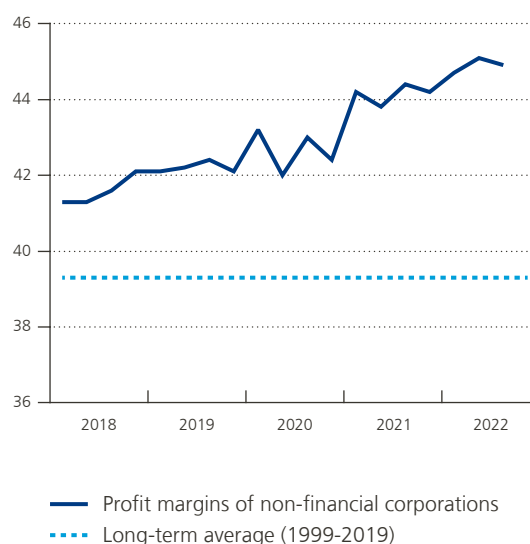
Chart 4.12

The macroeconomic profit margins of companies began to fall in 2022, after having risen for several years

Unit labour cost and profit margins
(YoY percentage change)



Profit margins of non-financial corporations
(gross operating surplus as a percentage of value added)



Sources: NAI and NBB.

1 Including reductions in contributions for target groups and wage subsidies.

2 Approach based on the difference between the growth in the GDP deflator and the unit labour cost.

of which varied depending on the energy intensity of their production processes. On the other hand, higher energy costs caused an acceleration in inflation which, due to automatic wage indexation, significantly pushed up wages. These higher costs impacted activity. Thus, according to a Bank survey published in October, the two above-mentioned factors became the main obstacles, over the course of the year, to business operations, leading to a reduction in activity in September for a third of respondents. However, it should be noted that some companies could have temporarily benefited in 2022 from the time lag inherent in the mechanism for the automatic indexation of wages, since some wages in the private sector were only indexed in January 2023.

Corporate profit margins shrink if only some cost increases can be passed through to sales prices, as was the case in the past. Historically, the macroeconomic profit margins of Belgian firms have

fallen when labour costs increased rapidly. The degree of pass-through is determined by a multitude of factors, such as market power, profitability, the change in marginal costs and the expected reaction of demand. Based on past data, it appears that companies manage to recover approximately 60 % of cost increases relatively quickly by raising their sales prices.¹ According to the latest quarterly statistics, corporate profit margins (as defined in the national accounts) reached historic highs in mid-2022. However, growing cost pressures weighed more heavily on corporate profits in the second half of the year, causing profit margins to start to fall.

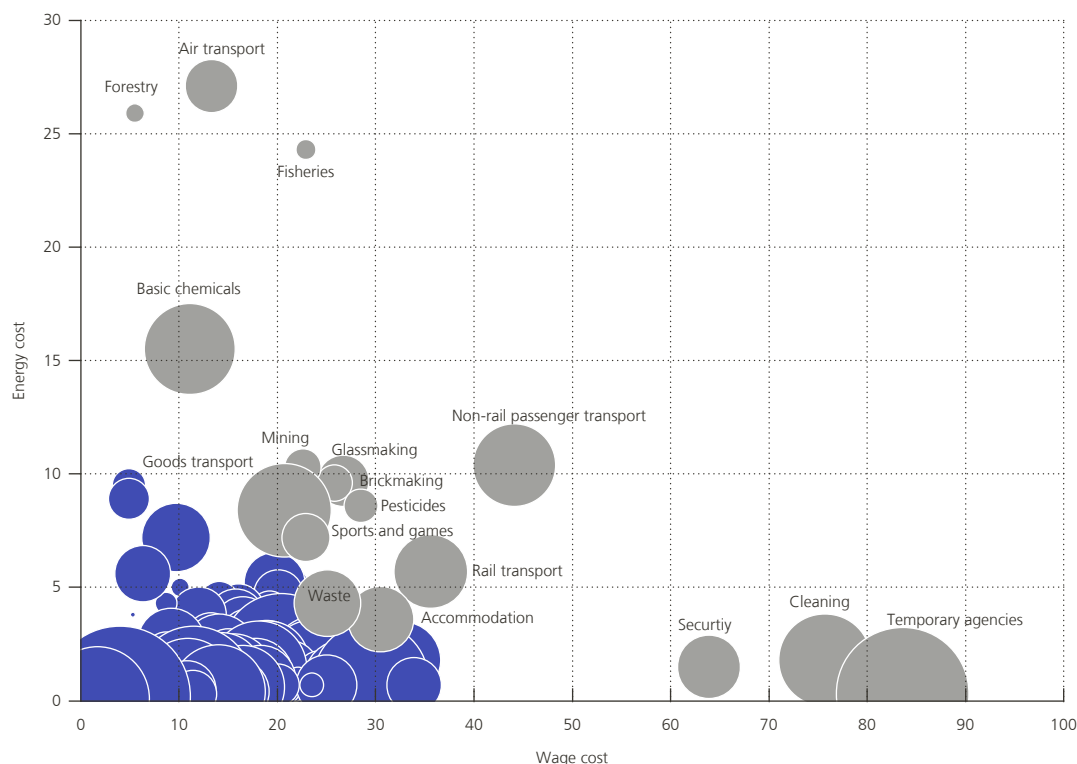
A handful of very large companies exert a preponderant influence on the trend in macroeconomic profit margins. In terms of payroll, 1 % of

¹ Bijmens, G. and C. Duprez (2022), « Les firmes et la hausse des prix énergétiques », NBB, May.

Chart 4.13

Many labour-intensive sectors are low energy-intensive and vice versa

(energy cost and wage cost as a percentage of sales revenue, 2018)



Source: NBB.

Note: The diameter of the circle reflects the relative size of the sector in terms of jobs.

the largest firms account for over half of total value added. The trend in profit margins may be influenced by composition effects, with large firms exerting a preponderant influence. Macroeconomic profit margins are therefore not necessarily representative of a typical company's.

Soaring costs affect all companies, across all sectors, but not to the same degree. The share of energy in total sales revenue differs significantly between sectors, ranging from less than 1% to over 50%. The most energy-intensive sectors mainly use oil-based energy sources, so that price rises have remained fairly limited from a historical perspective. Gas, the energy source for which price increases have been the most pronounced, is mainly used in specific

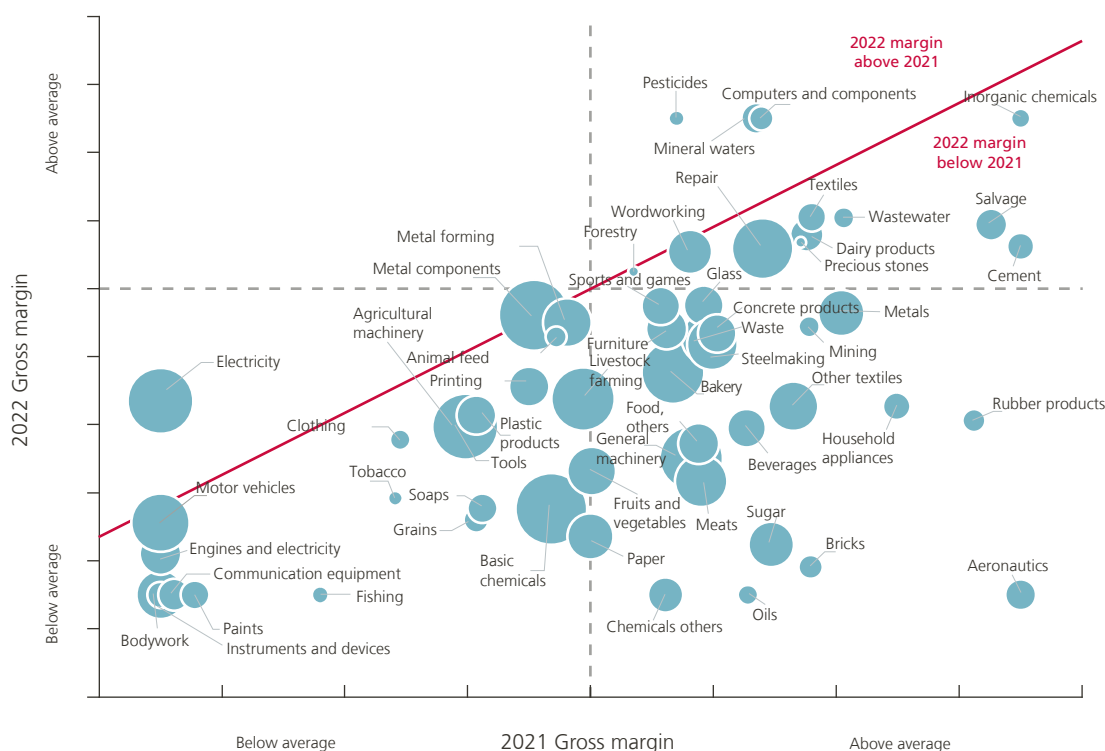
manufacturing industries, such as brickmaking, basic chemicals, pesticides, glass, steel and cement. Energy prices also influence wages through automatic indexation. Labour-intensive sectors, especially the services sector, are therefore most affected. These sectors are generally less energy intensive though. Nonetheless, some companies have suffered from the combination of rising energy and wage costs. In addition to significant differences between sectors and firms in terms of energy and labour intensity, there are obvious differences in the extent to which firms are able to pass higher costs through to sales prices.

A recent analysis of the median operating margins by sector revealed differences between companies. This analysis was based on firm-level

Chart 4.14

Most industrial sectors saw their margins tighten in 2022

(median operating margins in Q1-Q3 2021 (x-axis) and 2022 (y-axis) compared to the 2015-2019 average)



Source: NBB.

Note: The operating margin is defined as turnover less input costs and the wage bill, expressed as a percentage. The diameter of the circle reflects the relative size of the sector in terms of jobs. Industrial sectors are covered by NACE codes 1 to 39. Sectors below the diagonal line saw their margins fall from 2021 to 2022. Sectors to the right of the vertical dotted line had margins above the historical average in 2021. Those above the horizontal dotted line reported margins above the historical average in 2022.

For example, the "sugar" sector had a higher margin in 2021 than its average margin over the period 2015-2019 ("sugar" appears to the right of the vertical dotted line). In 2022, the margin in this sector fell compared to 2021 ("sugar" is below the diagonal line) and was below the average for the sector over the period 2015-2019 ("sugar" is beneath the horizontal dotted line).

Chart 4.15

Most service sectors reported a tightening of their margins in 2022, but this was less pronounced than in industrial sectors

(median operating margins in Q1-Q3 2021 (x-axis) and 2022 (y-axis) compared to the 2015-2019 average)



Source: NBB.

Note: The operating margin is defined as turnover less input costs and the wage bill, expressed as a percentage. The diameter of the circle reflects the relative size of the sector of activity in terms of jobs. Services are covered by NACE codes 41 to 82. Sectors below the diagonal line saw their margins fall in 2022 compared to 2021. Sectors to the right of the vertical dotted line had margins above the historical average in 2021. Those above the horizontal dotted line had margins above the historical average in 2022.

data which deviate from the framework used in the national accounts.¹ The use of median operating margins per sector facilitated analysis of the case of a typical company operating in a sector where margins are primarily determined by the largest firms.

In many industrial sectors, the median operating margin slumped in 2022 compared with 2021, which was a better-than-average year, although the starting point in certain sectors was not necessarily favourable. Most sectors saw their margins fall in 2022 compared with the previous year, but there were major differences in terms of the magnitude of this decline. Many sectors were able to use their relatively high 2021 profit margins to cushion the fall somewhat. Others, however, had relatively

1 Bijnens, G. and C. Duprez (2023), « Firms, prix et marges », NBB, January.

low profit margins in 2021, which further contracted in 2022. These included firms active in the chemicals (basic chemicals, paints, plastic products) and food industries (fish, cereals) as well as in traditional manufacturing sectors (motor vehicles, engines and electricity, communication equipment). That being said, a handful of sectors continued to boast historically strong margins in 2022 including some energy-intensive sectors such as cement and pesticides. This suggests that a number of energy-intensive companies were able to absorb most of the increases in their energy costs.

Median operating margins were tighter in most industries in the services sector, although the decline was less pronounced than in the manufacturing industry. In the services sector as well, increased costs had a heterogeneous impact on margins. Most retail and distribution businesses posted relatively strong results in 2021 with margins below the average for 2015-2019. A number of construction-related businesses also saw their margins shrink (slightly). Some industries that were still suffering from the COVID-19 crisis in 2021 (accommodation, tour operators, non-rail passenger transport) reported an upturn in their margins in 2022. In many knowledge-based services industries, the impact on margins was generally limited.

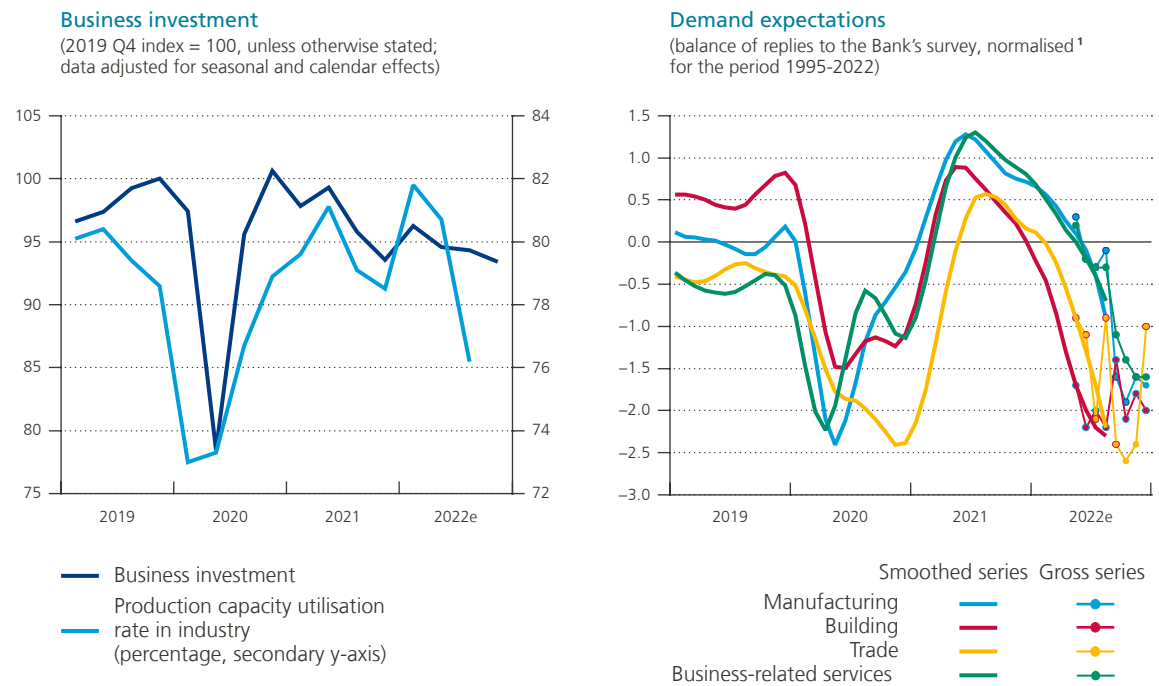
The corporate profit margins analysed here differ from final profit margins. The gross operating surplus does not correspond to final profit, as it includes a series of accounting items representing costs (depreciation, taxes, etc.). It is rather the balance available to companies to pay their financial backers (shareholders and creditors), settle their tax bills and build up reserves to finance investment. Moreover, the choice to conduct the analysis at firm level did not allow factors other than wage subsidies to be taken into account.

In this context, business investment fell by 2.1 % in 2022. This fall can be attributed not only to rising costs but also to deteriorating demand expectations in almost all business sectors, along with high uncertainty, which hardly encouraged companies to invest. It was also the result of a spillover effect, as investment had gradually declined over 2021 due to disruptions and bottlenecks in supply chains for capital goods. The temporary easing of the latter and, in particular, a few transactions related to the purchase of ships abroad, which inflated the national account statistics in the first quarter of 2022, were unable to make up for the above-mentioned factors. Furthermore, the production capacity utilisation rate in industry dropped sharply over the year, eliminating the need for expansion investments.



Chart 4.16

Business investment was affected by rising costs, growing uncertainty and bleak demand expectations



Sources: NAI and NBB.

1 All observations are reduced by the empirical average of the data and divided by their standard deviation.

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5. Financial developments

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5.1 Corporate balance sheets remained strong

Balance sheets were restructured in the wake of the COVID-19 crisis, leading to heightened resilience as the energy crisis began

Despite pressure on cash reserves and profitability, Belgian firms came out of the COVID-19 crisis in better financial health overall. According to the annual accounts for 2021, debt ratios were, in general, declining at the end of the last lockdown. In 2020, some companies saw their equity depleted as a result of losses incurred during the first waves of the pandemic and, to avoid running out of cash, took on debt or applied for the moratorium on loan repayments. This was particularly the case for those active in industries most affected by the lockdown measures,

such as transport, travel agencies, sports, cultural and recreational activities, hospitality, catering and personal services. The effect of the COVID-19 crisis on corporate balance sheets was greatly reduced by the lump-sum allowances and tax deductions granted by the federal and regional governments and companies' ability to adjust their costs when faced with a substantial drop in activity levels. Firms were also helped by the furlough scheme. Moreover, while some companies most affected by the crisis were initially bailed out by advances from their managers, partners or shareholders,¹ there were more

¹ See Piette, Ch. and J. Tielens (2022), "How Belgian firms fared in the COVID-19 pandemic", NBB, *Economic Review*.



recapitalisations in 2021, which brought debt ratios down to more acceptable levels.

The number of bankruptcies has therefore remained limited since the beginning of 2022, after the lifting of the moratoria on social security and tax liabilities. These were introduced during the pandemic to alleviate potential liquidity problems for companies. For the year as a whole, 9 265 bankruptcy proceedings were initiated before the business courts. While this number is higher than the 6 533 bankruptcies recorded in 2021, when the moratoria were still in effect, it is comparable to the averages observed prior to the COVID-19 crisis. The good financial health of Belgian companies at the end of the crisis was also reflected in low default rates on loans from credit institutions (see section 5.3).

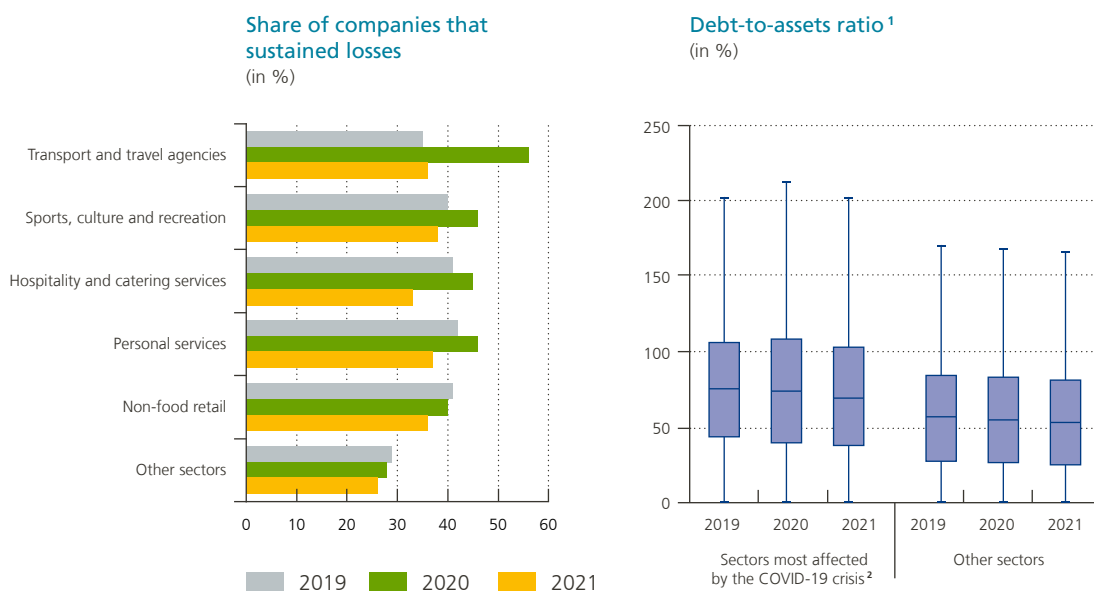
Therefore, at the start of the energy crisis, Belgian companies had, on the whole, sufficient buffers to absorb the new shock to their operating profits. This also implies that, in general,

the impact of any losses on equity and, consequently, solvency in 2022 should not be amplified by excessive leverage. The latter depends on the share of debt on the liabilities side of the balance sheet.

The impact of the energy crisis was generally contained in the first three quarters of 2022. At the macroeconomic level, firms' gross operating surpluses developed favourably, particularly in the first six months of the year, although the performance of different sectors – and of firms in general – varied widely (see chapter 4). In addition, in most sectors affected by rising input prices or wage indexation, the magnitude of the fall in operating profits between 2021 and 2022 was limited having regard to the available capital buffers. In terms of median values (represented on the left-hand panel in chart 5.2), this decrease most often amounted to less than 5% of these buffers. However, this figure was greater for companies active in machinery manufacturing and chemicals as well as for food industries and businesses such as supermarkets, which

Chart 5.1

Company solvency was stronger at the end of the COVID-19 crisis



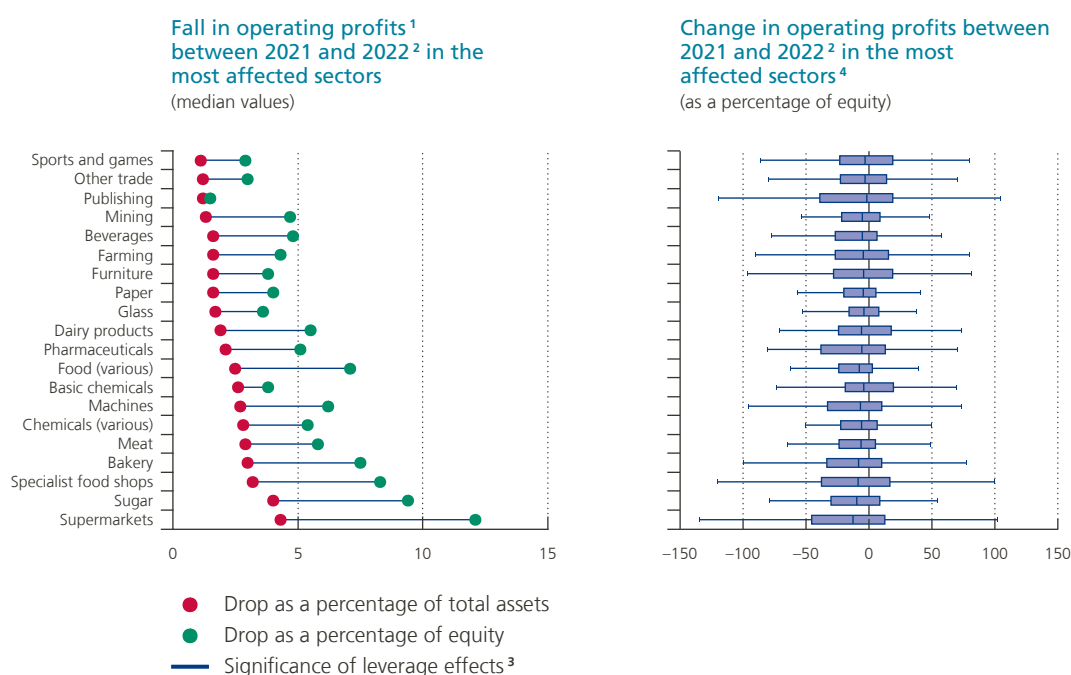
Source: NBB.

1 The box plots show the distribution of the debt-to-assets ratio within the population of firms. The lower and upper limits of the boxes correspond to the first and third quartiles of the distribution, respectively, while the inner bar indicates the second quartile, i.e. the median value. The ends of the whiskers represent the minimum and maximum of the distribution when the extreme values are excluded.

2 Namely transport, travel agencies, sports, culture, recreation, hospitality, catering and personal services.

Chart 5.2

The impact of the energy crisis on company equity was generally limited in 2022, but with wide variations and at times amplified by leverage effects



Source: NBB.

1 Operating profits were approximated by subtracting consumption of intermediate goods and services and payroll expenditure from turnover. Only the 20 sectors with at least 50 firms reporting the largest drop in profits compared to 2021, expressed as a percentage of total assets, are included here.

2 Difference between total earnings for the first three quarters of 2022 and for the first three quarters of 2021 (referred to as $\Delta profits$ hereafter). As the left-hand panel shows only falls, the change in operating profits is associated with a negative sign.

3 The significance of leverage effects may explain the difference between the change in the ratio of a firm's operating profits to total assets ($\Delta profits/assets$) and this same change expressed as the ratio of operating profits to equity ($\Delta profits/equity$). Leverage can be measured as the ratio of assets to equity so that $(\Delta profits/assets) \times (assets/equity) = (\Delta profits/equity)$. It is directly linked to the firm's debt level, with the assets/equity ratio equivalent to $1/(1-debt/assets)$.

4 The box plots shown on the graph indicate the distribution of change in operating profits between 2021 and 2022. The lower and upper limits of the boxes correspond to the first and third quartiles of the distribution, respectively, while the inner bar indicates the second quartile, i.e. the median value. The ends of the whiskers represent the minimum and maximum of the distribution when the extreme values are excluded.

find it more difficult to pass higher costs through to sales prices. In addition, as food retailers generally have higher-than-average debt levels, the resulting leverage effects can be expected to lead to a more substantial decline in equity in this industry. Aside from median values, it is once again worth emphasising the heterogeneous effect of the energy crisis on the profits and financial health of companies. As the right-hand panel in chart 5.2 illustrates, the change in the operating profits of firms, taken individually, varied widely between 2021 and 2022, across all sectors.

Demand for business financing was up, despite rising interest rates

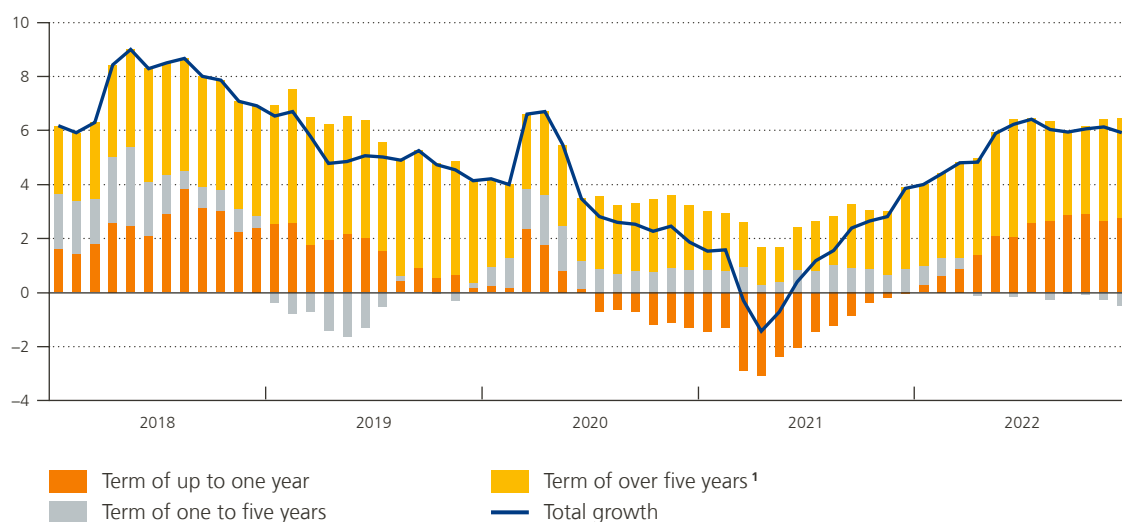
In addition to their negative effect on corporate margins, higher input prices and wage indexation also push up working capital requirements.

This translates into a greater need for liquidity and, therefore, more demand for short-term borrowing. Since 2021, this type of credit has indeed been the main driver of the rise in bank loans to non-financial corporations in Belgium. Medium- and long-term credit growth was also strong in 2022, although it

Chart 5.3

Growth in bank loans to businesses was largely driven by short-term borrowing

(growth in loans granted by resident banks to non-financial corporations, annual percentage change and contribution)



Sources: ECB and NBB.

1 Including loans securitised or otherwise transferred.

weakened slightly over the course of the year as borrowing for capital projects began to decline. In total, at year's end, growth in bank loans to non-financial corporations was still high, coming in at 5.9% in December 2022.

Higher financing costs have not yet significantly impacted growth in bank lending. In fact, the interest rates charged by Belgian banks on loans with a term of less than one year did not begin to rise until the summer of 2022, following increases in the Eurosystem's key interest rates. In Belgium, these rates rose from 1.4% on average in May to 3.1% in November. Medium- and long-term rates started to rise earlier in the year due to the prospect of monetary policy tightening. In November 2022, the average interest rate on loans with a term of over five years was 3.2%, more than double the level recorded at the end of 2021. Generally more volatile, bond yields followed a similar trajectory.

Along with the rise in interest rates, other lending conditions became somewhat more constrained in 2022. According to respondents to the Bank's quarterly survey on corporate credit conditions,

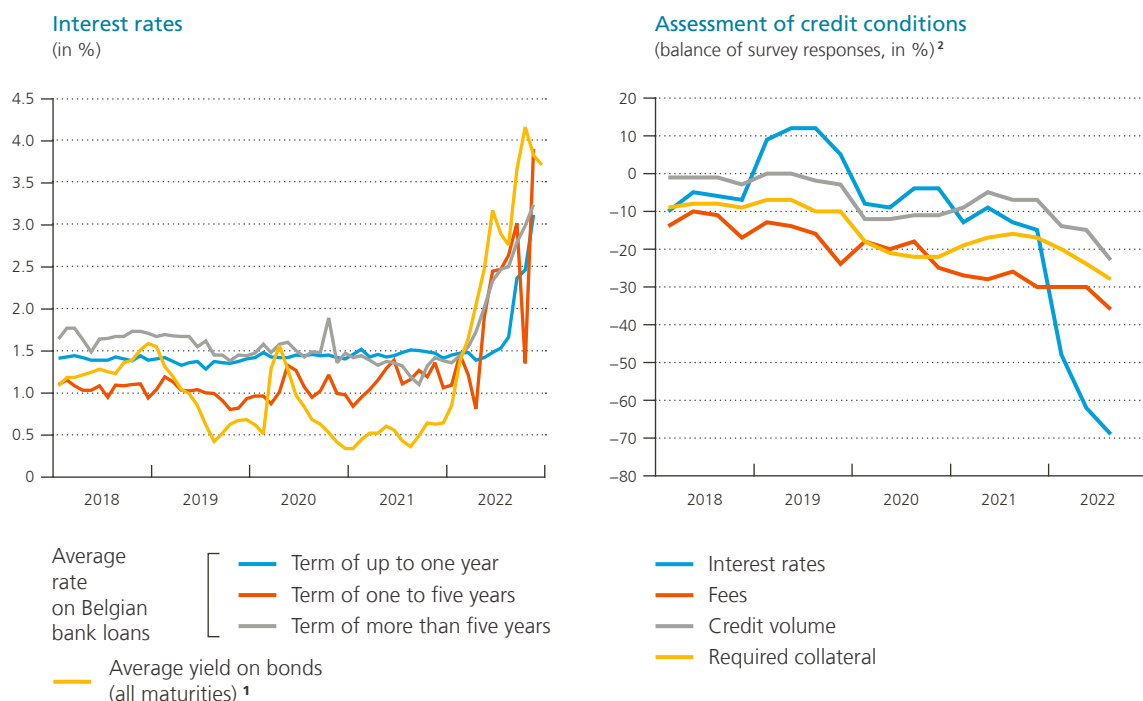
these included fees (other than interest) charged by banks, caps on credit volumes, and the level of collateral required. This trend reflected a tightening of the lending policies of Belgian banks, which revised their assessment of the risks inherent in corporate lending upwards, according to their responses to the Bank Lending Survey (BLS). However, according to SAFE,¹ organised jointly by the ECB and the European Commission, the rejection rate for loan applications submitted by Belgian SMEs to credit institutions did not increase significantly in 2022.

Bank loans were the main debt instrument used by Belgian companies in 2022. In the first nine months of the year, Belgian companies borrowed a net amount of €8.8 billion from banks in Belgium and €4.8 billion from banks abroad. Intra-group loans, which make up a large portion of the debt of non-financial corporations in Belgium, resulted in the return to foreign entities of a net amount of

¹ ECB (2022), *Survey on the Access to Finance of Enterprises in the euro area: April 2022 to September 2022*.

Chart 5.4

Interest rates charged by Belgian banks on loans to non-financial corporations rose significantly, but the tightening of other credit conditions was moderate



Sources: ECB, S&P Global and NBB.

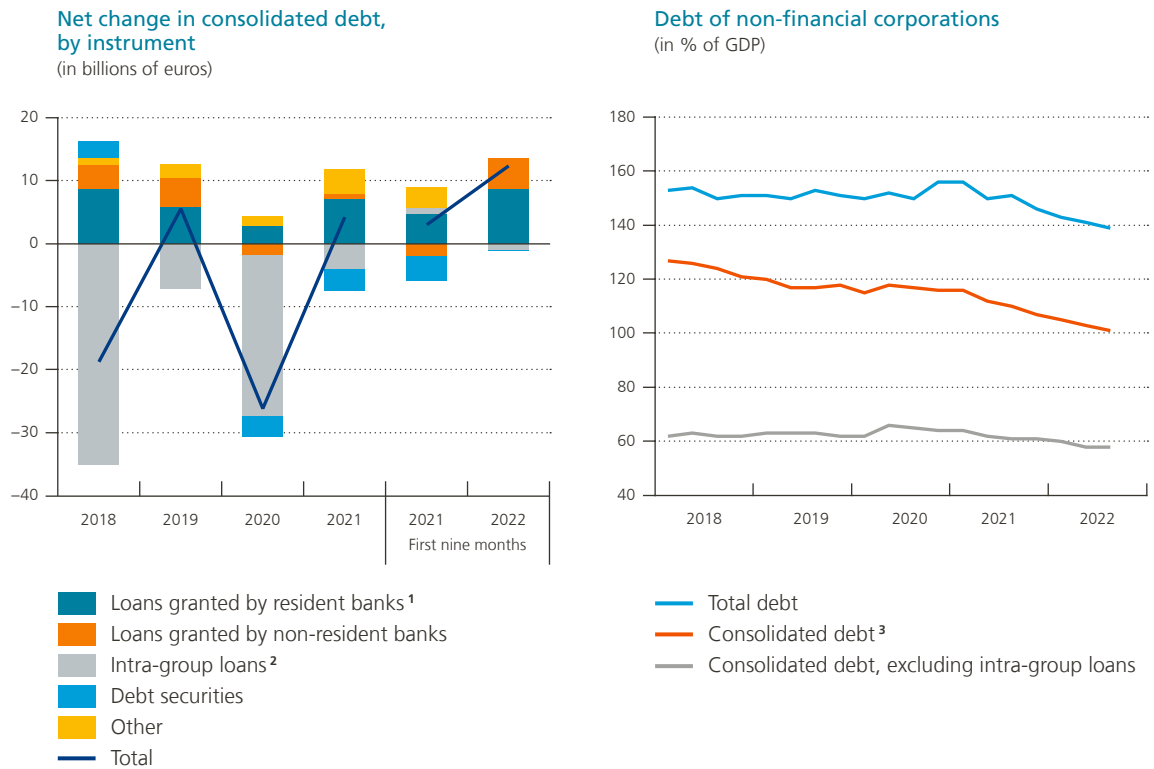
¹ Average calculated for euro-denominated corporate bonds traded on financial markets.

² A positive (or negative) balance indicates that firms perceived an easing (or tightening) of credit conditions.

€0.9 billion. Finally, bond issues fell in the first nine months of 2022, with redemptions of debt securities issued by non-financial corporations exceeding their issuance by €0.3 billion. These securities lost a substantial share of their market value over the same period due to interest rate hikes. According to financial accounts data, this devaluation amounted to €9.1 billion. Ultimately, taking into account both transactions carried out during the year and valuation effects, the consolidated debt of non-financial corporations rose from €537.8 billion at the end of 2021 to €548.6 billion at the end of the third quarter of 2022. However, as a percentage of GDP, this change amounted to a fall from 107.1% to 101.4%, due in large part to the fact that inflation amplified nominal GDP.

Chart 5.5

Growth in the debt of non-financial corporations was slower than GDP growth



Source: NBB.

1 Including loans recorded as assets on the balance sheet of securitisation vehicles.

2 Intra-group loans are defined as loans granted by captive money lenders and the foreign non-financial sector.

3 Borrowings by resident non-financial corporations from other resident non-financial corporations are excluded from the definition of consolidated debt.

5.2 Household finances were marked by inflation and rising interest rates

Inflation had a much greater effect on some households than others

Some households were more affected by the rise in energy prices than others, even though, in Belgium, the vast majority benefit from the indexation of wages and social benefits. As mentioned in chapter 3, the indexation of wages and benefits means that these items are raised by the same proportion for all households concerned, whereas, expressed as a percentage of income, energy expenditure can vary greatly between households. The share of energy expenditure in household income depends, amongst other factors, on the size of the dwelling, its energy performance, the type of energy used, the terms of the energy contract (fixed rate or variable) and its expiry date and the household income level. Low-income households generally spend a larger share of their budget on energy products. While the extension of the social tariff helped to offset the rise in energy prices for some low-income households, those who did not benefit from this measure saw their purchasing power decline. It should also be noted that, for some workers, wage indexation occurs with a time lag while others benefit from it more quickly.

Low-income households generally have less savings which, in some cases, are insufficient to absorb the shock of a sharp rise in the cost of living. High prices for energy and other goods and services are putting a strain on the finances of some Belgian households. For a minority of households, indexation and government measures have only partially offset increased prices (see above). A recent Bank survey¹ showed that for most households, a reduction in energy consumption would offset only a small portion of recent price rises. Some households are therefore forced to mitigate the shock of higher

energy prices by reducing their consumption of other goods and services or, where possible, dipping into their savings. According to the results of the fourth wave of the Household Finance and Consumption Survey (HFCS) conducted between 2020 and 2021, low-income households generally have much lower savings in the form of liquid assets compared to the most affluent households. More than 40 % of households in the first income quintile and more than 30 % of those in the second income quintile have less than one month's gross income in savings. Of the most vulnerable households, some appear unable to offset the rising cost of living by reducing their consumption or drawing on their savings. According to the latest data from the Federal Public Service (FPS) for Social Integration, there has not yet been an increase in the number of applications to public social welfare centres for financial assistance. However, other forms of social assistance, such as debt mediation or assistance with water and energy bills, have grown steadily since early 2022.

A fixed-rate mortgage has proved beneficial for some households, while others could see their interest payments or rent increase. In Belgium, most mortgages are fixed rate. Combined with wage indexation, these have been a boon for borrowers, as the debt burden has remained unchanged while incomes have been adjusted for inflation. Households in the highest income quintile are more likely to have taken out a mortgage, including at a fixed rate,

¹ This survey of consumers was carried out in May, June and July 2022. It included a series of questions on household behaviour in terms of energy consumption in rising energy price scenarios. The results indicated that, on average, households only expect to be able to offset 28 % of a price increase through energy savings. For more information, see Peersman, G. and J. Wauters (2022), "Heterogeneous household responses to energy price shocks", NBB, *Working Paper Research 416*.

and have therefore disproportionately benefited from this advantage. Indeed, 45 % of these households are currently repaying a fixed-rate loan, compared to just 7 % of the poorest households. However, a small group of households, mostly middle- and high-income households, took out variable-rate mortgage loans, the repayment of which increases as interest rates rise. For their part, low-income households are more likely to face rent hikes, although measures to limit such increases for the most energy-intensive housing were introduced in the last quarter of 2022. The percentage of renters is in fact higher amongst households in the first (46 %) and second (37 %) income quintiles than amongst the most affluent (6 %). Low-income households that rent generally spend a larger share of their income on rent (35 % for households in the first quintile, 28 % for those in the second) than those in the highest quintile (16 %).

Mortgage payments are a heavy burden for some households. Although a mortgage loan may offer advantages in the current context (provided it is fixed rate), it remains a fixed expense (unless the household concerned benefits from a moratorium, see below), which further reduces the wiggle room

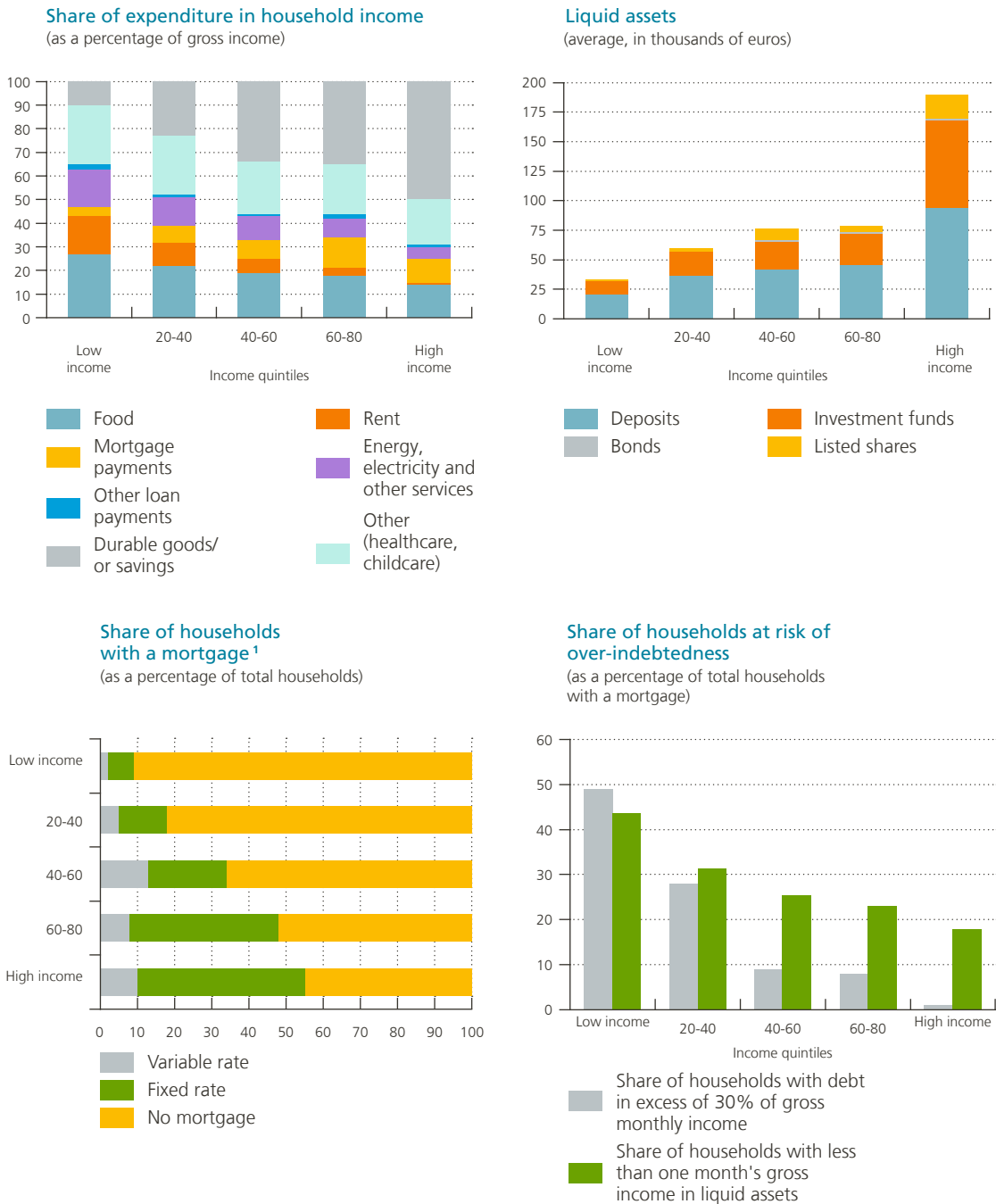
of some households already affected by the energy crisis. While few households in the first and second income quintiles have a mortgage (9 % and 18 %, respectively), a significant proportion of those who do (50 % and 25 %, respectively) spend more than 30 % of their pre-tax income on mortgage payments. Households in the third and fourth quintiles are more likely to have a mortgage (34 % and 48 %, respectively), with just under 10 % of those who do spending more than 30 % of their income on it.

Rising interest rates and falling stock market prices caused the value of financial assets to decline. Although the households affected by these developments are rarely in the most vulnerable categories, some might have been particularly affected by the loss in value of their investments, such as pension savings. Household financial wealth (considered as a whole) fell from an aggregate level of € 1 556 billion in December 2021 to € 1 457 billion in September 2022 (or 269 % of GDP compared to 298 % in December 2019 and 310 % in December 2021), despite the net acquisition of € 14.2 billion in new assets. In terms of composition, the main categories of household financial assets are, in descending order



Chart 5.6

The lowest-income households have less savings to cope with rising energy prices and interest rates



Source: NBB (HFCS 2020-2021).

¹ Mortgages taken out to purchase a home.

Note: Expenditure is calculated in relation to gross income. Spending on food is defined as the amount spent on food to be consumed at home. "Other services" are expenses related to water, internet, television and telephone. "Other" expenses are defined as any spending on consumer goods and services other than those referred to above, such as childcare and healthcare, excluding spending on consumer durables (cars or appliances), the cost of insurance policies and renovation. The percentages displayed above are averages for all households in the respective income quintiles. "Low income", "20-40", "40-60", "60-80", and "high income" indicate the different income quintiles. The median gross income in each income quintile is as follows: low income, € 18 884; 20-40, € 30 398; 40-60, € 47 201; 60-80, € 70 479; and high income, € 115 066.

of importance, savings and sight deposits, unlisted shares and other equity investments, life insurance and pension products, and investment fund units.

Negative valuation effects impacted shares, investment funds and insurance products. The combination of rising interest rates and falling stock market prices led to write-downs in the value of investment fund units, mainly mixed funds (the main category marketed in Belgium) and equity funds (–€43.1 billion in total in the first three quarters of 2022), while flagging stock markets led to the downgrading of listed shares (–€17.1 billion). Finally, the upward trend in the yield curve, which is used by insurers to calculate the value of technical provisions

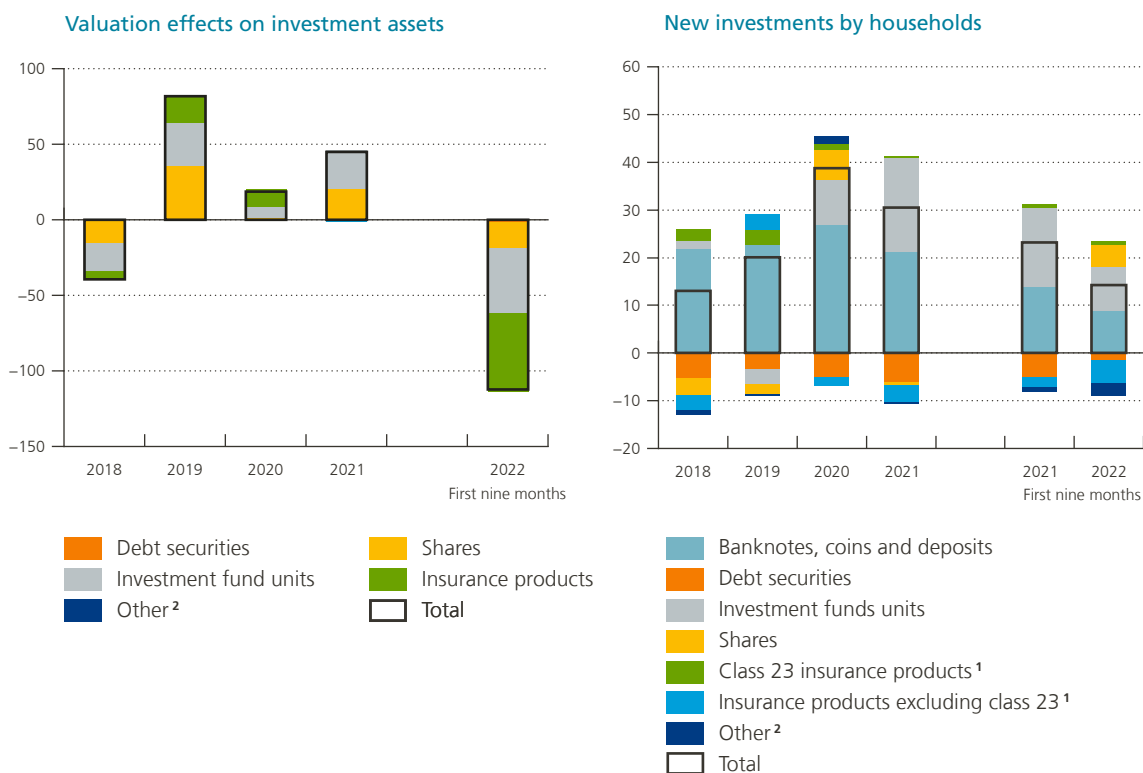
for life insurance and pension entitlements, led to a loss in the value of insurance products (–€51.9 billion).

Although down compared to 2021, net financial asset formation by households remained positive. This was mainly to the benefit of bank accounts and deposits, on the one hand, and investment funds, on the other. Between January and September 2022, retail investors also sold insurance products and debt securities. The growth rate of bank deposits, which averaged 4.9% in 2021, fell over the course of 2022, reaching 1.8% in December. Overall, faced with higher energy bills and consumption expenditure, households saved less than in previous years.

Chart 5.7

Acquisitions of financial assets continued, but downgrades affected the outstanding value

(in billions of euros)



Source: NBB.

1 This item includes net household equity in insurance technical reserves, pension funds and standard guarantee schemes.

2 In the right-hand panel, this item includes, to the extent they could be recorded, trade credit as well as miscellaneous assets of general government and financial institutions. In the left-hand panel, this item also includes banknotes, coins and deposits.

Growth in the residential property market and house prices slowed in 2022

The number of transactions on the residential property market, which continued to rebound in the first half of 2022, fell slightly in the third quarter. In the first half of the year, the number of transactions increased by 7% compared to the corresponding period in 2021, and by 17% compared to 2019, thus before the COVID-19 pandemic and the Flemish government's announcement of abolition of the housing bonus. The number of transactions rose in all Regions and for all types of housing, but the most substantial increases were in the Flemish Region and for apartments. However, it should be noted that these figures mainly relate to properties purchased before Russia invaded Ukraine and the sharp rise in mortgage rates starting in March 2022 (see below). The dates on which transactions are recorded correspond to those of the notarial deeds, which are generally only signed about three months after conclusion of the sales agreement. The number of transactions in the third quarter was down 7% from the previous quarter, but remained 3% above the level recorded in the third quarter of 2019. At that time, the beginning of the rise in interest rates had not yet had a major impact on the number of transactions, perhaps because buyers brought forward property purchases to hedge against further rate increases.

The available indicators point to growth in housing stock losing steam in 2022. In the first nine months of 2022, value added in the building industry declined by 1% compared to the same period in 2021 and by 4% compared to the same period in 2019. Although investment in housing grew by another 3% in the first quarter compared with the previous three months, this trend reversed in the last three quarters of the year (see section 4.4). These developments were the result of the sharp rebound in mortgage rates and faster growth in construction costs than house prices. Finally, investment in new housing might have contracted more sharply than value added in the building industry and residential property investment. The latter includes components such as energy retrofits which accelerated compared to previous years due to high energy prices and more stringent energy efficiency regulations.

Although growth in house prices slackened in the first three quarters of 2022, it remained

relatively steady. Following a robust 16.1% surge between the fourth quarter of 2019 and the fourth quarter of 2021, house prices rose 4.5% over the first three quarters of 2022. This figure clearly indicates a slowdown and also a fall of 2.4% in real terms, given the high inflation rate during this period. Over the first three quarters, price increases were similar in Belgium and the euro area, where they reached 4.6%. Finally, rising prices once again affected all Regions and all types of housing in the first half of the year, although the rise was slightly more modest for apartments and in the Walloon Region.

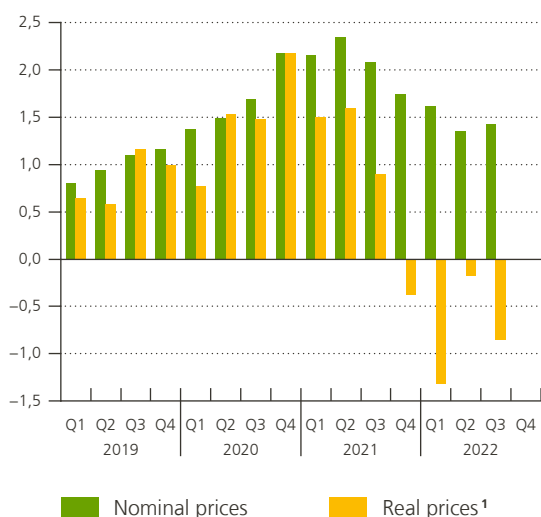
While the underlying determinants of house prices were still very favourable in the first half of the year, they deteriorated in the second half. Until early 2022, interest rates on mortgages with a term of more than 10 years were still hovering at a historic low of 1.4%, but then began to rise sharply, reaching 2.8% in November 2022. This rate increase means that, for the same monthly payment on a 25-year mortgage loan, the amount households can borrow is 15% lower. The rise in market rates may also dampen demand for property investment, which has been boosted in recent years by low interest rates and the resulting search for yield. Rising energy prices reduce the share of the household budget that can be used to repay a mortgage, which can in turn negatively impact house prices, especially for energy-intensive housing (see box 4). The deterioration in the economic outlook and consumer confidence since Russia's invasion of Ukraine has also had an adverse effect on demand for property. Finally, according to survey data, household intentions to build or acquire housing fell in 2022. However, the aforementioned negative effects on demand for property were partly offset by longer loan maturities (see below) and a sharp increase in nominal incomes due to high inflation and automatic wage indexation in Belgium.

Although it narrowed in the first three quarters of 2022, the gap between actual property prices and prices estimated using the Bank's model remained substantial (13%). The narrowing of this gap reflected the downturn in inflation-adjusted house prices and the impact of accelerating inflation on the real interest rate. However, this indicator should be interpreted with caution given that it is an estimate based on an econometric model, which is more uncertain in the context of high inflation.

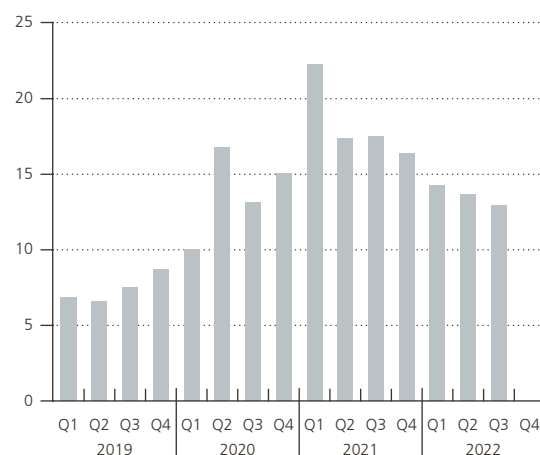
Chart 5.8

In 2022, house prices continued to rise in nominal terms but fell in real terms, while the gap with prices estimated according to the Bank's model narrowed slightly

Quarterly growth in house prices
(in %, seasonally adjusted data)



Deviation of house prices from prices estimated using the Bank's model²
(in %)



Source: NBB.

1 Deflated by the private consumption deflator.

2 See Warisse, Ch. (2017), "Analysis of the developments in residential property prices: is the Belgian market overvalued?", NBB, *Economic Review*.

Mortgage loans kept household indebtedness at a high level

Driven by activity on the residential property market and rising house prices, mortgage demand remained strong in 2022. The year-on-year growth rate for this type of loan averaged 6.2% for the first two quarters of the year. However, growth in mortgage loans fell in the second half of the year, to 5.7% in December, in line with the slowdown observed in the housing market.

In the first part of the year, demand for mortgages was further boosted by low interest rates and the expectation that rates would rise. Households' level of savings made it easier for them to take out mortgages and carry out real estate projects. However, as previously mentioned, according to the BLS, from the second quarter onwards, falling consumer confidence and rising interest rates exerted downward pressure on household demand for real property and hence mortgage loans. The

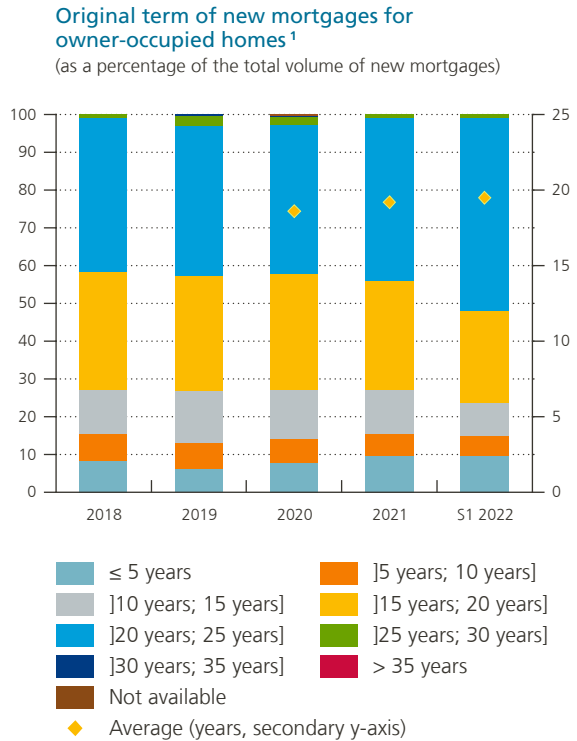
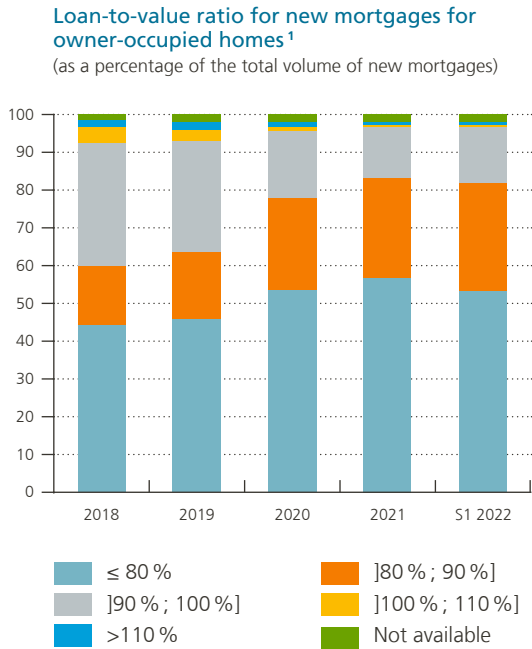
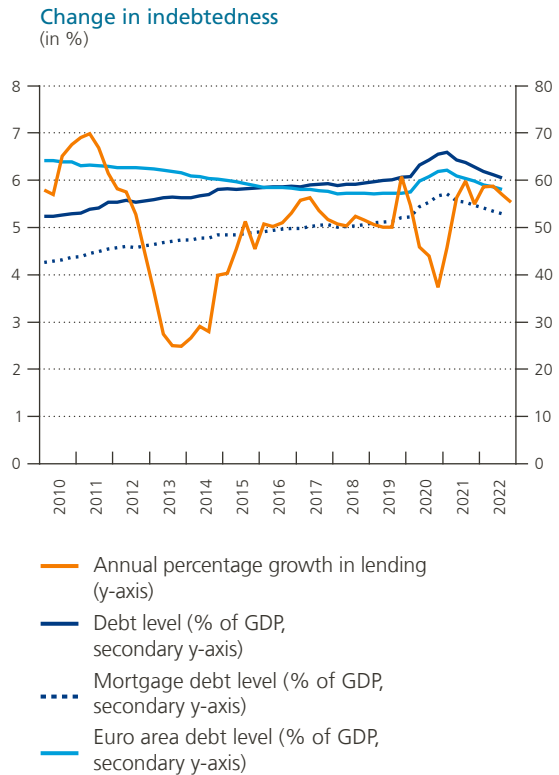
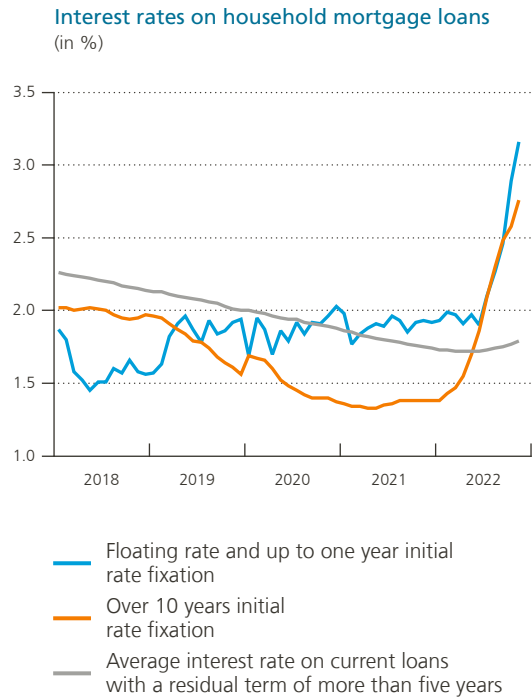
average interest rate for a mortgage with an initial fixed term of more than 10 years was 1.4% at the end of 2021, but in March it began to rise sharply. By November 2022, it had climbed to 2.8%.

On the supply side, Belgium's four major banks reported in their responses to the BLS that they had tightened their mortgage conditions owing to a deterioration in risk perception and lower risk tolerance. The number of rejected applications also rose slightly in the third quarter of the year, reflecting both the tightening of lending standards and pressure on households' repayment capacity caused by the rising cost of living and higher interest rates.

However, overall household debt as a percentage of GDP fell in 2022 due of course to the increase in nominal GDP, which was largely attributable to high inflation. At 60.6% in September, thus close to its pre-COVID level (60.7% at the end of 2019), the ratio remained above the euro area average of 58.2% for the same period.

Chart 5.9

Belgian household debt continued to rise



Sources: ECB and NBB.

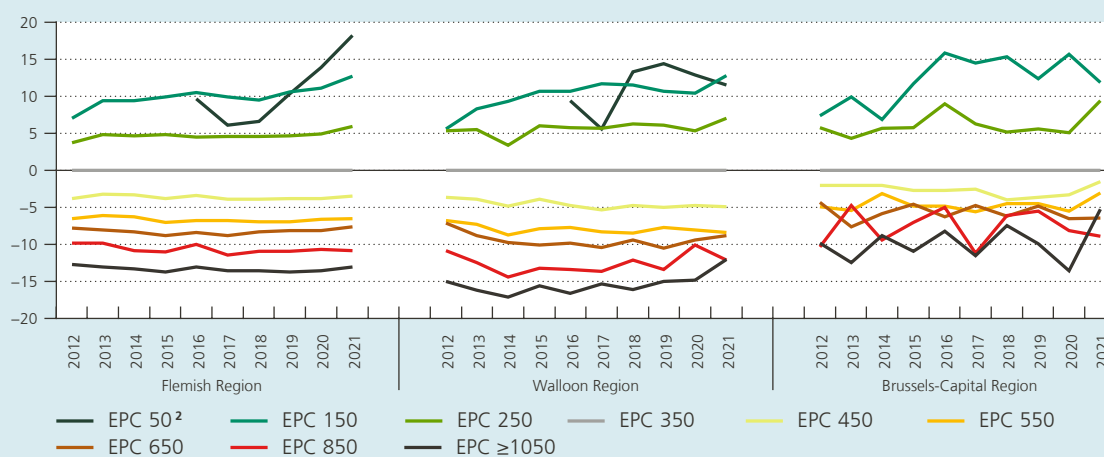
¹ The data in these graphs relate only to mortgages for owner-occupied dwellings (not those granted to acquire investment properties).

A widening energy-efficiency price premium

The price difference between energy-efficient and energy-intensive housing has widened over the past decade, and the recent rise in prices for energy and building materials may have accentuated this trend. Between the third quarter of 2020 and the second quarter of 2021, a home with an EPC score of 150 kWh/m² cost about 12 % more than a similar home with an EPC score of 350 kWh/m² and 22 % more than a similar home with a score of 650 kWh/m². These price differences have increased significantly over the past decade, reflecting a growing awareness of the importance of energy efficiency by buyers and sellers, real estate appraisers, brokers and financial institutions. Soaring prices for energy and building materials, as from the autumn of 2021, are not yet reflected in the estimates, meaning these gaps may have widened further.

Estimated energy-efficiency price premium for houses¹

(in percentage, price difference compared to a similar dwelling with an EPC score of 350 kWh/m²)



Source: Reusens, P., F. Vastmans and S. Damen (2022), "The impact of changes in dwelling characteristics and housing preferences on Belgian house prices", NBB, *Economic Review*.

- 1 These estimates should be interpreted with caution as the data do not allow for a clear distinction between the impact of energy efficiency and that of overall living comfort. The estimated price premiums for houses in Brussels and for those with an EPC score of 50 kWh/m² are subject to a larger margin of error due to the small number of transactions. It should also be noted that only house sales (thus not apartment sales) were included and that the years were shifted backwards by two quarters (e.g. 2021 corresponds to the period from Q3 2020 to Q2 2021).
- 2 The estimated price premium for an EPC score of 50 kWh/m² was omitted for the period before 2016 and for houses in Brussels due to an insufficient number of transactions.

Future tightening of legislation on energy retrofitting obligations is likely to further increase the price discount for energy-intensive housing.

This is because potential buyers will factor the cost of an energy retrofit into their home purchase budget. In accordance with European directives, the three Regions have set the objective of moving towards an energy-efficient housing stock by 2050 with an average EPC score of 100 kWh/m² for the Flemish and Brussels-Capital Regions and 85 kWh/m² for the Walloon Region. There is still a long way to go to meet this target, meaning housing energy efficiency will need to improve significantly (in 2021, the average EPC score for existing dwellings sold was about 400 kWh/m² for houses and 250 kWh/m² for apartments). Minimum energy efficiency standards and retrofit obligations are a key lever in this regard (in addition to the carbon price discussed in section 7.3). Last year, the Flemish and Brussels-Capital Regions approved regulations to tighten retrofit obligations going forward, but most citizens are not yet aware of this and there is a lack of clarity on this subject in the Walloon Region. The growing awareness of retrofit obligations amongst the general public is expected to increase the price discount of energy-inefficient homes, with the benefit that buyers of these dwellings will be able to allocate more of their budget to energy retrofitting. Clear communication on these obligations will also allow the construction sector to be better prepared for the surge in demand for retrofits and households to undertake energy retrofits with a better understanding of the long-term goals. Finally, the restrictions imposed since October 2022 on rent indexation for the most energy-intensive housing may further inflate price differentials.



Although the household debt ratio in Belgium remains high, credit quality is starting to stabilise. The proportion of loans characterised by a high loan-to-value ratio (i.e. the amount borrowed exceeds 90 % of the value of the property) is now lower than it was in 2019 and 2020, while the average original term has risen slightly for those buying a home. In addition, mortgage default rates fell to historically low levels before rising slightly at the end of the year (see below), whereas default rates for consumer credit (7.9 % on average in 2022) and credit lines (4.1 %) remained relatively stable.

Finally, very few households took advantage of the mortgage moratorium. This measure, which was introduced by banks in October 2022 to reduce financial pressure on certain categories of borrowers, concerned less than one billion euros, for total mortgage debt of € 287 billion at the end of September 2022.

Soaring house prices since 2020 and the recent sharp rise in mortgage rates worsened affordability

In 2022, housing affordability deteriorated to historically low levels. This deterioration, driven by rising house prices since 2020 and, more recently, the sharp increase in mortgage rates, was only partially offset by nominal income growth. Affordability can be compared over time based on the change in the repayment burden of a 20-year mortgage with a loan-to-value ratio of 80 %. The repayment burden measures the share of household net disposable income that must be allocated to the reimbursement of a new mortgage loan. This burden, which had already risen from 23.4 % at the end of 2019 to 24.7 % at the end of 2021 as a result of the surge in house prices over that period, further increased as a result of the rate hike, rising to 27.1 % in the third quarter of 2022 (see the left-hand panel in chart 5.10). This figure is close to the historically high level seen in the early 1980s and that which preceded the global financial crisis of 2008. It should be noted that the repayment burden does not take into account taxes. In 2008, households could still rely on very high mortgage tax relief even though, at that time, transaction costs were slightly higher than in 2022. Affordability was projected to continue to decline in the fourth quarter of 2022, reflecting further increases in mortgage rates, although this could be partially offset by rising

nominal incomes. Affordability will also depend on future house prices.

The increase in the actual average repayment burden was mitigated by longer maturities (see above) and by the fact that the average down payment for first-time buyers has risen significantly since 2020, from € 40 000 in 2019 to € 60 000 in 2022 (see the central panel in chart 5.10). These higher down payments can be explained by a rise in forced saving during the COVID-19 crisis and the fact that households benefited more from gifts and inheritances, as shown by 2020 and 2021 survey data.¹ These factors could also partially explain why the share of young mortgage borrowers has remained stable in recent years and even climbed in the first half of 2022. The percentage of young borrowers might also have increased in 2022 due to the fact that many house purchases were brought forward to hedge against further rate hikes. In addition, young buyers could have been obliged to purchase a less well-located or lower quality home. Finally, the rise in the average down payment masks a certain heterogeneity between households. Many households with lower incomes and limited financial wealth found it more difficult to increase their down payment, partly because they were, on average, less able to save during the pandemic and in general benefit less from gifts and inheritances.

Affordability also varies greatly between households and municipalities. The repayment burden can be particularly high in certain expensive municipalities, notably Brussels and some Flemish cities such as Ghent and Leuven, where house prices are well above average (see the right-hand panel in chart 5.10). Housing affordability in these municipalities is exceptionally low, especially for households with low income and limited financial wealth. Inequalities are therefore accentuated, in the sense that these households have more difficulty accessing education, employment, career opportunities, cultural activities and the amenities offered by these cities.

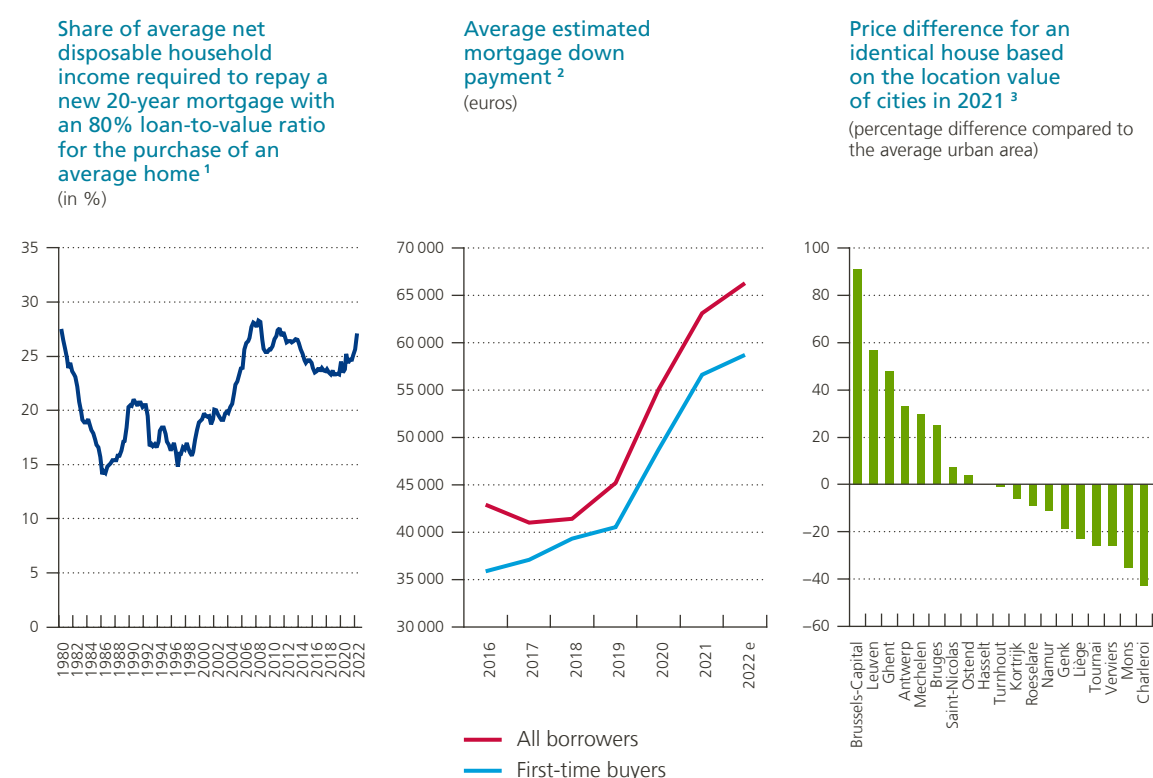
¹ De Sola, M. and L. Van Belle (2022), "Early results of the fourth wave of the Belgian Household Finance and Consumption Survey", NBB, *Economic Review*.

Finally, the sharp increase in house prices and rent has led to a significant transfer of wealth from buyers and tenants to property owners over the past twenty years. While the real estate wealth of property owners has risen considerably, especially for those who own several properties, first-time buyers and tenants have been faced with significantly higher purchase prices and rent. Since younger generations make up a significant proportion of such buyers, this situation leads to an

intergenerational transfer of wealth. In addition, households with low income and limited wealth are more likely to rent. While, overall, home ownership in Belgium has remained relatively stable over the last twenty years (around 72 %) and is above the euro area average (66 % in 2021), the rate of home ownership amongst lower-income Belgian households has fallen steeply over this period, from 56 % in 2003 to 40 % in 2021, which is below the euro area average (44 % in 2021).

Chart 5.10

Housing affordability deteriorated to historically low levels in 2022



Sources: NBB, Warisse, C. (2022), "Is home ownership still affordable in Belgium?", NBB, *Economic Review*; Reusens, P., F. Vastmans and S. Damen (2022), "The impact of changes in dwelling characteristics and housing preferences on Belgian house prices", NBB, *Economic Review*.

1 This indicator is based on the assumption that a household with average disposable income buys an averagely priced house and finances 80% of the purchase price with a fixed-rate 20-year mortgage. The tax deductibility of the mortgage payments, the transaction costs and future changes in nominal income are not taken into account.

2 Estimated based on the average house price in Belgium and an average LTV ratio.

3 Location value was calculated by applying a correction to the average sales prices to account for differences in the dwelling characteristics of the houses sold. It should be noted that only house sales (thus not sales of apartments) were taken into account and that the year 2021 corresponds to the period from Q3 2020 to Q2 2021.

5.3 The Belgian banking sector remained resilient in a difficult economic environment, but credit risks cannot be ruled out

If necessary, the Belgian banking sector is sufficiently sound to support the real economy

Belgian banks were in a healthy financial position in the wake of the coronavirus crisis. This was in particular due to the effectiveness of the various support measures put in place for households and businesses. The government introduced income support measures while the financial sector adopted measures to defer loan repayments (moratoria) as well as other restructuring measures aimed at improving the repayment capacity of borrowers. This allowed the percentage of defaults and of non-performing loans to remain very low, both during and after the pandemic.

Due to their ample and solid capital and liquidity buffers, banks can serve as a powerful lever to deal with the consequences of Russia's invasion of Ukraine on the Belgian economy. The capital and liquidity ratios of Belgian banks are well above the minimum requirements. The Belgian banking sector's average core capital ratio (CET 1 ratio) rose to 17.1 % in the third quarter of 2022, well above the euro area average (15.3 % in June 2022). At the end of the third quarter of 2022, the liquidity coverage ratio (LCR) of Belgian banks was 174 %, while the minimum requirement is 100 %.

Russia's invasion of Ukraine initially had little direct impact on the Belgian banking sector. Direct exposures to counterparties located in (or strongly linked to) these countries proved very limited for Belgian banks and were valued at less than € 500 million at the end of 2022 or barely 0.03 % of

the sector's balance sheet total. Significant price rises on the commodity markets led to a sharp rise in margin calls on energy derivatives. In some countries, derivatives market participants quickly had to raise large amounts of funds to meet their margin requirements. However, Belgian banks have little direct exposure to this type of financial product.

Despite a relatively favourable starting position in early 2022 and limited credit losses due to the pandemic and the geopolitical crisis, banks could still face significant second- and third-round effects and the associated challenges. The pronounced slowdown in economic growth impacted profit forecasts. Together with the rise in interest rates, this led to substantial corrections for various financial assets, while the risk of further corrections in the equity and bond markets remains. Tighter credit conditions, rising energy prices and generally high inflation will make it harder for vulnerable households and corporates to repay loans, increasing the probability of credit risks for Belgian banks.

For the time being, bank profitability remains high

Despite worsening macroeconomic conditions, profitability in the banking sector reached high levels in 2022. Belgian banks posted net profits of € 5.4 billion for the first nine months of 2022, resulting in a return on equity of 9.4 % and a return on assets of 0.6 % (see table 5.1). The Belgian banking sector thus reported significantly better performance than banks in the euro area, for which the return on equity averaged only 6.2 %.

The increased profitability of Belgian banks was partly due to a rise in net interest income, driven by higher risk-free interest rates.¹ Belgian banks mainly follow a traditional financial intermediation model in which (short-term) deposits finance (long-term) loans. As a result, net interest income has traditionally accounted for the largest share of the sector's earnings. This component came under pressure in recent years, in an environment characterised by low or even negative interest rates. The average interest income that banks received on loans fell sharply, while the average interest rate they had to pay for funding decreased, partly because savings deposits are subject to a minimum statutory interest rate.

However, the increase in lending volumes mitigated this effect on earnings. Although current interest rates are still historically low, after repeated and rapid increases, they are now well above the lowest levels seen between 2018 and 2021, leading to a rise in banks' net interest income.

The return to more sustainable profitability for traditional financial intermediation due to rising interest rates will ease the pressure on the business model of Belgian banks. This is especially true for small and medium-sized banks that focus on deposit and credit operations with retail customers. With improved margins, banks will also be less compelled to compensate through increased lending volumes or riskier investments. In this way, higher interest rates can, in time, also promote financial stability.

1 Including net interest income from major foreign markets.

Table 5.1

The profitability of the Belgian banking sector reached a high level

(consolidated data; in € billion, unless otherwise stated)

					First nine months	
	2018	2019	2020 ³	2021	2021	2022
Net interest income	14.4	14.6	14.2	14.4	10.8	11.1
Non-interest income	8.3	8.5	8.2	7.6	5.7	6.0
Net fee and commission income ¹	5.6	5.6	5.6	6.4	4.8	5.0
Net realised and unrealised gains and losses on financial instruments	1.2	0.5	0.0	0.6	0.5	0.6
Other non-interest income	1.5	2.4	2.6	0.6	0.4	0.4
Operating income	22.7	23.1	22.4	22.0	16.5	17.1
Operating expenses	-13.9	-13.7	-13.8	-13.3	-10.1	-10.8
Gross operating profit (before impairments and provisions)	8.8	9.4	8.6	8.7	6.3	6.3
Impairments and provisions	-0.8	-1.3	-3.1	-0.2	-0.2	-0.7
Other components of the income statement ²	-2.3	-2.0	-1.2	-0.7	-0.9	-0.2
Net profit or loss	5.6	6.1	4.3	7.8	5.3	5.4
Return on equity (in %)	8.0	8.7	5.9	10.2	9.2	9.4
Return on assets (in %)	0.5	0.6	0.4	0.7	0.6	0.6
Cost/income ratio (in %)	61.3	59.5	61.7	60.4	61.5	63.3

Source: NBB.

1 Including commissions paid to independent banking agents.

2 This item includes, amongst other things, taxes, exceptional profits, negative goodwill recognised on the income statement, and the share of profits or losses on investments in subsidiaries and joint ventures.

3 A reporting adjustment has resulted in a transfer of certain costs between different income statement components in the figures since 2020.

The Belgian banking sector should pay close attention to the risks that could accompany a further hike in interest rates. This situation could put the availability and price of bank financing under pressure. Customer sight and savings deposits are an important source of funding for Belgian banks. So far, deposit volumes have remained stable at a high level, but banks, by managing their interest rate and liquidity risks, need to try to estimate correctly how current and savings account holders will react to changes in interest rates on alternative investments. A rash assessment of the pace and magnitude of the increase in financing costs based on savings and current accounts, for example, could result in inadequate hedging of interest rate risks by interest rate derivatives and have a greater than expected impact on bank profitability. There are early signs that savers are beginning to shift to term accounts, and some banks have already increased interest rates on savings accounts. The longer the rise in interest rates continues, the greater the pressure on other banks to follow. In addition, banks borrow using short-term financial instruments. Short-term financing can become substantially more expensive when the yield

curve is inverted and short-term interest rates are higher than long-term rates, which can occur when central banks raise rates quickly.

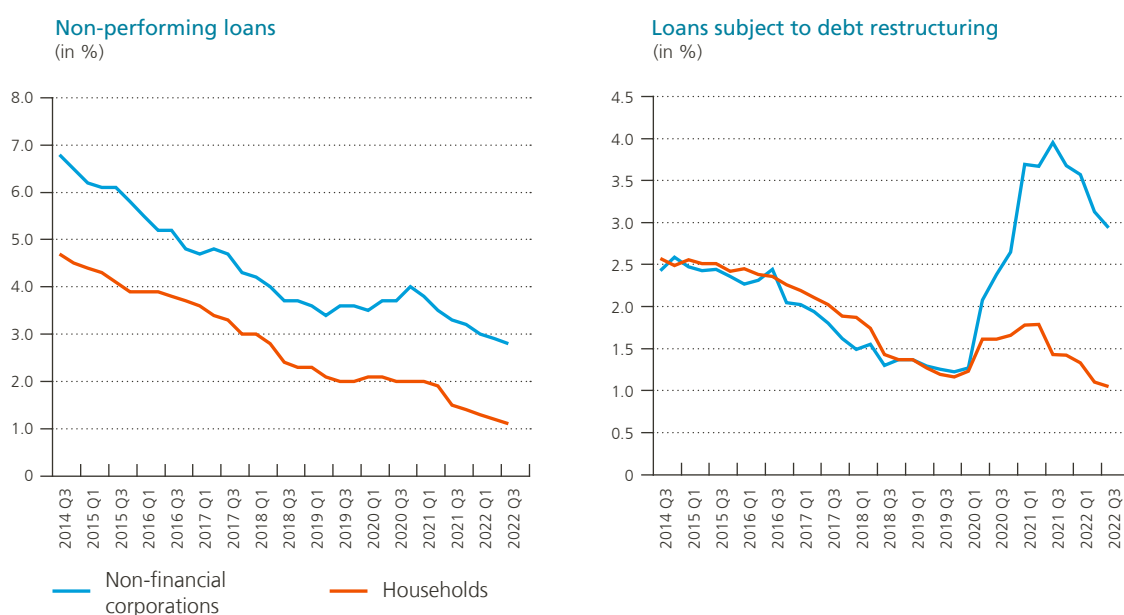
Banks' non-interest income, such as fee and commission income, for example for asset management, and income from financial instruments are also subject to rate and market fluctuations and could therefore be negatively affected if interest rates were to rise sharply and significantly. The current figures do not show this at present, but several components of non-interest income rose in the first nine months of 2022. Financial conditions have tightened considerably in a relatively short time period, and the financial markets are looking for a new equilibrium, with the possibility of downward price corrections.

As the Belgian residential property market accumulated vulnerabilities in the low interest rate environment, the rise in interest rates could also lead to a change in the dynamics of mortgage lending and house prices. This could further erode the value of the collateral in banks' mortgage portfolios and lead to higher credit losses.

Chart 5.11

The number of non-performing loans and credit agreements that formed the object of debt restructuring by households and non-financial corporations continued to decline temporarily

(data on a consolidated basis; percentage of total loans to households and non-financial corporations, respectively)



Source: NBB.

In times of high inflation, cost optimisation constitutes a major challenge for financial institutions, particularly small banks. Operating expenses grew significantly in the past year compared to previous periods (see table 5.1). This was partly due to an increase in total current expenditure. As Belgium has automatic wage indexation, banks saw their wage bills rise last year. The cost/income ratio surged in 2022, reaching 63.3 % in the first nine months of the year, significantly higher than in the corresponding period of 2021. Cost efficiency is a key issue for the Belgian banking sector. Small and medium-sized banks are often less advanced when it comes to the development of cost-saving digital applications. For the first nine months of 2022, large banks reported an average cost/income ratio of 62.5 %, while smaller banks reported a much higher ratio of 73.5 %. One reason for this was that the latter are less able to take advantage of economies of scale that would allow them to spread investments over a broader asset base. Improved control of operating costs is critical to maintain a robust capital position.

The profitability of Belgian banks was positively influenced in part by the fact that, so far, they have made few additional provisions for credit losses that could materialise in the short and medium term due to accumulated vulnerabilities. During and after the pandemic, there were very few defaults, partly as a result of the extensive monetary, fiscal and prudential measures put in place. The debt restructuring that banks offered to households and corporates during the health crisis also contributed to this (see chart 5.11). As there were fewer defaults during the pandemic than initially feared, banks recorded few additional provisions during the recent geopolitical and energy crises and even reversed some of the provisions that had been set aside before the pandemic, which had a positive effect on their operating income. At first glance, the quality of loans to both households and businesses remained good. More recent monthly figures revealed a slight increase in non-performing loans. For some portfolios, the probability of risks materialising is higher. During the pandemic, the loan loss ratio, that is the ratio between new loan loss provisions and the total volume of loans, stood at 35 basis points. Over the first six months of 2022, this rate fell to 5.6 basis points, although it rose to 9.1 basis points in the third quarter.

Nevertheless, the Belgian banking sector faces many challenges

The limited credit losses suffered by banks during the pandemic cannot be extrapolated as such to the current macroeconomic environment. Despite strong profits, credit risks and loan losses cannot be ruled out in the short term, along with an expected rise in defaults. Many credit institutions reported a significant increase in the number of “stage 2” loans in the first nine months of 2022. Stage 2 loans are those which banks consider to be at a substantially higher risk of default than at the time they were granted. At no point during the pandemic did banks classify as many loans as stage 2. This is a notable sign that they may expect some credit risks to materialise for vulnerable households and corporates. Both household and corporate loans have been reclassified from stage 1 (performing loans) to stage 2. For household lending, the share of stage 2 loans averaged 8.8 % during the pandemic, rising to 11 % in the second quarter of 2022. With regard to loans to non-financial corporations, banks significantly increased the number of stage 2 loans to 19.9 %, compared to an average of 17.7 % in 2020. However, this shift from stage 1 to stage 2 has not yet encouraged banks to make additional provisions. Timely provisioning is however an important element for financial stability.

In order to give the banking sector sufficient flexibility and allow it to fully play its role in supporting the economy, the Bank decided not to activate the countercyclical capital buffer in 2022 and to maintain the rate at 0 %. The Bank believes that the Belgian banking sector is likely to provide significant support during the current period of weak economic conditions. The substantial free capital available to the sector needs to be proactively mobilised to support the economy and ensure that businesses and households continue to have access to credit. In addition, the sector must use its available capital to make the necessary provisions and offer debt restructuring to vulnerable households and corporates at its own initiative.

At the start of the energy crisis, the financial sector assumed its responsibilities by announcing new moratoria from October 2022, with the aim of providing as much support as possible to customers experiencing difficulties. As it did during the pandemic, the financial sector has allowed

a general deferral of mortgage payments. Banks have also committed, where necessary and appropriate, to offering companies debt restructuring to support the economy to the fullest extent possible. The Bank encourages these initiatives.

Unlike during the pandemic, the possibility of deferral has not been widely used so far. At the end of December 2022, moratoria valued at nearly €900 million had been granted to households, which is less than 0.5% of all outstanding mortgage loans. During the pandemic, this amount peaked at €12 billion, which corresponded to 6% of the total outstanding loans granted to households by Belgian banks. This relatively limited use may indicate that other support measures targeting vulnerable households have been effective. In addition, the relatively strict eligibility conditions and the long-term costs associated with a deferral have probably played a role, since the interest is still due.

Finally, the banking sector will face major climate-related challenges in the near future.

Climate change and the transition to a carbon-neutral economy may lead to heightened risks. One of the greatest risks banks face is the transition risk associated with loans for which energy-inefficient buildings serve as collateral. However, given the ever-growing importance of energy efficiency as a determinant of house prices, the likelihood of such collateral being overvalued may diminish in the future. In this context, the Bank issued a circular at the end of 2020 encouraging the banking sector to collect and report information on the energy efficiency of buildings used as collateral for mortgage loans and to incorporate energy efficiency into their internal risk management and credit policies. Energy efficiency is becoming a more important determinant of house prices (see box 4), especially in light of the current energy crisis and, therefore, has a major impact on housing affordability and household repayment capacity (see also section 5.2 of this chapter). Analysis of the initial results revealed that while banks have made substantial progress in this area, further integration of energy efficiency and transition risks into internal risk analyses and policies is needed (see also part B, section 3.2 of this report).



5.4 The insurance sector benefited from interest rate rises but is exposed to growing risks

The insurance sector started off 2022 on a sound basis as it had been only slightly affected by the COVID-19 crisis. At the end of 2020, the COVID-19 crisis had a positive impact on the non-life sector, as lockdown measures led to a general downturn in claims, whereas the level of premium income remained stable. The insurance sector therefore started from a sound position when it had to cope with the impact of the floods the country experienced in July 2021. Based on the legislative framework, as well as exceptional agreements concluded in the wake of the floods, it was agreed that the claims burden would be borne by various public and private players, including insurance companies and reinsurers. As far as profitability is concerned, the sector posted a net profit of €2.6 billion in 2021. More specifically, the net profit of the non-life sector between the end of 2020 and the end of 2021 fell from €1.6 to €1.3 billion. However, it should be noted that not all flood-related claims had been recorded on the balance sheet of insurance companies at that time.

The direct impact of Russia's invasion of Ukraine on the insurance sector was limited, but second-round effects could emerge from exposures to energy-intensive sectors. For insurance companies subject to the Bank's prudential supervision, exposure to Russian, Ukrainian and Belarusian assets is extremely low and represents less than 1 % of the sector's investment portfolio. The same applies to the insurance coverage in effect in these countries. This is concentrated in a few business lines, such as credit insurance, transport insurance (including marine and aviation) and cyber risks (ransomware), and remains very marginal. However, one consequence of the conflict has been heightened credit risk in the sector's investment portfolio. The insurance sector is still

a substantial source of financing for non-financial corporations through the holding of bonds and shares and the granting of commercial loans. At the end of the third quarter of 2022, exposure to gas and electricity intensive companies represented approximately 21 % of the corporate bond portfolio, 12 % of the equity portfolio and 1 % of the commercial loans portfolio of the sector.

To date, the insurance sector has benefited from rising interest rates. At the end of 2021, the solvency capital requirement (SCR) ratio stood at 207 %, higher than its pre-crisis level, although it eroded significantly in the second half of the year following the July 2021 floods. It then rose again during the first two quarters of 2022, supported by the increase in risk-free rates, which drove down the discounted market value of commitments to policyholders. Due to the long maturities of life insurance liabilities, this decrease was relatively larger than the fall in asset values. Mechanically, this led to a positive effect on the sector's net capital level. In the third quarter of 2022, the SCR ratio fell slightly from 227 % to 221 %.

However, inflation and rising interest rates could negatively impact the sector. Inflation affects the liabilities of insurance companies by increasing their overhead (salaries, operating costs, etc.) and the cost of claims. This is mainly the case for certain non-life and health branches of activity for which guarantees are expressed in current prices. According to the Bank's simulations, the negative impact of inflation on the sector's SCR ratio remained limited in the third quarter of 2022. However, this impact could vary significantly depending on the development of energy prices. In the current environment of rising interest rates, life insurance companies also face

increased liquidity risk for two reasons. Firstly, the erosion of household purchasing power could lead to a fall in the volume of premiums collected as well as higher policy lapse rates. Similarly, the rise in interest rates could lead some households to terminate their low-rate life insurance policies in favour of other, more attractive investments. Secondly, in a rising rate environment, insurance companies that use interest rate swaps to hedge (downward) rate risk may face margin calls. In order to offset variations in their position in these transactions, such companies must be able to raise relatively large amounts of funds, often in cash and on a daily basis.

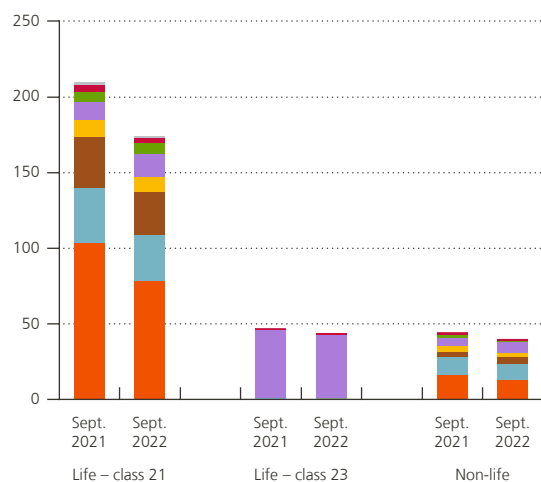
The rebalancing of the sector's investment portfolio continued in 2022, mainly dominated by valuation effects

As a result of the interest rate rises that began at the end of 2021, the value of certain assets held in the sector's investment portfolio depreciated. This was particularly the case for sovereign bonds. While these still account for a large proportion of the sector's investments, especially for companies offering guaranteed-rate life insurance, their relative share fell from 44% in September 2021 to 40% in September 2022. This drop was mainly due to

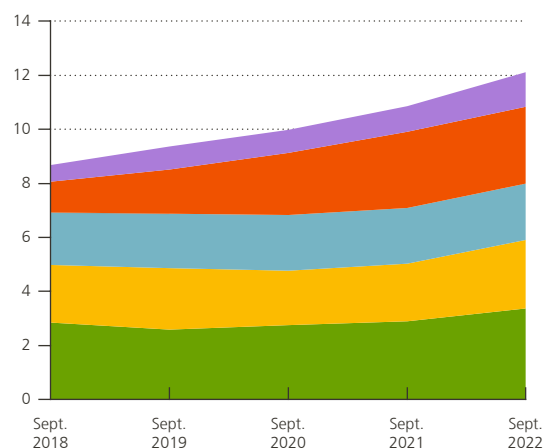
Chart 5.12

The share of sovereign bonds in the investment portfolio of life insurance companies fell, while exposure to commercial real estate continued to rise

Assets comprising the investment portfolio, by insurance type (in billions of euros)



Investment portfolio of the sector (excluding class 23 contracts): change in commercial real estate exposure, by asset type (in %)



- Sovereign bonds
 - Corporate bonds
 - Loans and mortgages
 - Shares and equity
 - Investment funds
 - Real property
 - Deposits (cash)
 - Other investments
- Real property
 - Equity
 - Corporate bonds
 - Commercial loans
 - Investment funds

Source: NBB.

valuation effects,¹ as the decreases recorded in previous years were essentially the result of volume effects in the context of a search for yield.

The low interest rate environment that prevailed in recent years led to a search for yield and an increased appetite for riskier exposures.

Over time, the sector increased its exposure to certain asset classes with attractive returns, such as those related to commercial real estate and investment funds. In the third quarter of 2022, these exposures represented 12% and 8.5% of the sector's investment portfolio (excluding class 23 investments), respectively, compared to 8.7% and 4.8% in the same quarter

of 2018. The insurance sector's investment portfolio has therefore gradually become more vulnerable to potential shocks in these markets.

The search for yield from riskier assets was still visible in 2021, but is likely to subside with the transition to higher rates.

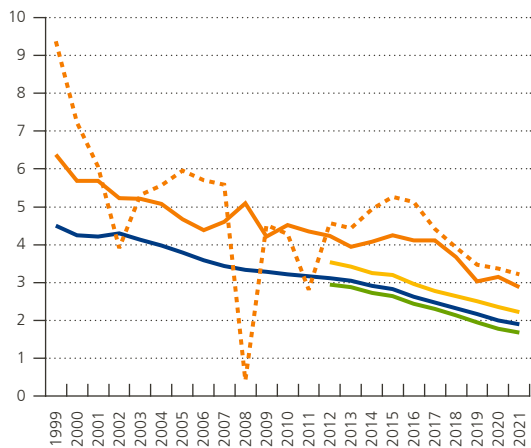
In order to generate sufficient margins to honour existing class 21 life

¹ In the Solvency II regulatory framework, the balance sheets of insurance companies are expressed at market value. Changes in the value of the sector's investment portfolios are therefore the result of price effects (resulting from fluctuations in the market value of assets) and volume effects (net flows).

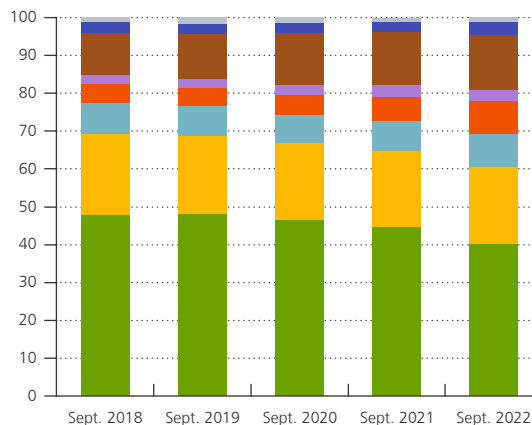
Chart 5.13

Returns on assets held to cover class 21 contracts still exceeded the average guaranteed rate, due in particular to reallocation of the investment portfolio

Change in average guaranteed return on class 21 contracts and in the return on assets held to cover these contracts (in %)



Investment portfolio of the sector (excluding class 23 contracts), by asset type (in %)



- Average guaranteed rate of return on existing contracts
- of which: group contracts
- of which: individual contracts
- Estimated annual return on assets covering guaranteed rate contracts, excluding gains and impairments
- Annual return on assets covering guaranteed rate contracts

- Sovereign bonds
- Corporate bonds
- Shares and equity
- Investment funds
- Deposits (cash)
- Loans and mortgages
- Real property
- Other investments

Source: NBB.

insurance contracts with guaranteed interest rates that are sometimes still remarkably high, life insurance companies continued to demonstrate their ability to adapt. On the one hand, they pursued a reduction in the average guaranteed rate on existing contracts (notably by steering customers towards class 23 products without guaranteed rates) and, on the other hand, they secured returns by redirecting investments to more lucrative, but riskier and often less liquid, assets (see above). Between 2020 and 2021, the returns on assets held to cover class 21 contracts fell from 3.1 % to 2.9 %, while the average guaranteed rate on existing contracts dropped from 2 % to 1.9 %.

In the current geopolitical context, climate and cyber risks continue to merit close monitoring

The financial risks resulting from climate-related risks, both physical and transition, are considerable for insurance companies. The number of claims due to damage caused by climate change is rising in Belgium. In addition, insurance companies are exposed to transition risk through the assets that make up their investment portfolios. According to mapping carried out by the Bank, around 52 % of the corporate bond portfolio, 56 % of the equity



portfolio and 23 % of the commercial loans portfolio of the insurance sector are exposed to industries likely to suffer from the risks associated with the transition to a low-carbon economy. At an individual level, climate risk exposures vary greatly and may be high for some insurance companies.

Finally, the pandemic and the widespread shift to teleworking, along with Russia's invasion of Ukraine, have brought to light growing cyber risk. The Bank is continuing a series of initiatives in this area, aimed in particular at encouraging insurance companies to take better account of this type of risk, not only from an operational perspective but also in the policies they sell. The chapter on digitalisation in the Prudential Regulation and Supervision section of this report provides a detailed overview of these measures.





6. Public finances

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6.1 Overview of Belgium's fiscal position and the European fiscal framework

The budget balance improved considerably after the pandemic died down, but as the energy crisis intensified public finances once again came under pressure

In 2022, the budget deficit continued to fall, to 3.9% of GDP. However, it remained under pressure due to the new measures adopted in response to the energy crisis and Russia's invasion of Ukraine. The budget balance recovered thanks to discontinuation of the temporary measures introduced to support the economy during the pandemic, which led to an improvement of around two percentage points of GDP, and the strengthening of the economy. Both of these factors led to a further reduction in the primary expenditure ratio. For its part, the revenue

ratio fell back slightly under the effect of the measures introduced to moderate energy prices.

The recovery of the economy, which almost reached potential output, gave rise to a reduction in primary expenditure of 0.8 percentage point of GDP. The denominator effect of primary expenditure illustrates the impact of the business cycle on the expenditure ratio. It expresses the difference between primary expenditure as a percentage of GDP and as a percentage of potential GDP. If GDP is below potential, the primary expenditure ratio goes up and the balance deteriorates. Consequently, a rebound in activity lowers the expenditure ratio.

On the other hand, Russia's invasion of Ukraine and the aggravation of the energy crisis

Table 6.1

General government budget balance and debt

(in % of GDP)

	2017	2018	2019	2020	2021	2022 e
Revenue	51.3	51.4	49.9	49.9	49.9	49.8
of which: Taxes and social security contributions	44.2	44.2	42.9	42.9	43.1	42.9
Primary expenditure	49.7	50.1	49.9	57.0	53.8	52.2
Primary balance	1.7	1.3	0.0	-7.0	-3.9	-2.4
Interest expenses	2.4	2.1	2.0	1.9	1.7	1.5
Overall balance	-0.7	-0.9	-1.9	-9.0	-5.6	-3.9
Public debt	102.0	99.9	97.6	112.0	109.2	105.0

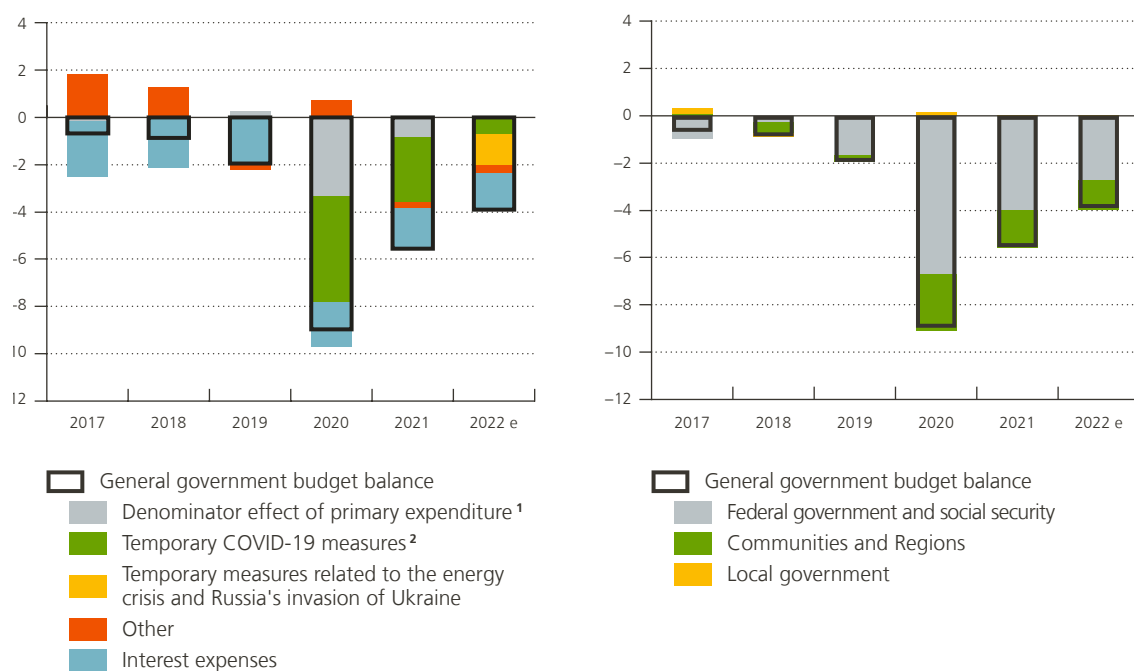
Sources: NAI and NBB.

Note: It was more complex to estimate the budget balance in 2022 due to the limited amount of data available on taxes withheld from earned income and on corporate and personal income tax assessments. This can be explained by, amongst other factors, the possibility to obtain a tax deferral owing to the energy crisis. Payments deferred until 2023, but for which the deferral was granted in 2022, were in fact charged to fiscal year 2022 for accounting purposes.

Chart 6.1

Crisis measures hampered improvement of the budget balance

(general government budget balance, % of GDP)



Sources: NAI and NBB.

1 The denominator effect of primary expenditure is calculated as the difference between primary expenditure as a percentage of GDP and primary expenditure as a percentage of potential GDP.

2 Temporary COVID-19 measures also included spending on furlough schemes and the bridging allowance.

negatively impacted the budget balance. The significant increase in energy prices and the conflict between Russia and Ukraine obliged the government to take measures. Thus, on the heels of the pandemic, the government had to tackle new challenges, which slowed the recovery of public finances. The measures adopted mitigated the consequences of this new crisis on the economy.

Temporary measures taken in response to the energy crisis and Russia's invasion of Ukraine, which changed the balance by around 1.3 percentage points of GDP, mainly focused on lowering energy prices. These included a reduction in the VAT rate on electricity and natural gas and lower excise duties on petrol and diesel along with an expansion of the "social tariff" to a wider target group. These schemes provided direct support for household purchasing power. Furthermore, Russia's invasion of Ukraine pushed governments to commit to additional spending to provide humanitarian

assistance to Ukraine and refugees arriving in Belgium.

The public deficit is mainly concentrated at federal level. The deficit of the federal government and social security fell by 1.3 percentage points of GDP, but remains very high. This level of government benefited more from the economic recovery as it encompasses most of the automatic stabilisers. It was also the federal government that mainly benefited from the continued withdrawal of COVID-19 support measures. Conversely, most of the measures introduced to face the energy crisis negatively affected the budget balance of the federal government and social security. At the regional level, deficits also shrunk modestly, by 0.4 percentage point of GDP, after the ending of most temporary COVID-19 support measures. As in the previous year, local governments came close to balancing their budgets thanks to *inter alia* transfers received from the federal government for the reception of refugees from Ukraine.



Interest expenses were again slightly down in 2022, despite the sharp increase in short- and long-term interest rates. High inflation and the subsequent tightening of monetary policy pushed up both short- and long-term interest rates. Consequently, deficits can no longer be serviced free of charge. Given the long maturity of public debt, however, the rise in interest rates will only gradually impact interest expenses. These fell somewhat further in 2022, as maturing debt can still be refinanced at a more favourable rate.

The sharp increase in prices temporarily reduced the debt ratio, but exacerbated medium-term structural challenges. In 2022, Belgium's debt ratio fell by 4.2 percentage points to 105% of GDP. This decrease can be explained by a clear increase in the denominator, nominal GDP, as a result of high domestic inflation, combined with a historically low average interest rate on outstanding debt (the implicit interest rate). However, the fall in the debt ratio is unlikely to last due to the expected persistence of heavy primary deficits over the next few years, the normalisation of nominal GDP growth and the gradual increase in the implicit interest rate.

In general, fiscal policy remained accommodative in 2022. The main objective of this expansionist policy, characterised by a wide deficit, was to provide immediate support for household purchasing power. However, in order not to further strain public finances, such measures should target the most vulnerable

groups, insofar as possible, and be financed by economic agents that benefit from soaring energy prices. In addition, for purposes of efficiency, price signals should be maintained to the extent possible, so as to also take into account the environmental impact of energy consumption. Moreover, given the level of the public deficit and debt, structural consolidation of Belgian public finances is required.

The suspension of the European fiscal rules was extended

The general escape clause of the European fiscal framework remained applicable in 2022.

The Economic and Financial Affairs (Ecofin) Council activated this clause in March 2020, at the start of the COVID-19 crisis. In the spring, it was extended for a second time until the end of 2023. This extension was justified by heightened uncertainty and strong downward risks to the economic outlook in the wake of Russia's invasion of Ukraine, the unprecedented rise in energy prices and continued supply chain disruptions. The activation of this clause allows application of the European fiscal rules to be eased, thereby offering the possibility of a temporary derogation, provided doing so does not jeopardise the medium-term sustainability of public finances. That being said, the Stability and Growth Pact procedures remain in place, and the annual budgetary surveillance cycle continues.

The 2022 country-specific recommendations remained largely qualitative, while calling for more differentiated fiscal policies.

In June 2021, the Ecofin Council recommended that Belgium use the funds from the Recovery and Resilience Facility (RRF) of the European Recovery Plan to finance additional investment in 2022 to boost economic recovery while, at the same time, pursuing a prudent fiscal policy. It also recommended preserving nationally financed investment.

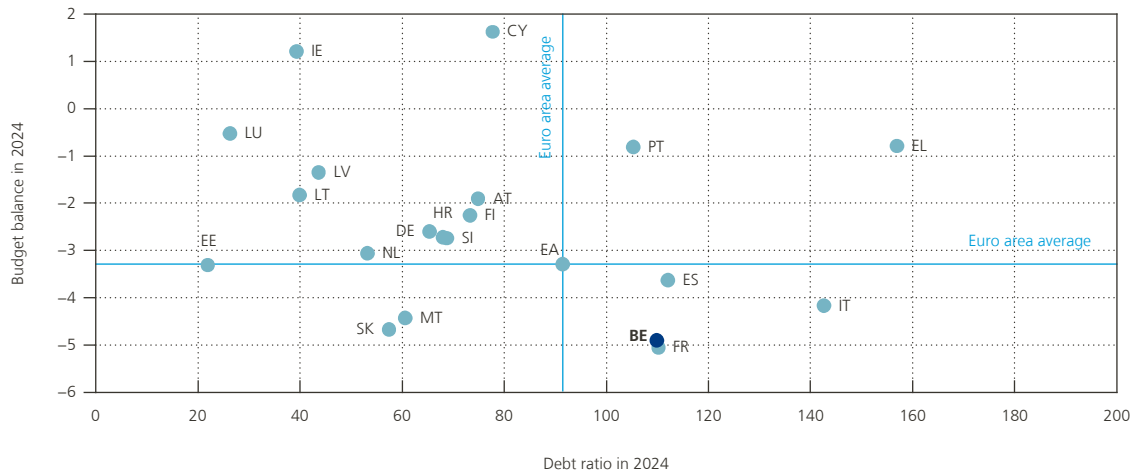
The 2023 country-specific recommendations, approved in June 2022, were more detailed than those for the previous year.

In particular, the Ecofin Council recommended that, in 2023, Belgium keep growth in public expenditure financed at national level – corrected for temporary, targeted support for Ukrainian refugees and for households and companies most vulnerable to rising energy prices – below medium-term potential output growth. Furthermore,

Chart 6.2

Both the public debt ratio and the budget deficit are structurally high in Belgium

(% of GDP)



Sources: EC and NBB.

it was asked to stand ready to adjust current spending to the evolving situation. Finally, it was advised to expand public investment in the green and digital transitions and in energy security.

Suspension of the European fiscal rules runs counter to the pressing need to consolidate public finances in Belgium. Belgium is one of

the worst performing countries in the euro area in terms of its budget balance and public debt. In 2022, Belgium’s debt ratio was one of the highest in the area. Moreover, it is on course to worsen further in the coming years, unlike most other countries with a high debt ratio, due to a still hefty budget deficit. This is extremely concerning for the sustainability of Belgian public finances.

6.2 High inflation considerably impacted public finances

Inflation automatically led to a sharp increase in most forms of revenue and primary expenditure, although the effects on the primary balance remained limited in 2022

Inflationary pressures did not as such lead to a deterioration of the primary balance in 2022, but are expected to do so in the coming years.

The budget balance even benefited temporarily from the delayed indexation of some expenditures and of the tax brackets applicable to certain revenue. These factors are however expected to change direction in the coming years, causing indexation to, this time, exceed the rise in domestic prices, if the latter develop as expected. In addition to these intrinsic effects, the nature of the inflationary shock, which was mainly due to supply-side disruptions, led to an impoverishment of the national economy, penalising public finances. The government responded to inflation by adopting a range of discretionary measures which had a clearly negative impact on the budget balance, as explained below.

Taxes on earned income increase in tandem with wages, which are adjusted based on the smoothed health index. Wage indexation takes place with a certain time lag, reflecting the various mechanisms used in different sectors of the economy. In addition, social security contributions, the rates for which are relatively uniform, are directly linked to the adjustment of wages. The latter also determines the evolution of personal income taxation, although the characteristics of the progressive nature of this tax require that additional factors be taken into account. Thus, inflationary pressures lead to a mismatch between adjustment of the tax brackets for taxes withheld from earned income, which are indexed based on the lower inflation figure for the previous year, and of wages, which are indexed

more quickly. In 2022, the tax brackets were adjusted for indexation by approximately 2.3 %, while wages were indexed at 6.2 %. Consequently, the additional income received by taxpayers is taxed at a marginal rate above the previously applicable average rate. This leads to a temporary increase in the average tax rate, which is greater for the minority of taxpayers whose additional income falls into a higher tax bracket. The resulting temporary increase in tax revenue is neutralised when the tax brackets are adjusted in subsequent years.

The downward pressure on companies' margins, which may be expected when costs rise, did not curb growth in corporate tax revenue in 2022. Exogenous inflation causes rising costs for companies. The inability to pass these higher costs through in full to sales prices could affect their profit margins and therefore government tax revenue. In 2022, corporate profit margins remained high from a macroeconomic perspective, driven by the beneficial impact of the post-COVID-19 economic recovery. An increase in advance tax payments by companies remained noticeable throughout the year. Overall, given a fall in tax assessments which continues to reflect, with some delay, firms' poorer earnings during the COVID-19 crisis, corporate tax revenue, adjusted for the temporary measures introduced to combat the COVID-19 and energy crises, grew slightly more slowly than GDP.

Most tax revenue on goods and services, with the notable exception of excise duties, is directly and immediately correlated with a rise in consumer prices. VAT is applied directly to consumer prices and therefore closely reflects the sharp rise in inflation. On the other hand, excise duties are fixed amounts levied per unit sold and are only adjusted for inflation if their nominal amount is revised to this end, with such revisions being rare. That

being said, the government has a certain flexibility to adjust excise duties for other reasons and effectively increased the duties on tobacco during the year. VAT and excise revenue also benefited from the persistent increased demand for goods and services which followed the COVID-19 crisis. Excluding the measures taken to deal with the energy crisis, VAT revenue rose by 10.1 % and excise revenue by 9.6 %.

Inflation influences taxes and levies on investment income and other income with a certain time lag. Withholding tax revenue, which is linked, with a delay, to corporate earnings, is expected to be adversely affected by inflation. In 2022, it was exceptionally high given the large profits recorded in 2021.

Other types of tax revenue, on the other hand, tend to rise along with prices. In the case of property tax, cadastral income is explicitly indexed based on the consumer price index for the previous year. For other levies, the relationship with the rise in consumer prices is less automatic. Revenue from registration duties when purchasing a property for example, depends on property prices, which may have different dynamics than consumer prices. In 2022, tax revenue from investments and other income contracted slightly relative to GDP.

A large share of public expenditure is very sensitive to price changes, particularly through automatic indexation. This mechanism applies to

Chart 6.3

Change in tax revenue and primary expenditure, adjusted for the temporary measures related to COVID-19, the energy crisis and Russia’s invasion of Ukraine ¹

(nominal percentage growth; in parentheses: weight of categories as a percentage of GDP in 2021)



Sources: NAI and NBB.

¹ Including the decisions related to funding the measures.

² In accordance with ESA 2010, general government revenue does not include customs revenue that is transferred to the EU or revenue collected directly by the EU.

³ Mainly taxes withheld from earned income, advance tax payments, tax assessments and the proceeds from surcharges on personal income tax.

⁴ Including the special social security contribution and the contributions of people not in work.

⁵ Mainly advance tax payments, tax assessments and corporate withholding tax.

⁶ Mainly withholding tax paid by individuals, property tax (including the proceeds from surcharges), inheritance taxes and registration duties.

⁷ Income from assets, imputed social contributions, current transfers and capital transfers from other sectors, plus sales of goods and services produced, including income on state guarantees for interbank loans.

⁸ Adjusted for the impact of the measures taken following the July 2021 floods.

social benefits and the remuneration of government employees, which are raised by 2% one and two months, respectively, after the smoothed health index crosses the trigger threshold, which occurred five times in 2022. Given this staggering of indexation, the average annual pay rise was 7% to 8%, thus less than the increase in the health Index. This discrepancy will only be made up in 2023, when the rate of indexation is likely to exceed that of inflation. Overall, automatic indexation has a significant impact on public finances, insofar as the categories concerned represent approximately half of primary expenditure. With regard to social benefits, however, there is a notable exception, namely family allowances in Flanders, for which it was decided to raise the rate of annual increase for a significant portion of the base amounts, from 1% to 2%, as from 2022.

By default, inflation affects healthcare expenditure with a time lag. The annual federal healthcare budget includes a real growth target, currently set at 2.5%, to which an indexation figure is added to account for changes. This figure is based partly on expected automatic wage indexation and partly on the change in the health index over the previous year. While this model works well when

inflation is steady, it can be slow to react in the event of sudden price rises. Consequently, during the spring budget review, an envelope was allocated to permit the National Institute for Sickness and Invalidity Insurance (INAMI) to grant an additional allowance to healthcare providers in the context of surging inflation. Despite this allocation, which has since been deducted from the 2023 budget, total healthcare indexation barely exceeded 2% in the past year. It should be noted that within the budgetary target, a series of subsidies, such as the advance to hospitals further to the health crisis, fell significantly. On the other hand, healthcare categorised as social benefits rose more sharply.

Typically, operating and investment credits are not automatically linked to inflation. In other words, the possibility and extent of their revaluation form the object of a political decision. In general, budgets for these items were not raised in line with the level of inflation observed in 2022. At the federal level, the government limited operating and investment credits to 2.9%, with the exception of energy expenses which were indexed by 32.5%. In Flanders, apart from a few exceptions, operating credits were frozen. In both cases, public spending was necessarily restricted in order to stay within the



allocated budget given the marked increase in the prices of everyday goods and services and investment projects. Substantial savings were therefore made in real terms.

With regard to residual expenditure, it can be indexed in full, in part or not at all, as the case may be. At the federal level, the SNCB's annual operating grant is indexed based on the change in prices measured at the end of the previous year. Exceptionally, the railway operator was granted additional assistance during the year, intended to help absorb the increase in both workers' wages and the energy bill, so as to avoid an increase in ticket prices. The budget allocated to the social (energy) tariff, classified as a miscellaneous social benefit, is closely linked to energy inflation as it cushions the increase in gas and electricity prices for eligible households. Some reductions in social security contributions, considered subsidies, are adjusted in tandem with the wages to which they relate. Exemptions from taxes withheld from earned income were moreover temporarily inflated by the time lag in adjustment of the tax brackets. At the regional level, the subsidies granted to approved service voucher companies are adjusted automatically when the trigger index is crossed.

High inflation and Russia's invasion of Ukraine led to a large-scale discretionary policy response

Fiscal policy was once again accommodative in 2022, not only in order to mitigate the impact of higher energy prices but also in response to Russia's invasion of Ukraine. The temporary discretionary measures implemented in 2022 represented a total estimated cost of € 7 billion (1.3 % of GDP). Energy measures accounted for most of this amount, coming in at € 5.8 billion (1 % of GDP), while the measures taken following Russia's invasion of Ukraine cost € 1.3 billion (0.2 % of GDP). Measures were adopted gradually over the year and were regularly extended and/or expanded in line with energy prices, which remained high.

The vast majority of energy measures were adopted at federal level. These were mainly designed to provide immediate support for household purchasing power. At the regional level, measures were taken to remove certain charges from the



electricity bill, intended to finance suppliers' public service obligations, and to support a reduction in energy consumption and provide direct assistance to firms.

In terms of the budgetary cost, two thirds of the measures pertained to interventions that reduced the cost of an additional unit of energy. Consequently, these measures partially cancelled out the "price" incentive to limit energy consumption. In this context, the lowering of the VAT rate on gas and electricity introduced in April represented a budgetary cost of € 1.5 billion. The extension of the social tariff cost € 0.9 billion. Finally, the lowering of excise duties on petrol and diesel – a tax based not on the price paid but on the volume consumed – represented a cost of € 0.9 billion.

The remaining third of the budgetary cost of these measures was attributable to various decisions to shore up household income without impacting the marginal cost of energy. In this case, households received a sum of money that was not dependent on their energy consumption and therefore did not distort the price signal, which is preferable to maintain the incentive to reduce energy demand. Such assistance mainly took the form of various vouchers to help reduce the energy bill as well as a credit of €135 towards the gas bill and of €61 towards the electricity bill in November and December. These vouchers and credits represented a budgetary cost of €1.7 billion in 2022.

All of these measures also influenced the health index, with the exception of the reduction in excise duties on petrol and diesel. Since they lead to lower prices, they curb inflation and the associated wage indexation. For households, this offsets the measure's positive effect on purchasing power, while for companies, it mitigates the increase in the wage bill.

The federal government also offered the possibility of a tax deferral to support the liquidity of households and companies. This decision applied to all payments for tax year 2022, for both personal income tax and corporate tax. Moreover, the standard payment deadline for all assessment notices was extended from two to four months. In addition, companies were able to defer for two months the payment of taxes withheld from earned income for November and December. These measures did not affect the budget balance, however, since deferred payments are imputed to the year in which the tax is assessed in accordance with ESA methodology.

The measures were not sufficiently targeted. Although the government responded strongly to the exceptional situation, in order to be fair, effective and not jeopardise the sustainability of public finances, assistance should target the economic agents that need it most. The social tariff, intended for all benefits recipients and social housing tenants, and its extension to all low-income households qualifying for greater assistance are an example of a measure designed to target more vulnerable groups. On the other hand, the lump-sum credits for gas and electricity are not considered targeted, even though these amounts are subject to tax in the hands of the highest earners. Indeed, the targeted nature of this type of measure is very limited since the threshold above which the

special social security contribution is levied is high, and reimbursement remains partial.¹ This general lack of targeting obviously had a regrettable significant effect on the budgetary cost of the support measures.

The support measures were only partially offset by discretionary financing measures. Reference is made here only to new discretionary measures introduced to finance the support measures. The endogenous effects of inflation on government revenue, such as the increase in VAT revenue, were not included in this calculation. Direct financing measures included a contribution from the oil industry of €0.3 billion. Furthermore, a decision was made to tax the excess profits of energy producers (see box) which was expected to bring in €0.2 billion for 2022. Non-gas-based electricity producers could indeed make substantially higher profits during the energy crisis. In addition to an income ceiling of €130 per megawatt hour from August 2022 to June 2023, they had to report these transactions to the energy sector regulator (CREG). The amount in excess of the ceiling must be paid to the government.

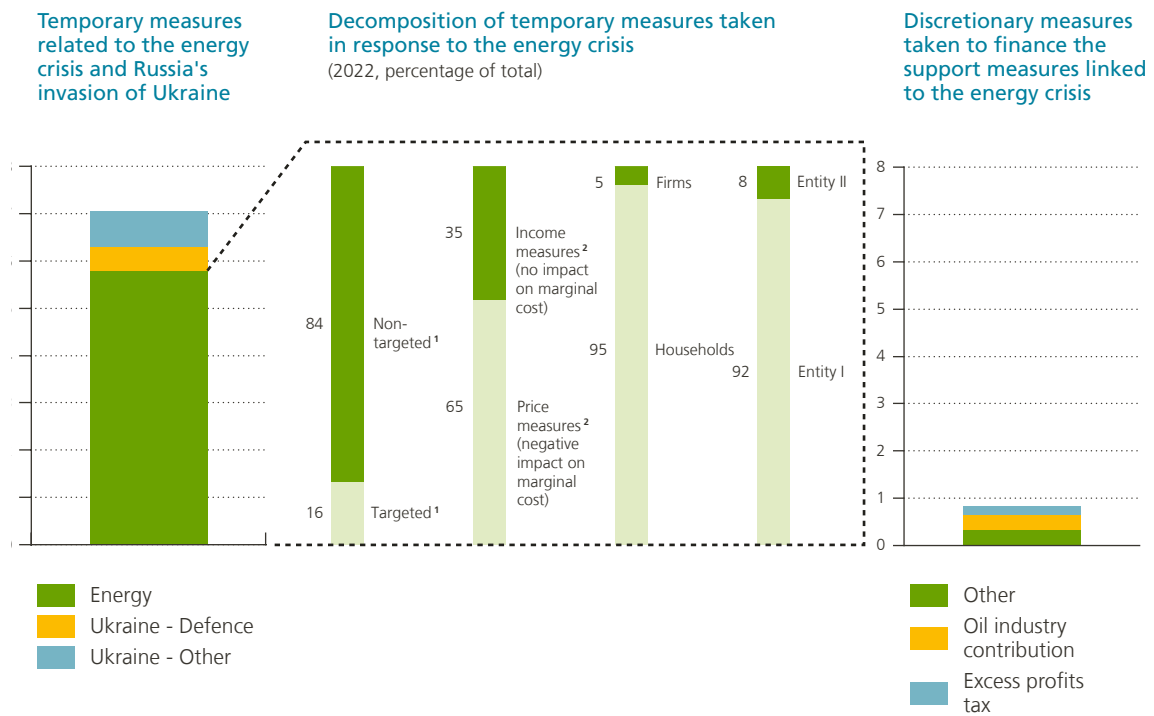
At the same time, the government took measures in response to Russia's invasion of Ukraine. At the federal level, a provision of €0.8 billion was earmarked for this purpose. In 2022, around half this amount was spent on the reception of Ukrainian refugees, who also received integration income. The federal government used some of this amount to provide public social welfare centres with funding to cover this additional cost. Moreover, humanitarian assistance was sent to Ukraine. Specific appropriations were also made in each of the three Regions, totalling €0.3 billion. Finally, in terms of defence, a budget of €0.5 billion was released in order to fund the acquisition of military equipment and infrastructure investments so as to improve in the short-term the preparedness of the armed forces.

¹ For individuals with an annual net taxable income in excess of €62,000 and couples with an annual net taxable income above €125,000 (increased by €3,700 per dependant), a social security contribution, of 1.5 times the average tax rate, will be applied based on 2022 income.

Chart 6.4

Substantial temporary measures were taken in response to the energy crisis and the war in Ukraine

(2022, in billions of euros)



Sources: Communities and Regions, FPS Policy & Support, FPS Finance and NBB.

- 1 A targeted measure should be interpreted as referring to one "targeting households or firms that are vulnerable to rising energy prices". For households, a measure is considered targeted if it is subject to some type of means testing and is not intended to apply to most of the population. Means testing can take any form. A fundamental requirement is that the measure be applied selectively based on real income, specific social needs, access to other social benefits generally reserved for the poorest households, etc.
- 2 The distinction between price measures and income measures is based on their impact on the marginal cost of energy consumption. Price measures directly lower the cost of consumption of an additional unit of energy. Consequently, they reduce incentives to consume less or to increase energy efficiency. Income measures, on the other hand, do not directly depend on the quantity of energy consumed by an entity (for example, a low-income household or vulnerable SME) and therefore maintain the incentive to reduce demand or save energy. Measures that reduce energy consumption are also categorised as income measures.

BOX 5

Should there be a tax on the excess profits of energy companies?

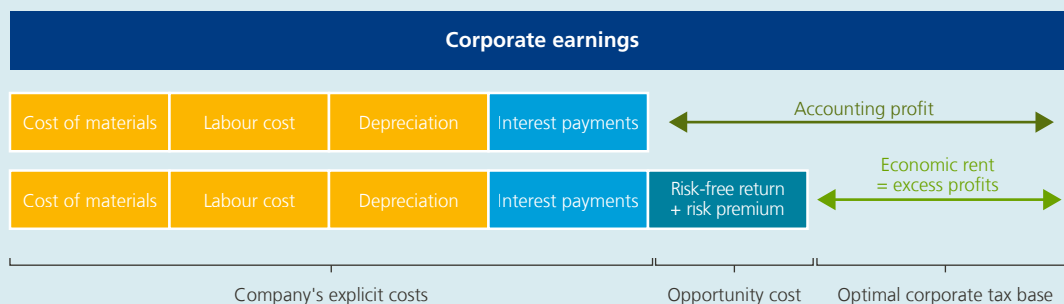
In early 2022, the Bank was asked to investigate whether it would be possible and appropriate to tax the excess profits of energy companies resulting from high gas and electricity prices. This box summarises the conceptual economic opinion provided to the federal energy minister.¹

¹ The Bank did not comment on the practical arrangements for or legal feasibility of a tax on excess profits.



According to tax policy, it is optimal to apply a high tax rate to excess profits, defined as a company's revenue after the deduction of its costs, including opportunity cost. This requires that excess profits be identifiable and internationally immobile. In practice, excess profits are not always easy to identify, justifying a more pragmatic approach. Current corporate tax systems do not tax excess profits but rather the more broadly defined accounting profit, and only at a relatively low rate. The corporate tax rate in Belgium is 25 %.

What are excess profits?



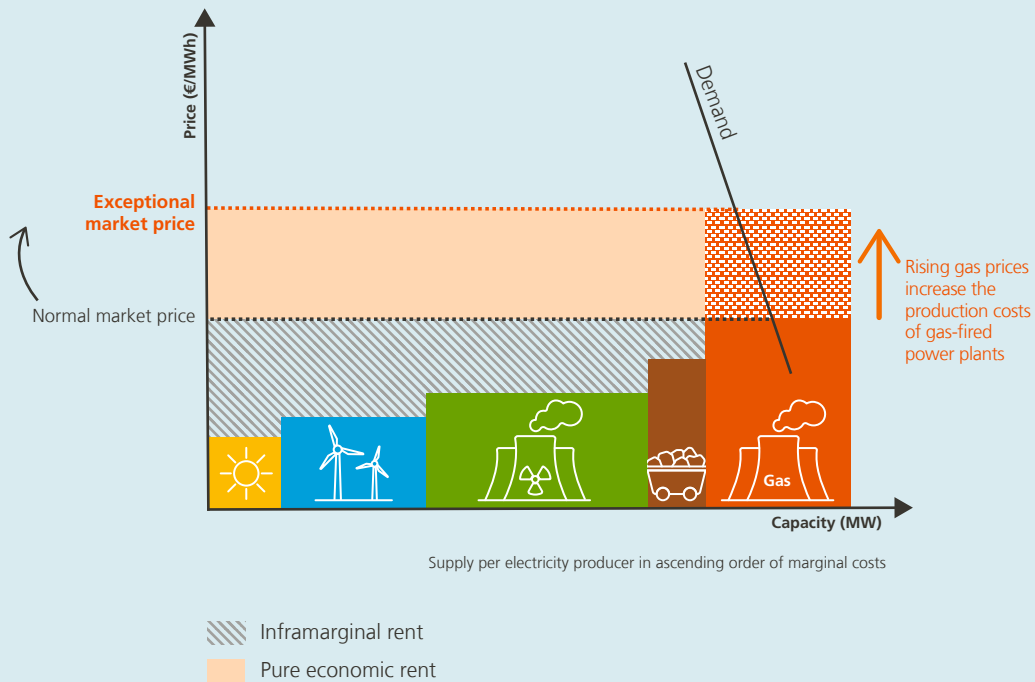
Source: NBB.

Nevertheless, if there are substantial excess profits which can more or less be defined and identified, it may be appropriate to specifically tax them. A permanent excess profits tax is preferable to a temporary scheme. An occasional increase in tax risks undermining business confidence in government and discouraging private investment. Furthermore, a permanent tax allows for time-consistent taxation, meaning negative excess profits from other years can be offset against positive excess profits.

In Belgium, as in other European countries, the electricity market has been liberalised, but remains far from the theoretical model of perfect competition in many respects. In a completely free market, an inframarginal rent can temporarily appear if an economic agent manages to produce at a lower cost than its competitors. This rent can be considered compensation for the fixed costs and initiative-taking – along with the associated risks – that led to the efficiency gain. There is no reason to tax this profit at a higher rate. Over the long term, as other firms with similar efficiencies arrive on the free market, the rent will fade away. Such inframarginal rent also exists on the European electricity market. This market operates in accordance with a merit order, whereby electricity producers are called on based on ascending order of their respective marginal costs, in order to satisfy electricity demand at the lowest cost. The price of electricity is determined by the marginal cost of the final supplier, i.e. the most expensive one (generally gas-fired power plants). Under normal circumstances, this market price enables the most efficient electricity producers to benefit from an inframarginal rent.



The European electricity market operates in accordance with a merit order system ¹



Source: NBB.

¹ Simplified illustration.

In addition to the inframarginal rent realised under normal circumstances, certain particularities may give rise to excess profits, for which specific taxation is justified. Thus, nuclear power plants that were put into operation before market liberalisation continue to benefit from past market power. Excess profits can also be caused by a sharp increase in electricity prices resulting from a marked rise in the marginal production cost of the final producer in the merit order. This form of profit can be seen as scarcity rent. In this way, extremely high gas prices determine the price of electricity when gas-fired power plants are the marginal supplier. Electricity producers with lower marginal costs then make excess profits. As long as marginal suppliers continue to use fossil fuels, the risk of expensive and volatile electricity prices will remain, as will excess profits. Having regard to the ecological transition, the geopolitical context and other market circumstances and uncertainties, we should not lose sight of the fact that fossil fuel prices will remain subject to significant fluctuations.

Several European countries, including Belgium, have already opted to introduce a temporary tax on excess profits. This decision is understandable from a practical standpoint, insofar as the implementation of a more permanent system takes time and is fraught with technical difficulties. That being said, temporary measures should where possible be as intelligent as permanent ones and pay particular attention to the need to ensure legal and economic certainty and consistency over time.



As excess profits can be subject to substantial uncertainty, it is important to set the threshold for taxation sufficiently high and/or limit the applicable tax rate.

In addition to an excess profits tax, it would be useful to conduct an investigation into the causes of high and volatile electricity prices. The moderation of these prices would limit excess profits. We can think here of the functioning of the electricity market and its merit order system, in which the marginal cost of the final supplier determines the price of electricity. This means of organisation ensures that electricity prices are only loosely connected to the average production cost, towards which the market price should move in the long-term, both in theory and from an efficiency perspective. However, various considerations should be taken into account in any discussion of the organisation of the electricity market. First, discussions should ideally be held at European level, having regard to European rules and regulations and the interconnected nature of the markets. Second, it is important to keep in mind the importance of short- and long-term price signals. This is the most effective mechanism to ensure that supply matches demand, including in the short term. Furthermore, it is essential for the market price to take into account the negative externalities of electricity production.

In addition to inflation, a handful of other factors influenced the primary balance

The past year was marked by the gradual discontinuation of numerous COVID-19 measures and an associated reduction in the budgetary cost. The main savings were in the area of social security, primarily replacement income paid to furloughed employees and the bridging allowance for the self-employed. These items, significantly lower than the previous year, nonetheless represented a cost of € 1 billion in 2022. The federal government also decided not to extend certain measures, such as the monthly allowance paid to several categories of benefits recipients, still in effect in the first quarter of the year. For companies that had experienced difficulties due to the economic repercussions of the pandemic, compensatory allowances granted by the three Regions also declined noticeably. On the public health front, screening, contact tracing and vaccination campaigns continued to affect public finances. In general, the budgetary cost of the temporary COVID-19 measures, although down by over € 9 billion compared to 2021, was still estimated at approximately € 4 billion for 2022, or 0.7 % of GDP.

Provisional figures indicate that public spending under Belgium's Recovery and Resilience Plan (RRP), launched in 2021, remained substantially below initial expectations.¹ According to NAI statistics, over the first nine months of 2022, some € 270 million was spent, while the initially projected expenditure was around € 1.7 billion euros for the year. Likewise, expenditure on recovery plans not financed by the RRF was lower than expected. In Flanders, in the first half of the year, such spending was well below the annual forecast. In Wallonia, the adjusted budget to stimulate lending was € 1.6 billion, only a fraction of which was used.

The amount of subsidies that Belgium can claim under the Recovery and Resilience Facility (RRF) for the period 2021-2026 was reduced from € 5.9 billion to € 4.5 billion. This adjustment followed the announced recalculation, carried out in June 2022, of the share per Member State of the total available amount, which takes into account the relative economic loss sustained by each due to

¹ For more information on the Belgian RRP, see box 6 of the NBB's [2021 Report](#).

the COVID-19 crisis.¹ According to the GDP figures validated by Eurostat, the upward revision of these figures for the period 2020-2021, compared to those on which the provisional amount was based, was more significant for Belgium than the EU average. Consequently, the amount Belgium can claim was reduced.

Since the European subsidies Belgium will receive are lower than the spending projected in the RRP, the annual accounting of the related income and expenditure is no longer neutral for the budget balance but rather will have a negative effect on it. The NAI follows Eurostat's recommendations for accounting purposes. These stipulate that, each year, expenditure can be neutralised by European subsidies but only to the extent of the ratio between the revised and initial subsidies, which for the period 2021-2026 amounts to just over 76 % for Belgium.

In Wallonia, spending to rebuild infrastructure destroyed by the July 2021 floods also boosted investment. However, compensation to policyholders that filed claims no longer had any effect on the Region's budget balance in 2022, insofar as this expenditure was charged to the previous year, in accordance with national accounting rules.

Structurally, gradual implementation of the government agreement continued to contribute to growth in federal spending. Here, too, this mainly concerned social security. In terms of healthcare, the real growth target rose to 2.5 % last year, thus more in line with the sector's needs, which exceed the growth outlook for economic activity. This revision is on top of a pay rise for healthcare personnel provided for in the social agreement for the non-market sector, booked as a subsidy. Furthermore, the gradual raising of many minimum social benefits, including old age pension, disability, unemployment and social assistance, planned until 2024, continued. A number of structural budgetary efforts were however agreed, including new linear savings in the federal government.

In terms of revenue, the impact of structural measures remained limited. At the federal level, the mini tax shift that entered into effect on 1 April

aims to reduce taxes on labour through a shift to other revenue sources in order to neutralise the net impact, hence the introduction of a new tax on air travel and increased duties on tobacco. In addition, savings were realised through the imposition of stricter eligibility conditions for the partial exemption from the obligation to withhold taxes from wages for night and shift work. On the other hand, labour costs were mainly reduced through reform of the system for the reduction of employee social security contributions for low-paid workers and partial abolition of the special social security contribution. At the regional level, the gradual abolishment of tax benefits formerly granted to owner-occupiers had a favourable effect on revenue.

Rising inflation led to an increase in interest rates but not yet interest expenses

The past year was marked by a significant increase in short- and long-term interest rates. The reference rate on ten-year bonds, which averaged 0.3 % in January 2022, rose by 2.7 % on average in December 2022. In terms of short-term yields, those on six-month Treasury certificates stood at -0.7 % in January 2022 and 1.9 % in December 2022. The public deficit can no longer be serviced free of charge on the financial markets and maturing securities will be refinanced at less favourable rates than in the past. This widening of the Belgian spread, i.e. the gap between the ten-year yield on Belgian government bonds and that on German government bonds which are considered the most solvent and liquid in the euro area, rose from 30 basis points at the end of 2021 to approximately 60 basis points at the end of 2022.

The impact of the increase in interest rates on interest expenses remained limited in 2022. Nearly all public debt is financed at fixed nominal rates. Rising interest rates thus only affect debt that needs to be financed or refinanced. At the federal level, debt issued by the Belgian Debt Agency in 2022 was subject to an average annual rate of 1.7 % (compared to 0.1 % in 2021). By comparison, the OLO to be refinanced in 2022 were still issued at an average rate of close to 3.5 %. Long-term refinancings were thus still favourable in terms of interest expenses. These positive dynamics largely offset the negative effect of higher interest expenses to service the public deficit and short-term debt. Interest expenses on short-term debt, which represents around 10 %

¹ A detailed description of the subsidy calculations is presented in box 1 of the article by Bisciari, P., P. Butzen, W. Gelade, W. Melyn and S. Van Parys, "The EU budget and the Next Generation Recovery Plan: A game changer?", NBB, *Economic Review*.

of outstanding government debt, increased in 2022, since this type of debt is refinanced at least once a year. Overall, the implicit interest rate on public debt fell slightly in 2022, albeit to a lesser extent than in previous years. Refinancing gains are expected to disappear as from 2023, due to the lower yields associated with the instruments to be refinanced and substantially higher market expectations of the trend in long-term rates.

The increase in the ECB’s key interest rates will negatively impact the general government budget balance as from 2023 following the downward trend in the Bank’s earnings. Over the last few years, the Bank acquired significant holdings of Belgian sovereign bonds under the Eurosystem’s asset purchase programmes. The share of Belgian public debt held by the Bank thus now exceeds 20%. The Bank receives interest on these long-term bonds. At the same time, these purchases were financed by bank deposits, on which the Bank pays a deposit rate. The yield on long-term bonds is low and fixed

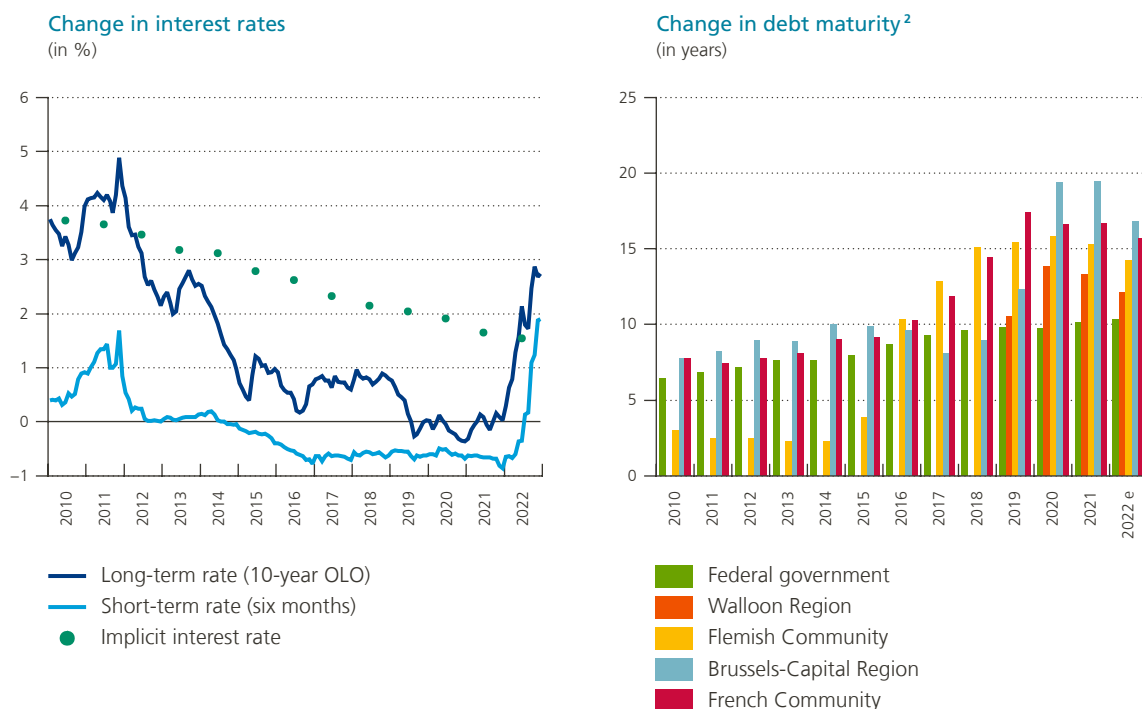
until they mature, whereas the ECB has significantly increased the deposit rate and plans to do so again. This situation explains the negative earnings expected by the Bank in 2022 and, in all likelihood, in subsequent years.

Debt maturity is still very high at the federal level as well as in the Communities and Regions.

At the federal level, the initial maturity of long-term bonds issued in 2022 was 16.5 years. Very long-dated loans were again issued regularly, as in previous years. As a result, the average remaining term-to-maturity of outstanding debt increased further in 2022. By the end of 2022, the average remaining term-to-maturity of federal debt, which stood at around six years at the end of 2010, had risen to ten years and four months, the highest level ever recorded. Rising rates thus did not upset the strategy of government debt managers to maintain debt maturity at a relatively high level. Such staggering of the maturity dates of long-dated debt allows refinancing volumes to be limited every year. As this strategy was gradually

Chart 6.5

Change in interest rates, the implicit interest rate¹ and debt maturity



Sources: Belgian Debt Agency, Communities and Regions and NBB.

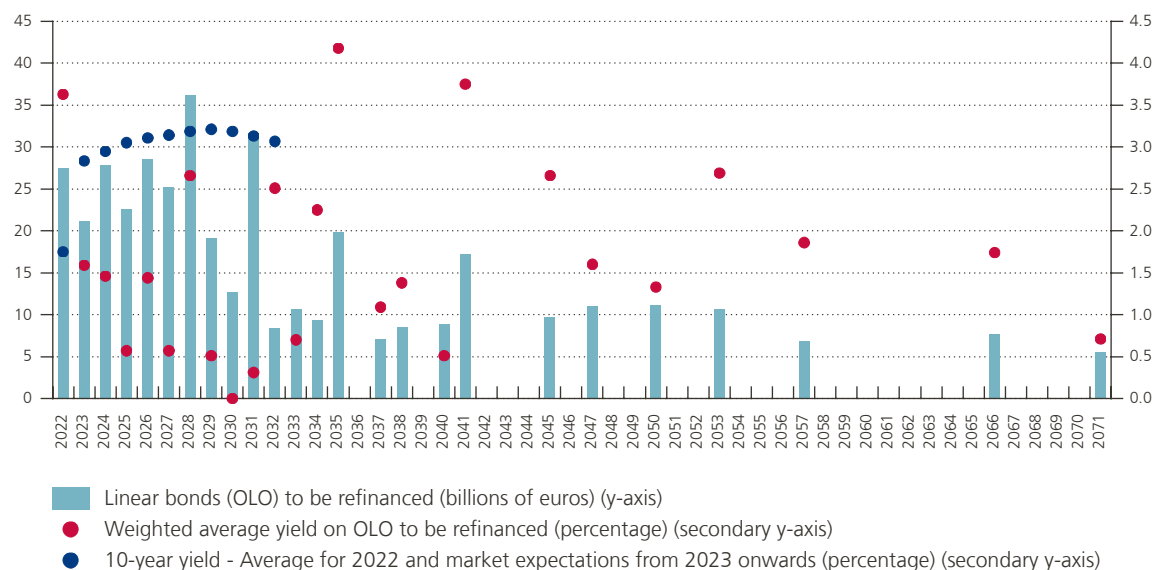
1 Ratio between interest expenses in the current year and indebtedness at the end of the previous year.

2 Direct debt only. Data for the Walloon Region are not available prior to 2019.

Chart 6.6

As from 2023, the refinancing of linear bonds (OLO) should exert upward pressure on the federal government's interest expenses

(maturity of long-term debt (OLO) to be refinanced by the federal government at the end of 2022, associated interest rates and change in yield over 10 years)¹



Sources : Belgian Debt Agency, NAI and NBB.

¹ 2022 average for 10-year OLO, forward rate as from 2023, based on the average interest rate level observed in December 2022.

deepened in recent years, a large portion of the debt is immune to the current hike in interest rates. In the Communities and Regions, an extension of the maturity of direct debt has also been observed in recent years. At the end of 2022, the maturity was 12 years in the Walloon Region, 14 years in Flanders and 17 years in the Brussels-Capital Region and the French Community. Refinancing volumes are also limited.

High inflation temporarily reduced the debt ratio

In 2022, Belgium's debt ratio again shrank, by 4.2 percentage points, to 105 % of GDP. The level remains high, however, at 7.4 percentage points more than before the COVID-19 crisis and 11.3 percentage points higher than the euro area average. From 2023, the Belgian debt ratio should start to rise again, while that of the euro area is expected to follow a downward trajectory.

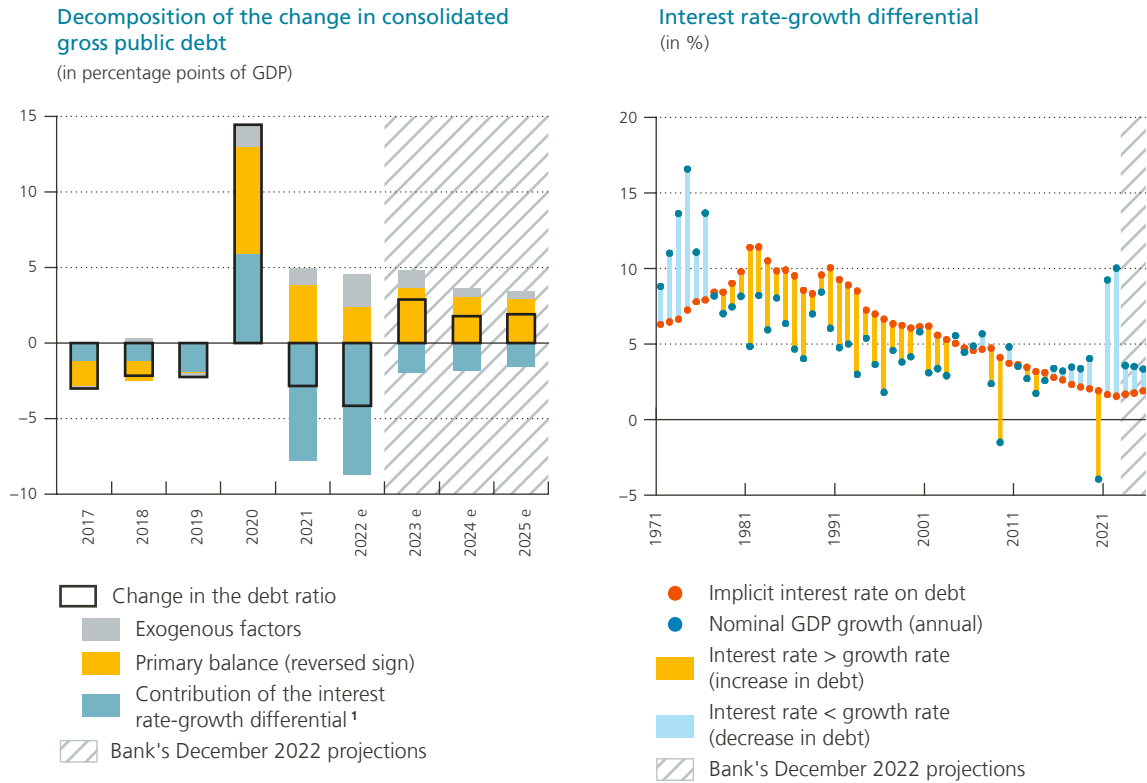
The fall in the debt ratio was due, once again, to exceptionally strong nominal economic growth,

specifically the price component. The surge in domestic inflation, as measured by the GDP deflator, translated into a higher denominator for the debt ratio which, consequently, reduced the debt by 7.1 percentage points of GDP in 2022. Strong nominal GDP growth, coupled with a historically low implicit interest rate on debt, resulted in an extremely favourable contribution by the interest rate-growth differential to debt dynamics. The interest rate-growth differential reached its second highest level since 1971 and, consequently, contributed significantly to reducing the debt ratio. However, the primary deficit of 2.4 % of GDP weighed on the debt ratio.

Exogenous factors increased the debt by 2.2 percentage points of GDP. Exogenous factors include variations in the debt that are not explained by the change in the general government budget balance. For example, in 2022, investments in the portfolios of Ageas and Euroclear by the Federal Holding and Investment Company (SFPI-FPIM) exacerbated the debt. Consequently, these companies, which the government deems strategically important for the economy, became more firmly anchored in

Chart 6.7

The debt ratio continued to fall due to exceptionally strong nominal GDP growth



Sources: NAI and NBB.

¹ Difference between the implicit interest rate on the debt and nominal GDP growth, multiplied by the debt ratio at the end of the previous year.

Belgium. Another exogenous debt-increasing factor concerns loans granted by the Flemish Community in the framework of its social housing policy. Moreover, a series of accounting adjustments, including the payment of compensation to flood victims in the Walloon Region, further increased the debt. The total estimated flood-related compensation was included in the budget balance in 2021 (the year in which the damage occurred) in accordance with European accounting rules (ESA). However, at the end of that year, only a portion of the compensation had actually been paid. The difference did not need to be borrowed that year. In 2022, a larger portion of the compensation was paid out, which led to an increase in the Walloon Region's debt. More specifically, this is debt owed by the Walloon Region to the insurers that pre-financed the compensation paid to insured parties that sustained flood damage. A similar accounting principle applies to defence investments, for

which delivery does not coincide with payment. Thus, the prepayment made by the Ministry of Defence in 2022 increased the debt, whereas the investment expenditure will only be included in the budget balance when the investment is actually delivered. Likewise, the possibility to defer the payment of taxes withheld from earned income and assessed taxes in response to the energy crisis is likely to temporarily have driven up the debt in 2022. Nonetheless, this did not influence the budget balance since, from an accounting perspective, deferred payments of taxes withheld from earned income and assessed taxes are included in government revenue in the year in which the payment is assessed. The non-receipt of subsidies under the European Commission's RRF also led to a temporary upward correction of the debt, although, in accordance with ESA rules, the revenue was included in the general government balance for expenses incurred in 2022. Another accounting

correction concerned the recording of issue premiums for debt securities. The Belgian Debt Agency issued multiple securities at values below par. In 2022, the year of issuance, the premiums were negative and temporarily increased the debt.

The fall in the debt ratio observed in 2021 and 2022 is not expected to last: from 2023, the ratio is expected to start to rise again, according

to the Bank's December 2022 projections, under the influence of stubbornly high primary deficits. While the interest rate-growth differential is expected to remain favourable, it will most likely nevertheless decrease. Nominal GDP growth should begin to return to normal and, on the other hand, the implicit interest rate on public debt should rise slightly as a result of the rise in market rates caused by the normalisation of monetary policy.

6.3 Belgian public finances are still subject to substantial structural challenges

The risks to the sustainability of public finances are high in the medium to long term.

Belgium's high debt ratio and, more importantly, its upward trajectory in the coming years, assuming unchanged policy, are concerning. Heavy debt reduces the margin available to the government to cushion shocks and deal with future challenges (such as population ageing and the energy transition) and increases the risk of losing control of the debt dynamics. The interest rate-growth differential can deteriorate quickly and considerably when there is a sudden fall in GDP growth (as was the case during the pandemic) or an unexpected rise in interest rates fuelled by a tightening of monetary policy or an increase in risk premiums (as at the time of the financial crisis). If the implicit interest rate exceeds nominal growth, the debt ratio may start down an explosive trajectory. The higher the debt, the greater the adverse effect of the interest rate-growth differential

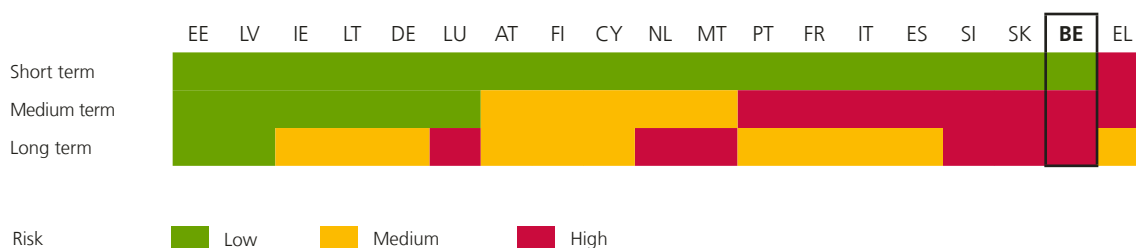
and the greater the efforts (in the form of primary surpluses) the government must make to stabilise the debt ratio. While the interest rate-growth differential is currently expected to remain favourable, there is no basis for treating this as free reign to run high deficits. Given the current inflationary climate, in which disruptions have led to a mismatch between supply and demand, an expansionist fiscal policy is inappropriate and impedes monetary policy efforts to get inflation under control.

The risks to the sustainability of Belgian public finances are deemed substantial. A high and climbing debt ratio indicates risks to the sustainability of public debt. The European Commission also stressed this in its detailed sustainability analysis. The analysis takes into account a large number of relevant and forward-looking indicators, synthesised into three measures reflecting the risks associated with the sustainability of public debt in the short, medium and long term, respectively.

Chart 6.8

The future sustainability of Belgian debt is under pressure

Risks to the sustainability of Belgian public debt according to the European Commission



Source: EC (based on spring 2022 projections).

The findings indicate that Belgium's public finances do not pose significant short-term risks, although the substantial deficits raise the government's annual financing needs. However, they point to significant medium- and long-term risks. According to the simulations, based on assumptions regarding the future development of certain key macroeconomic and budgetary variables, the debt ratio will continue to climb over the next ten years. In particular, rising costs due to population ageing are expected to contribute to this, although the interest rate-growth differential should remain favourable. The fiscal effort required to stabilise the debt is substantial from a historical perspective and amongst the greatest in the euro area.

In November, the European Commission proposed using its analysis of the sustainability of public finances to anchor the new European fiscal framework. In accordance with these proposals, Belgium, like other countries exhibiting a high level of sustainability risk, would have to meet more stringent conditions than countries outside this group. More precisely, after a transition period, at unchanged policy the debt ratio in countries that present high sustainability risk should demonstrate uninterrupted decline over a ten-year period, while

the budget deficit should remain below 3% of GDP for the same period. The fact that the focus is on the medium term is certainly a positive development, but, unlike the current framework, the new proposal does not set a specific goal for the budget balance, aside from the 3% of GDP deficit limit. Although one of the main aims of the proposed reforms is to simplify the framework, the use of the EC's complex sustainability analysis does not appear to align with this objective. The Commission's proposals still contain many ambiguities that require clarification. Once these points have been cleared up, the new fiscal framework will have to be submitted to the Member States for approval.

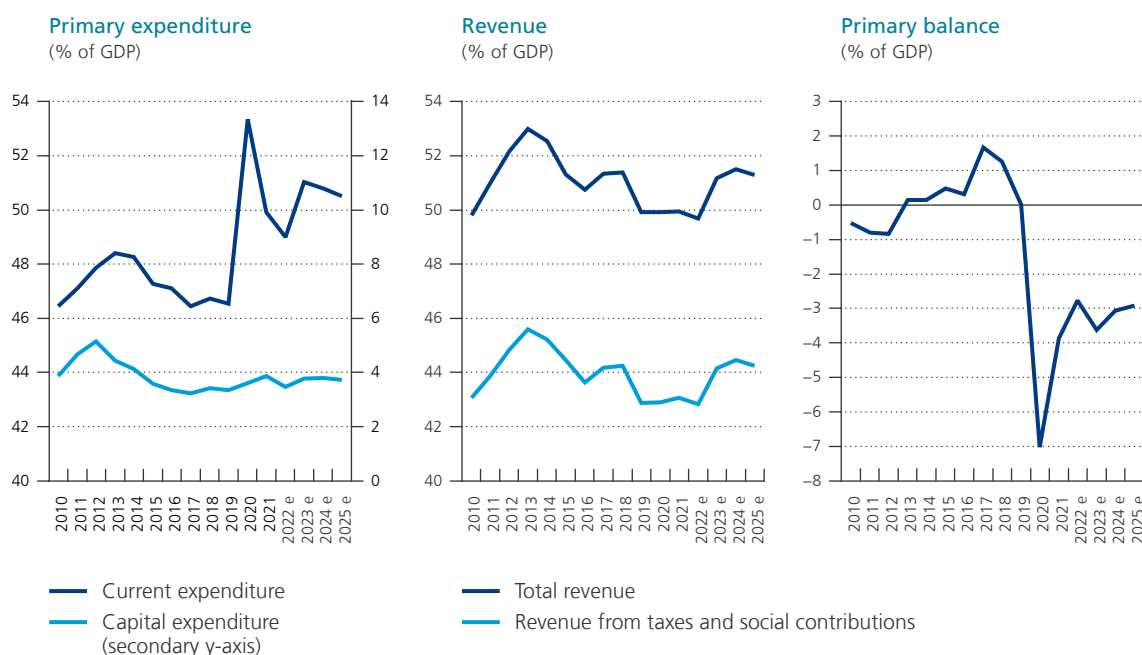
The widening of the primary budget deficit is due to the rise in primary expenditure

According to the Bank's December projections, the general government budget deficit should reach 4.9% of GDP in 2025. This deficit can be considered structural since, during this period, economic activity is expected to reach potential output and the budget balance to no longer be burdened by the temporary crisis measures.



Chart 6.9

The primary budget deficit remains high due to a sharp increase in current expenditure¹



Sources: NAI and NBB.

¹ The figures relating to the period 2022-2025 are taken from the Bank's December 2022 macroeconomic projections, which cover the period until 2025.

The clear structural upturn in primary expenditure since 2019 is the source of the high public deficit expected in 2025. Between 2019, the year before the coronavirus pandemic, and 2025, the primary spending ratio is expected to increase by 4.3 percentage points of GDP. This sharp rise can be fully explained by the growth in current expenditure. In fact, capital expenditure, which contributes to boosting potential output, has grown only marginally, while it is precisely this type of expenditure that should be increased.

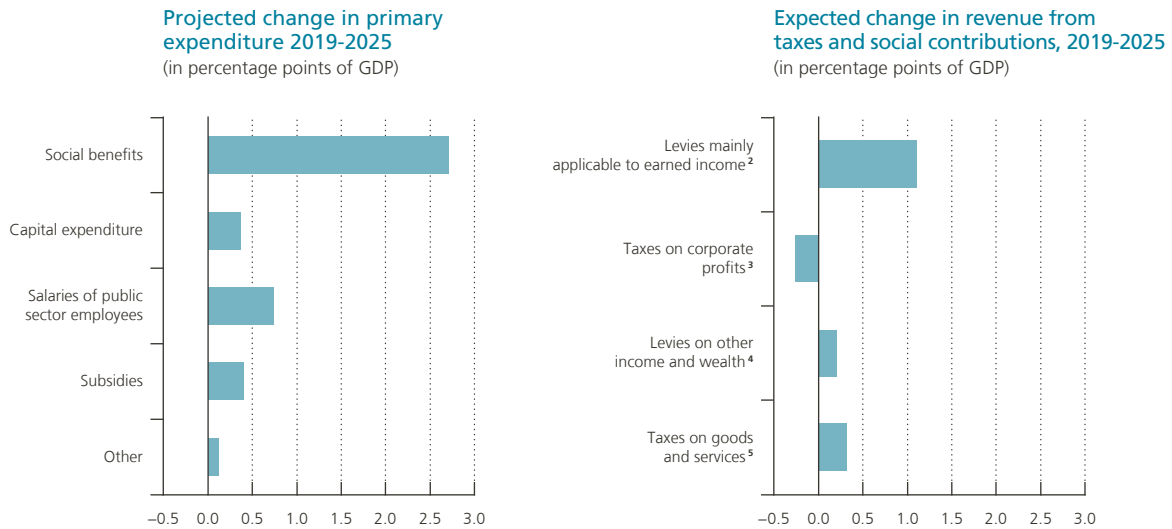
Growth in current expenditure is being driven in large part by growth in social benefits. In practice, social benefits are projected to rise by 2.7 percentage points of GDP by 2025, compared to their 2019 level, primarily due to the growing costs associated with population ageing. However, the upward trend in pension spending should temporarily slow in 2025 when the statutory retirement age is raised from 65 to 66. Furthermore, social benefits are being driven structurally upwards by the gradual increase in minimum social benefits (approved

in 2020). In addition to social benefits, both business subsidies and the wages of government employees will rise again by 2025. Higher salaries for government employees can be explained by automatic wage indexation, based on the change in the health index, which exceeds that of the GDP deflator. The rise in business subsidies is largely due to higher wage subsidies in the healthcare sector from 2019 to 2022.

Government income is projected to grow slightly until 2025 due to higher revenue from taxes on labour. By 2025, revenue from taxes and social contributions is expected to rise by 1.4 percentage points of GDP compared to 2019. This rebound can largely be explained by increased revenue from taxes on labour, i.e. personal income tax and social security contributions. Such taxes benefit from automatic wage indexation in accordance with the sharply rising health index. By contrast, the change in the GDP deflator is expected to be more subdued. Consequently, the share of labour in GDP should increase, which will translate into greater revenue from taxes on labour.

Chart 6.10

The strong increase in social benefits is a key factor explaining primary expenditure growth¹



Sources: NAI and NBB.

- 1 The figures relating to the period 2022-2025 are taken from the Bank's December 2022 macroeconomic projections, which cover the period until 2025.
- 2 These include personal income tax and social security contributions. Personal income tax mainly consists of taxes withheld from earned income (payroll tax), advance tax payments, tax assessments and surcharges on personal income tax. Social security contributions include the special social security contribution and contributions of those not in work.
- 3 Mainly advance tax payments, tax assessments and withholding tax.
- 4 Mainly withholding tax payable by individuals, property tax (including proceeds from surcharges), inheritance tax and registration duties.
- 5 The main revenue categories are VAT and excise duties.

On the other hand, the share represented by corporate profits, which are subject to a lower tax rate, should decrease.

to increase by 2.8 percentage points of GDP between 2022 and 2059 before dropping slightly until 2070.

Rising pension expenditure puts public finances at serious risk in the coming years and decades

Population ageing is the greatest structural challenge to the medium- and long-term sustainability of public finances. According to the Study Committee on Ageing's (SCA) latest report, the increase in social benefits compared to 2022 will peak at 4.1 percentage points of GDP in 2049, before falling slightly until 2070. The most substantial increase will be over the next 15 years, with annual average growth of 0.2 percentage point of GDP. Pensions are the main category of social benefits. This expenditure has already increased sharply in recent years and will continue to rise considerably in the decades ahead as the population ages. The SCA projects that spending on pensions will continue

In the medium and long term, pension spending is set to grow more substantially in Belgium than in most other euro area countries.

The European Commission's latest Ageing Report, published in May 2021, indicated that the increase in public pension spending over the period 2019-2070 would be significantly higher in Belgium than in most other euro area countries. The increase is expected to amount to 3 percentage points of GDP in Belgium.¹ This rate is far higher than the euro area average of just 0.1 percentage point of GDP. These costs are even expected to decline in all other

¹ The pension spending figures in the Ageing Report are not directly comparable to those of the SCA, but the methodology applied in this report can nevertheless be used to compare EU countries. The 2021 Ageing Report covers government measures taken until September 2020. For Belgium, this means that the impact of a range of measures, including the increase in minimum pensions, adopted after this date, which will increase pension spending, has not been taken into account.

euro area countries with high debt. Furthermore, the temporary profile of pension costs reveals significant disparities. Unlike in these other countries, costs in Belgium should continue to rise during most of the projection period, after which they are expected to stabilise. Consequently, Belgium's pension costs will probably be the highest in this group of countries at the end of the period, while they were amongst the lowest in 2019.

The steeper rise in pension costs expected in Belgium is due not so much to demographic factors as to other factors that can generally be influenced by policy. Based solely on the increase in the old-age dependency ratio, i.e. the ratio between the number of people aged 65 and over and the number of people aged 20 to 64, pension costs in Belgium should climb by 7.2 percentage points of GDP over the period 2019-2070. With the exception of France, the contribution of this demographic factor is greater in other countries with high debt. In the euro area, the expected average increase is 7 percentage points of GDP. It should be noted that growth in pension spending arising from demographic factors can be mitigated and even reversed by changes in other factors, which can

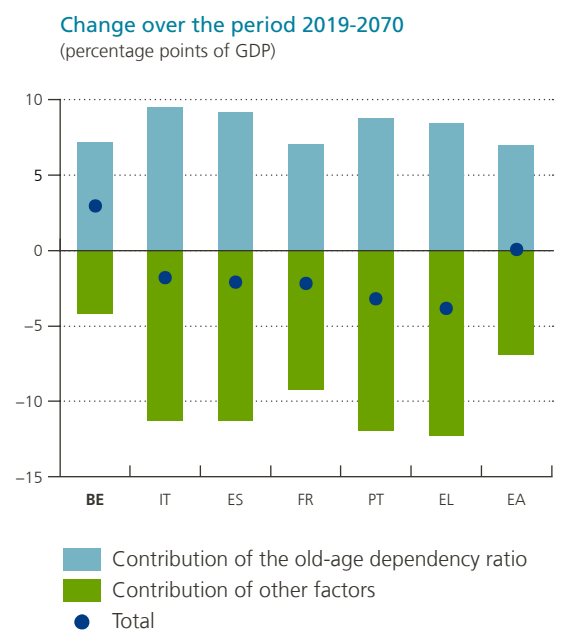
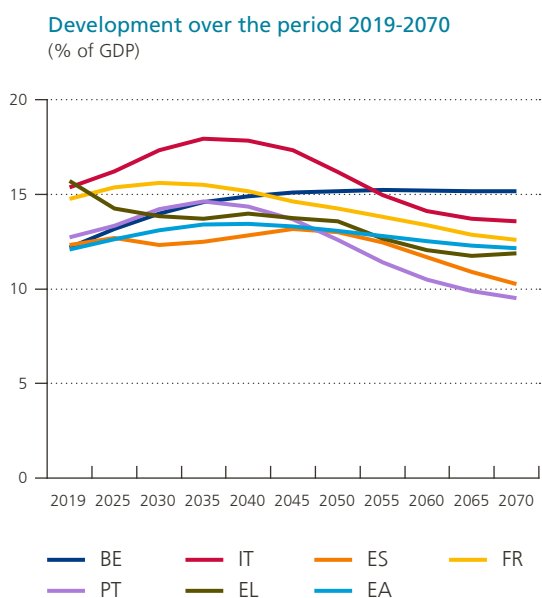
generally be influenced by policy. In particular, these include raising the statutory or effective retirement age, increasing the employment rate and reducing the generosity of the pension system. In Belgium, over the period 2019-2070, these other factors are expected to lead to a much less significant reduction in pension costs than in other countries with high debt and in the euro area on average.

In July, the federal government reached an agreement on the continuation of pension and (end of) career reform. This is one of the reforms incorporated into the national recovery plan. Three measures were announced. The first pertains to the introduction of a pension bonus for employees, self-employed workers and civil servants who continue to work after they have reached retirement age (early or not). The second measure reforms access to the minimum pension under all three pillars, with a minimum number of days worked taken into account. Finally, a measure was approved on the revaluation of part-time work for the purpose of calculating employee pensions.

According to simulations by the Knowledge Centre on Pensions, it appears that the

Chart 6.11

Public pension spending: development and factors explaining the variation



Source: EC.



pension reform will further increase long-term population ageing costs. This is mainly due to the introduction of the pension bonus, the estimated cost of which by 2070 is expected to be in the range of 0.1 to 0.3 percentage point of GDP. Estimates show that the budgetary impact of the other two measures will most likely be limited and that they should have only a slight impact on the budgetary costs of ageing. The reform does not help improve the financial sustainability of the pension system, which is a prerequisite for obtaining additional subsidies under the RRF.

Substantial consolidation efforts at all levels of government are required to reduce the debt ratio

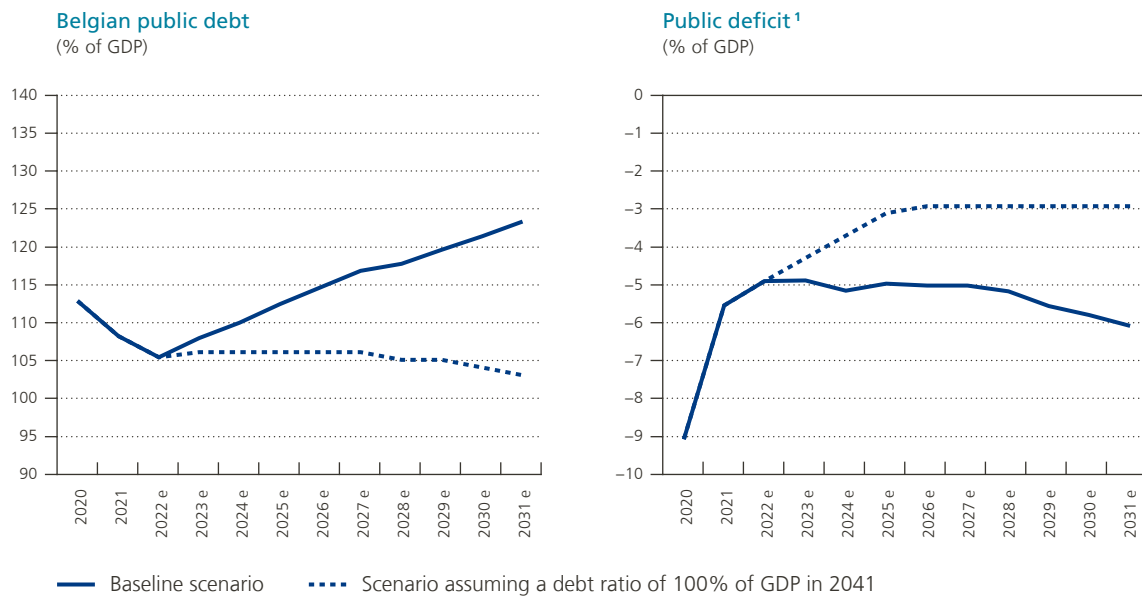
At unchanged policy, the Belgian debt ratio will gradually continue to rise. From a sustainability perspective, fiscal consolidation

is required. Under a baseline scenario assuming no policy change and using the forecasts of the Federal Planning Bureau for 2022-2027, Belgian public debt is expected to exceed 120 % of GDP in the coming decade.¹ Fiscal consolidation is needed to reverse the debt dynamics. A simulation that sees the Belgian debt ratio reduced to 100 % of GDP over 20 years illustrates that even to achieve this minimum objective, substantial efforts will be needed. More specifically, the Belgian government deficit must be brought to just under 3 % of GDP as quickly as possible. The efforts required will be even greater if economic growth and the interest rate develop less favourably than predicted in the assumptions used in the simulation. In order to build margins which can be used to absorb such

¹ For more information on the simulation, see Cornille, D., M. Deroose, H. Godefroid, W. Melyn, P. Stinglhamber and S. Van Parys (2022), "How sustainable are the finances of the federal government, the regions and the communities in Belgium?" NBB, *Economic Review*.

Chart 6.12

At unchanged policy, Belgian public debt will continue to rise



Sources: FPB, NAI and NBB.

1 The baseline scenario is based on the June 2022 projections of the Federal Planning Bureau so as to be consistent with the regional projections used later in the analysis. According to the Bank's latest projections, the public deficit for 2022 should be narrower than the Planning Bureau's June estimate but, in subsequent years, should approach 5% of GDP. This means that, in line with the alternative scenario, an additional annual fiscal effort of 0.6 percentage point of GDP will be required over the period 2023-2026 to push the public deficit to below 3% of GDP, i.e. the level at which the debt will reach 100% of GDP in 2041. An effort of 0.6 percentage point is consistent with the guidelines in the "preventive arm" of the Stability and Growth Pact.

shocks or interest rate increases, the national deficit needs to be brought to well below the reference value of 3% of GDP in the medium term. A return to the debt ceiling of 60% of GDP as provided in the current European fiscal framework will require even more substantial fiscal efforts. Reducing the debt to 100% of GDP should therefore be considered a minimum scenario to contain the sustainability risks.

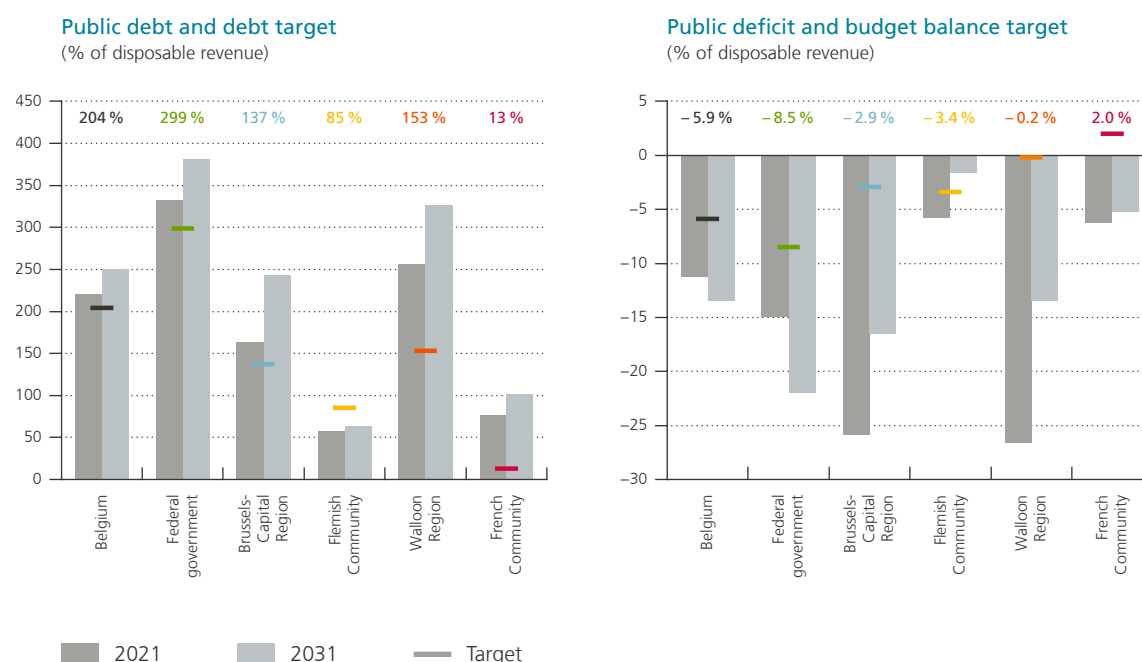
Although the lion's share of public debt is concentrated at the level of the federal government, the increase in the debt ratio at regional level also entails risks. In order to be able to compare the debt ratios of different government entities, they are expressed as a percentage of disposable government revenue rather than GDP. Disposable revenue is defined as the total revenue of an entity less any transfers to other entities. Consequently, it is a good indicator of the resources available per entity. The baseline scenario of no policy change,

which again relies mainly on the projections of the Federal Planning Bureau, shows that the debt ratios of nearly all government entities will continue to rise over the next decade. This increase will be particularly pronounced for entities with an already high debt burden (the federal government, the Walloon Region and the Brussels-Capital Region). Only the debt ratio of the Flemish Community is expected to shrink after 2027, as the budget should balance based on the medium-term projections of the Federal Planning Bureau.

Reversing the upward dynamics of public debt requires action at all levels of government. In order to lower Belgian public debt to 100% of GDP, for example, efforts must be spread across all levels of government. This will require defining an allocation method for the national debt ceiling. In the simulation, the selected key was the share of own revenue in total national revenue. Own revenue is defined as total revenue less any transfers received from

Chart 6.13

Substantial efforts by almost all entities will be required to reduce Belgian public debt to 100 % of GDP by 2041



Sources: FPB and NBB.

The budget balance target indicates the budget balance required in 2031 to bring the debt ratio back to the debt target by 2041, as indicated in the left-hand panel.

other government entities.¹ This allocation key can be justified by the basic principal that governments should only be allowed to incur debt to the extent they have their own, directly manageable revenue. Consequently, entities that depend exclusively on income from transfers should not, over a long period, spend more than they receive in transfers. Based on this allocation key, a national debt target for Belgium of 100 % of GDP, or 204 % of disposable revenue, would translate into a debt ceiling of 299 % of disposable revenue for the federal government, 85 % for the Flemish Community, 153 % for the Walloon Region, 137 % for the Brussels-Capital Region and 13 % for the French Community. According to the baseline scenario of no policy change, the debt ratios of nearly all entities currently exceed these debt ceilings and will continue to do so in the future.

All levels of government will have to make considerable consolidation efforts. In order to meet their respective debt targets by 2041, the federal government, the Walloon Region and the Brussels-Capital Region will have to reduce their projected deficits for 2031 (expressed in relation to their disposable revenue) by approximately 13 percentage points and the French Community by 7 percentage points. According to the simulation, the Flemish Community should not need to make additional efforts to remain below its debt target, provided it executes its policy plans and balances its budget in the medium term. If every entity makes the efforts required to respect its own debt limit by 2041, the national deficit should fall to just below 6 % of disposable revenue or 3 % of GDP. To achieve this goal, clear and binding agreements on budgetary targets for the various government entities are essential.

¹ More specifically, own revenue is defined as total government revenue less transfers received from other government entities, imputed social security contributions and production for own final use.





7. The Belgian economy must create sustainable prosperity

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7.1 Effective use of resources for wealth creation

Wealth and value creation in an economy depends on which resources are used and how efficiently. The main resources are labour, physical capital (machines, etc.), intangible capital (data, patents, etc.), energy and raw materials. The development of these resources determines the economy's growth potential.

By international standards, Belgium's position is primarily unfavourable in terms of the employment and energy factors. The employment rate, which represents the proportion of the working-age population effectively in work, is well below the average of the country's three neighbours and that of the three Nordic EU countries (Denmark, Finland and Sweden). Furthermore, the Belgian economy uses much more energy to generate the same quantity of value, due in part to its relative specialisation in energy-intensive industries. This higher energy intensity not only places a greater environmental burden on the planet but also exposes more vulnerability during periods of high energy prices since most energy is imported. In addition to energy, the economy imports other raw materials and inputs making it highly dependent on foreign suppliers and other countries. In the event of trade conflicts or geopolitical tensions, the Belgian production system is therefore at risk of coming under intense pressure.

In recent years, the ever-growing trend towards global interdependence has come to a standstill. For decades, the global economic system was characterised by deepening international trade relations combined with stronger value chains that were increasingly specialised throughout. As explained in chapter 1 (box 1), this dynamic ended as a result of, amongst other factors, tensions between the main protagonists on the world trade markets (the United States and China). The COVID-19 pandemic

exacerbated this change due to lockdowns and travel and transport restrictions that disrupted global flows. The energy crisis caused by Russia's invasion of Ukraine also highlights that strong specialisation brings with it great vulnerability. In this context, developments such as insourcing, which brings certain activities – previously outsourced to other countries – back in-house, and nearshoring, intended to shift activities from far-away to nearby countries, have emerged. It goes without saying that such changes in value chains are not inconsequential for Belgium whose status as a small economy at the heart of the EU has led it to capitalise on integration into global flows, which have in the past been a major source of growth, jobs, capital formation and productivity.

Available resources are used very efficiently. For many decades, the Belgian economy has been highly productive. Consequently, Belgium manages to attain a high level of prosperity despite fairly limited use of resources. In 2020, the country was 25th in the United Nations' world rankings for GDP per capita.

However, productivity change is on a downward trend. Productivity growth is getting weaker and weaker. While this trend is affecting all developed countries, it has been systematically more pronounced in Belgium than elsewhere in the EU in recent years.

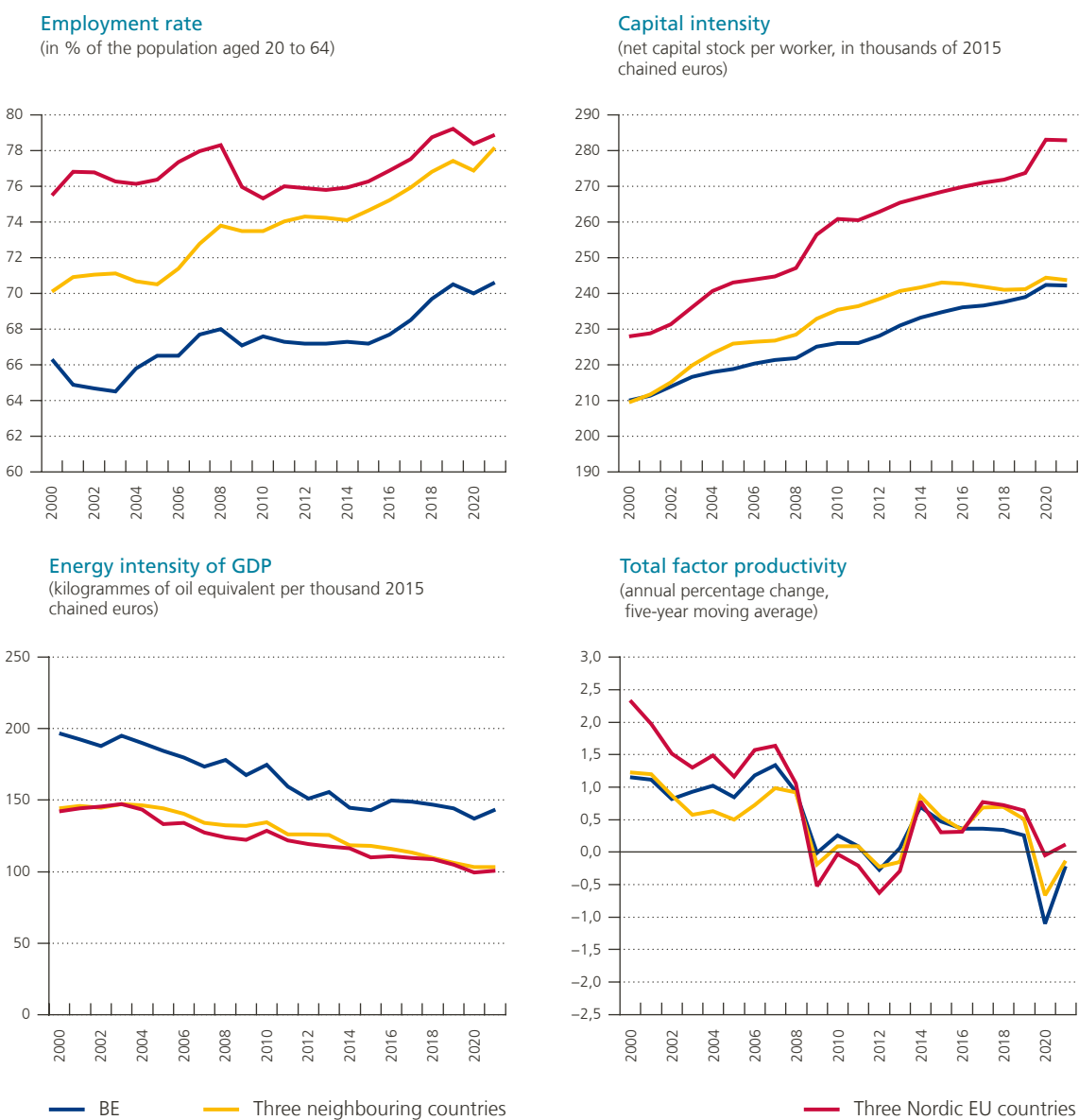
Generally, lower resource utilisation and limited productivity growth make the basis for wealth creation in Belgium narrower than elsewhere in Europe. In order to maintain wealth creation at the same level as in the past, the various factors involved will need to catch up significantly. This will require more people in work, more widespread technological change, reduced energy dependence and a boost in productivity growth. In addition, the urgency of the

climate challenge requires a drastic reduction in fossil fuel consumption. Against this backdrop, the rest of this chapter focuses on labour and energy inputs.

Box 6 refers briefly to several factors likely to influence the competitiveness and attractiveness of the Belgian economy.

Chart 7.1

The wealth creation basis is narrower in Belgium than elsewhere in Europe¹



Sources: EC and Eurostat.

¹ Unweighted averages of the three neighbouring countries and the three Nordic EU countries.

Attractiveness of the Belgian economy

Belgium's attractiveness is high and climbing, but there is still room for improvement in some areas. While the current situation of rising production costs is negatively impacting Belgium's competitiveness (see chapter 3), according to the International Institute for Management Development (IMD), its overall attractiveness has grown over the past four years. Belgium was ranked 21st out of the 63 countries assessed in 2022 (compared with 26th in 2018). This improvement was due to stronger economic performance. Businesses and government also stepped up their efficiency, albeit to a lesser extent, while the indicator on infrastructure quality remained steady. However, in the global ranking, Belgium is still below its neighbours (except France) and the Nordic EU countries. Improved attractiveness is a decisive factor in the investment decisions of Belgian and foreign firms and the economy's future wealth creation capacity.

Belgium's ranking based on competitiveness indicators compared with other countries

(top three countries per indicator and ranking of the three neighbouring countries and the three Nordic EU countries, 2022; 2018 ranking in brackets)

Global indicator		Economic performance		Government efficiency		Business efficiency		Infrastructure	
1 (6)	Denmark	1 (4)	Luxembourg	1 (2)	Switzerland	1 (3)	Denmark	1 (2)	Switzerland
2 (5)	Switzerland	2 (7)	Singapore	2 (1)	Hong-Kong	2 (4)	Sweden	2 (3)	Denmark
3 (3)	Singapore	3 (1)	United States	3 (4)	United Arab Emirates	3 (6)	The Netherlands	3 (5)	Sweden
4 (9)	Sweden	5 (12)	Germany	6 (6)	Denmark	5 (16)	Finland	4 (6)	Finland
6 (4)	The Netherlands	13 (26)	Denmark	9 (11)	Sweden	19 (23) Belgium		5 (9)	The Netherlands
8 (16)	Finland	14 (44) Belgium		10 (15)	Finland	21 (19)	Germany	9 (11)	Germany
15 (15)	Germany	17 (30)	France	12 (8)	The Netherlands	35 (31)	France	15 (12)	France
21 (26) Belgium		19 (6)	The Netherlands	21 (19)	Germany			20 (20) Belgium	
28 (28)	France	21 (24)	Sweden	33 (35) Belgium					
		44 (43)	Finland	40 (39)	France				

Source: IMD.

Note: The economic performance indicator takes account of the domestic economy, international trade, international investment, employment and prices. The government efficiency indicator encompasses public finances, tax policy, institutional framework, business legislation and the societal framework. Business efficiency is measured by productivity and efficiency, the labour market, finance, management practices and attitudes and values. The quality of infrastructure is based on an assessment of basic, technological and scientific infrastructure as well as health, environment and education.



Skills acquisition needs to be more in line with what companies need. In terms of human capital, the share of highly educated people aged 25 to 34 in job-creating fields (science, technology, engineering and mathematics or STEM), which reached 21 % in 2021, is still too low to meet demand. According to IMD data, Belgium is ranked 57th out of 60 countries for this indicator. Yet there is a positive correlation between the proportion of highly educated workers employed in STEM fields by a company and its productivity.¹ Beyond higher education, ensuring the widespread acquisition of digital and technological skills will be a challenge going forward. In particular, skills in green technologies will become increasingly crucial to the success of the climate transition.

The quality of the education system is another important factor for consideration. In Belgium, spending on education amounted to 5.6 % of GDP in 2019, which is higher than the OECD average (4.9 %). The student-to-teacher ratio in secondary education is one of the lowest in OECD countries. These indicators probably explain why the country's PISA scores are higher than the OECD average. However, there are wide disparities between Communities, with the Wallonia-Brussels Federation averaging scores well below those of the Flemish Community. It is clear that student performance seems to be declining and that the school system is relatively unequal in Belgium. By way of illustration, the differences in maths results between the top 10 % and the bottom 10 % of students are some of the largest in the countries of comparison. It is also more common for students to repeat a year, especially those from less favourable socio-economic backgrounds. Beyond initial education, the lack of lifelong learning for workers and low mobility on the labour market are other major obstacles to competitiveness (see section 7.2).

One of Belgium's strengths is still its level of innovation. According to the EC's Innovation Scoreboard,² Belgium is among the leaders in this area, along with Sweden, Finland, Denmark and the Netherlands. Furthermore, Belgium's innovation performance continues to improve over time. It has one of the highest rates of expenditure on research and development in the EU at 3.4 % of GDP in 2020, a figure that has been increasing steadily for around fifteen years (it was 1.8 % in 2005). Despite this, there are some weaknesses and areas for improvement, not least the roll-out of climate technologies and exports of high-tech goods. Recent analysis³ has shown that while innovation is highly developed in Belgium, its diffusion remains problematic. This is because a limited number of companies account for a high concentration of innovation efforts.

Spending on innovation, education and healthcare is one of Belgium's strong points, but the country still has significant room for improvement in terms of the quality of its basic infrastructure (transport, urban planning and energy). According to the IMD's infrastructure sub-indicator rankings, Belgium is 30th for water supply infrastructure, 35th for the efficiency of energy infrastructure and 43rd for air transport. Investment in telecommunications and cyber security is also too low (43rd and 35th, respectively).

1 Bijnens, G. and E. Dhyne (2021), "The return on human (STEM) capital in Belgium", NBB, *Working Paper 401*.

2 EC (2022), *European Innovation Scoreboard 2022*.

3 De Mulder, J. and E. Dhyne (2022), "With a little help from my friends: patents, technological diffusion and firm productivity", NBB, *Economic Review*.



Finally, entrepreneurship is still lagging behind in Belgium, although the situation is improving.

According to Eurostat data for 2020 (the last available year), the business creation rate, 6.9 % of total active companies, is not only lower than the European average (8.9 %) but also below that of the comparison countries (except for Sweden). In contrast, the business failure rate is relatively low at 3.2 %, compared with 7.2 % on average in the EU. The lack of entrepreneurship incentives is partly due to current legislation and regulations. According to the World Bank's "Ease of doing business" indicator, updated in 2020, Belgium is 46th, far behind Denmark (4th), Sweden (10th), Finland (20th) and Germany (22nd). Although lower in the rankings, France (33rd) and the Netherlands (42nd) are nevertheless more conducive to entrepreneurship than Belgium.

7.2 Boosting the labour factor sustainably and significantly

One of the determining factors in economic growth is the size of the workforce employed to produce goods and services. Belgium has significant room for improvement here. The workforce can be measured by either the number of workers or hours worked, and its growth requires that companies' labour demand match the labour supply of the population. Belgium faces both a low activity rate and a high job vacancy rate.

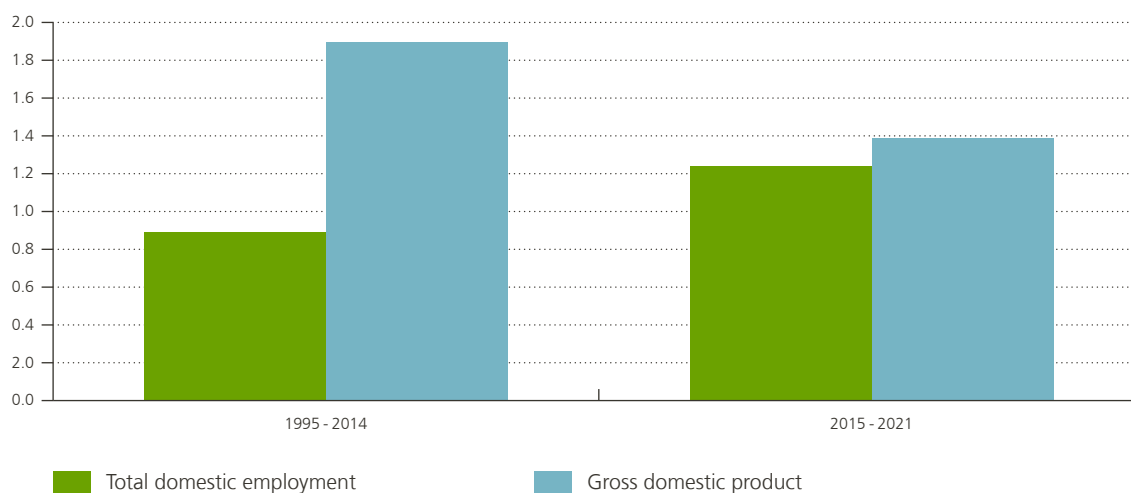
Job creation has been more dynamic since 2015 than in the previous 20 years, bringing unemployment down to a historically low level. Between 2015 and 2021, domestic employment grew by an average

of 1.2% year on year, which is a net increase of 412 000 jobs. By way of comparison, the average annual growth in domestic employment was 0.9% between 1995 and 2014. This acceleration was the result of stronger job creation in construction and fewer job losses in industry. Employment growth in services was relatively stable between these two periods and continued to exceed the economy's average, but this was coupled with a fall in value added growth, especially in non-market services. The government has helped boost job creation in the private sector, in particular by encouraging low-skilled workers to enter the job market, such as under the service voucher scheme and in security services,

Chart 7.2

Employment grew strongly

(average annual growth rate, in %)



Source: NBB.

administrative support and call centres. The result is a more polarised labour market, in which the share of medium-skilled employment has fallen over time.¹

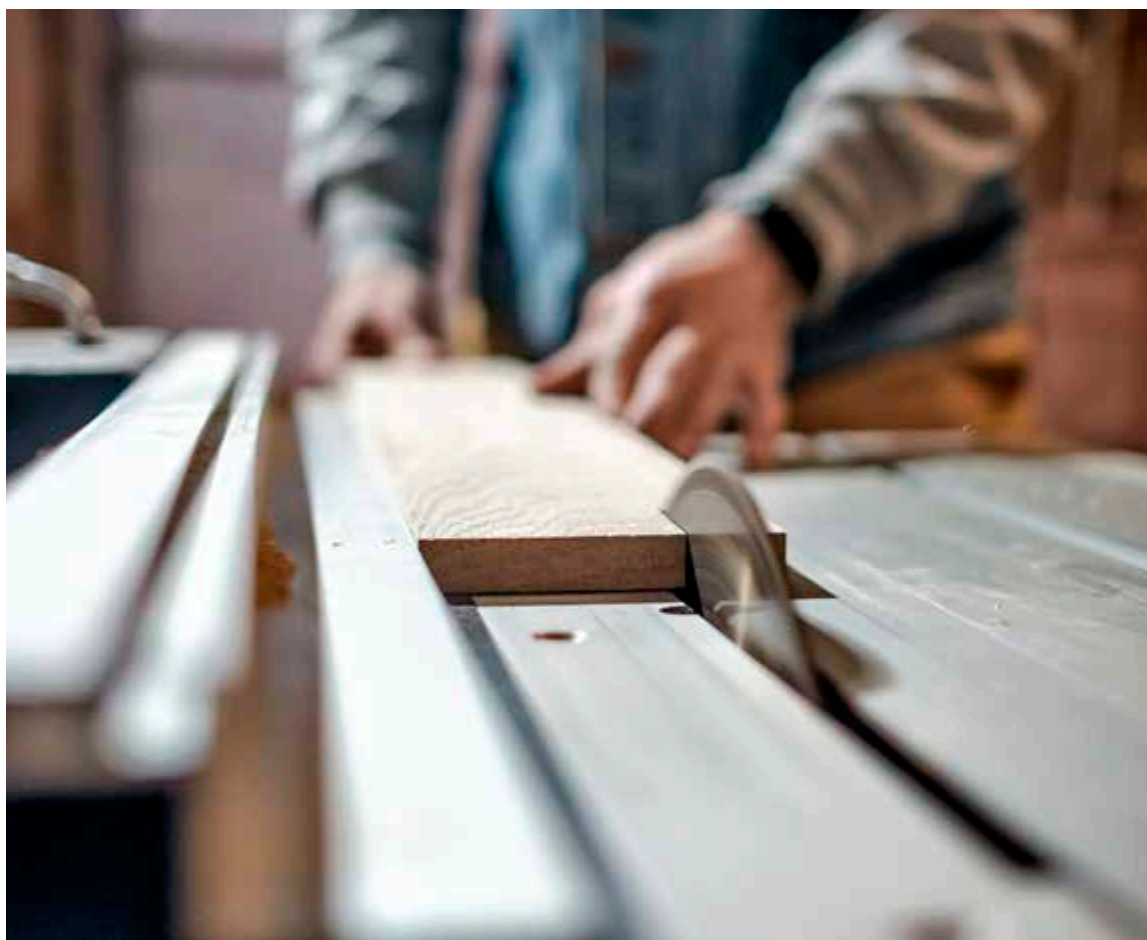
The lack of skilled labour influences companies' long-term decisions

The labour shortage affects many sectors and many occupations with varying skill levels. The country's regional public employment services closely analyse bottleneck vacancies, i.e. those that are harder to fill and require a lengthier recruitment process. According to Actiris, Forem and the VDAB, there are various sources of tension, including the economic context, a lack of skills, insufficient numbers of applicants and difficult working conditions. Most bottleneck vacancies are relatively similar between the Regions, but the regional lists feature a wide range

of sectors and required skills. They include jobs in construction (formworkers, roofers and carpenters), the hospitality and catering industry (chefs, butchers and waiters), metalworking (fitters and turners, tool makers and welders), medicine (general practitioners and medical imaging technologists) and even business services (accountants and IT developers).

Like the number of vacancies in general, the number of bottleneck vacancies has grown in recent years. In the third quarter of 2022, Belgium recorded 211 000 vacant jobs, more than double the figure of eight years earlier. Admittedly, the post-pandemic recovery boosted demand for labour, particularly in hospitality and retail trade, but many of the bottleneck vacancies on the regional lists were already there in 2019. The job vacancy rate (i.e. the ratio of the number of vacancies to the total number of filled and vacant positions) has risen sharply since 2020, reaching 5% in the second half of 2022, meaning Belgium is above the European average (3%). Recent data seem to indicate a reversal from mid-2022.

¹ De Sloover, F. and Y. Saks (2018), "Is job polarisation accompanied by wage polarisation?", NBB, *Economic Review*.



Two-thirds of vacancies are in Flanders. In the third quarter of 2022, the job vacancy rate stood at 5.5% in Flanders compared to 4.1% in Brussels and 3.9% in Wallonia. There are more vacancies in industry and market services in Flanders. In Wallonia and Brussels, vacancies are more concentrated in the public sector which partly reflects the composition of employment and implies less dynamism in economic boom years.

In addition to their short-term effect on growth, recruitment difficulties potentially have a long-term impact on the volume or direction of business investment. According to a European Investment Bank survey conducted in 2021, 57% of Belgium's business leaders thought that a lack of staff with the required skills was a major obstacle to long-term investment and 29% thought it was a minor obstacle. These percentages have increased significantly in the last five years. The Bank's quarterly survey on production capacity utilisation in the manufacturing industry reveals a similar trend in

the number of business leaders citing insufficiently skilled labour as a barrier to production.

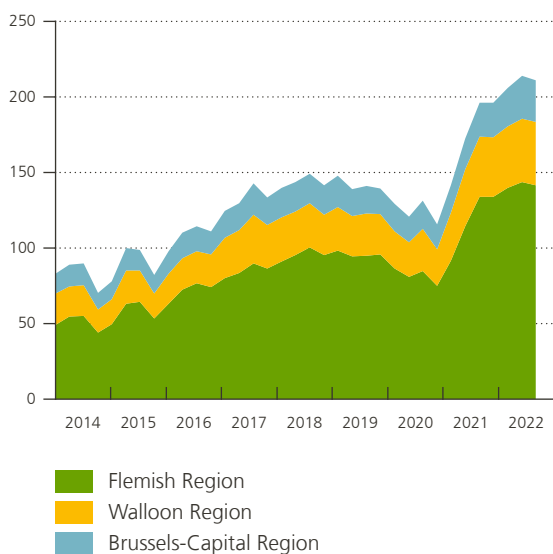
Tensions are caused in part by a mismatch between the required skills and the level of education or training

The quality of the education system is a factor contributing to the attractiveness of the Belgian economy. Belgium is historically renowned for the quality of its education system, although, in recent years, international surveys have reported a deterioration in results. In addition, the percentage of young people (aged 15-24) not in education, employment or training (NEET) is low compared to the European average and on a downward trend, falling from 17.7% in 2000 to 7.4% in 2021. As it is more difficult to get this segment of the population into work in the short term, reducing these numbers is a top priority, especially in Brussels and Wallonia

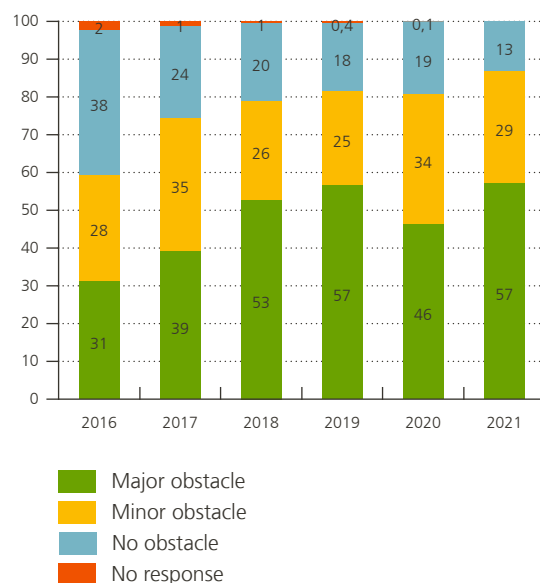
Chart 7.3

The high job vacancy rate impacts long-term prospects

Number of job vacancies in the three Regions of Belgium
(thousands of people)



Factors influencing long-term investment decisions: availability of workers with the required skills
(% of Belgian respondents)



Sources: EIB and Statbel.

which exceed the national average. Lockdowns and school closures during the pandemic might have hindered learning, especially for pupils and students from disadvantaged backgrounds, and could ultimately have a negative effect on human capital and success in higher education.

Growing enrolment in higher education is also positive, notably because it leads to a rise in the activity rate. In 2021, 45 % of the Belgian population aged 25 to 64 had some higher education, an increase of 5 percentage points in four years. The percentage of those aged 30 to 34, i.e. the youngest generation that has completed graduate studies, reached a record level of 49.9 % in 2021 (45.9 % in 2017). This percentage is 56.4 % for women and as high as 58.4 % in the Brussels-Capital Region. The level of education has a decisive impact on unemployment and inactivity rates. In 2021, 48 % of people aged 20 to 64 with a low level of education were inactive, compared with 28 % and 13 %, respectively, of those with a medium or high level of education. Higher education also has positive effects on worker productivity and entrepreneurial skills, while helping to boost demand for household services, thus creating low-skilled job opportunities.

The mismatch between applicants' skills and those required by employers explains most labour shortages. Choice of studies and training influence employability, with certain in-demand fields, such as science, technology, engineering and mathematics (STEM), attracting fewer students. Workers more advanced in their careers can improve their employability by upskilling or developing hard skills through lifelong learning, which can also help inactive people find jobs. As shown in the 2021 HCE report on lifelong learning, four in every ten Belgians will need to update their skills but recourse to lifelong learning is still not widespread enough. There are many initiatives designed to develop skills in STEM fields and new technologies. In some cases, these are financed at national, regional or community level such as certain training courses in digital skills with Technobel or Technofutur TIC in Wallonia, BeCode in Brussels and Syntra in Flanders.¹ Other, more transversal competencies

(soft skills), such as interpersonal and communication skills and the ability to innovate or adapt, can also improve employability.

Raising the employment rate requires getting many more people into work

There can be many barriers between jobseekers and vacancies. In order to fill vacant positions, jobseekers are often considered prime candidates due to their short-term availability. However, since the unemployment rate is highest in Wallonia and Brussels but most vacancies are in Flanders, there may be short-term geographical or linguistic incompatibilities. Other aspects, such as skill mismatches or human capital depreciation amongst the long-term unemployed, can also make it harder to match job supply to demand. Moreover, for low-skilled workers, the loss of certain social benefits linked to unemployment or inactive status and additional expenses such as travel or childcare, in relation to the salary on offer, are likely to discourage them from accepting a job.

The labour reserve is relatively low in Belgium. The pool of available workers also includes part-time workers who would like to work more, people who are available to work but not actively seeking a job, and people looking for work who are not immediately available. These categories, together with jobseekers, accounted for labour market slack² of 544 000 people in the third quarter of 2022, which is 10.4 % of the extended labour force.

Wider activation is required to achieve the target employment rate of 80 % of the population aged 20 to 64 by 2030. This means an increase of 7.9 percentage points compared to the level in the third quarter of 2022. Currently, in order to achieve this, nearly 532 000 more people will need to be in work. Labour market activation must be more

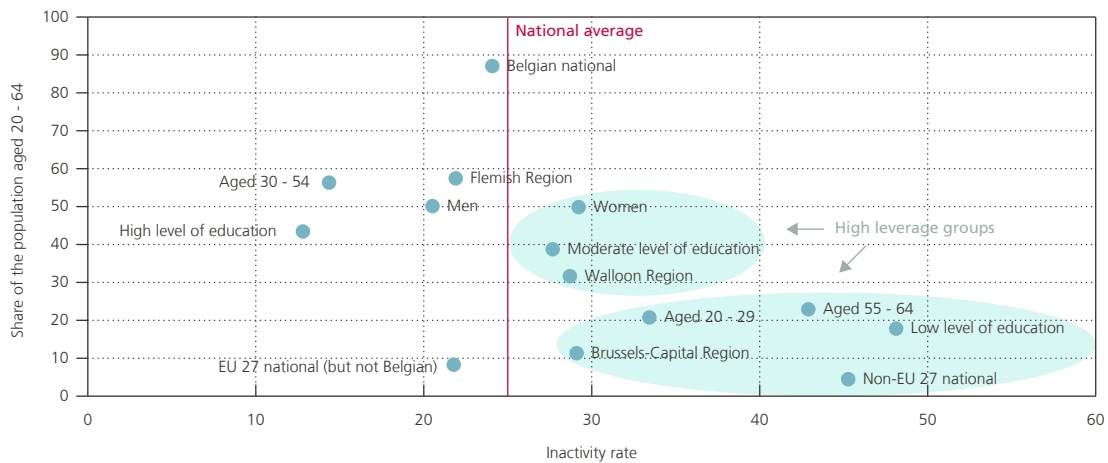
¹ See <https://economie.fgov.be/fr/themes/line/les-tic-en-belgique/competences-numeriques/formations-en-competences>.

² Labour market slack is unmet demand for paid labour within a given population. It is expressed as a percentage of under-utilised labour (the unemployed, part-time workers who would like to work more and could work more hours in the short term, people who are available to work but not actively looking for a job, and people looking for work who are not immediately available) in the extended labour force (working people, the unemployed and certain categories of inactive people).

Chart 7.4

Inactivity rate and share of the Belgian population aged 20 to 64

(in %, 2021)



Source: Statbel.

widespread to tackle the challenge of a structural labour shortage and improve the sustainability of public finances.

In order to achieve the overall objective, certain groups of people are more important levers due to their relative weight in the inactive population. The goal of 80% employment relates to the population aged 20 to 64, but already at the outset there is substantial heterogeneity between groups of individuals within this population, in terms of both relative size and the inactivity rate. Depending on these two aspects, getting a particular sub-group into work may not result in an 80% employment rate, although certain categories are more powerful levers than others. Firstly, the activation of groups whose inactivity rate is broadly higher than average is associated with greater potential for improvement despite low numbers in the population. These include non-European nationals, persons with a low level of education, persons aged 55 to 64 and persons living in Brussels. The situation is somewhat different for those aged 20 to 29, of which a significant proportion are in higher education meaning that although they are currently classed as inactive, they may become active when they finish their studies. Secondly, for groups with both a higher-than-average inactivity rate and a substantial weight in the working age population, even limited activation

can have a significant effect on employment. These groups include women, moderately skilled people and residents of Wallonia.

Reducing the labour market participation gap between men and women is a key lever

The labour market participation gap between men and women is on a downward trend. This is the result of a rise in the female employment rate, which increased from 50% in 1995 to 67% in 2021, while that of men has remained stable at just below 75%. Changing attitudes about roles in the household and society have contributed to this development. This trend can also be seen in education where the percentage of women with higher education now exceeds that of men. However, while women’s labour force participation has increased and their access to employment improved, they still face obstacles on their career paths.

Women’s labour market participation is still below that of men. The European Pillar of Social Rights Action Plan aims to reduce the gender gap in employment by half in the EU by 2030. In Belgium, this means that this gap needs to be narrowed to 4 percentage points by 2030, which would mean an additional 120 000 women in employment.

Certain gender gaps are structurally embedded in the supply and demand of labour. On the business side, certain sectors have long been characterised by over-representation of a particular gender. Construction, information and communication, and industry are male-dominated sectors, while health-care and education are seen as female sectors. As far as workers are concerned, there are wider gender gaps in the employment rate of certain groups including non-European workers (34 percentage points), low-skilled workers (22 percentage points) and couples with children (18 percentage points).

Gender impacts professional specialisation. There is a plethora of underlying causes for the participation gap between men and women, which originates long before they enter the labour market, i.e. during childhood, primary and secondary education and university studies. For example, the scarcity of women with certain technical skills on the employment market is partially linked to their under-representation in certain fields of higher education, such as STEM subjects.

Entry to the labour market is influenced relatively little by gender, unlike career advancement. The law prohibits gender-based discrimination on the labour market. Based on available data and study results,¹ such discrimination in the recruitment process is in fact relatively rare in Belgium. Career and salary development nevertheless differ depending on gender. Women are more often limited to lower levels of management (a phenomenon known as the “sticky floor”) and find it more difficult to reach higher positions (a phenomenon known as the “glass ceiling”). These differences originate from both labour supply, as the distribution of household tasks and childcare is still highly unequal, and demand, with some employers tending to promote employees who can work more flexible hours. The scale and deliberate nature of these phenomena are still difficult to assess given, amongst other factors, the influence of norms and stereotypes.

The arrival of children in a household changes career prospects as women are more often

responsible for childcare. Given that the labour market participation gap between men and women widens with the birth of a child, measures such as improving access to childcare or a more equal sharing of parental leave between parents are important tools to encourage broader participation by women. According to OECD data, when a parent with two children accepts a full-time job and has to rely on childcare, they only benefit from 40 % of the extra income generated by the job due to additional taxes and the loss of social benefits.² In addition, women face a higher rate of in-work poverty, partly because 80 % of single-parent families are headed by women. Thus, measures to support lower-wage workers could boost the female employment rate.

Making work (financially) more attractive is important, especially for the lowest earners

Several factors affect the decision to work or not. In some cases, working conditions may deter (potential) applicants: heavy or hazardous work, weekend or night work, temporary work and low pay. Structural reforms making work more accessible or financially beneficial could help to attract certain groups of people into employment.

The decision to join the labour force is based on the net salary after the deduction of social security contributions and taxes. Reforms have been enacted to boost employment through a reduction in the tax wedge on labour (which includes personal income tax and employee and employer social security contributions), such as the tax shifts in 2016-2020 and 2022, the social security and tax employment bonus in 2011, and the exemption from social security contributions when hiring a first employee in 2015. Despite these efforts, the tax burden on labour remains high. In 2021, the ratio between net and gross income in Belgium was generally below the average of its three neighbours and that of the Nordic EU countries. However, the situation differs depending on the category of household and, logically, the tax pressure is less for the most vulnerable, such as

¹ Baert, S., A.-S. De Pauw and N. Deschacht (2016), “Do employer preferences contribute to sticky floors?”, *Industrial & Labor Relations Review*, 69(3), 714–736, and Capéau, B., L. Eeman, S. Groenez and M. Lamberts (2012), “Two concepts of Discrimination: Inequality of Opportunity versus Unequal Treatment of Equals”, ULB, *ECARES Working Papers No. 2012-021*.

² The calculations refer to a couple with two children aged two and three where the other parent works full time and receives 67 % of the median income.

low-income and single-parent households. For the most vulnerable, the ratio of net to gross income in Belgium is comparable to the average of its three neighbours and that of the Nordic EU countries. This ratio is significantly lower for other households, indicating a heavier tax burden.

Filling vacancies often requires upgrading the jobs on offer relative to other jobs or statuses, in terms of wages or image. Some sectors that are struggling to find workers with the right skills or qualifications may have to adopt measures to attract inactive people. Employers can choose to raise the pay or social benefits on offer and invest in the position to make the work less onerous or dangerous or more ergonomic. They can also appeal to a wider audience by improving the image of – and communication related to – jobs that are considered demanding but which technology has made less arduous.

The decision as to whether or not to work also depends on the level of social benefits such as unemployment benefits and integration income. In addition to the *level* of social benefits, the *period* of eligibility also influences participation. Belgium is known for its relatively extensive social safety net and high spending on social protection. For example,

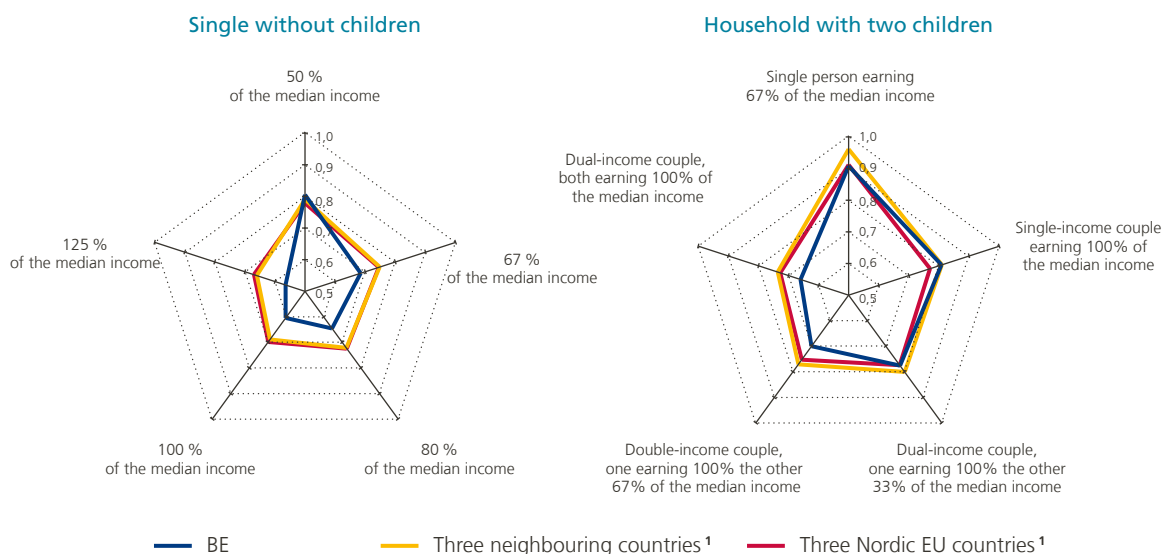
a high level of unemployment benefits is paid for a lengthy period. After six months of unemployment, a single person who previously earned the equivalent of 67 % of the median income, still receives 84 % of their former salary (this figure is 59 % on average in OECD countries) and 58 % of this amount after five years (while this figure is 30 % on average in OECD countries). Based on these two statistics, Belgium is ranked second amongst OECD countries. The social safety net plays an important role but can also be an unemployment trap. Since 2012, reforms have made unemployment benefits more degressive, but the complexity of the system has limited the impact of these measures, transitions into employment have not risen significantly and savings in terms of social spending have been low.¹

In addition to social benefits, other unemployment traps may encourage some people to remain inactive or unemployed. The loss of the social energy tariff and of top-ups on certain benefits, along with commuting and childcare costs, may be an obstacle to accepting a job or training course.

1 See NEO (2022), “Ten years of increased degeneration of unemployment benefits – Evaluating the impact of the transition into employment and on social spending over the 2010-2020 period”.

Chart 7.5

Ratio of annual net to gross income for different categories of households



Source: Eurostat.
1 Unweighted averages.

Support measures implemented during the pandemic and following Russia's invasion of Ukraine limited the reallocation of jobs.

During the COVID-19 crisis and the subsequent energy crisis, the government supported companies by means of a moratorium on bankruptcies and a furlough scheme. While these measures were lifelines for many firms, they did not encourage the reallocation of jobs towards more productive or profitable sectors or companies. As Belgian workers were already known for low mobility and companies for strong job retention, Belgium may simply have slowed the process of creative destruction on the labour market. Furthermore, high inflation coupled with automatic wage indexation has reduced potential growth in real wages nationally, limiting the possibility of differentiation between sectors or companies and, consequently, incentives for worker mobility.

7.3 Making the energy system carbon neutral

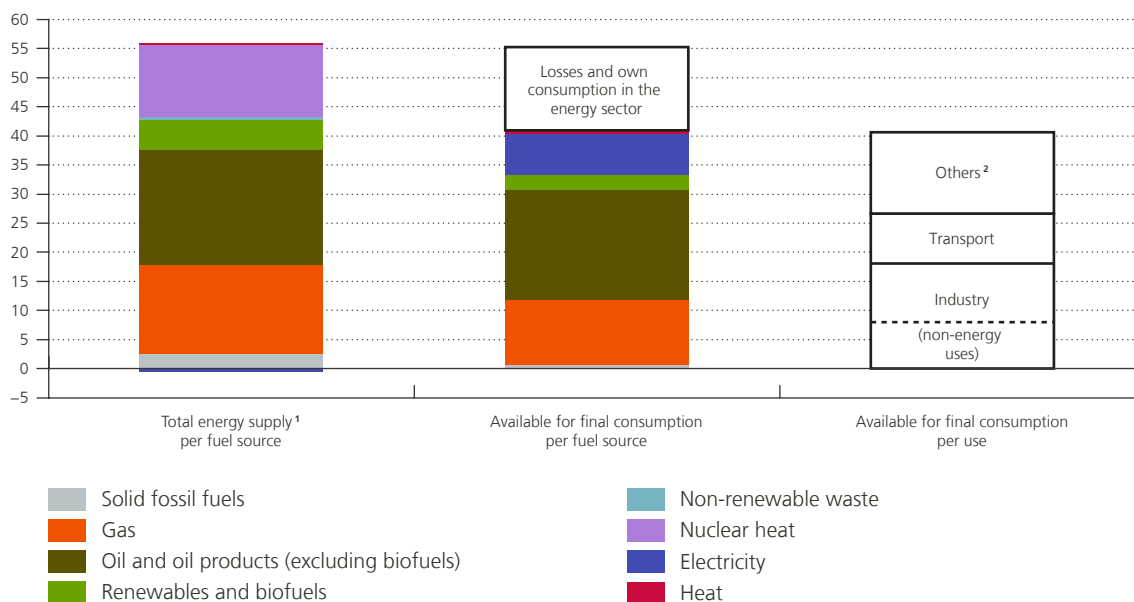
Energy inputs are essential to a country's wealth creation. The energy crisis has driven home Belgium's dependence on fossil fuels. Given the extremely high cost of fossil energy sources, the prospect of moving rapidly towards a low-carbon energy supply is highly attractive. Not only would such a transition reduce energy costs, but it would also enhance Belgium's energy security. Yet improving energy security at an affordable cost and staying on course to carbon neutrality will require a deep-seated change in the economy.

As Belgium has hardly any fossil resources, its energy supply is heavily dependent on imported fossil fuels. Oil, gas and coal account for nearly 70 % of the energy supply. The share of renewable energy sources (RES) has nevertheless increased, rising from 5 % of the total energy supply in 2010 to 9 % in 2021. Energy demand is characterised by specialisation in more energy-intensive industrial activities, including for non-energy purposes (as a raw material, particularly in petrochemicals). In 2021, volumes

Chart 7.6

An energy supply dominated by gas and oil

(in million tonne of oil equivalent, 2021)



Source: Eurostat.

1 Including exported secondary energy (net exported electricity volumes).

2 Mainly includes energy quantities intended for heating and cooling buildings.

destined for non-energy uses accounted for 18 % of final energy consumption in Belgium, compared to 12 % in Germany and 9 % in France. Only the Netherlands, which also has a large petrochemicals industry, recorded a higher share of final consumption for non-energy uses, of around 22 %.

The manufacturing industry is more energy-intensive in Belgium than in its three neighbours. This can be explained in part by the positioning of Belgian industry in more energy-intensive segments of value chains. Belgian industry specialises in upstream sectors of activity, in which fossil fuel use is often more intensive in the initial phases of the production process. This high dependence on fossil fuels should encourage manufacturers to innovate and invest in the development of low-carbon energy sources. The cost of fossil fuels is in fact likely to rise, due to either supply constraints or high carbon pricing.

Sharp rises in gas and electricity prices put energy-intensive industries under pressure, causing them to change their consumption patterns. The 2022 energy crisis – which was primarily a gas supply crisis – caused significantly volatile and high gas prices, which in turn impacted electricity prices. Some companies reacted by streamlining their production processes to reduce their energy requirements or by substituting their energy inputs with alternative fuels where their facilities so allowed. These changes were deemed necessary in order to protect business and competitiveness. But if the current

market conditions were to persist, certain production capacities in Belgium and elsewhere in Europe could be wiped out. In particular, this raises concerns of supply problems down the value chain for certain raw materials whose production could be relocated. There are also fears of spillover effects on the EU’s ability to strengthen its production capacity for materials, components and equipment used in renewable energy industries. High electricity prices have already led to the closure of foundries whose production is essential to these industries. Industrial competitiveness and the risk of carbon leakage remain major concerns, particularly due to the high cost of energy. Should the high price levels continue, an accelerated transition to a low-carbon energy system could form part of the solution.

The guarantee of a continuous and reliable energy supply is needed to maintain economic prosperity

The consequences of Russia’s invasion of Ukraine brought to the fore the multiple macroeconomic impacts caused by a disruption in the energy supply. They called attention to the geopolitical aspect of this energy dependence and required short-term adjustments in terms of both energy supply and demand.

The short-term energy supply of the Belgian market has never been threatened. Belgium enjoys a diversified supply thanks to good interconnections

Table 7.1

There are more energy-intensive manufacturing activities in Belgium

(kilogrammes of oil equivalent per thousand euros of value added, ¹ in %)

	Belgium		Germany		France		The Netherlands	
	2000	2021	2000	2021	2000	2021	2000	2021
Manufacturing	241	195	103	83	150	112	219	141
Manufacturing (including non-energy uses)	384	334	154	122	229	169	391	282
<i>p.m. Share of the most energy-intensive sectors² in the value added of manufacturing at current prices³</i>	28	24	16	14	14	14	17	16

Source: Eurostat.

1 In chained euros, reference year = 2015.

2 Chemicals and petrochemicals, metalworking and other non-metal mineral products.

3 Latest available year: 2020.



with the gas supply networks of neighbouring countries and the regasification terminal in Zeebrugge. Prior to the crisis, dependence on Russian gas was already limited to 8 % of domestic consumption (compared to 41 % at EU level). This infrastructure ensures the transit of gas to neighbouring countries (in 2022, 74 % of imports were re-exported, mainly to Germany). The oil refining plants at the Antwerp-Bruges port allow conversion from crude qualities other than Russian oil, with limited inconvenience to the country's oil supply. The availability of power plants was strengthened by deferring maintenance works until after the winter of 2022-2023. Finally, multiple interconnections with neighbouring networks made it possible to maintain or even reverse electricity flows that are usually imported, particularly to France, where some nuclear power plants had been shut down.

The medium-term supply requires more attention. The crisis has made the ongoing changes to the energy system more complex and their implementation more urgent. It is necessary to have power generation infrastructure that is adapted to the requirements of and compatible with carbon neutrality, while the future evolution of the country's production capacity will depend in part on the availability of a portion of its existing nuclear fleet in the coming years. This will entail compensating for the decommissioning of around 5.9 GW of nuclear capacity (50 % of gross electricity production in 2021) in a context marked by the voluntary development of plants powered by RES (the capacity of which has quadrupled over the last decade), without ruling out imports.

Soaring energy prices and concerns over shortages justified extending the operating life of the two newest nuclear power plants. In March 2022, the federal government agreed to take all necessary measures to extend the life of Tihange 3 and Doel 4 by ten years, until 2036, without displacing renewable electricity generation from the market (with any excess nuclear power being used for hydrogen production). An agreement on the arrangements to restart these reactors on 1 November 2026 was concluded in January 2023 with the private operator Engie. However, based on information on the availability of Belgian and French nuclear power plants and given the possible difficulties in energy supply facing Germany, adjustments to the operation of other facilities cannot be ruled out. Electricity supply over the winter of 2025-2026 deserves attention and preparation as

Belgium will then see its nuclear power plants shut down, as provided for by law, before the two reactors are restarted in 2026. In this regard, the government is not overlooking the capacity remuneration mechanism adopted in 2020 to compensate for the decommissioning of other nuclear plants between 2022 and 2025. This system provides for the payment of remuneration for the maintenance of production capacity as well as for the energy produced to suppliers selected on the basis of two tenders, held four years and one year before the year of actual supply. At the first auction for 2025-2026 supply, held in 2021, capacity of around 4 450 MW was selected. No bid was selected in 2022 for 2026-2027 supply, but many participants agreed to stay in the market and take part in the 2025 auction for supply the following year.

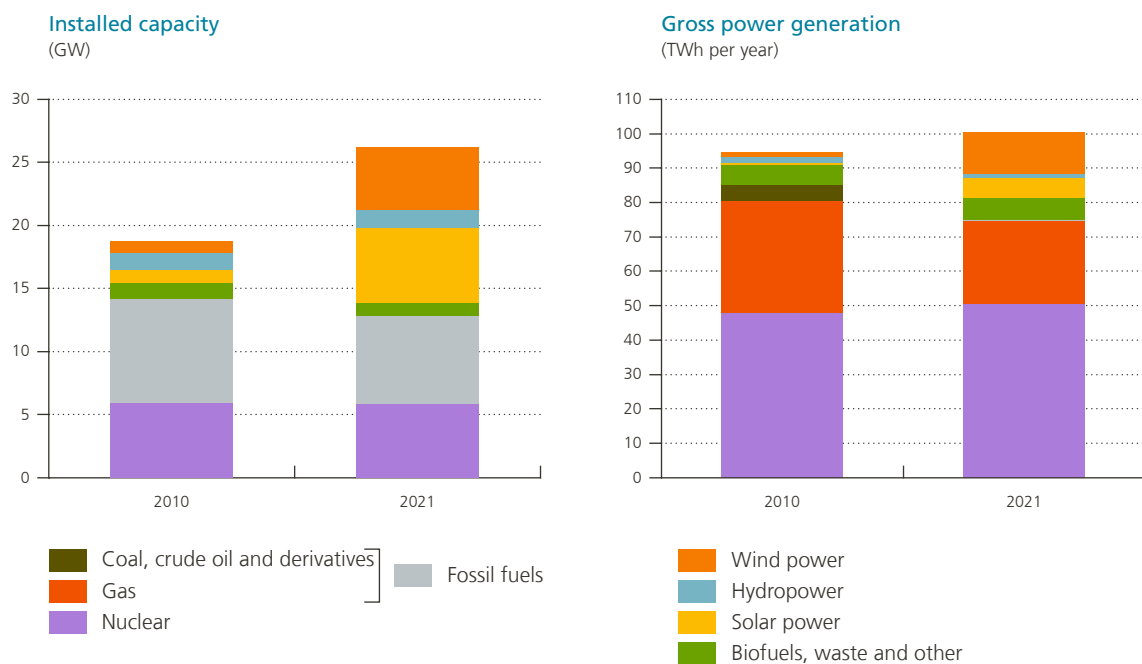
Making the energy system compatible with climate change

The energy crisis and geopolitical tensions triggered a European-wide mobilisation of policies and financial resources for the purpose of

reducing dependence on Russian fossil fuels well before 2030 and using this momentum to accelerate the transition to a low-carbon energy mix. Reducing dependence on fossil fuels through the wider use of low-carbon energy sources and greater energy efficiency will cut greenhouse gas emissions and help improve security of supply and the resilience of the energy system and the economy as a whole. The renewable energy objective to be achieved in less than a decade is ambitious and will have to encourage the use of RES in sectors other than electricity generation as well. By way of comparison, in 2021, gross renewable electricity production stood at some 24% of total production in Belgium, which corresponds to 5.5% of gross final energy consumption. When including RES used for heating, cooling and transport, 13% of gross final energy consumption comes from renewables. The current policy on renewables stipulates a target of 32% of gross final energy consumption in the EU (17.5% for Belgium) by 2030, which was raised to 40% in the revised “Fit for 55” legislative package. The REPowerEU plan put forward by the EC in May 2022 aims to speed up the introduction of RES by 2030 (with the RES

Chart 7.7

A greater shift towards carbon neutrality in the electricity mix is still required



Sources: Eurostat and FPS Economy.

target raised from 40 % to 45 % at EU level) and accelerate energy savings and efficiency (with the targeted reduction in consumption at EU level raised from 9 % to 13 % by 2030 compared to 2020). The plan also aims to achieve the rapid diversification of gas, oil and coal supplies through joint purchases and partnerships with reliable suppliers, including for renewable hydrogen.

The electricity system must adapt to this transition. The electrification of applications combined with low-carbon electricity production is the preferred option for the decarbonisation of economic activity. The electricity supply must be scaled to satisfy the expected rise in consumption related to the growing use of electric vehicles and heat pumps as well as to replace fossil fuels in industry. The electrification of production processes (electric boilers and heat pumps, electric arc furnaces) and the implementation of technologies that can reduce the emissions of inputs upstream (use of green hydrogen and its derivatives, carbon capture) are essential if industry is to become carbon neutral by 2050. According to the latest analyses by the transmission system operator Elia, these structural developments will result in a 50 % increase in industrial electricity consumption in Belgium by 2030 and in a doubling of this consumption by 2050. The most substantial rises are expected in the steel, petrochemicals, paper and pulp, food and drink, data storage and digitalisation industries.

Low-carbon electricity production at an affordable price should make it possible to maintain a carbon-neutral industrial base. Reducing fossil fuel consumption is beneficial as high gas prices and their knock-on effects on electricity prices erode corporate margins and cost competitiveness. Developing new production capacities from RES could help to remedy this. Electricity production using RES, for which marginal production costs are almost nil, results in lower wholesale electricity prices, an effect that rises along with the share of RES in the electricity mix.¹ The rising cost of fossil fuels has moreover improved the profitability of these sources of power generation. Based on 2021 costs, wind and solar power generation

costs between €40 and €60 per MWh,² compared to €110 to €130 per MWh for a combined cycle gas turbine power plant and €170 to €230 per MWh for a coal-fired power plant (these figures do not however take into account all costs related to the intermittent nature of RES production methods). Since the electricity generation costs for fossil fuel-based production facilities correlate strongly with fuel prices, these discrepancies are even more pronounced due to higher gas and coal prices in 2022. Aside from reduced costs through the integration of technological improvements and economies of scale, the relative profitability of the renewable energy sector is influenced by the EU Emissions Trading System (EU ETS) to which electricity producers and other sectors with high greenhouse gas emissions are subject. The resulting indirect carbon price changes the relative production costs of the various sectors by taking their environmental impact into account and adjusting their profitability accordingly. The gradual and expected increase in the carbon price should encourage investors to focus their investment choices on less carbon-intensive sectors, with economically justified sequencing in the deployment of the most competitive technologies.

Financial incentives are needed to support the development of innovative technologies, especially for high emitting activities. In order to boost innovation linked to the transition, EU assistance through the Innovation Fund, financed by growing revenue from the auction of EU ETS emission rights, has been increased. Three successive calls for projects, with a total value of nearly €5 billion, were organised in 2022. These mainly relate to large late-stage innovative technology projects with significant potential to reduce greenhouse gas emissions. Advanced technologies are crucial to reducing the carbon footprint of hard-to-abate energy-intensive industries. Such technologies include carbon capture, storage and usage (particularly for processes where carbon emissions are unavoidable) and even the production, distribution and use of green hydrogen. Green hydrogen is an option for storing energy from RES and its possible transmission over long distances. Due to its versatility, hydrogen – including its derivatives such as methanol and ammonia – can be used as an RES in sectors with processes that are difficult to electrify (such as high-temperature

¹ Cevik, S. and K. Ninomiya (2022), "Chasing the Sun and Catching the Wind: Energy Transition and Electricity Prices in Europe", IMF, *Working Paper 220*.

² Interquartile range of the levelised cost of energy.

industrial processes) and as a carbon-free input in certain industrial processes (for example, in the steel, cement and chemical industries) or as a fuel for maritime or aviation transport. However, there is some uncertainty as to its large-scale deployment, particularly in terms of production technologies (and costs), the availability of storage and transmission infrastructure and even the effective use of these molecules in different sectors. There is also the challenge of ensuring sufficient RES upstream of the processes. The strategy of the Belgian authorities in this area is to set up an infrastructure for the import and transit of green hydrogen (and its derivatives) from various sources. They also aim to make Belgium a centre of expertise and innovation in this field. In this regard, the authorities are supporting the development of a hydrogen value chain in the framework of the Recovery and Resilience Plan. They are involved in financing seven projects related to research, transmission infrastructure and the industrial use of hydrogen valued at nearly €500 million. The idea is to transform these innovation efforts into rapidly available, large-scale applications, leading to new markets and sources of growth.

In the short and long term, controlling energy demand must be encouraged. As a matter of good management, the aim is to minimise energy losses by optimising production processes and limiting unnecessary consumption, particularly in the current context. The authorities have repeatedly reminded the public of this, as have professional federations in their communication to companies on the Energy Saving Charter. More broadly speaking, measures designed to meet tougher energy efficiency goals are entirely compatible with objectives to reduce greenhouse gas emissions and boost the share of RES in final consumption. They also improve security of supply by reducing the need for imported (fossil) energy sources. In practice, commitments to improve companies' energy efficiency take the form of results undertakings in the voluntary industry-level agreements concluded between the competent regional authorities and industry federations representing the most energy-intensive firms. The energy efficiency of buildings must be improved, too. While new products (insulation materials) and more efficient equipment (heat pumps, batteries, home automation systems) can easily be incorporated into new buildings, this task can be more complicated in a densely populated area (due to noise and visual impact, the footprint on the available surface

areas). Furthermore, incorporating such products and equipment into existing buildings often requires substantial renovation and must therefore be accompanied by appropriate financial incentives. In addition to the availability of products, it is necessary to have a sufficient supply of labour with the right skills, it being noted that workforce qualifications are evolving along with the new technologies needed for the transition.

Infrastructure appropriate to the energy supply is necessary to maintain a reliable electricity system. The expected electrification of uses and the increased use of intermittent RES will require adapting various aspects of network infrastructure. Belgium plans to improve transmission capacity and roll out new connections to the high-voltage grid so as to respond to future needs of industrial sectors. The deployment of offshore wind turbines necessitates the installation of dedicated infrastructure at sea (such as the Princess Elisabeth energy island and its connections to other offshore wind farms) and improvement of the land transmission network (the Ventilus and Boucle du Hainaut projects) to transport production in Belgium and elsewhere in Europe. The technical specifications of this infrastructure should be compatible with the intermittent nature of RES and their decentralised production and be capable of preserving the stability of the grid (need for flexible resources and smart grids and meters to optimise management). The transition and resulting electrification of applications will also affect distribution network operators. The electricity transmission network in particular requires substantial investment. The federal regulator has estimated the investments involved in Elia's 2024-2034 development plan at €6.6 billion. The use of this monopolistic by nature infrastructure is subject to regulatory supervision. The tariff conditions should cover costs as well as ensure fair remuneration for the capital invested in the infrastructure while containing expenditure and prices. Such projects are still contingent upon the approval of permits by various national, regional and local authorities, based on procedures that would benefit from being adjusted so that their application can be better coordinated. This is also reflected in the REPowerEU plan and other EU proposals to simplify administrative procedures and specify maximum timeframes for granting permits with the aim of accelerating the roll-out of RES and the associated infrastructure.

Digitalisation and critical materials contribute to the creation of an energy system that is suitable for the transition to carbon neutrality.

Digitalisation and the transition to a low-carbon energy system go hand in hand: the development and implementation of digital technologies make the operation of increasingly decentralised energy systems more efficient. The connectivity of the energy system is stronger in terms of equipment and the connection of equipment (Internet of Things), communication technologies, and data processing and interoperability (big data, artificial intelligence). Accurate, real-time data are used to develop innovative energy services that also benefit consumers by enabling them to actively manage their energy consumption. However, these advances must be accompanied by a clear framework governing the sharing and using of collected data and by extreme vigilance in terms of cybersecurity, in view of the central role played by energy infrastructure in all economic activities. In addition, green technologies require more minerals, metals and advanced materials than most fossil technologies, which could lead to new dependencies. Supply chain disruptions and/or high input prices are likely to slow the transition. This is potentially already the case in the lithium-ion batteries industry, where the continued fall in prices observed over a decade (with a fivefold fall in cost since 2013) came to a halt in 2022 owing to the higher cost of the metals used in their manufacture. To avoid replacing energy dependence on one country or region with dependence on imported critical materials, it is important to promote better resource efficiency and the development of recycling chains for these materials, as well as innovation in the use of alternative materials and in the design of sustainable products and equipment.

Reducing the carbon intensity of economic activity extends beyond the energy sector to a much wider and diversified range of fields.

In addition to energy-related measures and policies, industrial, tax, mobility, innovation and training policies are needed, as is the development of new business models (renewable energy communities, the commercialisation of hydrogen) and means of economic operation (circular economy). The resulting arrangements are liable to fall under the powers of different federated entities with different approaches to handling projects, which could be detrimental to the energy transition. It is the responsibility of the Belgian authorities to ensure that resources are not scattered by ensuring effective cooperation and

implementation and a stable regulatory framework to optimally control the cost of the transition.

The economy must be committed to climate neutrality

In Belgium, the pace of decarbonisation is currently too slow.

While greenhouse gas emissions relative to gross value added have fallen over the past decade, not enough progress has been made towards the European objective of achieving climate neutrality by 2050. However, this is the case not only in Belgium; similar trends have been observed in neighbouring countries, including the Netherlands, France and Germany. According to a recent Bank analysis,¹ the reallocation of economic activity has as yet untapped potential to cut emissions, which could also boost productivity. According to this study, even without technological innovation, reallocating production from inefficient companies in terms of carbon emissions to efficient entities could lead to a reduction in emissions of around 40%. Although this potential for mitigation is available in the short term, technological innovation remains crucial in the transition to climate neutrality.

Belgium is part of the EU ETS system which sets the price of greenhouse gas emissions for the electricity, manufacturing and domestic air travel sectors, although it only covers around a third of the country's emissions.²

The Fit for 55 package, presented by the EC in July 2021, aims to extend carbon pricing to emissions from the domestic transport and building sectors. Such an extension would be a useful step in developing relative prices and encouraging the replacement of high-emission activities and technologies with low-carbon solutions. Similarly, the gradual phase-out of inefficient fossil fuel subsidies, including the provision of company cars, would be economically effective.

The energy crisis is a political opportunity to make carbon-intensive activities less financially attractive.

Russia's invasion of Ukraine in February 2022 significantly affected the supply of natural gas, which further drove up the price.

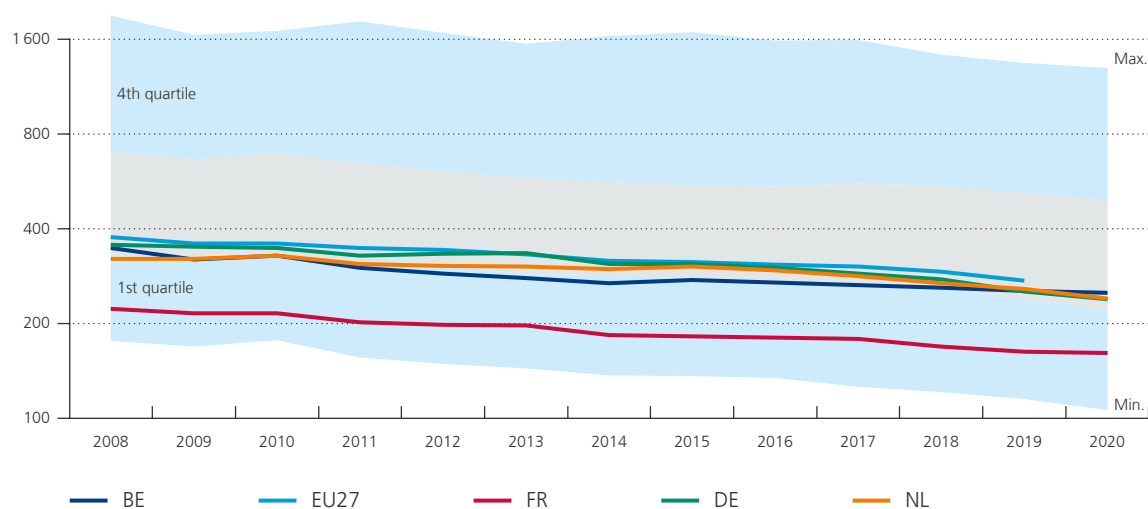
1 See Bijmens, G. and C. Swartenbroekx (2022), "Carbon emissions and the untapped potential of reallocation", NBB, *Economic Review*.

2 See <https://www.eea.europa.eu/data-and-maps/data/data-viewers/greenhouse-gases-viewer>.

Chart 7.8

Belgium's greenhouse gas emissions are falling but slowly

(greenhouse gas emissions relative to gross value added for all NACE activities, logarithmic scale, in grammes of CO₂ equivalent per 2010 chained euro)



Source: Eurostat.

As previously explained, this led to rising energy prices in Belgium. High energy costs should be distinguished from a high carbon price as they do not change relative prices based on greenhouse gas emissions. Buoyant energy prices also lead to transfers to other countries. However, when governments guide carbon pricing, they can make redistributions, offsets and other corrections for the distortions created by taxation. That being said, high energy prices can encourage positive action on the climate front. For example, investments in residential renovation projects designed to improve energy efficiency and in heat pumps are significantly more profitable than just a few years ago. Likewise, investments in RES have grown, although this is also true for fossil fuel exploration projects.

As the spike in energy prices is widely considered to be temporary, it is important to think about how to make the most of future price falls in Belgium. One solution could be the gradual introduction of a minimum carbon price, low enough to reduce energy prices but high enough to support complete decarbonisation. The exact scale of such a minimum carbon price will of course depend on political considerations, viewed in the literature as a major stumbling block to reducing emissions.¹ Similarly, a number of variants in the design of such a scheme

will need to be taken into account. For example, in 2013, the United Kingdom established a carbon price floor in the electricity sector with the aim of boosting low-carbon electricity generation. This example shows that a price floor can take the form of either a minimum carbon price in a specific sector or a fixed supplement on top of the carbon price in the EU ETS. In late December 2022, the carbon price set in the EU ETS stood at around €85/tonne of CO₂ equivalent, one of the highest recorded since the system was introduced. All things considered, though, this will probably not be enough to make the Belgian economy completely climate neutral.

Looking to the foreseeable future, raising the carbon price gradually and carefully is essential to manage the phase-out of fossil fuels. This would help to avoid the widespread decommissioning of carbon-intensive assets and periods of unforeseen soaring energy prices, such as those witnessed during the 2022 crisis, by guaranteeing sufficient low-carbon electricity generation (using RES, for example) before fossil fuel power plants are shut down.

¹ See Klenert, D., L. Mattauch, E. Combet, O. Edenhofer, C. Hepburn, R. Rafaty and N. Stern (2018), "Making Carbon Pricing Work for Citizens", *Nature Climate Change*, 8(8).

Sustainable development indicators

The Act of 14 March 2014 instructed the Federal Planning Bureau (FPB) to come up with a set of indicators measuring quality of life, human development, social progress and economic sustainability. To this end, a report on *Sustainable Development Indicators* is published annually by the FPB. This legislation also requires the Bank to publish a summary of these indicators in its annual report. The data forming the basis for the FPB's report are available at www.indicators.be.

Evaluation of individual indicators and progress made towards meeting the stated objectives

Further to its mission to assess federal policy with a view to sustainable development, the FPB publishes an annual report on the progress made, as measured by a set of indicators, towards meeting the Sustainable Development Goals (SDG) defined by the United Nations. This assessment is based on 51 indicators, three per SDG.

Progress is evaluated in various ways:

- if an objective is quantified and accompanied by a (target) deadline: the assessment considers whether, if current trends continue, the target based on the various programmes or international commitments to which Belgium is a party can be achieved within the set timeframe;
- if a qualitative target is defined in terms of a desired trend: the assessment determines whether the indicator's historical trend (since 2000) is moving in the right direction to achieve the objective.

Based on the data available at the end of October 2022, the assessment did not reveal a clear trend. Of the 51 indicators, the assessment for 31 was unfavourable or undetermined, meaning additional efforts need to be made to achieve the SDG. With regard to the environment, 11 indicators (out of a total of 16) showed favourable development. On the contrary, the assessment of 17 indicators (out of 23) measuring the social component of sustainable development tended to be unfavourable or undetermined. With regard to economic and governance components, no clear trends could be identified. An assessment was also made for each SDG, identifying those for which the three underlying indicators are moving in the same direction. SDGs 2 (zero hunger) and 6 (clean water and sanitation) received the highest ratings. With an unfavourable rating for their three indicators, the situation is concerning for SDGs 4 (quality education), 5 (gender equality) and 17 (partnerships for the goals).

International comparison

A comparison of the situation in Belgium with that in other EU countries, as well as with the average for the EU and the three neighbouring countries, is also provided for a set of indicators. Based on the 63 indicators available to rank Member States according to their performance, Belgium features in the group of the best performing countries for 24 indicators. However, for 16 indicators, it is ranked amongst the lowest achievers. For the remaining 23 indicators, the country is in the intermediate group. The majority of favourable comparisons relate to the social and economic components, while most unfavourable comparisons relate to the environmental component. Even for indicators on which



Belgium scored better than other countries, its current position does not necessarily mean it will achieve the SDG in question by 2030.

Breakdown by selected categories of the population

“Leave no one behind” is a guiding principle of the UN’s 2030 Agenda. Assessing the position of different categories of the population in terms of the SDGs is therefore fully justified. 38 indicators propose a breakdown by gender and help to qualify the analysis from three perspectives: (a) whether a particular category is disadvantaged, (b) whether their respective positions are moving in the direction of the SDGs and (c) how gender disparities are evolving. Three major trends emerged from the assessment. For 19 indicators, the comparison between men and women revealed undetermined or unfavourable results, depending on the perspective. That being said, for 15 other indicators, the assessment of trends and/or the evolution of disparities was quite favourable. The final four indicators are not moving in the direction of the SDGs and gaps are still significant, even widening. Unsurprisingly, breakdowns by income level (20 indicators) and education level (11 indicators) reveal a more favourable situation for those with higher incomes or levels of education. Moreover, differences appear to be increasing. Except for health, inability to work and the employment or unemployment rate, no general trend emerged when making distinctions based on age. Finally, breakdowns according to the three Regions are also available, but were not analysed.

Composite well-being indicators

The FPB has developed composite well-being indicators for two of the three aspects of sustainable development: the well-being of the current generation in Belgium (“Here and Now”) and the well-being of future generations (“Later”). It also proposes a preliminary approach to measure the third aspect relating to the impact of Belgian society on the well-being of people living in other countries (“Elsewhere”).

Here and Now: a continuing decline in current well-being

From 2005 to 2019, the “Here and Now” composite indicator for well-being recorded a substantial downward trend. This was due to a steep deterioration in the population’s general state of health, which cancelled out improvements seen at the socio-economic level. The analysis by population category found that the decline in well-being was statistically significant for men, the 16-24 and 50-64 age groups and the middle class (third income quintile). The indicator rose significantly over the period only for those aged 65 and over.

As a result of disruptions and delays in collecting survey data, the indicator has not yet been updated, but clarification on the recent trend in well-being in Belgium is provided. The impact of the COVID-19 crisis on well-being was assessed using *ad hoc* surveys conducted between March 2020 and October 2022, based on a subjective well-being indicator (level of satisfaction in life) and two indicators measuring change in mental health (depression and anxiety disorders).

In terms of satisfaction in life, the results indicate a deterioration compared with the pre-pandemic situation. Rising in early 2022, the indicator subsequently fell, in a context marked by high



inflation and substantial uncertainty. Between 2018 and 2020-2022, the well-being of Belgians dropped by 9.5% on average with a more pronounced decline for men than women, although women's well-being is generally lower than men's. While the decrease in well-being affected all age categories, it was particularly marked for young adults.

The mental health of Belgians also declined after 2020. Depression and anxiety disorders appear much more prevalent, having reached significantly higher levels than those observed before 2020. As was the case for satisfaction in life, after improving in the first half of 2022, both indicators fell in October 2022. Between 2018 and 2020-2022, these types of disorders increased on average in the population by 83% and 71%, respectively, with more pronounced rises for men than for women, although the number of women affected remains higher than that of men. Wider exposure to mental health disorders affects all age categories and is increasing at younger ages, although the well-being of the youngest groups was already falling.

Later: the deterioration of environmental capital is undermining the well-being of future generations

The sustainable development of a society implies that satisfaction of the current generation's needs is not at the expense of the well-being of future generations. As it is impossible to predict the composition of future well-being, the FPB uses an approach based on the stock of different kinds of capital (the "Later" aspect). This approach involves measuring changes in the stock of resources necessary to create well-being for future generations and is based on the principle that a society develops sustainably when it ensures that future generations can enjoy a capital stock at least equivalent to the current level. In the conceptual framework used in the FPB report, development is sustainable if it at least preserves all types of capital stock.

In the absence of recent data, only two types of "stock" were updated without changing the results presented in the previous report. The "economic capital" indicator was on a significantly upward trend starting in 1995 and peaked in 2021. On the contrary, the four components (air, water,



land and biodiversity) of the “environmental capital” indicator contributed to its further fall. With biological diversity declining substantially over time, if specific measures are not taken, the environmental capital available to future generations will be significantly worse. “Human capital” and “social capital” were on an upward trend between 2005 and 2018. However, given the pandemic’s major impact on the daily life of Belgians, it is highly likely that these two indicators will change direction in the future.

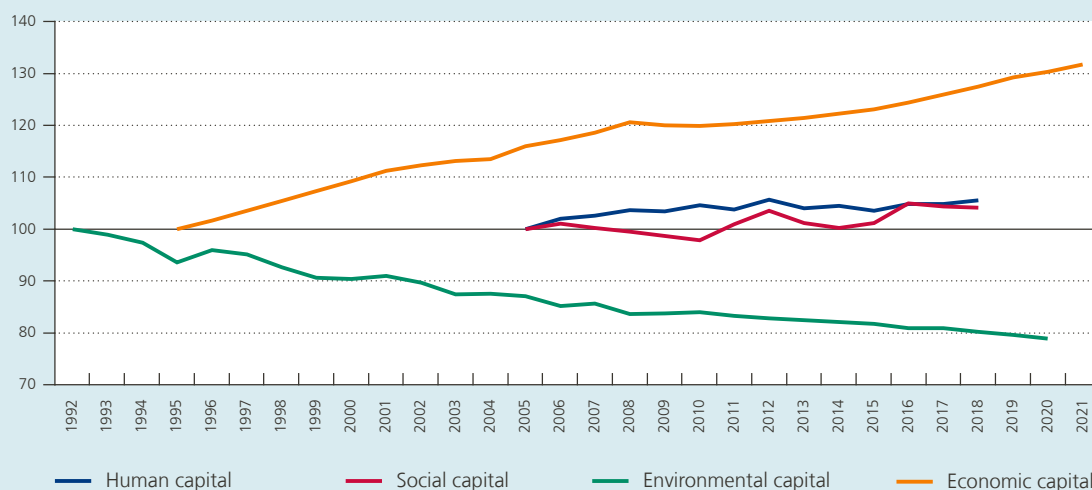
Based on these composite indicators and taking into account the worsening of the environmental capital indicator, the FPB report indicates that Belgium’s current developmental path is not sustainable in the long run.

Elsewhere: Belgium’s footprint on well-being elsewhere in the world

An initial assessment of the impact of lifestyle in Belgium on the well-being of people living in other parts of the world is proposed based on two footprint indicators. The “footprint” approach takes into account both direct and indirect effects, i.e. those generated by the entire production process upstream of consumption, including beyond national borders. These concern greenhouse gas emissions (carbon footprint) and the extraction of raw materials (material footprint) to satisfy Belgian final demand. In terms of its carbon footprint, the country is a net importer of CO₂ emissions: emissions related to the consumption of goods and services in Belgium are higher than emissions from Belgian production of goods and services. The same observation applies to the material footprint. Converted into emissions per capita, the carbon footprint and production emissions in Belgium are greater than the EU median. Conversely, Belgium’s material footprint and domestic extraction of materials are lower than the EU average. These findings reflect the fact that Belgium is a small open economy that relies heavily on the rest of the world for its supply of energy and raw materials.

Composite indicators – “Later” aspect

(100 = baseline year)¹



Source: FPB.

¹ Indicators were standardised at 100 for the baseline year coinciding with the first year for which all components of the composite indicator were available. Capital types were not collated into a single indicator as they are not interchangeable.