

STUDY

Requested by the ECON committee



Overview of how major economies have responded to the Covid-19 pandemic

Growth trajectories, debt
sustainability, best practices

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Economic Governance Support Unit (EGOV)
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Overview of how major economies have responded to the Covid-19 pandemic

Growth trajectories, debt sustainability and best practices

Abstract

This study aims to assess how major economies were affected by the Covid-19 pandemic, in particular with respect to economic growth and public debt sustainability. It reviews the heterogeneity of policy measures taken, and aims to identify best practices. A special focus is placed on the euro area and its largest Member States. Principles and practices for ensuring sustained growth and sustainable public finances are discussed.

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LIST OF ABBREVIATIONS

ECB	European Central Bank
EIB	European Investment Bank
ECCL	Enhanced Conditions Credit Line
ESM	European Stability Mechanism
ESRB	European System Risk Board
FOMC	Federal Open Market Committee
GCEE	German Council of Economic Experts
GDP	Gross Domestic Product
GNI	Gross National Income
IMF	International Monetary Fund
KfW	Kreditanstalt für Wiederaufbau (Engl. Reconstruction and Loan Corporation)
NGEU	Next Generation EU
NKR	Nationaler Normenkontrollrat (Engl. National Regulatory Control Council)
OMT	Outright Monetary Transactions
PCSI	Pandemic Crisis Support Instrument
PEPP	Pandemic Emergency Purchase Program
RRF	Recovery and Resilience Facility
SURE	Support to Mitigate Unemployment Risks in an Emergency

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EXECUTIVE SUMMARY

Background

There is no one-to-one correspondence over time between the severity of the pandemic in terms of infection, hospitalization or death rates and economic activity. Economic activity declined most strongly in the first wave of the pandemic. Major economies experienced a rapid recovery after the initial shock. During subsequent waves, gross domestic product decreased only to a small extent or kept increasing throughout in some of these economies. Multiple forces and measures have shaped the growth trajectories, including behavioural responses of households and firms to the epidemic, non-pharmaceutical public health measures, social distancing and lockdown measures, as well as fiscal support measures. Due to the deep economic recession, tax revenues strongly declined at the same time as governments extended massive fiscal support to businesses and households affected by the pandemic. Governments borrowed heavily on financial markets and, as a result, sovereign debt-to-GDP ratios rose substantially.

Aim and Findings

- This study analyses the scope, type and effects of fiscal support measures in major economies. A special concern is the impact of the pandemic and the fiscal policy responses on debt sustainability. Finally, an attempt is made to identify best policy practices, including the role of fiscal rules in order to maintain debt sustainability.
- The growth effects and policy responses are influenced by labour market institutions and the relative importance of different sectors. For example, in the United States, the adjustment to the pandemic occurred via unemployment, but in Europe via reduced working hours. In supporting households and firms, European countries relied on job retention schemes, while the United States provided substantial cash payments directly to individuals. Most European governments launched large-scale programmes of public loans and guarantees to preserve access to bank loans for companies.
- A speedy reaction to the onset of the pandemic and economic contraction is essential. In the euro area, in particular, the quick response by monetary policy helped protect banks' and governments' funding costs. Eventually, however, the European Central Bank's debt purchases competed with and substituted fiscal support by the European Stability Mechanism and loans from the Recovery and Resilience Facility.
- To ensure fiscal sustainability and successfully deal with structural change, best practice involves flexible instruments that are easily scaled up and reversed without causing economic and behavioural distortions. Ideally, support schemes respond endogenously to the demand for liquidity by companies that are strongly impacted by the pandemic. Preferable measures automatically take into account whether a company was profitable prior to the epidemic or whether it will be successful afterwards.
- It is important to phase out support measures as the economy recovers. Ideally, this happens automatically, as in the case of short-time work programmes, loan and guarantee facilities and tax deferrals.
- Following the pandemic, it is key to allow the reallocation of capital and labour that is conducive to the structural changes triggered by the pandemic. Companies with viable business models need to be able to expand, and workers need to shift from declining to growing sectors. Keeping generous support measures in place for too long will slow down structural change and productivity growth.

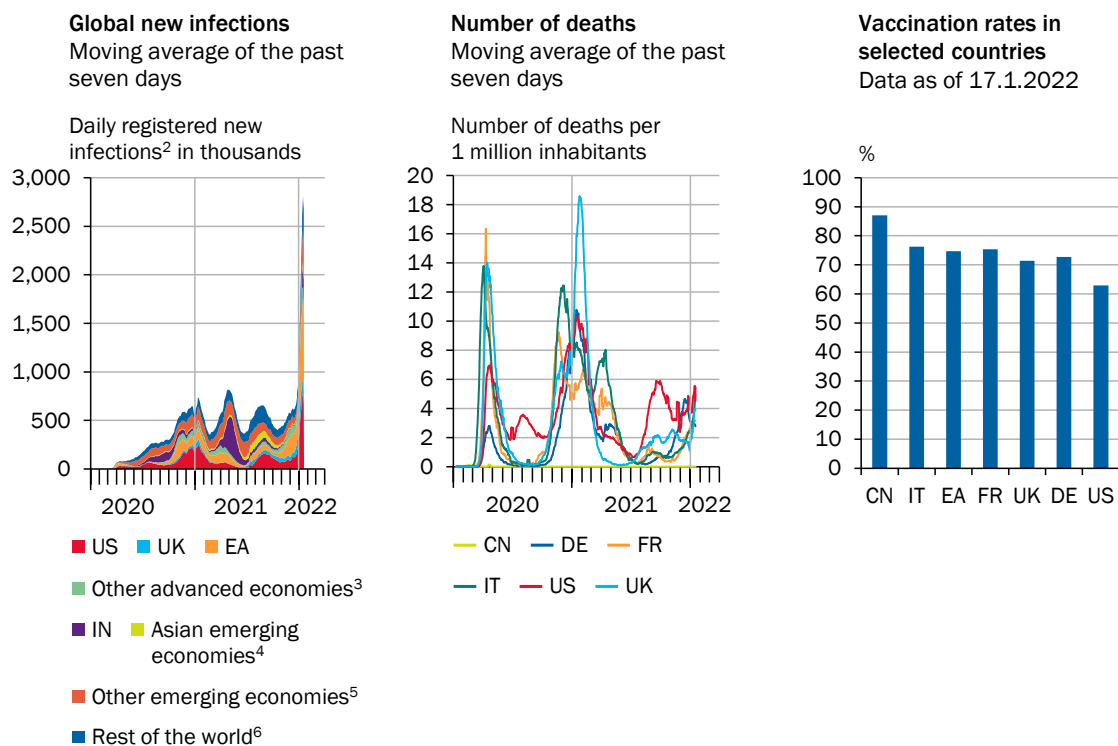
- Furthermore, governments need to recreate fiscal space to improve countries' resilience in future crises. Thus, the government debt ratio relative to gross domestic product needs to be reduced again after the pandemic. Ideally, the economy grows faster than government debt and thereby grows out of the high debt ratio. Market-oriented structural reforms can strengthen productivity, investment and innovation and thereby raise trend growth. Governments should take care to have public expenditure grow more slowly than economic activity.
- Fiscal rules help contain the deficit and debt bias of governments. They are essential in a monetary union to protect the central bank from fiscal dominance. In other words, debt sustainability needs to be maintained by fiscal means, without recourse to inflation, in order to allow the central bank to achieve price stability. Not all Member States used the period of recovery and growth and record low interest rates prior to the pandemic for reducing the debt ratio. European Union fiscal rules should thus be strengthened by reducing exceptions and the degree of discretion. They should be focused more effectively on reining in the trend increase in government expenditure. A weakening of the rules by raising debt targets should be avoided.

1. THE PANDEMIC AND ECONOMIC ACTIVITY

The coronavirus pandemic has had a huge impact on the world economy. It has triggered major changes in the behaviour of households, firms and financial institutions, as well as extensive economic and health policy responses by national governments and international organisations. The effects of the pandemic in terms of infection, hospitalisation and death rates on economic activity have been quite heterogeneous across countries and economic areas.

Importantly, there is no simple correspondence between the scale of the health impact and the scale of the economic impact over time or across countries. As shown in **Figure 1**, the pandemic has proceeded in multiple waves and regional shifts across the world.

Figure 1: Development of the Corona pandemic in large economies and worldwide



1 - CN-China, DE-Germany, EA-Euro area, FR-France, IN-India, IT-Italy, UK-United Kingdom, US-USA. 2 - 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. 3 - Country definitions according to footnote 9 in table 1 without Hong Kong and Taiwan. 4 - China and Southeast Asian emerging economies according to footnote 8 in table 1 (GCEE Annual Report 2021). 5 - Country definitions according to footnote 10 in table 1 (GCEE Annual Report 2021). 6 - Remaining countries listed by the WHO.

Sources: Our World in Data, WHO, World Bank, own calculations
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Following the initial wave of infections in winter and spring 2019/2020, the global infection rate kept climbing higher until it reached a first peak in winter 2020/21. Subsequent peaks of global infections occurred in spring and summer 2021, and global infections are scaling another much higher peak as of winter 2021/22. A comparison of death rates (per million inhabitants) between China, the United States

and four major European economies – France, Germany, Italy and the United Kingdom – underlines the heterogeneity of the health impact of the pandemic.

In China, the death rate per million inhabitants remained very small, by comparison, throughout the whole period. This is likely the result of a strict control of mobility and travel, an intensive tracking of infected inhabitants, and extremely strict enforcement of restrictions, such as social distancing and other non-pharmaceutical public health measures.

In the other five countries, peaks in death rates were reached in the first wave of the pandemic in spring 2020, in the subsequent waves of winter 2020/21, and spring 2021. Death rates are rising again in winter 2021/22, yet remaining on a smaller scale than before, most likely due to vaccination rates having reached levels between 60% and 80%. Comparing the US and European economies, the death rate in the US reached another peak in late summer 2021 and declined subsequently. In Germany, the death rate rose in late 2021, briefly exceeding the rate in the United States.

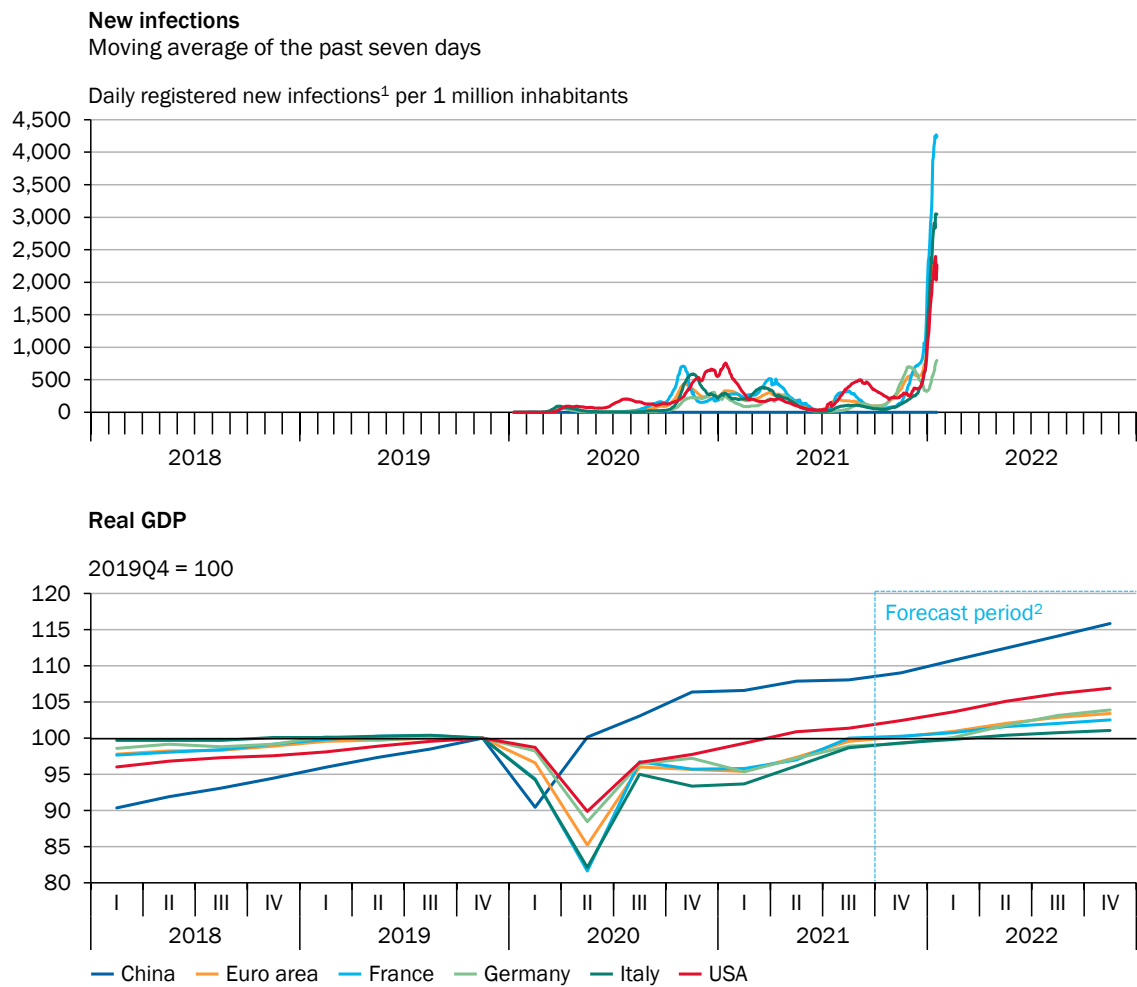
By contrast, economic activity as measured by Gross Domestic Product (GDP) declined most strongly in the first wave of the pandemic and decreased only to a small extent or even grew throughout subsequent waves. This is the case for China, the United States, the euro area as a whole, as well as the Member States Germany, France and Italy, as shown in **Figure 2**. Thus, there is no one-to-one correspondence over time between the severity of the pandemic in terms of infection, hospitalization or death rates and economic activity.

There is heterogeneity across countries in terms of timing and depth of the initial recession, and whether or not subsequent waves of the pandemic coincided with a smaller reduction in GDP or none at all. China, where the pandemic hit first in December 2019, experienced a decline by about 10% of GDP in the first quarter of 2020. The other economies, where the pandemic broke out in March 2020, experienced a small decline in the first quarter, followed by a larger decline in the second quarter of 2020. Even though infection rates were much higher in the United States and Germany than in China, the initial decline of economic activity was similar at about 10% of GDP. In France and Italy, which experienced substantially higher infection and death rates in the first wave than Germany or the United States, GDP declined about 18%, respectively, by the second quarter of 2020.

All these six economies experienced a rapid recovery after the initial shock. China reached pre-crisis GDP already in the second quarter of 2020 and grew continuously thereafter. The United States economy exceeded the pre-crisis level by the second quarter of 2021. Even though it experienced much higher death rates in the winter 2020/21 and summer 2021, the economy continued to expand.

The euro area economy as a whole, as well as the German, French, and Italian economies, were hit by a second downturn in the winter 2020/21, likely due to pandemic-related containment and social distancing measures. Yet, this downturn was much smaller than in the first wave of the pandemic, while infection rates were higher than in the first wave. Forecasts by the German Council of Economic Experts (GCEE) from November 2021 indicate that GDP is expected to exceed the pre-crisis level by the first or second quarter of 2022 in Italy and Germany (see GCEE 2021). France most likely exceeded its pre-crisis level already in the fourth quarter of 2021.

Figure 2: Real GDP and Covid infections in selected countries



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 – Forecast by the GCEE (GCEE Annual Report 2021).

Sources: Eurostat, national statistical offices, WHO, World Bank, own calculations
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With infections due to the new Omicron variant of the coronavirus rising very rapidly, it is possible that GDP will decline somewhat in Germany and other countries in the first quarter of 2022. Business confidence indicators for Germany declined moderately in November and December 2021, but still remained above or at the levels of December 2020.

There are several forces that determined the impact of the pandemic on economic activity over time and across countries. First of all, an epidemic triggers cautionary behavioural responses of households and firms that are voluntary in nature. Given the risk of hospitalization and possibly death, people react by reducing contact-intensive consumption to avoid infection. Similarly, companies may reduce or shut down business activity to avoid risks for their employees or to respond to the reduction in demand. Such responses have been observed in all countries hit by the pandemic. For example, real-time activity indicators also declined in the absence of government-regulated restrictions, or stayed lower beyond the duration of such restrictions.

Recently developed epidemic-macroeconomic models show that cautionary behavioural responses can be optimal from the perspective of individual household utility maximisation and corporate profit maximisation. At the same time, these optimal reactions to heightened infection risk trigger a decline in economic activity.¹ However, there is an externality. While people may well take into account optimally the risk posed by an infection to themselves, they may not fully account for the risk of others to catch the disease from them. Thus, the extent of voluntary social distancing may be individually but not socially optimal or sufficient. Therefore, epidemic-macro models provide an argument for additional government containment measures concerning social distancing and quarantines, including wide-ranging lockdowns. Particularly, the latter type of measures is likely to further reduce economic activity.

However, there are a range of measures and developments that are likely to counteract these negative effects on economic activity. For example, as disinfectants, face masks and other protective gear, app-based tracking options, and coronavirus test-kits are made widely available, infection risk is reduced and more economic activities become viable. Government restrictions, such as mask requirements or the provision of more effective tracking of infections, may also help protect economic activity. Importantly, the provision of vaccine and effective vaccination campaigns have a positive impact on economic activity.

Finally, a variety of economic policy measures can help keep companies in business and alleviate the impact of government health-related restrictions. These include, for example, loans, guarantees, tax deferrals and direct payments to businesses. Transfers to households provide income support and help keep up consumption, in particular with regard to goods and services that are not contact-intensive. Stimulus programs may help the recovery after the initial impact of the pandemic and business closures. Monetary policy measures can reduce funding costs for businesses, households and governments, and provide liquidity for the financial system. Easing of macro-prudential requirements can make it easier for financial intermediaries to provide loans to households and firms.

All these forces and measures have contributed to the growth trajectories in major economies. In principle, a fully-specified multi-country epidemic-macro model would be needed to disentangle the causal effects from behavioural responses to the epidemic, non-pharmaceutical public health measures, social distancing and lockdown measures and fiscal measures on economic activity. A full-scale model-based assessment would be beyond this study. Instead, we focus on fiscal measures by national governments and international organizations, primarily in the euro area and large Member States, such as Germany, France, Italy and Spain. Some comparisons are made to other economies, in order to highlight different policy measures. We analyse the effects of such measures. A special concern is the impact of the pandemic and the respective fiscal policy responses on debt sustainability. Finally, an attempt is made to identify best policy practices, including the role of fiscal rules in order to maintain debt sustainability.

2. ECONOMIC EFFECTS OF THE PANDEMIC SHAPED BY LABOUR MARKETS AND SECTORAL STRUCTURE

When comparing the economic effects of the pandemic and the type of fiscal policy responses across major economies, it quickly becomes apparent that they are influenced importantly by existing labour

¹ See for example, (Eichenbaum et al. (2021)). For a range of different epidemics-macro models that have been reproduced independently, the software code has been made available in the [Epidemic-Macro Model Database](https://www.epi-mmb.com), a project by Mathias Trabandt and Volker Wieland supported by the Goethe University Corona Fund and the Institute of Monetary and Financial Stability (see <https://www.epi-mmb.com>).

market institutions and the relative importance of different sectors in the respective economy. For example, in the United States, the labour market adjusted very differently to the pandemic crisis than in Europe, as shown in **Figure 3**. Whereas in the United States, the adjustment occurred via unemployment, the adjustment occurred via reduced working hours in Europe (including the United Kingdom). This is due to different labour market institutions and has important effects on how governments channelled fiscal support to households and firms, via both automatic stabilizers and discretionary policy measures.

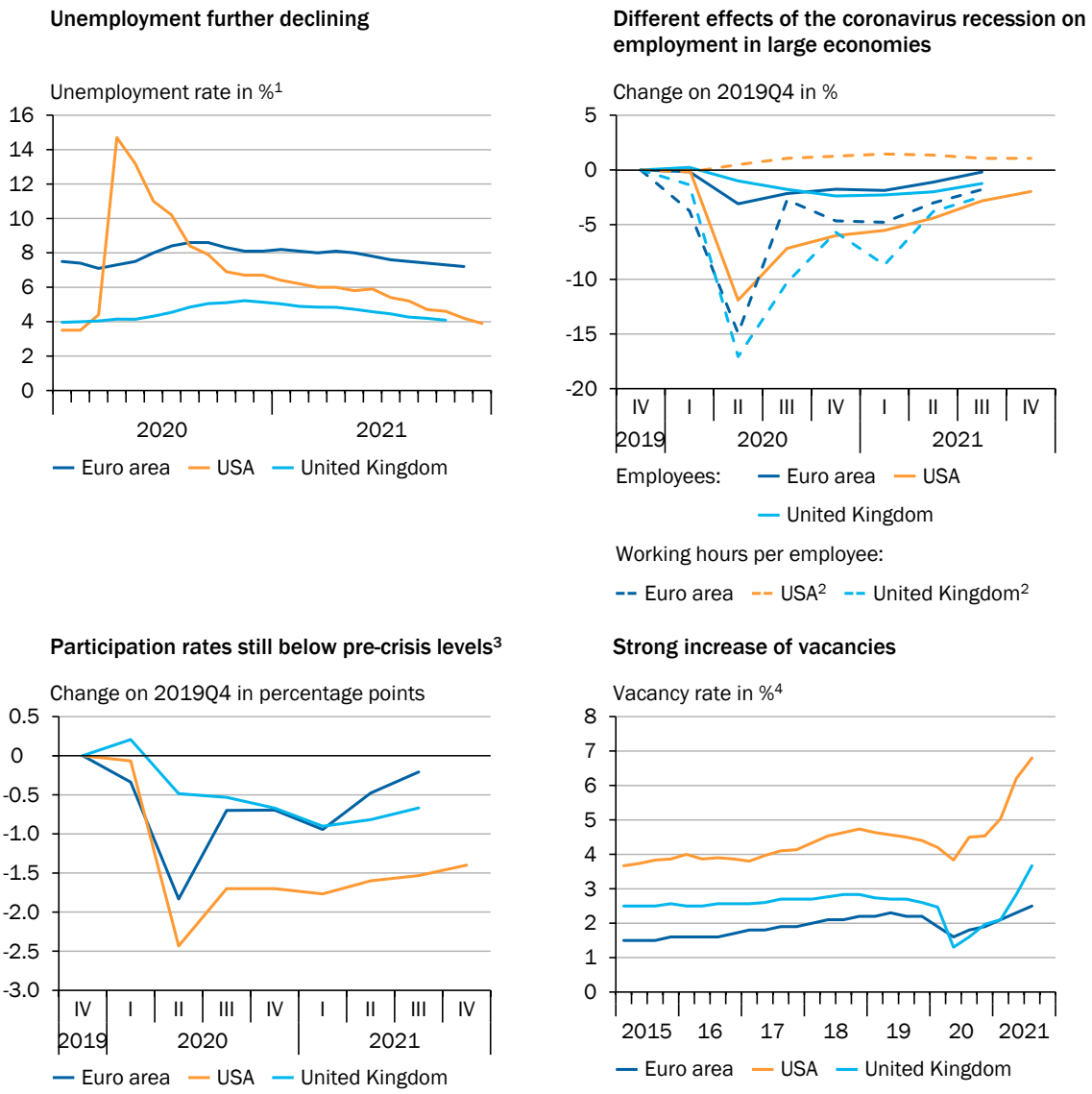
In the United States, the unemployment rate rose sharply in April 2021 to over 14%, as businesses closed to reduce infection risk, or reduced staff in response to the decline in demand for their products and services. Given the huge scale of the increase of unemployment and the relatively modest unemployment benefits in the United States (relative to Europe), the federal U.S. government quickly decided to pay additional monetary benefits to the unemployed, in order to compensate (and often over-compensate) income losses.² As economic activity recovered, the unemployment rate quickly declined again. By spring 2021 it dropped below 6%. As of December 2021, it has fallen to 3.9%. Thus, it is not far anymore from the rate of 3.5% which prevailed at the start of 2020, prior to the coronavirus pandemic. Labour force participation rates still remain subdued. Even so, U.S. firms in certain sectors report labour shortages.

In Europe, most countries (including the UK) had in place more generous unemployment insurance, but also so-called short-time work allowance programs, or introduced and even expanded such programs.³ These programs take over a large part of the costs that companies are faced with if they hold employees in the case of sudden shortfall of demand for their products and services, in a recession. As a result, employment and unemployment rates could be kept stable. Instead, the number of hours worked adjusted. Despite the recovery, hours worked in the euro area remain significantly below their pre-crisis level as of the latest data from the third quarter of 2021.

² Benefit amounts for eligible workers vary by State, ranging from \$783 in Massachusetts to \$235 per week in Mississippi, as of 2017 "[Best and Worst States for Unemployment Benefits – 2017](#)" *AboutUnemployment.org*. February 25, 2017. Starting in March 2020, the Coronavirus Aid, Relief, and Economic Security Act (CARES Act) provided one-time Economic Impact Payments of up to \$1,200 per adult for eligible individuals and \$500 per qualifying child under age 17. The payments were reduced for individuals with adjusted gross income (AGI) greater than \$75,000 (\$150,000 for married couples filing a joint return). Two subsequent rounds of such payments followed in December 2020 and March 2021. For a family of four, these Economic Impact Payments provided in sum up to \$3,400 of direct financial relief ([U.S. Treasury, accessed February 15, 2022](#)).

³ In Germany, for example, the existing short-time work allowance program was temporarily made substantially more generous. As of March 2020, the benchmark, for which companies could register short-time work, was lowered from 30% to 10% of employees affected by the shortfall of work. At the same time, the income compensation provided by the government increased from a standard level of 60% to a maximum of 87% under certain conditions concerning length of the period and children. <https://www.bundesfinanzministerium.de/Content/DE/Standardartikel/Themen/Schlaglichter/Corona/2020-03-19-Beschaefiqung-fuer-alle.html>

Figure 3: Labour markets shape economic and fiscal consequences of pandemic



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.

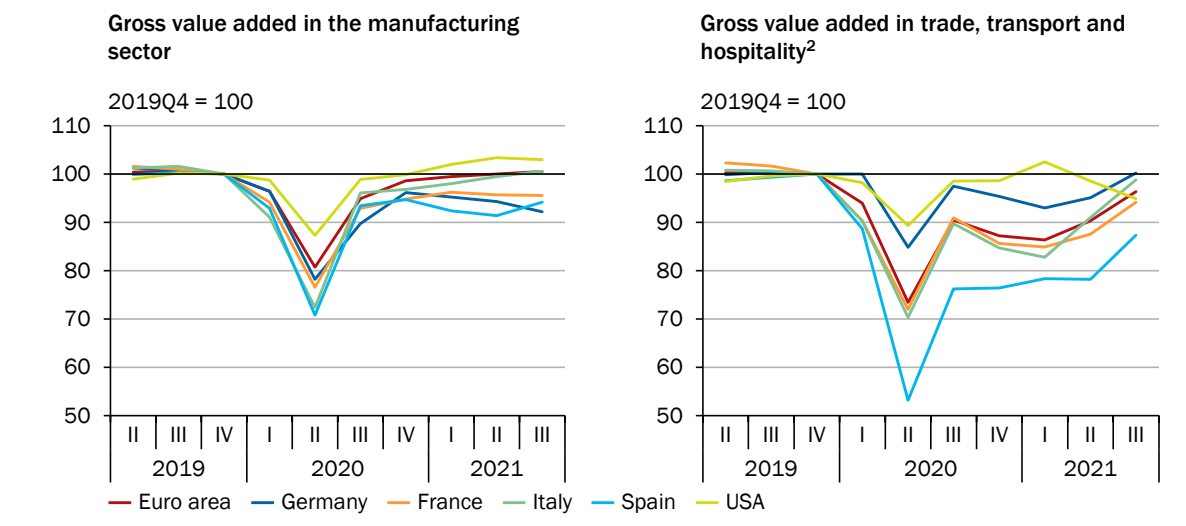
Sources: BLS, Eurostat, OECD, ONS, own calculations
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In the short-run, both policy approaches compensate employees for income losses and allow firms to deal better with demand shortfall or government-induced business closures. Yet, adjustment via unemployment comes with higher costs for firms who need to search and re-hire employees during the recovery. The advantage of short-time work allowance programs is that they help companies to keep productive employees that they may need again in the future, when demand for their products increases again. However, if structural changes require that workers move to different companies or even different sectors, the short-time work allowance programs may postpone necessary structural adjustments and hold down productivity. In Germany, labour reallocation was relatively modest during

the pandemic. By contrast, the U.S. economy could realize greater productivity gains through reallocation. However, negative consequences could be long-term scarring effects on unemployment and more discouraged workers.

Not surprisingly, the coronavirus crisis directly affected contact-intensive services and travel-related businesses, where the infection risk was higher than in manufacturing and government health-related restrictions were more prevalent. As shown in **Figure 4**, for example, retail trade, transport, and hospitality declined more strongly initially, and remained below the pre-crisis level longer than manufacturing in the euro area as a whole and especially in France, Italy, and Spain.

Figure 4: Sectoral gross value added in the euro area and the USA



1 – Price-, seasonally and calendar-adjusted values. 2 – For USA only retail trade.

Sources: BEA, Eurostat, own calculations
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Countries with a higher share of the tourism sector in the economy were, at least initially, impacted more strongly than countries with a higher share of manufacturing. Even so, manufacturing also declined substantially in the second quarter of 2020. As household expenditure switched from contact-intensive services to more durable goods, the manufacturing sector recovered more quickly. Yet, supply bottlenecks, shortages in transport capacity, raw materials, intermediate products, computer chips, etc. slowed down the recovery of manufacturing in 2021. This is especially noticeable for Germany, where manufacturing and, in particular, automobile and machinery production, makes up a bigger share of the economy than in many other major economies.

Fiscal and liquidity support measures were naturally targeted relatively more at firms whose business was directly affected by the coronavirus pandemic. These firms were more likely to fulfil the criteria to benefit from loan guarantees, direct payments, or special tax treatments. The extent of loss of business due to the crisis was a sensible indicator for support in the initial crisis. However, if firms continue to rely substantially on government support to stay in business, even once health-related restrictions are eased and the economy recovers, the risk increases that the government supports firms whose business model is not viable anymore. Some support measures are more likely to suffer from such problems than others, as discussed in sections 3.2 and 5.

3. FISCAL SUPPORT MEASURES DURING THE PANDEMIC AND BEYOND

3.1. Scope of fiscal policy measures

First, it is important to note that automatic stabilizers, such as unemployment insurance, short-time work allowance systems and the progressivity of the tax system, are most effective in stabilizing demand in typical recessions. No new laws need to be passed. These stabilizers respond automatically and immediately to changing conditions in labour markets, in business revenues, and household incomes. Such automatic stabilizers have a much greater scope in Europe than in the United States. This needs to be borne in mind, in particular, when comparing European countries and the United States. To achieve an equivalent overall stabilizing effect, discretionary measures would need to be larger in the United States than in Europe.

Second, in terms of discretionary policy measures, monetary policy easing is normally more immediately available than fiscal support, because central bank rates and liquidity provision can be adjusted right away, as central banks receive new information about economic activity. Thus, monetary easing should have priority, while fiscal stimulus packages run the risk of coming too late.⁴ However, the lower bound on nominal interest rates has constrained the ability of central banks to ease financing conditions further in the coronavirus crisis. Instead, central banks have resorted to large-scale asset purchases, including large-scale purchases of government debt.⁵ Such measures were deployed right at the start of the crisis in spring 2020. While their ability to further improve financing conditions were limited, especially in Europe, they did succeed in keeping the already unusually favourable financing conditions in place. Importantly, large-scale government debt purchases meant that the increase in government debt to fund government deficits was more or less right away monetized. Government deficits were funded by increased central bank liquidity provision, as government securities were bought up by central banks in financial markets.

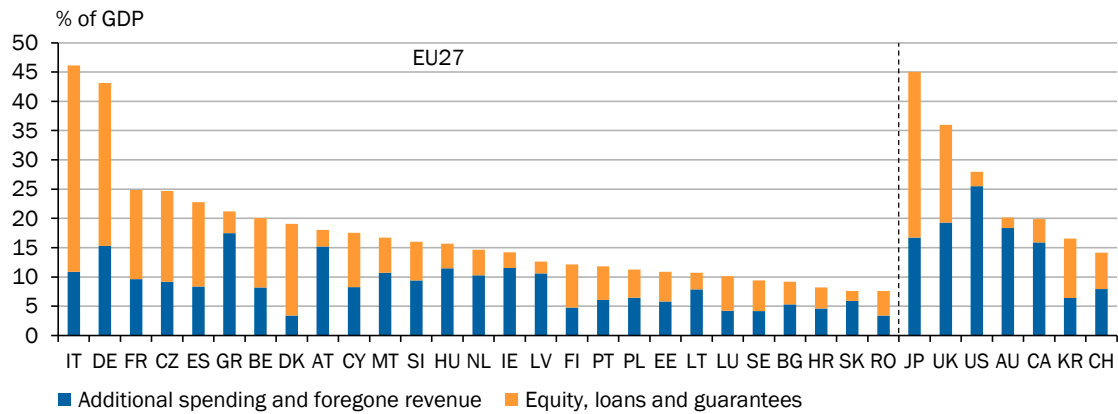
However, the sharp recession caused by the pandemic in spring 2020 was quite different from typical recessions caused by a shortfall of demand. There was no point to stimulate demand for contact-intensive consumption directly. This would have increased infection risk and run counter to the caution exercised by households and firms, and the health-related restrictions imposed by governments. The main objective had to be to provide liquidity and possibly transfers to help businesses and households weather the “pause” in economic activity due to the pandemic.

For this reason, and because of the large scale of the decline, governments quickly introduced a wide range of discretionary fiscal support measures aimed at helping those businesses and households most strongly affected by the pandemic and government-imposed restrictions. **Figure 5** provides a comparison of such measures across countries, based on data collected by the International Monetary Fund (IMF). It shows announced or implemented measures by the EU27 and some other industrial countries (US, UK, Canada, Australia, Korea and Switzerland) in percent of GDP. Measures are grouped in two categories: (i) directly budget-relevant measures comprising either additional expenditure or foregone revenue; and (ii) equity and loans and guarantees.

⁴ See, for example, Wieland (2009) and Cwik and Wieland (2011).

⁵ For early analyses of optimal strategies of quantitative easing see Orphanides and Wieland (2000) and Coenen and Wieland (2003) when Japan was the first major economy at the zero lower bound on nominal interest rates and more recently Wieland (2021).

Figure 5: Discretionary fiscal policy measures adopted in the context of the coronavirus pandemic vary between selected countries (data as of September 27, 2021)



1 - The data represent a cumulative summary by IMF (2021) of the main discretionary fiscal measures announced or implemented by governments in response to the coronavirus pandemic up to 27 September 2021. IT-Italy, DE-Germany, FR-France, CZ-Czech Republic, ES-Spain, GR-Greece, BE-Belgium, DK-Denmark, AT-Austria, CY-Cyprus, MT-Malta, SI-Slovenia, HU-Hungary, NL-Netherlands, IE-Ireland, LV-Latvia, FI-Finland, PT-Portugal, PL-Poland, EE-Estonia, LT-Lithuania, LU-Luxembourg, SE-Sweden, BG-Bulgaria, HR-Croatia, SK-Slovakia, RO-Romania, JP-Japan, UK-United Kingdom, US-USA, AU-Australia, CA-Canada, KR-Republic of Korea, CH-Switzerland.

Source: IMF
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There is substantial heterogeneity in the total amount and the composition of measures across countries. Italy, Germany, the U.K. and Japan stand out with regard to the total volume exceeding 35% of GDP. In the U.S. it is about 28% of GDP, in France 25% and Spain 23%. Smaller European economies, such as Sweden, Bulgaria, Croatia, Slovakia, and Romania, announced measures on a smaller scale, totalling less than 10% of national GDP. The mix of measures is quite different. Large European economies, such as Germany, France, Italy and Spain, announced loans and guarantees on a much larger scale than directly budget relevant spending and tax measures. The latter amount to 15% of GDP in Germany, about 11% of GDP in Italy, 10% in France, and somewhat over 8% of GDP in Spain. By contrast, the United States implemented the largest amount of directly budget relevant measures at just over 25% of GDP. Similarly, Canada and Australia relied relatively more on direct expenditure, transfers or tax reductions. Some EU countries, such as Greece and Austria, also focused more on directly budget-relevant measures, around 15% of GDP in Austria, and 17% of GDP in Greece.

The data collected by the IMF, shown in **Figure 5**, focus on discretionary measures. There is some overlap between discretionary measures and automatic stabilizers. For example, the overview includes the discretionary extension of short-time work allowance programmes as in Germany, but not volumes under standard short-time work allowance programmes. The actual use of such job retention schemes across countries is shown further below.

Furthermore, the IMF data in **Figure 5** refers to announcements of policy measures. These are different programmes that governments have made available to companies and households affected particularly strongly by the pandemic. Values shown typically concern the maximum volume that has been announced and made available. Actual uptake has been substantially smaller. The next section discusses some information that is available for different types of fiscal measures.

3.2. Types of fiscal measures, uptake and effects

There was a large number of discretionary fiscal support measures that have been used in advanced economies around the world. For Europe alone, the European System Risk Board's (ESRB) report from February 2021 counts more than 600 measures that had been reported by the 31 ESRB member countries. They may be grouped in terms of directly budget relevant measures such as direct grants, cash transfers, tax deferrals and tax relief, or in terms of financial liquidity provision via loan moratoria, public loan guarantees, public loans, public support for credit insurance and public equity injections. Furthermore, job-retention schemes such as short-time work programmes, which are part of the automatic stabilizers, played an important role supporting both companies and households.

A prominent example of large-scale **cash transfers** to individuals is the Economic Impact Payments in the United States, on the scale of about 6% of GDP. Many countries paid **grants** to companies that were affected particularly strongly by the pandemic, either because they were subject to health-based restrictions and closures or because their business was primarily with such companies. In Germany, for example, a sequence of different assistance programmes paid out cash to companies, micro-enterprises and self-employed workers that lost much business due to the pandemic. Many countries provided **tax relief** and **tax deferrals** to such companies. Of particular interest are "**tax loss carry back**" schemes: these schemes provide liquidity to companies by allowing them to apply losses incurred during the pandemic to taxes paid on profits in years prior to the pandemic, and receive a tax refund. The benefit of such schemes is that they help companies that at least pursued a profitable business model prior to the coronavirus crisis. Similarly, "**tax loss carry forward**" schemes help companies that return to profitability after the pandemic.

As to financial measures, many countries implemented **loan moratoria** that allowed households or businesses affected by the pandemic to postpone loan repayments or interest. Under public moratorium schemes, banks must accept a request for moratorium if certain eligibility criteria are satisfied. In Europe, around €840 billion of loans, that is around 5% of banks' total loans, were subject to moratoria as of September 2020 (ESRB 2021a).

Most European governments launched large-scale programmes of **public loans** and **public loan guarantees**, which are intended to preserve access to bank loans for companies affected by the pandemic and health-related government restrictions. These programmes help banks to satisfy the increased demand for loans at favourable conditions. They transfer some of the credit risk and possible losses from banks to governments, thereby reducing the costs for the banks. Germany, for example, launched a special programme with an unlimited funding volume in March 2020 via its public development bank, Kreditanstalt für Wiederaufbau (KfW, Reconstruction and Loan Corporation). KfW assumed risk up to 90% for small and medium-sized enterprises, and up to 80% for large companies. KfW fast-track loans for investment and equipment for businesses with more than 10 employees are 100% guaranteed and do not require a risk assessment by the intermediary bank. As a result, lending banks were faced with little or no credit risk that could negatively influence their approval of liquidity support.

Finally, certain companies such as airlines or large travel companies received direct **equity injections** from the government. When the government takes a large stake in a business, the danger is that the focus of the company will not be sufficiently oriented towards returning to profit-making operations. As a result, it may become dependent on permanent public support. Thus, governments should refrain from trying to control operational decision-making and sell their stake in the company at the earliest opportunity.

For many of the support programmes, actual uptakes are quite a bit smaller than announced volumes. Furthermore, the extent of actual use can be quite different across countries. The ESRB has provided comparable information on **announced volumes and uptake** for European countries, based on reports from national macroprudential authorities. An overview is shown in **Table 1**, with data as of September 2020.

In the first quarter of 2021, the overall volume of announced fiscal measures stood at 18.7% of pre-crisis GDP relative to 14.6% by the third quarter of 2020. The overall uptake of measures increased from 4.2% to 6.9% of GDP between Q3 2020 and Q1 2021. Thus, the announced size remains far from being fully used. Loan moratoria are not included in this calculation. As they expire, the uptake of loan moratoria has declined from 5% to 2.4% of 2019 GDP between September 2020 and March 2021.

Direct grants constitute a substantially smaller share of the total support extended in European countries than public loan guarantees. Even so, the amount of direct grants has increased between the third quarter of 2020 and the first quarter of 2021. Their uptake increased quite a bit from 0.7 to 1.6% or €223 billion. The uptake of public loan guarantees increased from 2.6% to 3.6% or €507 billion.

Table 1: Announced size and uptake of fiscal measures and loan moratoria in ESRB Member States (as of September 2020 and March 2021)

	2020 Q3 Announced % of GDP	2020 Q3 Uptake % of GDP (€ bln)	2021 Q1 Announced % of GDP	2021 Q1 Uptake % of GDP (€ bln)
Direct grants	2.0%	0.7% (112)	3.0%	1.6% (223)
Tax deferrals	1.0%	0.5% (77)	1.3%	0.7% (96)
Tax relief	0.4%	0.1% (13)	0.5%	0.3% (37)
Public loans	0.3%	0.4% (66)	0.6%	1.4% (204)
Public loan guarantees	9.5%	2.6% (435)	10.9%	3.6% (507)
Public support for credit insurance	1.4%		1.5%	0.3% (37)
Total (without moratoria)	14.6%	4.2% (704)	18.7%	6.9% (987)
Loan moratoria		5% (838)		2.4% (343)

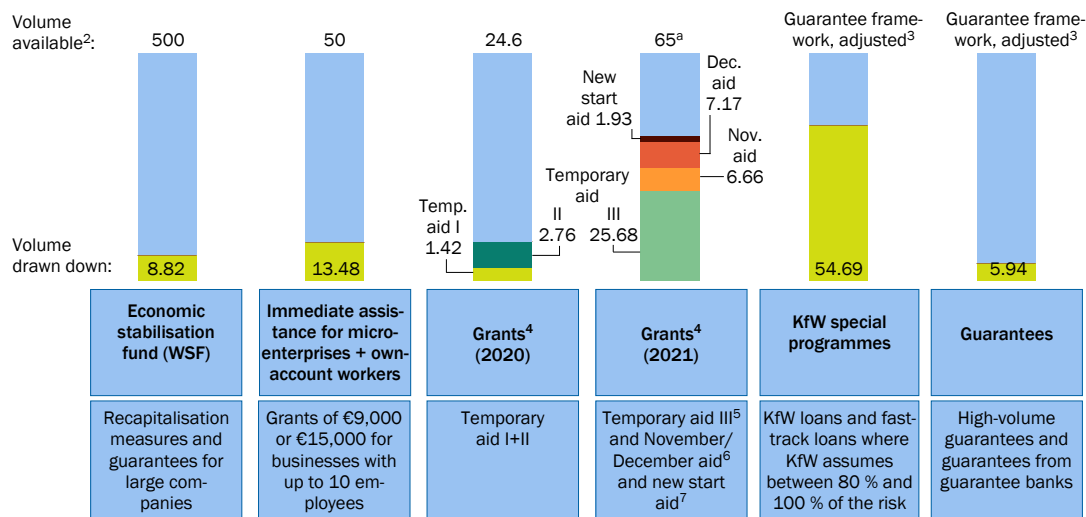
Source: [ESRB 2021 a, b](#)

The uptake for different measures is quite heterogeneous across Member States. For example, according to ESRB (2021a), new loans subject to public guarantees make up a particularly large share of loans in Spain, Portugal, France, and Italy with 10.9%, 5.8%, 3.5% and 2.4% respectively as of June 2020. A detailed breakdown of the ESRB's overview of announcements and uptake information by country is not available in public documents.

In the following, we provide further details comparing announced volumes and uptake for difference assistance measures in Germany. **Figure 6** reports the draw down for grants, guaranteed loans, and equity injections based on data collected by the German Council of Economic Experts as of December 7, 2021. It shows that direct grant programs evolved over time, with more recent programmes receiving much greater uptake. In terms of scale, by far the largest program is the KfW guaranteed loans.

Figure 6: Uptake of coronavirus assistance for business in Germany

Only small percentage of coronavirus assistance for businesses drawn down so far¹
 € billion



1 – Data as of 7. December 2021. 2 – €100 billion for the possible refinancing of authorised KfW loans not considered in the economic stabilisation fund. 3 – In the first supplementary budget, the Federal Government increased the guarantee framework by €357 billion to €822 billion for this purpose (Deutscher Bundestag, 2020a). 4 – Grants to compensate for lost revenue. 5 – Temporary aid III (€24.68 billion) and Temporary aid III plus (€1 billion). 6 – Small amounts of November and December aid have already accrued in 2020. 7 – New start aid to own-account workers. New start aid (€1.58 billion), new start aid plus (€0.24 billion) and new start aid plus Q4 (€0.11 billion). a – The aid for businesses increased from €39.5 billion to €65 billion in the supplementary budget 2021.

Sources: Federal Ministry of Economic Affairs and Energy, Federal Ministry of Finance, KfW, Association of German Guarantee Banks © Sachverständigenrat | 21-053

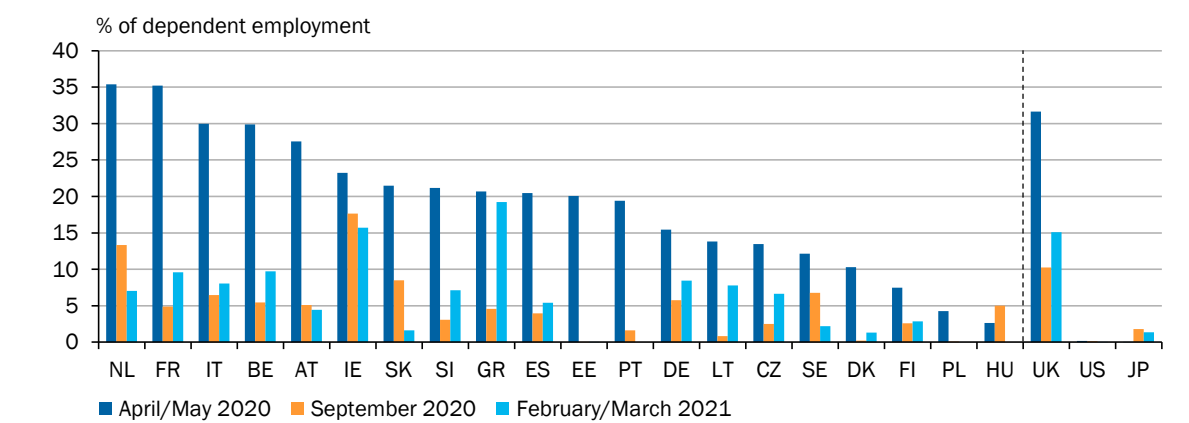
Job-retention schemes

The use of job retention schemes was high across advanced economies, as shown in **Figure 7**, based on data from the OECD. For example, during the first wave of the crisis, the take up – as a share of dependent employment among the major economies of the EU 27 – was the highest in France and the lowest in Germany, with 35.2% and 15.5%, respectively, while in Italy and Spain the take-up rate amounted to 30% and 20.5%. By February and March 2021, the average take-up rate in the major economies of the EU 27 dropped to significantly below 10%.

There were important differences in design and implementation. Short-time work schemes directly subsidising hours not worked, such as “Kurzarbeit” in Germany, have been popular frameworks to support job retaining in sectors affected by social distancing restrictions in a number of advanced economies. Some other countries have introduced temporary wage subsidy schemes that subsidise hours worked. Most of the pre-existing short-time work schemes did not impose any significant limits on the permissible reduction in working time (e.g., in Germany, Italy, France, Spain) or only allowed for

partial reductions. In contrast, the new short-time work schemes introduced in response to the crisis took the form of furlough schemes (United States, Sweden).

Figure 7: Use of job retention schemes during the pandemic



1 – NL-Netherlands, FR-France, IT-Italy, BE-Belgium, AT-Austria, IE-Ireland, SK-Slovakia, SI-Slovenia, GR-Greece, ES-Spain, EE-Estonia, PT-Portugal, DE-Germany, LT-Lithuania, CZ-Czech Republic, SE-Sweden, DK-Denmark, FI-Finland, PL-Poland, HU-Hungary. UK-United Kingdom, US-USA, JP-Japan. Take up rates are calculated as a percentage of all dependent employees in Q1 2020. For Italy, Slovenia, and the Slovakia the latest data refer to December 2020. For Hungary, Poland and Portugal data for December 2020 was not available. For Japan and the Netherlands the estimates are based on the total use during the reference period and the assumption that support is provided for no more than three months during this period. For the United States data refers to short-time compensation benefits.

Sources: National sources, OECD

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Macroeconomic effects of fiscal measures

Estimating the macroeconomic **effects** of support measures is a complex problem. Some very tentative conclusions can be drawn from comparing the developments of aggregate macroeconomic indicators across countries. For example, households’ income support via short-time work, wage subsidies and direct cash transfers has held up aggregate disposable household income. This effect is particularly strong where large-scale direct transfers were deployed, as in the United States and Canada. For the United States, household income spiked up drastically in April 2020, January 2021, and March 2021, due to these payments. Yet, the smooth path of aggregate consumption indicates that households largely saved the increase in income, consistent with the standard economic theory of consumption smoothing (Modigliani and Brumberg 1954, Friedman 1957). By contrast, aggregate disposable households’ income declined somewhat in European economies, such as France, Italy, Spain and, to a lesser extent, Germany (see, for example, Hudson et al 2021, GCEE 2021). Nevertheless, as consumption on contact-intensive services declined even more strongly, households in European countries also accumulated substantial excess savings.

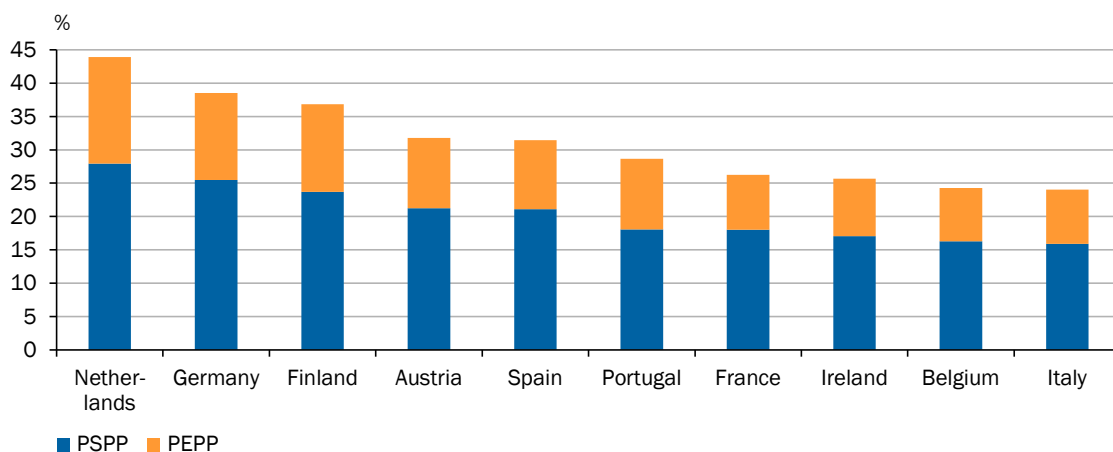
Estimating the **overall effect of fiscal measures on GDP** would, in principle, require a multi-country structural epidemic and macroeconomic model that could disentangle the causal impact of different fiscal and health measures from the behavioural responses of households and firms to the risk of infections. A simpler approach is to estimate vector autoregressive models that attempt to predict the path of GDP with and without fiscal measures. For example, Chudik et al (2021) estimate a global VAR model for 33 countries using the discretionary fiscal spending and revenue measures put together by the IMF. Their analysis suggests that the quarter-on-quarter real GDP growth effects vary across countries depending on country-specific factors, cross-border spillovers, and the size and composition

of policy support. They estimate a particularly large quarter-on-quarter growth impact in the second quarter of 2020 of about 7 percentage points in the United States and Germany and a bit more than 6 percentage points in Canada. At the global level, they estimate effects of a bit below 3 percentage points. However, such estimates need to be taken with a large grain of salt. The analysis assumes that the fiscal measures represent an exogenous shift. The model does not characterize the causal links between discretionary and automatic policy measures and household and firm behaviour. Also, it does not model the interaction with the epidemic and health-based policy restrictions.

3.3. Support measures at the euro area and EU level

The first European institution to react to the pandemic with large-scale measures was the **European Central Bank (ECB)**. Its nonstandard monetary policy measures were intended to counteract the decline in euro area inflation and support the economy in the crisis and recession. In particular, they included generous long-term and low-cost liquidity provision to the banking system and large-scale asset purchases. They had also an important fiscal dimension: by announcing large-scale government debt and private sector debt purchases, the ECB made clear that it would buy up much of the new public and corporate debt from financial markets and provide monetary liquidity in return. Thereby it aimed to ensure very favourable financing conditions for governments, private sector firm, and households throughout the pandemic crisis. The [Pandemic Emergency Purchase Programme \(PEPP\)](#) had an initial envelope of €750 billion and was subsequently expanded to €1850 billion, which corresponds to 15.4% of Euro Area GDP in 2019. This came on top of the Public Sector Purchase Programme (PSPP), which has been ongoing since 2015. As national central banks and the ECB have purchased government debt securities on a large scale on financial markets, they effectively monetized most of the increase in government debt in the pandemic. As of December 2021, the share of general government debt held by euro system central banks ranged from 23% in highly-indebted Italy to 42% in the less-indebted Netherlands as shown in **Figure 8**. Interest earned on government securities by national central banks is in the end returned to the respective government, together with annual central bank's profits.

Figure 8: ECB has purchased a large share of the general government debt of member states



1 – Euro area member states government debt held by the Eurosystem central banks under the PSPP and PEPP as a share of general government debt of each member state. The general government debt is based on Eurostat data referring to the consolidated general government debt. Since the amount of government debt of a country that is eligible for purchase under the PSPP and PEPP is not provided by the central banks, there may be deviations from the information shown here. Data as of 2021Q3.

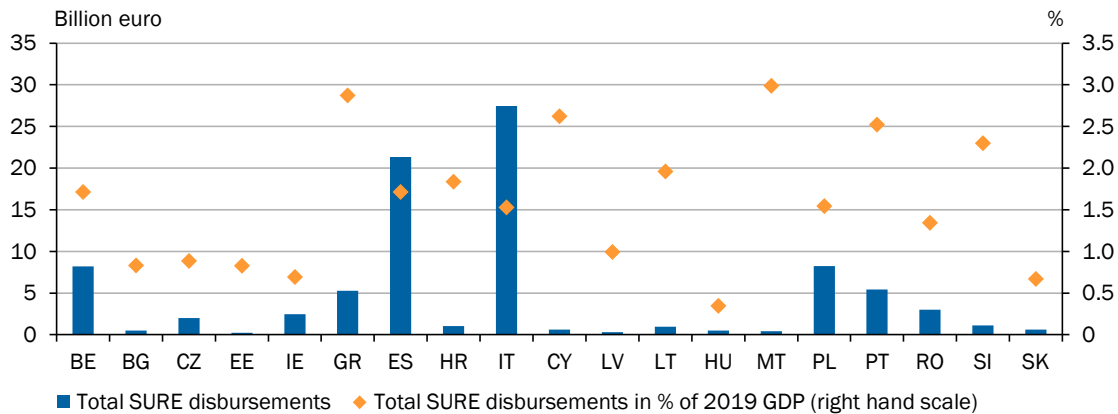
Sources: ECB, Eurostat, own calculations
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EU Member States initially agreed on a triplet of safety nets totalling €540 billion in spring 2020. The three safety nets consisted of financial support for national short-time-work schemes (Support to Mitigate Unemployment Risks in an Emergency, **SURE**), a new credit programme of the **European Investment Bank** (EIB), and easier access to loans from the **European Stability Mechanism** (ESM).

The first safety net consisted in €100 billion for the SURE initiative, that financed Member States' national short-time-working programmes. Between October 2020 and May 2021, the European Commission issued a total of €89.64 billion of social bonds in seven issuances, with SURE becoming the world's largest social bond scheme. [Financial assistance from SURE has been granted to 19 EU Member States](#), as shown in **Figure 9**. In absolute terms, the three largest amounts of financial assistance disbursed were to Italy (€27.4 billion), Spain (€21.3 billion), and Poland (€11.2 billion). However, if compared to the Member States' GDP, respectively, financial assistance was the largest for Malta (3.0%), Cyprus (2.9%), and Greece (2.6%).

The second safety was provided via the **European Investment Bank** (EIB). [A guarantee fund of €25 billion](#), into which the Member States paid in proportion with their EIB capital key, enable the EIB to secure loans of up to €200 billion. These guarantees for loans extended by national financial intermediaries are intended to benefit primarily small and medium-sized companies that have a sound long-term base, but have run into financial difficulties due to the pandemic. The EIB supplements and extends national guarantee programmes, with the Member States profiting of the EIB's good financial rating and borrowing conditions. The guarantee fund launched in October 2020, as of 31 October 2021, approved financing of €17.9 billion, which should mobilize expected investments of €134 billion. In addition, EIB emergency aid measures have made it possible to provide guarantee and liquidity assistance to banks to mobilise loans to companies amounting to €40 billion (EIB, 2020).

Figure 9: Financial support disbursed under SURE



1 – SURE-Support to mitigate Unemployment Risks in an Emergency. BE-Belgium, BG-Bulgaria, CZ-Czech Republic, EE-Estonia, IE-Ireland, GR-Greece, ES-Spain, HR-Croatia, IT-Italy, CY-Cyprus, LV-Latvia, LT-Lithuania, HU-Hungary, MT-Malta, PL-Poland, RO-Romania, SI-Slovenia, SK-Slovakia.

Sources: European Commission, Eurostat, own calculations
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To help support Member States' funding possibilities, the EU package also included a new precautionary credit line by the ESM. The [Pandemic Crisis Support Instrument \(PCSI\)](#) was designed along the lines of the existing Enhanced Conditions Credit Line (ECCL). It has a volume of €240 billion and is limited in time until the end of 2022. Based on a blanket preliminary assessment by the European Commission stating that all Member States are economically affected by the coronavirus pandemic (European Commission, 2020), each Member State is allowed to apply for loans of up to 2% of its GDP. The only prerequisite for drawdown of the PCSI is that it is used for costs in the healthcare system caused directly or indirectly by the coronavirus pandemic. Compliance with this use of funds is monitored by the Commission. The funding cost is very low – only a small margin over the funding cost of the ESM – and hence lower than the funding costs of highly indebted Member States. Nevertheless, no Member State has applied for the PCSI as of December 2021. Instead, Member States issued national debt on financial markets, as ECB measures ensured very favourable funding conditions without any conditionality. Furthermore, governments paying positive interest rates can recover the interest earnings of national central banks who purchased their debt. Thus, funding conditions correspond essentially to central bank rates. With regard to the separation of fiscal policy and monetary policy in a European Monetary Union, it would have been preferable if highly indebted Member States would have been steered more actively towards the ESM instead. For example, when the ECB launched its Outright Monetary Transactions (OMT) Programme in 2012 at the height of the euro area debt crisis, it tied this instrument to the use of ESM facilities.

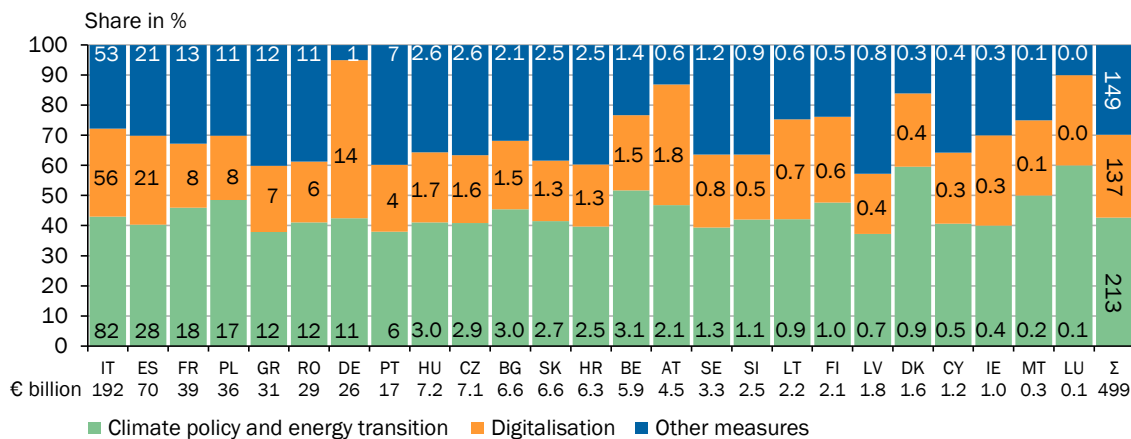
To further help Member States cope with the COVID 19 crisis and achieve sustainable growth, the **EU has set up the Recovery and Resilience Facility (RRF)**. The RRF allows the Commission to raise [funds to help Member States implement structural reforms and public investment](#) that are in line with the EU's priorities and that address the challenges identified in country-specific recommendations. The facility makes available €724 billion (or 5.2% of 2019 EU GDP) – €386 billion in form of loans and €338 billion in form of grants, that is, direct transfers. The first 70% of grants have been allocated among Member States according to three criteria: population; GDP per capita; and average unemployment in the years 2015 to 2019. The remainder will be allocated taking into account the observed loss of GDP in the coronavirus crisis. Every Member State can request loans up to 6.8% of its 2019 Gross National

Income (GNI) in nominal terms. As of January 2022, 43% of the loans have been requested (Deutsche Bank, January 21, 2022).

The RRF aims to prevent the coronavirus crisis from having a negative impact on the EU's economy in the longer term, and is intended to strengthen sustainable growth. In particular, the RRF is meant to help the EU achieve its target of climate neutrality by 2050 and facilitate further digitalization. Accordingly, targets of 37% for climate and 20% for digital spending have been agreed. **Figure 10** reports on the allocation of funds across countries and across climate versus digitalization-relevant spending. The value of reported shares meets the criteria required by the European Commission in each case.

Figure 10: NGEU Allocations

Allocations under the National Recovery and Resilience Plans should be focused on projects in the area of climate policy and energy transition¹



1 – Due to lack of specific detail, overlaps in the measures were not taken into account: the assignment to categories therefore corresponds to the general information provided by the member states in their recovery plans. An investment categorised by the member states under climate policy that also has digital components is therefore only assigned to the climate policy category. For Italy, Greece, Poland, Portugal, Romania, Slovenia and Cyprus: grants and loans. IT-Italy, ES-Spain, FR-France, PL-Poland, GR-Greece, RO-Romania, DE-Germany, PT-Portugal, HU-Hungary, CZ-Czech Republic, SK-Slovakia, BE-Belgium, AT-Austria, SE-Sweden, SI-Slovenia, LT-Lithuania, LV-Latvia, DK-Denmark, CY-Cyprus, LU-Luxembourg. Differences in the sums due to rounding. 2 – Sum of all states shown that had already submitted their recovery plans by July 2021, including details of the respective allocations. The Netherlands has not yet submitted a recovery and resilience plan.

Source: Bruegel (2021) based on the national Recovery and Resilience Plans submitted to the European Commission.
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Disbursements are planned to take place from 2021 to 2026. In absolute terms, the largest amounts are received by Italy (€192 billion or 10.6% of GNI (about 10)), Spain (€70 billion or 5.6% of GNI (about 12)), and France (€ 39 billion or 1.6% of GNI). For some of the smaller countries, the amount received corresponds to an even larger share of GNI, for example, 18% in Croatia and 17% in Bulgaria.

The RRF and, in particular, its use of direct grants, constitutes a strong signal of solidarity of the Member States. The European Union is authorized to raise the necessary funds on capital markets. Repayment via the EU budget will begin in 2028 at the latest and is to be completed by the end of 2058. The RRF is ultimately funded by the EU contributions of the Member States. For some of them, the amount of grants exceeds their future contributions under this arrangement, while others receive less than they

are expected to contribute. This implies net transfers between Member States. The Commission has proposed new own resources the help pay for the grants such as revenues from emissions trading, a possible future carbon border adjustment mechanism or taxes on multinational profits. This would shift revenues to the Commission that could otherwise go to Member States.

The RRF is not a stimulus package to offset short-term impacts of the pandemic, but rather meant to support investment and improve productivity and economic growth in the medium to longer run. It should facilitate structural reforms in Member States that remove national barriers to economic growth. Such reforms should improve the general conditions for private sector investment and innovation in Member States, and raise the level of education and participation in the labour market. This could help Member States to become more resilient in future crises. It is important that the European Commission effectively monitor the spending and the accompanying reforms, to ensure that appropriate progress is made.

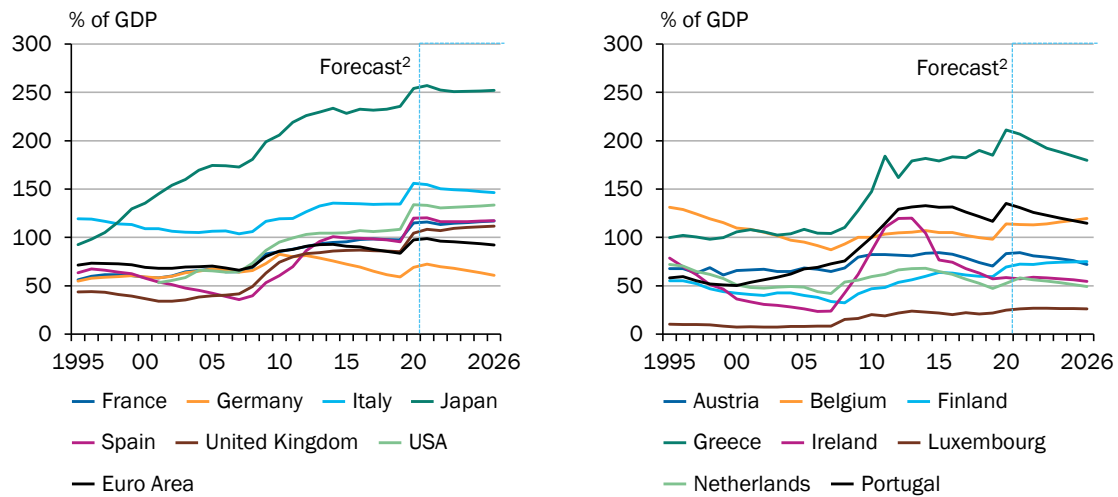
It is positive that some countries are planning substantial reforms. For example, Italy's recovery plan includes improvements of public administration through training and digitalisation, and improvement of the justice system by increasing staff and simplifying regulation. Spain plans reforms in a range of areas, including public administration and the labour market, such as the expansion of vocational training and a reform of the tax system and pension insurance. Of course, actual implementation is key. In Germany, substantial public spending on infrastructure and climate policy is planned. Past experience has shown that there exist major non-monetary barriers to the implementation of future-oriented expenditure. Examples concern the long delay in developing new railway lines, roads, bridges, or capacity for wind and solar energy. Cumbersome planning, licencing, and legal procedures block or delay the implementation of investments. According to the National Regulatory Control Council (NKR, 2021), rapid digitalisation of public administration and faster legal proceedings with compulsory early hearings could help reduce these delays. The coalition agreement of the new German government includes a commitment to substantially accelerate these processes. However, there are other areas in need of reform that still need to be tackled more ambitiously. Examples include the reduction of entry barriers to the German economy, which exist in many professions, and the stabilization of the pension system, by coupling the retirement age to rising life expectancy. This could also encourage other Member States to implement corresponding reforms.

4. IMPACT OF THE PANDEMIC AND FISCAL MEASURES ON DEBT SUSTAINABILITY

4.1. Substantial increase in debt-to-GDP ratios

Due to the deep economic recession, tax revenues strongly declined at the same time as governments extended massive fiscal support to businesses and households affected by the pandemic. Governments borrowed heavily on financial markets and, as a result, sovereign debt-to-GDP ratios rose substantially, as shown in **Figure 11**.

Figure 11: Debt ratios in selected countries



1 - General government gross debt as a percentage of GDP. 2 - For Austria, Japan and the Netherlands the forecast period starts in 2020.

Source: IMF World Economic Outlook
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As of 2021, many countries record debt ratios above 100% of annual GDP. As long as interest rates remain near zero or negative and, importantly, below the growth rate of GDP, such high debt ratios are borne relatively easily. Yet countries need to prepare for the possibility of rising sovereign funding costs exceeding the rate of GDP growth. It is particularly problematic that, in many countries, debt ratios failed to decline even in the years of recovery from 2013/14 until 2019, while these countries enjoyed extremely low financing conditions. In Europe, this concerns, for example, France and Italy. As a result, the starting position, in terms of fiscal sustainability, with which these countries entered the coronavirus crisis is worse than in others, where the debt ratio had previously been reduced.

High public debt poses a challenge to the sustainability of public finances in the future. Many euro area Member States have been able to increase debt ratios substantially, relative to the time prior to monetary union when they issued their own national currencies. Nevertheless, countries like the United States or Japan differ in important aspects from most euro area Member States, and may be able to sustain higher debt ratios. The US has the advantage of issuing the world's major reserve currency. This implies a strong demand for US debt from around the world. Japan actually holds large foreign exchange reserves while much of the sovereign debt is already monetized and on the central bank balance sheet.

4.2. Risks to public debt sustainability

Economic theory characterizes public debt sustainability in terms of the so-called intertemporal government budget constraint. In order to satisfy this constraint, expected discounted future budget surpluses need to be sufficient to cover the initial outstanding government debt over the infinite horizon. Then the debt-to-GDP ratio is stabilized over the long-run. Of course, there are many unknown future factors entering this constraint, including future spending and taxation, interest rates, growth rates and inflation. Monetary economics, especially, has studied alternative mechanisms that ensure

the constraint is satisfied, including easy monetary policy and higher-than-expected inflation in the future.⁶

Appropriate fiscal and monetary institutions and legal frameworks are needed to ensure that recourse to devaluing the debt via massive inflation or insolvency crises - with consequent debt restructuring - is avoided. Ideally, tax and expenditure policies are adjusted to safeguard public debt sustainability such that monetary policy is free from fiscal dominance and can act to safeguard price stability. This is particularly important in the euro area, which is a monetary union of otherwise fiscally largely sovereign Member States. It requires a safety margin against excessive risks to debt sustainability. EU and euro area fiscal rules and monitoring have been designed, and several times reformed, in order to make sure that national public finances remain sustainable without relying on seigniorage income from high inflation. The ECB needs to be able to tighten policy and raise central bank interest rates in the face of rising inflation, without having to be concerned about any destabilizing effects on government finances and funding costs.

4.2.1. The European Commission's S1 and S2 Indicators

There are a number of useful indicators of debt sustainability that are based on the governments' intertemporal budget constraint. For example, the medium and long-term risks to debt sustainability can be measured using the European Commission's S1 and S2 indicators, which are shown in **Figure 12**. The European Commission employs these indicators, among others, as instruments for analysis conducted in context of the budgetary surveillance under the Stability and Growth Pact.

The S1 indicator quantifies the cumulative adjustment required in the structural primary balance within 5 years to reach a debt-to-GDP ratio of 60% within 15 years. The adjustment requirement can be broken down into three components: the initial budgetary position, i.e., the difference between the contemporaneous structural primary balance and the target value at which the debt-to-GDP ratio would be stabilized, the debt target of 60%, and the cost of aging.

⁶ See Sargent and Wallace (1981) and Leeper (1991). A large literature on monetary and fiscal interactions and possible fiscal dominance has emerged from these seminal contributions.

Figure 12: Medium- and long-term debt sustainability of the European Commission 2020



1 – European Commission estimates. The S1 indicator quantifies the adjustment to the structural primary balance that is required (cumulated over five years) to bring the debt ratio to 60 % of GDP within 15 years. The S2 indicator quantifies the cumulative adjustment to the structural primary balance that is required to stabilize the debt ratio over an infinite horizon.

2 – The results for both sensitivity analyses of the S2 indicator correspond to the value zero.

3 – The scenario takes into account the effects of a higher nominal short-term and long-term interest rate on the new debt incurred. In the case of the S1 indicator, an interest rate that is one percentage point higher is assumed. In the case of the S2 indicator, a convergence is assumed within 30 years at interest rates of 2.5 % and 5 % instead of the values of 2 % and 4 % in the baseline scenario.

4 – The scenario assumes a negative shock for the long-term economic outlook in the form of a lower total factor productivity.

5 – Corresponds to the difference between the prevailing structural primary balance and the target value for the balance that would stabilise the debt ratio in the long term.

6 – Corresponds to the adjustment to the structural primary balance that is required to reach the target debt ratio of 60 % of GDP within a prespecified time of 15 years.

7 – Corresponds to the adjustment to the structural primary balance that is required to cover the costs of aging. In the case of the S2 indicator, this includes the costs of old-age provision, health care and long-term care.

Source: European Commission
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According to the European Commission’s Debt Sustainability Report (2021a, p. 14), the S1 indicator shows a high risk for the medium term for Spain, France, and Italy, for example. The high initial debt-to-GDP ratio relative to the debt target is the largest component in these cases. As the data show, debt-to-GDP ratios tend to increase over time, and it is quite difficult to achieve a reversal of an upward trend. Thus, the S1 indicator provides a timely warning signal that high-debt countries should aim to achieve such reversal sooner rather than later. The preferred strategy would be to pursue policies that help increasing the denominator, that is, raising the growth rate of potential GDP.

The S2 indicator derives directly from the government's intertemporal budget constraint with an infinite time horizon. It quantifies the adjustment needed to stabilize the prevailing debt-to-GDP ratio. Thus, it sets a much more modest objective than the S1 indicator. It does not have a built-in safety margin such as the 60% target. For the S2 indicator, the implications of demographic change for the costs of pension systems play a particularly important role. Interestingly, the S2 indicator shows a stronger need for consolidation for Germany relative to France, due to the more favourable demographic development and recent pension reforms in France. It is also striking that the S2 indicator for Italy, which has already undertaken pension reform in the past, is slightly lower than for Germany, at least in the baseline scenario with low interest rates.

These indicators incorporate the Commissions' economic outlook, including projections for future growth and interest rates. Furthermore, as shown in Figure 10, alternative scenario analysis is conducted to assess the impact of less favourable interest rate and growth developments. However, missing from the analysis is the possibility of future macroeconomic shocks and fluctuations, including major economic crises. Furthermore, debt and interest rate dynamics are related because interest rates incorporate risk premiums that respond nonlinearly to increases in debt. For this reason, the European Commission, as well as other institutions, include stochastic simulations of macroeconomic models in their toolbox for assessing risks to public debt sustainability. For example, simulation analyses conducted by the GCEE shows that sustainability risks resulting from potential future recessions and higher sovereign premiums are much greater with an initial debt-to-GDP ratio of 120% instead of 60% (GCEE 2021).

4.2.2. Debt sustainability and interest-growth differentials

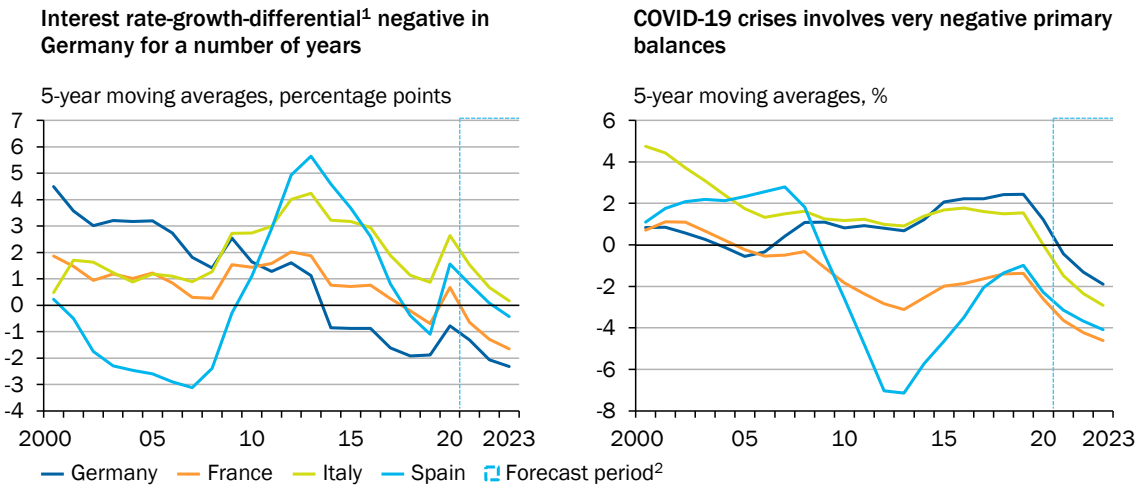
Recently, it has been argued that debt targets should be raised (see Francova et al 2021) or even abandoned (Blanchard et al 2021). In a world where real interest rates average below real GDP growth, debt-to-GDP ratios tend to decline. In this case, maintaining a constant positive debt ratio does not require future primary surpluses. Rather, it coincides with a permanent primary deficit. Also, there is no need for a safety margin in form of a 60% debt target. Much larger debt-to-GDP ratios can be sustained easily over the long term.

Indeed, the interest-growth differential ($r-g$) has been declining for some time in many developed economies. It has been argued that demographic change and low productivity growth brought about an era of secular stagnation. Monetary policy has responded by turning even more accommodative by further lowering nominal interest rates and conducting large-scale asset purchases. From 2013 to 2019, asset purchases and negative policy rates seemed to have little impact on the rate of inflation. Some argue that $r-g$ can be expected to remain negative over the medium term (see, for example, Francova et al 2021), partly thanks to accommodative ECB policies.

However, there are considerable differences between individual countries, as shown in **Figure 13**. While the five-year moving average of the interest rate growth differential is negative for Germany, it is positive in Italy, and close to zero in Spain and France. Relying primarily on a negative interest rate-growth differential to ensure debt sustainability is problematic. First, there are many countries that have not experienced a negative interest rate-growth differential. Second, in crisis situations this differential can rise sharply, along with a rapid deterioration of the primary balance. Empirical studies concerning the interest rate-growth differential suggest reversal probabilities of sometimes more than 50% within 10 years, depending on the time period and country (see GCEE Annual Report 2019 box 13 and Mehrotra (2017)).

Figure 13: Interest rate-growth-differential and primary balance in the euro area

Interest rate-growth-differential and primary balance in the euro area



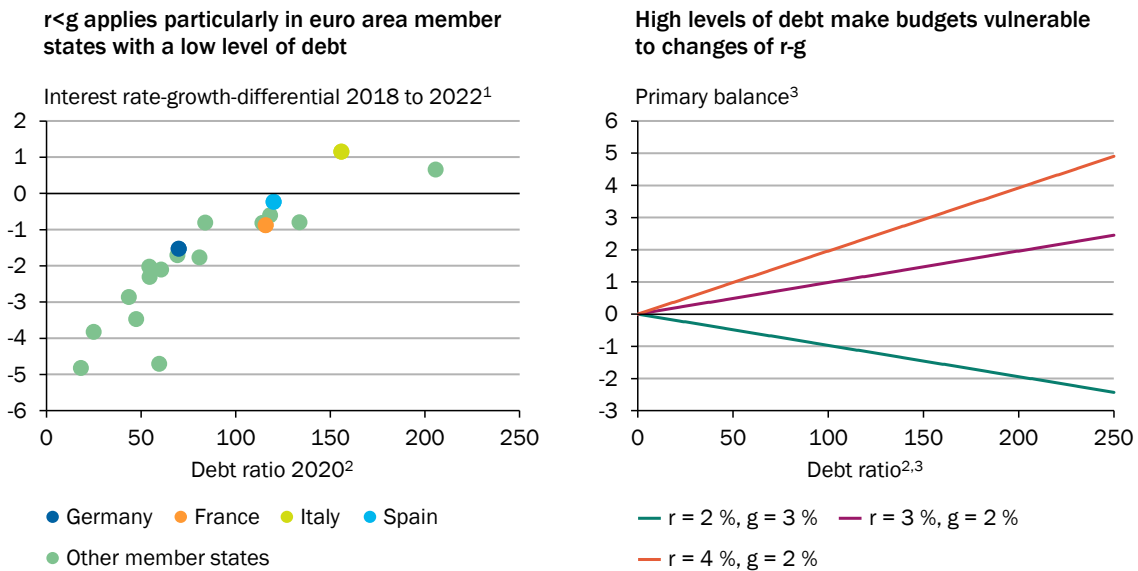
1 - Difference between the average interest rate (interest expenditure of the government in relation to the debt burden in the previous year) and the nominal GDP growth rate in percentage points. 2 - European Commission autumn 2021 forecast.

Sources: European Commission, own calculations
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As shown in **Figure 14** (left panel), the size of $r-g$ is positively correlated with the debt-to-GDP ratio. The higher the debt-to-GDP ratio, the more likely it is that the average real interest rate exceeds the average rate of growth of GDP. Furthermore, highly indebted countries would be relatively more strongly affected by changes in the interest rate-growth differential. This effect can be easily illustrated with an application of the standard debt accumulation equation with constant interest and growth rates. In this case, there is a simple relationship between stability of the debt-to-GDP ratio, the primary balance, and the interest-growth differential, which is depicted graphically in **Figure 14** (right panel).⁷ Each of the lines depicts the possible combinations of a stable debt-to-GDP ratio and corresponding primary deficit for a particular interest-rate growth differential. For example, the green line shows these combinations for a negative interest rate growth differential of -1%. In this case, a constant debt ratio of 100% requires a primary balance of -1%. If $r-g$ increase to 2% (the red line), then a primary surplus of 2% is needed to keep the debt ratio constant at 100%. For a country that has a debt ratio of 200%, the effect of an increase in $r-g$ is more dramatic. At $r-g$ of -1%, it can afford a primary deficit of -2%. At $r-g$ of 2%, a primary surplus of 4% of GDP would be needed to stabilize the debt ratio.

⁷ See GCEE 2021 and Checherita-Westphal (2019) (ECB Bulletin 2/2019) for the standard debt accumulation equation and the resulting steady-state equation shown in Footnote 3 of Figure 12).

Figure 14: Relationship between debt level, interest rate-growth-differential, and primary balance



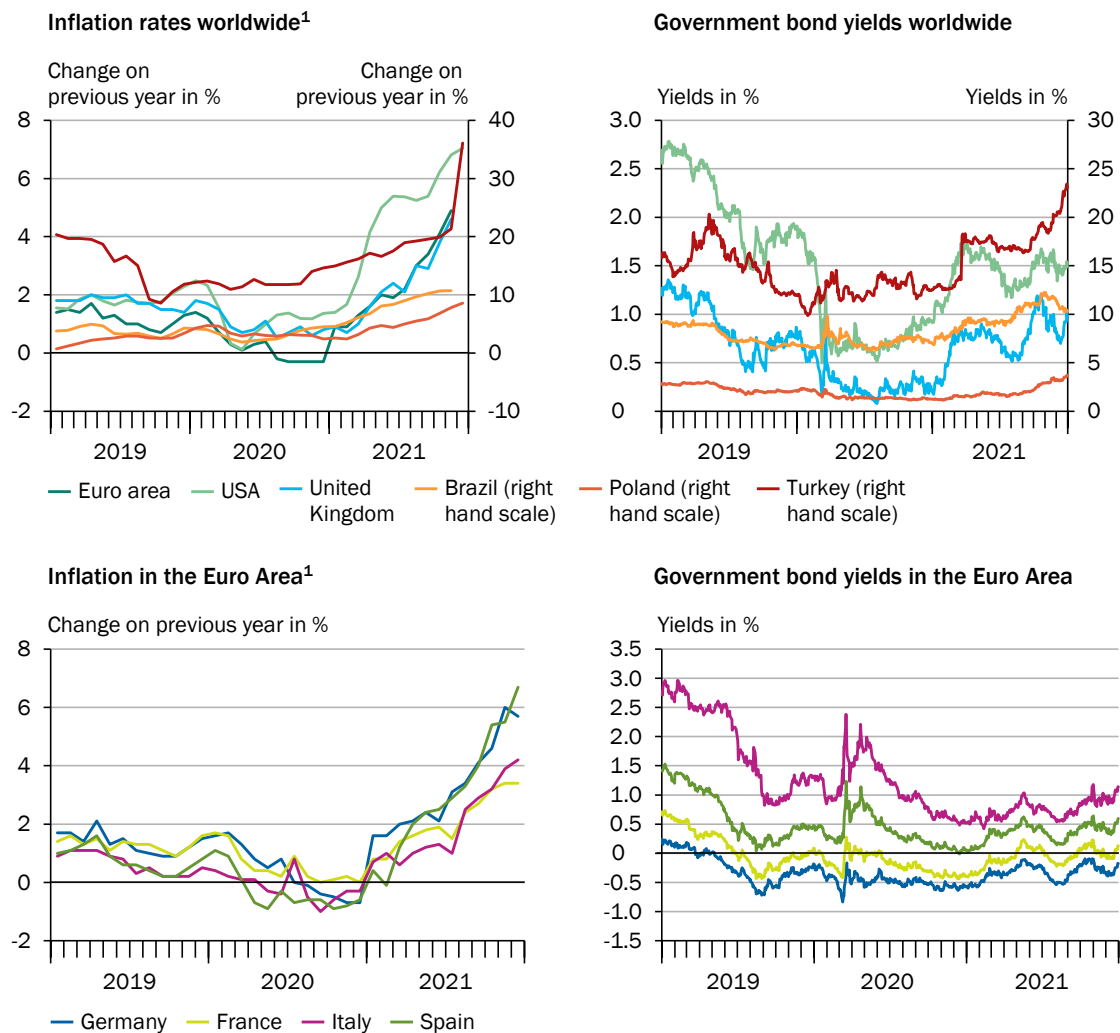
1 – Difference between the average interest rate (interest expenditure of the government in relation to the debt burden in the previous year) and the nominal GDP growth rate in percentage points. Average of the years 2018 to 2022. From 2021: European Commission forecast. 2 – In % of GDP. 3 – Primary balance = $(r-g)/(1+g) \times \text{debt ratio}$, where r is the interest rate and g represents the nominal GDP growth rate.

Sources: European Commission, own calculations
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4.2.3. Can government finances in the euro area adjust to an end of the period of low interest rates and inflation?

With the outbreak of the pandemic, inflation strongly declined. Prices responded to the collapse of world aggregate demand triggered by fear of infection and government restrictions on mobility and economic activity. Energy prices, in particular, dropped quickly. They are very flexible and quickly incorporate changes in expectations. However, the start of 2021 witnessed a rebound of inflation. Partly, this followed the quick recovery of economic activity in the second half of 2020 and the consequent normalization of energy prices. Yet, global supply chain bottlenecks and scarcity of transport resulted in additional price pressures. Furthermore, shifts in consumption behaviour towards durable goods instead of services requiring social contact contributed to soaring inflation. Finally, ample financial assistance to households by governments, often financed by monetization of government debt, also boosted demand and contributed to inflation. As shown in **Figure 15**, inflation thus increased to historically high levels after many years of low inflation rates that were below the targets pursued by central banks.

Figure 15: Development of inflation and government bond yields in selected economies



1 – Overall index.

Sources: Eurostat, OECD, Refinitiv Eikon

This turnaround of inflation came largely unexpected. Consequently, central banks, such as the Fed and the ECB, have revised up their inflation forecasts for 2022 and subsequent years. Federal Open Market Committee (FOMC) participants have signalled that they expect to raise the federal funds rate target repeatedly in 2022 and 2023.⁸ This may well mark the end of the long period of near-zero interest rates. Already, government bond yields have increased in many countries in reaction to heightened inflation expectations and inflation risk.

An important question for the euro area is whether government finances would be sustainable with higher interest rates. If so, then the ECB can raise interest rates along with inflation forecasts without destabilizing government finances. The following exercise – updated for the GCEE Annual Report 2021/22 – sheds some light on this question for the case of the major Member States economies. During the last seven years, governments have taking advantage of low interest rates in rolling over

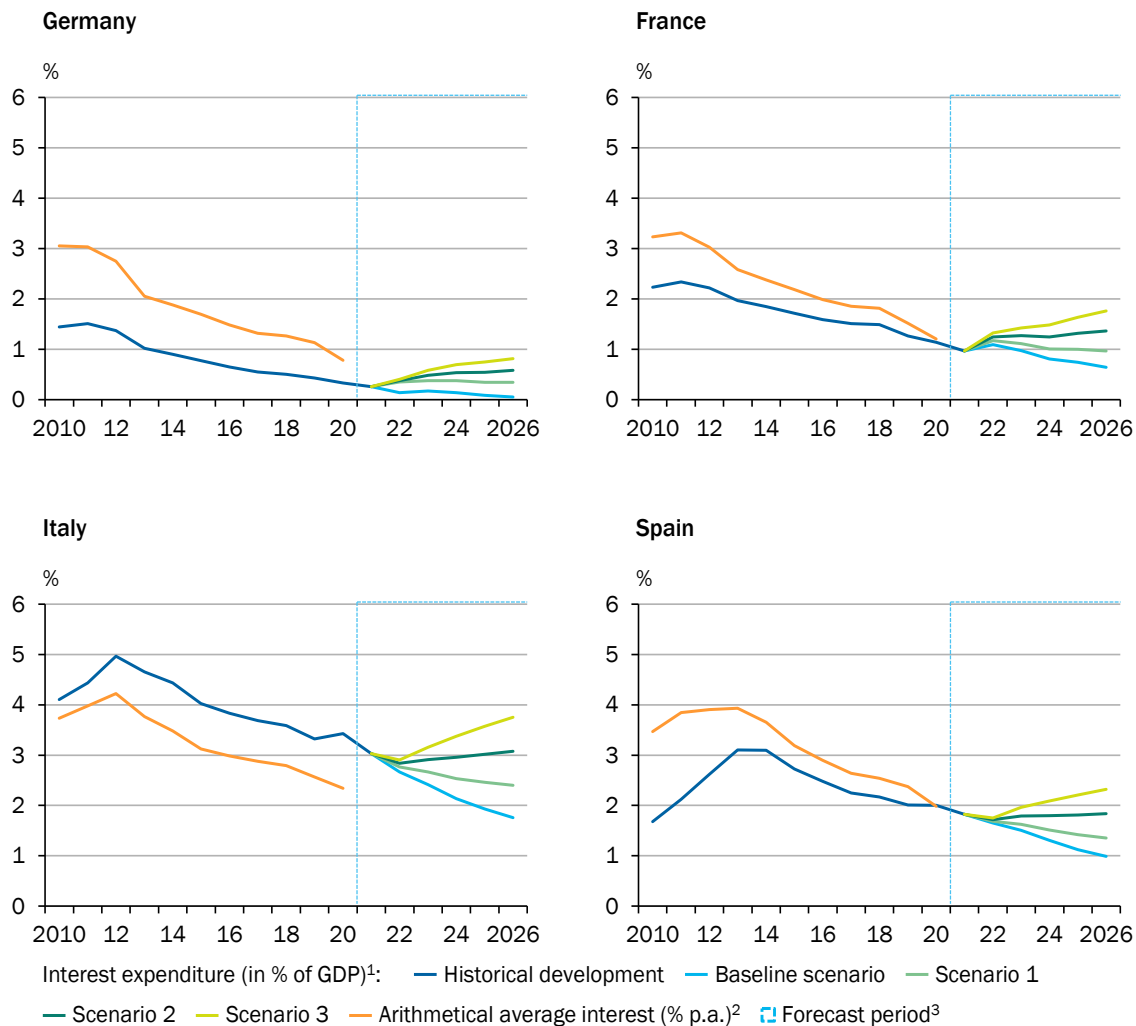
⁸ Standard monetary policy analysis in Keynesian and New-Keynesian models implies that central bank rates ought to rise more than one for one with inflation expectations, the well-known Taylor principle, unless there are other factors calling for low rates such as a large negative output gap. See, for example, Clarida, Gali and Gertler (1999) or Woodford (2003).

maturing debt. As a result, interest expenditure has declined over time, as shown for Germany, Italy, France and Spain in **Figure 16**. Furthermore, governments have issued more long-term debt, to partly insulate themselves against a future increase in bond yields. To assess the impact of higher future rates, the exercise considers three different scenarios and calculates the expected future interest expenditure under the technical assumption that government debt stays constant from 2022 onwards while maturing debt is rolled over. The yield curve from August 2021 serves as baseline scenario for future interest rate developments. In this case, interest expenditure will continue to fall, as shown by the light blue line in Figure 14 for Germany, Italy, France, and Spain.

Three different alternative scenarios provide information on the possible consequences of a rise in interest rates for government finances. For Germany, France, Italy and Spain, an interest rate forecast for a parallel rise in the yield curve by 1, 2 or 3 percentage points is simulated, to calculate the resulting increase in interest expenditure under the assumption that debt does not increase. Interest expenditure stays flat or declines for a one-percentage-point upward shift in the yield curve. With a three-percentage-point shift, which is a fairly extreme scenario, interest expenditure in Italy would rise towards 4% of GDP by 2026. Yet it does not reach the 2010 level. In Spain and France, interest expenditure would stay below 2% of GDP within this period. Of course, if debt ratios were to rise further due to sustained budget deficits, interest expenditure would be higher in all these scenarios. Higher budget surpluses would be required to maintain debt sustainability as long as (nominal) economic growth is unchanged.

This analysis shows, on the one hand, that the ECB could raise central bank rates as needed, without destabilizing government finances in high-debt countries such as Italy, France, or Spain. The ECB is still planning to increase net government debt purchases over the course of 2022 and reinvest proceeds from maturing bonds for a long time thereafter. Even if it were to change this policy, there would be alternative non-market sources of funding available, such as the ESM and the RRF loans. The ESM pandemic support has not been called upon at all so far and substantial space for RRF loans remains. Thus, gross financing needs from rolling over debt and expanding desirable public investment and pandemic-related expenditures would not be at risk. However, as higher interest rates are quite likely in the medium- to longer-run, this exercise also shows that it is necessary to contain and consolidate high-debt ratios as the Member State economies further recover from the coronavirus crisis and need to build resilience against future downturns and crises.

Figure 16: Scenarios for interest expenditure show long-term decline and risks of increase



1 – In relation to nominal GDP, from 2021 in relation to the GDP forecast of the IMF. Interest expenditure to be paid by the central government. Baseline scenario: Based on the yield curve from August 2021. Scenario 1: Interest rate increase by 1 percentage point. Scenario 2: Interest rate increase by 2 percentage points. Scenario 3: Interest rate increase by 3 percentage points. 2 – Interest payments of the central government from period t divided by $0.5 \cdot (\text{debt level } t + \text{debt level } t-1)$. 3 – Own calculations based on the outstanding bonds of a central government. For 2021, the bond issue for the second half of the year is assumed to be identical to the bond issue in the first half of the year. From 2022, the central government debt from 2021 is taken to be constant, with a maturity structure for new issues like in 2019. The IMF's GDP forecast is based on a constant debt level.

Sources: Agence France Trésor, Deutsche Finanzagentur, Eurostat, IMF, Ministry of Finance Italy, Ministry of Finance Spain, Refinitiv Datastream, own calculations
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4.3. Private sector debt sustainability and risks to government finances from contingent liabilities

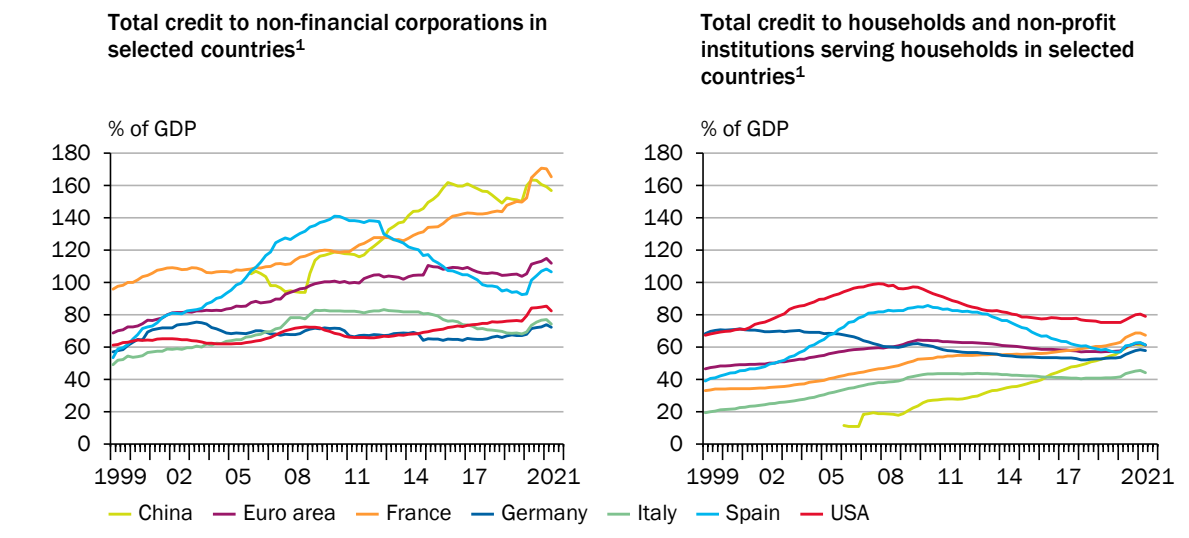
Government support measures for firms affected by the pandemic included loans and loan guarantees on a large scale, especially in the European Union. In addition, there were equity injections to support certain companies that were strongly impacted, for example airlines. Loans and guarantees imply contingent liabilities that may materialise at a later point in time, when over-indebted companies cannot continue to service their debt or go out of business. Thus, they constitute additional risks to public finances.

According to ESRB (2021), about 36% of new loan commitments provided by banks to non-financial companies since March 2020 have benefited from public guarantees or have taken the form of public loans. ESRB analysis suggests that the development of loans to the corporate sector is positively correlated with the size and uptake of public loan and guarantee programmes across ESRB countries. By contrast, the increase in private sector corporate debt is found to be negatively correlated with the extent of direct grant measures. If the volume of non-performing loans was large before the crisis, then loan moratoria and public loans have been used more extensively during the coronavirus crisis. Countries hit harder by the pandemic tend to have larger programmes with greater uptake. Finally, the use of loan moratoria is found to go along with greater corporate credit growth across ESRB countries.

In terms of volumes, ESRB countries announced public guarantees on the scale of €1580 billion or 9.5% of 2019 GDP as of September 2020. The actual uptake of public guarantees by that date came to €435 billion, or 2.6% of 2019 GDP. Accordingly, the uptake has remained much smaller than the announced size of measures. The uptake of public loans corresponded to €66 billion or 0.4% of GDP. Public guarantees and public loans mostly concern loans to non-financial companies. Households primarily benefited from loan moratoria. There is substantial heterogeneity across countries. Member States with a very high share of public guarantees on new loans relative to total loans and advances to non-financial companies are Spain, Portugal, France and Italy, with respectively a share of roughly 11%, 6%, 3.5%, and 2.2%. These findings suggest that there are potentially significant risks for national government budgets from non-performing loans that are quite uneven across Member States.

It is instructive to compare these measures to the developments of total credit to non-financial companies and households over time and across countries. Similar to public debt, corporate debt has increased since the beginning of the pandemic. Between the global financial crisis and recession of 2008/09 and the coronavirus crisis of 2020, the ratio of corporate debt to GDP in the euro area has remained fairly stable, while the ratio of households' debt to GDP has declined somewhat, as shown in **Figure 17**. Yet, the euro area average hides diverse developments across Member States. For example, in Spain the ratio of corporate debt to GDP declined from about 140% in 2009 to below 100% in 2019. The increase due to the pandemic has raised it to about 105%. Similarly, households' debt relative to GDP declined in Spain from over 80% of GDP in 2009 to below 60% in 2019 and has risen somewhat above 60% by 2021. By contrast, the corporate debt to GDP ratio in France has risen steadily after the financial crisis towards 150% of GDP and jumped to over 160% of GDP in the coronavirus crisis. In Italy, corporate debt and household debt ratios declined since about 2014 and remain lower than in other major European economies.

Figure 17: Total credit to non-financial corporations and households in selected countries



1 – Credit is provided by domestic banks, all other sectors of the economy and non-residents. The series have quarterly frequency and capture the outstanding amount of credit at the end of the reference quarter. In terms of financial instruments, credit covers loans and debt securities.

Source: BIS

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Generally, insolvencies and business closures declined during the pandemic, due to government interventions. So far, forecasts do not predict a substantial increase. However, keeping support measures in effect for too long may prevent firms whose business models are not viable anymore from exiting the market. This would negatively affect innovation, productivity and long-term growth. Firms that are persistently unprofitable and cannot cover debt service costs, but stay in business thanks to rollover loans and subsidies from banks or governments, are often referred to as “zombies”.⁹ ESRB (2021) stresses the importance of continued monitoring of the effects of the pandemic on solvency in the corporate and banking sectors.

Risks for government finances may also emanate from weaknesses in the banking system. Clearly, risk-weighted equity ratios have improved substantially since the global financial crisis of 2008/9. However, un-weighted equity ratios have remained quite stable relative to 2007. In Europe, there has been substantial progress with regard to non-performing loans, also in Member States that experienced a very high share of non-performing loans right after the global financial crisis. However, there has been a build-up of other financial stability risks over recent years. For example, interest rate risks on bank balance sheets have increased substantially, in particular in Germany where banks make long-term fixed rate real estate loans. Furthermore, asset prices including housing prices have risen substantially during the period of near-zero or negative nominal interest rates. As a result, there are risks of sudden asset price reversals when interest rates increase. ESRB (2021) warns that even though banks are increasingly provisioning for balance sheet risks, they may be underestimating macroeconomic risks. Banks are increasingly taking into account that loans under moratoria carry an above-average credit risk, for example. However, according to ESRB analysis, at an aggregate cross-country level, loan loss provisioning has been virtually uncorrelated with GDP losses during the pandemic or with the increase in corporate borrowing from banks. ESRB calls on supervisors and banks to adequately provision for a

⁹ See Caballero et al (2008) and Acharya et al (2019), for example.

potential increase in corporate losses once support measures are reduced or ended. This would be important to avoid financial stability risks leading to risks for public debt sustainability.

5. BEST PRACTICES AND PRINCIPLES FOR THE FUTURE

5.1. Lessons for dealing with recessions caused by epidemics

Recessions caused by epidemics are different from typical recessions caused by demand shortfalls, tight monetary policy, or financial crises. The reduction of contact-intensive economic activities in an epidemic is an optimal reaction to infection risk. This causes demand and production to decline. Furthermore, there are supply-side constraints arising from public health restrictions and lockdowns. Thus, standard demand stimulus, whether via fiscal or monetary policy, is quite likely to be counter-productive. The main task for stabilization policy in such a situation is to provide liquidity and - to some extent - direct payments to businesses and households to help them weather the period of forced reduction of activity.

Lacey et al (2021) from the World Bank propose several **principles** for assessing the crisis measures. They note that the efficiency of a measure to achieve the objective in a cost-effective way will be influenced by the targetability, speed, and abuse resistance. Important characteristics concerning fiscal sustainability are the affordability, as well as predictability and control of costs of certain policy instruments. Given the high degree of uncertainty, they advise to use flexible instruments that are easily scaled up and reversed without causing economic and behavioural distortions. Furthermore, they recommend choosing measures that are administratively easy to implement and do not run counter to health-related behavioural responses and restrictions.

Policy measures and **schemes that respond endogenously to the demand for liquidity** are best suited to a recession caused by an epidemic and satisfy many of the above-mentioned principles. Examples include, in particular, short-time work allowance schemes that help companies adjust to reduced demand and support household income, public loan guarantees to the companies most affected by the epidemic and related health-based restrictions, as well as tax deferrals. Short-time-work schemes allow companies to decide the extent of staff put on short-time work and reverse these decisions as they are faced with increased demand for their products and services. Thus, the timing is appropriate and needs not be determined by the government. If companies have sufficient skin in the game in form of bearing a significant part of the costs, short-time-work schemes are likely to be reversed in time. Furthermore, they do not run the risk of overcompensating part of the employees, as is the case with direct cash transfers to individuals.

Public loan guarantees help keep costs for liquidity down for companies and for governments, as they require companies to repay the received support.

Policy instruments that are **automatically taking into account whether a company was profitable** prior to the epidemic or whether its business model will be successful after the epidemic are preferable. In particular, tax loss carry backward or carry forward have benefits in terms of helping companies that at least made profits prior to epidemic or after the epidemic, respectively. Thus, the risk of “zombification” – that is, keeping alive companies whose business model is not viable anymore – is reduced.

Voluntary distancing and government-imposed restrictions had the largest impact on economic activity during the first wave of the pandemic in spring 2020. Subsequent waves with many more infections, hospitalizations, or deaths had much less impact on economic activity. During the first wave,

there was little **experience with how to keep the economy functioning** and which measures to take to continue production and consumption, without overburdening the health-care system. Over time, rules for distancing, masks, tests, tracking, etc. made it possible to sustain a larger range of economic activity. All these measures are available to deal with future epidemics and may help reduce the severity of their initial impact on economic activity. Common stock-piling in the European Union, as well as sourcing production of health-related products from multiple world regions, is desirable. However, calls for a more general rollback of international supply chains are misplaced. This would reduce productivity in Europe.

While **vaccines** did not turn out to be the single magic bullet, they have been crucial in allowing more social contact, mobility, and economic activity without overwhelming the health care system. **Governments' support** of basic research towards the new vaccines as well as the large-scale vaccine orders and subsidies for scaling up vaccine production were important. Yet, research and innovation by the private sector provided the key to progress and growth. **Private initiative and competition** between vaccine producers was key to delivering the new product quickly and distributing it widely.

In terms of macroeconomic policies, a **speedy reaction** to the onset of the pandemic and economic contraction is essential. The quick reaction of monetary policy was very helpful in maintaining banks' ability to provide credit and avoiding the risk of sharp rise in governments' funding costs. In the European Monetary Union, it played an important role for highly indebted Member States. Eventually, however, the ECB - with its programs - indirectly competed with and substituted fiscal support from the European Stability Mechanism and loans available via the Recovery and Resilience Facility of the European Commission. Instead, the ECB could have tied the scale of purchases to governments drawing on ESM and EU loans. As the recovery took hold in the second half of 2020 and 2021, greater weight should have been given to the fiscal support mechanisms on the European level instead of the ECB's pandemic emergency purchase programme (PEPP).

5.2. Supporting non-inflationary long-run growth and adjusting to structural change following the pandemic crisis

It is important to **phase out support measures as the economy recovers** from the crisis. Some measures more or less phase out automatically, as the economy improves, and are therefore preferable. These include, in particular, short-time work programmes and loan and guarantee facilities, as well as tax deferrals.

One might presume that an epidemic-caused crisis is essentially a stop-and-go type of shock to certain sectors of the economy, such as travel, tourism, restaurants, arts and entertainment, etc. Thus, one might conclude that after the epidemic ends, these and other sectors can continue business as before the epidemic. However, the coronavirus pandemic may well change behaviour for a longer time. It has seen a strong push for digitalization. Tele-working (or remote-working) is likely to be much more widely practiced after the pandemic than before. Business travel may well not come back as strong as before the pandemic. Office buildings may not be needed as much as before. There is **significant structural change** resulting from this crisis. It is important to allow the reallocation of capital and labour that is conducive to these structural changes. Companies that have viable business models need to be able to expand, and workers need to move from declining to growing sectors. Keeping generous support measures in place for too long will slow down structural change and productivity growth. While short-time work programmes are very effective in the short run, it is important to end the generous expansion that was implemented at the start of the pandemic. A strong signal that programmes should come to

an end is given when the economy passes beyond the pre-crisis level of GDP and the economic outlook indicates that the economy will continue to expand.

Addressing **financial stability** problems that could arise from increased corporate or public debt in a timely manner is essential. In some EU Member States there are significant contingent liabilities that may contribute to fiscal sustainability risks.

In the crisis, fiscal support policies were financed by large-scale issuance of government debt. Much of this government debt was then purchased in financial markets by the respective national central bank. As a result, the central banks expanded the supply of central bank money. Thus, the expenditure and transfers of governments were effectively financed by monetary means. The indirect monetary financing of such a large increase in government debt is likely to have been a key factor in turning supply constraints and oil price increase into a broad rise in inflation (See, for example, Bordo und Levy 2020). **Excessive demand stimulus** by government purchases and large-scale cash transfers to households **can fuel substantial inflation**. This may well be a key reason why inflation rose so much more strongly in the United States, where direct cash transfers to households by the Trump and Biden administrations were much larger than in Europe.

Finally, governments should ensure that fiscal support programmes implemented during the coronavirus crisis should subsequently be evaluated. Data should be made available for research and **independent evaluation** to improve policy in the future.

5.3. Maintaining sustainable government finances by means of fiscal rules

There will be other recessions and crises in the future. Thus, it is essential to **recreate fiscal space** after the coronavirus pandemic and to improve countries' resilience in future crises. To this end, government finances need to be consolidated and government debt ratios reduced again. Rather than effectively paying down government debt, it is preferable to ensure that the economy grows faster than government debt and thereby grows out of the high debt ratio. In this regard, it is helpful to strengthen productivity, investment and innovation with market-oriented structural reforms, so as to raise trend growth. Furthermore, it is key that government expenditure grows more slowly than GDP.

The EU's Recovery and Resilience Facility can help support long-run growth by funding public investment in digitalization and climate protection and stimulating market-oriented structural reforms. Net transfers between countries are a strong sign of solidarity in the EU in response to the exogenous shock constituted by the pandemic. **EU borrowing** will ultimately be repaid via the EU budget including own resources. To the extent this results in additional future obligations for Member States these should also be taken into account when assessing fiscal sustainability and compliance with fiscal rules.

Fiscal rules, such as the 3% headline deficit threshold and the 60% debt to GDP threshold, have been at the core of the EU treaties since 1992. They are simple, clear, and transparent. They can be easily monitored and are understood by the public. Public attention can strengthen governments' commitment to take action in order to keep sovereign debt under control. There is substantial evidence that **fiscal rules help contain the deficit and debt bias** of governments (see Badinger and Reuter (2017) and references therein). Higher government spending can be financed by raising taxes, reducing spending elsewhere, or borrowing. Borrowing is the easiest way. A large political economy literature

explains the incentives theoretically and provides empirical evidence. Furthermore, the idea that the time inconsistency of plans (Kydland and Prescott (1977)) creates a deficit bias in fiscal policy is a core element of modern macroeconomics. Time-inconsistency describes situations where, with the passing of time, policies that were determined to be optimal in the past are no longer perceived to be optimal today. Thus, time inconsistency creates an incentive to renege on past promises.

Fiscal rules are essential in a monetary union of fiscally largely sovereign Member States. They protect the central bank from fiscal dominance. During the pandemic crisis, monetary and fiscal policy acted in unison to support economic activity and provide liquidity and transfers. After the crisis, debt sustainability needs to be maintained by fiscal means, without recourse to inflation, in order to allow the central bank to achieve price stability. Periods of recovery and growth need to be used to regain the fiscal room for action in future crises. Some euro area Member States took advantage of the period of record low interest rates, recovery, and growth from 2015 to 2019 to reduce the debt-to-GDP ratio. Others have failed to do so. France, for example, went from a debt ratio of 65% before the financial crisis to just below 90% after it. During the recovery and growth phase, its government debt-to-GDP ratio increased further to almost 100% and with the corona crisis to 115%.

As the European Union is debating a revision of its existing fiscal rules in form of the Stability and Growth Pact (SGP), it needs to explore how to make sure that fiscal rules lead to reduction of debt-to-GDP ratios during good economic times. The SGP has been overwhelmed with a complex body of secondary legislation that introduced many exceptions and a large degree of discretion. There are good elements, such as the idea that Member States should respect a more ambitious structural deficit rule (that is, adjusted for cyclical variation due to the business cycle) of 0.5% when debt is high, or 1%. But this also introduced technical problems in identifying the cycle. **The complex framework needs to be refocused.** The number of exceptions and the degree of discretion should be reduced. The GCEE, for example, has made such a [proposal](#) (See Feld et al 2018, GCEE 2015 and 2017). It proposes to strengthen the rule for government expenditure - that is already part of the framework - and use it on the annual operational level. Expenditure is much less cyclical than tax revenue, especially once the cyclical unemployment insurance expenditure is stripped out. The GCEE proposal includes a debt reduction factor that kicks in with high debt, such that in good times government expenditure grows more slowly than potential GDP. As a result, the structural deficit rule (0.5 or 1%) would be respected over the medium term. The constraint on expenditure would effectively work towards controlling the debt-to-GDP ratio and bring it towards safer terrain. If, instead, fiscal rules are weakened and debt targets raised, the risk is that we will see a repeated ratcheting up of government debt relative to GDP, without regaining fiscal room in good times.

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This study aims to assess how major economies were affected by the Covid-19 pandemic, in particular with respect to economic growth and public debt sustainability. It reviews the heterogeneity of policy measures taken, and aims to identify best practices. A special focus is placed on the euro area and its largest Member States. Principles and practices for ensuring sustained growth and sustainable public finances are discussed.

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