



ECONOMY: SUPPLY-SIDE BOTTLENECKS DAMPEN GROWTH

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References

This is a translated version of the original German-language chapter "Konjunktur: Angebotsseitige Engpässe dämpfen Wachstum", which is the sole authoritative text. Please cite the original German-language chapter if any reference is made to this text.

KEY MESSAGES

- ↘ Multiple supply-side bottlenecks are causing disruptions in global value chains and will probably continue to shape global industrial production into 2022.
- ↘ Bottlenecks and sharply rising energy prices, as well as pandemic-related restrictions over the winter, are likely to postpone a certain amount of growth into next year.
- ↘ The German Council of Economic Experts expects Germany's gross domestic product to rise by 2.7 % this year and by 4.6 % in 2022. For the euro area, it expects growth of 5.2 % and 4.3 % respectively.

SUMMARY

The coronavirus pandemic continued to impact on global economic growth in the first half of the year. **As a result of the decreasing number of new infections and rapid progress with vaccinations, private consumption recovered** from the second quarter onwards. However, increasing **supply and capacity bottlenecks** have led to disruptions in global value chains and **slowed down industrial production** in many countries since the beginning of the year. As the global containment of the pandemic makes progress and the pandemic-induced shift in the structure of demand for goods and services returns to normal, the supply-side restrictions should gradually ease next year.

Over the summer, economic activity in the **euro area recovered strongly**, with services being a key driver of growth. A limited increase in infection rates is expected in the **winter half-year 2021/22**, which, coupled with supply-side bottlenecks, is likely to **temporarily slow down further recovery**. However, due to the progress of vaccination efforts, no far-reaching restrictions comparable to last winter should be necessary. With supply-side bottlenecks easing and the recovery of private demand – especially for services – continuing, **economic growth is likely to remain high in 2022**. The German Council of Economic Experts (GCEE) expects euro area gross domestic product (GDP) growth rates of 5.2 % in 2021 and 4.3 % in 2022. For **Germany**, the GCEE has lowered its forecast for this year to a **GDP growth rate of 2.7 %**. In **2022**, GDP is then expected to **grow strongly** at a rate of **4.6 %**, driven by rising private consumer spending and a reduction in the level of orders in the manufacturing sector.

The sharp rise in global demand since the beginning of the year has led to high commodity and energy prices. Together with the supply-side bottlenecks, **consumer price inflation**, already elevated due to base and special effects, is likely to rise to **2.4 % in the euro area (HICP) and 3.1 % in Germany (CPI) this year**. However, further increases in energy and producer prices are likely to have an impact well into next year. Accordingly, while inflation is expected to fall over the course of 2022, it could well average 2.1 % in the euro area and 2.6 % in Germany for the year. Continuing supply-side bottlenecks and further rising energy prices pose the risk of persistently higher inflation rates.

Uncertainty about future economic developments **remains significantly higher** than in the pre-crisis period. If the pandemic necessitates comprehensive restrictions again, this could interrupt the recovery more severely. Moreover, in the event that supply and capacity bottlenecks prove more persistent, there will be **significant risks** to industrial production. However, if the bottlenecks can be reduced more quickly, there is a **chance** that the consumer and investment pent-up demand that has built up over the past two years will ensure a **more dynamic upswing**.

I. INTERNATIONAL ECONOMY

1. The **recovery** of the **global economy in the first half (H1) of 2021 weakened** compared to the strong growth in the last six months of 2020. However, economic development **varied** greatly **from region to region**. For example, in the first quarter of 2021, **recovery** was interrupted by rising infection rates in many advanced economies – notably the euro area, the United Kingdom and Japan. However, growth in these economies picked up strongly in Q2 as the pandemic situation eased and restricted service sectors gradually opened up. The rapid progress of vaccination efforts in many advanced economies probably also contributed to lower consumer restraint than in 2020, despite high infection rates in some cases. By contrast, in some emerging markets – especially India – the pandemic situation worsened in the spring compared to the start of the year, so that economic activity there declined overall in Q2 2021. Rising global demand and related supply-side bottlenecks together led to rising energy prices and thus to a sharp increase in inflation.
2. The **recovery** of the global economy is **expected to continue throughout the forecast period**. Nevertheless, **supply-side bottlenecks** and the spread of the highly contagious **Delta variant** of the coronavirus (SARS-CoV-2) [↘ GLOSSARY](#) are likely to **initially slow down growth** somewhat for the rest of the year in some countries. Inflationary pressures are likely to diminish as the demand for goods and services, some of which had been postponed as a result of the pandemic, increasingly returns to normal, and as the supply-side bottlenecks, which have had a predominantly output-inhibiting and price-inflating effect, continue to decrease. Where infection levels can be further reduced, the remaining public health-policy restrictions will probably be gradually withdrawn, stimulating economic activity in those sectors of the economy that are currently still restricted. Overall, the German Council of Economic Experts (GCEE) expects global growth of 5.7 % in 2021 and 4.4 % in 2022.

1. The development of the global economy – pandemic and bottlenecks determine economic activity

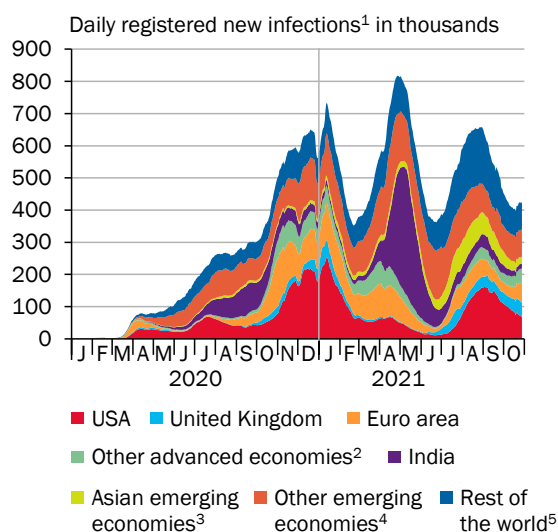
3. The highly infectious **Delta variant** of the coronavirus has significantly **exacerbated** the **pandemic situation in many regions of the world** during the year. [↘ CHART 1 TOP LEFT](#) For example, the registered infection and mortality figures rose sharply in the spring and summer, especially in India and some Southeast Asian and Latin American emerging economies, where the registered infection figures had previously been comparatively low. The summer months also saw a renewed intensification of the pandemic in some advanced economies. [↘ CHART 1 TOP](#) In the United States in particular, infection rates in August returned almost to last year's peak, while mortality rates also rose sharply but by much less. In the United Kingdom, the number of new infections has also risen sharply since the summer and has remained at a high level since then. However, the number of deaths has

↳ CHART 1

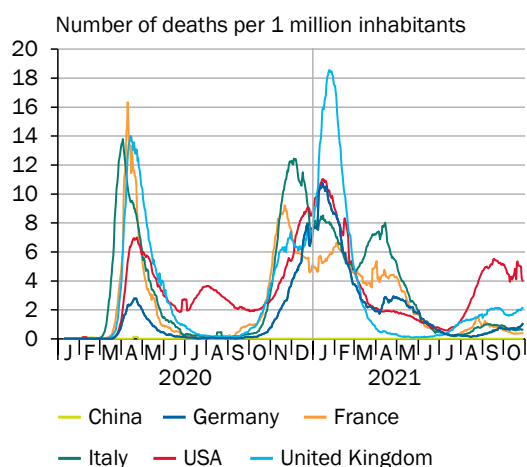
Development of the Corona pandemic in large economies and worldwide

Moving average of the past seven days

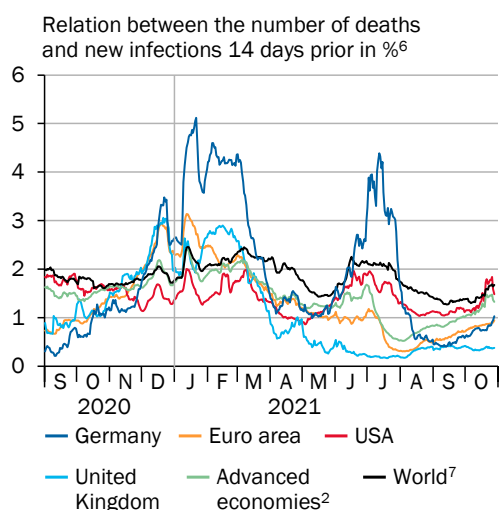
Global new infections remain high



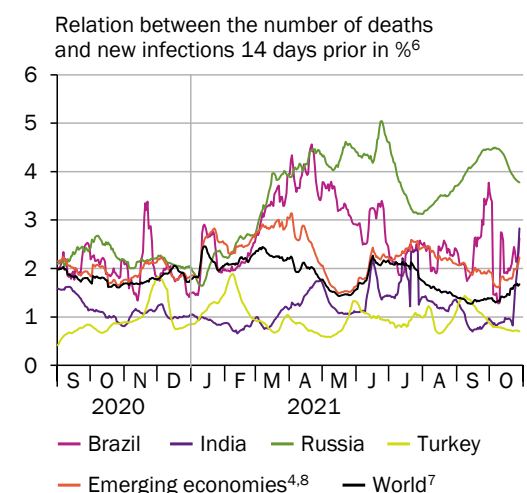
Significant reduction of the number of deaths in many large economies



Relation between the number of deaths and new infections in advanced economies



Relation between the number of deaths and new infections in emerging economies



1 – Number of actual new infections is most certainly higher than the officially registered number of new infections. Reasons for this are different testing strategies and the availability of tests that is especially limited in poorer regions. 2 – Country definitions according to footnote 9 in table 1 without Hong Kong and Taiwan. 3 – China and Southeast Asian emerging economies according to footnote 8 in table 1. 4 – Country definitions according to footnote 10 in table 1. 5 – Remaining countries listed by the WHO. 6 – Correlation between the number of deaths and new infections 14 days prior is 0.81 for the advanced economies and 0.95 for emerging economies. 7 – Contains all countries listed in table 1 without China. 8 – Without China.

Sources: WHO, World Bank, own calculations
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hardly increased. When comparing figures for new infections over time across different countries, it should be noted, however, that the number of cases recorded depends on the number of tests performed (Ritchie et al., 2021).

4. A gradual **decoupling of new infections from death rates** can be observed, especially in many advanced economies – with the exception of the United States. [↪ CHART 1 BOTTOM LEFT](#) By contrast, the decline in most emerging economies has been much more heterogeneous and shows no clear trend on average. [↪ CHART 1 BOTTOM RIGHT](#) A significant reason for the decline in the number of deaths relative to new infections is likely to be **progress with the vaccination rate**. [↪ BOX 1](#) That said, the ratio of deaths to new infections is determined not only by the vaccination rate, but not least by the number of tests carried out, the age structure and a country's healthcare system.

As vaccination rates increase, the risk of severe disease decreases, and this will probably **reduce the risk of the healthcare system becoming overstretched**. In its forecast, however, the GCEE assumes that there will be a renewed increase in the number of infections in many countries in the northern hemisphere in the winter half-year 2021/22. At least in the advanced economies and some emerging economies, progress with vaccination rates, among other factors, should prevent the healthcare system becoming overstretched and sufficiently contain the pandemic without renewed widespread action. This assumption also implies that there will be no extensive spread of new virus variants against which existing vaccines are less effective. [↪ ITEM 47](#)

[↪ BOX 1](#)

The development of international progress on vaccinations against COVID-19

The **availability of COVID-19 vaccines is unevenly distributed worldwide**. Distribution is largely distorted in favour of the advanced economies. Even so, when availability is high, vaccination capacity and the willingness to get vaccinated also influence the progress of vaccination rates. To achieve basic immunity among the population, not only vaccination capacity is decisive, but also the number of people who have been vaccinated or have recovered, as well as the length of time that immunity lasts. However, immunity can decline over time (RKI, 2021a). It is currently unclear how long immunity lasts after a COVID-19 vaccination or after infection with the SARS-CoV-2 virus and when general booster vaccinations are required (RKI, 2021b).

With regard to vaccination progress, in low-income countries (with a per-capita annual gross national income (GNI) [↪ GLOSSARY](#) of less than 1,046 US dollars as defined by the World Bank) only 4.96 vaccine doses per 100 inhabitants have currently been administered against COVID-19 [↪ GLOSSARY](#) (33.01 million in total). By contrast, high-income countries (with a per-capita GNI higher than 12,696 US dollars) have already vaccinated 137.48 doses (Germany 134.17 doses) per 100 inhabitants (1.67 billion in total, Germany 111.69 million in total) (OWID, data as of 29 October 2021). However, **ensuring supplies of vaccine to low-income countries is in the interests of advanced economies**, both **economically** and **epidemiologically**. In particular, global vaccination progress plays a decisive role in containing the emergence of new variants of the SARS-CoV-2 virus (Krause et al., 2021).

Among the populous emerging economies, in India 23.0 % of the population are currently fully vaccinated against COVID-19, compared to around 76.1 % in China. [↪ CHART 2 TOP](#) The United Kingdom, the euro area (excluding Germany) and Japan are ahead of Germany (66.5 %) and the United States (58.0 %) with 67.9 %, 70.6 % and 71.6 % respectively. The differences in reported COVID-19 vaccination rates vary depending on whether the total population or the adult population (18 years and older) is chosen as the benchmark. Thus, the proportion of fully vaccinated adults in Germany is 77.2 % and in the euro area (excluding Germany) approximately 80.2 % (RKI, ECDC data as of 29 October 2021). In Germany, however, it can be

assumed that this vaccination rate has been underestimated, since, as a result of reporting requirements, not all vaccinations (e.g. those performed by general practitioners) are taken into account in the official statistics. The RKI regards the official statistics as a minimum vaccination rate, having determined in a survey in mid-August 2021 that the proportion of fully vaccinated adults was around 81 %, although it can be assumed that these figures are an overestimate caused by positive selection (RKI, 2021c, 2021d). The European Union (EU), like Germany, reached its original vaccination target – to vaccinate 70 % of the adult population by the end of summer 2021 – already by the end of August 2021 (European Commission, 2021; RKI, 2021e). However, compared to the estimates of the model scenarios on **vaccination progress** in Germany compiled in mid-March 2021, a significantly higher vaccination rate would be necessary to reduce the risk of an increase in COVID-19 cases in the case of the especially contagious Delta variant (Grimm et al., 2021; RKI, 2021b, 2021f; Twhig et al., 2021; Economic Outlook 2021 Box 3).

At present, the biggest **challenge** for the further progress of national vaccination campaigns in the advanced economies is probably the low **vaccine take-up** among the unvaccinated population. Estimates based on surveys in Germany and the United States currently indicate that 76.1 % and 74.0 % respectively of the unvaccinated are unwilling to be vaccinated (OWID as of 15 October 2021). In the United Kingdom, the figure was 75.8 % on 15 September 2021. The percentage in Japan was 23.4 % on 15 August 2021, although the figure can be assumed to be higher in the meantime, since the percentage of unvaccinated in the population will probably have fallen. However, about 16.6 % of the unvaccinated in the United States and 15.5 % in Germany said they were undecided. Confidence-building measures in particular are likely to be needed to accelerate vaccination progress in countries where sufficient vaccine is available (WHO, 2020).

Vaccine supply and production are key challenges to global vaccination success. The **COVAX** (COVID-19 Vaccines Global Access) **initiative** is the vaccines pillar of the 'Access to COVID-19 Tools (ACT) Accelerator', which was set up in April 2020 by the WHO, the European Commission and France, and aims to help speed up access to COVID-19 tools (Gavi, 2020; WHO, 2021a). It is currently the only mechanism **aiming to ensure multilateral access to licensed vaccines against COVID-19**. However, in terms of funding and vaccine deliveries, there are doubts as to whether the COVAX initiative can achieve the target of distributing about 2 billion doses of vaccine in 2021 (OECD, 2021a). COVAX's global supply forecast is currently working on the assumption of 1.4 billion vaccine doses in 2021, 1.2 billion of which are to be available in low-income states. This would allow at least 20 % of the population of these countries to be vaccinated (as of September 2021; CEPI et al., 2021). Up to the end of August 2021, the COVAX initiative had distributed 230 million COVID-19 vaccine doses to 139 participating states (CEPI et al., 2021). At the same time, some manufacturers have experienced production problems, the approval of new COVID-19 vaccines has been delayed, and India has imposed export restrictions; as a result, the COVAX initiative has lowered its forecast for 2021 by 25 % (CEPI et al., 2021). In terms of production capacity, availability is expected to be significantly higher in 2022 and 2023. [↘ CHART 2 BOTTOM LEFT](#)

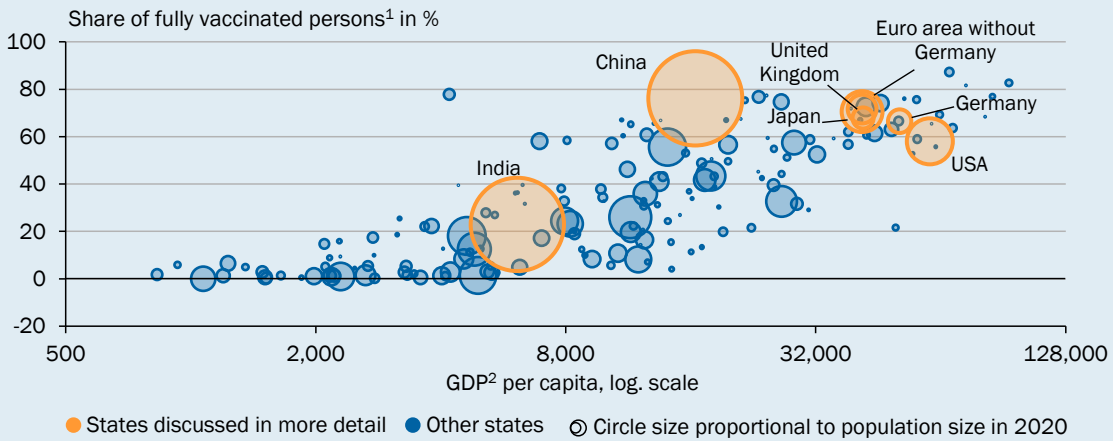
In addition to vaccine donations, funding for the COVAX initiative plays a significant role. The **COVAX initiative's funding gap for 2021 is currently 16 billion US dollars** (as of 15 October 2021; WHO, 2021b) – not least because COVAX has to compete for supplies with bilateral agreements between producers and governments. Given the agreed COVID-19 vaccine-supply contracts and the precautionary forecast [↘ CHART 2 BOTTOM RIGHT](#), which includes additional estimated deliveries based on non-binding agreements and commitments to bilateral COVAX vaccine donations, the COVAX initiative is expected to have approximately 5.9 billion doses available at the end of 2022 (CEPI et al., 2021). To improve the coordination of global vaccination progress in the future, a multilateral approach and a global governance and financing

mechanism may be decisive (Shanmugaratnam et al., 2021).

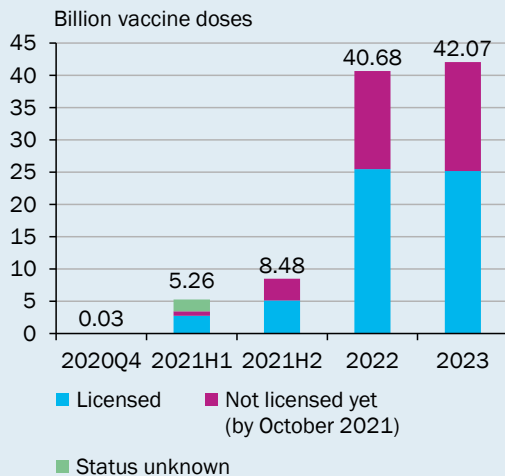
CHART 2

International comparison of vaccination progress, production capacities and COVID-19 vaccine supply agreements

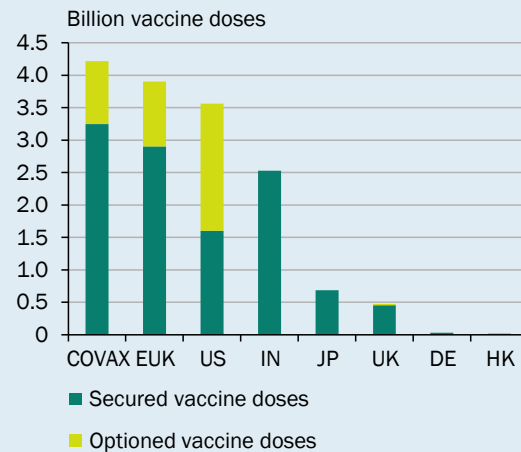
Advanced economies leading in COVID-19 vaccination progress



Worldwide production capacities for COVID-19 vaccines are rapidly increasing³



Contractually agreed delivery volumes of COVID-19 vaccines for COVAX highest⁴



1 – Share of total population. Alternative definitions of a full vaccination against COVID-19, e.g. being recovered and having received one dose of a 2-dose protocol, are excluded to enable a better comparability between the states. Data as of 29 October 2021. 2 – Gross domestic product in US dollars, purchasing power parities from 2017. Latest available value. 3 – Estimated COVID-19 vaccine production capacity. The 0.72 billion production capacity of COVID-19 vaccine doses not yet licensed in the first half of 2021 are COVID-19 vaccines that may be used for emergencies or under certain conditions. 4 – Data as of 29 October 2021. COVAX-COVID-19 Vaccines Global Access, EUK-European Commission, US-USA, IN-India, JP-Japan, UK-United Kingdom, DE-Germany, HK-Hong Kong. No data available for China.

Sources: Our World in Data, UNICEF, World Bank, own calculations
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The development of the global economy up to autumn 2021

5. Despite the renewed economic slump in many advanced economies at the beginning of 2021, **global gross domestic product (GDP)** [↘ GLOSSARY](#) continued to trend **upwards** in the first half of 2021, **albeit significantly more slowly** than in H2 2020. For example, in the first quarter of this year, global GDP expanded at a rate of only 0.7 % quarter-on-quarter on a market-based exchange-rate basis, matching the pre-crisis level last seen in Q4 2019. In Q2 2021, global economic activity picked up pace with a growth rate of 1.1 %. However, measured on a purchasing-power-parity basis [↘ GLOSSARY](#), economic momentum developed differently in H1 2021. In this calculation, growth was somewhat stronger in the first quarter at 0.8 % but much weaker in the second quarter at only 0.4 %. [↘ BACKGROUND INFO 1](#)



[↘ BACKGROUND INFO 1](#)

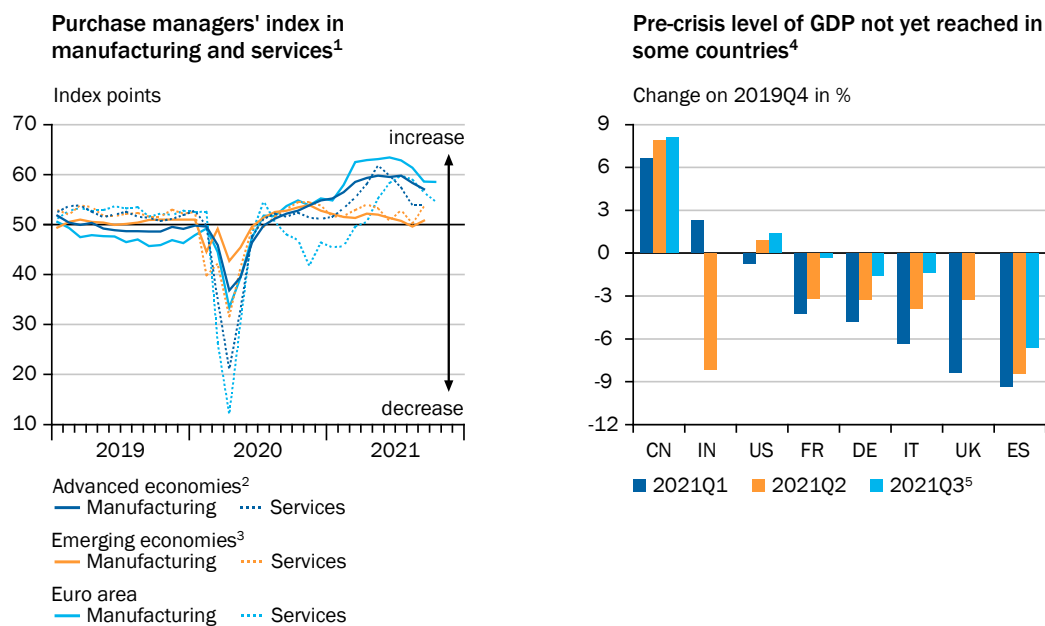
Comparison of different weightings for calculating global GDP

In addition to GDP growth in individual countries, the GCEE forecasts global GDP growth based on the aggregation of a total of 50 economies, taking their relative economic importance into account. Since each country reports its GDP in terms of its national currency, these figures are converted into US dollars using exchange rates. This is usually done with either nominal market-based exchange rates or rates with purchasing-power parity. The latter take into account differences in price levels between countries and measure the exchange rate as the rate at which one currency would have to be exchanged for another so that the same basket of goods could be purchased in each country. When aggregated to calculate global GDP, these two conversion methods can lead to very different results. In 2020, for example, the United States' share of global GDP was just under 28 % weighted by nominal exchange rates, but just under 19 % using purchasing-power-parity exchange rates. By way of contrast, India has a weight of less than 4 % according to market-based exchange rates, but over 8 % when purchasing-power-parity exchange rates are used. Due to the price level differences, emerging economies tend to account for a larger share of global GDP using purchasing power parity exchange rates.

6. However, the **trend** is far **less synchronised between advanced and emerging economies** than it was last year (GCEE Annual Report 2020 item 6). In Q1 2021, economic output declined again, especially in the euro area, the United Kingdom and Japan, while in China the recovery almost stagnated in Q1. With falling infection rates and the lifting of restrictions in the spring, particularly the personal services sectors recovered, as a result of which GDP in some of these countries grew strongly in the second quarter. By contrast, recovery continued in most emerging economies in the first quarter, but was interrupted in the second quarter by the rapid spread of the Delta variant, particularly in India and some Southeast Asian and Latin American countries. The purchasing managers' indices for the individual country groups also reflect these developments, although a higher index level does not necessarily go hand in hand with a proportionally higher GDP growth rate. [↘ CHART 3 LEFT](#)

↘ CHART 3

International comparison of purchase managers' index and GDP growth



1 – Based on a monthly survey among purchasing managers and managing directors. 2 – According to IHS Markit: Australia, Austria, France, Germany, Greece, Hong Kong, Ireland, Italy, Japan, Netherlands, Republic of Korea, Singapore, Spain, Taiwan, United Kingdom, USA. 3 – According to IHS Markit: Brazil, China, Czech Republic, Egypt, India, Indonesia, Kenya, Lebanon, Malaysia, Mexico, Nigeria, Philippines, Poland, Russia, Saudi Arabia, South Africa, Thailand, Turkey, United Arab Emirates, Vietnam. 4 – CN-China, IN-India, US-USA, FR-France, DE-Germany, IT-Italy, UK-United Kingdom, ES-Spain. 5 – Value in 2021Q3 not available for all countries.

Sources: IHS Markit, national Statistical Offices, OECD, own calculations

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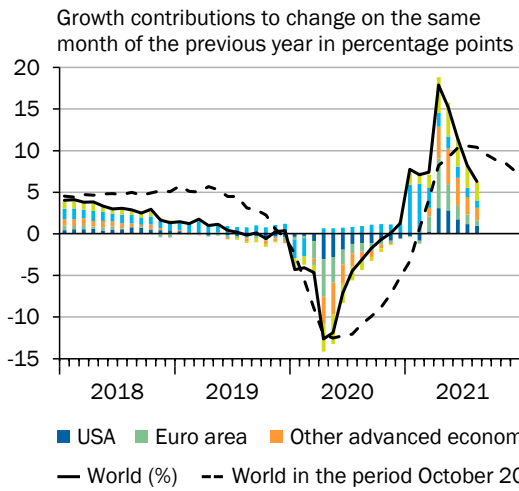
7. **Heterogeneity** in the recovery is also evident in the **distance of GDP to the pre-crisis levels** in Q4 2019. ↘ CHART 3 RIGHT China and the United States are the only major economies to date that have been able to exceed this level again, with China already doing so early in 2020. Some euro area member states, the United Kingdom and India – as another major emerging economy – are currently still – or in the case of India again – below their pre-crisis levels. ↘ ITEM 35 One of the many reasons for the heterogeneous recovery was probably the varying severity of the slump in economic output last year, the extent of the economic-policy support measures (Deutsche Bundesbank, 2021a, p. 56; OECD, 2021b, pp. 12 and 23), but also varying potential growth rates.

8. **Global trade in goods** recovered quickly from the pandemic-related slump in 2020 and continued to show a strong upward trend in H1 2021. Although a considerable portion of the increase in spring 2021 can be explained by the low base in spring 2020 in the year-on-year comparison, ↘ CHART 4 RIGHT world trade has already exceeded the previous pre-crisis peak (WTO, 2021). **Since the summer** of this year, however, the expansion of global trade in goods has **slowed** noticeably. On the one hand, this is probably due to an incipient normalisation of demand for consumer goods. ↘ ITEM 17 On the other hand, global maritime **capacity may already be fully utilised** (Gern et al., 2021; WTO, 2021). High capacity utilisation and pandemic-related delays in handling operations at major Chinese ports have most likely contributed to the drastic **increase in ocean freight costs**. ↘ CHART 5 LEFT Although the situation in Asia is already easing, some

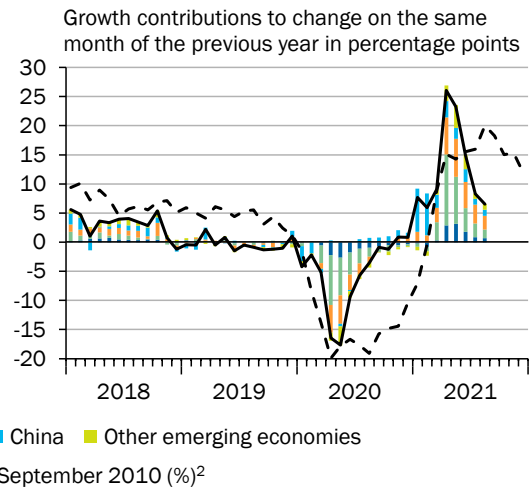
↘ CHART 4

Regional contributions to global growth of industrial production and merchandise exports¹

Dynamics of the global industrial production...



... and volume of global merchandise exports slow down significantly on a high level



1 – Change on same month of the previous year, price- and seasonally adjusted. Data and country definitions of the Dutch Centraal Planbureau (CPB). 2 – Indicates the period around the global financial crisis between 2007 and 2009.

Sources: CPB, own calculations
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European ports are now also reporting considerable delays due to full capacity utilisation.

9. The recovery of **global industrial production** also continued in H1 2021, but, like the trade in goods, it has recently lost some of its momentum. ↘ CHART 4 LEFT In the year-on-year comparison, much of the lower momentum is probably due to fading base effects ↘ GLOSSARY. Particularly in China and other emerging economies, however, the normalisation of the consumption structure and thus of demand for consumer goods and medical protective equipment is also likely to reduce momentum (Deutsche Bundesbank, 2021a, p. 46; Gemeinschaftsdiagnose, 2021, p. 15). In advanced economies, persistently high **supply and capacity bottlenecks** are most likely the main reason for the slowdown and partial decline in industrial production. ↘ BACKGROUND INFO 2 For example, a large number of manufacturing companies report that shortages of intermediate goods and raw materials as well as long delivery times are increasingly among the factors limiting production. ↘ CHART 5 LEFT ↘ BOX 6



↘ BACKGROUND INFO 2

Supply-side bottlenecks temporarily inhibit production

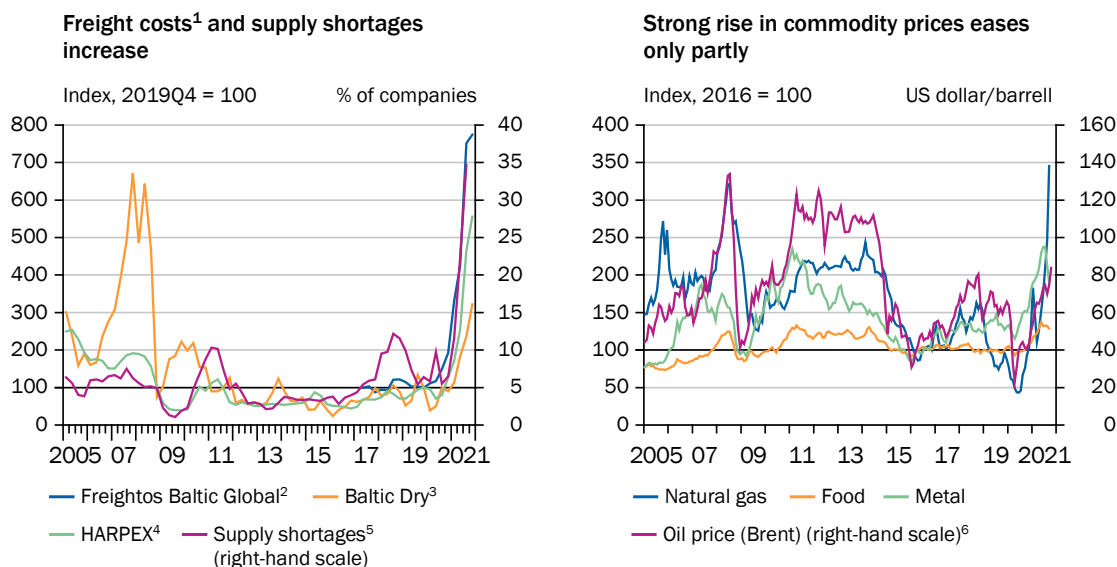
The distortions in global value chains caused by the coronavirus crisis have led to supply and capacity bottlenecks in many markets. For example, the increased risk of infection initially resulted in a **shift in the private consumption structure** away from personal services towards durable consumer goods such as electronic goods or furniture. Boosted by the rapid recovery of the global economy, this in some ways **surprising increase in demand** led to bottlenecks in individual sectors of the economy as a result of limited capacities for raw materials and preliminary products,

especially metals, wood and semiconductor products. In addition, global **transport capacity** has not been able to keep pace with the changing flows of goods, and pre-crisis stockpiles have shrunk sharply, especially at the beginning of the pandemic (Frohm et al., 2021). **Local events** – such as virus outbreaks in key ports and production facilities in China, the accident in the Suez Canal and production losses caused by special events – repeatedly led to additional far-reaching disruptions in global supply and value chains, thus exacerbating the bottlenecks. The strong segmentation of the bottlenecks affecting many different submarkets is likely to lead only to a gradual easing of bottlenecks. Overall, the current production-inhibiting bottlenecks should ease as soon as the shift in **consumption preferences** between goods and services **normalises** as the pandemic subsides, reducing the demand for goods and the excessive demand for freight capacity. In the event of lasting structural shifts in demand, for example as a result of digitalisation or the transformation of the economy towards climate neutrality, companies are likely to increasingly adapt to the changed conditions. [↪ BOX 2](#) [↪ BOX 29](#) However, for some goods – e.g. semiconductor products – **building up new capacity** is likely to take some time.

- Another factor inhibiting production has been the **sharp increases in some commodity prices** due to a combination of a surprisingly rapid rise in demand and reduced supply caused by weather events and pandemic-related production shortfalls (IMF, 2021a, pp. 31 f.). [↪ CHART 5 RIGHT](#) Here, too, part of the increase – especially in energy commodities – is due to the low price level in the previous year. However, in the meantime, most prices are well above pre-crisis levels. The price of Brent crude oil, for example, had already exceeded its pre-crisis level of just

[↪ CHART 5](#)

Global freight costs, supply shortages and commodity prices



1 – Value in 2021Q4: average calculated with the available values in October; as of: 29. October 2021. 2 – Freight rates on the spot market of 40-foot containers for twelve trade routes. 3 – Freight rates of different ship classes for bulk goods on 26 trade routes. 4 – The Harper Petersen Charter Rate Index (HARPEX) measures container freight rates in the time-charter market for periods of 3 to 48 months for seven ship classes with a defined minimum speed of 17 to 24 knots. 5 – Median over all industries in the euro area. 6 – Value in October: average calculated with the available daily values in October; as of: 29. October 2021.

Sources: Baltic Exchange, European Commission, Freightos, Harper Petersen & Co, IMF, own calculations

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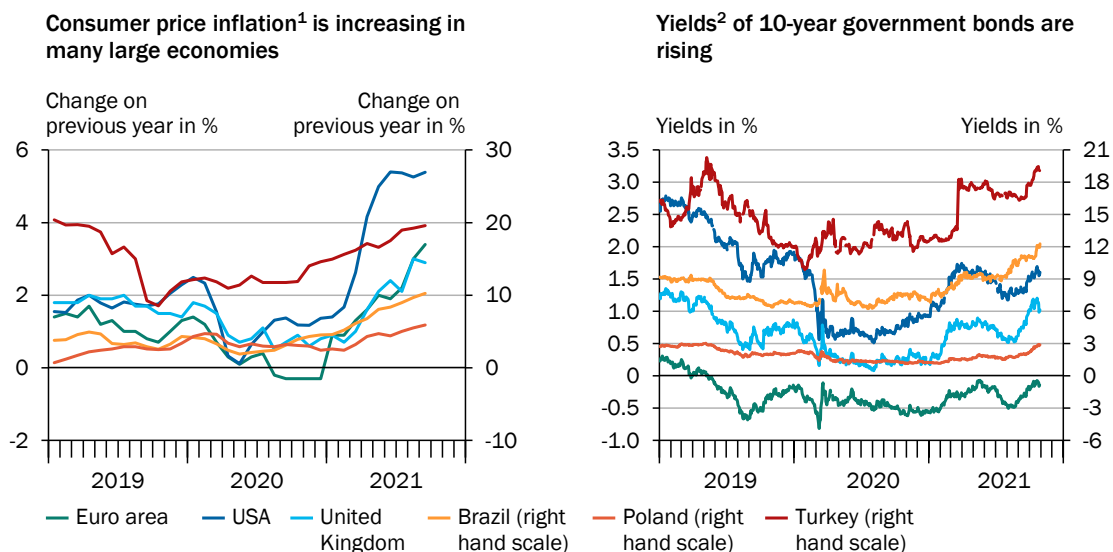
over 65 US dollars per barrel in the spring and is currently quoted at over 80 US dollars. [↪ CHART 5 RIGHT](#)

Prices for industrial metals and food also rose sharply. [↪ CHART 5 RIGHT](#) Compared to earlier periods – e.g. the 2010s – these increases are not unusual, however, and many are probably due to the economic recovery. [↪ BACKGROUND INFO 2](#) For example, since August many commodity prices have been seen to bottom out or even fall. At the end of October, however, depleted inventories caused renewed jumps in the prices of various industrial metals on the futures markets. One likely reason for this is the electricity rationing imposed by the Chinese authorities, which is likely to affect energy-intensive industries such as metal production in particular.

- 11. Global natural gas prices have risen** particularly sharply in recent months [↪ CHART 5 RIGHT](#) due to an interplay of various supply-side and demand-side factors (IEA, 2021). On the one hand, natural gas storage tanks are emptier than usual as a result of extreme weather events this year. First, a cold winter – especially in north-east Asia and North America – led to higher demand for natural gas at the beginning of the year. This then increased further in the course of the year as a result of extreme drought and associated lower energy generation both from hydropower in Brazil, California and Turkey and from wind power in Europe. On the other hand, the rapid recovery of global production raised global demand for energy, which was probably exacerbated not least by China's drive to reduce emissions and thus by a shift in demand from coal to natural gas (Gemeinschaftsdiagnose, 2021, p. 23). The latter widened the price spread between the Asian and European spot markets for liquefied natural gas (LNG), so that more LNG is being supplied to the Asian region; this has contributed to a reduction in supply on the European gas market (IEA, 2021, p. 81). Furthermore, some of the natural gas is

[↪ CHART 6](#)

Development of inflation and government bond yields in selected economies



1 – Overall index. 2 – Euro area yields only include AAA ranked bonds.

Sources: ECB, OECD, Refinitiv Eikon
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produced as a by-product of oil production, which is currently still well below pre-crisis levels (Gemeinschaftsdiagnose, 2021, p. 23). Futures prices for natural gas indicate that prices are likely to remain high in the winter half-year 2021/22 but to fall sharply in the second quarter of 2022 (European Energy Exchange, 2021).

12. **Consumer price inflation** is currently **picking up strongly** in many regions of the world, especially in the United States and the United Kingdom. [↪ CHART 6 LEFT](#) [↪ BOX 2](#) On the one hand, this is due to pandemic-related **base effects**. [↪ ITEM 10](#) On the other, rising producer prices do not affect consumer prices exclusively via a direct pass-through, but can also lead indirectly via substitution effects to **special effects** such as the sharp rise in used-car prices in the United States (Deutsche Bundesbank, 2021b, p. 14). [↪ ITEM 19](#) Last but not least, a strong increase in private demand, especially in the advanced economies, has provided an additional boost to inflation. In some emerging economies, rising food prices in particular have been driving inflation. [↪ CHART 5 RIGHT](#) At the current point in time, the sharp rise in inflation can be expected to be temporary and to gradually moderate over the coming months as commodity prices decline and supply and capacity bottlenecks ease. Nevertheless, a rapid return to an environment of very low inflation rates [↪ GLOSSARY](#) – like in the pre-crisis period – is not to be expected. [↪ BACKGROUND INFO 3](#)



[↪ BACKGROUND INFO 3](#)

Cost shocks may have longer-term effects on inflation

The impact of cost shocks and the persistence of inflation have been extensively studied in the macroeconomic literature, with the bulk of the studies concentrating on inflation developments in the United States. The overwhelming consensus is that while inflation in the United States follows a very persistent process, persistence is likely to fluctuate in the wake of changes in the monetary-policy regime and has declined since the early 1980s (Barsky, 1987; Cogley and Sargent, 2002; Altissimo et al, 2006; Pivetta and Reis, 2007; Sbordone, 2007; Cogley et al, 2010). Moreover, Cogley and Sargent (2001) show that there is a positive correlation between the level and persistence of inflation. Exogenous cost shocks – for example, as a result of shortages of inputs and commodities or supply-chain disruptions – may have a prolonged impact on inflation developments. For instance, a World Bank study (2020) shows that since the 1970s, changes in the price of commodities and energy have been quite persistent and that short-term fluctuations explain only a small part of these changes. Moreover, modern dynamic stochastic general equilibrium (DSGE) literature provides evidence that cost shocks may have longer-term effects on inflation (Smets and Wouters, 2003, 2005, 2007; Pytlarczyk, 2005). In principle, cost shocks pose a challenge to monetary policy because, under the Phillips curve relationship, they raise prices while simultaneously having a negative effect on the output gap (Clarida et al., 1999). This effect is amplified when rising costs cause higher inflation to affect market participants' inflation expectations.

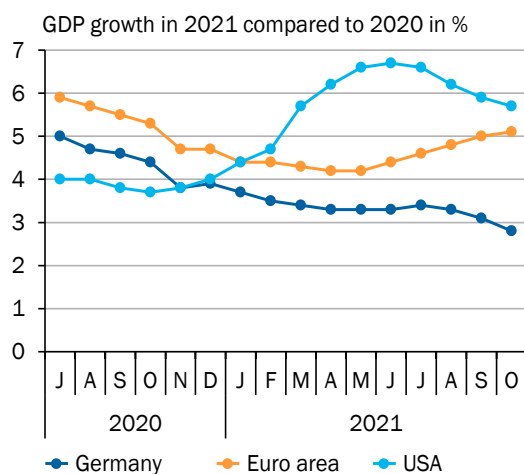
13. During the coronavirus pandemic, **growth and inflation forecasts** were subject to sometimes quite extensive **revisions**. [↪ CHART 7](#) For the United States, the Consensus Forecast's GDP predictions for 2021 were probably raised again and again, especially in view of the – at times surprisingly – strong increase in

➤ CHART 7

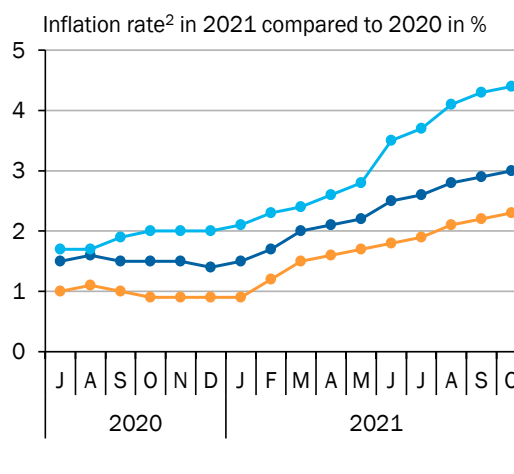
Forecast revisions¹ for GDP and consumer price inflation in selected economies

Monthly published Consensus forecasts

While the direction of GDP forecast revisions is mixed across countries, ...



... consumer price inflation forecasts are uniformly revised upwards.



1 – Average forecasts of professional forecasters. 2 – Overall index.

Source: Consensus Economics

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demand at the beginning of the year. Most recently, the downward revisions can probably also be explained by the supply-side bottlenecks that are now constraining output (Fed, 2021a, p. 1). In Germany in particular, these led to a significant reduction in growth forecasts in the autumn. ➤ BOX 7 By contrast, for the euro area as a whole, it is primarily the far-reaching openings in the services sectors that are leading to upward revisions in GDP forecasts for the current year. ➤ ITEM 37 Unlike GDP forecasts, forecasts of consumer price inflation have been continuously raised. While at the beginning of the year the strengthening global economy led to strong increases in commodity and energy prices, the importance of supply-side bottlenecks for price dynamics is likely to increase.

14. In some advanced economies, the sharply rising inflation rates have intensified the discussion about scaling back expansionary monetary policy. Since the beginning of the year, nominal **yields on 10-year government bonds have risen slightly** in the United States, the United Kingdom and, to a lesser extent, in the euro area. ➤ CHART 6 RIGHT The adjusted statements, especially by the Fed and the Bank of England, of their intention to raise interest rates earlier than had been expected at the beginning of this year is likely to explain most of the recent rises in long-term yields (IMF, 2021b, pp. 6 f.). Furthermore, a slight increase in longer-term inflation expectations and thus in risk premiums is likely to play a role, especially in the euro area and the United Kingdom.

Interest rates have already been raised in some emerging economies. Brazil's central bank began raising rates back in March and has since increased the key interest rate by more than 5.75 percentage points. In addition to rapidly rising inflation, the announcement of the beginning of monetary policy normalisation in the United States – and thus concerns about a rapid withdrawal of

international capital like in 2013 – are also likely to have put pressure on yields for government bonds and influenced interest rate decisions. At the beginning of October, the Polish central bank surprisingly raised interest rates because of rising inflation, whereupon the rise in the yield on 10-year government bonds slowed somewhat. By contrast, despite drastically rising inflation rates and a massive devaluation of its currency, Turkey has cut interest rates several times in the course of the year. This probably contributed to higher risk premiums on government bonds.

▸ BOX 2

Medium- and longer-term inflation risks

At present, several different factors for a prolonged upward trend in prices are under discussion. The sometimes sharp rises in global commodity prices have sparked a discussion on the possible beginning of a **commodity supercycle**. This usually affects a wide range of commodity groups and describes a long phase of demand-driven price increases due to structural shifts in the demand for commodities. Compared to the business cycle, the commodity cycle has a much longer upswing phase of 10 to 35 years, as the expansion and build-up of capacity on the supply side tends to take more time (Wellenreuther, 2021). Above all, the strong increase in the price of some industrial metals compared to pre-crisis levels could be due to limited production capacity as a result of low investment in recent years and could therefore last longer (Beckmann et al., 2021, p. 17; Gern, 2021). ▸ CHART 5 RIGHT **Structural shifts in demand** in the course of the decarbonisation and digitalisation of the global economy could reinforce this development and strongly boost demand for some non-ferrous metals, especially in the coming years (Beckmann et al., 2021, p. 17; IMF, 2021a, pp. 31 ff.; RWI, 2021, pp. 41 f.; Schmidt et al., 2021, p. 16; Wellenreuther, 2021). ▸ BOX 29 Furthermore, rising CO₂ certificate prices are likely to contribute to higher inflation rates in the medium term (Nöh et al., 2020).

Another structural trend that could lead to higher inflation rates in the longer term is the increasing **ageing of the world's population** and the associated decline in the percentage size of the labour force. ▸ ITEM 90 While population ageing began some time ago in many advanced economies, it is also likely to increase in the future in many emerging economies – especially China. Goodhart and Pradhan (2020) argue that this can lead to higher inflation via three channels. First, the ratio of the number of people of retirement age to the number of people of working age increases. Second, the resulting shortages of labour and skilled workers could strengthen the bargaining power of trade unions and employees and thus lead to disproportionately large increases in real wages. Third, an increase in the macroeconomic propensity to consume – triggered by lower saving by the elderly population – could raise the real interest rate as investment needs remain high. This would ceteris paribus also have an inflationary effect.

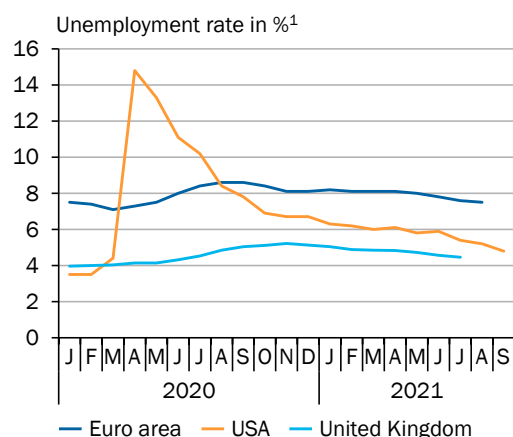
Last but not least, the disinflationary trends of globalisation and the international division of labour could be reversed in the future. Even before the pandemic, there were increasing signs that **globalisation** was beginning to **reverse** due to the rise of protectionist measures such as Brexit or the trade conflict between the United States and China. This could be reinforced by political measures such as the 'Buy American Act' in the United States or the 'Made in China 2025' plan.

15. The **situation on the labour markets** is increasingly returning to normal. However, the recovery process here is bumpy in some areas and still marked by the influence of the pandemic; it is lagging behind the macroeconomic recovery. It is true that unemployment has been falling and employment rising in the major

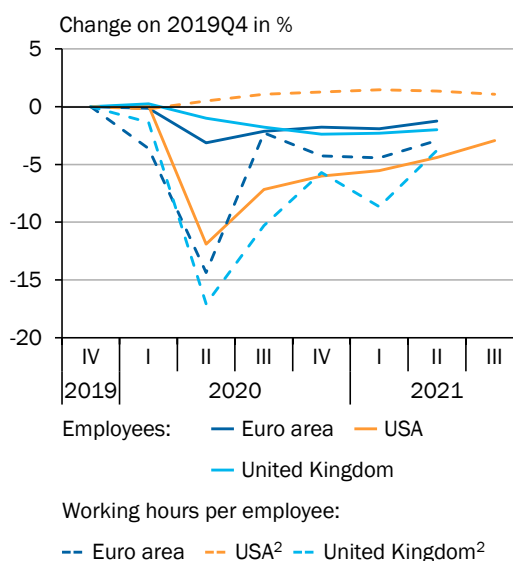
↘ CHART 8

Labour markets still shaped by the pandemic

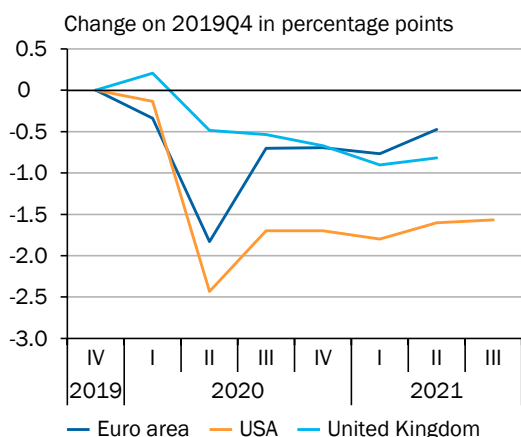
Unemployment further declining



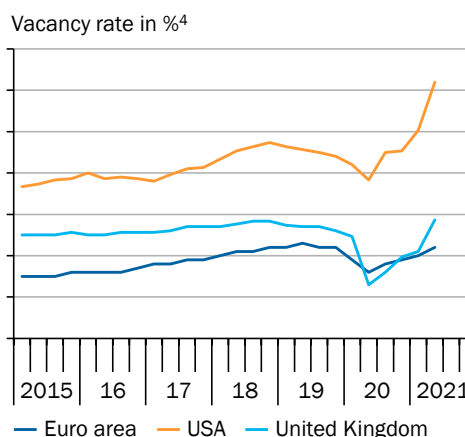
Different effects of the coronavirus recession on employment in large economies



Participation rates still below pre-crisis levels³



Strong increase of vacancies



1 – According to the measuring concept of the ILO (International Labour Organization). 2 – Calculations based on average weekly working time. 3 – The participation rate measures the share of the population that is active on the labour market (employed + unemployed) over the age of 16 at the labour force potential (employed + unemployed + inactive). 4 – Share of vacancies as measured by the sum of occupied and open positions.

Sources: BLS, Eurostat, OECD, ONS, own calculations
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advanced economies since the end of 2020. ↘ CHART 8 TOP At the same time, however, the labour supply – measured in terms of labour-market participation – is still markedly lower than before the pandemic. ↘ CHART 8 BOTTOM LEFT This decline is probably due to a variety of reasons. For example, some of those who temporarily left the labour market may not have returned as yet (ILO, 2021) and barriers in the reallocation process are likely to delay the process of filling vacancies (Anayi et al., 2021). ↘ ITEMS 410 FF. In addition, still limited childcare provision, state income-replacement benefits or concerns about contracting coronavirus, particularly in contact-intensive occupations, could still be reasons for low labour-market participation (ILO, 2021, pp. 18 f.; IMF, 2021a, pp. 7 f.). This contrasts with a

sharp rise in the demand for labour in certain sectors of the economy, with the result that there are signs of labour bottlenecks and temporary frictions on the labour market (BoE, 2021, pp. 29 f.). [↪ CHART 8 BOTTOM RIGHT](#)

↪ TABLE 1

Gross domestic product and consumer prices of selected countries

Country/country group	Weight in % ¹	Gross domestic product ²			Consumer prices		
		Change on previous year in %					
		2020	2021 ³	2022 ³	2020	2021 ³	2022 ³
Europe	28.4	- 5.8	5.3	4.2	1.2	3.2	2.9
Euro area	17.3	- 6.4	5.2	4.3	0.3	2.4	2.1
United Kingdom	3.6	- 9.8	6.5	5.0	0.9	2.3	2.9
Russia	2.0	- 3.0	5.5	3.2	3.4	6.4	5.2
Central and Eastern Europe ⁴	1.8	- 3.9	5.1	4.8	3.0	4.2	3.8
Turkey	1.0	1.8	9.0	3.4	12.3	17.9	15.5
Other countries ⁵	2.7	- 2.3	3.5	3.5	0.2	1.7	1.4
America	34.6	- 3.9	5.5	4.2	2.0	5.3	4.1
United States	27.8	- 3.4	5.5	4.4	1.2	4.5	3.5
Latin America ⁶	2.6	- 8.2	7.1	3.6	10.8	13.3	9.8
Brazil	1.9	- 4.1	5.2	1.5	3.2	8.1	5.8
Canada	2.2	- 5.3	4.9	4.1	0.7	3.2	2.6
Asia	37.1	- 0.9	6.1	4.8	2.1	1.4	2.0
China	19.8	2.3	7.9	5.0	2.5	1.0	1.8
Japan	6.7	- 4.6	2.0	2.9	0.0	- 0.2	0.5
Asian advanced economies ⁷	4.0	- 1.1	4.9	3.2	0.2	2.1	1.9
India	3.5	- 7.3	8.4	8.9	6.6	5.1	5.3
Southeast Asian emerging economies ⁸	3.0	- 4.7	3.0	5.3	1.0	2.0	2.4
Total	100	- 3.3	5.7	4.4	1.8	3.3	3.0
Advanced economies ⁹	66.1	- 4.6	4.9	4.1	0.8	3.0	2.6
Emerging economies ¹⁰	33.9	- 0.9	7.2	5.0	3.8	3.7	3.6
memorandum:							
weighted by exports ¹¹	100	- 4.4	5.8	4.2	.	.	.
following IMF concept ¹²	100	- 2.7	6.0	4.7	.	.	.
World trade ¹³		- 5.4	10.8	4.7	.	.	.

1 – GDP (US dollar) of the named countries or country groups in 2020 as a percentage of total GDP of the named countries or country groups, corresponding to 88 % of the IMF country group weighted by US dollars and 84 % of the IMF country group weighted by purchasing power parities. 2 – Price-adjusted. 3 – Forecast by the German Council of Economic Experts. 4 – Bulgaria, Croatia, Czech Republic, Hungary, Poland, Romania. 5 – Denmark, Norway, Sweden, Switzerland. 6 – Argentina, Chile, Colombia, Mexico. 7 – Hong Kong, Republic of Korea, Singapore, Taiwan. 8 – Indonesia, Malaysia, Philippines, Thailand. 9 – Asian advanced economies, euro area, Central and Eastern Europe, Canada, Denmark, Japan, Norway, Sweden, Switzerland, United Kingdom, United States. 10 – Latin America, Southeast Asian emerging economies, Brazil, China, India, Russia, Turkey. 11 – Total of all listed countries. Weighted by the respective shares of German exports in 2020. 12 – Weights according to purchasing power parities and extrapolated to the countries covered by the IMF. 13 – As measured by the Dutch Centraal Planbureau (CPB).

Sources: CPB, Eurostat, IMF, national statistical offices, OECD, own calculations

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An **international comparison** shows the **different effects of labour-market-support programmes**. While the United States stabilised household incomes by raising unemployment benefits – and facilitating access to them – [↪ CHART 9 RIGHT](#) both the United Kingdom and most member states of the euro area are relying on the payment of short-time working benefits. The fall in employment and rise in unemployment were much more moderate in these countries. Instead, the number of hours worked per employee fell sharply. [↪ CHART 9 TOP RIGHT](#)

Bottlenecks will shape further global economic development

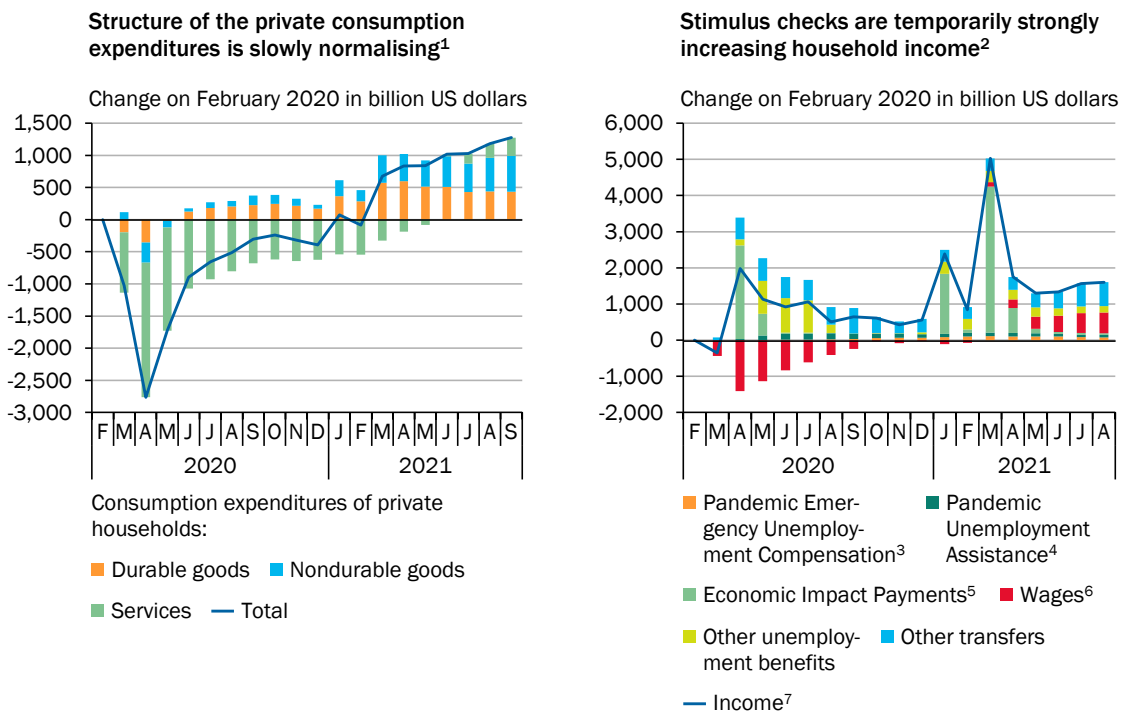
16. The momentum of **global economic activity** has slowed noticeably so far this year, but overall the **recovery** is likely to **continue**. Nevertheless, supply-side bottlenecks and further waves of infection are likely to dampen the recovery towards the end of 2021. Next year, the supply and capacity bottlenecks should slowly ease and lose some of their impact. As vaccination rates continue to rise, large-scale closures of entire economic sectors can probably be avoided, particularly in the advanced economies and some emerging economies, [↪ ITEM 4](#) so that the recovery in the sectors severely affected by the pandemic should continue. Nevertheless, rising infection rates are again likely to have a slightly dampening effect in these areas in the winter half-year 2021/22. Overall, the GCEE expects **global GDP growth of 5.7 % in 2021 and 4.4 % in 2022**. [↪ TABLE 1 Global trade in goods](#) is expected to post strong growth of 10.8 % this year and 4.7 % next year, despite the sideways movement over the summer.

The major economies in detail

17. In the **United States, the economic recovery continued unbroken in the first half of 2021**. Real GDP expanded strongly in the first and second quarter at just over 1.5 % and 1.6 % respectively; in the second quarter it slightly exceeded its pre-crisis level of Q4 2019. **Private consumer spending** in particular **rose** by almost 3 % in each of the first two quarters of 2021 compared to the previous quarter, thus making a strong contribution to growth. [↪ CHART 9 LEFT](#) In this context, the easing of restrictions was accompanied by a rise in the consumption of services, especially in the second quarter, which was stronger than in the second half of 2020, but without returning to the real level seen in February 2020. At the same time, service prices rose quite strongly, so that in nominal terms private expenditure on services is already above the pre-crisis level. [↪ CHART 9 LEFT](#) By contrast, spending on consumer durables, which had risen sharply during the previous year, declined markedly in both nominal and real terms. The economic stimulus packages in January and March 2021 are likely to have provided some additional positive impetus for private consumption, since the **transfer payments** led to a **strong expansion** of private-household **incomes** in some months. However, they probably only led to limited increases in consumption expenditure, as most of them were saved or used to reduce debt (Coibion et al., 2020; Perez-Lopez and Monte, 2021; Taylor, 2021). [↪ CHART 9 RIGHT](#)
18. The **US labour market** continues to recover, although the traces of the pandemic are still clearly visible. The unemployment rate [↪ GLOSSARY](#) and employment

↪ CHART 9

Change of income and consumption expenditures of private households in the USA



1 – Nominal private consumption expenditures, seasonally adjusted annual rate. 2 – Matches the publication of the BEA on 1 October 2021. Update not possible due to missing division of the components from the special evaluation of the federal pandemic response programs. 3 – The Pandemic Emergency Unemployment Compensation Program prolongues the payments for 13 weeks if all other regular aid facilities are already exhausted. 4 – The Pandemic Unemployment Assistance Program provides unemployment aid to persons who would not be eligible for it under normal circumstances. 5 – The US Internal Revenue Service provided in total three Economic Impact Payments to all eligible citizens in the amount of a maximum of 1,200 US dollar in April 2020, 600 US dollars in January 2021, and 1,400 US dollars in March 2021. 6 – Wages and other private income sources. 7 – Seasonally adjusted annual rate.

Sources: BEA, own calculations
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figures are improving steadily, but have not yet returned to pre-crisis levels. ↪ CHART 8 TOP Moreover, the **participation rate** is still about 1.6 percentage points **below pre-crisis levels** and has been nearly **stagnant** since Q3 2020 ↪ CHART 8 BOTTOM LEFT ↪ ITEM 15 At the same time, the **job vacancy rate** – with the ratio of vacancies to the number of unemployed people at about 1 – currently exceeds the average for the years 2015 to 2019. ↪ CHART 8 BOTTOM This indicates at least temporary frictions in the labour market (IMF, 2021a, p. 10). ↪ ITEM 15 In some sectors of the economy, labour bottlenecks are currently leading to rising wages. So far, however, this has applied mainly to the hospitality industry and the logistics sector, where an increase in the quits rate has also been recently observed. However, there are currently no signs of a broader trend towards higher wages (IMF, 2021a, p. 10).

- 19. Year-on-year **consumer price inflation** in the **United States** has been **high** this year and rose again to 5.4 % in September after price pressures had eased somewhat in August. ↪ CHART 6 LEFT Base effects and individual special factors, such as a sharp rise in prices for used cars and for travel and transport services, contributed to the upward pressure on prices, particularly in the spring and summer

(Hauber, 2021; Koester et al., 2021). ↘ **ITEM 12** Recently, housing-related expenditure, which accounts for a large share of the basket of goods at around 30 %, has also increased again. This made a below-average contribution to price increases last year due to rent moratoria that have since expired (RWI, 2021). The sharp 24.8 % increase in energy prices contributed about 1.6 percentage points to consumer price inflation in September.

20. In view of the persistent underutilisation of capacity in the labour market, uncertainty about the further course of the pandemic and the rise in inflation, which is seen as primarily temporary, **monetary policy** in the United States is likely to remain expansionary for the time being, and to be **tightened only gradually over the forecast period** (Fed, 2021b). For example, the September monetary-policy meeting indicated that first interest rate hikes can be expected in 2022 (Fed, 2021c). Nine of the 18 members of the Federal Open Market Committee (FOMC) expect an interest rate hike in 2022, with six members expecting a rate of between 0.25 % and 0.5 % and three members a rate of between 0.5 % and 0.75 %. Moreover, if economic recovery continues, the Fed is likely to start reducing its bond purchases from the current monthly level of 120 billion US dollars before the end of the year. The **fiscal boost** provided by the pandemic-related economic stimulus packages is likely to weaken as the year progresses. Negotiations on two major infrastructure packages are still ongoing, making it difficult to assess their impact on growth at this stage. However, most of the impact is not likely to be felt until after the forecast horizon.
21. **Consumer sentiment clouded** noticeably in the summer, probably due to the rapid spread of the Delta variant and high infection rates since the summer, as well as the discontinuation in September of the unemployment benefit increase in all the federal states. For example, retail sales figures were clearly negative in July, but rose again slightly in August and September. Despite the bottlenecks, industrial production was surprisingly robust in the summer. However, a marked decline was recorded in September, largely due to a downturn in the automotive industry. **GDP growth** thus slowed to **0.5 % in Q3 2021** compared to the previous quarter. However, with the decline in the number of infections since the end of September, the impact of the pandemic should gradually diminish, so that somewhat stronger growth is already expected in the final quarter. Nevertheless, supply-side constraints are likely to continue to dampen the short-term outlook. Growth should then pick up again more strongly in the coming year. This is due not least to the fact that the bottlenecks are likely to gradually ease, so that positive stimuli should come from industrial production. Overall, the GCEE reckons with **GDP growth** of 5.5 % for the **United States** this year and 4.4 % next year. There is uncertainty about an agreement on a further increase in the debt ceiling in December.
22. In **China**, **GDP growth** had slowed considerably to 0.2 % quarter-on-quarter in Q1 2021, but then noticeably **regained momentum in Q2 2021**, rising by 1.2 % on a seasonally adjusted basis. This was most likely largely due to the recovery in the services sectors, which were severely affected by the pandemic at the beginning of the year. Nevertheless, private consumption and consequently the services and retail sectors have not yet fully recovered. The retail sector again showed

considerable weaknesses in July and August, probably due to a decline in consumer confidence. Although industrial production expanded strongly last year, it lost momentum in the second and third quarter this year. This was due to persistent shortages of preliminary products, temporary production losses in connection with local increases in the number of infections, and power rationing in large parts of energy-intensive production. In addition, a decline in the pandemic-related boom in exports of personal and medical protective equipment is likely to have contributed to the slowdown in growth (Deutsche Bundesbank, 2021a, pp. 46 f.). As a result, according to the first official estimates, the **Chinese economy cooled off considerably in the third quarter** with growth of only 0.2 %.

23. In view of the rapid recovery of the Chinese economy last year, monetary and fiscal policy had already pursued a less expansionary course and withdrawn some of the pandemic-related liquidity support. In addition, the Chinese authorities have taken a much tougher line with regard to the **regulation of various sectors of the economy**, above all affecting private **lending**, the **digital economy** and the **real-estate sector**. Combined with electricity rationing, this is likely to contribute to the slowdown in growth, especially in the short term. The looming insolvency of the **Evergrande** real-estate group shows that the level of debt in the real-estate sector, which, at around 29 %, accounts for a large share of the Chinese economy, poses significant growth risks for the near future, especially if contagion effects occur within the industry (Rogoff, 2021).
24. The GCEE has therefore lowered its **GDP-growth forecast for China** for the **current year** to 7.9 %. In the **coming year**, growth is then likely to be significantly lower at 5.0 %, i.e. below the government's target of 6 %. However, in view of the current uncertainty in the Evergrande case and possible related major distortions on the Chinese financial and real-estate markets, the forecast involves considerable downside risks.
25. **Economic development in Japan again took a turn for the worse as a result of the coronavirus pandemic** in H1 2021. Rising infection figures and the resulting containment measures led to a decline in private demand and caused GDP to fall by 1.1 % overall in the first quarter. In the second quarter, the economy as a whole only revived slightly with GDP rising by just 0.5 %. Although private consumption and non-governmental investment provided much bigger growth stimuli, these were weakened by negative net exports and a decline in public investment.
26. By contrast to other advanced economies, consumer-price inflation in Japan remains at the extremely low level seen since the 1990s. Since the beginning of the year up to and including August 2021, **consumer prices** fell continuously year-on-year; only in September was there a slight year-on-year increase of 0.2 %. The negative inflation rates this year were mainly influenced by cuts in the mobile-communications charges of many providers from March 2021 onwards and a change in the base year, the influence of which should diminish in the further course of the forecast period (BoJ, 2021, pp. 44 ff.). The rise in global energy and producer prices is likely to lead to higher consumer price inflation in the future. A

change in monetary policy is not to be expected over the forecast period in view of the continued low inflation overall.

27. **Growth in Japan** was also probably **weak in the third quarter**. The Summer Olympic Games, which were held from the end of July to the beginning of August, are unlikely to have generated much positive momentum, as they were held virtually behind closed doors. However, the number of coronavirus infections rose sharply in connection with the sporting event and reached its highest level to date in August, which probably contributed to a marked decline in consumer sentiment in the summer. Retail sales, for example, slumped by over 4 % in August compared to July, and the purchasing managers' index in the services sector fell to its lowest level since the beginning of the pandemic, recovering only slightly in September. The monthly figures available so far for industrial production also point to a weak third quarter.

In view of the significant decline in the infection figures, the pandemic-related state of emergency was lifted in all prefectures at the end of September. As a result, the **economic recovery should pick up again more strongly in Q4 2021 and next year**. The GCEE expects GDP growth of 2.0 % in the current year 2021 and 2.9 % in 2022.

28. In the **United Kingdom**, following a decline in the first quarter, GDP **expanded strongly again in the second quarter**, growing by 5.5 % compared to the previous quarter. As the pandemic eased and many restrictions were lifted in the second quarter, private consumption in particular rose strongly, contributing 4 percentage points to vigorous growth. In the services sector, the hospitality industry and transport recorded strong growth. By contrast, output in many industrial sectors declined in the face of persistent supply and capacity bottlenecks, offset only by strong growth in the production of food, alcohol and tobacco.
29. **Consumer prices are rising significantly in the United Kingdom**. The year-on-year inflation rate was 3.1 % in September. Base effects especially from the hospitality industry have recently been added to those from the energy sector. In addition to the base effects, the sharp rise in gas prices has also contributed to the increase in inflation. Although the Bank of England currently still regards the rise in inflation as temporary and has maintained its expansionary monetary policy for the time being, it is signalling that it may raise interest rates sooner than hitherto expected by the financial markets.
30. In view of the high level of immunity among the population, almost all remaining restrictions were eased in the **United Kingdom** in mid-July, which should further support private consumption and have a stimulating effect on growth. Even so, **growth is likely to slow down noticeably**. GDP growth in July was thus slightly down on the previous month (–0.1 %), and only rose by 0.4 % in August. The main reason for this was most likely a slowdown in private consumption, as the recovery here is already well advanced. Furthermore, the economic picture is currently dominated by a **variety of supply-side bottlenecks**. As in the United States, the transport and hospitality sectors are particularly hard hit by labour shortages. These are being caused in the United Kingdom by an outflow of foreign labour as a result of Brexit and the pandemic, as well as pandemic-related labour-

market frictions. [↘ ITEM 15](#) Overall, the GCEE is raising its **expectations on GDP growth** in 2021 to 6.5 %, much higher than in the spring forecast, due to a much better-than-expected H1 in 2021. Growth is also likely to continue strongly in 2022 at 5.0 %.

31. In the **Eastern European economies, economic recovery continued** almost unabated in the first half of the year, despite high infection rates in some countries. For example, GDP in this group of countries rose quarter-on-quarter by 1.4 % in the first quarter and 1.5 % in the second quarter. Only in Bulgaria did GDP decline in the first and second quarter; in the Czech Republic, it declined slightly in the first quarter. Industrial production, which is important for the region, has been a key factor in the recovery so far. However, the withdrawal of many containment measures led to an improvement in both consumer and producer confidence, giving a boost to private investment and consumer spending, especially in the second quarter. Recently, however, the bottlenecks in the supply of preliminary products have burdened production and had a negative impact on the purchasing managers' indices. In view of high inflation rates, the central banks of Hungary, the Czech Republic and Poland have already raised interest rates. The **economic recovery is likely to continue during the forecast period**, not least because positive growth stimuli can be expected from the first disbursements under the Recovery and Resilience Facility in the coming year. [↘ ITEM 190](#) Overall, the economy in the region should grow strongly by 5.1 % in 2021. Growth is then expected to weaken only slightly to 4.8 % in 2022.
32. **India** was hit particularly hard by a new wave of infections in the spring, halting what had been a fairly strong recovery and again pushing GDP below the pre-crisis level of Q4 2019. [↘ ITEM 7](#) With infection rates falling since then, economic activity is expected to recover significantly, so that the GCEE expects growth of 8.4 % in 2021 and 8.9 % in 2022.

In **Brazil**, Latin America's largest economy, GDP declined slightly in the second quarter amid persistently high infection rates. Rapidly rising inflation and a depreciation of the Real prompted the Brazilian central bank to raise interest rates, which could have a dampening effect on economic development in the further forecast period. While GDP is still expected to expand strongly in the current year at 5.2 %, growth is likely to weaken considerably to 1.5 % in the coming year.

2. Euro area – rapid recovery despite production obstacles

33. Many euro area member states were affected by a **renewed increase in infection rates** at the beginning of 2021. [↘ CHART 1 LEFT](#) This necessitated restrictions, but, unlike in spring 2020, these were **primarily** limited to parts of the **services sector**. However, an easing of the pandemic situation and a withdrawal of restrictions led to an upturn in Q2 2021, again supported by the services sector.

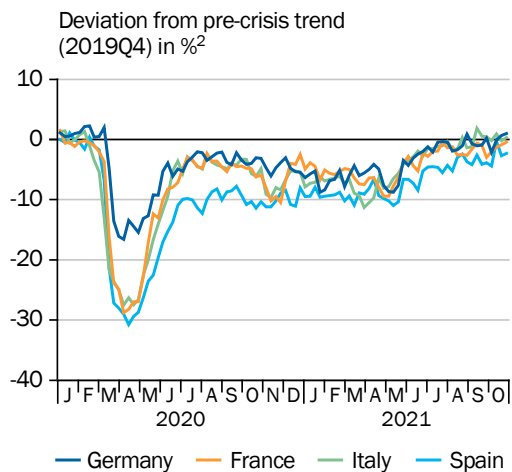
Economic situation – industrial stagnation, services on the upswing

34. The second and third waves of infections and the associated restrictions led to quarter-on-quarter declines in the euro area's calendar and seasonally-adjusted real **GDP of 0.4 % in Q4 2020 and 0.3 % in Q1 2021**. However, the decline in new infections supported by rising vaccination rates and the gradual rollback of restrictions led to a strong quarter-on-quarter growth of 2.1 % in Q2 2021. **Heterogeneity across euro area member states** was again very high during the slump in the winter half-year 2020/21. In the first quarter, GDP contracted by 1.9 % in Germany and grew slightly by 0.1 % in France. Italy, by contrast, grew by 0.3 %. GDP in Ireland rose by 8.7 % in Q1 2021, following a 4.6 % slump in Q4 2020. The great volatility and high growth in Ireland are due to the presence of multinational companies, some of which declare their profits there. Ireland's gross national income [↘ GLOSSARY](#) decreased by 1.1% in Q1 2021 and increased by 2.1 % in Q4 2020. The signs of the growth rates compared with GDP were thus reversed in the two quarters and the range of fluctuation was much narrower. The **recovery in the second quarter** was particularly strong in Portugal (4.5 %), Austria (4.0 %), the Netherlands (3.8 %) and Italy (2.7 %); it was rather weak in France (1.3 %).
35. Euro area GDP in Q2 2021 was still 2.7 % below **the pre-crisis level** of Q4 2019. Here too, there are major differences among the member states. While Finland,

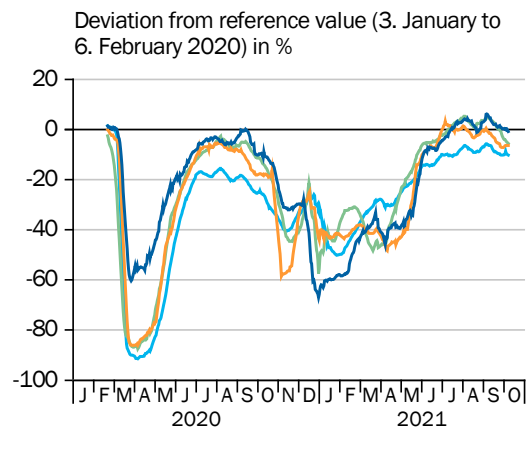
↘ CHART 10

Real-time indicators in selected member states of the euro area during the corona pandemic

Convergence of the economic activity to the pre-crisis trend according to real-time indicators
OECD GDP Tracker¹



Pedestrian movements in retail and leisure sectors close to pre-crisis levels again according to real-time indicators
Google mobility indicator³



1 – The OECD Weekly Tracker of GDP growth is a real-time high-frequency indicator of economic activity using machine learning combined with Google search queries related to consumption, housing, trade, industrial activity and economic uncertainty. 2 – Pre-crisis trend based on OECD GDP forecasts from November 2019. 3 – Change in mobility based on anonymised and aggregated location history activity collected by Google compared to a reference value from 3. January to 6. February 2020.

Sources: Google, OECD, own calculations
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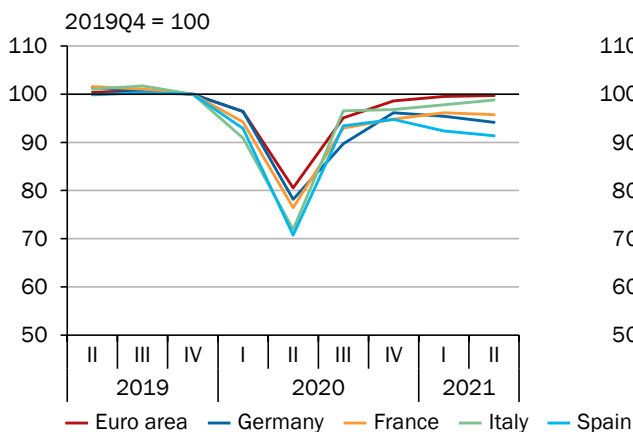
Greece, Luxembourg, Ireland and the Baltic states are above the pre-crisis level, in some cases significantly, the gap for Germany, France, Italy, Portugal and Spain is still about -2.9 %, -3.0 %, -3.9 %, -5.8 % and -8.4 % respectively. Even before the crisis, the trend growth rates were significantly higher than the euro area average especially in Eastern European countries such as the Baltic states. It is becoming apparent that growth there is likely to be correspondingly higher in the future as well. [▶ ITEM 7](#) By contrast, the Southern European member states are characterised by relatively weak trend growth and are also more dependent than average on tourism, which has been particularly hard hit by the measures taken to contain the pandemic (Economic Outlook 2021 item 25). [▶ ITEM 185](#)

- 36. Particularly in times of big fluctuations, **real-time indicators** can help better assess current economic developments. The OECD's GDP tracker, for example, uses economic queries in the Google search engine to approximate the published quarterly real GDP in the member states on a weekly basis. [▶ CHART 10 LEFT](#) The indicator gives the percentage difference from a GDP trend forecast by the OECD in November 2019 and can thus be interpreted as a deviation of estimated weekly GDP from a trend expected before the Corona crisis. Since the indicator has tracked GDP dynamics relatively closely during the pandemic (Woloszko, 2020), recent observations are informative for Q3 2021, for which data have not yet been published in all member states. It can be seen that there has been a convergence towards the pre-crisis trend, especially in recent months. Another indicator on pedestrian movements based on daily private mobility data is particularly relevant for the services sector. [▶ CHART 10 RIGHT](#) For the current quarter, this indicator points to a recovery of services, although recently it has been slowing slightly again.

▶ CHART 11

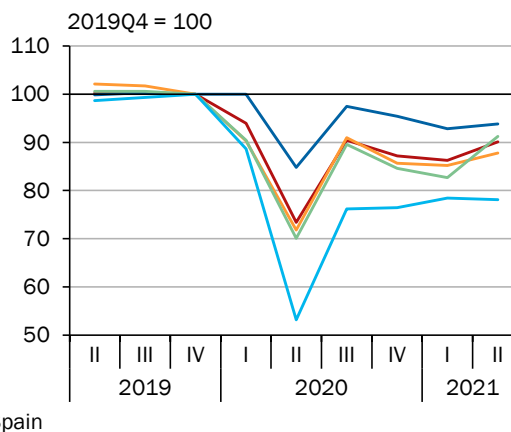
Sectoral gross value added in the euro area¹

Stagnation of the manufacturing sector at the current margin
Gross value added in the manufacturing sector



Recovery in the 2nd quarter of 2021

Gross value added in trade, transport and hospitality



1 – Price-, seasonally and calendar-adjusted values.

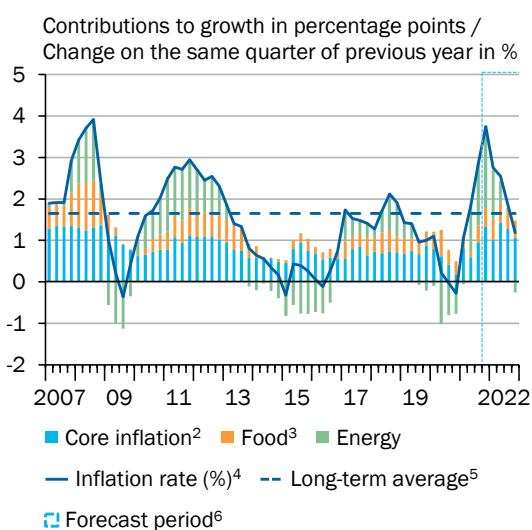
Sources: Eurostat, own calculations
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37. An examination of economic development in the euro area reveals clear differences between sectors. For example, gross value added in **manufacturing** recovered quickly after the sharp drop in Q2 2020 and had almost returned to pre-crisis levels by Q1 2021. [↪ CHART 11 LEFT](#) Since then, however, it has grown only slightly. The main reason for this is likely to be **supply bottlenecks** for preliminary products, which are restricting production. [↪ BACKGROUND INFO 2](#) The fact that, in relative terms, the gross value-added of the manufacturing sector in the euro area aggregate has been higher than that of the large member states Germany, France, Italy and Spain since Q4 2020 can be explained by the fact that it has been higher in all but a few of the other member states. For the **services sector** in the euro area, the dynamics are somewhat different. Starting from the initial slump in the spring of 2020 and a subsequent recovery, gross value-added in the retail, transport and catering sectors experienced another big slump in Q1 2021 as a result of the resurgence of new infections and the closure of large sections of the retail and catering sectors. However, the easing of travel and contact restrictions and the opening up of services sectors in Q2 2021 led to an upward development. Gross value-added in the services sector in the euro area is currently still 9.9 % below the pre-crisis level. [↪ CHART 11 RIGHT](#)
38. During the coronavirus crisis, **employment and unemployment rates** in the euro area remained relatively stable, despite the sharp pandemic-related falls in value added (GCEE Annual Report 2020 item 34). [↪ CHART 8 TOP](#) The employment level in Q2 2021 was still 1.2 % below its pre-crisis level of 161,3 million. In August, the unemployment rate [↪ GLOSSARY](#) was 7.5 %, i.e. almost back to the pre-crisis level of 7.4 % (February 2020). During the crisis, the number of hours worked fell much

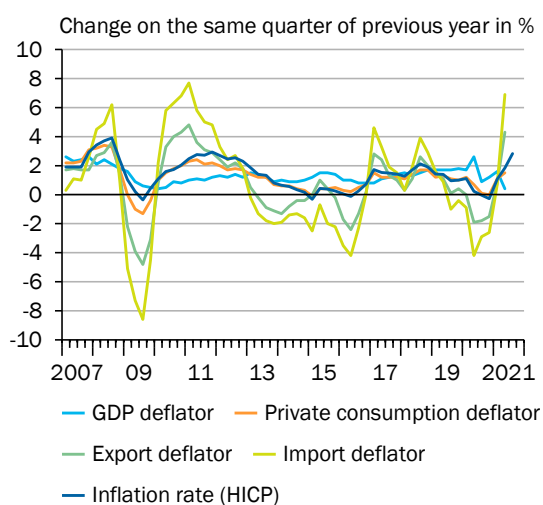
[↪ CHART 12](#)

HICP¹ and deflators for the euro area

Rise in energy prices drives inflation



Currently opposite development between GDP deflator and HICP



1 – Harmonised Index of Consumer Prices. 2 – Overall index excluding energy and food. 3 – Food including alcohol and tobacco. 4 – Change of the HICP on the same quarter of previous year. 5 – Average over the period of the years 1999 to 2020. 6 – Forecast by the GCEE.

Sources: Eurostat, own calculations
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more sharply than the employment rate as a result of the payment of benefits for short-time working. [↪ ITEM 15](#) Most recently it was still 4.2 % below the pre-crisis level. Gross wages (which, by definition, do not include payments from short-time-working benefits) rose 10.0 % year-on-year in Q2 2021, after falling about 8.0 % in 2020. Here, too, short-time working was a major reason for the strong fluctuation. [↪ CHART 8 TOP RIGHT](#) The index of negotiated wages published by the ECB rose by only 1.7 % year-on-year in Q2 2021, which is comparable to the increases seen in the pre-crisis years.

39. The dynamic recovery of the overall economy in the euro area has been accompanied by a **strong increase in consumer prices**. According to a Eurostat first release of October this year, the rate of inflation measured with the Harmonised Index of Consumer Prices (HICP) [↪ GLOSSARY](#) reached 4.1 % – the highest figure since July 2008 – following its more-than-four-year low of -0.3 % in September 2020. On the one hand, the high price increase has been driven by unexpectedly large **increases in energy and commodity prices**. [↪ CHART 12 LEFT](#) [↪ ITEM 10](#) The sharp upward revisions of inflation forecasts in the course of this year are indicative of this and highlight the scale of the unexpected price rises. [↪ ITEM 13](#) On the other hand, the high price increase is due to the expected expiry of the temporary reduction in the rate of VAT and the introduction of the CO₂ tax in Germany at the beginning of 2021 (Nöh et al., 2020). According to the first release, the **core inflation rate** [↪ GLOSSARY](#) rose to 2.1 % year-on-year in October. [↪ ITEM 42](#) The price increase for industrial goods excluding energy was 2.0 % and for services 2.1 %.
40. Using the **GDP deflator** [↪ GLOSSARY](#) as a measure of the price rise, a moderate decline in growth can be seen compared to 2020. Unlike the HICP, which reflects the prices of privately consumed goods and services, the GDP deflator includes the prices of all goods and services produced in the euro area. In Q2 2021, the GDP deflator rose by only 0.4 % compared to the corresponding quarter of the previous year. [↪ CHART 12 RIGHT](#) The divergent developments in the HICP and the GDP deflator are largely due to the import deflator. This recorded an increase of 6.9 % compared to the same quarter of the previous year as a result of rising oil and commodity prices. Since the import deflator has a negative effect on the calculation of the GDP deflator, the latter falls when import prices are higher. By contrast, the HICP is positively related to import prices (Wieland, 2021). Moreover, the HICP is relatively strongly correlated with the private consumption deflator.
41. Since the beginning of 2021, companies in the euro area have increasingly reported **bottlenecks in the supply of raw materials and preliminary products such as semiconductors**, which particularly restrict production in the manufacturing sector. [↪ BACKGROUND INFO 2](#) According to corporate surveys conducted on behalf of the European Commission, the proportion of industrial companies reporting supply shortages in Q3 was 43 %. As a consequence, delivery times and prices for preliminary products have risen sharply (Attinasi et al., 2021; Wohlrabe, 2021), to which companies have initially reacted by reducing their inventories (Wohlrabe, 2021). However, there is evidence that they successively pass on the higher input prices to the consumer along the value chains (Elding et al., 2021; Wohlrabe, 2021). [↪ BOX 6](#) In addition to the supply bottlenecks, the

higher freight costs and commodity prices could lead to an increase in inflation. Empirical studies have shown that past increases in freight costs have significantly increased consumer-price inflation in the United States and OECD countries (Herriford et al., 2016; OECD, 2021c). A recent analysis by the GCEE on the euro area comes to similar conclusions. [▶ BOX 3](#) The causes of the bottlenecks are manifold, so that a progressive reduction is not expected until sometime in 2022.

[▶ BACKGROUND INFO 2](#)

[▶ BOX 3](#)

Analysis of the impact of rising supply bottlenecks and transport costs on consumer prices in the euro area

Two forecasting models are compared to estimate the impact of higher freight costs and worsening supply bottlenecks on consumer price inflation. In the baseline model, the quarterly rate of change in the consumer price index excluding energy and food (core inflation) follows a vector autoregressive (VAR) model that additionally includes the output gap and commodity prices excluding energy. This specification represents a Phillips curve model that relates inflation trends to economic capacity utilisation (Ciccarelli et al., 2017; Jarociński and Lenza, 2018). A forecast of **core inflation rates** for 2022 and 2023 is drawn up based on an estimate of this model.

In order to take into account the impact of supply bottlenecks and higher freight costs, this VAR model is extended to include a freight cost indicator (HARPEX) and the European Commission's survey-based indicator for supply bottlenecks in manufacturing. Both indicators are logarithmised, as this reflects the effects of their relative changes in the estimation and also improves the model's statistical explanatory power. It turns out that both indicators exhibit a slight leading indicator property for the core inflation rate. [▶ CHART 13 LEFT](#) Both indicators have **risen sharply** since the **beginning of 2021**, suggesting price pressure over the forecast horizon.

According to the unconditional VAR forecast for the years 2022 and 2023, **the core inflation rate could turn out higher** than in the baseline model forecast, **taking into account supply bottlenecks and freight-cost increases**. Accordingly, it would be 0.6 percentage points higher for 2022 and 0.5 percentage points higher for 2023. Looking at freight costs and supply bottlenecks separately, we find that both indicators have a significant effect on the forecast of consumer prices in 2022. **However, the effect of the freight costs is slightly stronger and longer-lasting** than that of supply bottlenecks, so that the estimated effect in 2023 can be attributed to freight costs.

In addition, the strong effect in 2023 can be explained by the fact that the unconditional forecast assumes a slow decline in the supply bottlenecks and freight costs to the mean by Q4 2022. In the event of a **faster return to the mean** as early as the end of Q2 2022, a conditional forecast shows that while inflation will still be 0.3 percentage points higher in 2022, there is then no longer any difference for the whole of 2023 compared to the base scenario. [▶ CHART 13 RIGHT](#)

The effects in the individual member states are likely to be heterogeneous. For example, analyses for Germany, France and Italy show that the increases in freight costs and the supply bottlenecks have the largest effect in Italy and the smallest in Germany. By contrast, the effects in France are similar to those of the euro area aggregate.

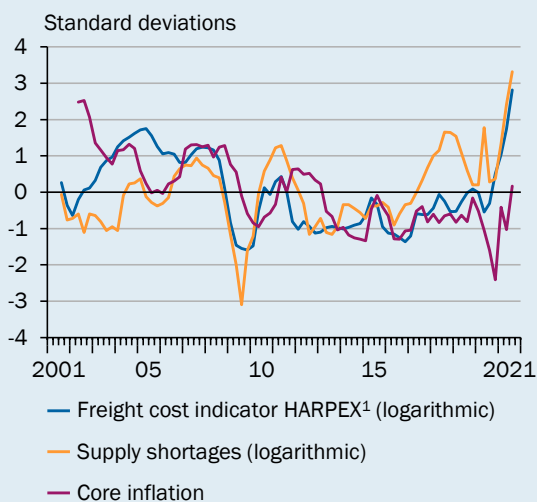
It thus appears that **supply and capacity bottlenecks and freight cost increases could lead to a rise in core inflation in the euro area in 2022**. The size of the impact depends on which normalisation scenario is assumed. The normalisation of the supply bottlenecks in the winter half-year assumed in the conditional forecast is somewhat more optimistic than the GCEE's basic assumption, so that the results should be interpreted conservatively. On the other hand,

it should be noted that the forecast values given are merely scenarios and are not based on a structural causal analysis. Furthermore, the model does not take into account a possible conditional cost transfer.

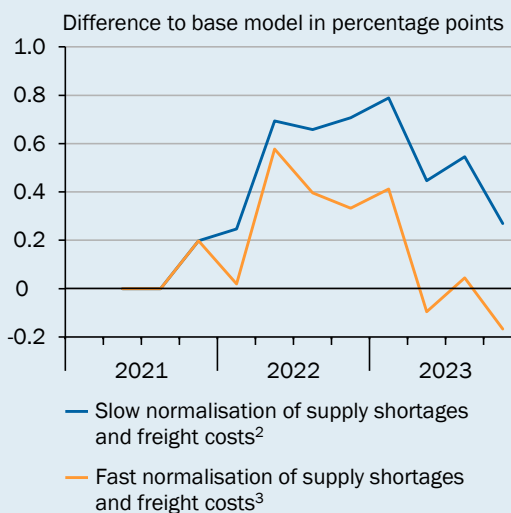
▾ CHART 13

Implications of supply shortages and freight costs for the inflation forecast

Sharp rise in freight costs and supply shortages ...



... with a positive effect on the core inflation rate according to model scenarios



1 – The freight cost indicator Harper Petersen Charter Rate Index (HARPEX) measures container freight rates in the time charter market for periods of 3 to 48 months for seven ship classes with a defined minimum speed of 17 to 24 knots. 2 – Shown is the difference between the inflation forecast from the extended VAR model (including HARPEX and supply shortages) and the forecast from the base model. A normalisation of freight costs and supply shortages is assumed according to the forecast of the model. 3 – Shown is the difference between the inflation forecast from the extended VAR model (including HARPEX and supply shortages) and the forecast from the base model. Freight costs and supply shortages are assumed to return to their mean by the end of Q2 2022.

Sources: European Commission, Eurostat, Harper Petersen & Co., own calculations
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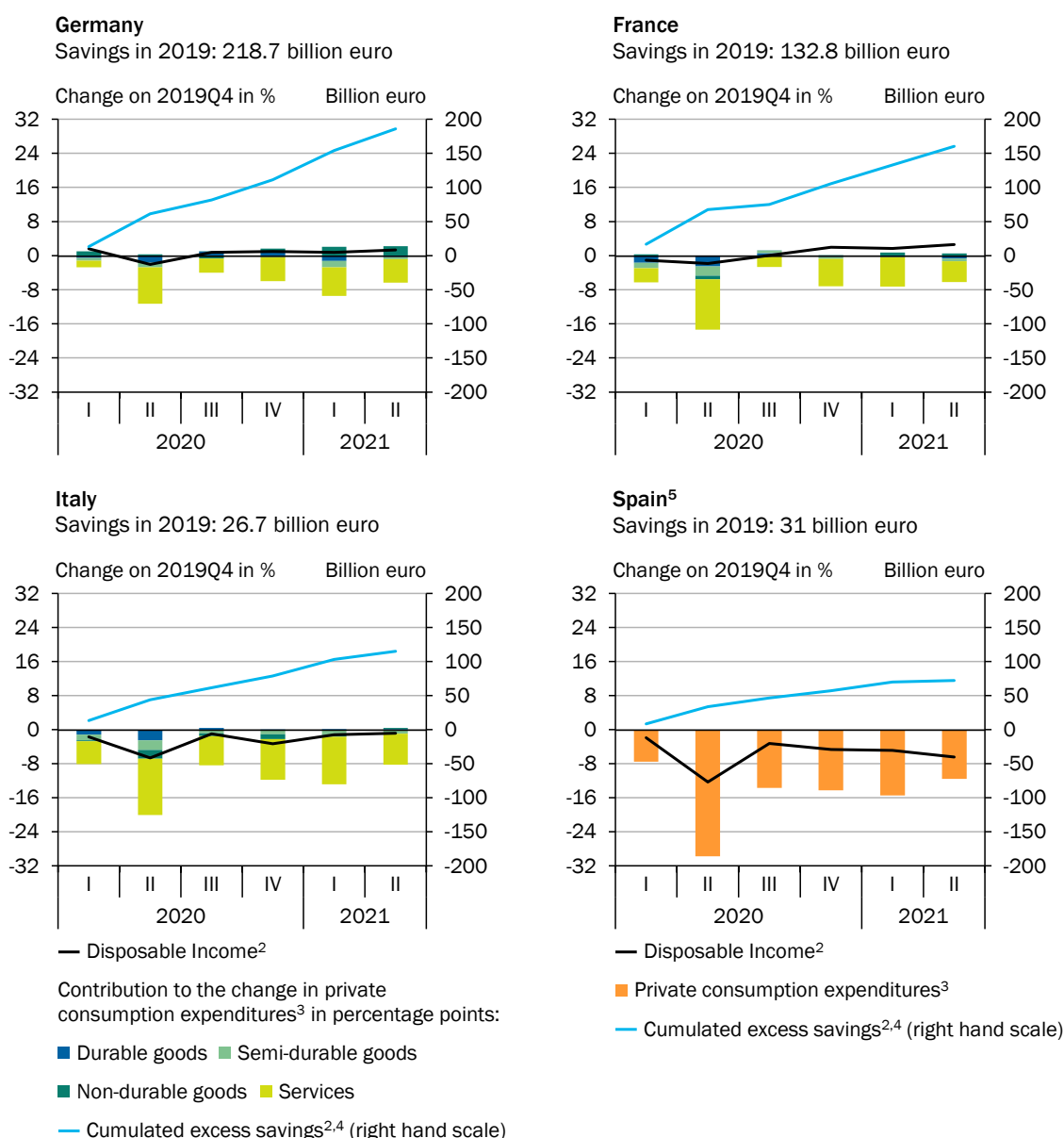
42. Up to now, **monetary policy** has reacted cautiously to the rise in consumer-price inflation. The ECB has announced that it will moderately reduce net bond purchases under the Pandemic Emergency Purchase Programme (PEPP) in Q4 2021, as it still regards favourable financing conditions as guaranteed (ECB, 2021a). ▾ ITEM 157 However, the key interest rates are to remain at the current level or lower until the ECB comes to the assessment that inflation will reach – and stabilise at – the symmetric target level of 2 % well before the end of the forecast horizon (ECB, 2021b). ▾ ITEMS 164 AND 181 Thus, the basic direction of monetary policy is likely to remain **expansionary**, at least in the current and coming years.

Against this background, the **financing conditions** for consumers and businesses, as well as for euro area member states, remain very favourable, and this should support economic growth. For example, the Country Level Index of Financial Stress (CLIFS) published by the ECB, which uses several indicators to

measure disruptions on the financial market, rose slightly in spring 2021, although it is currently back at a low level. The same applies to the yields on the member states' 10-year government bonds. Credit growth, which surged in 2020, has normalised somewhat in the current year (Economic Outlook 2021 item 30). In September 2021, corporate credit growth was 2.1 % and private household credit growth 4.1 % year-on-year (ECB, 2021b). Credit standards for businesses and private households remained virtually unchanged in Q3 2021 for the second consecutive quarter, according to the Bank Lending Survey, following a slight tightening in the winter half-year 2020/21 (ECB, 2021c). [▶ ITEM 111](#)

▶ CHART 14

Most of the excess savings resulted from lower expenditure for services¹



1 – Seasonally and calendar adjusted. In current prices. 2 – Of private households and private organisations without pecuniary reward. 3 – Of private households. 4 – Excess savings are estimated as counterfactual via the average saving rate over the years 2015 to 2019 and added together by quarters. Cumulated from 2020Q1. 5 – No decomposition of private consumption.

Sources: Eurostat, own calculations
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Outlook – growth continues

43. The relatively low **infection figures** in the summer half-year and the lifting of restrictions on public and economic life in the euro area have led to a recovery of the **services sector**. However, as it has not yet returned to pre-crisis levels, the GCEE expects that the **need to catch up** in the services sector will support growth in the third and fourth quarters. Furthermore, it is assumed that widespread containment measures can be avoided, should infections rise. [↘ ITEM 4](#) The lack of momentum in **euro area industry** is likely to continue for the time being in view of the **supply-side bottlenecks**. Although incoming orders are high and influenced by a generally positive mood, they seem to have become detached from production due to the multiple product and material shortages, so that demand cannot be met. The GCEE believes that a significant growth spurt in industry is only likely to emerge as the supply and delivery bottlenecks are continuously reduced in the course of 2022.
44. The GCEE expects favourable growth conditions for the euro area in 2022. **Further measures to relax coronavirus restrictions** should become possible in 2022, allowing the population's **consumption and travel behaviour** to normalise further. This should provide a strong impetus for growth, particularly in countries that are heavily dependent on services in general and tourism in particular, such as Spain, Greece and Portugal. In addition, the reduction of pandemic-related **excess savings** [↘ GLOSSARY](#) by private households could generate additional demand. [↘ CHART 14](#) For example, in Germany, as things stand, unplanned savings had reached about €186 billion by Q2 2021 since the start of the pandemic. However, since the decline in consumption is mainly due to lower spending on services, only part of this saving is likely to be spent in the context of catch-up effects (Friz and Morice, 2021; Economic Outlook 2021 item 32). Last but not least, the **European Recovery and Resilience Plans** are likely to be realised more and more in 2022, [↘ ITEM 190](#) leading to higher investment spending; positive **fiscal stimuli from the United States** are also expected to have an effect (Economic Outlook 2021 item 19).
45. After the sharp slump in the euro area's GDP of –6.4 % in 2020, the GCEE expects growth of 5.2 % for the current year, thus revising its forecast upwards by 1.1 % compared to the spring 2021 forecast. Above-average growth is expected for France (6.7 %) and Italy (6.3 %); growth is likely to be slightly slower in Spain (4.8 %) and Germany (2.7 %). [↘ ITEM 71](#) Economic growth in the euro area is expected to remain high at 4.3 % in 2022. The pre-crisis level should be reached in the euro area by the end of Q4 2021. [↘ TABLE 2](#)
46. For **consumer prices**, measured by the HICP, the GCEE forecasts an increase of 2.4 % in the euro area in the current year. In 2022, the inflation rate should then fall again slightly to around 2.1 %. [↘ TABLE 2](#) After the elimination of the base effects in 2021, the GCEE expects that, in addition to supply-side production obstacles, energy price increases and generally strong macroeconomic demand are likely to drive prices up in 2022. [↘ ITEMS 41 AND 47](#)

TABLE 2

Gross domestic product, consumer prices and unemployment rate in the euro area

Country/ country group	Weight in % ¹	Gross domestic product (calendar-adjusted) ²			Consumer prices (HICP) ³			Unemployment rate ⁴		
		Change on previous year in %						%		
		2020	2021 ⁵	2022 ⁵	2020	2021 ⁵	2022 ⁵	2020	2021 ⁵	2022 ⁵
Euro area⁶	100	- 6.4	5.2	4.3	0.3	2.4	2.1	7.9	7.7	7.2
including:										
Germany	29.6	- 4.9	2.7	4.7	0.4	3.0	2.4	3.8	3.7	3.2
France	20.2	- 8.0	6.7	3.5	0.5	2.0	2.0	8.0	8.0	7.7
Italy	14.5	- 9.0	6.3	3.7	- 0.1	1.7	1.8	9.3	9.6	9.0
Spain	9.9	- 10.8	4.8	6.8	- 0.3	2.6	2.2	15.5	14.8	13.9
Netherlands	7.0	- 3.8	4.4	3.4	1.1	2.2	2.0	3.8	3.3	3.0
Belgium	4.0	- 5.7	6.1	3.6	0.4	2.6	2.2	5.5	6.3	5.8
Austria	3.3	- 6.8	4.9	4.0	1.4	2.7	2.4	6.0	6.4	5.8
Ireland	3.3	5.8	14.3	4.2	- 0.5	2.0	2.1	5.9	6.8	5.9
Finland	2.1	- 2.9	3.5	2.8	0.4	2.0	1.7	7.7	7.8	7.3
Portugal	1.8	- 8.4	4.4	5.7	- 0.1	0.8	1.6	7.1	6.7	6.3
Greece	1.5	- 7.8	9.6	4.2	- 1.3	0.2	2.1	16.4	15.0	13.7
memorandum:										
Euro area without Germany	70.4	- 7.0	6.2	4.1	0.3	2.1	2.0	9.4	9.2	8.6

1 – GDP in the year 2020 as a percentage of the GDP of the euro area. 2 – Price-adjusted. Values are based on seasonal and calendar-adjusted quarterly figures. 3 – Harmonised index of consumer prices. 4 – According to the measuring concept of the ILO (International Labour Organization). For the total euro area and euro area without Germany weighted by the labour force of 2020. 5 – Forecast by the German Council of Economic Experts. 6 – Weighted average of the 19 euro area member states.

Sources: Eurostat, own calculations

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An evaluation of inflation forecasts by several institutions shows that they predicted higher inflation rates in the euro area in the period from 2014 to 2020 than subsequently materialized. The precision of the GCEE's forecasts is comparable to that of other institutions in this context. [BOX 4](#)

[BOX 4](#)

Evaluation of inflation forecasts by the GCEE and other institutions

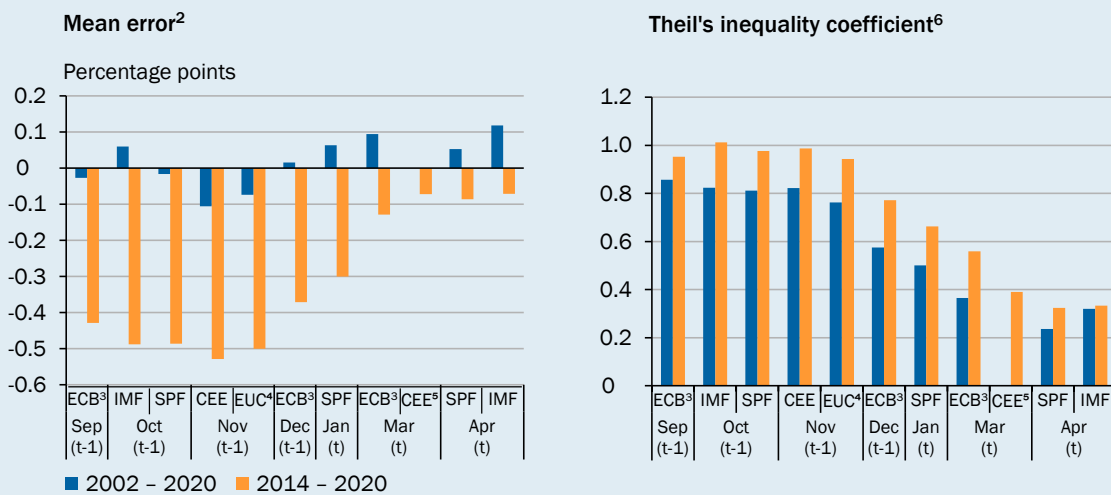
An evaluation of the inflation forecasts made by the GCEE and other institutions shows that **during the years 2014 to 2020, systematically higher inflation rates were forecast than actually occurred**. The mean forecast error across the institutions during this period was 0.3 percentage points. This is particularly striking because no systematic deviation was found when looking at the period from 2002 to 2020, and the overall errors were smaller than in the period from 2014 to 2020. [CHART 15 LEFT](#) Ciccarelli et al. (2017) argue that ex post the weak macroeconomic demand in the euro area has been the main cause of the low inflation dynamics. Ex ante, however, it was assumed that there would be a strong recovery following the sovereign debt crisis and thus significant pressure on prices. In addition, Ciccarelli et al. (2017) identify structural factors such as a fall in trend inflation and higher inflation persistence as a cause of

the underestimation, as these can lead to misspecifications of the forecasting models. The decline in the equilibrium interest rate is also likely to have played a role in the weaker-than-expected inflation rate. [▶ ITEM 183](#) Last but not least, an overestimation of the effects of quantitative easing on inflation probably contributed to the forecast errors (Fabo et al., 2021).

Moreover, the inflation forecasts show larger errors when the following year is forecast rather than the current year. This can be explained by the fact that the data set used for forecasting in year t-1 does not yet contain any information for the year t to be forecast. This results in a less precise estimate of the inflation rate compared to when the data status and the forecast year coincide. Finally, the evaluation shows that the forecasting models used by the institutions are of a better quality than a naive extrapolation of the inflation rate. This can be seen in the Theil coefficient, which relates the forecasting errors to those of a reference model. If the coefficient is less than 1, the forecast is better than the reference model. [▶ CHART 15 RIGHT](#) The quality of the GCEE's forecasts does not differ significantly from that of other institutions.

[▶ CHART 15](#)

Accuracy of selected forecasts of the inflation rate in the euro area¹



1 – The year t displayed in the axis labeling refers to the forecast year. t-1 thus refers to the previous year.
 2 – Negative values indicate that the forecast was above the actually realised value. 3 – Macroeconomic projections by staff of the ECB (March and September) and of the Eurosystem (December). 4 – European Commission.
 5 – Before 2014, the GCEE did not calculate a spring forecast for the inflation rate. 6 – Square root of the ratio of the mean squared forecast error and the mean squared forecast error of an alternative model, in which the inflation rate is assumed to remain unchanged.

Sources: ECB, European Commission, Eurostat, IMF, Survey of Professional Forecasters (SPF), own calculations
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3. Opportunities and risks

- 47. The **course of the coronavirus pandemic remains a major risk** to global economic development, particularly as it could prolong capacity and supply bottlenecks. A renewed worsening of COVID-19 incidence, particularly in emerging economies and developing countries without sufficient access to vaccines, could promote the **emergence of new virus variants**. [▶ ITEM 4](#) There is a risk of a renewed acceleration of global infections if the currently available vaccines prove to be less effective in protecting against infection and severe progressions of the

disease. In this case, the healthcare system could be at risk of becoming overstretched, which could again interrupt economic recovery and **put a lasting damper on growth prospects**.

In addition to prolonging or intensifying supply-side bottlenecks, rising infection rates could again put pressure on **private consumption**. This is particularly true if far-reaching health-policy restrictions become necessary, or if voluntary restraint on the part of private households increases again. Furthermore, renewed **restrictions** could affect the **labour supply** – e.g. when parents are affected by shortages in childcare services. [↘ ITEMS 15 AND 290](#) However, it can be assumed that more and more companies and households will have adapted better to the situation. Accordingly, the negative impact on economic activity should be smaller in the winter of 2021/22 than in 2020/21 if the number of infections increases.

48. In principle, there is a **risk** that **capacity and supply bottlenecks will persist for longer** than assumed and that energy prices will continue to rise; this could have a sustained negative impact on global industrial production and foreign trade. Such a development would be exacerbated by the risk of recurring production disruptions, particularly in China and other emerging economies that are closely integrated into global value chains. Moreover, many advanced economies are experiencing labour shortages in several sectors of the economy. Although these are likely to decrease as the pandemic-related shifts in the consumption structure return to normal, [↘ ITEM 80](#) significantly higher wage settlements could have an additional **inflationary effect** should there be a persistent and **widespread shortage of skilled workers** exceeding the level of the pre-crisis years.
49. **Continuing supply-side bottlenecks** and demand-induced sharply rising energy prices also **involve the risk** that what are in fact temporary drivers of prices could lead to **persistently higher inflation rates**. [↘ BOX 2](#) [↘ BOX 3](#) If the current sharp increases in consumer-price inflation in many advanced economies continue for longer, for example as a result of a stronger-than-expected increase in demand, this, coupled with continuing expansionary monetary and fiscal policy in many countries, could lead to an entrenchment of **higher inflation expectations** among private households. Second-round effects could lead to a wage-price spiral, which would present central banks in particular with difficult choices. [↘ BACKGROUND INFO 3](#) A late and therefore abrupt tightening of monetary policy to ensure price stability could then prematurely interrupt economic recovery. [↘ ITEMS 181 FF.](#)
50. Since the pandemic-related restrictions on demand have probably led to a decline in the equity base of many companies, a renewed slump in economic development could lead to an **increase in insolvencies and** the associated **unemployment**. Resulting loan defaults could lead to increased risk provisioning by banks and thus to bottlenecks in new lending. This could prevent business investment and, in extreme cases, threaten financial stability. [↘ ITEMS 404 F.](#) [↘ BOX 18](#)
51. **Opportunities** for a better development than forecast would arise above all if the pandemic could be overcome more quickly than expected – for example through an accelerated **global availability of vaccines**. [↘ BOX 1](#) The resulting earlier stabilisation of private-household and business expectations

would **provide an additional boost to global demand** – especially for services and capital goods. Furthermore, on the demand side there is great potential for improved economic development, e.g. the additional private savings built up in the advanced economies during the pandemic, as well as government economic and future-oriented measures. A prerequisite for this, however, is that the current supply-side bottlenecks are resolved. Otherwise, a considerable proportion of the higher demand that cannot be met is likely to result in higher prices. Moreover, this high demand, combined with the still very favourable financing conditions for companies, could lead to a stronger acceleration of private capital formation.

II. GERMAN ECONOMY

52. After the pandemic-related setback in the winter half-year 2020/21, the German economy continued its recovery **from Q2 2021** onwards. The increasing vaccination of large sections of the adult population has supported the rapid decline in new infections, enabling many sectors of the economy that were previously restricted to **increasingly open up**. As a result, the pandemic-related behavioural adjustments of private households have probably normalised to some extent; taken together, this has most likely stabilised consumer demand in particular. Nevertheless, the short-term **prospects for further recovery have dimmed** compared to the spring. In particular, the worldwide supply and capacity bottlenecks are impacting on German industry, which is highly integrated into global value chains. [↪ BACKGROUND INFO 2](#) Rising energy, commodity and transport costs are putting pressure on companies' profit margins and are likely to be passed on, at least in part, to consumers. [↪ BOX 3](#) Furthermore, according to the Robert Koch Institute (RKI, 2021g, 2021h), the currently observed increase in the number of new infections is likely to accelerate further in the course of the winter half-year 2021/22, e.g. because of increased numbers of indoor contacts. [↪ ITEM 4](#) This is likely to initially dampen the further recovery of private demand and thus – despite a still-favourable external environment and expansionary monetary and fiscal policy – slow down economic growth in Q4 2021 and Q1 2022.
53. The GCEE expects **economic output to grow by 2.7 % in 2021** (without any significant calendar effects). [↪ TABLE 3](#) Supply-side bottlenecks are likely to postpone into next year much of the industrial recovery that was forecast in the spring, [↪ ITEM 59](#) as evidenced, for example, by the widening gap between output and high level of orders. This means that the pre-crisis level of Q4 2019 is unlikely to be reached again until Q1 2022. In **2022, economic output is then expected to pick up again and to grow by 4.6 %** (4.7 % adjusted for calendar effects). The output gap should close in the course of next year and turn positive again by the end of 2022. However, prolonged supply-side bottlenecks and a resurgence of pandemic activity in the winter of 2021/22 pose significant downside risks. [↪ ITEM 47](#) On the other hand, there are also opportunities for stronger growth – for example, via a stronger reduction in pandemic-related private savings. [↪ ITEM 51](#)

TABLE 3

Key economic indicators for Germany

	Unit	2019	2020	2021 ¹	2022 ¹
Gross domestic product^{2,3}	Growth in %	1.1	- 4.6	2.7	4.6
Final consumption expenditure	Growth in %	1.9	- 3.2	0.6	5.1
Private consumption ⁴	Growth in %	1.6	- 5.9	- 0.2	7.4
Government consumption	Growth in %	3.0	3.5	2.5	0.1
Gross fixed capital formation	Growth in %	1.8	- 2.2	2.3	4.2
Investment in machinery & equipment ⁵	Growth in %	1.0	- 11.2	5.1	6.8
Construction investment	Growth in %	1.1	2.5	1.2	2.6
Other products	Growth in %	5.5	1.0	0.9	4.5
Domestic demand ³	Growth in %	1.8	- 4.0	2.5	4.7
Net exports	Growth contribution in percentage points	- 0.7	- 0.8	0.3	0.1
Exports of goods and services	Growth in %	1.1	- 9.3	7.9	6.6
Imports of goods and services	Growth in %	2.9	- 8.6	8.1	7.1
Current account balance⁶	%	7.4	6.9	6.3	6.1
Persons employed (domestic)	1,000	45,268	44,898	44,892	45,374
Persons employed, covered by social security	1,000	33,518	33,579	33,824	34,286
Registered unemployment, stocks	1,000	2,267	2,695	2,633	2,367
Unemployment rate ⁷	%	5.0	5.9	5.7	5.1
Consumer prices ⁸	Growth in %	1.4	0.5	3.1	2.6
General government budget balance ⁹	%	1.5	- 4.3	- 4.9	- 1.9
Gross domestic product per capita ^{10,11}	Growth in %	0.8	- 4.6	2.7	4.5
Gross domestic product, calendar-adjusted ¹¹	Growth in %	1.1	- 4.9	2.7	4.7

1 – Forecast by the GCEE. 2 – Price-adjusted. Change on previous year. Also applies to all listed components of GDP. 3 – As the expenditure-side composition of the revisions to GDP in the first half of 2021 is still pending, it is assumed that they represent an adjustment to the changes in inventories. 4 – Including non-profit institutions serving households. 5 – Including military weapon systems. 6 – In relation to GDP. 7 – Registered unemployed in relation to civil labour force. 8 – Change on previous year. 9 – Regional authorities and social security according to national accounts; in relation to GDP. 10 – Population development according to medium-term projection of the GCEE calculations. 11 – Price-adjusted. Change on previous year.

Sources: Federal Employment Agency, Deutsche Bundesbank, Federal Statistical Office, own calculations
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54. In its forecast for Germany, the GCEE expects that industrial production will continue to be burdened by the multiple **supply-side bottlenecks** over the winter. **In 2022**, however, these bottlenecks are likely to be gradually **reduced** in many areas. [▶ BACKGROUND INFO 2](#) The GCEE assumes that it should be possible to **control the pandemic by means of targeted and regional measures** without re-introducing far-reaching restrictions on public and economic life. [▶ ITEM 4](#) Since vaccinations – at least for the currently dominant virus variants – should significantly reduce the risk of severe courses of the disease, it can be assumed that a situation comparable to the winter of 2020/21 can be avoided. However, to achieve this it is essential that a sufficient number of new infections can be prevented, either by individual and organisational contact-reducing measures – such as general hygiene and more mobile working – or by a further increase in the vaccination rate (RKI, 2021h). In September, the RKI presented an updated phased approach for the winter half-year 2021/22 (RKI, 2021h). [▶ ITEM 47](#)

1. Developments to date – consumption is recovering, but industrial production is faltering

55. **Macroeconomic development remains strongly influenced by the direct and indirect consequences of the pandemic**, whereby the heterogeneity between economic sectors is relatively high. [↪ BOX 6](#) [↪ ITEM 388](#) Following the historic slump in GDP in spring 2020, the renewed **decline in winter 2020/21** was less pronounced, but it **interrupted economic recovery** and represented a setback particularly for personal services. [↪ BOX 5](#) Furthermore, supply and capacity bottlenecks in the global value chains increasingly slowed down production in German industry from the spring onwards.

[↪ BOX 5](#)

Dating the peak before the COVID-19 recession in Germany

The **coronavirus pandemic led to a 4.9 % slump in price- and calendar-adjusted GDP in Germany in 2020**. The macroeconomic development since the beginning of the pandemic differs from previous recession phases primarily in the high dynamics during the year. Both the slump of almost 12.0 % in H1 2020 compared to Q4 2019, and the strong 9.0 % upswing from Q2 to Q3 2020 are the highest quarterly rates of change since the introduction of quarterly national accounts (NA) [↪ GLOSSARY](#) in 1970. [↪ CHART 16 TOP LEFT](#)

The business cycle-dating committees of the National Bureau of Economic Research (NBER, 2020) for the United States and the Centre for Economic Policy Research together with the Euro Area Business Cycle Network (CEPR-EABCN, 2020) for the euro area, and the committees for France (Ferrara and Mignon, 2021) and Spain (AEE, 2020) have dated the business cycle peaks for their respective economies to Q4 2019 and February 2020. The divergence between the monthly dating and the quarterly dating is due to the rapid and sharp drop in economic activity in March 2020. Despite the still-upward trend in most countries at the beginning of 2020, this led to a decline in the quarterly average of the overwhelming majority of economic indicators. Since economic recovery in the United States – unlike the economies in the euro area – has continued uninterrupted since last year, the NBER has dated the trough to as early as Q2 2020 or April 2020 (NBER, 2021).

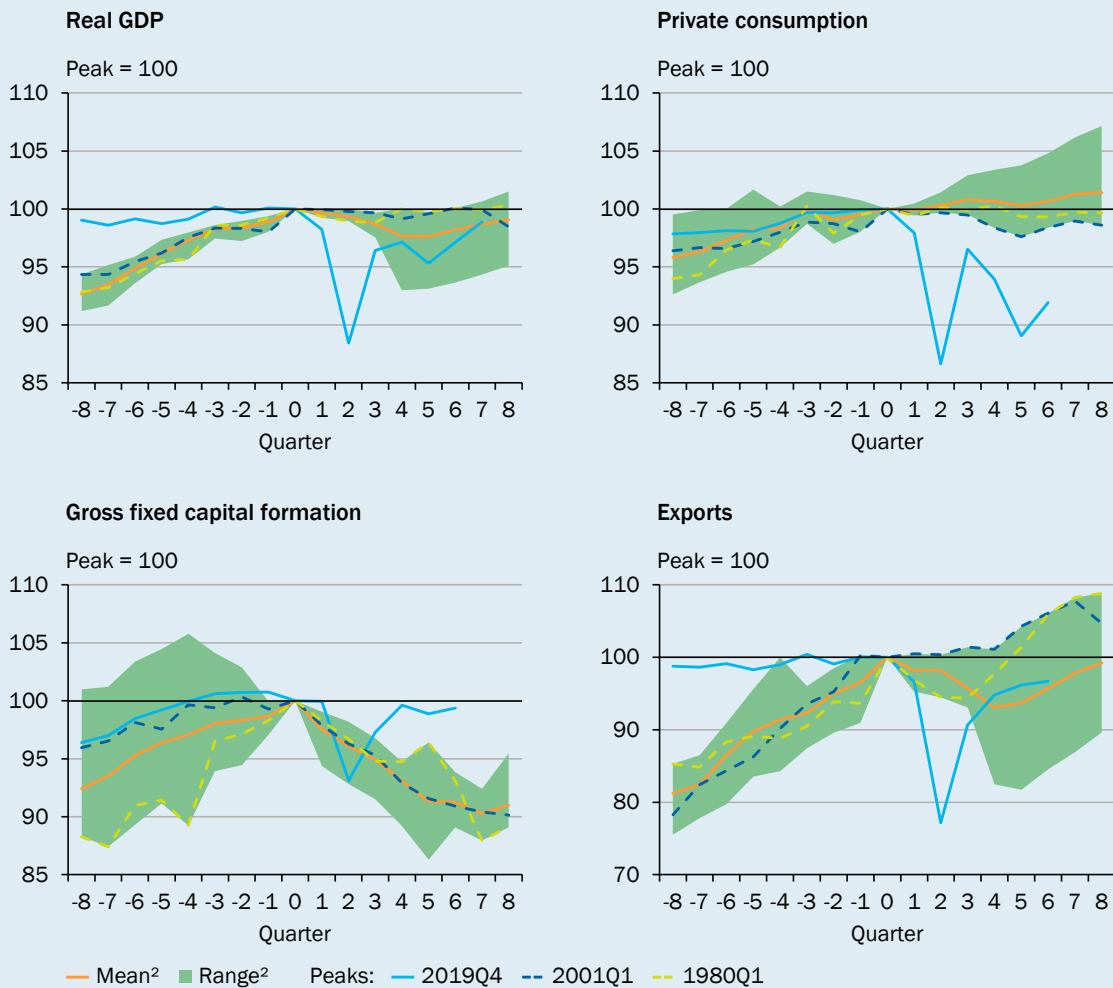
Based on the multidimensional and expert-based approach (Breuer et al., 2018) established in the 2017 Annual Report (GCEE Annual Report 2017 Box 7), **the GCEE also dates the business cycle peak before the coronavirus recession in Germany as Q4 2019 or February 2020**. Despite the stagnating industrial production already prevalent in 2018 and 2019 (GCEE Annual Report 2019 items 85 ff.), the onset of the pandemic in March 2020 is clearly visible in the development of all relevant economic indicators. [↪ CHARTS 16 AND 27 APPENDIX](#) Moreover, an ex-post evaluation of the development of the indicators – especially including the revisions to the national-accounts results in August 2021 – confirms the assessment made at the time that the period of economic weakness in 2018 and 2019 was mainly confined to industry and thus did not meet the conditions of a macroeconomic recession (GCEE Annual Report 2019 item 84). An estimated probit model provides additional evidence for this interpretation, indicating a jump in the probability of recession for March 2020. The model is based on the GCEE's previous business cycle dating and uses various real economic indicators as well as financial-market variables (GCEE Annual Report 2018 Box 3; GCEE Annual Report 2019 item 97; GCEE Special Report 2020 item 57).

Due to the continued elevated uncertainty about the course of the pandemic in the winter half-year 2021/22 **as well as** the possibility of extensive **revisions** to the quarterly and monthly

developments of the years 2020 and 2021 in the official statistics, the GCEE is **not dating the trough** at this point in time. However, this decision does not mean that Germany is currently still in recession. The GCEE does not expect a renewed slump in overall economic activity over the forecast horizon. By contrast, earlier recession phases – namely the 1980-1982 and 2001-2003 recessions – were also characterised by a temporary recovery of individual economic indicators. [↘ CHARTS 16 AND 27 APPENDIX](#) Next year, the GCEE will re-evaluate the dating of the trough as part of its regular assessment of the economic situation.

↘ CHART 16

Characteristic development of GDP and its components during recession periods¹
 Relative to the peak of the business cycle (t=0)²



1 – Germany from 1991, previously former West Germany. 2 – A total of five recessions according to GCEE chronology since 1970 (GCEE Annual Report 2017 box 7; peaks: 1. quarter 1974, 1. quarter 1980, 1. quarter 1992, 1. quarter 2001, 1. quarter 2008).

Sources: Deutsche Bundesbank, Federal Statistical Office, own calculations
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Another strong recovery of private demand in summer

56. After adjustments for price, seasonal and calendar effects [↘ GLOSSARY](#), **GDP** declined in Q1 2021 compared to the previous quarter due to the pandemic, but economic activity **picked up** again significantly **from May onwards**. The rapid decline in the number of new infections made it possible to ease the containment measures linked to regional incidence and led to an increasing recovery in private demand. According to the Federal Statistical Office's **first release** of 29 October 2021, growth continued at **1.8 %** in **Q3 2021**. The development of the expenditure components will not follow until the more detailed results are announced on 25 November 2021. Moreover, second quarter growth after seasonal and calendar adjustments was revised upwards by 0.3 percentage points to 1.9 %, while the decline in the first quarter was revised slightly upwards to 1.9 %. Thus, at the beginning of Q4, after price, seasonal and calendar adjustments, GDP is still 1.1 % short of the pre-crisis level of the final quarter of 2019. The high level of growth is probably being driven mainly by further normalisation in the services sectors.
57. **On the expenditure side, GDP growth in Q2 2021** was already **driven by the recovery of private consumer spending**. In the wake of rebounding consumption opportunities and government action to stabilise incomes, the household savings rate fell 2.2 percentage points to 16.8 % in the second quarter, which is still very high by historical comparison (between 2015 and 2019, the median rate was 10.6 % after adjustment for seasonal and calendar effects). Especially sales in the personal services sectors and the stationary retail sector, which was still under restrictions in the winter, increased significantly. Real turnover for all **retail trade** excluding motor vehicles was also up in the second quarter, but fell sharply in July. [↘ CHART 17 TOP RIGHT](#) In August, however, the loss was partially made up – buoyed by the non-food business. Mail-order and internet retail, which expanded rapidly during the pandemic, peaked in May after price, season, and calendar adjustments, and has remained well above pre-crisis levels since then but about 8.2 % below the Q2 2021 mean. [↘ BOX 6](#) After declining by around 26.0% quarter-on-quarter in Q1 2021 on a seasonally and calendar-adjusted basis and remaining more or less flat in the second quarter (0.2%), **new car registrations** fell by around 6.9% in the third quarter. Whereas at the beginning of the year the decline was probably mainly due to anticipatory effects caused by the temporary reduction in VAT, it can be assumed that long delivery times in the wake of production difficulties probably explain at least part of the decline in sales figures since July.
58. **Capital formation and foreign trade provided less impetus** than private consumption in the second quarter. Gross fixed capital formation grew in the spring by 0.5 % compared to the previous quarter, after adjustment for price, seasonal and calendar effects. However, this was not enough to offset the 0.7 % decline in Q1 2021. Despite continued strong demand, supply-side bottlenecks probably dampened both investment and the expansion of exports. As imports grew more strongly than exports in H1 2021, foreign trade's statistical contribution to growth was clearly negative in the first two quarters (–1.0 % and –0.6 %, respectively). In the spring, the 1.8 % increase in real **government consumption**

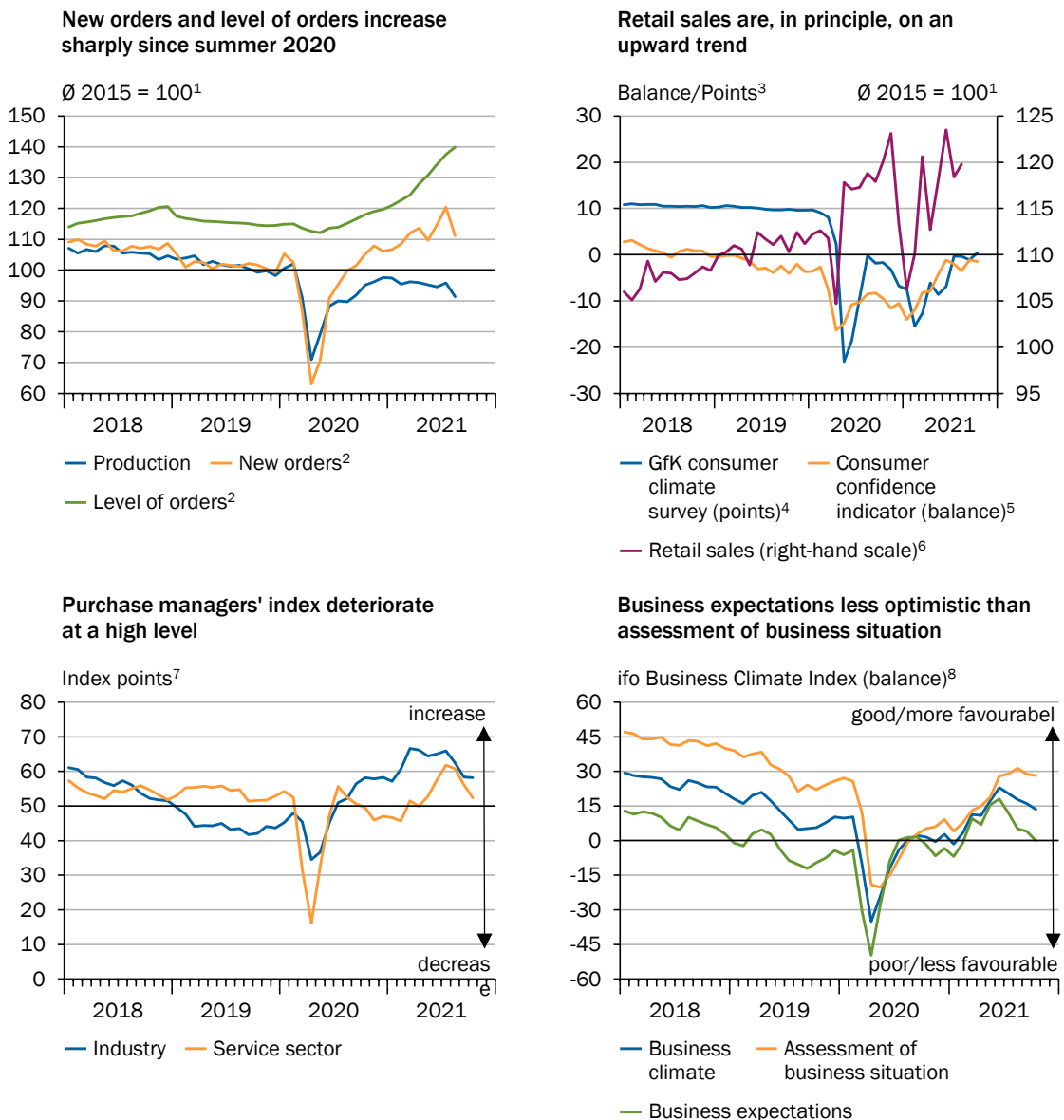
compared to the first quarter had a **supporting effect** on overall economic growth.

Supply-side bottlenecks are slowing down industrial production

59. **Seasonally and calendar-adjusted manufacturing output fell by 1.8 % between the start of 2021 and July 2021** compared to December 2020, despite rising demand. [↪ CHART 17 TOP LEFT](#) Production again fell sharply in August,

[↪ CHART 17](#)

Selected indicators for the economic development



1 – Seasonally and calendar adjusted values. 2 – Volume index. 3 – Seasonally adjusted values. 4 – Based on about 2,000 consumer interviews per month. 5 – The Consumer confidence indicator is based on selected questions asked of consumers in accordance with the Joint Harmonised EU Programme of Business and Consumer Surveys. 6 – Real index excluding the sale of motor vehicles. 7 – The purchasing managers' index is based on a monthly survey among purchasing managers and managing directors. 8 – Manufacturing activity, service sector, trade and construction industry.

Sources: European Commission, Federal Statistical Office, GfK, ifo, IHS Markit
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although this can probably be partly explained by an increased number of factory holidays in the automotive industry. While the production of consumer goods has been on a clearly upward trend again since the spring, **supply-side bottlenecks** are putting a strain on the manufacture of capital goods in particular. [↪ BACKGROUND INFO 2](#) Within the manufacturing sector, the important areas of mechanical and vehicle engineering have been particularly hard hit. [↪ BOX 6](#) By contrast, production expanded in other sectors, led by manufacturers of computer, electronic and optical products, with new orders in this sector also growing faster than production. After **production** in the **construction** industry fell considerably at the beginning of the year, it expanded in the second quarter. Since the summer, however, production has been dampened by shortages and considerable price increases for certain raw materials and preliminary products. More recently, there have been signs of a slight easing of material bottlenecks, at least in construction (ifo Institute, 2021a).

Demand for German industrial goods has risen sharply since the beginning of the year due to the global economic upturn. In July, for example, after adjustment for seasonal and calendar effects, real new orders in manufacturing reached their highest level since records began in 1991, but fell markedly in August (Federal Statistical Office, 2021a, 2021b). This probably partly reflects a normalisation after the strong previous months – which among other things were driven in particular by large individual orders (BMW, 2021). However, since sales in the manufacturing sector continue to develop more weakly than new orders, the level of orders continues to expand (Federal Statistical Office, 2021c). Since the **level of orders** is always adjusted for previous order cancellations, and since durable capital goods account for the bulk of outstanding orders (Linz et al., 2016), the backlog should have a stimulating effect on production once the bottlenecks ease. However, especially in the case of intermediate goods, material shortages could in some cases lead to orders being brought forward or exaggerated.

60. The imbalance between supply-side bottlenecks and still-rising demand is also reflected in the **sentiment indicators**. [↪ CHART 17 BOTTOM LEFT AND RIGHT](#) While the ifo business climate index is still just above the 2005 to 2019 mean, it has been declining since its June 2021 peak. Furthermore, since the spring, the **development of business expectations has lagged behind the assessment of the business situation**. This points to an economic slowdown. Similarly, purchasing managers' assessments have been falling since August 2021.

[↪ BOX 6](#)

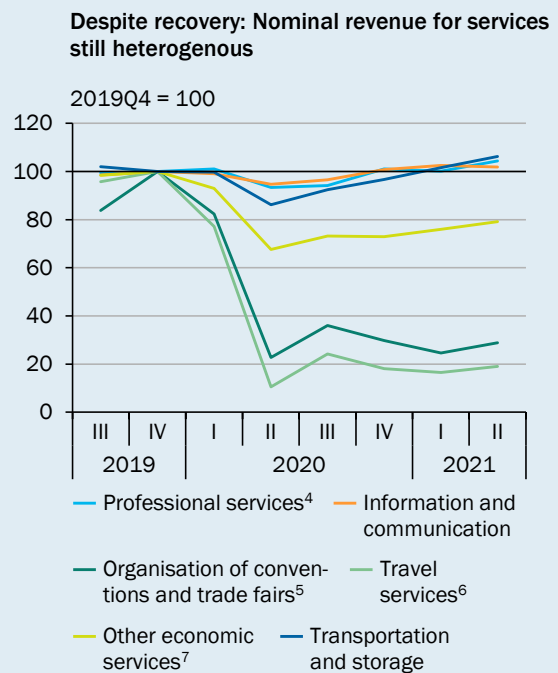
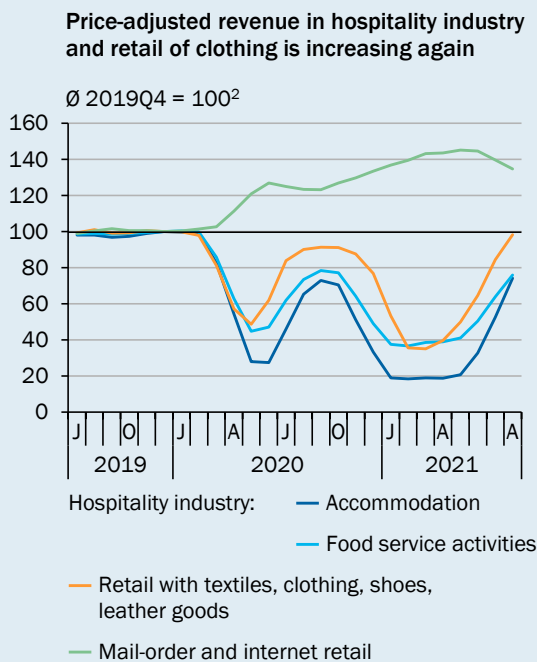
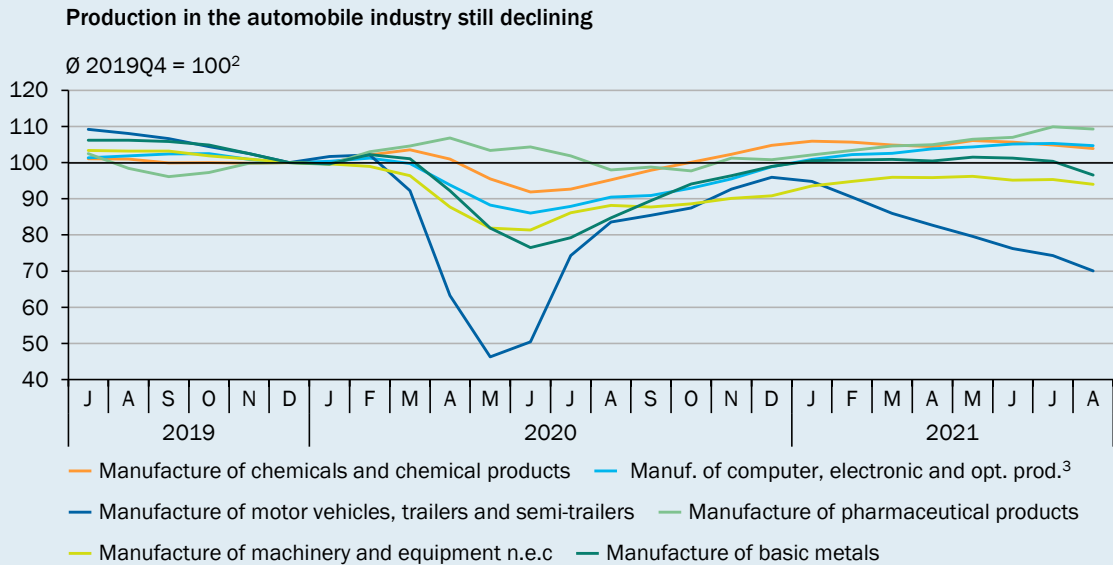
Different economic situations in the various sectors of the economy

Despite the recovery of overall economic activity as from Q2 2021, **some sectors of the economy are** still significantly **affected** directly or indirectly by the coronavirus crisis. There is great heterogeneity in development not only between the different economic sectors but also within the individual sectors. [↪ CHART 18](#) While **supply and capacity bottlenecks** in the global value chains are severely slowing down production by manufactures of machinery and equipment and the automotive industry in particular, [↪ ITEM 9](#) the retail and services sectors, which have been particularly affected by the pandemic, have been recovering since May 2021. Comparable to

the development in summer 2020, for example, turnover in August 2021 in the hospitality industry and in retail clothing – after adjustment for price, seasonal and calendar effects – was back to around 83 % and 99 % of the Q4 2019 mean, respectively. Although recovery will have continued since then, a return to pre-crisis levels of turnover from services is not expected until the pandemic is finally over. Furthermore, it remains to be seen to what extent individual pan-

↳ CHART 18

Development in selected economic sectors¹



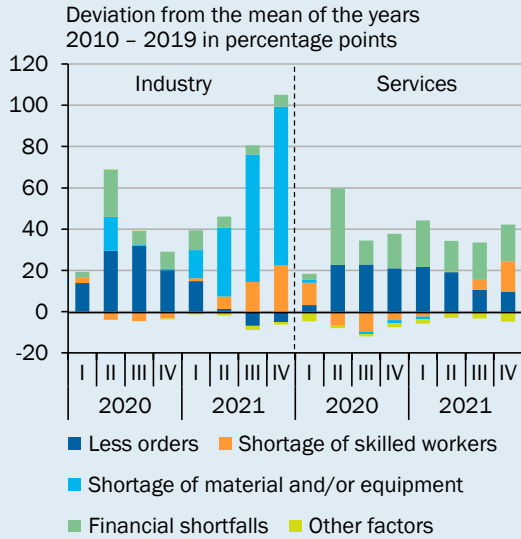
1 – According to classification of economic activities, 2008 edition (WZ 2008). Seasonally and calendar adjusted.
 2 – 3-month moving averages, price adjusted. 3 – Manufacture of computer, electronic and optical products.
 4 – Including scientific and technical activities. 5 – Including organisation of exhibitions. 6 – Travel agency, tour operator and other reservation service and related activities. 7 – Other economic service activities.

Sources: Federal Statistical Office, own calculations
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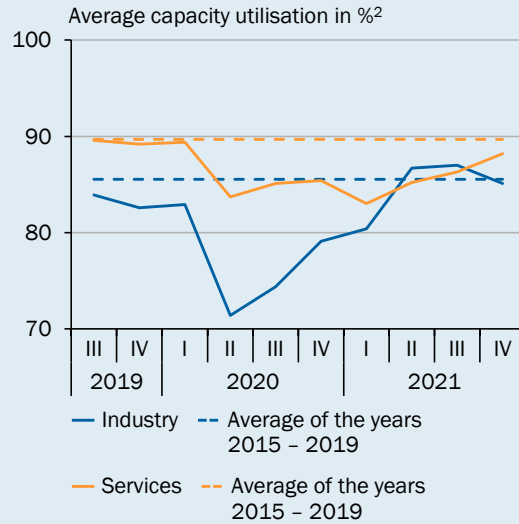
CHART 19

Companies report bottlenecks on the supply side and increased capacity utilisation

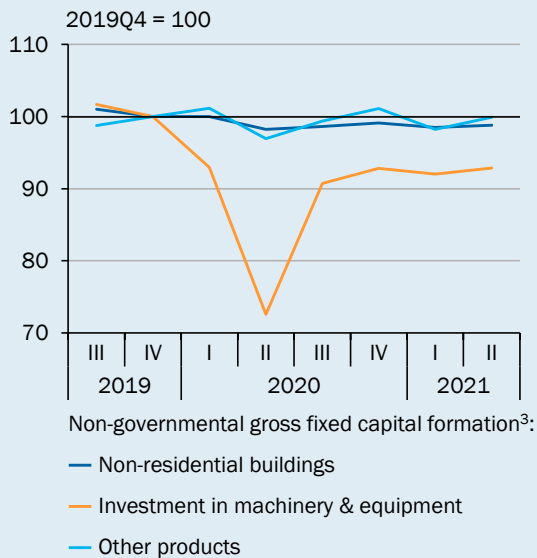
Increasing share of industrial companies reports production constraints¹



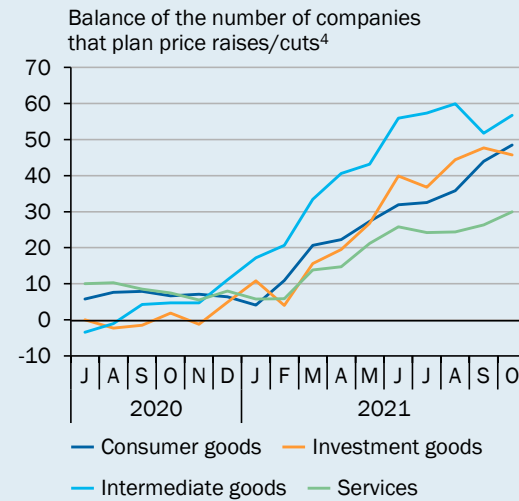
The capacity utilisation in the industrial sector has significantly recovered



Especially non-governmental investment in machinery & equipment still dampened



Increasing share of companies plans to raise selling prices within the next months



1 – Seasonally adjusted. Share of companies which reported that their domestic production activity is currently constraint by the respective factors. 2 – Seasonally adjusted. Average utilisation level of production plants (customary full utilisation = 100 %). For services the utilisation level is determined by how much the production activity could be increased while the factor input remains constant. 3 – Price-, seasonally and calendar adjusted. 4 – Seasonally adjusted. Difference between the interviewed companies regarding the expected change of the domestic sales prices (net) within the next three months. Positive values correspond to a higher share of companies which expect to increase their prices.

Sources: European Commission, Federal Statistical Office, own calculations
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demic-induced **shifts in consumption preferences** – e.g. in travel, the expansion of takeaway catering or online deliveries in the retail trade – will become permanent.

Material and input shortages, sharp increases in intermediate products prices and labour shortages are likely to worsen further in industry in Q4 2021, having already risen very quickly in many sectors in Q3 2021 (Wohlrabe, 2021). [↪ CHART 19 TOP LEFT](#) [↪ ITEM 80](#) In addition, individual industrial sectors have recently been suffering from worsening shortages of certain metals such as aluminium, and from the increase in gas prices. [↪ ITEMS 10 F](#). These supply-side bottlenecks may partly explain the fall in production despite rising demand. Yet the reported level of **capacity utilisation has risen continuously** since the slump in spring 2020 until Q3 2021. Although capacity utilisation has recently fallen, it is still close to the 2015–2019 mean. [↪ CHART 19 TOP RIGHT](#) On the one hand, the high level of capacity utilisation despite falling output is probably due to labour shortages, which are already again above pre-crisis levels. On the other hand, the continued subdued non-governmental gross fixed capital formation indicates that production capacity has not yet returned to pre-crisis levels as a result of shutdowns or postponed capital formations (Deutsche Bundesbank, 2021c, p. 61). [↪ CHART 19 BOTTOM LEFT](#) Moreover, survey data suggest that affected companies along the value chain are increasingly trying to **pass on the increased production costs to their customers**. [↪ CHART 19 BOTTOM RIGHT](#) [↪ ITEM 41](#)

Material bottlenecks play only a minor role in the **services sector**. On the other hand, companies in this sector continue to report an increased lack of demand and the financial bottlenecks thus caused. This is probably partly due to continuing pandemic-related restrictions – such as rules on social distancing or restricting access to people who are vaccinated, recovered or tested. Furthermore, the recent upsurge in infections may have increased consumer restraint. **Labour shortages** reported by companies in the European Commission's survey increased significantly in Q3 and Q4 2021 and are already above pre-crisis levels in many sectors – especially in the hospitality industry or transport and storage. To some extent, this is probably the result of a pandemic-related reallocation of labour (Deutsche Bundesbank, 2021c, p. 63). [↪ ITEM 414](#) At present, it is difficult to estimate the extent to which this reallocation will last. [↪ ITEMS 410 FF](#). However, employment has not yet fully recovered. Accordingly, the currently reported bottlenecks are likely to ease again, at least in part, in the coming months. [↪ ITEM 80](#) Since the spring, a rising number of service companies have also reported that they are planning **price increases**.

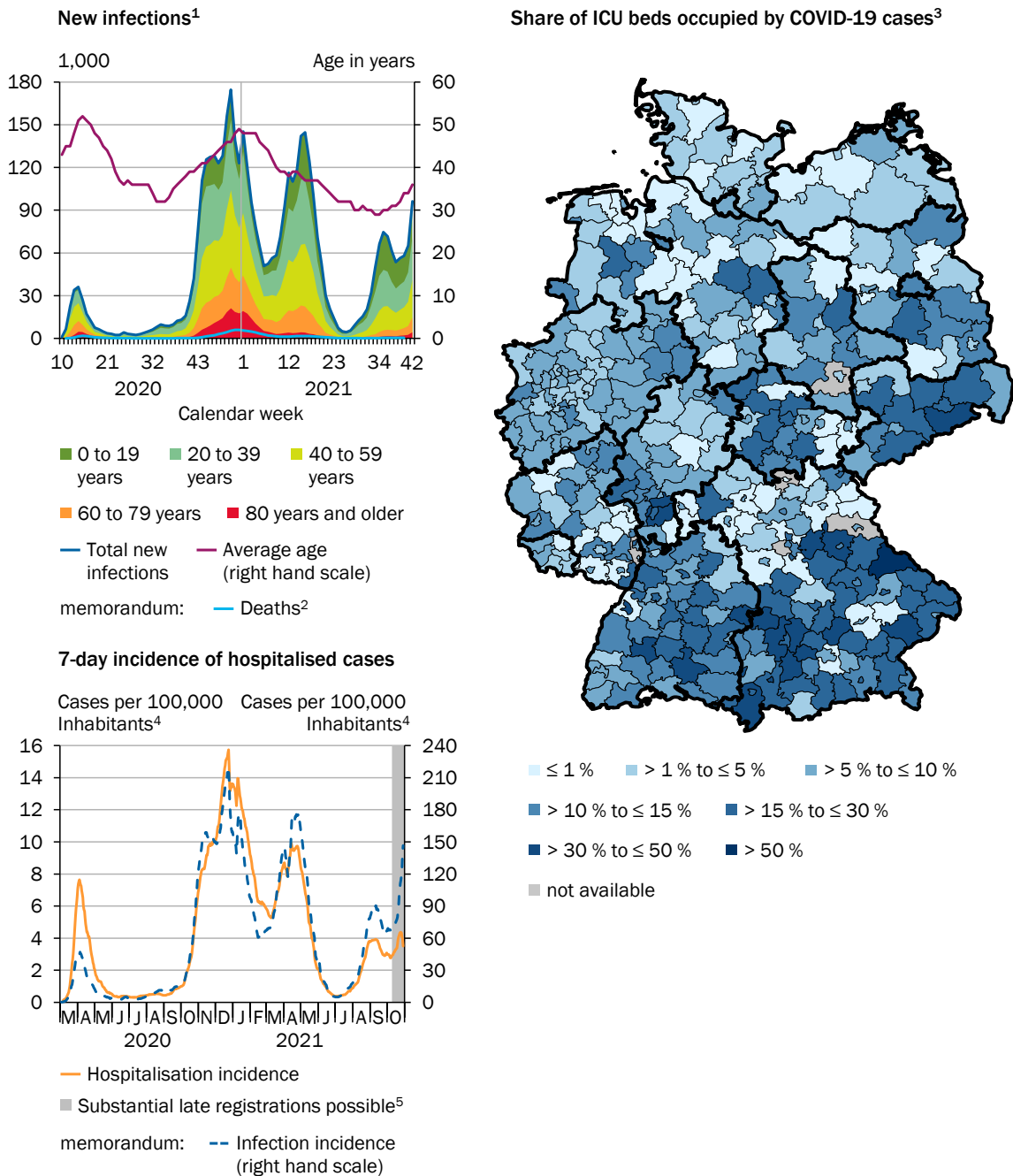
- 61. Business insolvencies and closures have continued to fall significantly** since the beginning of the year, following the sharp decline in 2020. [↪ ITEM 396](#) For example, the number of corporate insolvencies filed in July 2021 was 12.3 % lower than in the previous year and 27.0 % lower than in the corresponding period in 2019 (Federal Statistical Office, 2021d). Although the obligation to file for insolvency has only been in full force again since May, there are currently only signs of rising business insolvencies among small and micro enterprises with an annual turnover of no more than €250,000 (Creditreform, 2021). While the projected insolvency claims in the period between January and July 2021 are significantly higher than those in the corresponding periods in 2019 and 2020, only limited conclusions can be drawn from this about the average size of insolvent companies. Thus, a large proportion of the increase in projected claims is attributable to financial and insurance activities as well as the real-estate activities. In addition, business insolvencies in the real-estate activities have risen, above all in Bremen, indicating a small number of large-scale insolvencies. Based on current levels, business insolvencies are not expected to pose a threat to overall economic development over the forecast horizon. [↪ ITEM 50](#)

Pandemic activity picking up again since the summer

62. The growing prevalence of the Delta variant probably accelerated the **renewed increase in new infections** observed from **July 2021 onwards**. ↘ [CHART 20 TOP LEFT](#) Hospitalisations have also increased since then. However, due to the sharp

↘ [CHART 20](#)

Current development of the COVID-19 pandemic in Germany



1 – COVID-19 cases reported to the RKI in Germany for the reporting weeks CW 10 2020 to CW 42 2021. Data as of 28 October 2021. 2 – The deaths are published by the RKI with a delay of 3 weeks to ensure relative completeness. For the cases up to week 40 2021 there may still be late registrations. 3 – ICU-beds: Intensive care unit beds. Share of all ICU beds. Data as of 29 October 2021. 4 – Cases in the past seven days. 5 – Late registrations are to be expected for the area marked in gray.

Sources: DIVI-Intensivregister, Federal Agency for Cartography and Geodesy, RKI, own calculations
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rise in vaccination rates – especially among the particularly vulnerable population groups – hospitalisations have so far shown a less dynamic development than in the winter half-year 2020/21. [↘ CHART 20 BOTTOM LEFT](#) [↘ ITEM 4](#) However, an increased proportion of intensive care unit beds occupied by COVID-19 patients is currently evident, particularly in parts of southern and eastern Germany. [↘ CHART 20 RIGHT](#) On 7 September 2021, the Bundestag revised the Infection Protection Act to take account of the weakened link between COVID-19 incidence and the number of people falling severely ill – a result of vaccination progress. [↘ ITEM 4](#) The criteria for activating corona protection measures now focus more on the level of regional **hospitalisations** and an incidence of new infections differentiated by age (Bundesregierung, 2021). However, inadequate digital reporting channels have recently impaired the informative value of hospitalisation incidence figures, so that the RKI has had to resort to estimates (RKI, 2021g). After levelling off for a while, this adjusted incidence has been rising again since 7 October 2021. Basically, however, there are currently no uniform nationwide thresholds for this indicator. Alternatively, Augurzky et al. (2021) propose a risk-adjusted incidence indicator that weights age-group-specific incidences based on their risk of hospitalisation.

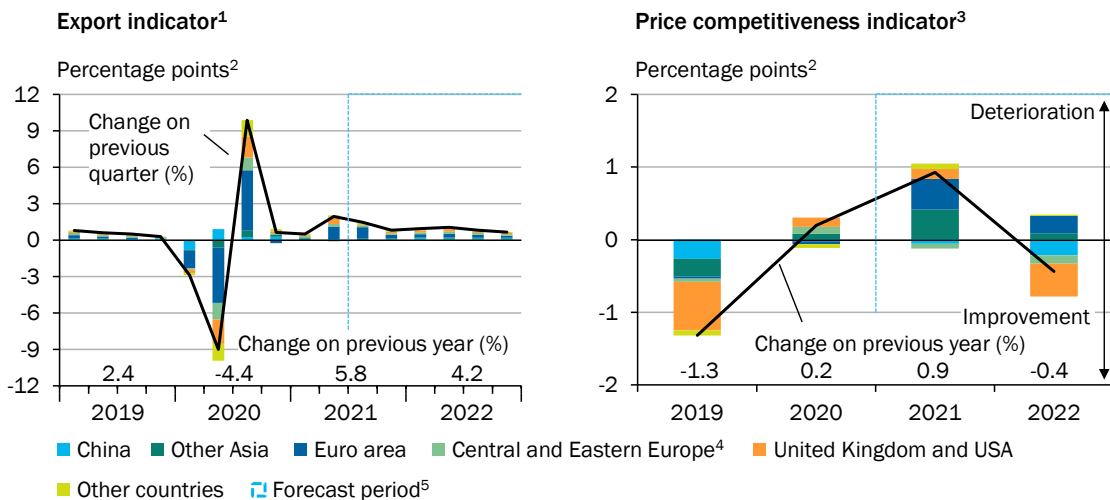
63. Although a renewed tightening of health-policy containment measures is not assumed in the forecast, a possible **acceleration of the pandemic** in winter would probably **dampen consumer sentiment** in private households. However, it can be assumed that, in the meantime, companies and private households have adapted better to protective measures. Changes in business models and adapted consumption decisions by private households should at least partially compensate for possible losses in economic activity. Moreover, in the event of a renewed worsening of the pandemic, consumer restraint is likely to have a somewhat weaker effect than in previous waves due to the higher proportion of vaccinated individuals. The consumer climate index – and particularly the propensity to buy – determined by the GfK consumer research association (Gesellschaft für Konsumforschung) has tended to develop contrary to the level of new infections in recent months. Consumer sentiment dampened considerably in August 2021 in the face of rapidly rising infection figures, but eased again in September 2021 (GfK, 2021a, 2021b). In October 2021, the propensity to buy rose again despite weakening economic and income expectations (GfK, 2021c). However, confidence in the services sector and the retail trade has recently deteriorated again (ifo Institute, 2021b). [↘ CHART 17 TOP RIGHT AND BOTTOM LEFT](#) In addition, comparatively high price inflation rates could also have a negative impact on consumer sentiment. [↘ ITEM 74](#)

Overall conditions remain favourable

64. **Fiscal policy remains expansionary** this year. In addition to the pandemic-related support measures, which are still active and to some extent still having an effect carried over from last year, [↘ ITEM 147](#) fiscal-policy measures – such as the partial abolition of the solidarity surcharge, the increase in child benefit and the cut in the renewable energy surcharge – will probably generate positive stimuli for domestic demand. [↘ ITEM 86](#) Claims for pandemic-related support measures are expected to decline as economic activity increasingly recovers. In addition, limited fiscal stimuli are likely to come from government aid for the damage caused by

↘ CHART 21

Expected development of the external environment



1 – The indicator is based on the GDP development of 49 trading partners. The weighting of each country corresponds to its share of German exports. Country definitions as in Table 1. 2 – Growth contributions of the respective regions. 3 – Against 37 selected countries; an increase shows a deterioration in price competitiveness of German products. Calculation and country definitions based on the approach of the Deutsche Bundesbank. 4 – Bulgaria, Croatia, Czech Republic, Hungary, Poland, Romania. 5 – Forecast by the GCEE.

Sources: Deutsche Bundesbank, national statistical offices, own calculations

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the July 2021 floods. ↘ ITEM 86 The overall economic impact of flood damage and reconstruction is estimated to be limited. However, investments to renew the infrastructure in the affected areas could increase productivity there in the medium term (Brautzsch et al., 2021). The **ECB's monetary policy** is also supporting the economy by contributing to favourable financing conditions. ↘ ITEM 42 The continued expansionary monetary policy not only consolidates the negative yields on government bonds, but, in view of the current high inflation rate and rising inflation expectations, also leads to further declining real interest rates, which should have a stimulating effect on demand. ↘ ITEMS 176 AND 183

65. Private consumption should also benefit from the **recovery in the labour market** that began in the spring of 2021. ↘ ITEMS 77 FF. On the one hand, the number of employees on short-time working has fallen significantly since the peak in February 2021, although this decline slowed down in September 2021 due to supply and capacity bottlenecks in some industrial sectors (ifo Institute, 2021c). On the other hand, as restrictions have been progressively eased, employment has increasingly recovered. Moreover, the rising number of job vacancies points to a continuation of this trend.
66. The **external economic environment is quite favourable on the demand side** over the forecast horizon thanks to the recovery of the global economy – especially in the member states of the euro area. This is reflected in the development of the GCEE's export indicator, which tracks the economic development of Germany's 49 most important trading partners and shows an upward trend over the forecast period. ↘ CHART 21 LEFT **On the supply side**, however, as in the first half of 2021, **bottlenecks** in preliminary products in particular may well initially

prevent an expansion in foreign trade. As these bottlenecks are likely to be mainly temporary, export expectations remain robust and in September 2021 were able to offset much of the decline recorded in August 2021 (ifo Institute, 2021d). Price competitiveness is expected to have a negative effect on foreign trade this year, but this effect will reverse next year. [↘ CHART 21 RIGHT](#)

2. Outlook – strong growth next year

67. The 1.8 % quarter-on-quarter **growth in Q3 2021** was probably largely **driven by a strong recovery in personal services**, which was still limited at the beginning of Q2 2021. After the COVID-19 restrictions were gradually scaled back from May 2021 onwards in the wake of rapidly declining new infections in many regions, it was possible to avoid renewed tightening in Q3 2021. Accordingly, the low infection figures, progress in the vaccination rate and the relaxation of restrictions most likely had a stronger and longer-lasting positive effect on private consumption. While gross value added in Q2 2021 in the retail, transport and hospitality sectors and other services was still around 6 % and 14 % respectively below the pre-crisis level of Q4 2019, after adjusting for price, seasonal and calendar effects, it was probably at a similar level in Q3 2021 as in summer 2020. This alone would have contributed about 1.0 percentage point to the growth of total gross value added. On the other hand, the decline in industrial production since the beginning of 2021 is likely to have prevented even stronger expansion.

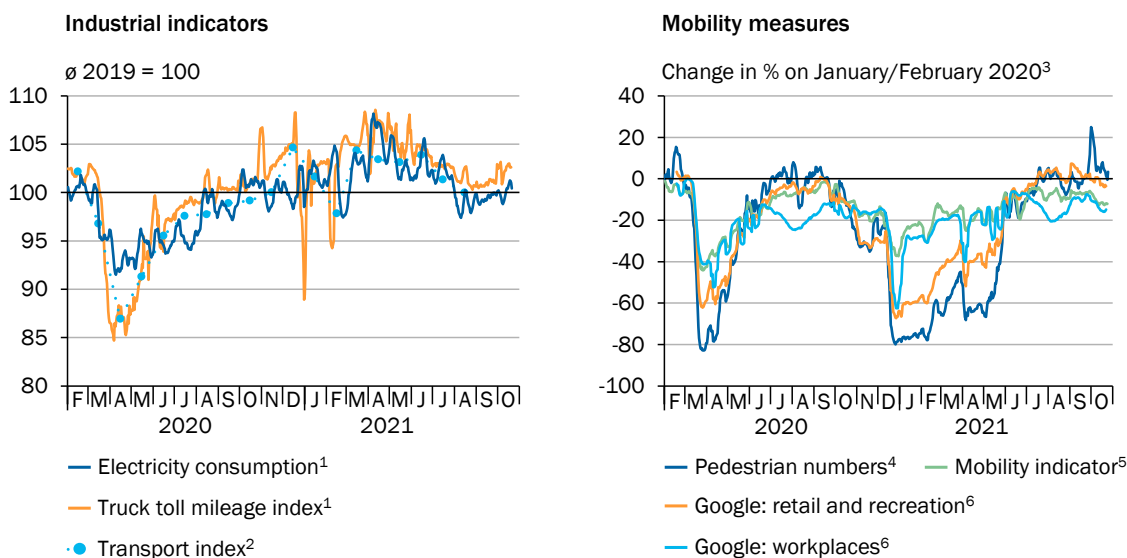
Growth likely to be subdued in the winter half-year 2021/22

68. The multiple **bottlenecks** are likely to continue to **slow down production** in some manufacturing sectors in **Q4 2021**. For example, the gap between new orders and production has widened further and further since the beginning of the year, particularly among capital-goods manufacturers and even more in the automotive sector and the manufactures of machinery and equipment; this is also reflected in the sentiment indicators. Developments in the leading short-term indicators available to date [↘ GLOSSARY](#) also point to an increasing slowdown in growth. [↘ CHART 22 LEFT](#) Once the supply-side bottlenecks are reduced, additional stimuli are likely to come from the level of orders. [↘ ITEM 59](#)
69. At the same time, any further recovery in **private consumer spending** – especially in personal services – is likely to be **subdued in the winter half-year 2021/22**. Mobility, especially in the consumer-related sectors, re-attained pre-crisis levels in the summer of 2021. [↘ CHART 22 RIGHT](#) However, given the projected increase in new infections, a slight decline should be expected in the coming months. [↘ ITEM 54](#) **As from spring 2022**, however, the pandemic should have receded to such an extent that private consumer demand should **strengthen**, supported by further improvements in labour-market conditions and declining uncertainty. While higher inflation is burdening households' real purchasing power this year, slowing price momentum and increases in disposable income should have a supportive effect next year. In addition, the excess savings generated during the pandemic can be expected to provide a limited stimulus to growth over the remainder of the year (Economic Outlook 2021, item 58). [↘ ITEM 44](#)

70. Although **government consumer spending** is likely to have risen again significantly in Q3 2021, the decline in pandemic-related additional expenditure in the health sector in particular and the resumption of sales in the context of the increasing normalisation of public administration services are expected to lead to a decrease in H1 2022. Towards the end of the forecast horizon, government consumption should then return to normal.
71. **This year**, the GCEE is forecasting **average annual GDP growth of 2.7 %**. [↪ CHART 23 LEFT](#) Thus, the pre-crisis level reached in Q4 2019 is unlikely to be exceeded before early next year, i.e. a little later than expected in March 2021. The reasons for this are, on the one hand, that the rate of infections in the spring of 2021 decreased later than assumed at the time. On the other hand, since the beginning of 2021, a variety of supply-side bottlenecks have had an increasingly inflationary effect and have inhibited production in parts of industry. [↪ ITEM 13](#) [↪ BOX 7](#)
72. In **2022, economic output** is expected to **increase by 4.6 %** supported by a backlog in industrial production, a partial reduction in unplanned private savings, and as a result of a strong statistical overhang [↪ GLOSSARY](#). With an expected growth rate over the course of the year of around 4.7 %, growth is thus well above the expected growth rate of potential output. [↪ ITEM 90](#) [↪ TABLE 10 APPENDIX](#) Accordingly, the **output gap should close at the end of Q2 2022** and be positive by the end of 2022. [↪ CHART 23 RIGHT](#) It should be noted, however, that the empirical

[↪ CHART 22](#)

Real-time indicators indicate a slowdown in growth



1 – Seasonally and calendar-adjusted. 7-day moving average. 2 – Seasonally and calendar-adjusted monthly value. 3 – Not adjusted. 7-day moving average. The reference value corresponds to the median for the corresponding weekday from 3 Jan 2020 to 6 Feb 2020. 4 – Calculated from the mean value for Germany from measuring stations in Berlin, Cologne, Dortmund, Dresden, Düsseldorf, Frankfurt a.M., Hamburg, Hanover, Leipzig, Munich, Stuttgart, Wiesbaden. 5 – Change in mobility based on anonymised and aggregated mobile data from the network of the telecommunications company Telefónica. Missing values for 4 to 7 December 2020, 27 to 28 February 2021, 17 May 2021, 17 to 21 June 2021, 18 to 19 July 2021 and 9 to 11 October 2021; averages calculated over existing values. 6 – Change in mobility based on anonymised and aggregated location history information collected by Google compared to a reference value.

Sources: Deutsche Bundesbank, Federal Office for Freight Transport, Federal Statistical Office, Google Mobility Report, Hystreet, own calculations

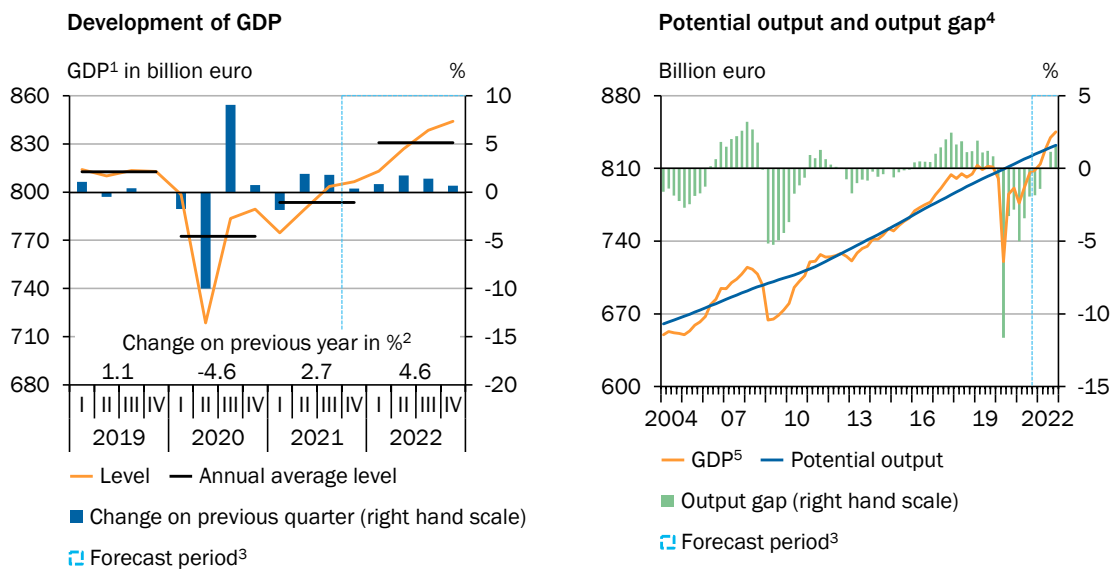
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methods used to estimate production potential can only reflect pandemic-related developments to a limited extent (GCEE Annual Report 2020 item 59). For example, the actual macroeconomic potential output was probably lower at the beginning of 2021 due to the constraints on economic activity (Eichenbaum et al., 2020a, 2020b). Similarly, there is likely to be a delay before the economic recovery leads to higher potential (Ademmer et al., 2019).

73. Consumer prices have risen considerably so far this year, and the **rates of change are expected to remain high well into 2022**. In addition to special effects as a result of the temporary reduction in the rate of VAT, which expired at the beginning of 2021, the pandemic-related low price level – e.g. for energy – in 2020 is automatically leading to higher annual rates for the consumer price index (CPI) ↘ [GLOSSARY](#) this year. At the same time, the introduction of carbon emission pricing in the transport and heating sectors will increase inflation. The VAT reduction alone is likely to contribute well over one percentage point to price increases in H2 2021 (Economic Outlook 2021 item 59). Furthermore, a special statistical effect in the prices of package holidays is leading to an uneven divergence between the German HICP and the CPI during the year (Deutsche Bundesbank, 2021d, pp. 64 ff.; Economic Outlook 2021 item 60). These **base and special effects will expire at the turn of 2021/22**, which should then lead to lower annual rates of inflation again.

In addition, all major components of the CPI have increased in price since the beginning of 2021. For example, further increases in oil prices and poor weather conditions have led to **sharp rises in energy and food prices**. The core rate excluding these two components also rose considerably from May 2021 onwards as the pandemic situation eased. Furthermore, **industrial products** (excluding

↘ **CHART 23**
Expected economic development in Germany

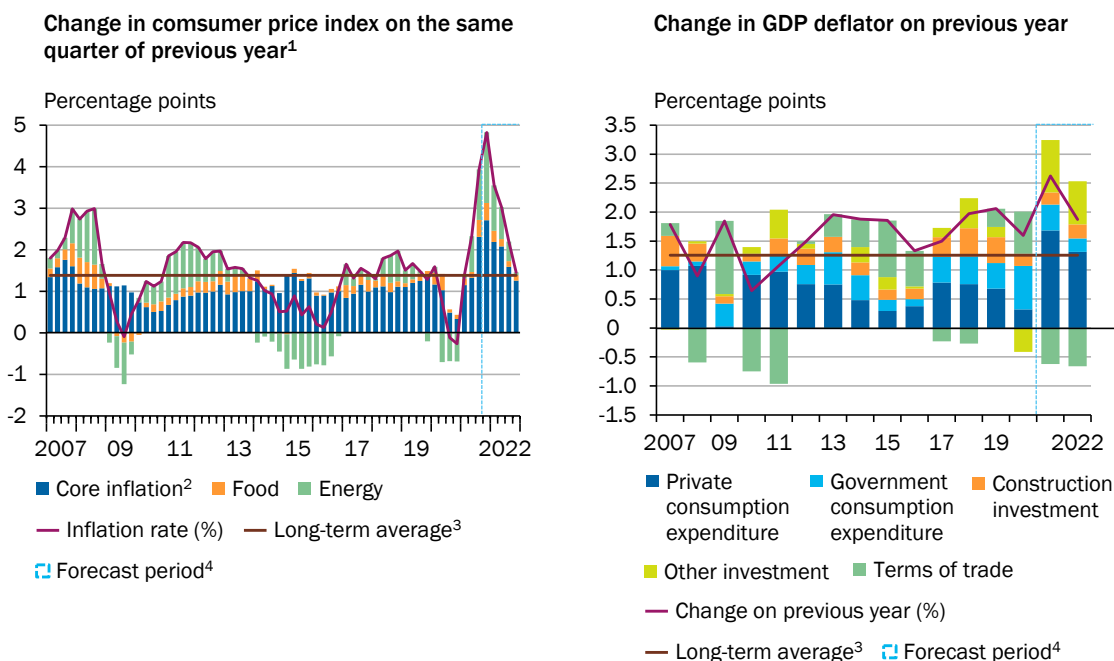


1 – Chained volumes, reference year 2015. Seasonally and calendar-adjusted. 2 – Not adjusted. 3 – Forecast by the GCEE. 4 – Estimate by the GCEE. 5 – Real seasonally adjusted values; the calendar effect is taken into account, however.

Sources: Federal Statistical Office, own calculations
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↘ CHART 24

Measures of inflation and their components



1 – Based on seasonally and calendar adjusted data. 2 – Overall index excluding food and energy. 3 – Average over the period from 1999 to 2020. 4 – Forecast of the GCEE.

Sources: Deutsche Bundesbank, Federal Statistical Office, own calculations
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energy) **and services** (excluding rents) rose in Q3 2021 by 1.0 % and 1.1 % respectively on a seasonally and calendar-adjusted basis, compared to the previous quarter. This suggests that companies are increasingly passing on the higher producer prices to consumers. ↘ [BOX 3](#) Moreover, the services sectors in particular, which have been more seriously affected by the pandemic up to now, are likely to try to offset past revenue shortfalls in this way. The increased willingness to pay on the part of consumers as a result of excess savings as well as a backlog in demand should also encourage this development. As far as wages are concerned, there is generally no price pressure to be seen at present. ↘ [ITEM 83](#)

74. The GCEE expects the **CPI** to change by **3.1 % this year**. ↘ [CHART 24 LEFT](#) While inflation is expected to decline significantly in **2022**, higher producer and import prices are likely to continue to have an impact well into 2022. ↘ [ITEM 46](#) Accordingly, the average annual growth rate should be around **2.6 %**. Due to the sharply rising import prices, the GDP deflator is expected to grow at a lower rate of 2.6 % and 1.9 % in 2021 and 2022 respectively. ↘ [CHART 24 RIGHT](#) ↘ [ITEM 40](#) However, according to the Federal Statistical Office's first estimate, the GDP deflator rose at an unusually strong rate of 2.1 % in Q3 2021 compared to the previous quarter.

Recovery of foreign trade and capital formation not expected until next year

75. On the consumption side, the supply-side bottlenecks are having a negative impact on **foreign trade and non-governmental capital formation** in

particular. [↪ TABLE 8 APPENDIX](#) [↪ CHART 28 APPENDIX](#) As a result, export growth rates have been declining since the beginning of the year. Part of the high demand – especially from the non-euro area – was probably met from finished-goods inventories. However, these are likely to become increasingly depleted (Wohlrabe, 2021). As the supply-side bottlenecks probably worsened further in H2 2021 according to surveys, and the situation is not expected to ease quickly, **no significant stimulus** is expected from **exports in H2 2021**. Imports, which have been quite robust to date, are also likely to be increasingly burdened by the bottlenecks. For example, the monthly import figures in the special trade sector indicate a slowdown in growth in Q3 2021. Imports of services, which remain low, probably outperformed the trade in goods, particularly as a result of the recovery in international travel. Supported by the high level of orders and the recovering economic situation of the main trading partners, **foreign trade** should recover in step with industrial production in 2022. The current-account balance is expected to weaken to 6.3 % of GDP in 2021 and 6.1 % in 2022 due to the worsening terms of trade [↪ GLOSSARY](#) and declining trade surpluses. [↪ TABLE 3](#)

76. Similarly, **capital formation** is expected to **remain subdued in H2 2021**. The recovered level of capacity utilisation and the high domestic level of orders among capital-goods manufacturers are already pointing to growth potential for a **robust expansion** in non-government gross fixed capital formation in machinery and equipment once the supply-side bottlenecks have presumably eased **in 2023**. Since survey data indicate that the material bottlenecks in the construction industry have already passed their peak, [↪ ITEM 59](#) the development of gross fixed capital formation in construction is likely to show a clear upward trend as early as the final quarter of 2021. In the case of residential construction, the continuing favourable financing conditions and the pandemic-related excess savings by households are likely to have a stimulating effect. The accelerating increase in economic activity next year should provide a boost to commercial construction. The price increases, which will have a strong restraining effect this year in particular, are also likely to decline gradually over the rest of the forecast horizon. The recovery in gross fixed capital formation in public construction at the end of 2021 is likely to be somewhat more muted than that of non-government investment. This is indicated, among other things, by lower new orders in civil engineering compared to the beginning of 2021. Funds earmarked as part of the economic stimulus and future package or the German Reconstruction and Resilience Plan should provide an additional boost next year. [↪ ITEM 191](#)

[↪ BOX 7](#)

On adjusting the forecast for 2021

In its forecast, the GCEE expects a GDP growth rate of 2.7 % in 2021. This represents a **downward revision of 0.4** percentage points compared to its March 2021 forecast. [↪ TABLE 4](#) The reasons for the lower growth lie mainly in the fact that recovery of economic output did not take place until later in the year. As a result of the pandemic, Q2 2021 GDP growth of 1.9 % compared to the previous quarter was much lower than had been expected in the March forecast. Part of the recovery in private consumer spending was thus postponed to Q3 2021. According to the Federal Statistical Office's first estimate of 29 October 2021, GDP grew by 1.8 %. As the

expenditure-side composition of the revisions to GDP in H1 2021 is still pending, it is assumed that they represent an adjustment to the changes in inventories. The now lower estimated growth prospects for Q4 2021 will then only have a limited impact on the annual average growth rate. Furthermore, the revisions to the official statistics for 2020 increased the statistical overhang from the previous year by 0.5 percentage points.

On the expenditure side, the downward revision of the average annual growth rate in 2021 is **primarily due to net exports**. This is probably a consequence of the various capacity and supply bottlenecks in the global value chains, which most likely also explains the subdued gross fixed capital formation. The stronger-than-expected uptick in government consumption spending in H1 2021 reduces the necessary forecast adjustments in the aggregate relative to the March forecast.

As the **pandemic-related restrictions** in the spring of 2021 had a longer and broader impact than had been assumed in March 2021, the **dynamics of private consumption** in particular

↘ TABLE 4

Comparison of the spring and the autumn forecasts for the year 2021

	Forecast by the German Council of Economic Experts					
	March 2021		Annual Report 2021		Difference	
	Year-on-Year change ¹	Growth contributions ²	Year-on-Year change ¹	Growth contributions ²	Year-on-Year change ³	Growth contributions ²
Gross domestic product⁴	3.1	x	2.7	x	- 0.4	x
Domestic demand ⁴	1.1	1.1	2.5	2.4	1.4	1.3
Final consumption expenditure	0.3	0.2	0.6	0.5	0.3	0.2
Private consumption ⁵	- 0.3	- 0.2	- 0.2	- 0.1	0.1	0.1
Government consumption	1.7	0.4	2.5	0.6	0.8	0.2
Gross fixed capital formation	3.7	0.8	2.3	0.5	- 1.4	- 0.3
Investment in machinery & equipment ⁶	7.3	0.5	5.1	0.3	- 2.1	- 0.1
Construction investment	1.4	0.2	1.2	0.1	- 0.2	0.0
Other products	4.8	0.2	0.9	0.0	- 3.9	- 0.2
Changes in inventories ⁴	x	0.0	x	1.4	x	1.4
Net exports	x	2.0	x	0.3	x	- 1.7
Exports of goods and services	10.7	4.7	7.9	3.4	- 2.8	- 1.3
Imports of goods and services	7.0	- 2.6	8.1	- 3.1	1.2	- 0.4

1 – Price-adjusted. In %. 2 – Contributions to growth of price-adjusted GDP. In percentage points; Deviations in the differences due to rounding. 3 – In percentage points. 4 – As the expenditure-side composition of the revisions to GDP in the first half of 2021 is still pending, it is assumed that they represent an adjustment to the changes in inventories. 5 – Including non-profit institutions serving households. 6 – Including military weapon systems.

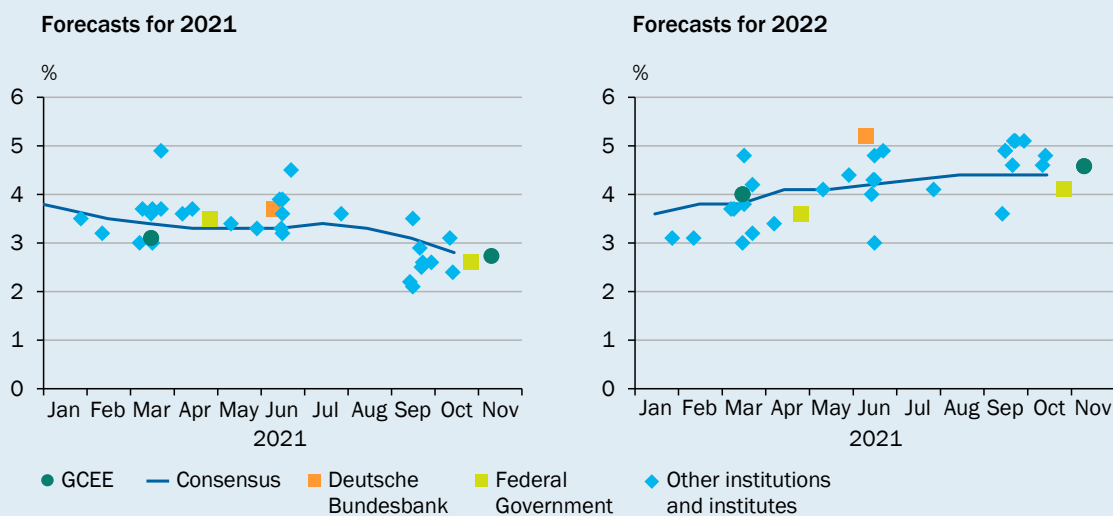
Source: own calculations

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diverged during the year. The slump at the beginning of 2021 was thus much smaller than expected. However, recovery, which was largely postponed to Q3 2021, and the currently forecast slowdown in growth in the final quarter of the year will result in a fairly similar average annual rate of change.

At the beginning of 2021, the global upturn in demand led to upward revisions in the forecasts of most institutions and institutes. Similar to the GCEE's forecast revision, supply-side bottlenecks have been reflected since this summer in (in some cases) significantly lower growth forecasts for 2021 and higher rates for 2022. ↘ CHART 25 ↘ ITEM 13

CHART 25

GDP growth in Germany: Forecasts at different forecast dates¹

1 – The time of the publications of the particular forecasts are indicated on the x-axes.

Sources: Consensus, Deutsche Bundesbank, Federal Government, Federal Statistical Office, Institutions and institutes, own calculations

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3. Positive signals on the labour market

77. The labour market has developed positively since the beginning of 2021. **Employment** rose by approximately 279,000 persons between January and August 2021 (+0.6 %). Most of this development came from an increase in **employment subject to social security contributions**. It rose by around 264,000 persons (+0.8 %) over the same period. The number of people working exclusively in **marginal employment** increased by 53,000 (+1.3 %) in the first eight months of this year. Self-employment fell in H1 2021, continuing the negative trend that has been evident since 2011. [TABLE 5](#)

In addition to the increase in the number of people in employment, the steady reduction in short-time work lead to an increase in working hours. Accordingly, the number of **hours worked** in Q2 2021 will be higher than the previous year's level. However, the work volume of Q4 2019 could not be reached. According to the latest projection by the Federal Employment Agency (Bundesagentur für Arbeit, BA), the number of employees taking advantage of **short-time work** fell continuously between February and August 2021. Based on survey data, Sauer (2021) estimates that in September 2021 just under 610,000 people were still receiving short-time-work benefits. According to this data, in September people in the **manufacturing sectors** were the most likely to claim this insurance benefit. Recently, the fourth amendment to the Ordinance on Short-Time Work Allowances **extended** facilitated access to these benefits and the full reimbursement

TABLE 5

Labour market in Germany

1,000 persons

	2019	2020	2021 ¹	2022 ¹	2021 ¹	2022 ¹
	Yearly averages				Change on previous year in %	
Labour force potential ²	47,535	47,511	47,390	47,532	- 0.3	0.3
Labour force ³	46,499	46,467	46,347	46,648	- 0.3	0.6
Unemployed persons ⁴	1,374	1,664	1,584	1,409	- 4.8	- 11.1
Commuter balance ⁵	143	95	129	134	35.8	3.9
Employed persons ⁶	45,268	44,898	44,892	45,374	0.0	1.1
Self employed persons	4,151	4,038	3,923	3,857	- 2.8	- 1.7
Employees	41,117	40,860	40,969	41,516	0.3	1.3
Employees subject to social security contributions	33,518	33,579	33,824	34,286	0.7	1.4
Marginally employed persons (ILO concept) ⁷	5,201	4,854	4,732	4,840	- 2.5	2.3
Marginally employed persons (FEA concept) ⁸	7,526	7,179	7,088	7,300	- 1.3	3.0
Exclusively marginally employed	4,579	4,290	4,143	4,221	- 3.4	1.9
Marginally employed in second job	2,947	2,890	2,945	3,078	1.9	4.5
Registered unemployed persons	2,267	2,695	2,633	2,367	- 2.3	- 10.1
Underemployment excluding short-time work ⁹	3,200	3,519	3,410	3,214	- 3.1	- 5.8
Short-time work (Employment equivalence)	48	1,217	911	74	- 25.1	- 91.9
Labour volume (million hours) ¹⁰	62,539	59,454	60,319	62,161	1.5	3.1
Unemployment rate (FEA) ^{11,12}	5.0	5.9	5.7	5.1	- 0.2	- 0.6
Unemployment rate (ILO) ^{12,13}	3.2	3.8	3.7	3.3	- 0.2	- 0.4

1 – Forecast by the GCEE except labour force potential (Source: IAB). 2 – Labour force and hidden reserve as defined by the IAB. 3 – Unemployed and employed persons in their working age with residence in Germany (national concept); as defined by the national accounts systems. 4 – According to the measuring concept of the ILO (International Labour Organization). 5 – Difference of employed workers commuting from foreign countries to Germany and those commuting from Germany to foreign countries. 6 – Employed persons in Germany independent of their residence (domestic concept). 7 – Employees not fully subject to social security contributions but who are employed according to the ILO labour force concept, especially exclusively marginally employed workers and persons with employment opportunities („1-Euro-Jobs“). 8 – Employed workers with a monthly wage up to 450 Euro (§ 8 Absatz 1 Nr. 1 SGB IV). 9 – According to the concept of underemployment by the FEA. 10 – Working hours of employed persons working in Germany. 11 – Registered unemployed persons in relation to civilian labour force. 12 – Yearly averages in %; change on previous year in percentage points. 13 – Unemployed persons in relation to the labour force, in each case persons in private households aged from 15 to 74 years.

Sources: Federal Employment Agency (FEA), Federal Statistical Office, Institute for Employment Research (IAB), own calculations
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of social security contributions (GCEE Annual Report 2020 items 208 ff.) **until the end of 2021**. [▶ ITEMS 416 FF.](#)

78. The positive trend in employment is reflected by a decline in **unemployment**, which fell from about 2.8 million in January 2021 to 2.5 million in October 2021. In particular, the number of people **receiving unemployment benefit I** (under social security code SGB III) declined. Since this unemployment insurance benefit is typically limited to twelve months (section 147 of SGB III), most of those who returned to employment were only unemployed for a relatively short period of time. [▶ ITEMS 295 F.](#)

79. Various **leading indicators**, such as the Ifo Employment Barometer or the Labour Market Barometer of the Institute for Employment Research (Institut für Arbeitsmarkt- und Berufsforschung, IAB), suggest that the positive trend is likely to continue in the coming months. The number of **registered vacancies** has recently risen significantly. In October 2021, around 778,000 vacancies were reported to the BA – almost 200,000 more than in the same month of the previous year. The last time there were more job vacancies was between December 2017 and July 2019.

The **number of job vacancies** has risen in almost all sectors of the economy over the past twelve months – most strongly in manufacturing and labour-leasing agencies. They are likely to **increase further in the coming months**, as several sectors of the economy are currently still operating on a limited basis. [↘ BOX 6](#)

80. Workers may have switched to another economic sector in the past year – not least because of the threat of unemployment (Bauer et al., 2021; Garnadt et al., 2021) – or gone back to their home country. [↘ ITEM 81](#) If they do not return despite progress in containing the pandemic and increasing job security, this could make it difficult to fill vacancies for some time to come. In particular, employment reduction were observed in **catering and accommodation** services last year. [↘ ITEMS 410 FF.](#) At the same time, according to BA statistics, job vacancies have recently risen dynamically in these sectors in particular. However, in October 2021, most of the **unfilled vacancies** in tourism, hospitality and food-service occupations were in **ancillary activities**. Here, the barriers to training unemployed people are relatively low. Following the definition of the BA (2021), the ratio of job-seeking skilled workers to vacancies in these occupations in October 2021 initially gave only weak indications of a possible shortage of skilled workers. However, this level of shortage also existed before the coronavirus pandemic. It remains to be seen to what extent **wage increases** or other non-monetary concessions by employers will contribute to encouraging the return of skilled workers who have moved to another sector of the economy. [↘ ITEM 83](#)
81. In the past, immigration was crucial in meeting the demand for labour in Germany (GCEE Annual Report 2018 items 285 ff.). However, **net migration** (inflows from abroad minus outflows) of 220,000 persons in 2020 was lower than in previous years (Federal Statistical Office, 2021e). In Q1 2021, net migration was also low compared to Q1 2019, according to the Federal Statistical Office (2021f). In addition to the negative trend in general observed since 2016, the coronavirus pandemic is likely to have a limiting effect on migration (Federal Statistical Office, 2021e).
82. Further developments on the labour market are likely to be characterised on the one hand by a continued steady reduction in short-time work. On the other hand, the positive trend in **employment** is expected to continue **over the forecast period**. Due to the statistical overhang in 2020, the annual average in 2021 is initially unlikely to change much compared to the previous year. In 2022, however, the GCEE expects employment to increase by around 481,000 compared to the previous year. In addition to **employment subject to social security contributions**, which is likely to **rise significantly** in 2021 and 2022, an annual

average increase in marginal employment cannot be expected again until 2022 – due to the statistical overhang. The unemployment rate is expected to fall from 5.9 % in 2020 to 5.7 % in 2021 and 5.1 % in 2022. [↘ TABLE 5](#)

The labour-market forecast remains subject to considerable uncertainty due to the different macroeconomic opportunities and risks. [↘ ITEMS 47 FF.](#) However, the **coronavirus pandemic** in particular **poses a significant risk** to the recovery of the labour market. If there are renewed restrictions, for example in the catering industry, the positive trend may be much weaker.

83. In 2020, there was a **significant increase in effective wages**, not least due to the reduction in working hours. This led to a dynamic wage drift, since collectively agreed wages rose less dynamically. Similarly, unit labour costs increased significantly in 2020. The development of wages is likely to be less dynamic in 2021 and 2022. Despite rising inflation and a renewed shortage of skilled workers, a strong increase in wage momentum is not expected at present. [↘ ITEM 48](#) Labour productivity is expected to increase significantly over the forecast period. In conjunction with the expected weak growth in compensation per hour, real unit labour costs are therefore expected to fall in 2021 and 2022. [↘ TABLE 9 APPENDIX](#)

Collective bargaining in the larger sectors of the economy, such as the chemical industry, will not begin until later next year. In the most recently concluded collective-bargaining negotiations wage increases were relatively moderate. Job security is likely to have been the primary consideration here (Deutsche Bundesbank, 2021b, p. 65). **Wage dynamics** – possibly **driven by higher wage demands** as a result of rising consumer prices and increasing employment security – are likely to impact on wage growth only with a **time lag** – i.e. at the end of the forecast period – due to the duration of collective bargaining. [↘ TABLE 9 APPENDIX](#)

4. Reduction in the pandemic-related additional burden on public finances from 2022 onwards

84. For **2021**, the GCEE expects an **general government budget deficit** of €174.2 billion (4.9 % relative to GDP). [↘ TABLE 6](#) With the strong economic growth in **2022**, the **deficit** is likely to **decline** and amount to €73.1 billion (1.9 % relative to GDP).
85. Against the background of these developments, the GCEE expects the **debt-to-GDP ratio** to reach 70.6 % in 2021. [↘ TABLE 6](#) Over the forecast horizon, this figure will probably **decline** to 68.2 % of GDP in **2022**.
86. The **pandemic-related fiscal measures** are likely to **remain extensive in 2021**. [↘ CHARTS 45 TOP AND 46](#) The extended temporary aid scheme and the continuation of facilitated access to the short-time work allowance are likely to result in significant additional pandemic-related expenditure year-on-year. However, there is **additional revenue** resulting from the expiry of the temporary reduction in the VAT rate, with the exception of its continued application to food and service activities.

TABLE 6

General government revenues and expenditures and selected fiscal indicators¹

	2020	2021 ²	2022 ²	2021 ²	2022 ²
	Billion euro			Change on previous year in %	
Total revenues	1,566.9	1,640.2	1,718.2	4.7	4.8
Taxes	773.4	826.2	864.5	6.8	4.6
Social contributions	607.9	630.7	661.4	3.7	4.9
Other revenues ³	185.5	183.3	192.3	- 1.2	4.9
Total expenditures	1,712.1	1,814.4	1,791.3	6.0	- 1.3
Intermediate consumption	209.8	219.5	212.2	4.6	- 3.3
Compensation of employees	284.1	292.9	301.9	3.1	3.1
Property income (including interest) payable	21.0	19.0	16.5	- 9.2	- 13.1
Subsidies payable	71.3	105.8	56.1	48.5	- 47.0
Social benefits other than social transfers in kind	595.1	614.5	620.5	3.3	1.0
Social benefits in kind	310.1	325.4	335.8	4.9	3.2
Gross capital formation	90.9	91.9	96.6	1.1	5.1
Other expenditures ⁴	129.9	145.3	151.6	11.8	4.4
Net borrowing/net lending	- 145.2	- 174.2	- 73.1	x	x
Fiscal indices (%)⁵					
Public spending ratio ⁶	50.8	51.1	47.3	x	x
Government consumption ratio	22.4	22.2	21.1	x	x
Social contributions ratio ⁷	16.8	16.6	16.3	x	x
Tax ratio ⁸	23.4	23.7	23.3	x	x
Tax and contribution ratio ⁹	40.2	40.2	39.6	x	x
Net lending/net borrowing	- 4.3	- 4.9	- 1.9	x	x
Structural balance ¹⁰	- 2.2	- 2.9	- 1.7	x	x
Debt-to-GDP ratio ¹¹	68.7	70.6	68.2	x	x
Interest-to-tax ratio ¹²	2.7	2.3	1.9	x	x

1 – National accounts (nominal values). 2 – Forecast by the GCEE. 3 – Sales, other subsidies on production, property income, other current transfers, capital transfers. 4 – Other current transfers, capital transfers, other taxes on production, and net acquisition of non-financial non-produced assets. 5 – In relation to GDP. 6 – Total expenditures. 7 – Social contributions without imputed social contributions. 8 – Taxes including inheritance tax and taxes to the EU. 9 – Taxes including inheritance tax and taxes to the EU, and actual social contributions. 10 – Cyclically adjusted budget balance net of temporary measures. 11 – Forecast by the GCEE for the general government gross debt as defined in the Maastricht Treaty. 12 – Interest payable in relation to taxes including inheritance tax.

Sources: Deutsche Bundesbank, Federal Statistical Office, own calculations

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In addition, burdens on the overall public budget in 2021 emanate from fiscal **measures independent of the coronavirus pandemic**. These include, for example, the partial abolition of the solidarity surcharge, the cut in the renewable energy surcharge and a reduction in revenue as a result of the second Family Relief Act. [▶ ITEMS 146 F](#). On the contrary, additional revenues can be expected to arise from national CO₂ pricing. By contrast, additional expenditure as a result of the flood disaster is expected to be low in 2021. In total, additional expenditure from fiscal measures are expected to amount to €84.7 billion in 2021 (2.4 % relative to GDP). [▶ TABLE 7](#)

87. With strong growth projected for **2022**, the GCEE expects a **marked decline in pandemic-related expenditure**. In the case of non-pandemic-related measures, however, additional burdens are likely to continue to result from the second Family Relief Act. Relief for public budgets will probably come from the increase in the supplementary contribution to the statutory health insurance and revenue from national CO₂ pricing. Furthermore, a small amount of relief could be

TABLE 7

Fiscal measures¹

Burden and relief of the general government budget compare to the previous year in billion euros

	2021	2022
Revenue of the regional authorities		
Partial abolition of the solidarity surcharge	- 9,3	- 1,4
Pricing of carbon emissions in transportation and heating (decision of the climate cabinet)	7,5	1,5
Second Family Relief Act	- 3,9	- 3,6
Other measures ²	- 3,9	- 4,6
Revenue of the social insurance		
Increase in the average supplementary contribution to the statutory health insurance	1,2	1,2
Other measures ³	0,6	0,7
Expenditures of the regional authorities		
Reduction in the renewable energy surcharge	- 5,4	2,7
Additional expenditures of the energy and climate fund	- 6,3	- 6,3
Other measures ⁴	- 9,2	- 6,9
Expenditures of the social insurance		
Basic pension	- 0,8	- 1,9
Adaptation of the pensions in Eastern Germany	- 0,5	- 0,5
Other measures ⁵	- 1,5	- 1,9
Economic stimulus program, "future package" and other measures in the course of the Corona pandemic among them:		
Temporary reduction of the value-added tax	12,5	3,0
Temporary aid schemes and restart aids	-29,6	32,0
Immediate assistance, November and December aid schemes as well as hardship case fund	- 2,4	17,5
Other measures ⁶	-33,7	33,1
Total	- 84,7	64,6
In % of GDP	- 2,4	1,7

1- Quantification of the burden and relief of the general government budget compared to the previous year without macro-economic repercussions. 2 - Other measures include among others the Retirement Income Act, additional revenue from the taxation of pensions as well as tax relief for research and development. 3 - Other measures include the increase of the insolvency payments contribution as well as the increase in the surcharge for childless persons in the statutory long-term care childless persons in the statutory long-term care insurance. 4 - Other measures include among others the increase in the child benefit in the context of the Second Family Relief Act, the "Gute-KiTa-Gesetz" as well as expenditures for the broadband expansion and the Digital Pact. 5 - Other measures include among others expenditures for the long-term care reform, the Work of Tomorrow Act, the Long-term Care Staff Strengthening Act as well as the increase in the supplementary period for persons with reduced earnings capacity. 6 - Other measures include among others the child bonus, the continued application of the reduced VAT rate to food and service activities as well as expenditures for protective masks, tests and the vaccination campaign.

Sources: Federal Ministry for Economic Affairs and Energy, Federal Ministry of Finance, Federal Ministry of Health, Federal Ministry of Labour and Social Affairs, own calculations

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provided by funds from the European Recovery and Resilience Plan (NextGenerationEU). In total, the GCEE expects expenditure from fiscal-policy measures to fall by €64.6 billion (1.7 % relative to GDP) for 2022. [↪ TABLE 7](#)

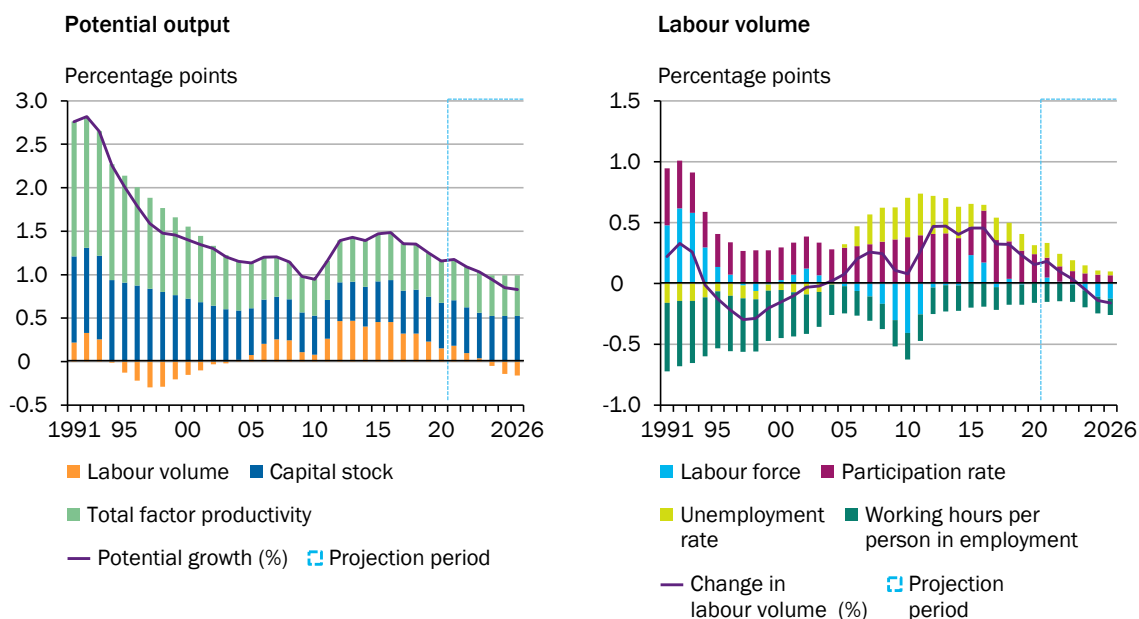
- 88. When the general-government budget balance is adjusted for the effects of cyclical developments and one-off effects in the forecast period, the GCEE expects a **structural budget balance** [↪ GLOSSARY](#) of **-2.9 % of GDP for 2021**. [↪ TABLE 6](#) This **structural budget deficit** is expected to **decrease in 2022**. For 2022, the GCEE expects a structural budget balance of **-1.7 % of GDP**.

5. Medium term – potential growth continues to decline

- 89. As part of its economic forecast, the GCEE prepares an annual **medium-term projection for** the next five years. **Potential output** is estimated using a production function approach strongly oriented towards the EU method (Havik et al., 2014), based on the development of the factors labour, capital and total factor productivity (TFP) [↪ GLOSSARY](#) (Breuer and Elstner, 2020; GCEE Annual Report 2020 Box 6). Although the pandemic-related recession is likely to have a negative impact on medium- to long-term potential output, the loss will probably be limited compared to previous recessions, in particular the financial crisis of 2008 and 2009. [↪ ITEMS 197 FF.](#)
- 90. The GCEE estimates that **potential growth will average 1.0 %** in the years **2020 to 2026**. [↪ CHART 26 LEFT](#) Compared to the previous year's projection, there

[↪ ABBILDUNG 26](#)

Growth contributions of components to potential GDP¹



1 – Calculations by the GCEE.

Sources: Federal Statistical Office, own calculations

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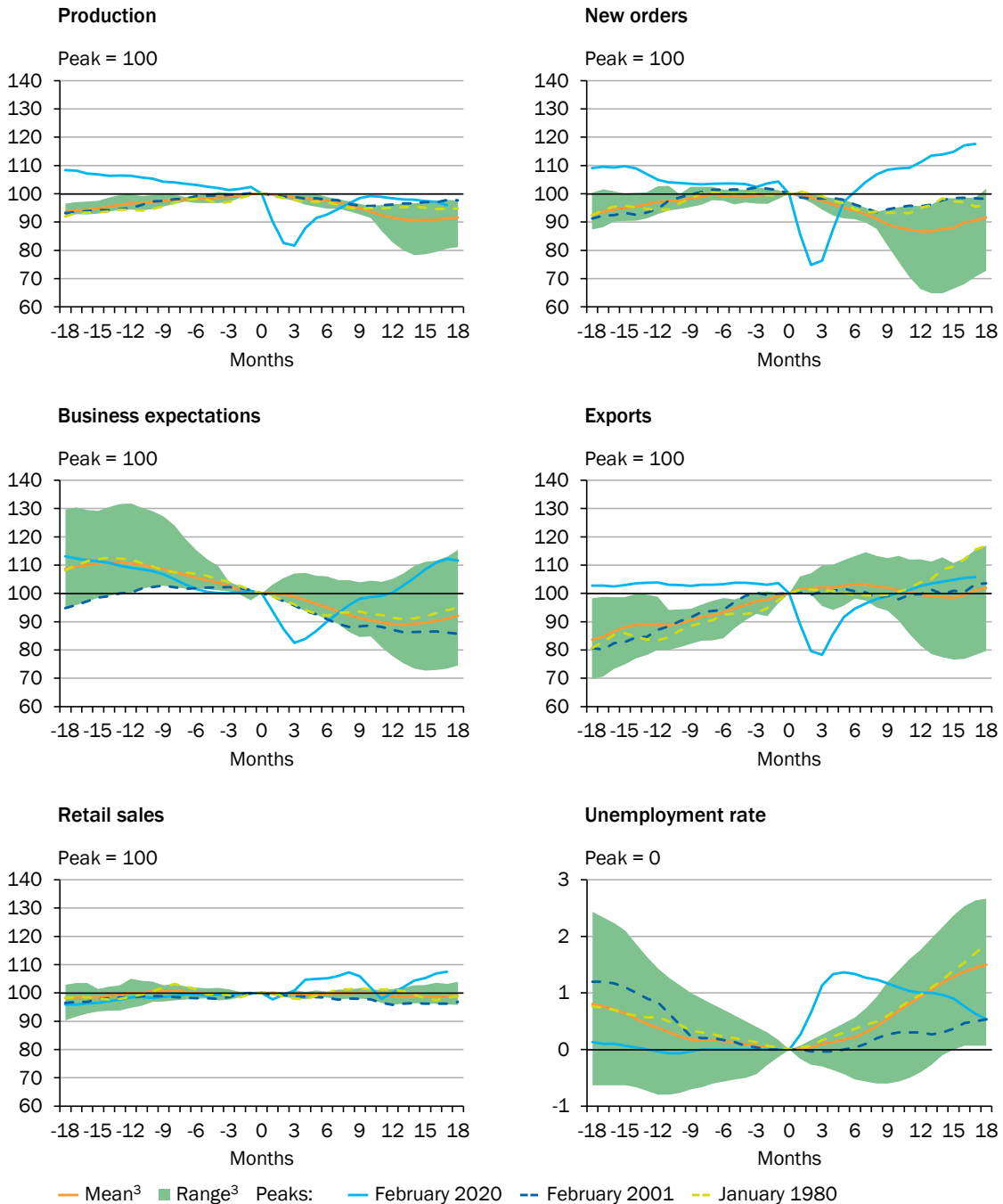
is only a minimal upward revision for the period 2020 to 2025 after last year's pronounced pandemic-related downward revision, but this is within the range of estimation uncertainty. [↘ TABLE 11 APPENDIX](#) Over the forecast period, the annual growth rate is expected to decline steadily and is projected to be as low as 0.8 % in 2026. In particular, the **contributions to growth from the labour volume** is likely to decline further in the coming years and become **negative from 2024** at the latest. [↘ CHART 26 RIGHT](#) This primarily reflects the continuing demographic change and the associated decrease in the labour force (GCEE Annual Report 2020 items 592 ff.). Net immigration can probably only partially compensate for this. In this context, the GCEE is guided by the Federal Statistical Office's updated medium-term population projection for the years 2021 to 2035 (Federal Statistical Office, 2021g), whereby the mean value of the scenarios for net migration assumed therein is included in the potential output estimate. Moreover, the increase in the participation rate is likely to slow down more and more.

91. The **coronavirus crisis** poses **various methodological challenges** to estimating potential output (European Commission, 2020). Most importantly, the high take-up of short-time work overshadows the estimate of the trend component of hours worked per employee and, via capacity utilisation, the trend TFP. As these effects fully affect the GCEE's method this year, one of the filtering procedures used for the TFP component (GCEE Annual Report 2020 Box 6) – as well as the extrapolation of the trend in hours worked – requires taking the pandemic-related special effect into account. Following the approach of the European Commission (2020), this is intended to minimise the extent of a primarily method-related break in the trend and the revision of past potential output estimates.

APPENDIX

▸ CHART 27

Characteristic development of monthly indicators during recession periods¹ Relative to the peak of the business cycle (t=0)²

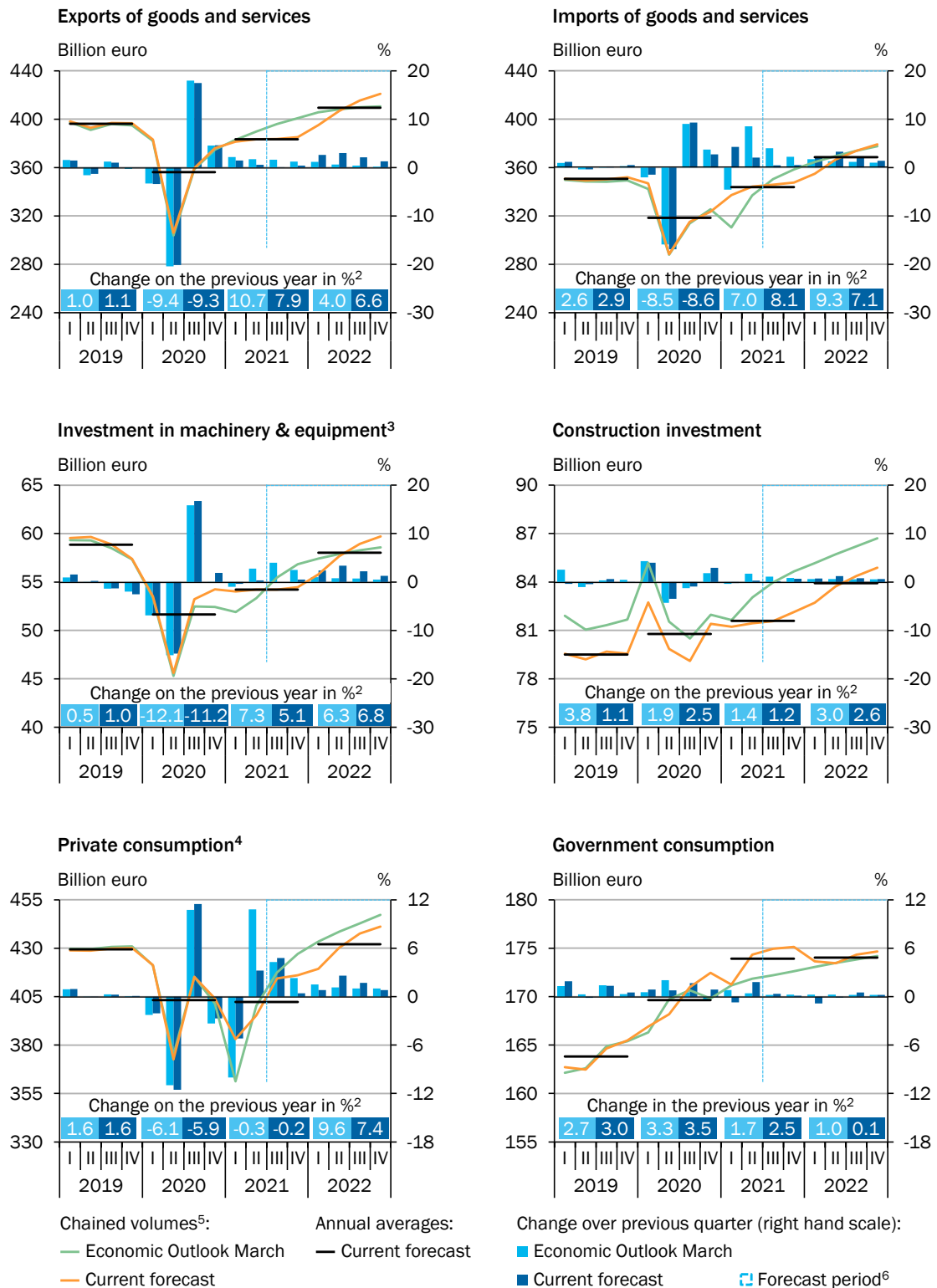


1 – 3-month moving averages. Germany from 1991, previously former West Germany. Unemployment rate since the recession February 2001. 2 – Unemployment rate: difference in percentage points. 3 – A total of six recessions according to GCEE chronology (GCEE Annual Report 2017 box 7; peaks: March 1966, January 1974, January 1980, February 1992, February 2001, January 2008).

Sources: Deutsche Bundesbank, Federal Employment Agency, Federal Statistical Office, ifo, own calculations
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CHART 28

Components of the German GDP¹



1 – All components of GDP reported price-adjusted. 2 – Not seasonally and calendar-adjusted. 3 – Including military weapon systems. 4 – Including non-profit institutions serving households. 5 – Reference year 2015, seasonally and calendar-adjusted. 6 – Current forecast period. Forecasts by the GCEE.

Sources: Federal Statistical Office, own calculations
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TABLE 8

Contributions to growth of gross domestic product by expenditure components¹

Percentage points

	2016	2017	2018	2019	2020	2021 ²	2022 ²
Domestic demand³	2.8	2.5	1.6	1.7	- 3.7	2.4	4.4
Final consumption expenditure	2.1	1.1	0.9	1.4	- 2.3	0.5	3.7
Private consumption ⁴	1.3	0.8	0.8	0.8	- 3.0	- 0.1	3.7
Government consumption	0.8	0.3	0.2	0.6	0.7	0.6	0.0
Gross fixed capital formation	0.8	0.5	0.7	0.4	- 0.5	0.5	0.9
Investment in machinery & equipment ⁵	0.2	0.3	0.3	0.1	- 0.8	0.3	0.4
Construction investment	0.4	0.1	0.3	0.1	0.3	0.1	0.3
Other products	0.2	0.2	0.1	0.2	0.0	0.0	0.2
Changes in inventories ³	0.0	0.8	- 0.1	- 0.1	- 0.9	1.4	- 0.2
Net exports	- 0.6	0.2	- 0.5	- 0.7	- 0.8	0.3	0.1
Exports of goods and services	1.2	2.3	1.1	0.5	- 4.3	3.4	3.1
Imports of goods and services	- 1.8	- 2.0	- 1.6	- 1.2	3.5	- 3.1	- 2.9
Gross domestic product (%)³	2.2	2.7	1.1	1.1	- 4.6	2.7	4.6

1 – Contributions to growth of price-adjusted GDP. Deviations in sums due to rounding. 2 – Forecast by the GCEE. 3 – As the expenditure-side composition of the revisions to GDP in the first half of 2021 is still pending, it is assumed that they represent an adjustment to the changes in inventories. 4 – Including non-profit institutions serving households. 5 – Including military weapon systems.

Sources: Federal Statistical Office, own calculations

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TABLE 9

Wage developments in Germany

Change on the previous year in %

	Collectively agreed wages (hourly concept)	Effective wages ¹	Wage drift ²	Compensation of employees per working hour	Labour productivity ³	Unit labour costs (nominal) ⁴	Unit labour costs (real) ⁵
2017	2.6	2.8	0.2	2.8	1.8	1.0	- 0.5
2018	2.9	3.3	0.4	3.0	0.0	3.0	1.0
2019	3.2	3.1	- 0.1	3.5	0.4	3.1	1.0
2020	2.0	3.3	1.3	3.8	0.4	3.4	1.8
2021 ⁶	1.8	1.8	0.0	1.8	1.3	0.6	- 2.0
2022 ⁶	2.2	2.2	0.0	2.2	1.4	0.7	- 1.1

1 – Gross wages and salaries (domestic concept) per employees hour worked. 2 – Difference between the increase in effective wages and the increase in collectively agreed wages in percentage points. 3 – Real GDP per working hour (employed person concept). 4 – Compensation of employees per working hour (employee concept) in relation to real GDP per working hour (employed person concept). 5 – Compensation of employees per working hour (employee concept) in relation to GDP per working hour (employed person concept). 6 – Forecast by the GCEE.

Sources: Federal Statistical Office, own calculations

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TABLE 10

Components of the forecast for GDP growth¹ (in %)

	2016	2017	2018	2019	2020	2021 ²	2022 ²
Statistical overhang at the end of the previous year ³	0.7	0.5	1.2	0.2	0.0	2.2	1.6
Growth rate over the course of the year ⁴	1.9	3.7	0.1	0.9	- 2.9	2.1	4.7
Annual rate of change of GDP, calendar adjusted	2.1	3.0	1.1	1.1	- 4.9	2.7	4.7
Calendar effect (in percentage points)	0.1	- 0.3	0.0	0.0	0.4	0.0	- 0.1
Annual rate of change of GDP ⁵	2.2	2.7	1.1	1.1	- 4.6	2.7	4.6

1 – Price adjusted. 2 – Forecast by the GCEE. 3 – Percentage difference between the level of GDP in the last quarter of year t and the average level of quarterly GDP in the total year t (Annual Report 2005 Box 5), seasonally and calendar adjusted. 4 – Percentage change of the fourth quarter on the fourth quarter of the previous year, seasonally and calendar adjusted. 5 – Deviations in sums due to rounding.

Sources: Federal Statistical Office, own calculations

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TABLE 11

Potential output and its determining factors¹

Average annual change in %²

	1995 to 2020				2020 to 2026	
	actual		potential			
Gross domestic product (GDP)³	1.1		1.3		1.0	
Capital stock	1.7	(0.6)	1.7	(0.6)	1.6	(0.5)
Solow-residual	0.5	(0.5)	0.6	(0.6)	0.5	(0.5)
Volume of labour	0.1	(0.1)	0.2	(0.1)	0.0	(0.0)
Working age population	0.0	(0.0)	0.0	(0.0)	0.1	(0.0)
Participation rate	0.5	(0.3)	0.5	(0.3)	0.2	(0.1)
Unemployment rate ⁴	0.2	(0.1)	0.2	(0.1)	0.1	(0.1)
Average working time	- 0.6	(- 0.4)	- 0.4	(- 0.3)	- 0.2	(- 0.1)
For information purposes:						
GDP per capita ³	1.1		1.2		0.9	

1 – Calculations by the GCEE. Differences in sums are due to rounding. 2 – In brackets: growth contributions in percentage points. 3 – Price-adjusted. 4 – One minus unemployment rate.

Sources: Federal Statistical Office, own calculations

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TABLE 12

Key figures of the national accounts
Absolute values

	Unit	2020	2021 ¹	2022 ¹	2021		2022 ¹	
					1 st half-year	2 nd half-year ¹	1 st half-year	2 nd half-year
Use of domestic product								
at current prices								
Final consumption expenditure	billion euro	2,462.6	2,552.9	2,739.8	1,212.2	1,340.7	1,325.1	1,414.7
Private consumption ²	billion euro	1,708.0	1,764.1	1,941.9	829.4	934.7	937.5	1,004.4
Government consumption	billion euro	754.6	788.8	797.9	382.9	405.9	387.6	410.3
Gross fixed capital formation	billion euro	735.9	790.1	857.2	371.0	419.0	408.2	449.0
Investment in machinery & equipment ³	billion euro	216.9	232.5	253.2	109.6	122.9	118.1	135.1
Construction investment	billion euro	380.1	415.2	452.1	194.6	220.5	218.4	233.7
Other products	billion euro	138.9	142.4	151.9	66.8	75.6	71.7	80.2
Domestic demand ⁴	billion euro	3,174.8	3,366.5	3,614.5	1,600.9	1,765.6	1,744.8	1,869.7
Exports of goods and services	billion euro	1,462.1	1,655.8	1,832.3	806.3	849.6	896.1	936.2
Imports of goods and services	billion euro	1,269.3	1,470.8	1,663.3	696.2	774.6	801.7	861.6
Gross domestic product⁴	billion euro	3,367.6	3,551.6	3,783.5	1,711.0	1,840.6	1,839.3	1,944.2
Chained volumes								
Final consumption expenditure	billion euro	2,294.7	2,309.4	2,427.7	1,111.3	1,198.1	1,183.7	1,244.0
Private consumption ²	billion euro	1,615.2	1,612.1	1,731.0	767.6	844.5	839.3	891.7
Government consumption	billion euro	678.5	695.6	696.0	342.5	353.1	343.9	352.1
Gross fixed capital formation	billion euro	664.4	679.8	708.3	326.3	353.6	338.6	369.7
Investment in machinery & equipment ³	billion euro	207.9	218.6	233.5	103.6	114.9	109.0	124.5
Construction investment	billion euro	324.5	328.6	337.1	159.6	168.9	163.8	173.3
Other products	billion euro	130.3	131.5	137.4	62.2	69.3	65.2	72.2
Domestic demand ⁴	billion euro	2,941.5	3,016.3	3,157.4	1,457.4	1,558.9	1,537.4	1,620.1
Exports of goods and services	billion euro	1,431.4	1,543.9	1,645.6	769.1	774.7	807.4	838.1
Imports of goods and services	billion euro	1,278.2	1,382.4	1,480.0	674.9	707.5	715.6	764.4
Gross domestic product⁴	billion euro	3,096.7	3,181.4	3,327.1	1,552.7	1,628.9	1,630.8	1,696.4
Price Development (deflators)								
Final consumption expenditure	2015=100	107.3	110.5	112.8	109.1	111.9	111.9	113.7
Private consumption ²	2015=100	105.8	109.3	112.1	108.0	110.7	111.7	112.6
Government consumption	2015=100	111.2	113.4	114.7	111.8	114.9	112.7	116.5
Gross fixed capital formation	2015=100	110.8	116.0	121.0	113.7	118.5	120.7	121.4
Investment in machinery & equipment ³	2015=100	104.3	106.3	108.4	105.8	107.0	108.3	108.5
Construction investment	2015=100	117.1	126.2	134.1	121.8	130.5	133.3	134.9
Other products	2015=100	106.6	108.2	110.6	107.4	109.0	110.0	111.1
Domestic demand ⁴	2015=100	107.9	111.6	114.5	109.9	113.3	113.5	115.4
Terms of Trade	2015=100	102.9	100.8	99.1	101.6	100.2	99.1	99.1
Exports of goods and services	2015=100	102.1	107.2	111.4	104.8	109.7	111.0	111.7
Imports of goods and services	2015=100	99.3	106.4	112.5	103.1	109.5	112.0	112.7
Gross domestic product⁴	2015=100	108.8	111.6	113.7	110.2	113.0	112.8	114.6
Production of domestic product								
Employed persons (domestic)	1000	44,898	44,892	45,374	44,582	45,193	45,129	45,619
Labour volume	million hours	59,454	60,319	62,161	29,092	31,227	30,338	31,823
Labour productivity (per hour)	2015=100	104.0	105.3	106.9	106.4	104.1	107.1	106.4
Distribution of net national income								
Net national income	billion euro	2,528.2	2,684.3	2,833.9	1,279.9	1,404.5	1,362.8	1,471.1
Compensation of employees	billion euro	1,852.1	1,913.3	2,009.3	906.4	1,007.0	958.5	1,050.8
Gross wages and salaries	billion euro	1,514.1	1,563.3	1,641.9	737.2	826.1	780.3	861.6
among them: net wages and salaries ⁵	billion euro	1,021.3	1,061.2	1,119.7	495.0	566.1	529.7	590.0
Property and entrepreneurial income	billion euro	676.1	771.0	824.6	373.5	397.5	404.3	420.3
Disposable income of private households ²	billion euro	1,975.2	2,020.1	2,101.0	996.2	1,023.9	1,035.4	1,065.5
Savings rate of private households ^{2,6}	%	16.1	15.2	10.2	19.1	11.4	12.0	8.5
For information purposes:								
nominal unit labour costs ⁷	2015=100	112.2	112.9	113.7	109.8	116.1	111.0	116.5
real unit labour costs ⁸	2015=100	103.2	101.1	100.0	99.6	102.7	98.4	101.6
Consumer prices	2015=100	105.8	109.0	111.9	107.8	110.1	111.6	112.2

1 – Forecast by the GCEE. 2 – Including non-profit institutions serving households. 3 – Including military weapon systems. 4 – As the expenditure-side composition of the revisions to GDP in the first half of 2021 is still pending, it is assumed that they represent an adjustment to the changes in inventories. 5 – Compensation of employees minus social contributions of employers and employees and income tax of employees. 6 – Savings relative to disposable income. 7 – Compensation of employees per working hour (employee concept) in relation to real GDP per working hour (employed person concept). 8 – Compensation of employees per working hour (employee concept) in relation to GDP per working hour (employed person concept).

Sources: Federal Employment Agency, Federal Statistical Office, own calculations

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TABLE 12 (CONTINUED)

Key figures of the national accounts

Change on the previous year in %

2020	2021 ¹	2022 ¹	2021		2022 ¹		
			1 st half-year	2 nd half-year ¹	1 st half-year	2 nd half-year	
							Use of domestic product
							at current prices
- 1.8	3.7	7.3	1.6	5.6	9.3	5.5	Final consumption expenditure
- 5.3	3.3	10.1	- 0.1	6.5	13.0	7.4	Private consumption ²
7.0	4.5	1.2	5.5	3.6	1.2	1.1	Government consumption
- 0.9	7.4	8.5	5.6	9.0	10.0	7.2	Gross fixed capital formation
- 10.0	7.2	8.9	11.6	3.5	7.8	9.9	Investment in machinery & equipment ³
4.4	9.2	8.9	4.0	14.3	12.2	6.0	Construction investment
1.4	2.5	6.7	1.3	3.6	7.3	6.1	Other products
- 3.1	6.0	7.4	3.2	8.8	9.0	5.9	Domestic demand ⁴
- 9.7	13.3	10.7	14.3	12.3	11.1	10.2	Exports of goods and services
- 10.8	15.9	13.1	11.8	19.8	15.1	11.2	Imports of goods and services
- 3.0	5.5	6.5	4.7	6.2	7.5	5.6	Gross domestic product⁴
							Chained volumes
- 3.2	0.6	5.1	- 0.4	1.6	6.5	3.8	Final consumption expenditure
- 5.9	- 0.2	7.4	- 2.0	1.5	9.3	5.6	Private consumption ²
3.5	2.5	0.1	3.1	2.0	0.4	- 0.3	Government consumption
- 2.2	2.3	4.2	3.1	1.6	3.8	4.6	Gross fixed capital formation
- 11.2	5.1	6.8	10.0	1.1	5.2	8.3	Investment in machinery & equipment ³
2.5	1.2	2.6	0.5	2.0	2.6	2.6	Construction investment
1.0	0.9	4.5	0.2	1.6	4.8	4.2	Other products
- 4.0	2.5	4.7	1.2	3.9	5.5	3.9	Domestic demand ⁴
- 9.3	7.9	6.6	11.5	4.5	5.0	8.2	Exports of goods and services
- 8.6	8.1	7.1	7.6	8.7	6.0	8.0	Imports of goods and services
- 4.6	2.7	4.6	3.1	2.3	5.0	4.1	Gross domestic product⁴
							Price Development (deflators)
1.4	3.0	2.0	2.0	3.9	2.6	1.6	Final consumption expenditure
0.6	3.4	2.6	1.8	4.9	3.4	1.8	Private consumption ²
3.3	2.0	1.1	2.4	1.6	0.8	1.3	Government consumption
1.4	4.7	4.3	2.4	7.2	6.2	2.5	Gross fixed capital formation
1.3	1.9	1.9	1.5	2.4	2.4	1.5	Investment in machinery & equipment ³
1.9	7.7	6.3	3.4	12.1	9.4	3.3	Construction investment
0.3	1.6	2.1	1.2	2.0	2.4	1.9	Other products
0.9	3.4	2.6	2.0	4.7	3.3	1.9	Domestic demand ⁴
2.0	- 2.0	- 1.7	- 1.4	- 2.6	- 2.5	- 1.1	Terms of Trade
- 0.4	5.0	3.8	2.6	7.4	5.9	1.9	Exports of goods and services
- 2.4	7.1	5.7	4.0	10.2	8.6	3.0	Imports of goods and services
1.6	2.6	1.9	1.5	3.7	2.3	1.4	Gross domestic product⁴
							Production of domestic product
- 0.8	0.0	1.1	- 0.7	0.7	1.2	0.9	Employed persons (domestic)
- 4.9	1.5	3.1	0.9	2.0	4.3	1.9	Labour volume
0.4	1.3	1.4	1.9	0.3	0.7	2.2	Labour productivity (per hour)
							Distribution of net national income
- 3.1	6.2	5.6	6.1	6.2	6.5	4.7	Net national income
- 0.2	3.3	5.0	2.2	4.3	5.7	4.4	Compensation of employees
- 0.7	3.3	5.0	2.1	4.3	5.8	4.3	Gross wages and salaries
							among them: net wages and salaries ⁵
- 0.1	3.9	5.5	2.9	4.8	7.0	4.2	Property and entrepreneurial income
- 10.2	14.0	7.0	17.0	11.4	8.3	5.7	Disposable income of private households ²
0.8	2.3	4.0	1.3	3.2	3.9	4.1	Savings rate of private households ^{2,6}
.	
							For information purposes:
3.4	0.6	0.7	- 0.8	2.0	1.2	0.3	nominal unit labour costs ⁷
1.8	- 2.0	- 1.1	- 2.3	- 1.7	- 1.2	- 1.1	real unit labour costs ⁸
0.5	3.1	2.6	1.8	4.2	3.5	1.8	Consumer prices

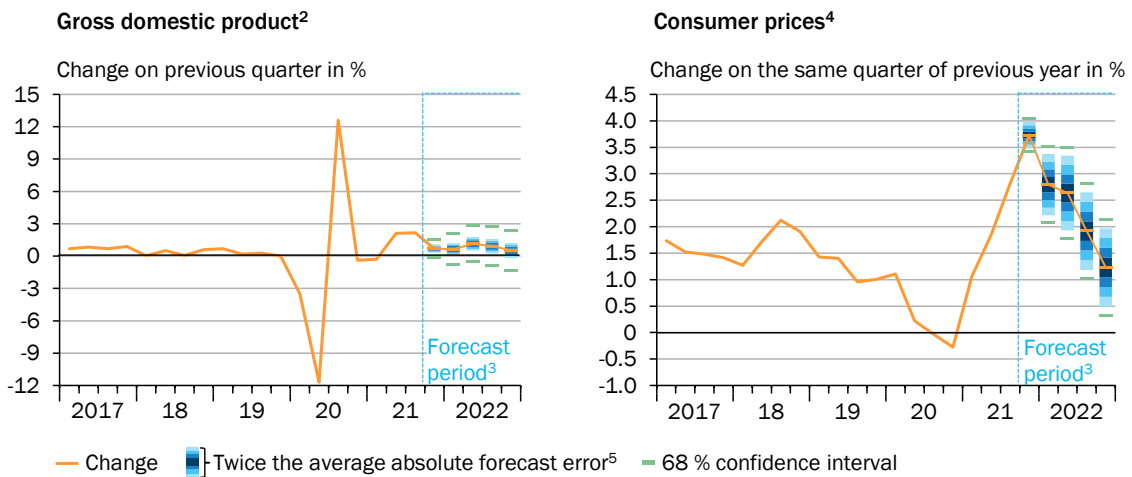
1 - Forecast by the GCEE. 2 - Including non-profit institutions serving households. 3 - Including military weapon systems. 4 - As the expenditure-side composition of the revisions to GDP in the first half of 2021 is still pending, it is assumed that they represent an adjustment to the changes in inventories. 5 - Compensation of employees minus social contributions of employers and employees and income tax of employees. 6 - Savings relative to disposable income. 7 - Compensation of employees per working hour (employee concept) in relation to real GDP per working hour (employed person concept). 8 - Compensation of employees per working hour (employee concept) in relation to GDP per working hour (employed person concept).

Sources: Federal Employment Agency, Federal Statistical Office, own calculations

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↘ CHART 29

Forecast intervals for gross domestic product and consumer price growth in the euro area¹

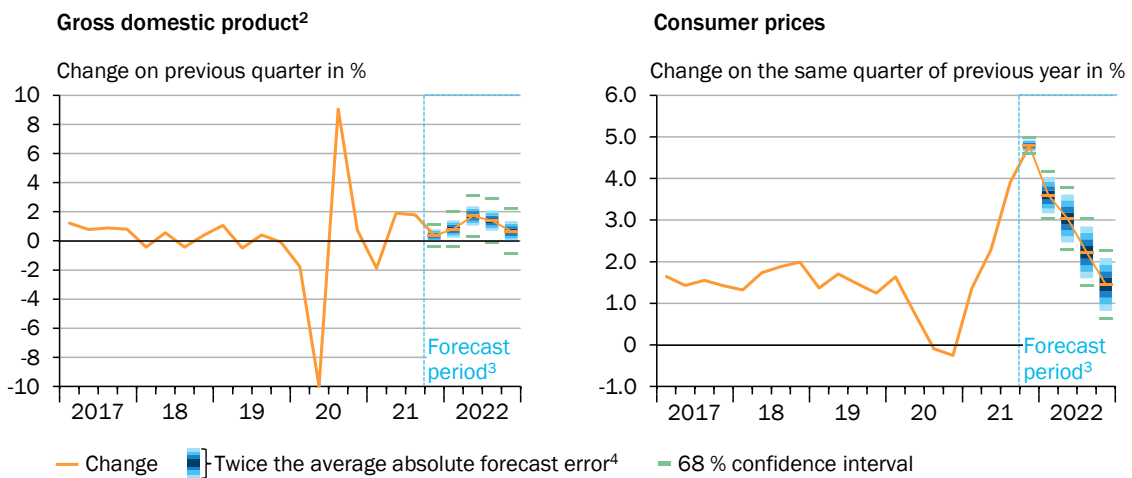


1 – Uncertainty margins calculated on base of the mean absolute forecast error in the period 1999 to 2020. 2 – Price-, seasonally and calendar-adjusted. 3 – Forecast by the GCEE. 4 – Harmonised index of consumer prices. 5 – The width of the confidence band, which is symmetric around the most likely value, is twice the average absolute forecast error.

Sources: Eurostat, own calculations
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↘ CHART 30

Forecast intervals for gross domestic product and consumer price growth in Germany¹



1 – Uncertainty margins calculated on base of the mean absolute forecast error in the period 1999 to 2020. 2 – Price-, seasonally and calendar-adjusted. 3 – Forecast by the GCEE. 4 – The width of the confidence band, which is symmetric around the most likely value, is twice the average absolute forecast error.

Sources: Federal Statistical Office, own calculations
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