

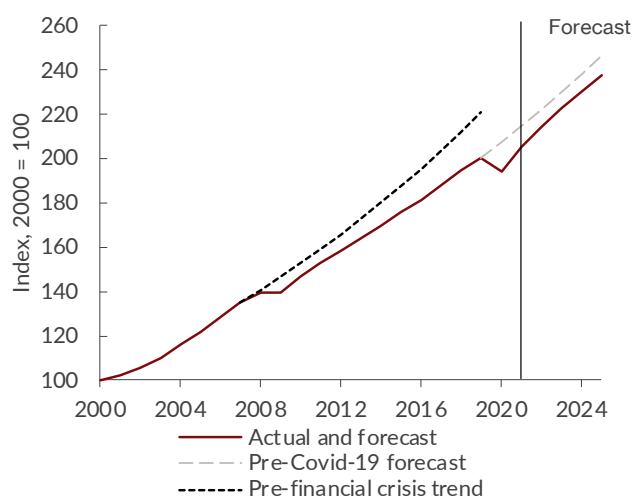
Global Economic Outlook: Slowing growth, rising inflation fears

by Corrado Macchiarelli and Barry Naisbitt with Janine Boshoff, Dawn Holland, Ian Hurst, Iana Liadze, Xuxin Mao, Patricia Sanchez Juanino, Craig Thamotheram and Kemar Whyte¹

Overview

We are more downbeat on global growth prospects for next year than other major forecasters. Our forecast for the world economy is still an expansion of 5.8 per cent in 2021 (0.1 percentage points lower than our Summer Outlook). Despite the virus continuing to crimp economic activity and severe supply chain disruptions holding back the recovery, we forecast global growth of 4.3 per cent in 2022.

Figure 3 World GDP (index, 2000 = 100)



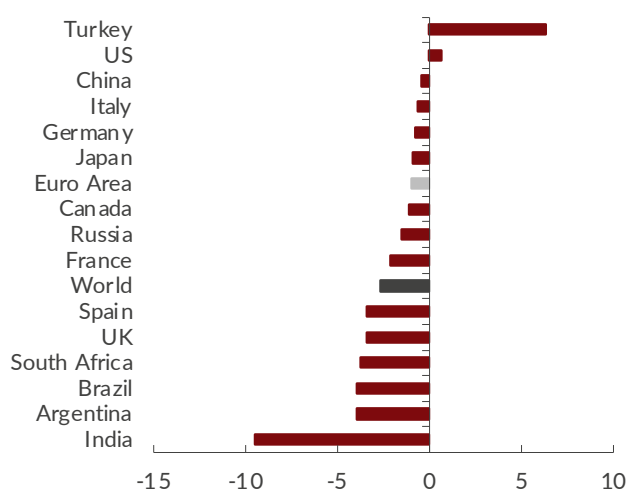
Source: NiGEM database and NIESR forecast.

Global GDP was around \$7.4 trillion lower in 2020 (5.7 per cent) and \$4.4 trillion lower in 2021 (3.4 per cent) than what we anticipated before the pandemic. The shortfall in GDP compared to the pre-pandemic trend is shown in figure 3. We estimate that the pandemic will result in the level of global GDP being over \$3 trillion (about 2 per cent of GDP) lower in 2025 than our pre-pandemic expectation, with the cumulative loss of GDP up to 2025 amounting to around \$25 trillion.

The G7 countries' share of global GDP has been shrinking over time, from over 55 per cent in 2000 to 42 per cent in 2010, 39.5 per cent in 2018 and just above 31 per cent last year.

Growth of the world economy is set to slow down further, to 4.3 per cent in 2022 and 3.7 per cent in 2023, slower than forecast by the IMF and the OECD. We see risks as currently skewed to the downside. We forecast a persistent gap between our current projection for global GDP and the pre-pandemic projection, particularly as we foresee that inflation fears, supply-side disruptions and the possibility of further virus mutations will bear down on our main case scenario.

Figure 4 Current GDP forecast in 2023 compared with Autumn 2019 forecast (per cent)



Source: NiGEM database and NIESR forecast.

Of the economies included in our NiGEM model, the largest falls in GDP last year were in Spain (-10.8 per cent), Argentina (-9.9 per cent) and the UK (-9.8 per cent). Comparing our current forecast for 2023 with our pre-pandemic projections, the UK will suffer the worst total hit from Covid-19 among the G7 (about 3 per cent), followed

¹ We would like to thank Jagjit Chadha and Paul Mortimer-Lee for helpful comments and Patricia Sanchez Juanino for preparing the charts and the database underlying the forecast. The forecast was completed on 24 October 2021. Exchange rate, interest rate and equity price assumptions are based on information available to 14 October 2021. Unless otherwise specified, the source of all data reported in tables and figures is the NiGEM database and NIESR forecast baseline. All questions and comments related to the forecast and its underlying assumptions should be addressed to Iana Liadze (i.liadze@niesr.ac.uk).

by France (2 per cent) and Italy (figure 4). These falls reflect the direct effects of Covid-19, changes in individuals' behaviour and lockdowns, as well as pharmaceutical and non-pharmaceutical control measures taken to contain additional virus flare-ups.

Monthly economic activity indicators for 2021Q3 show moderation in advanced economic growth, although it remains positive. Economic activity appears to have been more resilient throughout the pandemic waves late last year and early this year than it had been previously. Therefore, economic activity in major economies has continued to recover in the first three quarters of this year. For instance, the US ISM Manufacturing PMI Index has fallen from 61.1 in August to 60.8 in October, but still signalling rapid growth. Similarly, for the Euro Area, the IHS Markit Eurozone Manufacturing PMI has shifted to a 7-month low, currently standing at 58.3, down from 61.4 in August.

The ISM non-manufacturing PMI in the United States increased to 61.9 in September 2021 from 61.7 in August, indicating strong growth in the services sector, despite persistent issues with labour supply, logistics, and materials affecting supply continuity. Business activity, new orders, and order backlog all saw faster growth. Employment, supplier deliveries, and new export orders, on the other hand, stagnated as pricing pressures increased.

The IHS Markit Eurozone Services PMI fell to 54.7 in October 2021, down from 56.4 the month before, the lowest result in six months, indicating a slowing of the services sector. Travel, tourism, and leisure performed poorly, indicating continuing worries about Covid-19. Healthcare, media, banking, and non-banking financial services on the other hand continued to grow.

According to IHS Markit and Conference Board statistics, business confidence nevertheless increased in October 2021 in the Euro Area and the United States as current business and labour market conditions continue to normalise.²

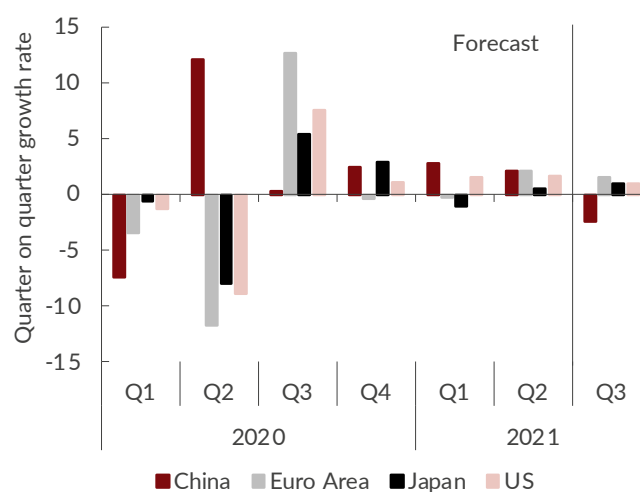
There is still considerable heterogeneity in growth experiences across countries, particularly across advanced and emerging economies. Reflecting its early start on vaccines and fiscal stimulus, the United States is still seeing one of the quickest economic recoveries among major developed economies, as shown in figure 5. We expect developments such as the EU-Recovery and Resilience Plan to continue supporting confidence in the Euro Area, despite supply constraints affecting growth prospects. Countries such as Germany that are closely tied to global trade are set for growth to slow down this year but accelerate by mid next year.

By contrast, Japan's economic recovery will be aided by

its increased immunisation rate, with two-thirds of its population currently vaccinated, and the expected large-scale fiscal spending of up to ¥33 trillion (equivalent to \$290 billion, about 5 per cent of GDP).

China's economic prospects have been the most promising among the big emerging market economies since the pandemic. Nevertheless, news from China remains mixed. Financial markets are still jittery after China's second-largest property developer, China Evergrande Group, struggled to meet its bond interest rate payments in September, roiling the Chinese real estate and debt markets.

Figure 5 Quarterly changes in GDP since 2019Q4 – major economies (per cent)



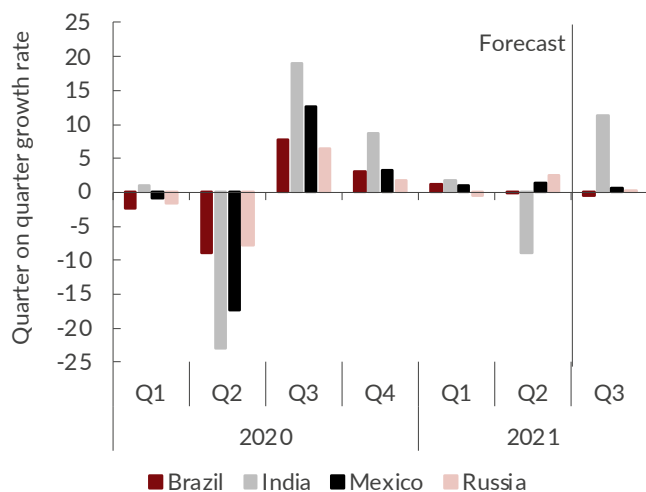
Source: NiGEM database and NIESR forecast.

India remains on track to achieve the world's fastest growth this year, thanks to a stronger-than-expected manufacturing and service performance (figure 6). Activity in India is rapidly rebounding, but it still has a long way to go following a significant drop last year. The country was very badly affected in Q2 this year, but the fall in GDP was far below that in the second quarter of last year, reflecting some resilience and the economic policy response.

Further economic recovery in Russia is likely despite its fifth interest rate hike this year (with interest rates currently sitting at 6.75 per cent), aided by rising energy prices and given the government's plans to increase spending. While Brazil's economy outperformed predictions in 2021, we expect it to expand at a considerably slower pace next year due to political uncertainty surrounding the upcoming elections. Further, Brazil's central bank has announced its biggest interest rate hike in two decades, as plans to expand government spending risks jeopardising Brazil's efforts to keep inflation under control.

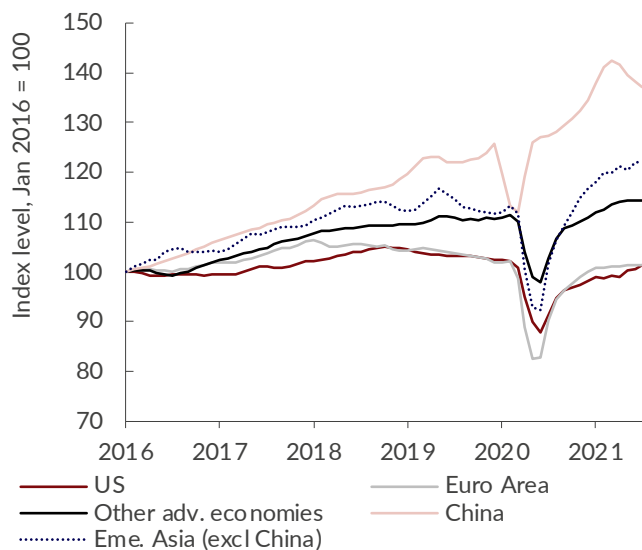
² See the Conference Board Consumer Confidence <https://www.conference-board.org/data/consumerconfidence.cfm>.

Figure 6 Quarterly changes in GDP since 2019Q4 – emerging market economies (per cent)



Source: NiGEM database and NIESR forecast.

Figure 7 Recent trends in industrial production (index)



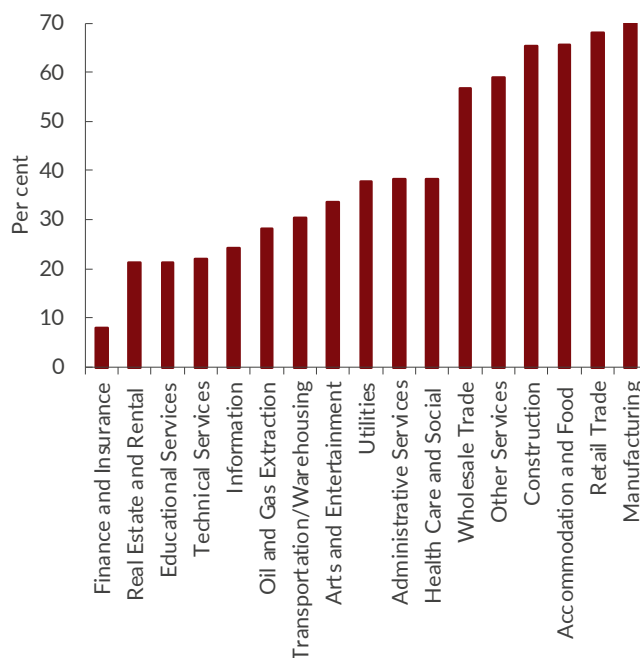
Source: Netherlands Bureau for Economic Policy Analysis (CPB), World Trade Monitor.

At the sectoral level, current procurement problems for raw materials and intermediate goods are putting the brakes on the global economy. Manufacturing in developed economies risks facing a bottleneck recession. Just before the third quarter of this year, the faster growth seemed to be most evident in the manufacturing sector, as shown in figure 7. Industrial production has picked up robustly from the sharp fall in the first half of last year. However, the sector is now slowing down and the pace of the recovery will likely be influenced by how fast supply chain problems fade. As the number of new Covid-19 cases declines, capacity constraints and labour

shortages should reduce, relieving some of the burdens on supply chains and delivery times. However, we do not expect supply chain problems to be resolved quickly as the interaction of increased demand over the Christmas season in some major economies, a further wave of the virus in countries producing intermediate goods, and weather conditions could mean supply chain disruptions could continue until the second half of next year.

In the US, while parts of the face-to-face service sector were adversely affected by renewed mobility restrictions and social distancing measures, the business climate has improved recently, particularly in hospitality and tourism. In contrast, expectations in logistics have deteriorated in parallel with manufacturing (figure 8).

Figure 8 Supply-chain disruptions by sector in the US ('In the last week, did this business have domestic supplier delays?' (percentage of 'Yes'))



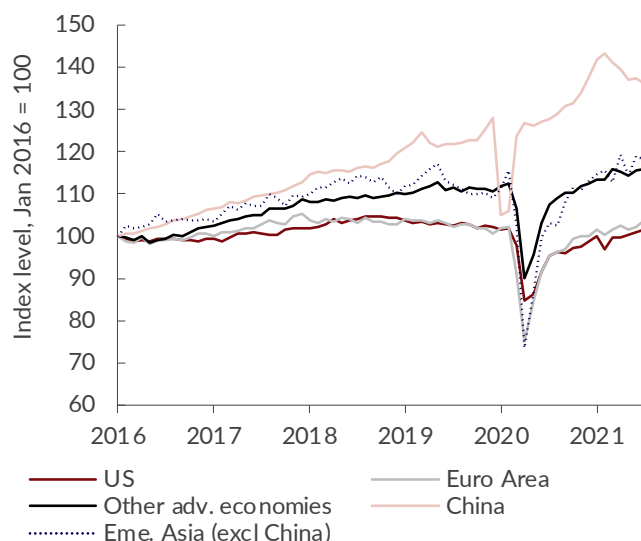
Source: U.S. Census Bureau. Small Business Pulse Survey Updated Oct 14th, 2021.

As the result of supply-side disruptions, we have revised down our forecast for world trade growth from 9.5 per cent in August to 8.3 per cent, and 7.6 per cent next year (from 9.3 per cent). After the slowing in world trade growth in 2019, partly stemming from higher tariffs, the global pandemic has led to a further drop in demand and disruptions to supply chains, leading to world trade falling by 8.3 per cent last year. While global industrial activity recovered in 2021 Q2 and Q3, the current bottlenecks imply that world trade growth is not going to be growing as fast as expected three months ago.

As figure 9 shows, China and Emerging Asian economies – which have seen the most marked and sustained

increases in trade activity since the second half of 2020 – are now being affected by international supply chain disruptions. Continued restrictions on international travel and faltering vaccination rates in some countries also explain why services trade has not recovered completely.

Figure 9 Recent trends in international trade (index)



Source: Netherlands Bureau for Economic Policy Analysis (CPB), World Trade Monitor.

As demand has increased and growth in some countries, especially the US, has been rapid, commodity prices have risen sharply and, with supply chain disruptions, input and consumer prices have risen. OECD consumer price inflation is projected to moderate from 3.2 per cent in 2021 and 2022 to around 2.6 per cent by 2023, remaining above pre-pandemic rates. In September, US CPI inflation was 5.4 per cent year-on-year, the highest rate for over 10 years, and Euro Area HICP inflation jumped to 4.1 per cent in October, from 3 per cent in September, the highest since October 2018. In the US, supply-side frictions and pent-up demand have pushed 12-month core personal consumption expenditure (PCE) inflation to its highest level since the early 1990s, 3.6 per cent. Higher energy prices have been a major factor in the increase in the US and Euro Area inflation but supply chain shortages and increases in other commodity prices explain more recent increases (see Box A).

Our inflation forecasts are higher than our previous forecasts three months ago. Lower growth and higher inflation result from more intense supply constraints, which we expect to last until the middle of next year. Over the medium run, we expect inflation in the US to be higher than the present Federal Open Market Committee (FOMC) consensus, which means policy tightening might happen earlier. Above target inflation might well persist

through next year in the US and UK, pressuring their central banks. In the Euro Area and Japan, higher prices recently could be a brief interlude to enduring sub-target inflation.

Other advanced economies are also seeing higher inflation, reflecting the drop in inflation last year (so-called base effects), rises in commodity prices, and shortages of raw and intermediate goods as global supply chains have become strained. A critical issue in many economies is whether higher inflation will prove to be temporary, and what effects it will have on the economy and economic policy. This will largely depend also on how much spare capacity each economy has and how wages react.

Many G10 central banks, e.g., the Bank of England, Bank of Canada, and Bank of New Zealand, have considered discontinuing central bank balance sheet asset purchase policies whereas other central banks have already done so. The Bank of Norway, for instance, was the first major Western European central bank to start tightening, while South Korea's central bank increased interest rates in August and signalled that more tightening was on the way. On 27 October, the Bank of Canada ended its bond purchases with immediate effect and flagged an earlier than expected rise in interest rates.

Several economies in emerging markets such as Turkey, Russia, Ukraine, Brazil, and Mexico have moved to taper early. The move has been accompanied by interest rate increases to suppress inflation, avert a capital outflow, and stabilise their currencies against the background of slowing global industrial and trade activity, the waning fiscal stimulus from the American Rescue Plan, and rising inflation fears. The combination of these factors has increased financial market volatility as the expectation of a monetary policy tightening in advanced economies has also increased.

Main-case short-term scenario

Assumptions

The progress of the pandemic remains a crucial issue for the global economic outlook. Our central assumption is that Covid-19 comes under control very gradually. According to data collected by Bloomberg, 184 countries have administered more than 6.6 billion vaccine doses.³ Vaccination has proved effective since the summer, as global numbers of weekly Covid-19 cases and deaths have been declining since late August. Excluding Europe, where new weekly cases have increased by 18 per cent, all the other regions saw a decrease in new cases. According to the WHO, Africa recorded the greatest drop in new weekly cases (21 per cent), followed by the Western Pacific Region (17 per cent) in the weeks until the end of October.⁴

³ See Bloomberg vaccine tracker www.bloomberg.com/graphics/covid-vaccine-tracker-global-distribution/ accessed 14 Oct 2021.

⁴ WHO - Weekly epidemiological update on Covid-19 - 26 October 2021, accessed 28 Oct 2021 <https://www.who.int/publications/m/>.

One of the main global issues remains the distribution of vaccine doses, as developed countries' vaccination rates remain 20 times higher than those in emerging economies. The uneven nature of the vaccine roll-out across countries means that there will continue to be diverse economic experiences as the virus moves across societies. There is still a long way to go before the vaccine distribution is sufficient to immunise the world, and vaccine coverage is highly uneven: countries and regions with the highest incomes have much higher vaccination rates than those with the lowest incomes.

International initiatives such as COVAX have proved politically important, but insufficient. Across the 95 countries and 6 geographic regions considered, COVAX vaccine coverage ranges from 3 per cent in Africa to 4 per cent in the Eastern Mediterranean, 11 per cent in South-East Asia, and 9 per cent in the Western Pacific.

The unevenness in the global vaccine roll-out, particularly in low and low-middle income countries, means that spillovers and supply chain disruptions may cause a considerable loss of global production, including in advanced economies. Immunisation in high-income countries has moved more swiftly than in low-income countries so that developed economies have reopened sooner. However, low-income countries are frequently key providers of intermediate inputs, as well as a significant market for developed nations' output. As a result, pandemic-related slowdowns in emerging economies pose a further risk to advanced economies through disruption to global supply chains. Çakmaklı et al. (2021), for instance, show this effect could be quantified between about 1-3 per cent of pre-pandemic GDP for advanced economies and between 7-9 per cent of pre-pandemic GDP for emerging economies.

Despite the progress on vaccination in many countries in the first three quarters of this year, the spread of the Covid-19 virus continues, and new variants may emerge. Based on our tracker of Covid-19 cases in the UK and India, further global economic disruption is possible, depending on epidemiological developments, such as the extent to which the virus becomes endemic, waning immunity, policy responses, and social behaviours. From our latest Indian Covid-19 tracker,⁵ the "evidence suggests that India is transitioning to the endemic phase of the disease. Large surges are very unlikely, though there is enduring potential for local flare-ups."

The recent increase in price inflation in major advanced economies has resulted in financial markets anticipating earlier increases in policy interest rates in these economies than three months ago. However, the scale of anticipated increases is limited, with financial markets still viewing the increase in inflation as largely temporary. As a result, the monetary policy assumptions, based on market-implied interest rates, show only a gradual increase in policy rates

at the end of 2022 for, e.g., the US. On fiscal policy, our forecast assumption is the retention of current published fiscal plans. The ongoing discussions in the US regarding a further economic stimulus are therefore not included in additional fiscal measures. The European Union's Next Generation EU (NGEU) programme is not included in the baseline scenario, given that many countries have not started spending the pre-financing amounts in the form of grants received over the summer (Liadze and Macchiarelli, 2021).

As usual, we assume that exchange rates against the US dollar follow the uncovered-interest parity condition in the medium-term, based on interest rate differentials. We also assume that corporate bond spreads gradually converge towards their long-term averages.

On oil prices, the recent increase in prices (to above \$83pb in mid-October) has led to a higher assumed medium-term price level. We follow the US Energy Information Administration (EIA) assumptions, which imply that the pressure coming from oil prices will fade and prices are projected to be around \$70pb in the medium term, around 3 per cent higher than in our Summer forecast. Full details of our assumptions are in Appendix A.

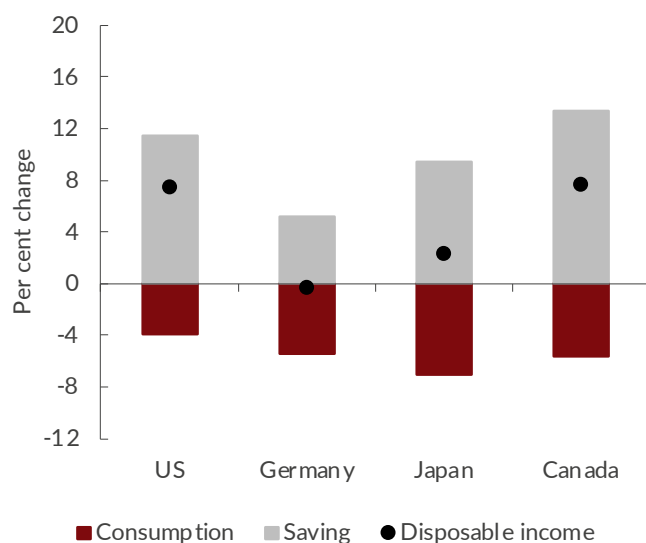
Economic activity

Vaccination programmes are bolstering governments' decisions to relax restrictions in many advanced economies (particularly, the US, UK, and Europe) and boosting service sector activity. However, our detailed analysis of service sectors across countries shows that there is still some way to go before output regains its pre-Covid level (see Box B). The relaxation in stringency measures shown by the University of Oxford Stringency Index confirms this pattern across the US and Europe in October. In recent weeks, based on Google Mobility data, mobility across a range of advanced – notably the US and the UK – and emerging economies has returned to pre-pandemic levels, while mobility in India is comparable with mobility levels observed in March 2020.

Among advanced economies, savings surged in 2020 in the US, the Euro Area, Japan and Canada as a result of the pandemic. Saving ratios increased in many advanced economies (figure 10). This rise – together with central banks' excess money balances and government support – has left many households with larger-than-usual accumulated savings buffers this year. In the US and the Euro Area, precautionary motives, because of uncertain job prospects, together with previous pandemic-constrained spending, have all contributed to an increase in savings. Demographic effects such as population ageing and sectoral changing consumption patterns particularly among high-income earners may have also played a part (see Hodbod et al., 2021).

5 Covid-19 TRACKER: INDIA, 10 October 2021 <https://www.jbs.cam.ac.uk/wp-content/uploads/2021/10/cjbs-cchle-india-covid19-forecasts-report-2021-10-10.pdf>.

Figure 10 Change in disposable income in 2021 from 2019 and consumption-saving allocation in selected advanced economies (per cent)



Source: NiGEM database.

Note: The changes in savings and consumption are expressed as a percentage of disposable income.

In the third quarter of 2021, consumers' ability to continue spending has supported demand for goods and services despite higher prices. We expect continued growth in consumers' demand despite the impact of the Delta variant and inflation fears.

Supply chain delays have been far more severe than we predicted earlier this year. Higher container, shipping, transportation, and storage costs are resulting in shortages and higher consumer prices. For the time being, the US Federal Reserve (the Fed) is counting on the bottlenecks being transitory and expects prices to level off once supply chain bottlenecks resolve. If the disruptions worsen or last longer than expected, monetary policy authorities might decide to raise interest rates earlier than we project.

Recent developments suggest that supply-side hindrances might fade only gradually, remaining a drag on economic growth at least through the first half of 2022. These affect the price of merchandise coming from China and other emerging economies to the US and the Euro Area. Additional delays in the supply of critical inputs could cause production falls. Such falls are already happening in numerous industries, most notably the automotive industry, where a chip scarcity is causing a production slowdown. Supply chain disruptions arose throughout the pandemic: according to the IMF (2021) Purchasing Manager Index components, such disruptions peaked in early 2020 and built up again during 2021 as a more permanent reopening added to increased demand for a wide range of goods and commodities. These curtailments will feed into lower real GDP figures over the next few quarters, slowing down the economic recovery in the US

and Europe. China's third-quarter GDP increased by only 4.9 per cent year-on-year, with supply chain concerns contributing to the slowdown.

There are significant differences in GDP growth projections across countries. Full details of the forecast are shown at the end of this section, in table 3.

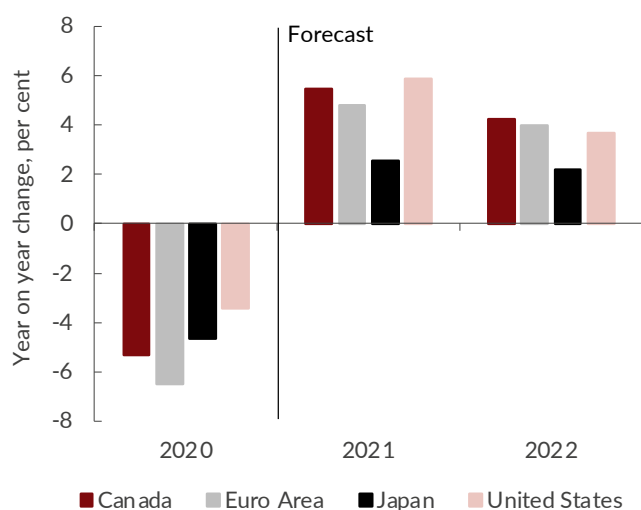
We have revised down our 2021 growth forecasts for most developed economies, with the US now projected to grow by 5.8 per cent, down from 6.7 in our Summer forecast. Since the pandemic, the United States has continued to have the strongest overall GDP performance among the G7 countries. The US had a smaller fall in GDP in 2020 than the other major advanced economies and, as figure 11 and table 2 show, US GDP has rebounded to its end 2019 level well before other advanced economies.

Although the US may have the strongest output performance, last year it saw the largest increase in unemployment when the official rate rose dramatically from 3.5 per cent in February to 14.8 per cent in April. Since then, the economy has continued recovering, with 5 million jobs added in the more recent twelve months. According to the Bureau of Labor Statistics, the unemployment rate fell to 4.8 per cent in October, the lowest since its pandemic peak.

GDP in the Euro Area is forecast to grow by 4.8 per cent this year and by 4 per cent in 2022 after the 6.7 per cent fall in 2020. Across the Euro Area, we expect GDP growth to range from less than 3 per cent in Germany to just above 6 per cent in France. In the light of these developments, table 2 shows that, on average, we forecast that Euro Area economies will return to pre-pandemic GDP levels by mid-2022, although the existing supply chain disruptions pose downside risks to this forecast.

Many EU countries have extended macroeconomic policy support in recent months. One of the most notable developments came from the Next Generation EU programme, the main expenditure component of the EU Recovery and Resilience Facility (RRF), the European Commission's € 750 billion fiscal boost. National plans for the NGEU have been firmed up in 20 countries (see also Giacomini and Macchiarelli, 2021; Liadze and Macchiarelli, 2021). The European Recovery and Resilience Facility envisages a total stimulus of about 5 per cent of GDP over the period 2021-2026, using both the grant and the loan components of the fund. Spending the bulk of the EU's fiscal package will only start next year.

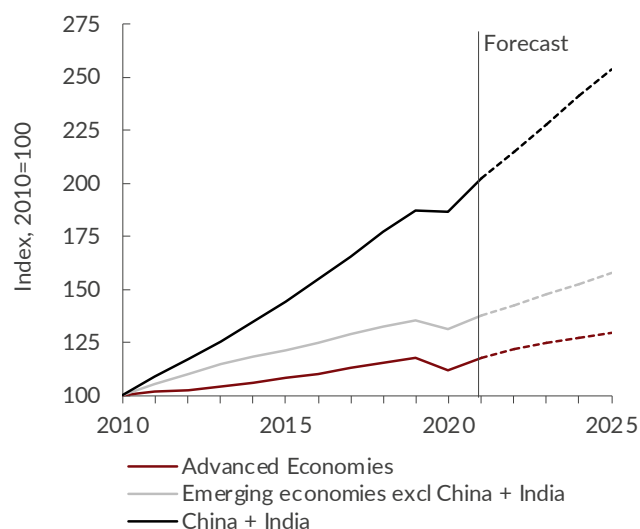
In the Euro Area, the unemployment rate rose more slowly than in the US, as the result of both government support and the European Commission's temporary Support to mitigate Unemployment Risks in an Emergency (SURE) program. We expect unemployment to be sticky next year, due to hysteresis in European labour markets largely explained by wage rigidities, lower labour turnover, and widespread use of short-term contracts (see Gross and Ounnas, 2021).

Figure 11 GDP growth in advanced economies (per cent)

Source: NiGEM database and NIESR forecast.

We forecast an increase in US inflation to average 3.8 per cent this year, and 3.5 per cent next year. With the move to average inflation targeting, the Fed is likely to interpret recent higher inflation as mostly temporary. While we expect inflation to increase further in the next six months and moderate thereafter, as core goods price pressures ease (see Box A), we forecast that underlying CPI inflation will stay above 3 per cent until the end of 2022 and moderate thereafter to around 2 per cent. PCE inflation figures are expected to be between 0.5 and 1 percentage points lower.

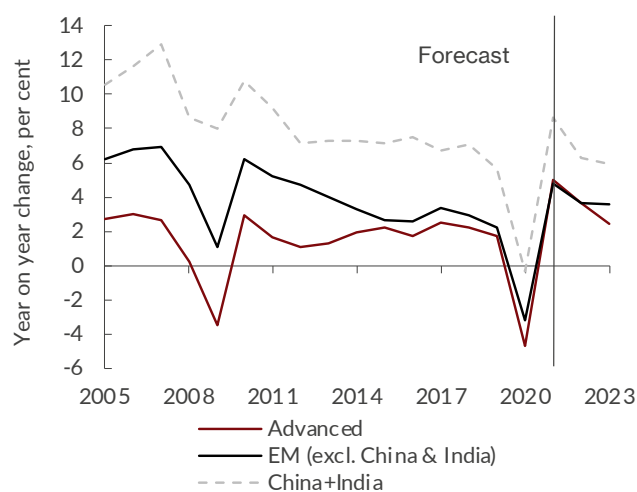
The forecast for GDP growth in Japan for this year has been reduced to 2.5 per cent compared to our Summer Outlook but a slowdown is expected next year when we forecast GDP growth to be 2.2 per cent (down from 2.5 per cent in the Summer Outlook). Japan's GDP has continued to expand despite the new restrictions to contain the pandemic, as shown in figure 11. Inflationary pressure has picked up since August because of pandemic-related supply constraints and increased energy prices. High input costs, shortages of raw materials, and shipping delays are restraining goods production. Due to the diffusion of the Delta variant, Japan's economy remains beset with uncertainty, particularly as consumer price inflation is still around zero, and weaker-than-expected demand is forcing firms to absorb higher prices for commodities and intermediate goods. Thus, monetary policy support continues, with no expectation that this will change.

Figure 12 GDP in emerging and advanced economies (2010=100)

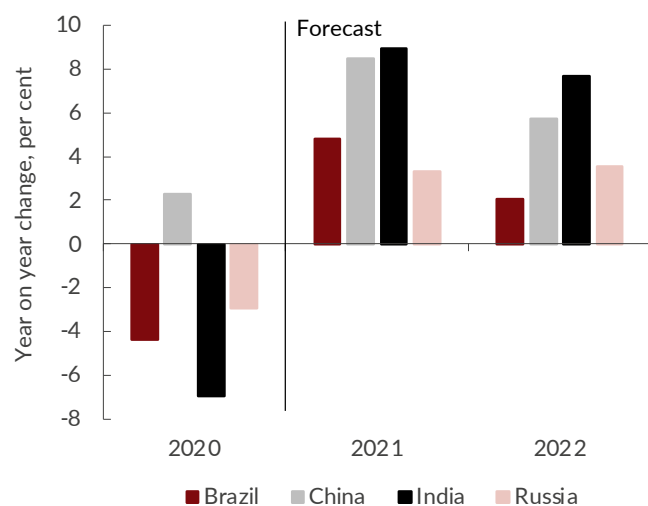
Source: NiGEM database and NIESR forecast.

For emerging economies, our main-case scenario is for GDP to continue to grow this year and the next. We expect to see a continuation of the split in economic growth performance, seen over the past two decades, between China and India, and the other emerging economies (figures 12 and 13). Emerging market economies have resumed growth this year, owing particularly to stronger manufacturing trade, and increasing commodity demand. Emerging market economies, whose growth patterns are generally more exposed to cyclical demand swings in advanced economies, are not likely to reach pre-pandemic GDP levels until late 2022. However, the two largest economies, China and India, have already regained their pre-pandemic GDP levels.

We have revised down our GDP growth forecast for China for this year to 8.5 per cent, from 8.8 per cent in the Summer Outlook; we predict 5.7 per cent growth next year (figure 14). Stronger-than-expected performance in export has sustained growth, against political uncertainty and increased financial risk due to the turmoil around debt-laden Evergrande. Evergrande is one of the world's largest property developers, with a debt of \$300bn (equal to 2 per cent of Chinese GDP). Its travails pushed up the overall Chinese risk premium. During 2024-28, we forecast Chinese GDP to grow annually at 4.4 per cent on average, compared with 5.1 per cent for India and 2.9 per cent for emerging markets.

Figure 13 GDP growth in advanced and emerging economies (per cent)

Source: NiGEM database and NIESR forecast.

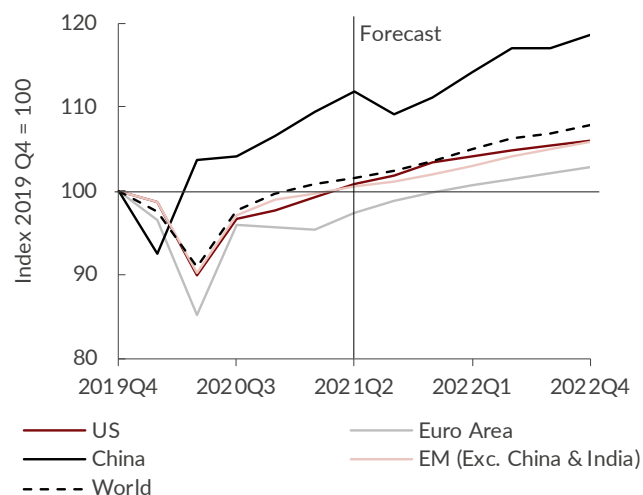
Figure 14 GDP growth in emerging economies (per cent)

Source: NiGEM database and NIESR forecast.

India is still on track to achieve the world's fastest growth this year, thanks to a still strong manufacturing and service performance. We project growth of 9 per cent this year, 0.5 percentage points higher than our Summer Outlook forecast (figure 14) and 7.7 per cent next year. This forecast has downside risks mainly due to the ongoing human and economic cost of the virus' variants, vaccine roll-out bottlenecks, and food inflation. The recovery of the Indian manufacturing industry was extended to September, as companies benefited from strengthening demand conditions amid the easing of Covid-19 restrictions.

With slightly slower than expected global economic activity in 2021Q3, the dates for the return of economic activity to pre-pandemic levels have not changed

substantially compared to August. Japan and Brazil are on track to return to 2019Q4 pre-pandemic levels by the end of this year and the beginning of next year. Thanks to an overall positive performance of GDP growth rates this year, by the end of 2021 GDP is expected to be higher in many economies than at the end of 2019, as shown in figure 15. Table 2 shows the estimated timing of when levels of GDP are projected to return to 2019Q4 pre-pandemic levels in major advanced and emerging economies.

Figure 15 Quarterly GDP (index 2019 Q4 = 100)

Source: NiGEM database and NIESR forecast.

Table 2 Projected dates of GDP returning to 2019Q4 levels for selected countries

Date of GDP return to 2019Q4 level	Country	Fall in GDP to trough
2020 Q2	China	-7%
2020 Q3
2020 Q4	India	-22%
2021 Q1	Australia	-7%
2021 Q2	US, Russia	-10%, -9%
2021 Q3	Canada	-13%
2021 Q4	Japan, Brazil, Germany	-8%, -11%, -12%
2022 Q1	France, Euro Area	-18%, -15%
2022 Q2	UK	-22%
2022 Q3	Italy	-18%
2022 Q4	Spain	-22%

Source: NiGEM database and NIESR forecast.

Despite many face-to-face services activities having resumed, international travel restrictions will continue to

affect service sector activity (Naisbitt and Whyte, 2020; Macchiarelli, 2021), particularly as a considerable part of the world remains unvaccinated. Continued measures to preserve public health and the continuation of the vaccination campaign are likely to support confidence and GDP growth, though further restrictions are possible.

Slower world trade growth mirrors the weakening in global economic activity. We expect world trade to increase by 8.3 per cent this year, about 1.2 percentage points lower than previously forecast. Behind this revision there are the current supply chain disruptions, inflationary pressures, and the uncertainty related to new variants of the virus.

The fundamental uncertainty about the global economic outlook remains a central feature of our Autumn Outlook. The potential duration of global economic disruption is unknown as the virus continues to impact countries differently, with the possibility of new strains emerging as vaccines continue to be very unevenly distributed. It is yet unclear how fast essential components of the services sector will recover, especially should further waves of the virus arise. As a result, the outlook remains highly dependent on the evolution of the virus and vaccines, and how epidemiological responses, behavioural and economic policies change as economies continue to open.

Table 3 Forecast summary percentage change

	Real GDP ^a												World Trade ^b
	World	OECD	China	BRICS+	Euro Area	USA	Japan	Germany	France	Italy	UK	Canada	
2012-2017	3.5	2.0	7.3	5.3	1.2	2.2	1.3	1.6	1.1	-0.2	2.2	1.9	3.6
2018	3.6	2.3	6.9	5.6	1.8	2.9	0.6	1.1	1.8	0.8	1.7	2.4	4.1
2019	2.8	1.7	6.0	4.3	1.6	2.3	0.0	1.1	1.8	0.4	1.7	1.9	1.3
2020	-3.1	-4.7	2.3	-1.4	-6.5	-3.4	-4.7	-4.9	-8.0	-9.0	-9.7	-5.3	-8.5
2021	5.8	5.3	8.5	7.5	4.8	5.8	2.5	2.8	6.1	5.5	6.9	5.5	8.3
2022	4.3	3.7	5.7	5.4	4.0	3.7	2.2	3.8	3.9	3.9	4.7	4.2	7.6
2023	3.7	2.5	5.6	5.2	2.7	2.2	1.5	2.4	2.9	2.2	1.7	3.0	7.0
2024-2028	2.9	1.7	4.4	4.0	1.5	1.6	0.9	1.2	1.8	1.7	1.3	1.6	4.1

	Private consumption deflator										Interest rates ^c			Oil (\$per barrel) ^d
	OECD	BRICS+	Euro Area	USA	Japan	Germany	France	Italy	Canada	USA	Japan	Euro Area		
2012-2017	1.6	4.2	0.9	1.3	0.3	1.1	0.6	0.9	1.3	0.4	0.0	0.3	77.7	
2018	2.7	3.7	1.5	2.1	0.7	1.5	1.7	1.0	2.0	1.9	-0.1	0.0	70.4	
2019	2.2	4.1	1.1	1.5	0.5	1.3	0.8	0.6	1.3	2.3	-0.1	0.0	63.7	
2020	1.7	4.1	0.5	1.2	0.2	0.7	0.6	-0.3	1.7	0.5	-0.1	0.0	43.0	
2021	3.2	4.3	2.0	3.8	-0.3	2.4	1.5	1.2	2.1	0.3	-0.1	0.0	70.6	
2022	3.2	4.6	1.6	3.5	0.8	1.2	1.3	1.5	3.9	0.3	-0.1	0.0	71.3	
2023	2.6	3.5	1.2	2.5	0.1	1.4	1.1	1.2	2.6	0.7	-0.1	0.0	66.5	
2024-2028	2.0	2.9	1.9	2.2	1.3	1.9	1.9	1.5	2.2	1.7	0.3	0.5	69.8	

Notes: BRICS+ includes Brazil, China, Russia, India, Indonesia, Mexico, South Africa, Turkey. ^a GDP growth at market prices. Regional aggregates are based on PPP shares. 2017 reference year. ^b Trade in goods and services. ^c Central bank intervention rate, period average per cent. ^d Average of Dubai and Brent spot prices.

Source: NiGEM database and NIESR forecast.

Unemployment

The pandemic initially wreaked havoc on the services sector in advanced economies, disrupting output and employment even more than the global financial crisis. With a rapid rate of vaccinations and government support, the US labour market has continued to show signs of revival, aided by a broader reopening in economic activity. In September 2021, the unemployment rate in the United States fell to 4.8 per cent, down from 5.2 per cent the

previous month. September's reading was the lowest since March 2020, as the negative effects of Hurricane Ida and the Delta variant's summer surge started to fade.

The unemployment rate for 2021 (5.4 per cent) remains above the pre-crisis average of approximately 3.5 per cent, we forecast that it will fall further in the coming months as more people return to the workforce. We forecast further reductions in the US unemployment rate in 2022 (to 4.4 per cent), with unemployment returning

to levels consistent with the historical average by 2023.

Data from the US Current Population Survey shows a drop in labour force participation among parents, particularly mothers with children aged 6 and under. This likely reflects pandemic-related job losses, the shift of many schools to distance learning, and the temporary closure of many day-care centres during the pandemic (Bureau of Labor Statistics, 2021).

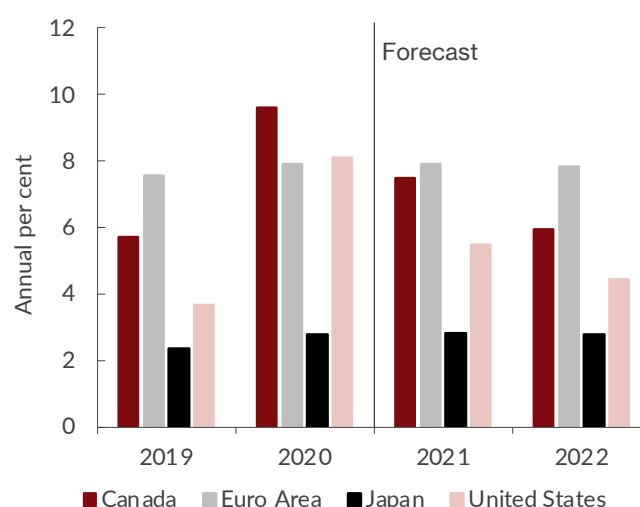
Our US labour market forecast contrasts with that projected for European countries. In Europe, many governments have made payments to employers to retain employees at businesses that might otherwise have closed because of lockdowns. Thanks to furlough schemes, unemployment has not risen as much as output declines would usually suggest. Despite such measures, unemployment rates in the Euro Area increased until Q2 and Q3 last year but are now declining slowly.

Figure 16 shows our projection for the unemployment rate in the Euro Area. In August 2021, the seasonally adjusted unemployment rate in the Euro Area fell to 7.5 per cent, the lowest level since May 2020. Despite signs of improvement in the labour market due to the progressive lifting of coronavirus-related restrictions, and employment support schemes, the youth unemployment rate remains in double digits, edging down to 16.4 per cent in August, from 16.7 per cent in the previous month. Spain (14.0 per cent), Italy (9.3 per cent), and France (8.0 per cent) have the highest unemployment rates among the five largest Euro Area economies, while the Netherlands (3.2 per cent) and Germany (3.6 per cent) have the lowest rates.

As cyclical support measures are phased out, the European labour market may remain subdued in comparison to pre-pandemic levels until beyond 2022, especially as the impact on employment of programmes like the Next Generation EU would be seen more over the medium term.

The still high unemployment rates in the short term raise a concern about possible unemployment scarring over the medium term. Based on previous downturns and recoveries, there is a risk of scarring after the pandemic as some of those who lost their jobs could lose attachment to the labour force and see their human capital depreciate faster than if they were employed. This concern applies most to those sectors, such as in-person services, where labour shortages due to enhanced unemployment benefits, concerns about contracting Covid-19, and finding childcare might further delay the labour market adjustment. Demand for less-skilled employees has resumed lately, but the pandemic's restructuring, sectoral shifts, and rapid automation, particularly in advanced economies, could stymie the recovery of low-skilled employment, with adverse implications for labour participation and wage distribution (see also 'Inflation' section).

Figure 16 Unemployment rates (per cent)



Source: NiGEM database and NIESR forecast.

Economic policy

The space for further monetary policy easing remains limited in advanced economies, though the focus now is on tightening. During the latest upswing, policy interest rates in many advanced economies hardly increased from the emergency levels close to the zero lower bound set in the global financial crisis a decade earlier (table 4). Thus, monetary policy space remains limited.

Positive news on the US labour market, increasing demand, and mounting inflation fears make a tapering of asset purchases likely next year. During the June meeting, many Federal Open Market Committee members brought forward slightly their expectations of eventual policy tightening, with half of FOMC members expecting a normalisation to start in 2022 (see also Holland, Küçük and Lenoël, 2021). Our assumptions imply a gradual increase of the US policy rate starting from 2022Q4.

We expect several other central banks to tighten soon (the Bank of England, the Bank of Canada, the Bank of New Zealand). The rate and extent of such monetary tightening are unclear because of the risks around Covid-19 and the growth forecasts, ambiguity about the transitory nature – or otherwise – of inflation after a decade of very low price growth, and doubts about the effects of monetary policy actions against the background of increased central bank balance sheets.

In advanced economies, the timing of halting quantitative easing and then reversing it, then increasing policy interest rates is yet to be clarified. For instance, an unanticipated policy reversal to guard against the loss of central bank credibility might result in a sudden financial market downturn and public sector balance sheet mismatches (see Allen, Chadha and Turner 2021; Goodhart and Pradhan, 2021). How central banks will respond to inflation will drive

bond yields up with a combination of ending quantitative easing and higher policy rates.

Our view is that, given these uncertainties, central banks will have to be cautious in tightening policy, particularly as central banks such as the Fed will face a trade-off between stabilizing below-target unemployment or above-target inflation. Many central bankers will fear that moving too far, too fast, could squander the best chance they will have to escape the trap of near-deflation and interest rates at the lower bound. If the cost of that is a period of moderately above-target inflation, they are likely to pay it.

We project Euro Area inflation at 2.2 per cent this year, marginally exceeding the European Central Bank's 2 per cent inflation target. However, we forecast a return to inflation undershooting the ECB target from next year. While the interest rate environment and the pace of the central bank purchases remain accommodative, the main challenge for the ECB will be to avoid tightening prematurely, i.e., overreacting to short-term supply shocks that have no lasting long-term bearing on inflation. The salutary experience of 2011's two rate hikes, subsequently reversed, is still fresh in the ECB's memory.

Table 4 Recent directions in monetary policy interest rates (per cent)^a

	End 2009	January 2020	March 2021	September 2021	Change since March 2021
USA	0.25	1.75	0.25	0.25	–
Euro Area	0.25	-0.50	-0.50	-0.50	–
Japan	0.10	-0.10	-0.10	-0.10	–
Canada	0.25	1.75	0.25	0.25	–
UK	0.50	0.75	0.10	0.10	–
China	5.25	4.15	3.85	3.85	–
India	4.75	5.15	4.00	4.00	–
Brazil	8.75	4.50	2.75	6.25	↑
Russia	6.00	6.25	4.50	6.75	↑
Australia	3.75	0.75	0.10	0.10	–
Turkey	6.50	11.25	19.00	16.00 ^b	↓

Note: ^a For reference, data at the end of the Financial Crisis in 2009 is shown. ^bThe latest data point for Turkey refers to 21 Oct 2021.

Source: Central banks, DataStream.

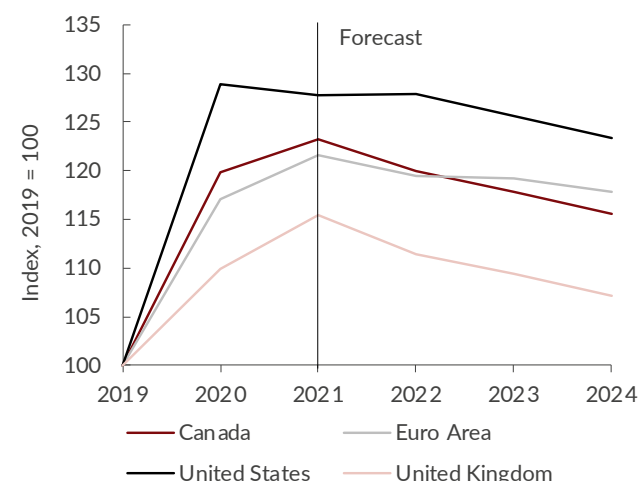
Looking at the main components of Euro Area inflation, energy had the highest annual rate in September (17.4 per cent, compared with 15.4 per cent in August), followed by non-energy industrial goods, food and services. Inflation in the Euro Area has reached the highest rate in a decade and the big gap between headline and core inflation has pushed Euro Area bond yields up on expectations of a more rapid tapering. We forecast that inflation at 1.7 per cent

next year will undershoot the ECB target, as some of the cost-push factors from the current energy shortage fade.

Several major emerging market economies (Turkey, Russia, Ukraine, Brazil, Mexico), have taken substantial steps to suppress inflation, avert a capital outflow and stabilise their currencies. While some emerging economies have started to increase monetary policy interest rates, we believe that central banks in those countries will have to balance continuing domestic demand weakness against near-term inflation pressures carefully. Additional inflation pressure in emerging market economies may risk de-anchoring inflation expectations and prompting monetary tightening amid modest recoveries, which might also result in financial stress. Some emerging economies which experienced currency depreciation in 2020 may “import” inflationary pressure. Mexico, Brazil, and Turkey have recorded some of the highest inflation rates thus far.

Due to massive pandemic support measures, government debt as a percentage of GDP has increased significantly in many economies. The continued spread of Covid-19 shows that repeated outbreaks are still possible, especially considering the likelihood of new strains of the virus. Thus, we believe that fiscal policy should remain accommodative to ensure continued support for those sectors and workers most adversely hit by the pandemic.

Figure 17 Change in government debt to GDP ratio (2019=100)



Source: NiGEM database and NIESR forecast.

We forecast global government debt to stay at record highs—close to but below 100 per cent of GDP—and then gradually decline through 2022-28. Large purchases of government debt by central banks, particularly in advanced economies, is, alongside subdued policy rate expectations, holding down the cost of government debt (table 5).

Table 5 Recent directions in 10-year government bond yields (per cent)^a

	End 2009	January 2020	March 2021	September 2021	Change since March 2021
USA	3.59	1.76	1.61	1.37	↓
Euro Area	3.53	0.16	-0.02	0.04	↑
Japan	1.26	-0.02	0.10	0.04	↓
Canada	3.43	1.50	1.47	1.27	↓
UK	3.94	0.67	0.81	0.81	-
China	3.60	3.05	3.20	2.87	↓
India	7.59	6.58	6.19	6.18	↓
Brazil	13.20	6.77	8.61	10.98	↑
Russia	8.61	6.22	6.92	7.12	↑
Australia	5.56	1.18	1.74	1.27	↓
Turkey	-	10.93	15.04	16.84	↑

Note: ^a Monthly average rates are shown. For reference, data at the end of the Financial Crisis in 2009 is shown.

Source: Central banks, DataStream.

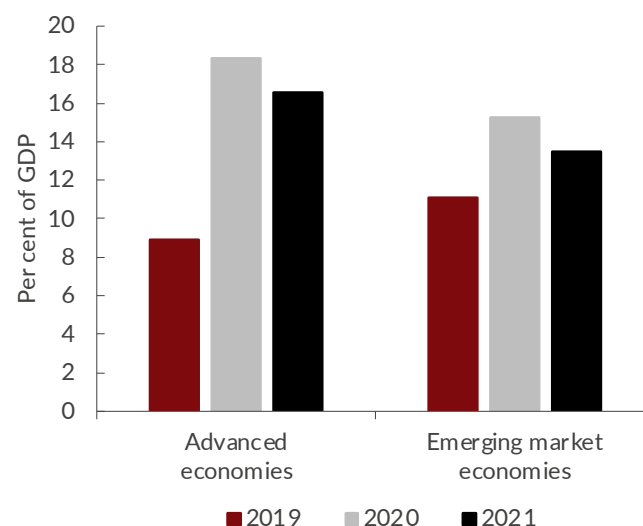
Public sector debt to GDP ratios in advanced economies have increased by 20 percentage points on average compared to the 2019Q4 pre-pandemic forecast, as shown in figure 17. In emerging economies, the rise in debt has been generally smaller than in advanced economies, increasing by up to 7 percentage points, compared to the pre-pandemic forecast (see IMF, 2021).

Financing needs (defined as the sum of budget deficits and funds required to roll over debt that is maturing over the year) remain above pre-pandemic levels. Increased debt rollovers due to increased debt stock and shorter maturities on some crisis-period borrowing are exceeding budget deficit reductions in some countries. Even in advanced economies that face no material insolvency risk and have some fiscal space, financing needs have remained above pre-pandemic levels (figure 18).

Further, there is little incentive for governments to decrease their debt stock quickly since long-term real interest rates remain at historically low levels. Debt dynamics will depend on primary deficits and the difference between the real interest rates they pay on their debt and their real growth rates. Our projections are for public debt to GDP ratios to stabilise as economic growth returns.

Unless risks from record-high debt are addressed, emerging markets with high external debt and expected low growth (e.g., Argentina, Brazil, Mexico and South Africa) will remain exposed to financial market stress, particularly should investors' risk sentiment deteriorate because of increased inflation pressures in advanced economies. Global financial conditions tightened between February and April 2021, partly reflecting a rise in U.S.

bond yields amid increased inflation pressures (Holland, Küçük, and Macchiarelli, 2021). While these conditions normalised until the summer, financial constraints are now tightening again for countries that markets see as becoming riskier, as evidenced by credit rating downgrades during the last two years. High debt levels expose the financial system to a sharp rise in interest rates, which might be triggered by increased risk aversion, higher-than-expected inflation, and monetary tightening.

Figure 18 Government gross financing needs (per cent GDP)

Source: IMF Fiscal Monitor – Oct 2021.

Note: 2021 refers to IMF forecast.

Higher interest rates, shorter debt maturities (on average), and reduced government revenues pose a challenge to low-income developing nations' ability to service their debt. Many emerging markets will need to be cautious about withdrawing fiscal support too soon while keeping a close watch on medium-term debt sustainability. The heavy reliance of many emerging economies on foreign capital makes their public finances more vulnerable to rising foreign interest rates and exchange rate depreciation. Thus, emerging economies face considerable threats from central bank interest rate tightening and a retreat from exceptionally large asset purchases in advanced economies.

The major multilateral agencies have provided financial support to emerging market economies requiring external finance, and we expect this to continue. The global financial system has so far weathered the pandemic, largely due to swift, bold, and effective international policy responses. Greater resilience of globally systemically important banks (G-SIBs) meant the system could absorb, rather than amplify, the macroeconomic effects of the pandemic.

The issue of debt sustainability in emerging markets remains crucial. One imperative continues to be increased

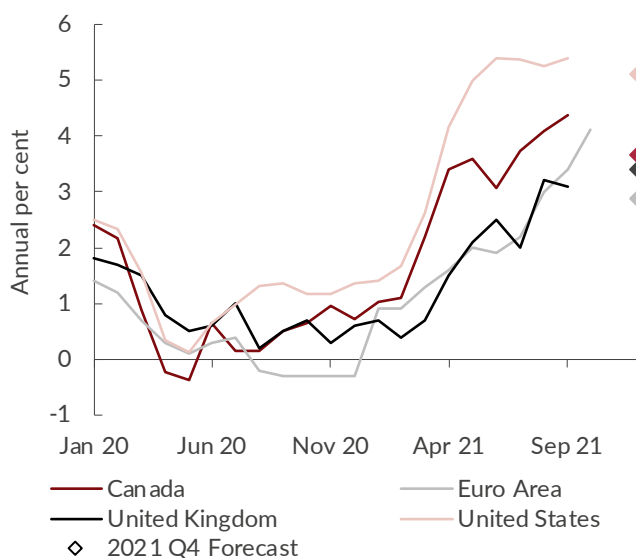
financial support from the IMF and the World Bank to low- and lower-middle-income countries that are exposed to substantially higher economic and financial risks. A cornerstone of the G20 Debt Service Suspension Initiative and IMF Common Framework is that private sector banks, investment funds, and G20 governments should agree to either write-off or postpone repayments on the money they previously lent to strained low-income countries.

Inflation

Our main case scenario is that annual price inflation will remain high in the short-term (figure 19). Annual OECD inflation is forecast to rise from 1.7 per cent last year to nearly 3.2 per cent this year and next, edging down to 2.6 per cent only in 2023. We expect inflation to recede further over the medium term.

Manufacturing is now being hit due to supply constraints mutating into reduced demand from complementary inputs to those in short supply. A pick-up in economic activity or closing output gaps, aided by accommodative fiscal and monetary policies, the release of pent-up demand and accumulated savings, rapidly rising commodity prices, and input shortages and supply chain disruptions, are all contributing to the observed inflation spike in the short term. Commodity price inflation is set to continue increasing as output ramps up. As vaccines become more widely available, we expect an increase in travel-driven demand for energy, particularly in advanced economies.

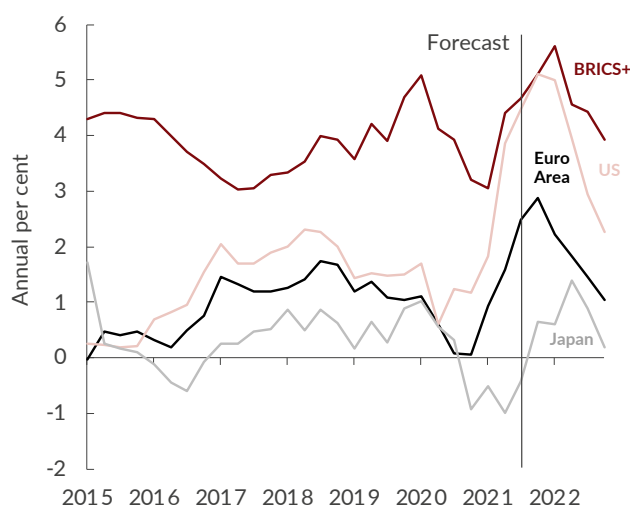
Figure 19 Inflation rates Jan. 2020 to Oct. 2021 and point forecast for 2021Q4 in advanced economies (annual, per cent)



Source: National accounts, DataStream, and NIESR forecast.

Although underlying consumer price inflation (excluding food and energy) has increased, we forecast it will go back to running at around the same pace as before the pandemic by next year in Japan, the Euro Area and the BRICS+ countries. It might not be until the start of 2023 for the US (figure 20). Recent price increases have been especially noticeable for durable items, such as vehicles, where demand has exceeded supply, and in some recently reopened contact-intensive service industries.

Figure 20 Inflation in advanced and emerging economies (per cent)



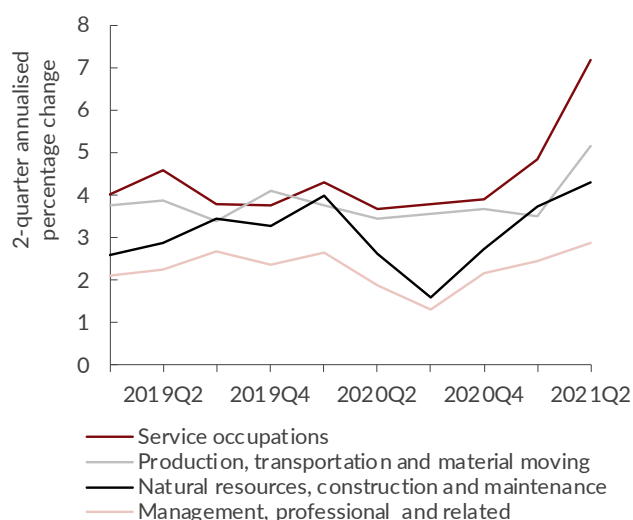
Source: NiGEM database and NIESR forecast.

The interplay of inflation expectations and wages will have a significant impact on inflation in advanced economies. A sustained rise in inflation from the low levels seen before the pandemic is unlikely unless wage inflation accelerates significantly, or inflation expectations build up. One source of uncertainty is wage processes that have emerged because of the pandemic, with increasing labour demand clashing with expected temporary labour shortages. Wage pressures are mounting in contact-intensive industries, such as leisure and hospitality. Survey indicators such as the IHS Markit/CIPS Purchasing Managers' Index (PMI), suggest that capacity constraints and staff shortages in face-to-face services sectors meant that many service providers struggled to keep up with new orders in the US and Europe. Companies trying to meet a surge in demand were able to increase prices, thereby passing these costs to consumers to avoid an erosion of profit margins.

If these forces continue, it could be plausible to expect a continued increase in labour's bargaining power in contact-intensive sectors, leading to higher reservation wages at the bottom of the wage distribution (figure 21) together with longer than expected frictional unemployment. In the light of the continuation of international restrictions to labour mobility, this could be particularly acute for small firms and industries that rely on seasonal and cross-

border employees, pointing to unemployment upside risks if the labour supply does not recover fully.

Figure 21 Employment cost growth by occupation in the US (per cent)



Source: The Conference Board; US Bureau of Labor Statistics.

Household inflation expectations for the coming year, and over longer periods, have risen due to higher perceived inflation. Inflation expectations indicators have also risen this year, though they are still moderate outside of the US. A lengthier period of higher inflation because of persistent supply constraints might contribute to an inflation expectations' build up. Bond yield differentials and market-based measures such as five-year inflation swaps have also risen, although not quite as much as surveys.

Due to the high weight of food in consumer expenditure and CPI baskets, rising food prices are adding to inflationary pressure, particularly in low-income countries. Global food prices have risen by about 40 per cent since the start of the pandemic.

Inflation risks remain on the upside, especially if consumer demand is greater than expected or if supply bottlenecks take a long time to resolve. Even if there are no further cost increases, the impact of past rises in shipping, transportation costs and commodity prices is already significant across the G20 nations, accounting for much of the rise in inflation over the last year. We forecast these pressures to persist into much of 2022. Nevertheless, our overall expectation at this stage is that the higher rates of inflation are most likely to be transitory rather than permanent, and in most countries will not extend beyond the first half of next year.

Medium-term outlook

For the period 2024-2028, our working assumption is that Covid-19, while likely to be still present in society,

will be under effective control by vaccinations and acquired immunity. Therefore, we assume that the severe economic disruption of the past eighteen months will not remain a medium-term feature. Even with this assumption, the recent experience of the pandemic may cast a shadow on future economic growth, for example through labour market scarring, as discussed previously, or lower investment.

While the effects of the pandemic on medium-term economic growth are difficult to gauge, the investment shortfall relative to pre-pandemic expectations will leave a lower than anticipated capital stock, moderated by post-pandemic fiscal policy initiatives increasing investment – especially in infrastructure.

Policies that encourage skills catch-up and boost skills will mitigate the negative effect of the pandemic on human capital, through the reduction in school attendance and training activities. These policies might be particularly important in the light of the reported sectoral skills shortages.

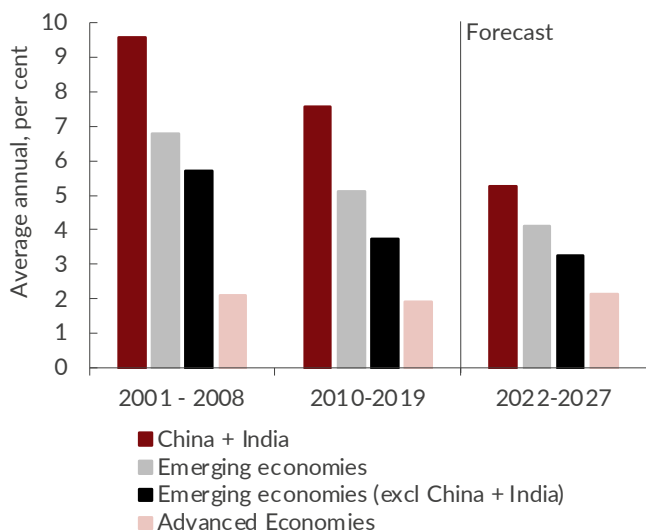
China and India are expanding rapidly and increasing their global GDP share. We project average annual global GDP growth in the medium-term of slightly below 3 per cent. Within this, we expect China and India to continue to be the fastest-growing major economies, with average annual growth of 4.4 per cent and 5.1 per cent, respectively. Both growth rates are slower than those achieved in the five years before the pandemic (6.8 per cent and 6.9 per cent, respectively), also reflecting changing stages of economic development. Since China and India account for around 25 per cent of global GDP on a PPP basis, their slower pace of economic growth will contribute towards an overall slowing in global GDP growth relative to the years before the pandemic.

We project emerging economies, excluding China and India, will grow by an average annual rate of around 2.9 per cent a year in the medium-term, which is the same pace of average growth experienced in the five years before the pandemic. For advanced economies, which comprise around 42 per cent of global GDP on a PPP basis, we forecast a slightly slower pace of annual GDP growth in 2024-28 – 1.6 per cent – than before the pandemic – above 2 per cent – as the effects of ageing populations and gradually rising interest rates are expected to weigh on spending growth.

In aggregate terms, the main scarring effect from the pandemic may be from the reduced level of GDP relative to that forecast before the pandemic, rather than a slower rate of GDP growth in the medium-term. Our medium-term GDP growth projections show a continuation of pre-pandemic patterns with gradually evolving trends such as ageing of the populations in advanced economies (and China) and the absence of another globalisation spurt contributing. As figure 22 shows, the past decade had a slower average annual global GDP growth rate (at 3.7 per cent) than the decade leading up to the global financial

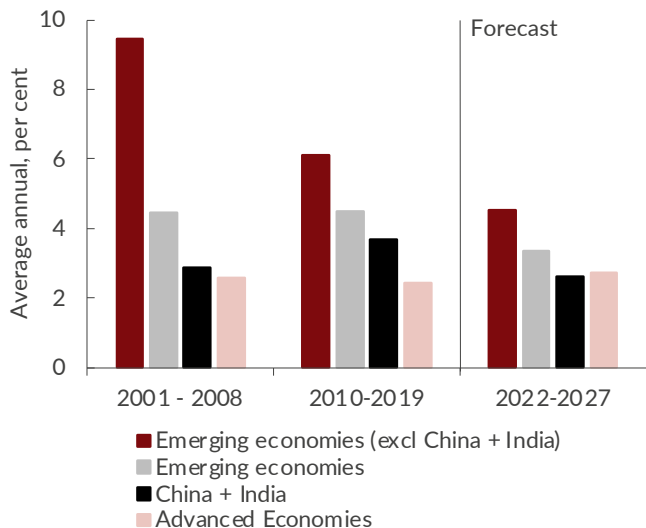
crisis (4.2 per cent). Before the global financial crisis, globalisation and the growth of China boosted global GDP growth. The dislocation effects from the global financial crisis played a role in slowing growth, but the recent pandemic has not seen any considerable financial dislocation, though the build-up of debt in both public and private sectors remains a concern for the future.

Figure 22 GDP growth rates (average annual, per cent)



Source: NiGEM database and NIESR forecast.

Figure 23 Inflation rates (average annual, per cent)



Source: NiGEM database and NIESR forecast.

Our central view on price inflation is that the current increase in advanced country inflation will prove to be temporary and that inflation will return to around 2 per cent in the medium-term. This projection would leave inflation only slightly higher than before the pandemic (figure 23), consistent with modifications in inflation

targets of the US Federal Reserve and ECB. We expect a moderation in the medium term of the factors driving the general rise in inflation in the short-term – the pace of recovery (especially in the US), the turnaround in commodity prices, and supply chain shortages.

As inflation reduces from peaks this year and the next, medium-term inflation expectations which have, so far, been only modestly affected, should moderate again, especially as the forecast incorporates gradual increases in policy interest rates.

Risk overview

The main downside risk is that the pace with which vaccinations are deployed, as well as the efficacy of current vaccines, may not prevent the spread of more infectious variants of the virus. Furthermore, supply-side constraints could persist until next year. In such a scenario, private sector expenditure, as well as external sector and service trade activities, could be weaker than in the baseline forecast.

In the short term, the primary risk to the economic outlook remains from the spread of Covid-19, which could lead to containment measures that would reduce economic activity. The vaccines offer a route to the return of the full range of economic activity, and there is growing evidence that infections are now leading to fewer hospitalizations and deaths, particularly in those countries where the vaccination rates are high. However, the number of reported new cases of the virus globally has risen recently, notably in the US and the UK. The number of deaths in developing economies has also increased because vaccination programmes have not progressed at the same pace across countries.

The current spread of the Delta variant of the virus could lead to slower global growth if severely affected countries impose stringent lockdowns. The rise in cases in India, and East Asia has led to the re-imposition of restrictions, especially on international travel and domestic service sector activity. These could slow the pace of economic recovery or - if sufficiently severe - lead to renewed growth GDP falls in some countries.

The urge to get to a much wider level of vaccinations in many parts of the world, particularly low and low-middle income countries, continues to be one important priority to ensure global prosperity. The least well-vaccinated economies are the emerging economies, although even among advanced economies there is a range of experiences, with, for example, Hong Kong having low vaccination rates. The uneven progress is a problem for individual countries and inter-connectedness as it inhibits international travel (Macchiarelli, 2021).

Increased international cooperation, including donations from advanced economies as agreed at the G7 meeting,

continues to be a key factor to ensure that vaccines reach all countries in sufficient amounts.⁶

While further waves of the virus are the primary downside risk to the global economic outlook, there are other risks. Reduced labour market participation in advanced economies remains a major concern, as the pandemic has increased the participation gender-gap, socio-economic inequalities and increased the likelihood of long-term unemployment.

Concerns about higher inflation in the medium-term could dampen demand and lead to rising market yields and consequently to an earlier than anticipated tightening of monetary policy, as discussed. While the increase in inflation is projected in financial markets to be temporary (but lasting into 2022), this view could change as higher inflation readings continue to occur this year and next year.

If higher inflation persists and leads to increases in interest rates, pressure on fiscal positions would intensify, particularly for economies facing risks from currency depreciation that lead to increased sovereign spreads and limited ability to raise taxation. Higher interest rates at a time of substantial increases in government indebtedness would add to dilemmas over the sustainability of such debt, creating vulnerabilities for countries that are already subject to high risk premia. The end of the US ultra-accommodative monetary policy stimulus might lead some emerging currencies to experience a depreciation against a stronger US dollar, potentially causing some economies to raise their interest rates to limit any adverse effects from foreign exchange market movements. Using our NiGEM model, we have previously shown that financial spillovers in case of an unanticipated tightening in the US monetary policy could impact countries with higher risk premia such as Argentina, Brazil and Turkey, as well as lower risk-rated countries such as Indonesia and Russia through lower output and trade growth. The effect of these negative spillovers on emerging economies' GDP was estimated between 0.2 percentage points in India, 1 percentage points in Brazil and 2.4 percentage points in Argentina (Holland, Küçük, and Macchiarelli, 2021).

Another potential risk could be for advanced economies running with ultra-low policy interest rates and high levels of quantitative easing, as a new economic crisis could come at a time when both monetary and fiscal policy would have much less scope to respond than they did last year or during the global financial crisis.

The increase in public sector debt (in absolute terms and as a share of GDP) that has resulted from policies to support economies during the pandemic also raises concerns for the economic outlook. Specifically, the low level of interest rates is not guaranteed into the future, so

there is potential for further pressure on public finances if interest rates were to rise, especially for countries with comparable higher risk premia such as Argentina, Brazil, Turkey, Indonesia and Russia or countries with a large share of debt at short maturity (see OECD, 2021). While this increase in debt has been supported by very low-interest rates, an increase in focus on fiscal sustainability may lead to policies of tightening public finances (as in the global financial crisis), with implications for slower GDP growth – although there are no signs of this currently.

During the pandemic, companies and households in many economies have also taken on more debt, thereby increasing their vulnerability to higher interest rates or reduced cash flow from lower product sales. The increase in private sector debt comes at a time when debt had risen in the previous decade after some retrenchment following the global financial crisis (Naisbitt, 2018, 2020a; b). Another substantial wave of the pandemic could lead to renewed lockdowns and interruptions to business cash flow and an increase in company failures. Many governments in advanced economies have included loans or guarantees to companies as part of pandemic support packages. There is an additional risk of debt write-offs in such circumstances, adversely affecting both governments and commercial banks.

In the medium and long term, economies face the challenge of responding to climate change. Climate change is now a central feature of government policy debate. The policies discussed during the United Nations Climate Change Conference (COP 26) in the United Kingdom from the 31st of October to the 12th of November will have a significant influence on the long-term growth outlook. In our Autumn NiGEM Topic Feature, we discuss some of those issues and simulate the effect of a carbon price tax on GDP growth in a number of countries in NiGEM (see Topical Feature).

NiGEM Risk Simulation⁷

If current vaccinations are shown to be ineffective against new strains of the virus, the risk of a fresh wave infections could increase, affecting both demand and supply. Over the last six months, the virus's negative economic consequences have not been as severe as the first wave, which might be due to individuals adapting to new behavioural constraints, substitution effects, and sectoral reallocation within the economy, on top of the widespread vaccination protection. Yet, the development of new variants in the coming months cannot be ruled out, particularly if a contagious new variant were to emerge in the northern hemisphere winter at the same time as a 'flu season, putting extreme stresses on health systems.

The prospect of a further wave increases the downside risk to our short-term GDP forecast. Figure 24 shows

⁶ Further support for the COVAX initiative is necessary and the introduction of measures to promote the cross-border licensing and production of medicines will also help the global vaccination progress.

⁷ Simulation compiled by Ian Hurst.

our global GDP downside risk estimates based on the possibility of a third wave of infection impacting economies' demand in the fourth quarter of this year.

The economic consequences of a projected further wave are expected to be roughly 30 per cent of those of the first wave, reflecting the smaller extent of the economic slump in the second wave compared to the first.⁸ This assumption is consistent with our Covid-19 risk simulation in the Summer Outlook. The simulation does not explicitly model a scenario of a further virus shock in 2021Q4. Rather, it creates a downward skew to the fan chart, reflecting our assumption on the balance of risks to the central projection. With the distribution negatively skewed, the width of the fan above the main-case scenario is smaller than the width below. In other words, the probability of GDP falling below the central projection is greater, as this reflects the net impact of the balance of risks factors on the forecasts, assuming renewed economic disruptions in the light of new strains of the virus.

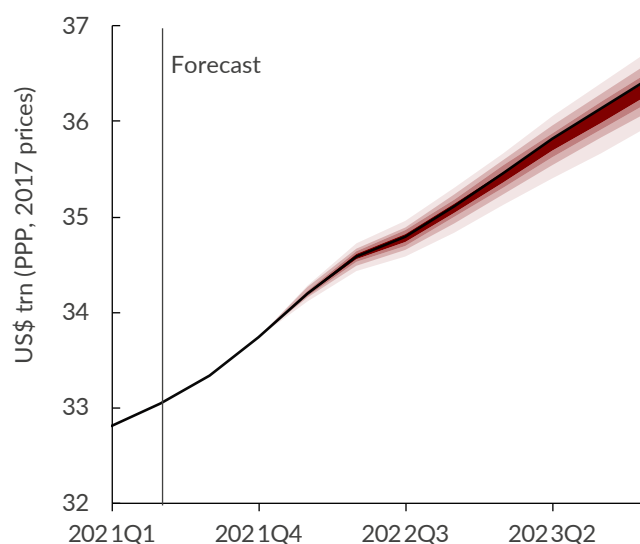
The pessimistic scenario (from the lowest decile shown) implies GDP being a further \$2.3 trillion lower (about 0.7 per cent of GDP) by the end of 2023. The simulation also sees a reduced impact on GDP by including an allowance for the distribution of vaccines, meaning that countries that are particularly reliant on tourism but are lagging with the rollout of vaccination programmes could be particularly affected (see Holland, Macchiarelli and Mao 2021).

If a new wave did occur, further economic policy support actions would be likely. The burden would fall again on fiscal policy with a risk of cranking up existing views on public debt sustainability further. In this scenario, debt (and debt to GDP ratios) would continue to increase. What would happen to long-term interest rates would largely depend on the monetary-fiscal mix and the space for monetary policy accommodation at the time.

The simulation also shows that is possible that GDP growth could be stronger than forecast. GDP growth might be stronger than expected if vaccination rates pick up and business and consumer confidence increase, while savings accumulated during the epidemic sustains consumer spending.

In addition, the risks of lower economic activity as the result of a third wave could be offset by accelerating digital transformation (i.e., with companies increasing their use of digital technology and work-from-home policies implemented during the pandemic.) and short-term productivity improvements. This interaction could boost consumers' and firms' confidence and labour force participation, causing potential output to increase.

Figure 24 Global GDP (level, US\$ trillion at PPP)



Source: NIGEM database and NIESR forecast.

⁸ Our stochastic simulations for the risk scenario are based on uncertainty from past data. To reflect the balance of risks we perceive from another wave of Covid-19, at each bootstrap run, we increase the risk of negative events and adjust negative shocks to equal (a maximum of) 30 per cent of the severity of economic disruptions experienced during the first wave.

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Box A: US inflation – peaking soon?

by Patricia Sanchez Juanino, Corrado Macchiarelli and Barry Naisbitt¹

Summary

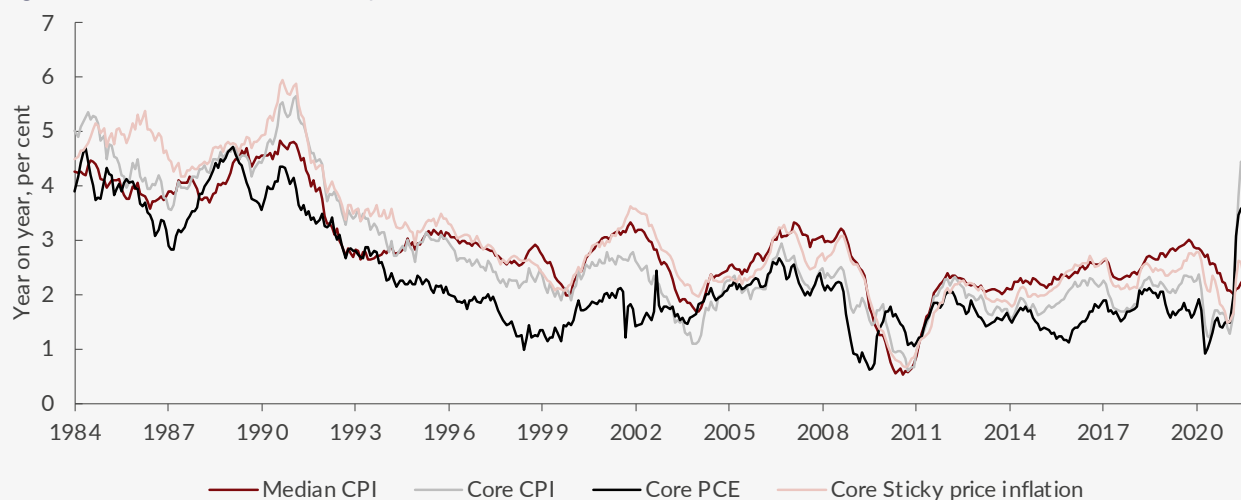
Over the past four months, CPI inflation in the US has run at over 5 per cent year-on-year, the highest since mid-2008, and was 5.4 per cent in September. Prior to 2008, the previous time headline CPI inflation was this high was in 1991. A key question of policy debate is whether this increase in inflation will be just temporary, as in 2008, the start of a prolonged period of inflation above the 2 per cent target, or worse still whether inflation will continue to escalate as it did in the 1970s and early 1980s. Either of the latter two outcomes will represent a significant monetary accommodation by the Federal Reserve and a departure from the recent monetary policy practice.

We think that this burst of higher inflation is more likely than not to be temporary. We document that a range of core US inflation measures, although having risen, have remained more subdued than headline measures. We examine past relationships between core and headline inflation and projections based on stylised assumptions about the path of monthly inflation. While our exercises do suggest that relatively high inflation is likely to persist well into next year, they do not point to an inexorable rise in inflation as in the 1970s for now. Much will, of course, depend on how firms and households respond to several quarters of higher inflation and whether they will change their expectations of medium-term inflation.

So many measures of price inflation to choose from

Over recent years the number of measures of US inflation has increased. Here we concentrate on examining two headline measures: the consumer price index (CPI) and the personal consumption expenditures (PCE) deflator, and four measures of underlying or core inflation - one for each of these headline measures plus median inflation and sticky-price inflation. The proliferation of measures of underlying inflation in the US in recent decades reflects a couple of factors. Some economic research suggests that core inflation provides a more accurate measure of underlying inflationary pressures than headline inflation, and that core inflation might be a better predictor of future headline inflation than current (or recent) headline inflation.² In addition, the improvement in data analysis capability enables such measures to be calculated rapidly from large datasets.

Figure A1 Core annual inflation (per cent)



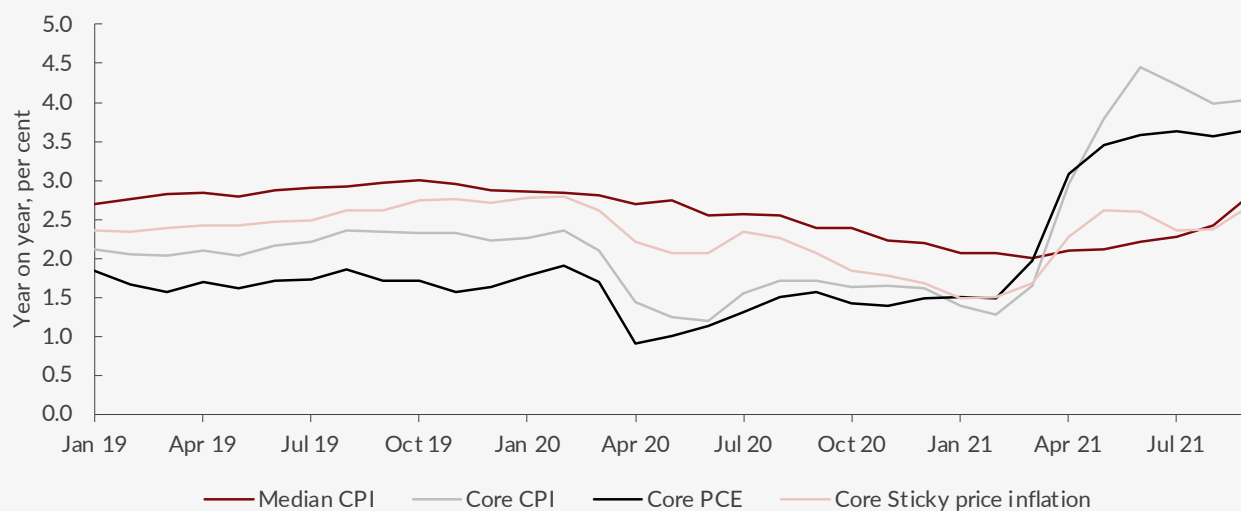
Source: Federal Reserve Bank of St Louis databank.

¹ We would like to thank Jagjit Chadha and Paul Mortimer-Lee for helpful comments.

² See for example Mehra and Reilly (2009), Khettry and Mester (2006) and Pincheira et al (2016).

Figure A1 presents year-on-year inflation for four core inflation measures over a long period, figures A6 and A7 in the Annex compare headline measures with their core counterparts. In each case, core inflation excludes food and energy price inflation from the headline.³ As would be expected, the core measures show less variability than the headline measures, and they have similar averages over long periods. The recent rise in inflation is evident on all the measures considered but is much less pronounced on the core measures. When comparing these core inflation measures, figure A1 gives the immediate impression of the measures' long-term similarity. However, the increase in inflation this year stands out. Figure A2 focuses on the current experience. The rise in inflation this year is most notable for the core CPI and PCE measures. The increase in inflation for the sticky-price and median measures⁴ is not especially strong.

Figure A2 Core annual inflation (per cent)



Source: Federal Reserve Bank of St Louis databank.

US inflation now

Focussing on current US inflation, two things stand out:

- As the Covid-19 pandemic hit last year, annual headline inflation rates dropped more than core inflation rates, and this year annual headline rates have risen more than core rates;
- However, core inflation rates (CPI and PCE) have risen to their highest since 1991.

Table A1 shows a different feature of the recent data by examining monthly rather than annual changes in inflation. The peak in monthly inflation was in the March to June period this year, and monthly inflation - both headline and core - has been considerably lower since. A large part of the sharp increase in year-on-year inflation has been because last year saw several months of very weak monthly inflation, but this has turned around this year as the economy has rebounded.

³ For a cautionary note on the use of core inflation measures in the US see Roach (2021).

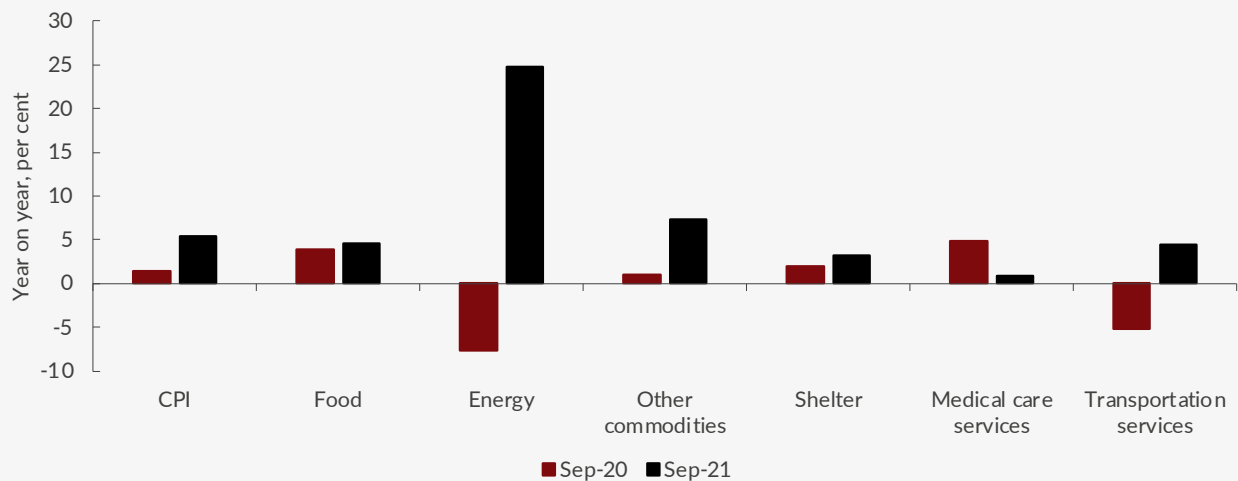
⁴ These measures are calculated from a subset of the full information in the CPI index.

Table A1 Monthly changes in inflation (per cent)

	CPI	Core CPI	PCE	Core PCE
2015-19	0.15	0.17	0.12	0.14
Sep 20	0.25	0.19	0.16	0.14
Oct 20	0.12	0.07	0.03	0.01
Nov 20	0.18	0.17	0.01	0.00
Dec 20	0.24	0.04	0.38	0.32
Jan 21	0.26	0.03	0.31	0.22
Feb 21	0.35	0.10	0.27	0.13
Mar 21	0.62	0.34	0.57	0.42
Apr 21	0.77	0.92	0.57	0.62
May 21	0.64	0.74	0.53	0.57
Jun 21	0.90	0.88	0.54	0.48
Jul 21	0.47	0.33	0.41	0.34
Aug 21	0.27	0.10	0.34	0.27
Sep 21	0.41	0.24	0.32	0.21

Source: Federal Reserve Bank of St Louis databank and authors' calculations.

The source of the price increases is important. Based on the latest reading in September, the largest increases in annual CPI inflation this year have been in used cars and trucks (24.4 per cent), motor fuel (42 per cent) and utility gas services (20.6 per cent), with these rapid increases reflecting shortages due to supply chain difficulties, the rapid increase in demand and the surge in global energy prices following the rapid boost to economic growth. Figure A3 compares the composition of annual CPI inflation in September this year with a year earlier and shows that, while the price increases in certain items stand out, the increase in annual inflation has been a general, but more subdued, phenomenon.

Figure A3 Annual inflation in CPI (September, per cent)

Source: Federal Reserve Bank of St Louis databank.

Considering the outlook

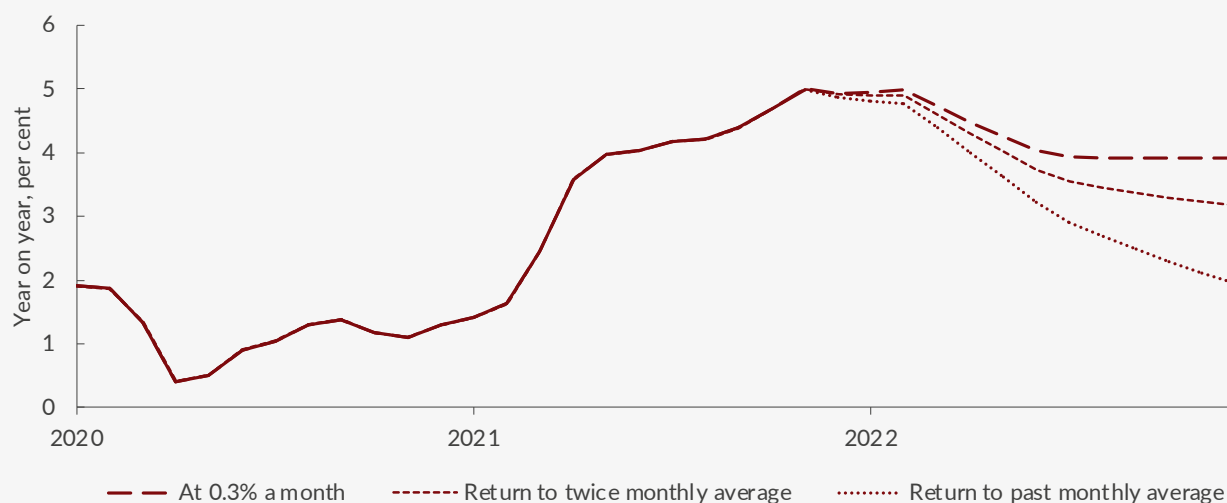
Given the drop in annual inflation last year and the increase this year, we examine monthly price changes as a way to consider the possible outlook for inflation. Following Dixon (2021) for the UK, we make stylised assumptions about future monthly price changes to derive possible paths for annual inflation over the next 18 months.

- The first assumption is that monthly price inflation returns gradually by next June to the average level of the five years before the pandemic. This is shown as ‘return to past monthly average’ in figure A4.
- The second assumption is that the change in monetary policy operations allows for a higher rate of inflation, with monthly price inflation adjusting back to a higher rate, assumed to be twice that of the pre-pandemic average.
- Third, we assume that monthly price inflation continues at the same rate as in September. This is labelled as ‘at 0.3 per cent a month’ in figure A4.

The implied paths for year-on-year inflation in figure A4 show that, even with monthly inflation dropping back to the 2015-2019 average by next June, year-on-year inflation continues strongly for the next few months, hitting 5 per cent, as the smaller monthly increases in the latter part of 2020 are replaced by larger monthly increases. Year-on-year inflation only returns to 2 per cent at the end of next year. If monthly inflation remains at 0.3 per cent a month, year-on-year inflation remains stubbornly close to 4 per cent.

These are simply projections based on stylised assumptions, rather than a detailed analysis of the underlying factors behind recent and prospective monthly price changes. They are broadly consistent with a view that, even if the current increases in prices that are due to supply chain disconnections fade away over time, inflation risks are likely to stay elevated through 2022, e.g., as policies do not prevent an inflation expectations’ build-up.

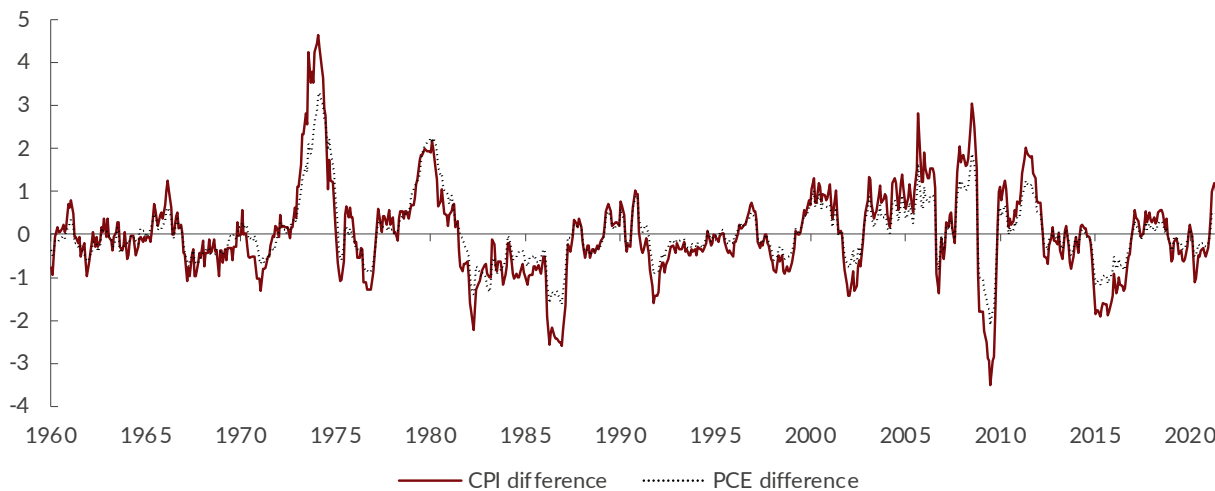
Figure A4 Projected year-on-year PCE inflation based on stylised monthly assumptions (per cent)



Source: Federal Reserve Bank of St Louis databank and authors' calculations.

Figure A5 examines the gap between the headline and core inflation measures, sometimes a helpful predictor of the inflation future path (see, e.g., Mehra and Reilly, 2009). As would be expected, the figure shows a cyclical pattern. At present, the gaps between the headline and core measures are quite wide by historical standards, with a gap of 1.4 percentage points for CPI inflation and 0.8 percentage points for PCE, but these gaps are still lower than at previous peaks in the gap such as in the 1970s and early 1980s, and in 2010. If previous trends repeat, the gaps should reduce over time, although there is a risk they could increase further first.

Figure A5 Difference between headline and core inflation measures (percentage points)



Source: Federal Reserve Bank of St Louis databank and authors' calculations.

The issue of whether core inflation measures help predict future headline inflation is not a settled one, however. Research by Mehra and Reilly (2009), Khetty and Mester (2006) and Pinchiera et al (2016) supports this view but Pinchiera et al (2016) report cases where this relationship does not hold, with core inflation having little predictive power in some cases. Despite the debate about the signal content in core inflation, the compilation of core measures has continued, and they are frequently referenced by members of the Federal Reserve Board (e.g., Powell, 2021; Yellen, 2017).

We examine whether core measures add predictive power to equations for headline inflation and start by running a set of Granger causality tests, testing the hypothesis of whether headline inflation (either CPI or PCE) causes core inflation (CPI or PCE) and vice versa.

In table A2, each column reports the probability on the test statistics that one variable, e.g., core inflation, does cause the other variable, e.g., headline inflation, by including 12 lagged values of each dependent variable. In other words, does core inflation help the prediction of headline inflation, and vice versa? The blue shading indicates where one variable significantly adds explanatory power to the variable of interest. For the whole period, the finding is that of statistical causality in both directions. For the sub-periods after 2007, there are episodes during which core inflation mainly does not statistically cause headline inflation.

Table A2 Granger causality between headline and core inflation measures (CPI and CPE)

	CORE CPI --> CPI	CPI --> CORE CPI	CORE PCE--> PCE	PCE --> CORE PCE
Full sample	Significant at 1 per cent	Significant at 1 per cent	Significant at 1 per cent	Significant at 1 per cent
1985:1 - 2007:2	Significant at 10 per cent	Not significant	Significant at 1 per cent	Significant at 1 per cent
2007:3 - 2009:6	Not significant	Significant at 10 per cent	Not significant	Significant at 1 per cent
2009:7 - 2021:9	Significant at 1 per cent	Significant at 10 per cent	Not significant	Significant at 1 per cent

■ Significant at 1 per cent ■ Significant at per cent ■ Significant at 10 per cent ■ Not significant

Note: The variables of interest are monthly CPI and PCE inflation price levels, either core or headline inflation. The test includes 12 lagged values of the dependent variable. The numbers reported refer to *p*-values where the null-hypothesis is that one measure does Granger cause the other, e.g., CORE CPI --> CPI means core CPI Granger causes headline CPI.

Source: Authors' calculations based on data from the Federal Reserve Bank of St. Louis.

The evidence presented so far indicates that headline and core measures of inflation not only move together but have important predictive information for each other.⁵ To this end, we examine the short-term dynamics between headline and core measures of inflation over three sub-sample periods: 1985:1–2007:2, 2007:3 – 2009:6 and 2009:7 – 2021:9.

Table A3 shows the results obtained by two separate regressions: one which regresses headline inflation on the gap between headline and core inflation, following Mehra and Reilly (2009), and a second regression that examines the relationship between core inflation and the headline-core inflation gap.

Table A3 The adjustment of headline and core inflation to the headline-core inflation gap

		1985:1 - 2007:2	2007:3 - 2009:6	2009:7 2021:9
CPI	Headline	-0.023	-1.064 ***	-0.014
	Core	0.034 ***	0.038 **	0.009
PCE	Headline	-0.037	-0.963 ***	-0.022
	Core	0.047 ***	0.030	0.029

Note: * significant at 10 per cent; ** significant at 5 per cent; *** significant at 1 per cent. The dependent variable in each equation is in the first difference. Each regression considers 12 lags of the dependent variable. The headline-core inflation gap is lagged, as this proxies the error correction to a long-run equilibrium between headline and core inflation. See Mehra and Reilly (2009).

Source: Authors' calculations based on data from the Federal Reserve Bank of St. Louis.

The regression coefficients reported in table A3 capture the short-term dynamics between headline and core inflation measures and indicate how headline inflation and core inflation adjust if a gap emerges between headline and core inflation rates. If the coefficient in the headline inflation equation is negative and the coefficient in the core inflation equation is positive, this means that both series adjust, with headline inflation moving toward core inflation and core inflation moving toward headline inflation.

Over the sample, the adjustment appears mainly to have been made by core inflation adjusting to the inflation gap (measured as headline minus core). From 2009, although the signs of the adjustment are as expected, there is no evidence of adjustment in either direction, possibly due to the prolonged period of very subdued inflation reducing the variability of the two inflation measures.

Implications

Examining inflation data does point out some important features of the current US inflation experience. The monthly pattern of price changes over the pandemic period has been important in determining annual inflation rates. Core inflation rates have not risen as much as headline inflation rates, but they are now back at rates last seen 30 years ago.

The key risk currently is that core inflation could increase further, perhaps due to heightened inflation expectations or faster average earnings growth. If that occurs, even if the gap between the headline and core measures reduces, as it usually does, headline inflation could remain above its average pre-pandemic rate over at least the next couple of years.

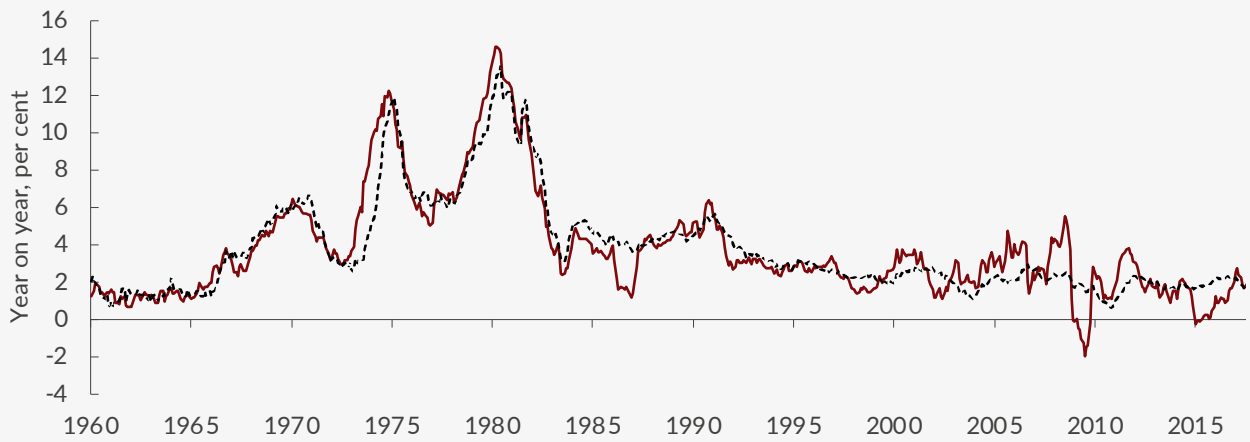
⁵ We extended these results by estimating simple regressions which examine the predictive power of core inflation on headline inflation and vice versa, including one lag of the dependent variable and the 5-Year, 5-Year forward inflation expectation rate (5y5y), as a proxy for inflation expectations. The results (with all variables in month-on-month difference) confirm the results of the previous table. In all cases, core inflation has an important predictive power for headline inflation and, equally, headline inflation is useful in explaining core inflation. Financial market inflation expectations are significant in explaining headline inflation but not core inflation, although this is mainly when the lag of the dependent variable is omitted.

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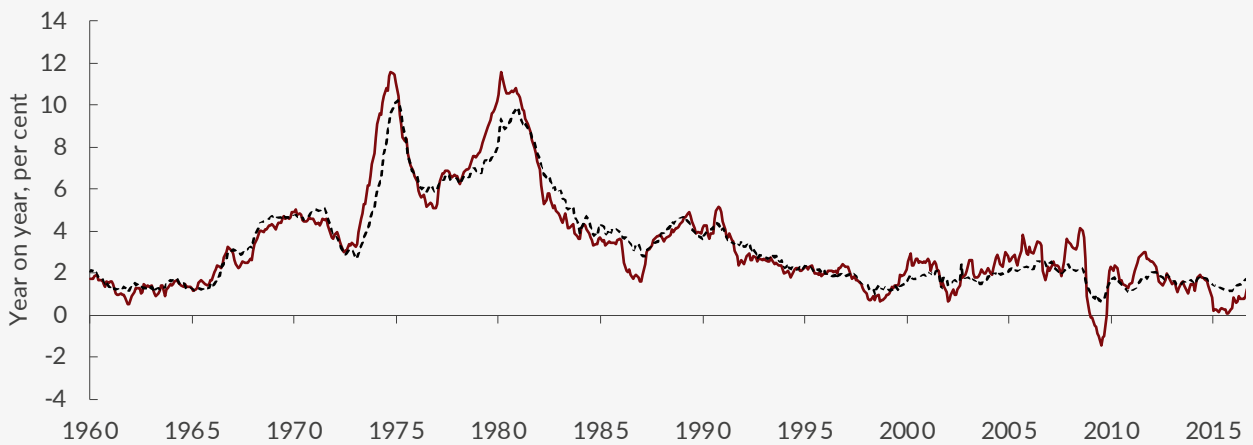
Annex

Figure A6 Annual CPI inflation (per cent)



Source: Federal Reserve Bank of St Louis databank

Figure A7 Annual PCE inflation (per cent)



Source: Federal Reserve Bank of St Louis databank

Box B: Services rebound from the Covid-19 shock

by Barry Naisbitt and Kemar Whyte¹

Summary

From Summer 2020, as the effects of the first wave of Covid-19 receded and governments started to remove lockdowns, economic activity began expanding again in the major advanced economies. By the second quarter of 2021, GDP in the US had regained its pre-pandemic level, but the other major advanced economies have lagged in their recoveries (OECD, 2021). After the unprecedented fall in service industries' output in the initial pandemic phase, this Box examines how far service sector activities have recovered over the past year, taking a close look at the performance of sub-industries within the services sector across a select group of advanced economies.

Highlights

- Just as the response of different service industries varied in the onset of the pandemic, the response of service sector industries has been far from uniform across countries, reflecting the different courses that the pandemic has taken (for example with the spread of new variants) and the restrictions imposed or adopted.
- The category 'other services', which includes arts, entertainment, and recreation, fared the worst during the initial phase of the pandemic.
- We estimate that a 10-point increase in the Covid-19 stringency index leads to a fall in output within 'other services' by about 4.5 per cent, while total services fall by about 1 per cent.
- The US has seen the strongest service sector recovery relative to the previous fall, reflecting, amongst other things, the boost from the initial impact of the American Rescue Plan and the easing of restrictions.

Background

A feature of the recession in advanced economies that followed the Covid-19 pandemic was that, unlike previous recessions, the service sector experienced a severe contraction in activity. In a 'typical' recession, households and firms concerned about current and future income and revenue reduce spending, investment, and production. These effects would result in a large fall in industrial output but a smaller fall in services. The fall in output in the service sector this time reflected a combination of the effects of the virus and the measures taken by individuals, companies, and governments to protect health. Social distancing measures adopted by individuals were always likely to have a greater effect in reducing demand for and supply of activities that involved personal contact, such as occurs in many service sector activities, than in manufacturing, although manufacturing activity was not immune to lockdown measures either.

Naisbitt and Whyte (2020) analysed the effects of the pandemic on service sector output in major advanced economies during the initial wave of the pandemic. They showed that the falls in service sector activity were not uniform across countries, with the UK and France experiencing the largest falls in service sector output between the final quarter of 2019 and the second quarter of 2020. While part of the differences may have been due to different existing sectoral trends across countries, the main explanation of the scale of the falls and the differences between countries was the extraordinary restrictions placed on citizens in lockdowns in the first half of 2020 and the self-imposed social distancing which, by limiting social contacts, public gatherings and movement, had a particularly adverse impact on activities such as restaurants, theatres, sporting activities, and travel (see, for example, Abay et al., 2020). The timing of restrictions, which differed across countries and their coverage, length, and severity in terms of the dislocation of normal business activity, played a part in different outcomes. In addition to these factors, some particular features such as how various outputs are measured, especially in non-market services (notably education and health in the UK), played a role in the differing sizes of reduced services' output across countries.

1 We would like to thank Jagjit Chadha, Corrado Macchiarelli, and Paul Mortimer-Lee for helpful comments, and Patricia Sanchez Juanino for help with the charts.

Service sector output in the pandemic

Unlike during the global financial crisis, in the pandemic-induced recession, the service sector did not provide a buffer for total output (GDP), reflecting the effects of both Covid-19 and the lockdown restrictions adopted to protect public health. Figure B1(a) and figure B1(b) document this experience for selected major advanced economies (namely, US, Germany, UK, France, Italy and Canada) and compare the fall in the first half of last year to the recovery seen since then. Since the end of the first wave of the pandemic in mid-2020, GDP has increased in all of these economies. However, the path has been halting and uneven as new variants of Covid-19 have swept through. The unmistakable feature is the rapid rebound in services' output. Although it has not regained its pre-Covid level in all these economies, the rebound in services' output has been sharp.

Figure B1(a) Change in output between 2019Q4 and 2020Q2 (per cent)

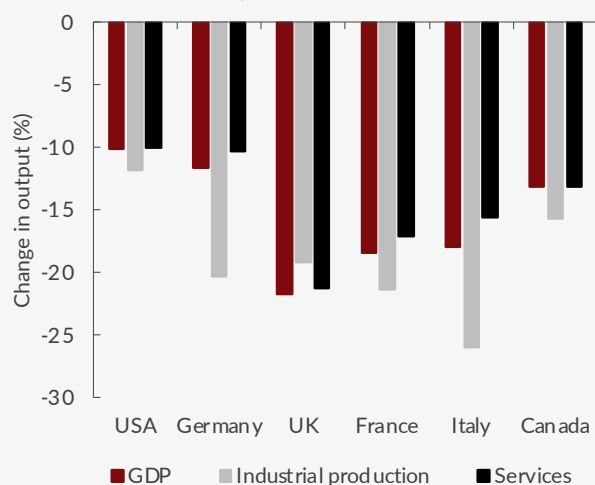
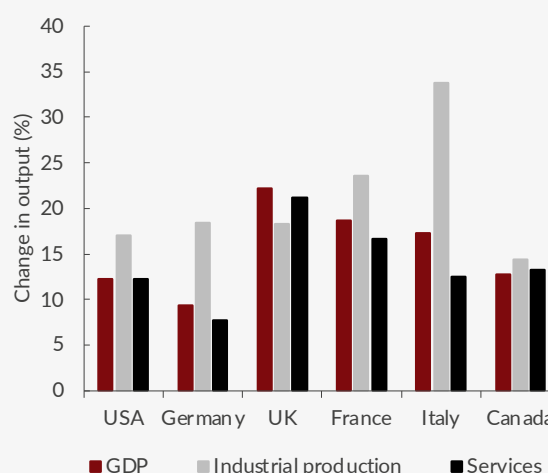


Figure B1(b): Change in output between 2020Q2 and 2021Q2 (per cent)



Source: NiGEM database, OECD, Bureau of Economic Analysis and NIESR calculations.

Not all industries that comprise the service sector were equally severely affected. Table B1 presents an analysis of seven broad service sectors across these economies. While there are some differences in precise definitions, the table shows that the category 'other services', which includes arts, entertainment and recreation, was the worst hit. The 'trade, transport and accommodation and food services' sector also experienced a deep fall in output. Germany's 'financial and insurance services' sector stands out as avoiding any decline in output at all.

Table B1: Service sector output change (output in 2020Q2 compared with 2019Q4, per cent)

	Trade, transport, accommodation and food services	Information and communication	Financial and insurance services	Real estate activities	Business services	Public services, education, health	Other services
USA	-18.3	-2.1	-0.7	-3.6	-9.0	-9.2	-35.8
Germany	-15.2	-5.7	0.0	-2.2	-13.9	-9.6	-20.3
UK	-36.2	-12.1	-6.4	-3.3	-22.7	-22.2	-47.3
France	-28.2	-7.2	-15.2	-3.8	-17.7	-15.1	-41.6
Italy	-29.6	-4.8	-4.1	-7.1	-20.7	-6.0	-20.8

Source: National statistical offices and NIESR calculations.

The differences in the extent of the falls in service sector output across countries in the first half of last year reflect several factors: the incidence of the pandemic not being uniform across countries, the timing and extent of lockdowns, differences in the support for households and businesses affected by lockdowns, issues around the measurement of non-marketed services, and differences in the human contact nature of the activities undertaken.

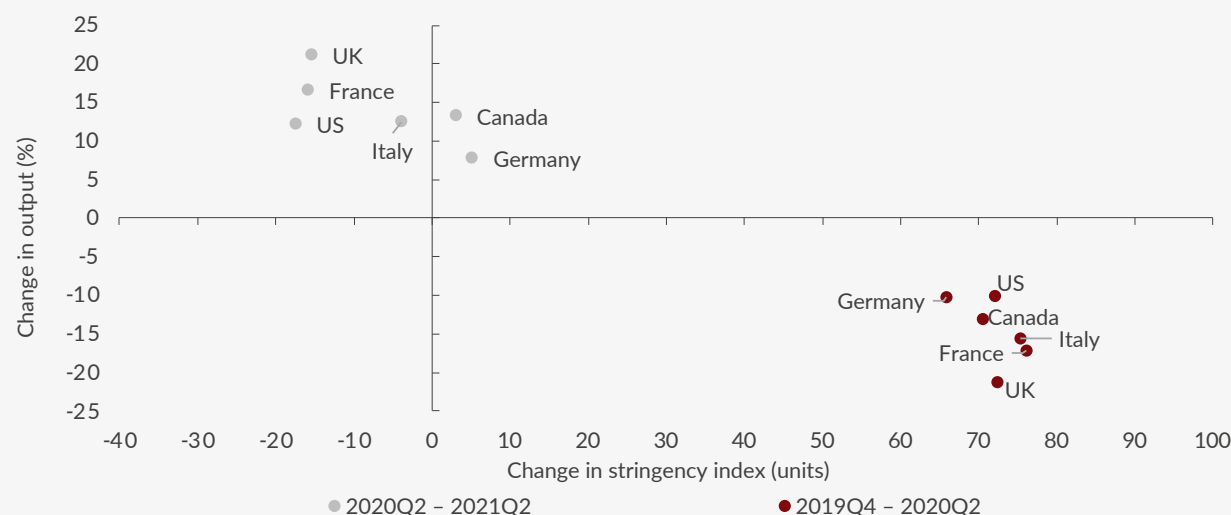
As with the fall in output in the initial, severe phase of the pandemic, the subsequent increase in output up to the second quarter of 2021 was uneven across countries and sectors. Compared to the previous phase of the pandemic, the rebound took longer, extending to over a year. This increase might largely reflect the intermittent restrictions that were reintroduced in 2020Q2 and the second quarter of this year. Table B2 shows the details across sectors and countries of the changes in service sector output between the second quarter of 2020 and the second quarter of 2021.

Table B2: Service sector output change (2021Q2 compared with 2020Q2, per cent)

	Trade, transport, accommodation and food services	Information and communication	Financial and insurance services	Real estate activities	Business services	Public services, education, health	Other services
USA	17.3	15.9	10.4	4.3	15.6	8.3	29.9
Germany	10.6	7.7	-0.3	1.6	9.3	10.1	7.9
UK	49.7	9.5	2.1	0.6	20.6	27.4	39.4
France	22.3	12.8	20.0	4.4	20.4	17.6	33.5
Italy	28.7	12.2	2.2	3.7	20.8	4.0	8.1

Source: National statistical offices and NIESR calculations.

Figure B2 Service sector output change and change in stringency restrictions



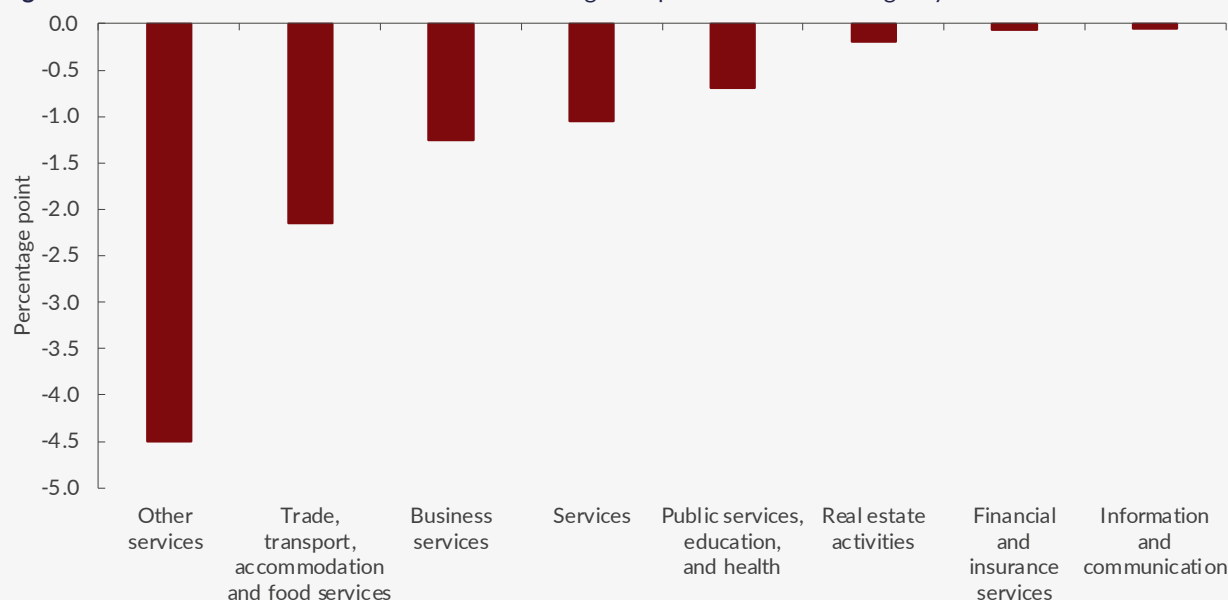
Source: National accounts, Oxford Covid-19 Government Response Tracker, NIESR calculations.

Despite the sharp increases in output over the past year, most industries have not regained their pre-pandemic output level. A few stand out as not having adjusted their output substantially in the recovery phase – ‘other services’ and ‘financial and insurance services’, in Germany, the latter of which did not fall in the first phase, and ‘other services’ in Italy, which fell substantially. The ‘information and communication’ sector has generally expanded so that its output now exceeds that before the pandemic struck. The US has seen the strongest service sector recovery relative to the previous fall, reflecting, amongst other things, the boost from the initial impact of the American Rescue Plan and the easing of restrictions.

An illustrative view of these effects is shown in figure B2. We show the percentage change in overall service sector output by country in both periods covered in the tables, together with a measure of the change in restrictions. Specifically, figure B2 uses the Oxford Stringency index to measure restrictions and shows the change in the average level of the stringency index between the second quarter of 2020 and the pre-pandemic level, and between the second quarter of 2020 and the second quarter of 2021. The figure shows a negative correlation between the increase in the measure of stringency and the change in output.

To buttress the findings in figure B2 and to add analytical structure to the findings presented in tables B1 and B2, we ran a simple panel regression of services output on average stringency and report estimated coefficients in figure B3.² After controlling for country fixed effects, the estimated coefficients suggest that services output responds negatively to increases in the level of stringency. In other words, as governments increase stringency restrictions, output in the various services industries falls. The results suggest that the category ‘other services’, which includes largely activities that involves person-to-person contact, such as entertainment and recreation, is most affected by the level of stringency restrictions. Specifically, we find that a 10-point increase in the stringency measure leads to a fall in output within ‘other services’ by about 4.5 per cent. To put that into perspective, total services declines by about 1 per cent with the same increase in stringency. Industries that do not rely on close contacts, such as ICT and financial and insurance, are least impacted.

Figure B3 Estimated coefficients on services following a 10-point increase in stringency

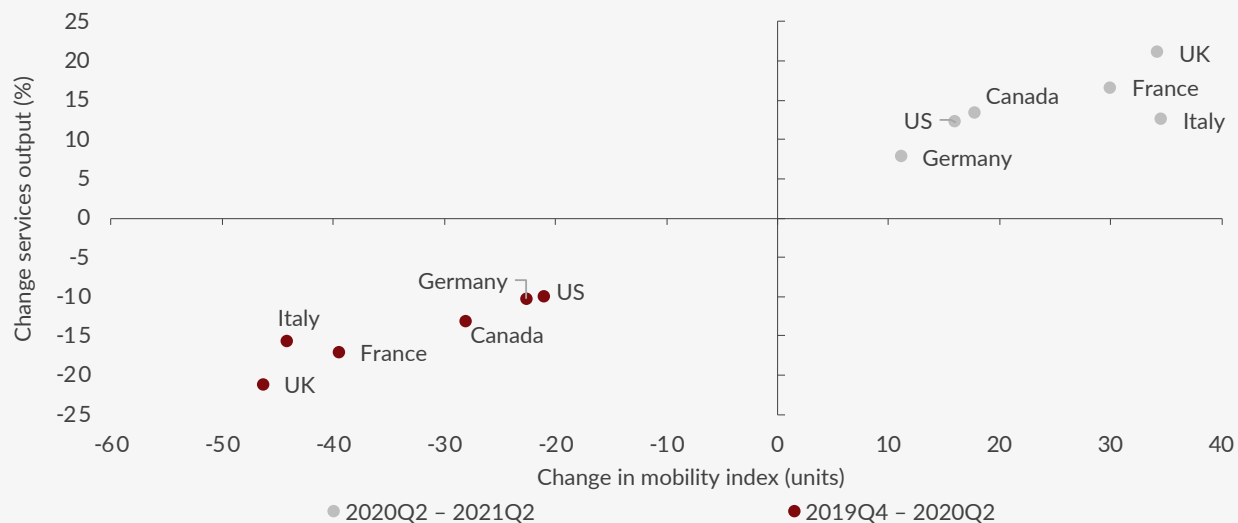


Source: National accounts, Oxford Covid-19 Government Response Tracker, NIESR calculations.

Figure B4 examines the Google mobility index as a measure of the effect of the Covid-19 restrictions and shows that the fall in services’ output was associated with a fall in mobility and that rising output has been accompanied by increased mobility.³ Both figures provide support for the view that the changes in individuals’ behaviour (whether by choice or by imposition) played an important role in the general pattern of service sector output in these countries over the past eighteen months of the Covid-19 pandemic, with the falls in output being associated with increases in stringency and falls in mobility and the subsequent increases in output associated with falls in stringency and rises in mobility.

² The panel of countries includes USA, Germany, UK, France, Italy, and Canada. Our sample spans the period 2019Q4 to 2021Q2. All coefficients are statistically significant at the 5 per cent level.

³ Figure B4 uses changes in the levels of the mobility index from the Google Covid-19 Community Mobility Reports. The index values are based on 10-day moving averages of changes from baseline for the average of ‘retail and recreation’ and ‘grocery and pharma’ categories as the measure of mobility.

Figure B4 Change in Mobility Index and change in service sector output (selected countries) (per cent)

Source: Google LLC “Google Covid-19 Community Mobility Reports”.

Note: Figure 4 uses 10-day moving averages of changes from baseline for the average of ‘retail and recreation’ and ‘grocery and pharma’ categories as the measure of mobility.

Conclusion

Recessions have typically been associated with sharp falls in industrial output but only small falls or even continued increases in service sector output. The scale of reduction in service sector activity experienced during Covid-19 is more typical of the experience of production industries.

The nature of restrictions on social interactions to combat the public health threat of the pandemic meant that the service sector saw a substantial fall in output. In the advanced economies examined, the extent of the restriction on movement and interpersonal association due to the Covid-19 pandemic had significant effects on economic activity in the service sector. However, as the severity of the initial phase of the pandemic waned and lockdown restrictions reduced (and individual behaviour adapted), and mobility increased, service sector output has increased sharply since the middle of 2020. The detailed analysis of service sectors across advanced economies shows that there is still some way to go before their output regains its pre-Covid level and that some countries (e.g., US) are ahead of others and some sectors (e.g., information and communication) are ahead of others across countries. For some parts of the service sector (such as spectator sports, theatres, music concerts, restaurants, and bars) restrictions on social activity remain, either nationally or at a local level, and so these sectors have not been able to increase their output to the same extent as those industries that do not have such restrictions.

With the Delta variant still circulating, despite the high vaccination levels reached in these advanced economies, service industries remain in the economic front line in the battle against Covid-19. Although the news on services has been positive over the past six months, there remains a risk that if further, more virulent variants of Covid-19 develop, service sector output could fall again as people and governments react to reduce adverse health risks.

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