

THE WORLD ECONOMY

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Global outlook overview

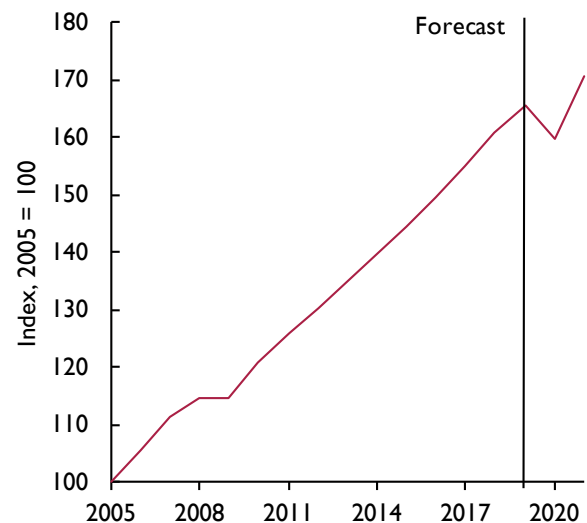
The short-term global economic outlook has changed in an unprecedented manner from that forecast just three months ago as a result of the coronavirus pandemic and the control measures taken to combat its spread. The prospective fall in global GDP in the first half of this year could be five times larger than that experienced in the financial crisis a decade ago. In terms of size of the drop in global GDP, the closest recent parallel is with the Great Depression, when global activity suffered a deeper and more protracted fall.

To say that the economic outlook is uncertain is an understatement. The likely duration of the current economic disruption is extraordinarily difficult to foresee because it is an epidemiological policy issue dealing with a totally new virus rather than an economic one. Issues such as the possibility of the virus re-appearing after the lockdowns are lifted and the development of a vaccine add to the uncertainty. In addition, the news on the effect of the pandemic changes every day and the availability of economic data lags behind the actual economic events. As a consequence, we have based our central case scenario on the assumption that countries experiencing economic lockdowns in response to the virus see these holding fully for around three months. Thereafter we assume there are phased returns to pre-shutdown business operations over a further six months and that the virus does not return once lockdowns end. The worst economic effects are in the first three quarters of this year, with the second quarter the nadir. There are clearly significant uncertainties around these assumptions, which in many ways may be thought of

as a second best case, and the projections based on them, especially as we have no evidence of what may happen when control measures start to be lifted in these extraordinary times.

As a result, a period of major economic disruption to economies leads to our projection of a fall in global GDP of 3½ per cent this year, with an estimated loss of over \$4 trillion for the global economy. For comparison, in

Figure 1. World GDP (index 2005=100)



Source: NiGEM database and NIESR forecast.

*All questions and comments related to the forecast and its underlying assumptions should be addressed to Iana Liadze (i.liadze@niesr.ac.uk). We would like to thank Jagjit Chadha and Garry Young for helpful comments and Patricia Sanchez Juanino for preparing the charts and compiling the database underlying the forecast. The forecast was completed on 17 April 2020. Exchange rate, interest rate and equity price assumptions are based on information available to 10 April 2020. Unless otherwise specified, the source of all data reported in tables and figures is the NiGEM database and NIESR forecast baseline.

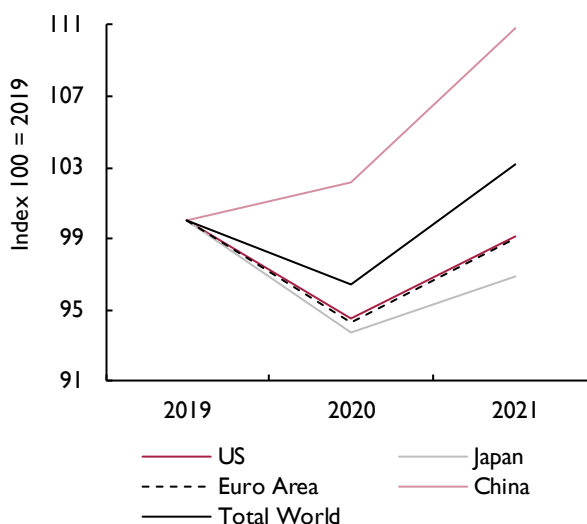
the financial crisis, the worst fall in global GDP was of 0.1 per cent in 2009, as shown in figure 1. Our scenario implies that economic activity picks up in 2021, and we project global growth of 7 per cent next year. Despite this, our projection implies that for 2021, the level of global GDP in 2021 would be 3¼ per cent lower than we forecast three months ago.

Unlike the financial crisis, in which continued robust economic growth in China was able to limit the size of the fall in global GDP, the coronavirus pandemic has severely affected output in all the major economies, albeit with slightly different timings in each, and with spillover effects between economies exacerbating the scale of the fall in activity. To date, the medical and control measures adopted to contain and control the outbreak have been applied earliest in China and its East Asian neighbours, reflecting the initial location of the virus and its geographical progress. The major European economies and the US have followed, with economies in Latin America and Africa forming a slightly later response. The impact on lower income economies may be particularly troubling as they do not have fiscal space to respond to the loss of trade and tourist earnings.¹

The economic policy measures taken to shield² households and companies from the effects of the virus and of the lockdowns of movement taken to combat the virus have been unprecedented, rapid, widespread, and substantial, although they have not been co-ordinated by governments. The nature of the virus and the complexity of the measures taken to combat it make it very difficult to judge at this stage how successful they will prove to be in the face of the unprecedented economic disruption. Our central scenario implies that the total economic policy measures taken, which sum to about 2½ per cent of GDP, will have reduced the extent of the potential fall in global GDP by about a third. They will ‘soften the blow’ but will not be able to prevent substantial falls in economic activity and widespread job losses and company failures in the short term, despite specific policy measures taken in several economies to provide government guarantees of loans to support companies. The volatility in financial markets, with a fall in asset prices of some 20 per cent, has reflected a fall in risk appetite and the first quarter saw the largest ever capital outflow from emerging economies (Lanau and Fortun, 2020).

The falls in GDP this year are projected to be widespread, as shown in figure 2, and are already leading to substantial increases in unemployment. It is important not to imply too much precision in these

Figure 2. Annual GDP (index 2019=100)



Source: NiGEM database and NIESR forecast.

point estimates for GDP – they are intended to indicate that we expect severe and damaging falls in output this year, in most cases of unprecedented extent in modern times, although under our assumptions the falls are temporary.

We noted in our February *Review* that it may be that the prolonged period of low inflation and ultra-low interest rates has created potential vulnerabilities that may not be fully understood and that these could become evident if there were a downside shock, especially with the debt levels of the household and corporate sectors. The coronavirus shock appears to have revealed just how dependent some companies are on a short period of cashflow and that many households have few financial reserves to be able to cope with an income shock. The rise in debt, particularly in the company sector, creating a potential vulnerability to the dependability of the income needed to operate and to service debt, is discussed in Box A.

The economic effects of the epidemic are widespread, although the focus so far has been on China, Italy, Spain and the US. Emerging market economies (EMs) are being affected directly and also indirectly through lower trade and record investment outflows and also through adverse exchange rate movements, with the US dollar having appreciated by 3½ per cent in effective terms since the end of February, in part reflecting its

role as a reserve currency. In addition, the falls in commodity prices since the start of the year are hitting commodity producers in emerging markets by reducing their income flows. With airline travel largely suspended, countries that have a substantial tourism contribution to GDP, such as Cambodia, the West Indies, Iceland, the Philippines, Cyprus and Greece, will suffer the direct effects of reduced visitor numbers.

For world trade, the coronavirus outbreak has hit after economic activity had already slowed last year due to the imposition of new tariffs by the US (and subsequent retaliations) and uncertainty over future tariff imposition (Liadze, 2018a,b). World trade growth of an estimated 2.3 per cent last year was the slowest since 2009. The effect of the virus outbreak has been to disrupt global supply chains and reduce world trade (Rincon-Aznar *et al.*, 2020). Our projection is for a fall of 10 per cent this year.

Controlling inflation has taken a much less prominent place in recent economic policy discussions as the virus outbreak has hit economies, but the global background is one of a sustained period of low inflation. While

countries such as Argentina and Turkey have bucked this global low inflation trend in recent years, the balance of the negative shocks to supply and demand from the coronavirus outbreak is expected to keep global inflation low in the short term, even with the rapid loosening of monetary policy, especially with the fall in the price of oil, as a result of lower demand supplemented by a disagreement over supply policy, and falls in other commodity prices, with oil prices suffering recent sharp falls and dramatic volatility as storage capacity has filled.

For the medium-term outlook, we continue to anticipate that the world's two largest economies, the US and China, will show a slowing in potential growth relative to the past two decades. That contributes to our expectation that global GDP growth will be around 3½ per cent a year, slower than the 4.2 per cent average over the decade before the financial crisis. However, the experience of the pandemic might lead to changes in industrial patterns and practices that could give a downside bias to this outlook. Continued slow productivity growth remains a key issue underlying our medium-term expectation.

Table I. Forecast summary

	Real GDP ^(a)												World trade ^(b)
	World	OECD	China	BRICS+	Euro Area	USA	Japan	Germany	France	Italy	UK	Canada	
2010–15	4.0	2.1	8.4	6.3	1.0	2.3	1.5	2.1	1.2	-0.3	2.0	2.3	5.7
2016	3.4	1.8	6.8	5.2	1.9	1.6	0.5	2.1	1.0	1.4	1.9	1.0	2.4
2017	3.8	2.7	6.9	5.6	2.7	2.4	2.2	2.8	2.4	1.7	1.9	3.2	5.8
2018	3.6	2.3	6.8	5.4	1.9	2.9	0.3	1.5	1.7	0.7	1.3	2.0	3.7
2019	2.9	1.7	6.2	4.6	1.2	2.3	0.7	0.6	1.3	0.3	1.4	1.6	2.3
2020	-3.5	-5.5	2.2	-1.2	-5.7	-5.5	-6.3	-5.6	-5.3	-7.3	-7.2	-6.1	-10.1
2021	7.0	5.3	8.4	8.3	5.0	4.8	3.4	4.5	5.0	3.1	6.8	6.3	15.3
2022–26	3.5	1.8	5.1	4.8	1.5	1.7	1.0	1.4	1.5	1.2	1.9	2.3	3.6

	Private consumption deflator									Interest rates ^(c)			Oil (\$ per barrel) ^(d)
	OECD	BRICS+	Euro Area	USA	Japan	Germany	France	Italy	UK	USA	Japan	Euro Area	
2010–15	1.7	5.4	1.2	1.5	-0.1	1.3	0.9	2.1	1.8	0.3	0.1	0.6	93.0
2016	1.1	4.3	0.4	1.0	-0.5	0.7	0.2	0.1	1.4	0.5	-0.1	0.0	42.9
2017	2.0	3.3	1.3	1.8	0.2	1.5	0.9	1.1	1.4	1.1	-0.1	0.0	54.0
2018	2.5	3.8	1.4	2.1	0.6	1.5	1.5	0.9	2.6	1.9	-0.1	0.0	70.4
2019	2.1	4.2	1.2	1.4	0.3	1.3	1.1	0.5	1.3	2.3	-0.1	0.0	63.7
2020	2.0	4.6	0.8	1.1	0.3	1.0	0.6	0.2	1.4	0.5	-0.1	0.0	41.2
2021	2.1	4.7	1.2	1.5	0.6	1.6	0.8	1.1	0.9	0.3	-0.1	0.0	57.3
2022–26	2.1	3.1	1.7	2.0	1.2	1.8	1.3	1.7	1.8	1.3	0.5	0.5	63.4

Notes: Forecast produced using the NiGEM model. BRICS+ includes Brazil, China, Russia, India, Indonesia, Mexico, South Africa, Turkey. (a) GDP growth at market prices. Regional aggregates are based on PPP shares, 2011 reference year. (b) Trade in goods and services. (c) Central bank intervention rate, period average. (d) Average of Dubai and Brent spot prices.

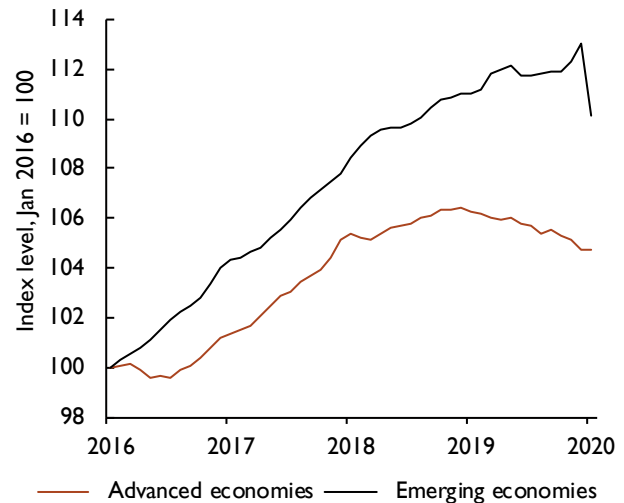
One medium-term issue is whether the experience of the virus outbreak will lead companies to reduce the global reach of their supply chains or perhaps move to multi-sourcing supply chains. Countries might also seek greater self-sustainability policies in, particularly, food supply and manufacturing. These possibilities, together with the uncertainty about the future of tariffs, may be key issues for the development of the global trading system and the economic prospects of emerging market economies.

Our projections are subject to a considerable degree of uncertainty, especially as our conditioning assumptions represent only one possible outcome for the effects of the coronavirus and the measures taken to combat it. Time will reveal whether the lockdowns are able to be removed gradually without any flaring of the epidemic and how businesses and households respond to the change in the environment. The pace and shape of a recovery from the lockdowns will depend on several factors, including the extent that people and companies change their behaviour as a result of the experience of this extraordinary period.

There is no simple policy response to this pandemic. The optimal policy package, whether that relates to the immediate priority, which is to contain the spread of the virus and save lives, or the medium and long-term agenda, must involve countries working collaboratively. The health emergency requires countries to work together on testing and preventing contagion. The immediate financial emergency, particularly for emerging economies, must include a range of facilities to help fill the gap created by record levels of capital flight, including short-term liquidity and medium-term financing from agencies such as the IMF and a debt relief programme that can be facilitated by the World Bank.

Another consequence of this crisis is a sharp rise in sovereign debt. According to our forecast, fiscal debt will rise by 10–20 per cent in a number of countries as a result of this crisis. Policymakers should resist pressure to embark on rapid fiscal consolidation plans especially in countries that have only just emerged out of austerity plans after the global financial crisis. If, as we expect, the global economy continues to suffer a shortfall in aggregate demand, countries that have fiscal space should coordinate and use that space and central banks that have room to stimulate the economy should inject that stimulus. The positive spillovers of these policies can be sizeable (see Box B, Triggs, 2018).

Figure 3. Recent trends in industrial production



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

Economic developments at the start of 2020

The widespread slowdown in global GDP and trade growth last year was driven by several factors including a downturn in manufacturing industry, that was particularly marked in the advanced economies, and tariffs imposed by the US. Uncertainty about future tariffs played a role in the global manufacturing industry downturn and the drop in world trade growth. Last year saw the weakest performance of world economic and trade growth since 2009. The gradual feeding through of higher policy interest rates in the US, which had been raised as part of policy normalisation, also added to the downward pressures. Recessions in Argentina, Turkey and Venezuela, which largely reflected domestic issues such as economic instability, financial sector problems, sanctions and sharp exchange-rate depreciations rather than global trends and uncertainties, contributed to the slower global growth.

Against this background, our expectation three months ago was for global growth in 2020 to continue at a similar, relatively slow, pace of around 3 per cent. Survey indicators of economic activity in most economies for January and February did not indicate any dramatic change to that expectation. But there was one major exception – China. The coronavirus outbreak led to an unprecedented fall in economic activity indicators in February in China and the spread of the virus and the measures taken to control it have fundamentally changed the economic outlook.

The coronavirus outbreak and its short-term economic effects

In mid-January the details of the coronavirus outbreak had only just started being reported by the World Health Organisation (WHO) and it was predominantly viewed as a virus circulating in China. It has since become a global pandemic and has led to widespread illness and death and significant disruption of economic activity. As a result, we now anticipate a deep fall in global output this year. Many advanced economies are likely to experience almost unprecedented quarterly falls in GDP during this year and 2020 is likely to be a much worse year for the global economy than the financial crisis of 2009.

The change in economic circumstances this year due to the coronavirus outbreak has been abrupt and severe. At the end of January, there were 9,826 coronavirus cases recorded by the World Health Organisation (WHO), with 99 per cent in China. In Wuhan, what were initially seen as draconian control measures to restrict the movement of people were imposed to reduce the spread of the virus. By the end of February, the WHO was recording 85,403 cases, an increase of 770 per cent. At the end of March, the number of cases reported had risen to 750,890 (an increase of 780 per cent) and the virus had spread widely around the world, with China only accounting for 11 per cent of cases. Versions of the control measures initially adopted by the Chinese government in Wuhan had become widespread. On 10 April, WHO reported 1,521,252 cases worldwide and the US, Spain, Italy, Germany and France each had more reported cases than China.³

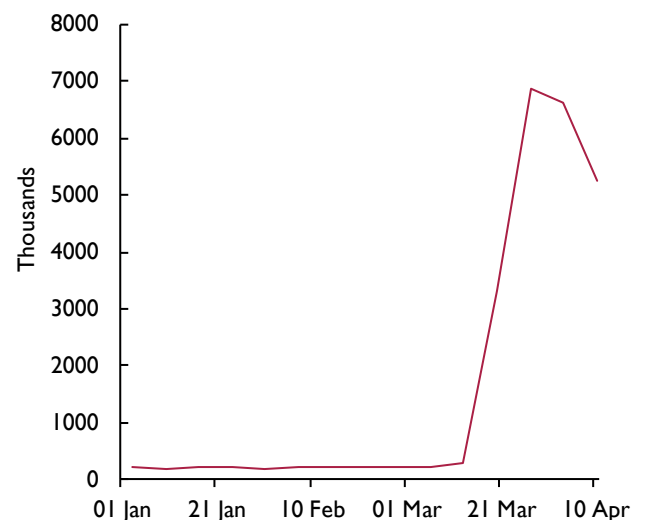
A key feature of the health policies that have been widely adopted to try to arrest the spread of the virus has been the objective of reducing human contact and movement to prevent (or substantially reduce) the transmission of the virus. Illness has directly reduced the number of people able to work and the control policies have further reduced the number of companies able to operate. Service sector industries, which had maintained relatively steady growth in 2019 have been very badly affected, with industries such as airlines, hotels, restaurants and transport affected by a severe reduction in customer business as a result of travel restrictions. Some other service industries, such as banking and accountancy, may not have seen a reduction in demand but working practices in these industries has had to change with, as far as is practicable, staff members using IT to work from home.

The opportunity for home working is generally lower for manufacturing and construction industries than

some service sector industries and the opportunities for continuing to work normally while obeying various restrictions about personal travel will vary across industries and countries. The US Bureau of Labor Statistics estimates that around 30 per cent of employees might be able to work from home (also see Dingel and Neiman, 2020).⁴ The profile of those occupations more likely to be able to work from home shows a higher proportion of those with higher educational attainment and relatively higher pay, thus raising a potential distributional issue from the short-term effects of the pandemic. Many companies able to continue will have faced reduced customer demand as those unable to work in other parts of an economy have seen their incomes fall.

The effects of the initial sharp drop in output in China in February were not just seen in China but in its trading partners, in companies in other countries that relied on intermediate inputs from China as part of global supply chains, and in countries that experienced high numbers of tourist visitors from China.⁵ As the virus has spread across the globe, the supply shock from the illness and the control measures has had wider effects on economies both directly and through significant spillover effects, with world trade falling by 1.2 per cent in January. The CPB report noted that “In this month, the spread of the coronavirus was still limited and the consequences of the coronavirus very uncertain”.⁶ The importance of these spillover effects is discussed in detail in Box B.

Figure 4. US new unemployment claims, 2020



Source: US Department of Labor.

The result of the supply shock and the control measures has been reduced incomes for some employees while others have been laid off, with dramatic consequences in some countries – the US saw 6.9 million new unemployment claims on 27 March, the highest number on record. The following week saw a further 6.6 million claims as shown in figure 4. A paper in this *Review* looks at recent unemployment trends in the US and UK (Bell and Blanchflower, 2020). In addition to these effects, the control measures have reduced retail spending for those whose incomes have not been reduced.

The virus and the lockdown measures adopted to control its spread have also created a situation of widespread uncertainty, most recently about how these measures can be lifted. Employees who are made unemployed do not know how long this situation will last, companies do not know when they might be able to operate again as normal agents and governments are seeing their debt increasing and national output shrinking, raising concerns about debt sustainability.

The effects of this uncertainty have been most prominent in financial markets. Since the end of February, yields on government bonds in most advanced economies have fallen, and in March reached historical low levels. The US 10-year Treasury bond yield fell to a record low of just under 0.5 per cent on 9 March, but has eased to 0.73 per cent on 9 April, still almost unprecedentedly low. In the US, the S&P 500 equity price index rose by about 5

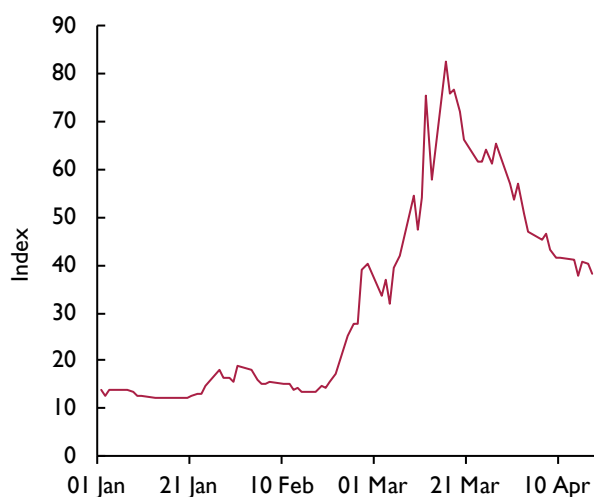
per cent from the start of the year to 19 February. But it had its largest one-day fall since 1987 on 16 March, and has had many days of substantial falls and considerable volatility. By the end of March the S&P 500 had fallen by 24 per cent from mid-February, a pattern repeated in other equity markets. The Nikkei index fell by 20 per cent in the first quarter of this year and the FTSE 100 and the Eurostoxx fell by 25 and 24 per cent respectively, with the falls centred in March and creating a negative wealth effect on consumer spending. The Vix index,⁷ an indicator of financial market volatility or uncertainty, had spikes on 12 March and 16 March which matched or surpassed those seen in the financial crisis last decade. At 10 April the Vix index had fallen back from the spikes but remained elevated, at around 40, showing a much higher degree of volatility than last year.

China had a 6.8 per cent annual fall in GDP in the first quarter of the year, the first quarterly fall in forty years, although the activity surveys for March showed a rebound and in Wuhan, the epicentre of the outbreak in China, some control measures have now started to be relaxed. In other economies that have been most substantially affected, the Banque de France has estimated that GDP fell by 6 per cent in the first quarter in France and NIESR has forecast a fall in GDP of 5 per cent in the UK, with the fall in the UK being concentrated in March after small increases in GDP in January and February.⁸ Given that the virus outbreaks and the control policies have occurred at different times in different countries, it is likely that there will be some timing differences in the reduction in economic activity across countries. It seems most likely that the second quarter of this year will see the sharpest falls in output, especially in the major advanced economies.

The key issues for the economic outlook in the short term, especially when so many countries are imposing lockdown at the start of the second quarter, are how long the lockdowns will last, and what form such lifting might take. In early April, the only guide to this issue for most countries is China where the lockdown of Wuhan has now started to be lifted, some 8 weeks after it was first imposed. In this economic outlook we have assumed that the lockdowns in countries last for a full quarter, generally the second quarter of this year, and then are gradually relaxed. We assume that by the first quarter of 2021 all restrictions will have been lifted. Economic activity falls this year but rises again in 2021.

Our assumption is, however, subject to considerable uncertainty, with some epidemiologists having argued that the lockdowns might need to be maintained for

Figure 5. CBOE volatility index –Vix index



Source: Chicago Board Options Exchange (CBOE).

a considerably longer period to prevent a recurrence and to ensure that demand for healthcare resources and services are not over-extended, and that, without a vaccine to provide immunity, the coronavirus outbreak could recur periodically. Some implications of these issues for the potential short-term economic outlook are examined in the risks section of this chapter.

Economic policy measures taken to shield economies

While governments have not taken identical measures to try to protect people and companies from the economic effects of the virus and control measures adopted to combat the spread of the virus, the measures taken have been similar. Central banks have, as in the financial crisis last decade, slashed policy interest rates to reduce the burden of debt interest repayments for borrowers. Because in many advanced economies interest rates had barely risen over the past decade from (close to) the zero lower bound that was reached in the financial crisis, the boost from these actions will not be substantial. So central banks have re-invigorated their programmes of quantitative easing and have gone further than previously, for example in the US by preparing to purchase BBB grade bonds.

In the financial crisis, governments typically increased borrowing substantially to rescue banks, for additional spending as unemployment rose and as tax revenues fell. Between 2007 and 2011, the public sector debt to GDP ratio for advanced economies rose from 70 per cent to 101 per cent. This crisis has seen a different type of increase in government borrowing, with additional funds being provided very rapidly and directed at guaranteeing loans to non-financial companies to maintain businesses so that the economy can be restarted once the need for lockdowns ends and supporting households who have lost income and with government debt to GDP ratios likely to rise by around 10 percentage points or more. There is also an anticipation of a very rapid rise in unemployment and claims on social welfare benefits as jobs are lost through an imposed shutdown of economic activity. Box B shows that trade and financial channels play an important role by amplifying shocks across the world economy. Co-ordinating a global fiscal policy response can be particularly beneficial for open economies with limited fiscal space (Triggs, 2018).

Financial markets have generally reacted positively to such policy measures, even though one result of the fiscal support will be higher government debt and debt to GDP ratios, with the advanced economies likely to see debt to

Table 2. Recent directions in monetary policy interest rates^(a)

	Jan. 2020	April 2020	Change	End 2009
USA	1.75	0.25	↓	0.25
Euro Area	-0.50	-0.50	-	0.25
Japan	-0.10	-0.10	-	0.10
Canada	1.75	0.25	↓	0.25
UK	0.75	0.10	↓	0.50
China	4.15	3.85	↓	5.25
India	5.15	4.40	↓	4.75
Brazil	4.50	3.75	↓	8.75
Russia	6.25	6.00	↓	6.00
Australia	0.75	0.25	↓	3.75
Turkey	11.25	8.75	↓	6.50

Source: Central Banks.

Note: (a) For reference, policy rates at the end of the Financial Crisis in 2009 are shown.

income ratios increasing by around 10 percentage points or more this year, reflecting both increased borrowing and lower GDP.

Key assumptions about the coronavirus shock for the forecast

We have used the National Institute's NiGEM global macroeconomic model to estimate the impact of the coronavirus shock through a range of channels (Hurst *et al.*, 2020). In terms of the direct supply shock, this is assumed to operate through reduced hours of work, with people either being physically unable to work (due to illness, factory closures or having to 'self-isolate' in order to contain the spread of the virus). To set the scale of the shock we have assumed an infection rate of 16 per cent,⁹ that affected people are out of work for 3 months, and associated with that there is a reduction in productivity of about 4 per cent in the first quarter of infection. For the following quarter, productivity is assumed to improve by 50 per cent relative to the previous period and then return to the previously assumed base by about the end of 2021. This assumption implies that there is not a permanent negative impact on the trend capacity of output.

The main channel of the direct domestic demand shock in economies is through reduced consumer spending, private investment and destocking. Lower consumer spending will result from reduced transport activity (including domestic and international air traffic and tourism), leisure activity such as hotel stays, meals out and cinema visits, and retail shopping activity. There is already evidence of a sharp fall in car sales in several advanced economies.

As a global macroeconomic model, NiGEM does not have industry level disaggregation to consider the impact

of spending on specific sectors. However, to gauge the shock, we assume that the share of non-food and non-essential items in household expenditure is around 40 per cent, giving a negative shock of about 10 per cent to private consumption for one quarter. This demand shock was applied to all economies in the second quarter of this year (apart from China, where it is applied in the first quarter). In the subsequent quarter, household consumption is reduced by a quarter of the full impact. Given the assumption about the temporary nature of the shock, the effect of the shock dissipates by the end of this year. In addition, companies are likely to reduce sharply their spending on investment, with reduced cashflow and subsequent job losses, leading to lower incomes and spending.

A third element of the shock arises from the uncertainty created by the virus, which affects both demand and supply sides of an economy. It is represented by an increase in investment risk premia, which captures heightened risk and an adverse shock on businesses. Given the recent falls in equity markets, the increase in the Vix index and the volatility in government bond markets, which have a severity of a broadly similar magnitude to that of the financial crisis of 2008–9, a 100 to 300 basis point increase in the investment premium is assumed, which gradually reduces until the middle of 2021.

In addition to these direct shocks, economies will suffer from indirect or spillover economic effects as domestic effects reduce demand for exports and imports, including tourism, and movements in global financial markets affect economies. At the global level, spillovers amplify the magnitude of domestic shocks by roughly 60 per cent. In other words, if all countries around the world suffered a 1 per cent domestic shock, the global economy would be expected to contract by 1.6 per cent after accounting for spillovers. The results of this interconnectedness are examined in detail in Box B.

The shutting down of considerable parts of economies in affected countries is unprecedented in peace-time. To characterise a temporary lockdown of the economy, where demand as well as supply fall by comparable magnitudes, we assume additional negative shocks to trend capacity output directly and to GDP (via reduced consumption).¹⁰ These lockdowns are assumed to last for one quarter.

The government support measures, which vary across countries in their magnitude, have acted to mitigate these negative effects. Incorporating these measures reduces the fall in global GDP by around one third, as in total

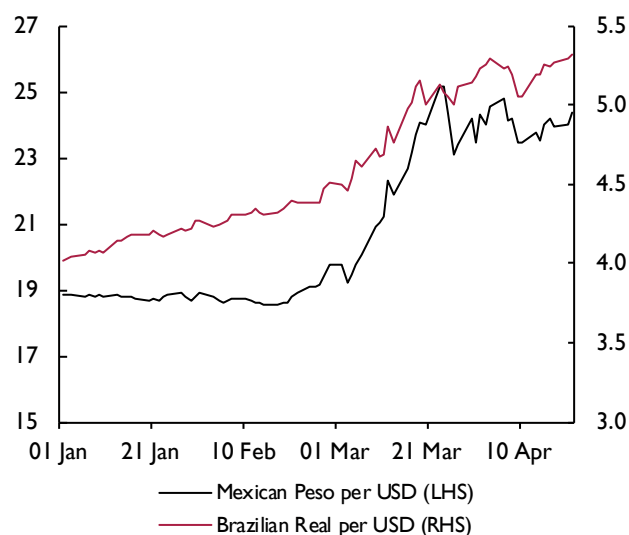
they would have boosted GDP by about 2–3 per cent. Many emerging market economies have, to date, been less directly affected by the coronavirus outbreak than advanced economies. But they have been significantly adversely affected by the indirect spillover effects from trade and from financial market movements. The US dollar appreciations of about 26 per cent since the end of January against the Mexican peso and of 21 per cent against the Brazilian real illustrate the extent of such changes.

At the same time, emerging market economies have seen record capital outflows, of around \$100 billion in two months, about three times the size seen a decade ago in the financial crisis, as assets have been moved into safe rather than risk assets and the fall in commodity prices has hit those economies that depend on commodity exports. As a consequence, the IMF and World Bank have greatly increased their emergency funding facilities (to \$100 billion and \$160 billion respectively) to provide financial support to emerging economies and the IMF has recently announced that it has \$1 trillion in lending capacity to respond to the crisis, providing balance of payments support as well as immediate debt relief.¹¹

Baseline forecast

The coronavirus outbreak came when global economic growth was at its weakest for a decade, adversely impacted by slower growth in China and India, a changed international trading background with the US having

Figure 6. US dollar exchange rate



Source: DWM/Reuters Closing Spot Rates, NIESR

introduced tariffs, and global industrial production stagnating. The Phase One trade agreement signing by the US and China in January this year, the reduction in US interest rates in 2019, and the prospective end of recessions in Argentina and Turkey, were some positive signs for the global economy entering 2020. The prospect was expected to be one of continued slow growth.

Forecast for economic activity

The coronavirus outbreak and the policy reactions to it have fundamentally changed the short-term economic outlook. We now project that global GDP could fall by 3½ per cent this year, a larger fall than in the financial crisis of -0.1 per cent. The falls in activity are expected to be widespread and exceptionally sharp, with global GDP falling by around 12 per cent in the second quarter of this year on a year-on-year basis. We assume the second quarter will be the peak of the crisis. With a rebound from the lower level of activity, based on our assumption of lockdowns ending this year, output growth could be 7 per cent in 2021.

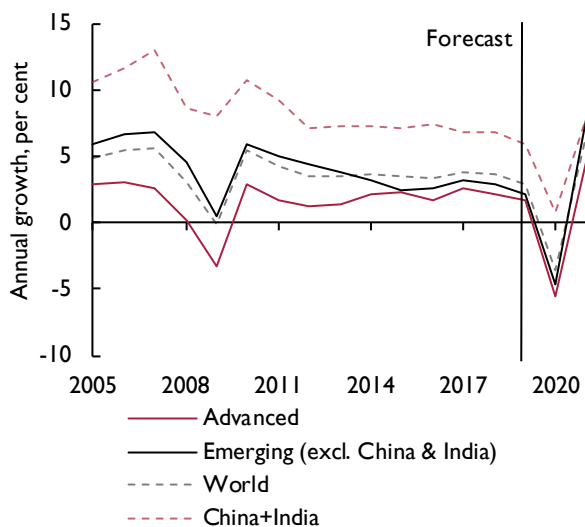
China has already seen a 6.8 per cent annual fall in GDP in the first quarter, although early signs suggest that activity will increase there in the second quarter. But it will not rebound to its pre-coronavirus level until some quarters later, when all restrictions have been lifted both there and in other economies, so that production and trade can resume on a sustainable basis. China now

accounts for around 20 per cent of global GDP,¹² and growth last year of 6.2 per cent was the slowest for 29 years. We anticipate that the effect of the coronavirus will substantially reduce annual growth in China this year to 2¼ per cent.

In the US, the ending of the boost to growth from the fiscal stimulus last year and the increase in interest rates as part of policy normalisation slowed growth to 2.3 per cent last year. The US economy, like the Euro Area, is expected to suffer the largest part of the hit to economic activity in the second quarter of this year and GDP is forecast to fall by 5½ per cent this year before rising by 4¾ per cent in 2021. The Euro Area is projected to see a fall of 5¾ per cent in GDP this year, with a rebound of 5 per cent next year. The levels of GDP in both the US and the Euro Area are expected to be lower in 2021 than previously forecast. Within the Euro Area, large GDP falls this year are projected for Italy (-7¼ per cent), Germany (-5½ per cent), and France and Spain (both -5¼ per cent).

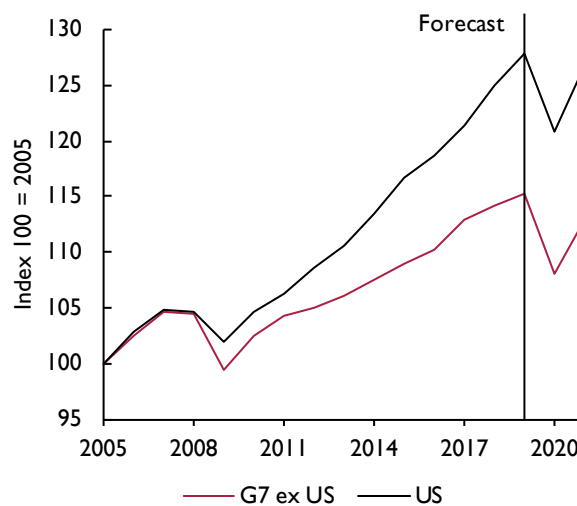
The advanced economies are forecast to have a fall in GDP of 5½ per cent this year, and emerging economies a reduction of 2¼ per cent, but this figure includes China which is expected to see positive GDP growth for the year as a whole. Excluding China and India, emerging economies are forecast to see a fall of 4½ per cent, as shown in figure 7. For the past five years these emerging

Figure 7. GDP growth in advanced and emerging economies



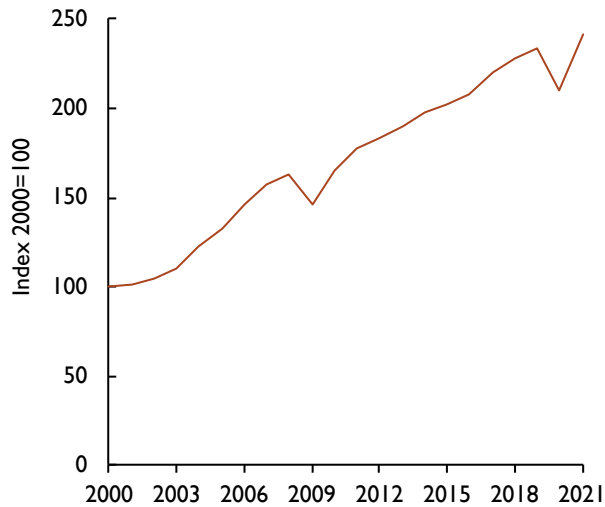
Source: NiGEM database and NIESR forecast.

Figure 8. GDP in G7 economies (level, index)



Source: NiGEM database and NIESR forecast.

Figure 9. World trade index (2000=100)



Source: NiGEM database and NIESR forecast.

economies have grown at a similar pace to the advanced economies but well below the pace of the two largest emerging market economies, China and India.

Part of the slowdown in annual GDP growth experienced by these economies as a group has been due to periods of recession in economies including Argentina, Brazil, Russia, South Africa and Turkey. These emerging economies will be affected by spillover effects from the falls in activity in the advanced economies as well as the effects of the pandemic in their own countries, as described in Box B.

Within the advanced economies, annual output growth in the US outpaced that of the other G7 economies as a group almost every year in the past decade, just as it did in the first decade of this century, as shown in figure 8. Even though we anticipate US GDP falling this year by 5½ per cent, the other G7 economies are also expected to see substantial output falls, including a fall of 6¼ per cent in Japan. The US has been able to respond more strongly with conventional monetary policy than the Euro Area and Japan because the earlier policy of normalisation had provided the space to reduce policy interest rates more. It has, however, suffered more reported cases of infection than the other G7 economies combined and has seen an exceptionally rapid rise in unemployment claims.

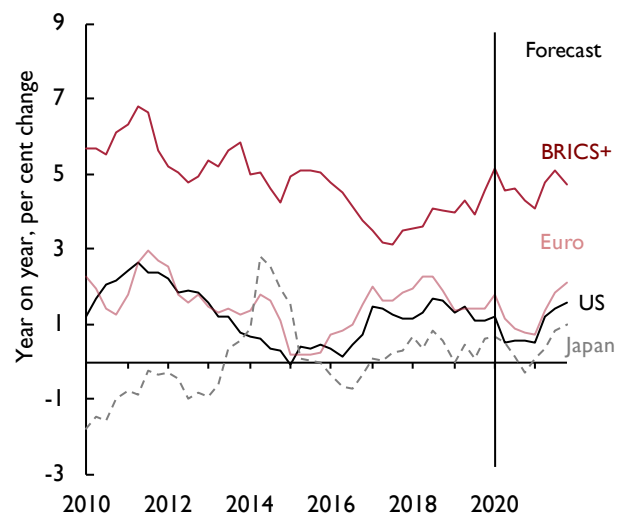
Global trade growth stuttered last year to its slowest pace since the financial crisis and initial data shows a

first annual fall in January. Our forecast is for the first fall in world trade since 2009, with a similar substantial fall to that during the financial crisis, of 10 per cent, with, as in 2010, a rebound in growth in the following year, as shown in figure 9. After the effects of the shock are over, our forecast is for world trade to grow by around 3½ per cent a year, similar to the average pace in the past five years.

The sudden fall in economic activity has resulted in some very rapid increases in unemployment, with US weekly unemployment spiking in an unprecedented way (see Bell and Blanchflower in this *Review*). The forecast anticipates that other countries that have been affected by the coronavirus and lockdown measures will start to experience substantial short-term increases in unemployment too. The unemployment rate in the US is projected to rise from 3.7 per cent to 8¼ per cent this year. European economies, with different government support policies and social provisions, will also experience a very abrupt change from the slow downward trend in unemployment rates.

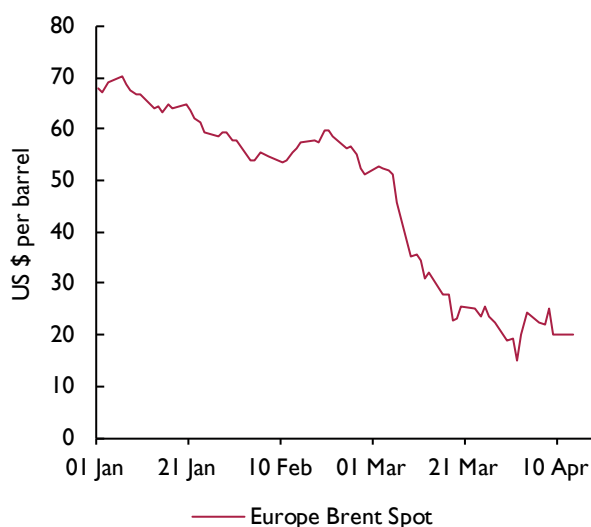
Given our assumption that the economic dislocation will be temporary, as economic activity picks up when the lockdown measures are lifted, unemployment rates should start to fall next year. However, there is considerable uncertainty over the timing of this effect, reflecting both continued economic uncertainty and some lagged response in hiring after the shock dissipates.

Figure 10. Inflation



Source: NiGEM database and NIESR forecast.

Figure 11. Crude oil prices



Sources: EIA, Thomson Reuters, and NIESR.

Forecast for inflation

Low inflation, relative to both the experience before the financial crisis and to inflation targets, has been the norm in the advanced economies since the financial crisis. The continued economic expansion, which has brought lower unemployment rates and reduced estimated output gaps in many economies, and may have led to increased capacity utilisation, shortages of certain types of skilled labour and rising wage pressures in some economies, has not, as yet, resulted in higher price inflation. To the extent that, with slow productivity growth, rising wage pressures lead to rises in unit labour costs, they could put upward pressure on inflation, as could the increases in tariffs on traded goods (see Naisbitt and Whyte, 2020).

For emerging economies the decline in annual inflation from the start of the last decade ended in 2017, since then inflation has picked up slightly. Despite this, inflation in the wider group of BRIC economies last year was below that in 2015 and the earlier years of the decade as shown in figure 10 (see Mao *et al.*, 2019). There have been some exceptions to this general pattern of low inflation in countries where specific domestic circumstances have been major considerations, notably Argentina and Turkey, but these inflationary pressures appeared to be easing as 2019 ended.

Even with the contraction of supply in the current crisis, the scale of the reduction in demand is expected to lead

to a reduction in OECD price inflation in the short term, with annual inflation expected to fall slightly from 2.1 per cent last year to 2 per cent. One additional factor that will reduce inflation is the dramatic fall in the price of oil that has resulted from a combination of sharply lower demand and a political disagreement between OPEC and Russia about restricting oil supply. At \$26 per barrel at the end of March, oil prices have fallen by around 60 per cent in the first quarter, as shown in figure 11, and have since dropped to their lowest levels for two decades. However, with greatly reduced vehicle traffic on the roads in the major advanced economies, much of very short-term potential cost savings to consumers are not being realised and oil stocks are high, which has recently led to further price falls and considerable price volatility. Recovering economic activity in 2021 may place some slight upward pressure on inflation.

Medium-term outlook

Since the financial crisis, the pace of average annual GDP growth in the advanced economies has been slightly slower than before the crisis despite policy interest rates being held at ultra-low levels for an extended period in several economies. For emerging market economies, the slower average annual pace of growth between 2011 and 2019 (4.9 per cent) than between 2000 and 2007 (6.7 per cent) is almost entirely due to the slowdown in the pace of growth of the Chinese economy (7.5 per cent in the later period compared with 10.6 per cent previously) as the development phase of that economy has altered.

The central assumption of this economic outlook is that the effects of the coronavirus outbreak, and the measures taken to tackle it, prove to have only a temporary effect on global output. For the medium term, we continue to expect that the rate of GDP growth in the advanced economies will remain below that of the pre-financial crisis period. With annual GDP growth in China expected to slow further, our medium-term forecast projects global GDP growth running at around 3½ per cent a year, slightly slower than in the period from 2011 to 2019 but notably lower than the average 4.2 per cent a year in the decade leading up to the financial crisis.

Our expectation for the medium term is that GDP growth in the advanced economies will be around 2 per cent a year, with emerging economies (including China) at around 4 per cent a year. As a result, the emerging economies, China and India in particular, will continue to see a growing share of the level of global output.

With this profile for growth, our forecast projects inflation remaining relatively low. Argentina and Turkey

would, if they are successful in reducing their recent very high rates of inflation, contribute to an overall reduction in the pace of inflation in the medium term. The context is more one of inflation stabilising around the 2 per cent target rate that many economies have adopted, rather than there being a marked change to recent performance trends.

Risk issues for the global forecast

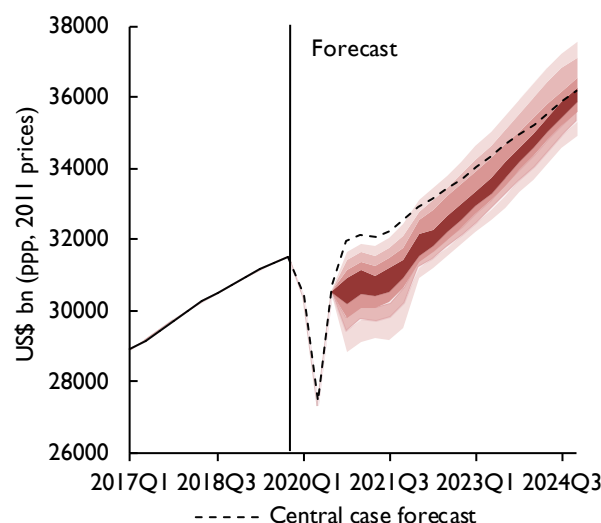
In the wake of the coronavirus pandemic and the extraordinary restrictions that have been placed on ordinary life by governments worldwide to fight the disease, both the short-term economic outlook and the principal risks around that outlook have changed radically. Previous concerns about slow growth, tariffs and global trading conditions, and the possibility of rising oil prices from tensions in the Gulf have receded from view as the immediate economic landscape has changed.

The key short-term economic risks now concern the effects of the pandemic, the policy control measures taken in reaction to it and the effectiveness of the support policies introduced. Our forecast is predicated on the assumption that the economic lockdowns will last for about one quarter and then restrictions will be lifted gradually. This assumption is in line with how governments appear to be reacting and, in early April, discussing exit strategies, and the recent moves by the Chinese government to allow increased mobility within Wuhan. But other scenarios are clearly possible.

There is great uncertainty around any assumptions about the progress of the pandemic. No-one knows just how people will react to the restrictions being lifted, whether the virus will recur (a second wave) or whether an effective vaccine can be developed and, if so, within what time frame. It is quite possible that lifting restrictions will just mean that the factors that have suppressed the virus will disappear and the virus will take hold again. At that point, reimposing the control restrictions would risk sending economies into a new downturn. In such an eventuality, there would be less scope for additional monetary and fiscal measures to shield households and companies from the adverse economic effects than there has been this year. So the economic risks have a downside bias.

The main-case forecast assumes that current suppression measures can be eased without a recurrence of the virus. But there is a significant risk to this conditioning assumption. Figure 12 provides an assessment of the size of the downside risks arising from recurrences of

Figure 12. Global GDP projection and scenario with additional downside risks associated with Covid-19 recurrence from 2020Q4 (level)

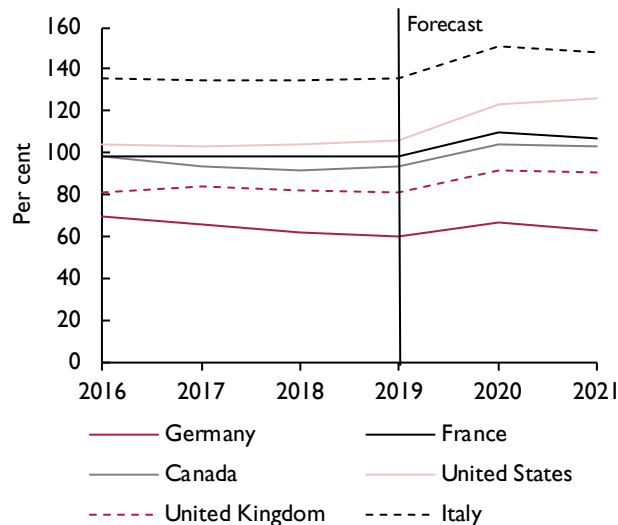


Source: NiGEM database, NIESR forecast and NiGEM stochastic simulations.

the virus in different countries from the start of 2021. Such a return of the virus is not assumed in our main case forecast. Stochastic simulations of the NiGEM model are used to assess the effect of a 20 per cent chance of the virus returning in each country with half of its previous impact. The effect at that time on GDP in each country is dependent on both whether the virus returns there and the extent to which the country is exposed to lower activity in other countries because of the return of the virus there. The figure shows the scale of the downside risk to global activity of this possibility.

It is possible that the short-term economic outcome could be better than the base forecast. With many economies in lockdown, we have limited evidence of just how much of 'normal' economic life is continuing. Many service sector employees are able to work from home and some activities that required face-to-face contact are now being done remotely. It is possible that output in the worst-affected quarter might be less weak than projected and that, combined with the possibility that the unprecedented economic shielding measures could provide more support to households and businesses than anticipated, could lead to lower GDP losses than in the base case projection. If an effective vaccine is developed in a super-fast time, it is also possible that confidence about a return to pre-virus levels of economic activity could boost activity later in this year and into 2021.

Into the medium term, it is possible that the economic policy measures taken in the crisis could change the

Figure 13. Government debt as a share of GDP (per cent)^(a)

Source: NiGEM database and NIESR forecast.

Note: (a) Shares of current year GDP.

future development of economies. Higher levels of unemployment may not unwind as rapidly as assumed, especially if companies are forced by their financial positions to reconsider the scale of their operations, or if the combination of the shock and high debt exposure leads to significant corporate defaults. In a broader context, the experience of social distancing and the lockdown may change individuals' attitudes to working and spending, particularly over international travel, and companies may change their policies with regard to holding stocks or sourcing their supply chains.

Governments will emerge from the crisis with higher debt (and higher debt-to-GDP ratios) than they had previously planned (as shown in figure 13) and will, in the medium term, need to decide whether to remain at higher debt levels or seek to reduce them through higher taxation or lower spending. Looking at the post-war period, financial repression may be the resulting course, especially if populations demand higher government spending on health measures to provide additional protection against a possible recurrence of the virus. This could result in a prolonged period of ultra-low interest rates and a tendency to slightly higher inflation to enable the debt burdens to reduce gradually.

One other possible area of government policy concerns the rise of tariffs. While the focus on the US tariff increases over the past 18 months has been overtaken

by the public health emergency, despite the Phase One US-China agreement that was signed in January, as the global economy recovers, trade tensions could re-surface and the trade war could re-ignite, restricting world trade growth. With some global production value chains already having been adversely impacted by the uncertainty over future tariffs, there may be increased pressures on US companies to re-shore production, perhaps for national security reasons.¹³ The risk that US tariffs will extend to other countries remains (see Kara *et al.*, 2019) and our previous estimates, using our NiGEM model, show negative effects of US tariffs on global GDP growth (Liadze, 2018a and b, Hantzsche and Liadze, 2018, and Liadze and Haache, 2017a) even without taking into account any effects from heightened uncertainty on business investment (Caldara *et al.*, 2019). The possibility of emerging from the pandemic into a renewed trade war presents a clear downside risk for the medium-term global outlook.

Possible policy responses to risks

The policy response to the Covid-19 pandemic in the advanced world has been swift and synchronous but largely uncoordinated. Collectively the measures taken will deliver positive spillovers by saving lives everywhere and supporting economic activity but, going forward, given the scale of the shock and the risk of long-term scarring, there is a compelling case for international policy coordination to restore both public health and the health of the global economy.

The immediate priority is to save lives locally by fighting the spread of the infection and supporting households through medical care and disaster relief and also to support businesses and the financial markets during this period of induced coma. Fiscal policy has played a dominant role in developed countries such as Australia, France, Germany, Italy, Japan, Spain, UK and the US. That fiscal support will cushion the impact of the pandemic in each of these countries and the collective action will serve to amplify the benefits as shown in Box B.

The US Federal Reserve and the Bank of Canada have had the space to lower the main overnight policy rate by 150 basis points but, in general, central banks have had to rely more on asset purchases because their policy rates were already close to the lower bound. These interventions have helped to restore confidence in domestic and international financial markets and the real economy rather than raise aggregate demand *per se*. One notable exception to the uncoordinated action is the provision of US dollars to a group of central banks through swap lines with the Federal Reserve.

The response of emerging economies has been relatively muted in comparison even though many countries face the double shock of the pandemic and falling commodity prices. The need for immediate action is best captured by data from the Institute of International Finance (IIF) that points to “a sudden-stop in capital flows to the emerging markets” (Lanau and Fortun, 2020). The outflow of capital in the first quarter of 2020 was the largest from emerging market economies ever.

Sovereign debt levels will rise across the world as a result of this pandemic. There is a wide spectrum of indebtedness among advanced economies, with economies such as Australia and Germany, that started with low levels of debt, likely to face little difficulty with debt servicing. At the other end of the spectrum is Italy, which entered the pandemic with a government debt-to-GDP ratio in excess of 130 per cent and low potential economic growth. A low inflation environment will allow central banks to intervene in countries like Italy, which can then live with high levels of debt in much the same way Japan has for the past two decades. The monetary stimulus announced by the European Central Bank in March (€750 billion asset purchase programme of private and public sector securities through the Pandemic Emergency Purchase Programme (PEPP)), is an example of indirect central bank support in a low inflation environment. Other advanced economies, such as the UK and France, will face the prospect of tolerating higher fiscal debt or embarking on another fiscal consolidation plan at a time when electorates are suffering austerity fatigue.

The case for international coordination

Having responded in a largely uncoordinated manner so far, there are compelling reasons for the international community to pull together with a clear agenda that can address the urgent needs to stem the spread of the virus

and maximise the benefits of the various relief packages. Policy also needs to be developed to ensure that the longer-term scarring effects of this crisis are minimised. At the global level, the short-term priority should focus on testing and reducing contagion rates (Blanchard, 2020). Developing countries are facing simultaneous shocks related to Covid-19, falling commodity prices and capital flight. International institutions, such as the IMF, are responding to financing requests from more than 100 countries through its Rapid Financing Instrument and Rapid Credit Facility. The international community could, with the help of the World Bank, consider debt write-offs for the most indebted economies and other international financing organisations, such as the IFC and EBRD, can complement this effort by immediately supporting target groups such as small and large industry, farmers, infrastructure and trade and set up a pipeline of post-crisis investment that will help restore confidence in these economies (Lee, 2020).

Similar efforts are underway for struggling developed economies. A good example of that is the €540 billion support package announced by the EU via the European Stability Mechanism. These funds are specifically earmarked for companies and workers.

The covid-19 pandemic has also brought into sharp focus the risk of countries turning away from multilateral institutions and global trade under the pretext of self-sufficiency and public health concerns. In this sense, global leaders now have the responsibility to safeguard the existing web of relations that has brought economies together post-Bretton Woods and built prosperity. Keeping international trade open is crucial for the maximisation of resources for a rapid recovery globally. Even more importantly, countries need to resist the impulse of stopping trade concerning healthcare and the exchange of scientific information.

Box A. Vulnerability from debt in the coronavirus crisis

by Barry Naisbitt¹

Introduction

In the decade since the financial crisis, the major economies have experienced a prolonged period of low inflation during which policy interest rates in several economies remained at or close to the zero lower bound. Private sector debt has increased over the past decade, creating potential vulnerabilities.² The effects of the coronavirus shock and the measures taken to combat the virus have created a severe cashflow shock to companies, issues about the availability of funds for re-financing, and an income shock to households. The purpose of this box is to provide insight into this vulnerability by examining recent trends in debt across sectors and countries.

Recent increases in debt

The advanced economies as a whole³ have total debt outstanding⁴ of a record \$129 trillion, with an increase of over \$4 trillion (3.5 per cent) in the year to 2019Q2 and an increase of 27 per cent over the past ten years. Emerging market economies⁵ have debt amounting to \$58 trillion, up \$3.5 trillion over the past year (an increase of 6.6 per cent). Their almost 200 per cent increase in debt over the past ten years has been more marked than in the advanced economies.

The overall figures for indebtedness combine debts raised by the public sector, households and non-financial companies. Table A1 shows the changes in indebtedness of these three sectors over the past five years in major advanced and emerging economies. The overall pattern is of rising indebtedness in all three sectors in almost all the economies. The 'debt problem' does not have a common form across types of countries. Canada and Australia, for example, have a substantially greater exposure to private debt issues than Italy or Japan, and France and Japan have greater exposures to the company sector than to household debt. The recent rise in debt by non-financial companies has been more substantial in the emerging than the advanced economies but, despite these increases, the debt to GDP ratios of non-financial companies in the emerging economies are still lower than in the advanced economies, with the striking exception of China.

Recent trends in private sector debt

For central banks' concerns about maintaining financial stability, the extent of private sector debt is the primary issue. Household debt-to-GDP levels in several major economies are now lower than just before the financial crisis, as shown in figure A1. These are being supported by interest rates running at historically low levels and the expectation that income growth will continue. Canada and Australia stand out as economies in which household sector debt-to-GDP ratios have risen substantially since the financial crisis, albeit with some stabilisation since 2016.

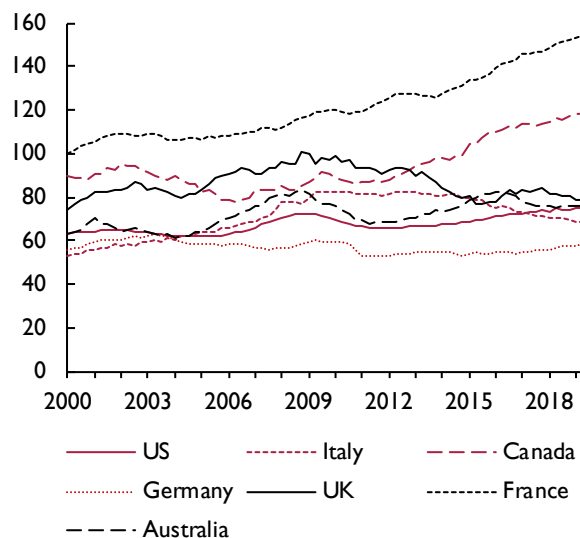
The coronavirus crisis and the policy responses to it have revealed that the immediate concern for debt affordability is not about interest rates, but about income. The effects of the economic lockdowns have led to businesses closing temporarily and furloughing employees or to people losing their jobs. The reduction in incomes has brought into focus the importance of continuity of income for debt service. These effects have been partly mitigated in some countries by the ability of certain borrowers to request mortgage holidays and government income replacement schemes for furloughed employees, but the risk is that many will see not just their current income reduced but their future income prospects reduced too. If higher debt has been predicated on expectations of continued future income growth, the disruption to incomes is likely to lead to debt problems.

Table A1 shows that in most of the economies detailed, the debt-to-GDP ratio of the non-financial corporate sector is higher than that of the household sector. The range of exposure differs across countries, as shown in figures A1 and A2. Over the past five years company indebtedness has increased in nearly three quarters of the economies included in table A1. This recent growth in the indebtedness of the non-financial corporate sector has been particularly marked in emerging economies. The rise in corporate debt in China has been cited by the IMF as a potential cause for concern.⁶ In the US the growth of leveraged loans over the

Table A1. Government and non-financial private sector debt-to-GDP ratios (%)

	General government		Households		Non-financial companies	
	2014	2019	2014	2019	2014	2019
<i>Advanced economies</i>						
Canada	76.9	79.4	92.0	100.8	97.5	118.7
Australia	29.2	37.1	111.9	119.3	73.9	75.7
US	95.6	96.3	80.6	75.0	67.7	75.0
UK	85.2	85.5	83.6	84.0	81.0	79.1
France	95.6	99.5	55.5	60.6	129.2	154.1
Italy	137.9	138.0	42.6	41.3	81.1	68.8
Germany	82.6	67.8	54.6	54.0	55.2	58.9
Japan	197.2	204.1	57.9	58.7	98.8	101.6
<i>Emerging economies</i>						
Brazil	59.3	87.0	26.6	28.3	42.5	42.3
Mexico	32.0	35.3	14.7	16.3	20.7	25.8
India	66.7	67.9	8.9	11.6	52.0	44.4
South Africa	47.0	60.3	38.0	34.0	32.2	40.0
Russia	12.7	14.8	17.0	18.1	43.9	45.4
Turkey	29.8	32.1	18.7	13.9	53.4	68.9
China	38.7	52.4	41.8	54.6	149.5	154.5

Source: Bank for International Settlements, total credit statistics, November 2019. Figures are for 2014Q2 and 2019Q2. The darker shading in the table shows where debt-to-GDP ratios are higher than the preceding period.

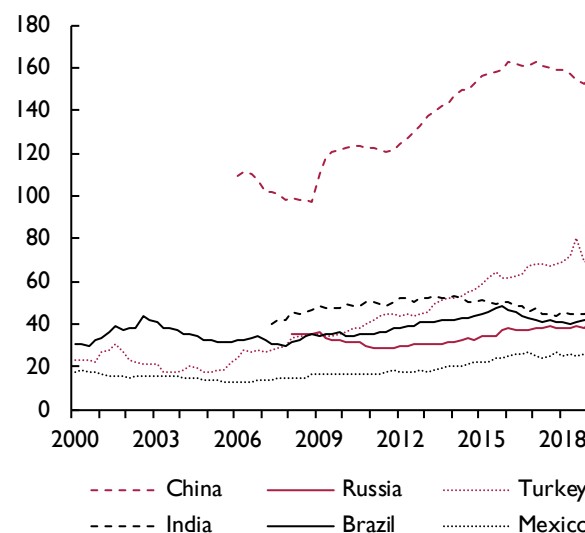
Box A. (continued)**Figure A1. Advanced economies – corporate sector debt to GDP ratios (%)**

Source: Bank for International Settlements, total credit statistics, November 2019.

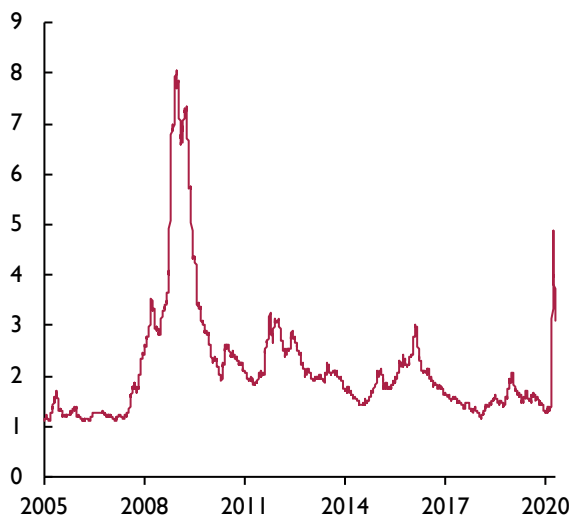
past five years has been pointed to as a potential cause for concern to financial stability as it increases the vulnerability of companies to an adverse shock.⁷

In an environment of elevated corporate indebtedness and with global corporate default rates already above their long-term average (McKinsey, 20218), the sudden shock of reduced product demand has hit cashflow and hence, even though policy interest rates have been reduced, the ability to service loans as well as to cover ongoing business costs. In addition, corporate bond spreads have spiked. As figure A3 shows, BBB grade corporate bond spreads have risen suddenly and sharply, with echoes of the financial crisis, to their highest level since the financial crisis. There have been a range of business support schemes announced by different governments but some major industries (e.g. airlines) have faced an extreme drop in income that may be protracted. The combination of high corporate indebtedness and reduced cashflow threatens an increase in company defaults and workforce redundancies. These actions could then reinforce the effect of reduced cashflow on a different set of companies and is likely to lead to economic policy intervention in order to prevent defaults.

Companies in emerging market economies are also facing an additional aspect because of the importance of foreign currency (US dollar) denominated debt that companies have and the sharp depreciations that emerging market economies have experienced. As a consequence, there will be increases in the domestic cost of the foreign currency debt repayment. There is not a uniform pattern across countries. In Turkey, over 25 per cent of government and corporate debt is dollar denominated and Mexico and Brazil are approaching 20 per cent. In the three months to end-March, the currencies of these three economies depreciated by 10 per cent, 30 per cent, and 25 per cent respectively against the US dollar. While China has a high level of corporate indebtedness, it has a low percentage of US dollar denominated debt (less than 10 per cent).

Figure A2. Emerging economies – non-financial corporate sector debt to GDP ratios (%)

Source: Bank for International Settlements, total credit statistics, November 2019.

Figure A3. US BBB corporate index option-adjusted spread (%)

Source: St Louis Federal Reserve, economic database.

Box A. (continued)

Issues arising from the continued increase in debt

Indebtedness is now higher in almost every major economy than five years ago and households and companies are facing a reduction in income. The adverse shock from the coronavirus outbreak could mean that the high level of indebtedness might exacerbate the downturn and lead to a wave of company defaults, so leading to a prolonged period of slower growth in the subsequent recovery phase. If household and corporate borrowers have not allowed an adequate buffer in their finances, then it is possible that the falls in daily cashflow and increases in interest rate spreads could lead to defaults rising quickly. Depending on the length and strength of the current severe fall in economic activity, it is possible that measures such as debt repayment breaks or write-downs may be needed to prevent company defaults.

The importance of debt obligations in the private sector has been brought into prominence by the effects of the coronavirus and the various policies introduced to support economic activity. The policy response by governments that has been widely seen will increase public sector debt substantially, with the management of this increase in debt likely to be a critical issue for the global economy in the medium term.

NOTES

- 1 The author is grateful to Jagjit Chadha and Garry Young for helpful comments on an earlier draft.
- 2 See, for example, Bank of England (2019), International Monetary Fund (2019), Kose *et al.* (2020) and Naisbitt (2018a, b).
- 3 The Advanced Economies grouping in the Bank for International Settlements (BIS) statistics is defined as Australia, Canada, Denmark, the Euro Area, Japan, New Zealand, Norway, Sweden, Switzerland, the United Kingdom and the United States.
- 4 BIS total credit statistics for 2019Q2. Total debt is the sum of Government, Household and Non-Financial Corporation debt.
- 5 The emerging economies group defined by the BIS includes 21 countries. See Dembiermont *et al.* (2013).
- 6 See International Monetary Fund (2015).
- 7 Bank of England (2019).
- 9 International Monetary Fund (2019), *Global Financial Stability Report*, October. It noted that, “The corporate sector weaknesses are primarily concentrated in small and medium-sized firms and in large Chinese firms, including state-owned enterprises”.

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Box B. Quantifying the global macroeconomic spillovers of illness and lockdown measures

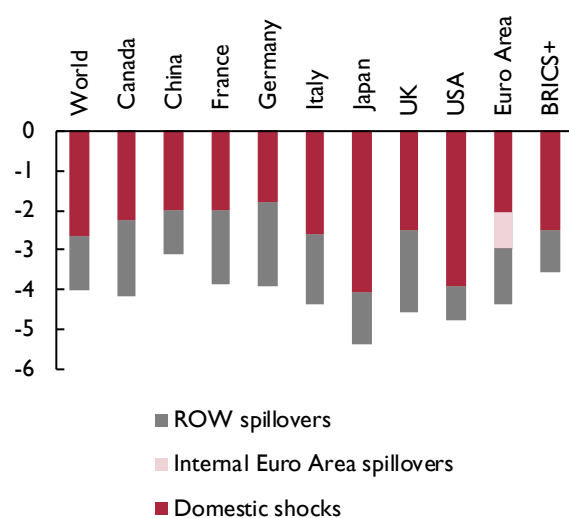
by Dawn Holland and Iana Liadze¹

The Covid-19 pandemic has delivered a shock that is truly global in nature. Cases of the virus have been reported in nearly every single country and territory in the world. At least 135 countries across the globe, including all of the world's largest economies, have introduced some form of containment measures or lockdowns.² The global nature of the shock has greatly amplified its economic consequences, with an abrupt drop in the movement of people, goods and services across borders, as well as an unprecedented withdrawal of capital from emerging markets (Institute of International Finance, 2020). The global disruption is driven partly by the direct impact of lockdown measures on cross-border flows, and partly by the drop in domestic demand within each country, which in turn has depressed demand for imported goods and services from the rest of the world. The two forces compound each other, and the losses suffered in each individual economy have been greatly exacerbated by spillovers from shocks faced in the rest of the world.

This Box seeks to quantify the order of magnitude of this amplification of the shock via global spillovers. The assessment is carried out through a series of scenario studies with the National Institute's Global Econometric Model, NiGEM. We adopt, as our illustrative global scenario, the preliminary assessment of the possible economic impact of the coronavirus outbreak detailed in NiGEM Observations No. 18 (Hurst, *et al.*, 2020). This illustrative global scenario applies shocks to both the demand and supply sides in all countries and regions across the world. In order to isolate the economic impacts driven by domestic shocks from global spillovers driven by economic downturn in the rest of the world, the shocks in the illustrative scenario are run in one country/region at a time, creating a series of 51 individual country/regional scenarios. The loss of output in each country that can be attributed to global spillovers is then uncovered as the difference between the impact on GDP in the country-specific scenario from that in the global scenario. Total global spillovers are then calibrated as the sum of spillovers from each of the 51 individual scenarios.

Figure B1 decomposes the first-year impacts from the illustrative global scenario on GDP in major economies into the part attributable to domestic shocks and the part attributable to global spillovers. At the global level, spillovers amplify the magnitude of domestic shocks by roughly 60 per cent. In other words, if all countries around the world suffered a 1 per cent domestic shock, the global economy would be expected to contract by 1.6 per cent after accounting for spillovers. At a given point in time and

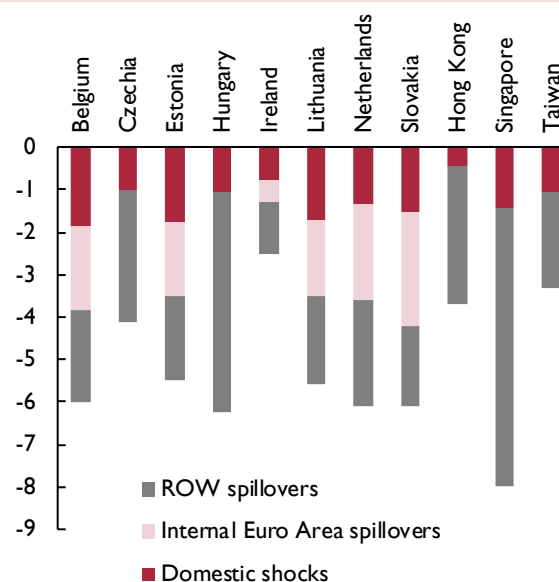
Figure B1. Decomposition of first-year GDP impacts (per cent difference from base)



Source: NiGEM simulations.

Note: The aggregate impacts are aligned with Figure 1 in Hurst *et al.* (2020).

Figure B2. Small open economies: decomposition of first-year GDP impacts (per cent difference from base)



Source: NiGEM simulations.

Box B. (continued)

for a given set of trade linkages, global spillovers are broadly linear with respect to demand within NiGEM, and the results can be scaled up accordingly. These results are broadly in line with those reported in Kohlscheen *et al.* (2020), who suggest that output losses suffered in emerging market economies would be only between one-half to two-thirds as large if advanced economies had been spared from the shock.

In practice, some countries are more exposed to spillovers than others, for example, those that are more deeply embedded in global trade networks and supply chains, or those that are more closely connected to the countries that are suffering most acutely. In the Euro Area, the world's most integrated trading bloc, global spillovers more than double the impact of the domestic shocks, with nearly half of the spillovers coming from internal spillovers within the Euro Area and the remainder from the rest of the world. For many of the smaller, very open economies in Europe spillover effects dominate the domestic impacts, with spillovers accounting for more than double the magnitude of the domestic shock on its own (figure B2). The same holds true in East Asia for smaller economies that are deeply embedded into regional value chains, such as Hong Kong, Singapore and Taiwan.

On the flipside, mitigating macroeconomic policy measures across the world are also bringing positive economic spillovers. Emergency fiscal measures that have been introduced to date to soften the downturn in aggregate demand are expected to offset more than 2 percentage points of the potential decline in world GDP. The magnitude of global spillovers strengthens the call for coordinated policy action across the major economies, which can significantly amplify the effects of policy measures in individual countries.

The analysis in this Box measures global spillovers from the impact of illness and lockdown measures on domestic demand. In the current circumstances, these are likely to be exacerbated by the closure of borders and deeper disruptions to global supply chains. The World Trade Organization expects a drop of 13–32 per cent in global merchandise trade this year (WTO, 2020). The effects of such a shock would be felt very unevenly across countries, with the most severe impacts likely to fall on those that are deeply embedded in complex value chain linkages, such as the electronics and automotive sectors.

NOTE

- 1 Thanks to Jagjit Chadha and Barry Naisbitt for helpful comments.
- 2 For details on the stringency of measures in each country see Hale *et al.* (2020).

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Prospects for individual economies

United States

With annualised GDP growth of 2.1 per cent in the final quarter of last year effectively repeating that of the previous two quarters, as it entered this year the rate of growth of the US economy had slowed from the pace of growth seen from late 2017 to early 2019. That slowing was in response to the boost from the fiscal stimulus decaying, the increase in policy interest rates by the Federal Reserve as part of policy normalisation, and the uncertainty around trade prospects that resulted from the tariff increases. The US economy entered 2020 with policy interest rates at 1.75 per cent, with the Federal Reserve having reduced them from a peak of 2.50 per cent in the middle of last year, and an unemployment rate of 3.5 per cent, a multi-decade low.

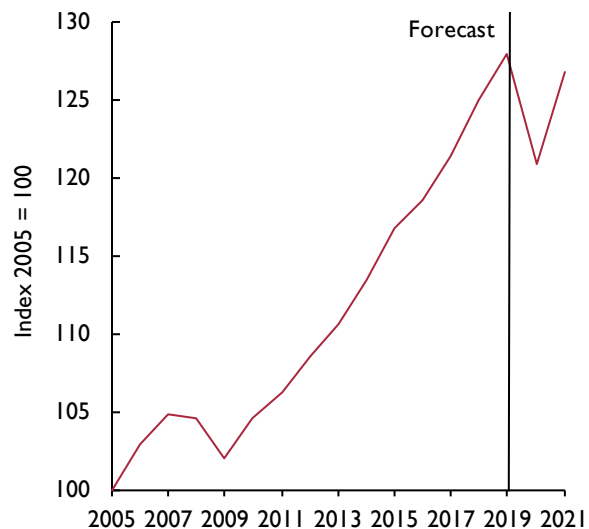
The signing of the Phase One trade agreement with China on 15 January, which was accompanied by a record level of US equity indices, and the survey indicators of economic activity and consumer confidence for January published in early February gave no real indication of the events that have unfolded since as the coronavirus crisis has taken hold. At its 29 January meeting the Federal Reserve noted that “Information received since the Federal Open Market Committee met in December indicates that the labor market remains strong and that economic activity has been rising at a moderate rate. Job gains have been solid, on average, in recent months, and the unemployment rate has remained low.”¹⁴

Just over a month later at an unscheduled meeting on 3 March, the Federal Reserve announced a 50 basis point policy interest rate cut, citing the risks caused by the developing coronavirus crisis. Just ten days later, after another unscheduled meeting on 13 March, the Federal Reserve cut the policy interest rate by 1 percentage point to 0.25 per cent. While the latest information had indicated that the labour market had remained strong in February and that economic activity had continued growing at a moderate rate, the effects of the coronavirus were beginning to be seen in the US. The effects of the virus had already been seen in China, Italy and Spain most notably and global financial conditions had been adversely affected. At the same time, the Federal Reserve announced substantial quantitative easing (QE) measures in order to maintain credit availability, by increasing its holdings of Treasury securities by at least \$500 billion and its holdings of agency mortgage-backed securities

by at least \$200 billion, thus reversing the rundown of QE. It subsequently announced temporary US dollar swap lines with leading central banks, and purchases of commercial mortgage-backed securities. In addition to these measures, Federal banking supervisors have encouraged depository institutions to use their capital and liquidity buffers to support credit to borrowers affected by the virus and the protection measures and indicated that virus-related loan modifications would not be classified as troubled debt restructurings and, in addition, Fannie Mae and Freddie Mac have announced assistance to borrowers, including providing mortgage forbearance.

The direct task of implementing health measures to control the spread of the virus rests with state authorities and the federal government. Different states have imposed lockdowns at different times (California was the first state to issue a state-wide ‘stay at home’ order, on 19 March) and the health shock has been worst in New York. The Federal government has passed the CARES Act providing support of around \$2.3 trillion (about 11 per cent of GDP) in a mix of loan guarantees, tax rebates and expanded unemployment benefits. An additional \$8 billion (0.5 per cent of GDP) has been provided for

Figure 14. US: Level of GDP (index)



Source: NiGEM database and NIESR forecast.

forms of support for those who suffer illness and for small businesses.

Even with these measures, and discussions about further packages to support the economy, economic activity fell in March and the second quarter of this year could see an almost unprecedented fall in GDP. Using our assumption that the lockdown of the economy will gradually be relaxed, the timing of which is a subject of intense political debate in the US, we project a fall in US GDP of 5½ per cent this year. The exceptionally sharp fall in GDP this year is, with a recovery, likely to lead to rapid growth next year, of 4¾ per cent. This would, however, leave the level of GDP at the end of next year below that expected before the virus hit.

While the change in the GDP outlook is dramatic, the labour market is likely to see even more dramatic change. After steady falls from a peak of 10 per cent in October 2009 to a low of 3.5 per cent in December, the lowest rate since 1969, the unemployment rate is set to rise sharply this year, to average around 8.5 per cent. Dramatic increases in weekly unemployment claims have already been seen as the lockdown bites and businesses close. Total nonfarm payroll employment fell by 701,000 in March, and the unemployment rate rose to 4.4 percent. These changes reflect the effects of the coronavirus and efforts to contain it. Employment in leisure and hospitality fell sharply, with smaller job losses in other industries. As output recovers, our expectation is that the unemployment rate will fall too, but not back

to its pre-crisis level, to 6 per cent in 2021, still well above its level before the crisis.

The Federal Reserve has been assisted in its ability to take action by inflation remaining subdued. The rise to 2.5 per cent in January in annual CPI inflation, the highest since October 2018, has not been sustained, and annual CPI inflation fell to 1.5 per cent in March, well within the official target range. While there may be some volatility in inflation measures in the short term, lower oil prices are likely to keep inflation low and our forecast is for inflation of around 1 per cent and 1½ per cent this year and next, respectively.

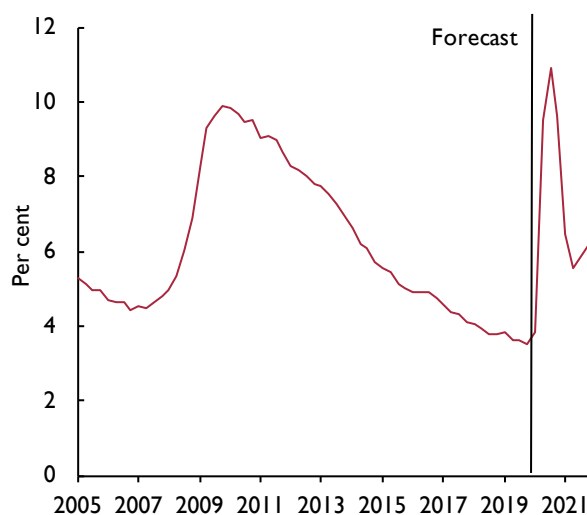
While the trade war with China appears to have been settled with the Phase One agreement, and the virus outbreak is the top priority issue, in the medium term there remain potential tariff disputes with the Euro Area and the possibility of the further tariffs on China. As a consequence, over the medium term, trade uncertainty is likely to return as an issue for business.

Canada

As a commodity producer, Canada is facing two major shocks – the fall in oil prices and the dislocation caused by the global pandemic. The sharp drop in oil prices has had a very large negative impact on investment in the oil and gas sector. The number of oil rigs has halved since the start of this year according to data from the Bank of Canada and investment could fall further if the price of oil does not recover. Like everywhere else, the immediate shock to the economy from the pandemic emanates from measures that have forced a shutdown in all non-essential activities. This has led to a shrinkage in supply capacity and an evaporation in consumer demand, investment spending and international trade. Employment fell by around one million in March and is likely to fall further in April. The Bank of Canada financial stress index shows a rapid build-up in stress from late-February to an elevated level, but it is important to note that, on this measure, stress levels remain lower than the peak reached during the global financial crisis in 2008.

One reason for the lower peak is the unprecedented level of support announced and implemented by the Canadian government, the Bank of Canada and other governments and central banks. The government has deployed a range of fiscal tools to bolster the economy. The fiscal package is worth around \$193 CAD (8.4 per cent of GDP).¹⁵ More than half the support is directed towards households and most of the rest is for businesses in the form of income and sales tax deferrals.

Figure 15. US: unemployment rate (%)



Source: NiGEM database and NIESR forecast.

The Bank of Canada has also responded aggressively with a set of measures that are more or less similar to those introduced by other central banks. The package includes a 150 basis point reduction in the overnight deposit rate to 0.25 per cent which is considered to be the effective lower bound, an asset purchase plan for government bonds, commercial paper, mortgage bonds and liquidity injection through the repo market.

The outlook for the economy will depend on the relative impact of these two negative shocks and the positive impact of the support and stimulus measures introduced. Our forecast suggests that GDP will fall by 6 per cent this year and bounce back next year provided that the restrictions in Canada and elsewhere start to be lifted sometime in the second quarter of this year. In so far as the oil price shock is related to the pandemic, a rise in global economic activity will lift oil prices and that in turn is expected to support investment in the Canadian oil and gas sector. That said, the unknown evolutionary path of the virus and the size of the shocks makes these forecasts unusually uncertain.

What is known is that Canada is relatively well placed to navigate this crisis. Going into 2020, the economy was operating at a level that was close to potential with inflation in line with the target rate, and unemployment was low. The fiscal position was healthy, with the government running a small budget deficit. The finances are in a good place to provide the necessary fiscal support to limit the long-term scarring effects of this crisis.

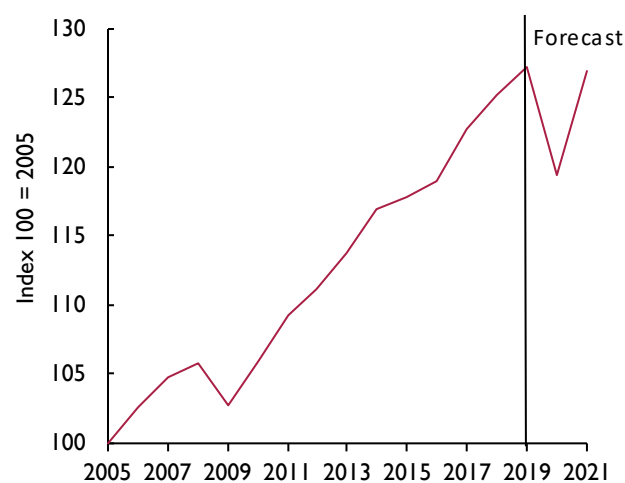
Euro Area

After picking up to report 0.3 per cent growth in the third quarter of last year, GDP rose by only 0.1 per cent in the final quarter, with overall growth of 1.2 per cent in 2019. Last year saw the two slowest growing quarters since 2013. The overall slower pace of growth reflected two of the three largest economies recording annual growth of well below 1 per cent last year (Germany 0.6 per cent and Italy 0.3 per cent). While some particular factors, such as the fall in the automobile market, help to explain the weakness, it is set against a monetary policy background of negative policy interest rates continuing some ten years after the financial crisis.

Against this background, and with our expectation three months ago that slow growth would continue, the coronavirus shock has had a severe effect. While to date the highest numbers of virus cases have been recorded in Italy and Spain, the virus effects have been widespread. The effects of illness and the lockdowns to combat the spread of the virus started to be seen in the early indicators for economic activity in February, but the March data are likely to show substantial falls in activity and this will continue in April. Overall our forecast shows a 5¾ per cent fall in GDP this year, but with a rebound of 5 per cent in 2021.

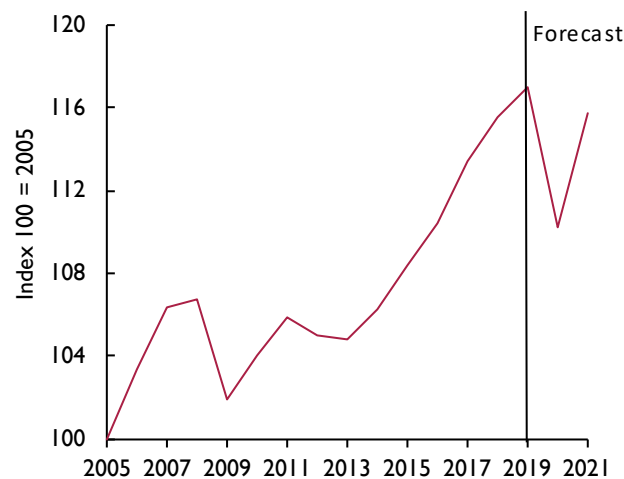
With limited scope to cut policy rates, the ECB announced additional asset purchases of €120 billion until end-2020 under the existing asset purchase programme, an additional €750 billion asset purchase programme

Figure I6. Canada: Level of GDP (index)



Source: NiGEM database and NIESR forecast.

Figure I7. Euro Area: Level of GDP (index)



Source: NiGEM database and NIESR forecast.

of private and public sector securities (Pandemic Emergency Purchase Programme, PEPP) until end-2020 and expanded the range of eligible assets under the corporate sector purchase programme (CSPP) together with a relaxation of collateral standards for Eurosystem refinancing operations. In addition, ECB Banking Supervisors have permitted major banks to operate temporarily below the capital conservation buffer and the liquidity coverage ratio (LCR) in order to support credit, especially to keep businesses operating.

In terms of fiscal support, a package of about €540 billion (4 per cent of EU27 GDP) has been agreed, including allowing the European Stability Mechanism (ESM) to provide Pandemic Crisis Support of up to 2 per cent of 2019 GDP for each Euro Area member country. A further 0.3 per cent of GDP (€37 billion) has been allocated from the EU budget for a range of measures, including credit provisions for smaller companies and credit breaks. One area of disagreement has been over establishing special Euro Area-wide coronavirus bonds issued centrally. At the time of writing, discussions are continuing on this issue.

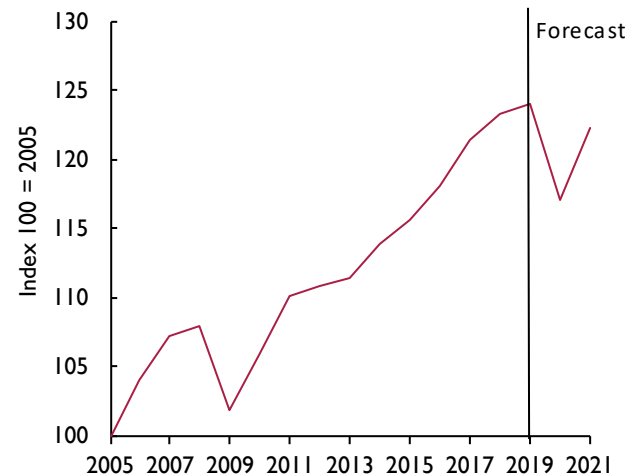
With inflation in the Euro Area remaining below the inflation target and lower oil prices, our forecast is that inflation will be below 1 per cent this year as output falls, and only show a small pick-up to 1¼ per cent next year.

Germany

Germany's economy saw little growth during the fourth quarter of 2019, as household demand stagnated and imports increased faster than exports. Following the Covid-19 shock, the level of output in the economy is projected to decline at the steepest rate since the global financial crisis. Both the direct impact of the shock on domestic and international demand, as well as the effect of the mitigation measures adopted by the government (i.e. closing schools, universities and public venues, at least until the second half of April) help explain these developments.

During the first quarter, the government presented a policy package worth €1.1 trillion to support consumption and business continuity, as well as invest in healthcare, hospital capacity and R&D. The country's low public debt and ultra-low interest rates provided enough fiscal room for such a large-scale policy response, rendering the plan one of the boldest among OECD economies – particularly when compared to other Euro Area countries. Such initiatives are expected to partly counter

Figure 18. Germany: Level of GDP (index)



Source: NiGEM database and NIESR forecast.

the effects of the shock, particularly on aggregate demand and unemployment (5½ per cent in 2020).

Annual average harmonised inflation and consumer price inflation remained stable at 1.4 per cent and 1.7 per cent, respectively, in February, and overall inflation is expected to stay low, at 1 per cent, given lower economic activity and falling oil prices. Through 2020, the external sector is projected to remain weak as exports are expected to fall by –11¾ per cent. With external demand anticipated to shrink, the current account balance (in per cent of GDP) could consequently continue to narrow from 7.3 per cent in 2019 to 6¼ per cent in 2020.

France

The French economy is currently operating well below capacity as a result of the Covid-19 pandemic. GDP is estimated to have fallen by 6 per cent in the first quarter as a result of the pandemic and the lockdown measures imposed by the government. As with other economies, the extent to which the economy will be affected depends on the duration of the peak lockdown period, the support measures that the government has put in place and the ability of businesses to bounce back afterwards. The government has intervened with various stimulus measures to combat the economic challenges of the lockdown. It has pledged to guarantee up to €312 billion in loans, including a credit reinsurance scheme, which amounts to around 14 per cent of GDP. The fiscal package to address the crisis has been increased from

€45 billion to €100 billion (more than 4 per cent of GDP) and includes measures such as liquidity support through postponements of social security and tax payments for companies; accelerated refunds of tax credits; support for wages of workers under the reduced-hour scheme; and the postponement of rent and utility payments for affected smaller companies.

The pandemic containment measures will have both supply and demand side effects and contribute to a sharp deterioration in the level of economic activity, with some sectors of the economy such as travel, restaurants and retailing affected more strongly. INSEE's March Business Climate Index revealed a sharp contraction in activity in all major industries, with similar sentiments being shared in the March IHS Markit PMI surveys. With the lockdown in its present form set to continue into May, we assume that the restrictions will gradually be lifted later in the second quarter, with activity picking up gradually from there.

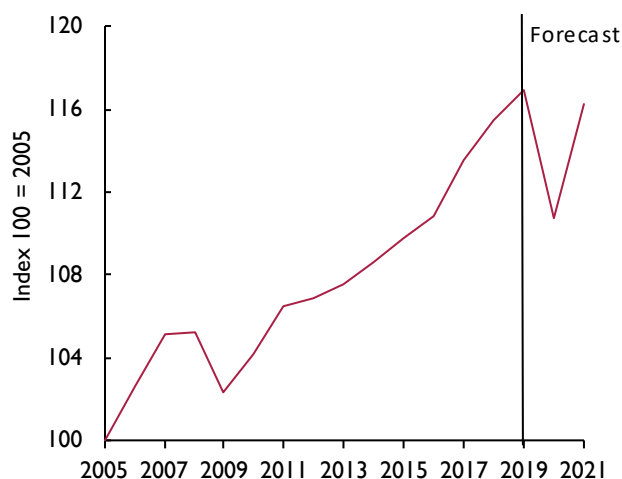
We now forecast GDP to fall by around 5¼ per cent this year, with an increase of around 5 per cent as the measures are lifted and businesses re-start in 2021. With the reduced level of economic activity and sharply lower oil prices, consumer price inflation, after falling to 1.3 per cent last year from 2.1 per cent in 2018, is projected to be even lower, at ¾ per cent this year and next.

Italy

During 2019, Italy's GDP grew by just 0.3 per cent, but the outlook for the first half of the year has worsened drastically due to both the coronavirus pandemic and the Italian authorities' aggressive measures adopted in a bid to flatten the epidemiological curve. With the country under complete lockdown since early March, it is anticipated the shock will severely affect the already weak Italian economy, by impacting domestic and international demand, through direct supply chains' disruption, and the shock's bearing on some of Italy's strategic sectors such as hospitality, tourism and the food industry.

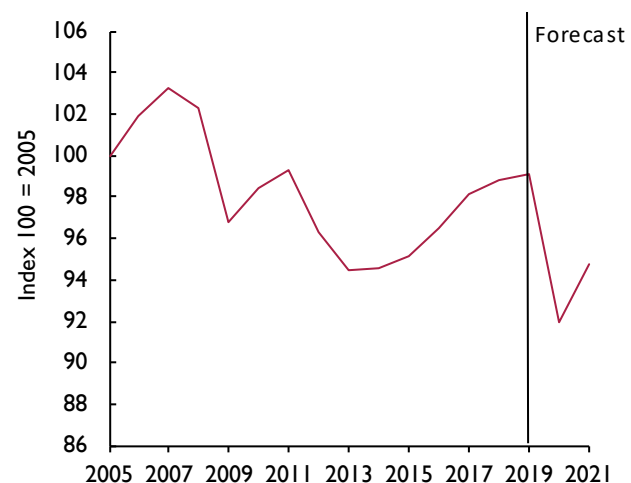
Italy's government launched two aid programmes in the first half of March 2020 amounting to €25 billion, aimed at shielding small and medium-sized enterprises, employment, and consumption. On 6 April, the government agreed on additional state guarantees of up to €400 billion, with state aid now totalling €750 billion. These new measures provide subsidised loans, deferred taxation, and additional active labour market policies. Though the government plans to implement more economic support measures shortly, the effect of the shock, coupled with the especially aggressive containment measures adopted, mean that Italy's economy will be hit particularly hard during the first half of 2020. GDP is expected to fall by -7¼ per cent during 2020, with unemployment set to climb up to 11¼ per cent by the third quarter of this year. To contribute to these developments, there is the difficult situation in

Figure 19. France: Level of GDP (index)



Source: NiGEM database and NIESR forecast.

Figure 20. Italy: Level of GDP (index)



Source: NiGEM database and NIESR forecast.

Lombardy and Veneto – Italy’s epicentre of the pandemic – where small and medium-sized enterprises play critical roles in the local economy.

Despite the monetary stimulus announced by the European Central Bank in March (€750 billion asset purchase programme of private and public sector securities through the Pandemic Emergency Purchase Program, PEPP) and the recent Eurogroup agreement of a collective safety net (worth €540 billion for member states via the European Stability Mechanism, for companies through the European Investment Bank, and for workers via the European Commission’s new instrument SURE), the situation in Italy is set to challenge the government’s fiscal sustainability. It could intensify the existing fragilities within the financial sector, as evidenced by an increase in the country’s risk outlook seen from sovereign spreads – to levels broadly comparable to 2009 – and the ensuing drastic drop in business investment.

Harmonised inflation and consumer price inflation measures are both expected to fall, to around 0 per cent and ¼ per cent respectively in 2020, driven by falling domestic demand and wages, and lower global energy prices, although a limited return to positive inflation is anticipated for 2021. The output of the external sector is also expected to shrink this year, reflecting a larger downturn in exports owing to dwindling international demand, supply chain disruptions and lower industrial production.

Spain

The Covid-19 crisis has heavily affected Spain, with the country at mid-April having the second most reported confirmed cases worldwide by the World Health Organisation.¹⁶ Initially this year, the halt on activity in some Chinese regions had an impact on imports of intermediate goods and on the demand for Spanish exports. However, the downturn in the Spanish economy started a little later as the spread of the disease became evident in Italy and Spain. The country has been under a state of emergency since 14 March, implying restrictions on movement for basic purposes and only essential business activity is allowed.¹⁷ Early social security figures showed that the tight containment measures have led to more than 800,000 workers to date losing their jobs.

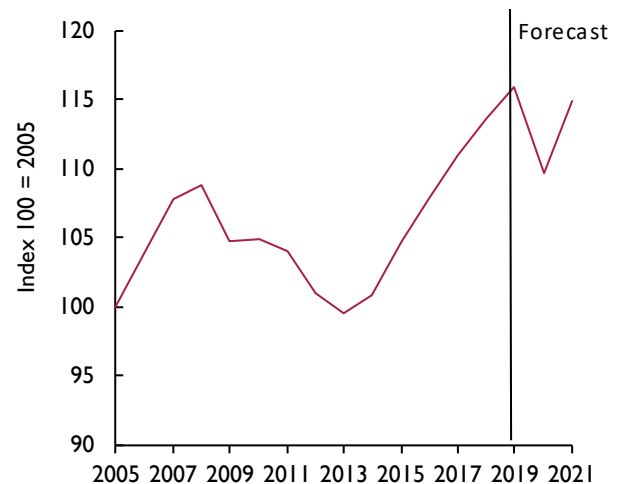
The Spanish economy is particularly vulnerable to the effects of the virus. It has the highest proportion of its workforce on temporary employment in the EU (26.9

per cent in 2018);¹⁸ a high percentage contribution to activity from the service sector, especially from tourism, which contributes around 14 per cent to GDP, that has already been impacted with huge losses at the peak Easter period; and a high number of small and medium-sized companies that are particularly affected by the crisis and the lockdown measures.

The Spanish government announced a €200 billion stimulus package¹⁹ to mitigate the effects of the Covid-19 crisis. Key fiscal measures include: €3.8 billion in medical expenditure; €5 billion of public expenditure for economic and social support; relaxed access conditions for temporary lay-off schemes (ERTEs) including exemptions of social security contribution to employers during the period of application; €25 million in meal allowances for the vulnerable; and an allowance for self-employed workers affected by the suspension of economic activity. Deferral measures include a €14 million tax payment postponement for six months for small businesses and the self-employed; and a moratorium on mortgage loans payments for those most vulnerable. In addition, the Spanish government has mobilised up to €100 billion government loan guarantees for companies.

Our forecast suggests a contraction in GDP of about 5¼ per cent in 2020, but as the lockdown is withdrawn and activity restarts, GDP is forecast to grow by 4¾ per cent in 2021. Harmonised consumer price inflation (HICP) is estimated to remain unchanged in 2020 at ¾

Figure 21. Spain: Level of GDP (index)



Source: NiGEM database and NIESR forecast.

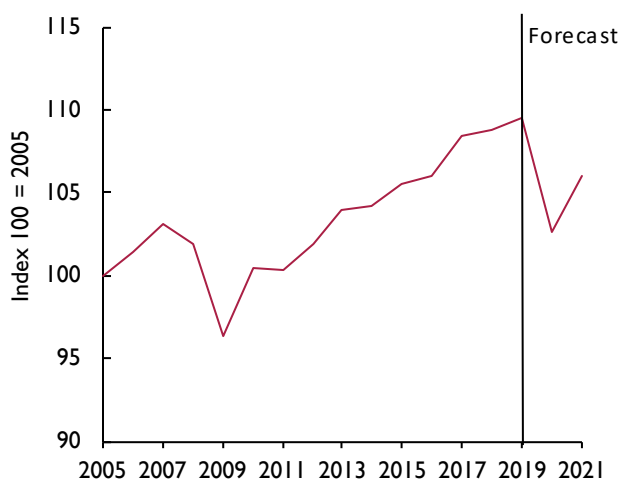
per cent, rising marginally but still under 1 per cent in 2021, reflecting the subdued level of economic activity and the dislocation caused by the crisis. An extension of the lockdown, or political uncertainties created by the extraordinary circumstances, are downside risks for Spanish economic activity in the rest of the year.

Japan

The Covid-19 outbreak happened in Japan at a time when the economy had already shown signs of recession after a 1.8 per cent year-on-year decline in the last quarter of 2019 following the 2 per cent consumption tax hike and the effects of Typhoon Hagibis in October. Japan's industrial production dropped for five successive months between October 2019 and February 2020.

The recent deceleration in Japan's economy is attributable to various factors. While the economy is still enduring the consequences of the national sales tax hike of last October, the Covid-19 pandemic has severely disrupted manufacturing supply chains which play an essential role in Japan's exporting industries. After dropping continually in the first three months of 2020, Japan's Composite PMI index fell to 36.2 in March, the weakest reading on record. On this basis the GDP growth rate in the first quarter of 2020 is projected to be around -4 per cent, the lowest since the 2008 economic crisis. At the same time, Japan's annual inflation rate reduced to 0.4 per cent in February, the lowest rate since last October.

Figure 22. Japan: Level of GDP (index)



Source: NiGEM database and NIESR forecast.

In current economic circumstances, inflation is projected to be around $\frac{1}{4}$ per cent this year and $\frac{1}{2}$ per cent next year.

The Japanese authorities have responded to the crisis with active fiscal and monetary support policies. After two dedicated Covid-19 fiscal stimulus packages in February and March, the central government recently adopted a ¥108.2 trillion Emergency Economic Package Against Covid-19, which is equivalent to around one fifth of GDP. The Bank of Japan provided a comprehensive set of measures to provide credit and maintain the smooth functioning of financial markets. Despite these supportive measures, the postponement of the Olympic Games this year, with the substantial tourist revenue it was expected to bring, mean Japan's GDP is projected to fall by $6\frac{1}{4}$ per cent this year, a larger fall than in the financial crisis when GDP fell by 5.4 per cent. Under the assumption that the effects of the virus and the lockdown measures to combat its spread are gradually withdrawn, within a global recovery the Japanese economy is projected to grow by $3\frac{1}{2}$ per cent next year, aided by the tourism income from the move of the Olympic Games into 2021 and manufacturing supply chains being re-established. Despite such an increase, the level of GDP in 2021 is likely to be around 3 per cent lower than that in 2019, before the coronavirus outbreak struck.

China

China's economy has been hit hard by the Covid-19 pandemic. GDP shrank by 6.8 per cent year-on-year in the first quarter of 2020, which is the first quarterly contraction in more than 40 years. Followed by a lockdown in Wuhan, the city where the first Covid-19 case was confirmed, a nearly two-month-long countrywide shutdown of all non-essential business activities in order to control the spread of the virus has caused severe damage to economic activity. In February China's official Purchasing Managers Index (PMI) reached a historical low for both manufacturing and non-manufacturing activities.

Amidst the sharply deteriorating economic situation, after cutting the one-year Loan Prime Rate by 10 basis points to 4.05 per cent in February, the People's Bank of China (PBOC) lowered the seven-day reverse repo rate by 20 basis points, the largest cut in nearly five years. The PBOC also reduced the reserve requirement ratio twice in the first quarter and released more funding to small and medium-sized companies. An estimated RMB 2.6 trillion (2.5 per cent of GDP) of fiscal measures or financing plans have been announced to increase spending

on epidemic prevention and control, medical equipment production, unemployment insurance, tax relief and social security and support workers and companies through the lockdown. Chinese authorities are expected to provide more monetary and fiscal stimulus this year as the economy eases out of the lockdown, especially on infrastructure investment.

With the start of the lifting of lockdowns across China in recent weeks and the resumption of production by enterprises, the economy has started to show signs of a partial recovery towards the end of the first quarter. After a year-on-year 13.5 per cent contraction in both January and February, China’s industrial production dropped by only 1.1 per cent year-on-year in March. In addition, in March both manufacturing and non-manufacturing PMIs rebounded to 52 and 52.3 respectively. Despite this, China’s economic recovery is still fragile as the PMI readings in March reflected a rebound from the very sharp drop in February.

With the assumption that the easing of restrictions continues, and that lockdowns elsewhere in the global economy also start to be lifted gradually after the second quarter of 2020, when the global pandemic may well reach its peak in most countries, China’s economy is forecast to grow by 2¼ per cent in 2020 and 8½ per cent in 2021 and average around 5 per cent annual growth between 2022 and 2026. With easing food inflation and lower oil prices, China’s annual inflation rate fell to 4.3

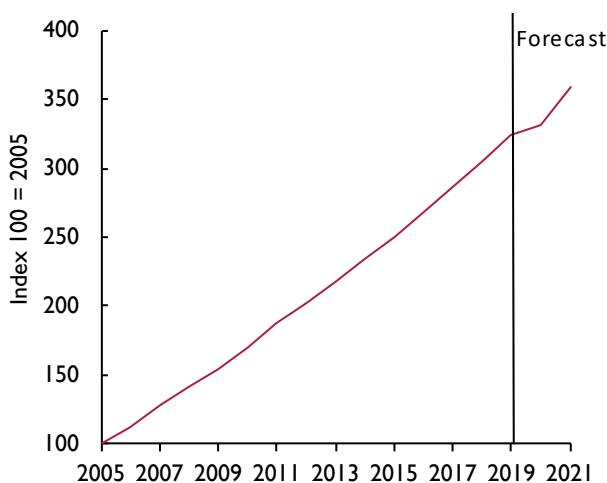
per cent in March, the lowest inflation rate since October 2019 and, with a lower path for GDP than previously forecast, China’s inflation rate is forecast to be around 4½ per cent this year, dipping to 2½ per cent next.

India

The Covid-19 outbreak came at a time when India’s economy had already slowed due to persistent financial sector weaknesses. The Reserve Bank of India (RBI) has admitted failing to gauge the extent of the slowdown in the Indian economy, even before the pandemic, mainly because of a greater than anticipated contraction in gross fixed capital formation and continuing weak domestic activity.

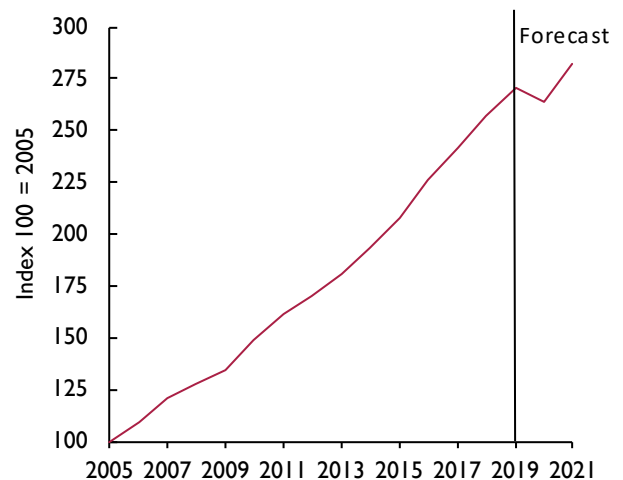
Lockdown measures taken to mitigate the spread of the virus have resulted in disruptions which will result in a sharp slowdown in growth. The government and the RBI have responded to the severe economic and financial dislocation caused by the pandemic and the measures to combat its spread with support measures that broadly echo the actions taken by other governments and central banks. A fiscal stimulus package of approximately 0.8 per cent of GDP has been enacted, offering a range of support measures including cash transfers to lower-income households; wage support to low-wage workers – to those working and by easing some benefit criteria for those who lose jobs; and increased insurance for healthcare workers.

Figure 23. China: Level of GDP (index)



Source: NiGEM database and NIESR forecast.

Figure 24. India: Level of GDP (index)



Source: NiGEM database and NIESR forecast.

These measures add to the initial 150 billion Rupees (about 0.1 per cent of GDP) for infrastructure. State governments, too, have responded, with initiatives estimated by the IMF to be worth a further 0.2 per cent of GDP so far.

The RBI reduced the repo rate by 75 basis points on 27 March (to 4.4 per cent) and announced liquidity measures to the tune of 3.7 trillion Rupees (1.8 per cent of GDP) including long-term repo operations and a reduction of 100 basis points in the cash reserve ratio. It has also relaxed export repatriation limits, created a facility to help with state government's short-term liquidity needs, and allowed qualifying companies a three-month moratorium on loan repayments. These measures are, as in other countries, designed to provide support to companies and households suffering from income shocks and to protect the financial system by ensuring the smooth functioning of financial markets. We project a fall in GDP of about 2¾ per cent this year, and a recovery with an increase of about 7¼ per cent next year as the impact of Covid-19 dissipates, and monetary and fiscal support take effect.

Retail inflation fell below the RBI's targeted upper band of 6 per cent for the first time since November 2019, largely due to continued easing in vegetable prices. However, supply shortages as a result of the national lockdown could push up inflation in the short run. Nonetheless, the conventional approach to policy rate setting which involves a sharp focus on inflation will now be secondary to growth concerns. The RBI has scope to cut its key policy rate further, especially with the prospect of lower inflation. Our projection is that the inflation rate will be 3¾ per cent, before reducing to 2¾ per cent in 2021.

Brazil

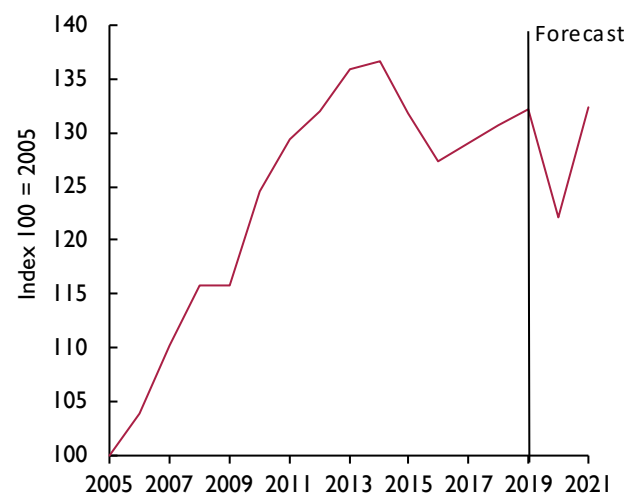
Brazil was the first Latin American country to report a case of Covid-19 and currently has the highest number of confirmed cases in the region. Despite this, President Jair Bolsonaro remains sceptical about medical directives related to social distancing and quarantining. The current attitude of the president differs significantly from other global leaders and represents an important obstacle in bringing the pandemic under control by labelling the virus as a "little flu" and publicly threatening to sack the health minister, Luiz Mandetta. In an increasingly confusing political environment, despite the national position, 24 of the 27 governors of the decentralised states of Brazil have taken measures to implement the World Health Organisation protocols.

To soften the economic downturn associated with the pandemic, Economy Minister Paulo Guedes announced a fiscal package to the value of 150 billion reais (\$30 billion). The package does not contain any new fiscal commitments, but brings forward social assistance payments that were scheduled for later in the year as well as deferring company taxes and improving accessibility to workers' severance funds.

In addition to the fiscal package, the Central Bank of Brazil (BCB) cut the policy rate by 50 basis points to 3.75 per cent and announced a BRL 1.2 trillion (\$234 billion) liquidity injection. The measures will provide liquidity support and capital relief to the value of 16.7 per cent of GDP, the largest initiative in the institution's history and approximately five times the value of the package instituted during the global financial crisis.

Despite these measures, we project a contraction in GDP of about 7¾ per cent in 2020, before GDP increases by about 8½ per cent in 2021. A drop-off in aggregate demand and a decline in incomes, combined with multi-decade lows in the oil price, mean that Brazil could face some deflationary pressures in the months ahead. Our estimates suggest consumer prices growing by 2½ per cent in 2020 before currency depreciation filters through to headline inflation to finish 2021 at just under 14 per cent.

Figure 25. Brazil: Level of GDP (index)



Source: NiGEM database and NIESR forecast.

Russia

After returning to growth in 2017, the economy grew by 2.5 per cent in 2018 – the fastest rate since 2012. The first half of 2019 showed a deceleration in growth to 0.8 per cent year-on-year as the high base effect from the boost from the 2018 World Cup and the contractionary VAT rise took hold, before recovering consumer spending in the second half of the year took GDP growth to 1.3 per cent for the year as a whole.

The effects of the coronavirus, both within Russia and globally, together with the geopolitical events surrounding OPEC+, in particular with Russia breaking from the OPEC+ planned reduction in production on 8 March, initiating a price war with other members leading to 20–30 per cent falls in oil prices in the days that followed, have hit the Russian economy. Worsening conditions due to the coronavirus subsequently led the Russian negotiators back to the table and on 9 April it was agreed to reduce production. This should support the Rouble in the near term before weaker commodity exports due to weak global demand could push it in the opposite direction.

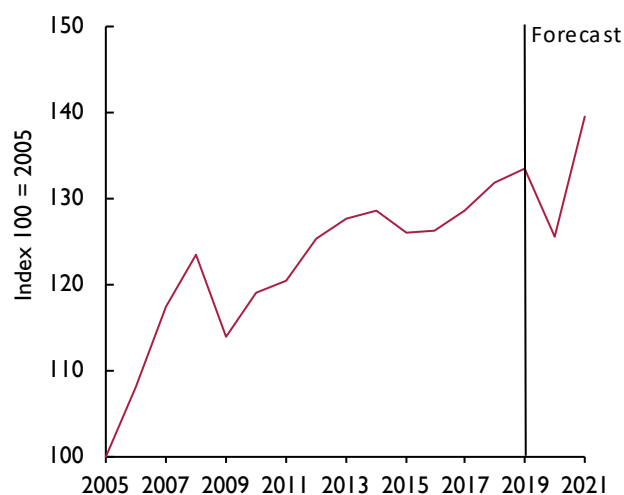
Whilst initially appearing to avoid the worst of the virus, with only a couple of hundred reported coronavirus cases in mid to late March, entering the second half of April the number of cases stands at over 30,000, with recorded deaths mounting into the hundreds. As

elsewhere, in order to try to halt the spread of the disease a raft of restrictions limiting economic activity have been implemented, with open-ended quarantine in Moscow and all non-essential businesses forced to close; regions have been advised to follow suit and most have done so.

On the monetary policy side, whilst the policy rate remains unchanged, the Central Bank has implemented several measures to support lending to households and firms. It has temporarily relaxed regulations for banks on lending to industries affected by Covid-19 and also allowed more favourable treatment of those industries with foreign dominated debt. Liquidity limits for systemically important institutions have also been relaxed. It has also disallowed re-classification of risk weights for both households and SMEs as well as allowing mortgage deferrals for those households with confirmed coronavirus. On fiscal policy, measures to support the loss of earnings and cashflow of businesses have been implemented, including sick pay for those under quarantine, benefits equal to at least the minimum wage for 3 months from April, deferrals of tax and social contributions for affected businesses, and guaranteed loans to SMEs. It is estimated that this fiscal support package amounts to around 1½ per cent of GDP.

The overall result has led to a depressed outlook for economic activity this year. Our forecast has marked down positive GDP growth in 2020 from 1½ per cent to a fall in GDP of 6 per cent. Given our assumption of a gradual relaxation of restrictions and the outbreak not recurring, the level of activity is expected to increase in 2021 and, because of the sharp fall in activity this year, the rate of increase in GDP growth next year could appear very strong, at over 10 per cent.

Figure 26. Russia: Level of GDP (index)



Source: NiGEM database and NIESR forecast.

Consumer price inflation will be dominated by the effects of the depreciation in the short term and the recovery of global demand into the second half of 2020 and 2021. We expect inflation to peak at just above 5 per cent in the second half of 2021. The weakness of the Rouble, allied with inflation above target into 2021, suggests that any planned policy interest rate reductions, aside from any associated with protecting economic activity in the short term as part of shielding the economy, could be postponed.

Aside from the economic developments, one major political issue is that Russia's proposed public vote on the constitutional amendments that would allow President Putin to stay in power until 2036 have been postponed due to the coronavirus outbreak.

Australia

Australia has been hit by two natural calamities in a short space of time. The bushfires that started in November last year had a devastating impact on its biodiversity, environment, people and the agriculture sector, but the overall impact of the bushfires on GDP is likely to be small. The Covid-19 pandemic is different.

Like everywhere else, the Australian government has placed the country into a state of induced coma to restrict the spread of the virus and protect the lives of its residents. Activities of sectors considered non-essential have been heavily curtailed and social distancing measures have been introduced and tightened over the past few weeks. The economy will shrink as a result, by about 14 per cent year-on-year in the second quarter of this year according to our projection and bounce back in the third quarter provided restrictions in Australia and its major trading partners are lifted. There is enormous uncertainty around these forecasts because of the unknown evolutionary path of the virus and the sheer scale of the response.

The government and the Reserve Bank of Australia (RBA) have responded to the severe economic and financial dislocation caused by the pandemic with a series of support measures which more or less echo the actions taken by other governments and central banks. According to the IMF, the government will increase spending by around 9.7 per cent of GDP over the next four years, most of which will be spent in the near term. The vast bulk of this spending is in the form of wage subsidies, income support

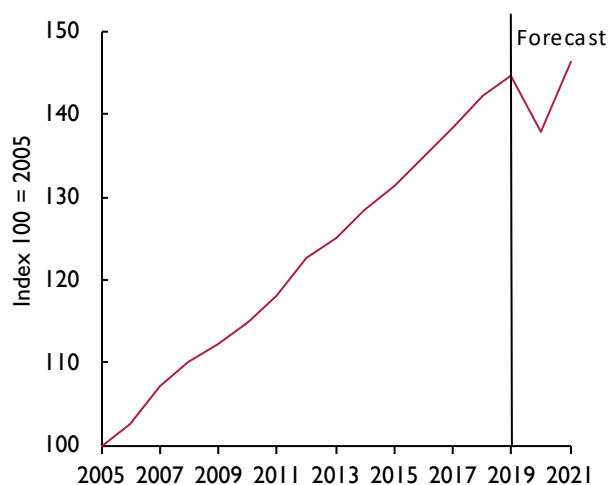
for households and measures to support businesses with cash flow issues. Other measures at the state and local level are designed to support the health system, care for the elderly and vulnerable and businesses.

The RBA has also introduced a set of complementary measures to support the economy and the financial system. This includes monetary policy stimulus to boost aggregate demand, financial stability measures to protect the financial system and interventions to ensure smooth functioning of financial markets.

More specifically, the RBA cut its overnight policy rate, the cash rate, by 50 basis points to 25 basis points and embarked on an asset purchase programme that will specifically target the 3-year government yield at around 0.25 per cent. In addition, the RBA has pledged to inject liquidity into the system through short-term repo operations every day until further notice. Again in common with other central banks, the RBA has introduced a term funding scheme worth AUD 90 billion that will provide three-year funding to banks at just 25 basis points. The government separately announced support for the asset backed security market specifically to help non-bank financial institutions and lenders that lend to households and small businesses.

Australia is well placed to navigate this crisis. Its fiscal position is sound with the budget balance in small deficit and government debt low. The banking system is exposed to the housing market but is, in general, considered to be well-capitalised. The economy is, however, closely tied to China through trade and financial channels and as such the economy remains vulnerable to any structural changes that might emerge in response to the pandemic that restrict global trade with China.

Figure 27. Australia: Level of GDP (index)



Source: NiGEM database and NIESR forecast.

NOTES

- 1 <https://www.imf.org/en/Publications/FM/issues/2020/04/06/fiscal-monitor-april-2020>.
- 2 The term 'shield' is used by Richard Baldwin (2020).
- 3 Source of data is World Health Organisation (WHO) daily Situation Reports on Coronavirus disease 2019.
- 4 See also BLS <https://www.bls.gov/news.release/flex2.t01.htm>.
- 5 Supply chains are discussed in the articles section later in this issue.
- 6 January figures for world trade were published on 25 March 2020 by CPB Netherlands Bureau for Economic Policy Analysis.
- 7 The Vix index is seen as a barometer of investor sentiment and market volatility and is a measure of market expectations of uncertain volatility implied by S&P 500 index option prices.
- 8 See Banque de France (2020) and NIESR (2020).
- 9 Assuming an infection rate of about 9 per cent and a basic reproductive ratio (R_0) of 1.3 for seasonal flu, and assuming Covid-19 has a proportionate infection rate given a R_0 of 2.25, results in a Covid-19 infection rate of about 16 per cent.
- 10 Lockdown simulation is run with prices held exogenous for a year and monetary responses being exogenous for two years, and thereafter reacting to changes in the economic environment.
- 11 See <https://www.imf.org/en/News/Articles/2020/04/09/pr20143-imf-executive-board-approves-proposals-enhance-emergency-financing-toolkit-us-billion> and <https://www.worldbank.org/en/news/press-release/2020/04/02/world-bank-group-launches-first-operations-for-covid-19-coronavirus-emergency-health-support-strengthening-developing-country-responses>.
- 12 On a PPP basis.
- 13 This Review includes a collection of research papers on the subject of 'Global value chains and economic dislocations'.
- 14 US Federal Reserve Press Release, 29 January 2020.
- 15 <https://www.imf.org/en/Topics/imf-and-covid19/Policy-Responses-to-COVID-19>.
- 16 https://www.who.int/docs/default-source/coronaviruse/situation-reports/20200410-sitrep-81-covid-19.pdf?sfvrsn=ca96eb84_2.
- 17 Manufacturing, construction, and some services workers returned to work from 13 April.
- 18 <https://ec.europa.eu/eurostat/web/products-eurostat-news/-/DDN-20190524-1>.
- 19 https://www.boe.es/diario_boe/txt.php?id=BOE-A-2020-3824.

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Appendix A: Summary of key forecast assumptions by Iana Liadze

The forecasts for the world economy and the UK economy reported in this *Review* are produced using the National Institute's global econometric model, NiGEM. NiGEM has been in use at NIESR for forecasting and policy analysis since 1987, and is also used by a group of more than 40 model subscribers, mainly in the policy community. Further details, including articles by model users, are provided in the May 2018 edition of the *Review*. Most countries in the OECD are modelled separately,¹ and there are also separate models for Argentina, Brazil, Bulgaria, China, Hong Kong, India, Indonesia, Romania, Russia, Singapore, South Africa, Taiwan and Vietnam. The rest of the world is modelled through regional blocks so that the model is global in

scope. All models contain the determinants of domestic demand, export and import volumes, prices, current accounts and net assets. Output is determined in the long run by factor inputs and technical progress interacting through production functions, but is also affected by demand in the short to medium term. Economies are linked through trade, competitiveness and financial markets and are fully simultaneous. Further details on NiGEM are available on <http://nimodel.niesr.ac.uk/>.

The key interest rate and exchange rate assumptions underlying our current forecast are shown in tables A1–A2. Our short-term interest rate assumptions are generally based on current financial market expectations,

Table A1. Interest rates

Per cent per annum

	Central bank intervention rates					10-year government bond yields				
	US	Canada	Japan	Euro Area	UK	US	Canada	Japan	Euro Area	UK
2016	0.51	0.50	-0.08	0.01	0.40	1.8	1.3	0.0	0.7	1.3
2017	1.10	0.70	-0.10	0.00	0.29	2.3	1.8	0.1	1.0	1.2
2018	1.90	1.40	-0.10	0.00	0.60	2.9	2.3	0.1	1.1	1.4
2019	2.29	1.75	-0.10	0.00	0.75	2.1	1.6	-0.1	0.4	0.9
2020	0.54	0.56	-0.10	0.00	0.23	1.0	0.9	0.1	0.3	0.4
2021	0.25	0.25	-0.06	0.00	0.10	1.3	1.2	0.5	0.7	0.8
2022–26	1.29	1.02	0.52	0.49	0.62	2.3	2.0	1.4	1.7	1.7
2018 Q1	1.53	1.20	-0.10	0.00	0.50	2.8	2.2	0.1	1.0	1.5
2018 Q2	1.80	1.25	-0.10	0.00	0.50	2.9	2.3	0.0	1.0	1.4
2018 Q3	2.01	1.47	-0.10	0.00	0.66	2.9	2.3	0.1	1.1	1.4
2018 Q4	2.28	1.69	-0.10	0.00	0.75	3.0	2.3	0.1	1.2	1.4
2019 Q1	2.50	1.75	-0.10	0.00	0.75	2.7	1.9	0.0	0.9	1.2
2019 Q2	2.50	1.75	-0.10	0.00	0.75	2.3	1.6	-0.1	0.6	1.0
2019 Q3	2.31	1.75	-0.10	0.00	0.75	1.8	1.4	-0.2	0.0	0.6
2019 Q4	1.83	1.75	-0.10	0.00	0.75	1.8	1.5	-0.1	0.1	0.7
2020 Q1	1.41	1.48	-0.10	0.00	0.61	1.4	1.2	0.0	0.1	0.5
2020 Q2	0.25	0.25	-0.10	0.00	0.10	0.7	0.7	0.0	0.3	0.3
2020 Q3	0.25	0.25	-0.10	0.00	0.10	0.8	0.8	0.1	0.4	0.4
2020 Q4	0.25	0.25	-0.10	0.00	0.10	0.9	0.9	0.2	0.5	0.5
2021 Q1	0.25	0.25	-0.10	0.00	0.10	1.1	1.0	0.3	0.6	0.6
2021 Q2	0.25	0.25	-0.10	0.00	0.10	1.2	1.1	0.4	0.7	0.7
2021 Q3	0.25	0.25	-0.05	0.00	0.10	1.3	1.2	0.5	0.8	0.8
2021 Q4	0.25	0.25	0.00	0.00	0.10	1.4	1.3	0.6	0.9	0.9

Table A2. Nominal exchange rates

	Percentage change in effective rate								Bilateral rate per US \$			
	US	Canada	Japan	Euro Area	Germany	France	Italy	UK	Canadian \$	Yen	Euro	Sterling
2016	5.1	0.2	15.1	4.8	2.5	2.5	2.7	-9.9	1.314	108.8	0.904	0.741
2017	0.1	1.9	-3.1	2.5	1.1	1.7	1.7	-5.5	1.294	112.2	0.887	0.776
2018	-0.1	-1.9	1.2	4.7	2.5	2.5	3.2	1.9	1.314	110.4	0.847	0.749
2019	3.5	0.3	4.6	-1.2	-0.7	-0.9	-0.7	-0.3	1.327	109.0	0.893	0.783
2020	5.4	-2.9	3.0	1.5	1.0	0.4	0.7	0.8	1.384	108.6	0.913	0.798
2021	1.3	-0.7	1.1	1.0	0.6	0.5	0.6	0.0	1.398	108.2	0.914	0.802
2018 Q1	-2.1	-2.2	2.2	1.8	0.9	1.0	1.2	1.9	1.294	108.3	0.813	0.718
2018 Q2	2.2	-0.7	0.4	-0.7	-0.3	-0.5	-0.4	0.2	1.313	109.2	0.839	0.735
2018 Q3	2.6	1.8	1.0	1.2	0.7	0.4	0.7	-1.7	1.304	111.5	0.860	0.767
2018 Q4	2.1	-2.4	0.0	-0.5	-0.3	-0.3	-0.3	0.1	1.343	112.8	0.876	0.778
2019 Q1	-1.0	0.2	1.6	-0.8	-0.5	-0.5	-0.4	1.4	1.337	110.2	0.881	0.768
2019 Q2	0.7	0.9	1.2	-0.2	-0.1	-0.1	-0.1	-0.5	1.329	109.9	0.890	0.778
2019 Q3	1.1	0.8	3.5	-0.1	-0.1	-0.1	-0.2	-3.4	1.324	107.3	0.900	0.811
2019 Q4	0.0	0.5	-1.4	-0.6	-0.3	-0.4	-0.3	4.8	1.318	108.7	0.903	0.777
2020 Q1	1.2	-1.7	0.1	0.4	0.2	0.1	0.2	-0.2	1.344	109.0	0.907	0.782
2020 Q2	4.6	-3.0	2.6	2.3	1.5	0.9	1.2	-0.9	1.399	108.5	0.916	0.804
2020 Q3	-0.1	0.1	-0.1	0.0	0.0	0.0	0.0	0.0	1.398	108.5	0.915	0.803
2020 Q4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.398	108.5	0.915	0.803
2021 Q1	0.1	0.0	0.2	0.2	0.1	0.1	0.1	0.1	1.398	108.4	0.914	0.802
2021 Q2	0.1	0.0	0.2	0.2	0.1	0.1	0.1	0.1	1.398	108.3	0.914	0.802
2021 Q3	0.1	0.0	0.2	0.2	0.1	0.1	0.1	0.1	1.398	108.2	0.913	0.802
2021 Q4	0.1	0.0	0.2	0.2	0.1	0.1	0.1	0.1	1.398	108.1	0.913	0.802

as implied by the rates of return on Treasury bills and government bonds of different maturities. Long-term interest rate assumptions are consistent with forward estimates from short-term interest rates, allowing for a country-specific term premium. Where term premia do exist, we assume they gradually diminish over time, such that long-term interest rates in the long run are simply the forward convolution of short-term interest rates.

Short-term interest rates are expected to remain unchanged before the end of this year in the US, Euro Area, the UK and Japan. As discussed in the UK chapter in this *Review*, we expect UK economic growth to return to a rate that is close to its potential within three years. Bank Rate is expected to reach 1.5 per cent in 2027, this being the point at which the MPC is assumed to stop reinvesting the proceeds from maturing gilts it currently holds, allowing the Bank of England's balance sheet to shrink 'naturally'.²

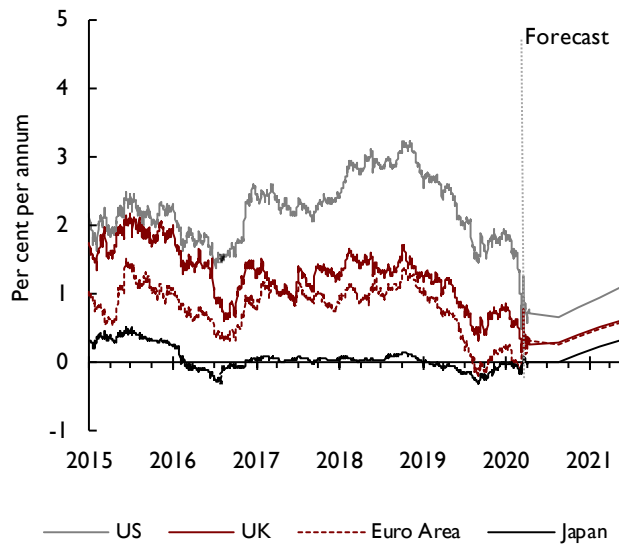
Figure A1 illustrates the recent movement in, and our projections for, 10-year government bond yields in the US, Euro Area, the UK and Japan. The average levels of 10-year sovereign bond yields in the US and the UK decreased in the first quarter of 2020 relative

to the previous quarter, by about 20–40 basis points, but remained unchanged in the Euro Area and Japan. Expectations currently for the government bond yields for the end of 2020 compared to expectations formed three months ago are lower for the US and the UK by about 50–120 basis points, but are largely unchanged for the Euro Area and Japan.

Sovereign risks in the Euro Area were a major macroeconomic issue for the global economy and financial markets over several years after the financial crisis. Figure A2 depicts the spread between 10-year government bond yields of Spain, Italy, Portugal and Ireland over Germany's. Concerns regarding the economic impact from the spread of Covid-19 led to widening of spreads in several Euro Area economies, with Greece and Italy experiencing the largest increase. We have assumed that spreads over German bond yields narrow in all Euro Area countries over the course of the forecast horizon.

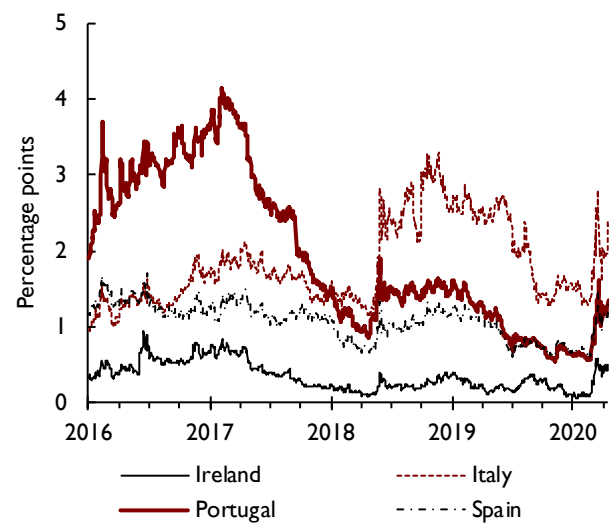
Figure A3 shows the spreads of corporate bond yields over government bond yields in the US, UK and Euro Area. This acts as a proxy for the margin between private sector and 'risk-free' borrowing costs. Corporate bond

Figure A1. 10-year government bond yields



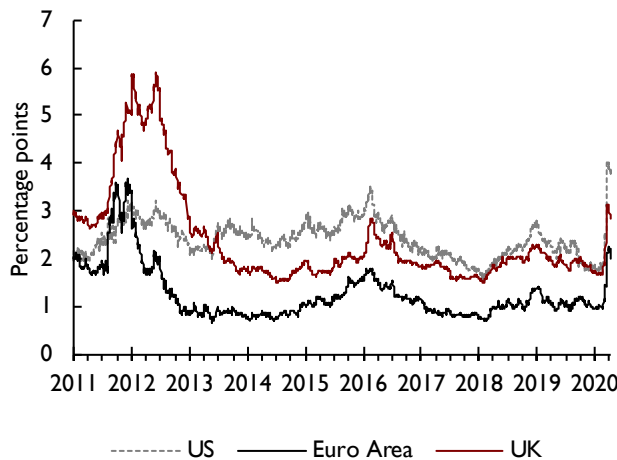
Source: Datastream and NIESR projections.

Figure A2. Spreads over 10-year German government bond yields



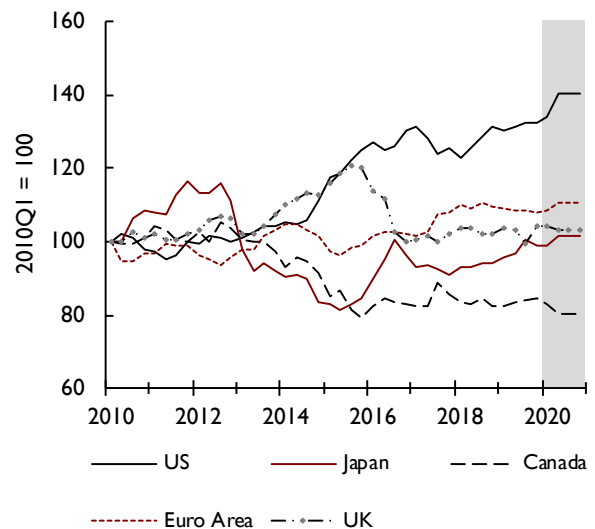
Source: Derived from Datastream series.

Figure A3. Corporate bond spreads. Spread between BAA corporate and 10-year government bond yields



Source: Derived from Datastream series.

Figure A4. Effective exchange rates



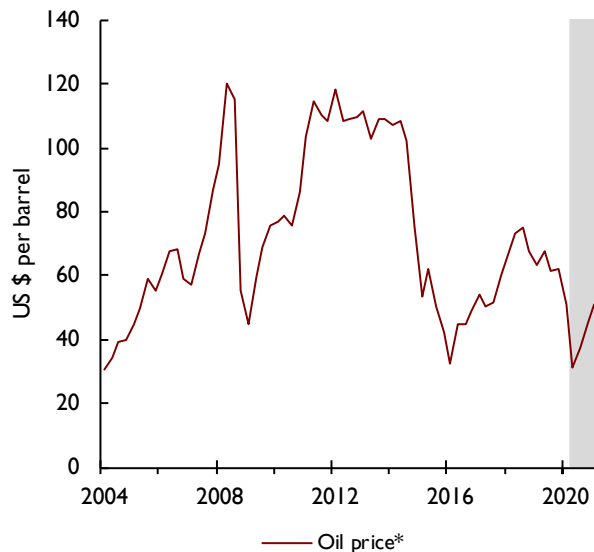
Source: NiGEM database and NIESR forecasts. Weights based on 2017 goods and services trade shares.

spreads in the US, UK and Euro Area have come down and remained low since the relatively recent peak at the turn of 2016. However, the global spread of Covid-19 and its impact on economic activity has resulted in an increase in private sector borrowing costs, while the observed risk-free rates have decreased. This led to widening of corporate bond spreads to levels last seen in the US during financial crises and for the Euro and UK

during the 2012–13 sovereign debt crisis. Our forecast assumption for corporate spreads is that they gradually converge towards their long-term average level.

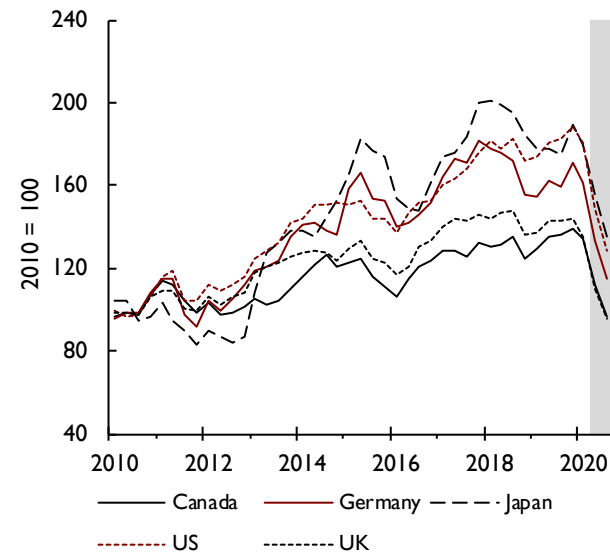
Nominal exchange rates against the US dollar are generally assumed to remain constant at the rate prevailing on 10 April 2020 until the end of December 2020. After that, they follow a backward-looking

Figure A5. Oil prices



Source: NiGEM database and NIESR forecast.
 Note: *Average of Dubai and Brent spot prices.

Figure A6. Share prices



Source: NiGEM database and NIESR forecast.

uncovered-interest parity condition, based on interest rate differentials relative to the US. Figure A4 plots the recent history as well as our short-term forecast of the effective exchange rate indices for Canada, the Euro Area, Japan, UK, and the US. In trade-weighted terms, the US dollar appreciated, by about 6 per cent, since the end of 2019. After having lost about 2 per cent in its value in effective terms over the course of 2019, the euro strengthened slightly since the end of last year by about 3 per cent. Among the developing economies currencies in our model, the largest movement in trade-weighted terms since the end of 2019 has been the depreciation of the Mexican peso and Brazilian real by about 19 and 17 per cent, respectively.

Our oil price assumptions for the short term generally follow those of the US Energy Information Administration (EIA), published in April 2020, and updated with daily spot price data available up to 10 April 2020. The EIA uses information from forward markets as well as an evaluation of supply conditions. As illustrated in figure A5, oil prices, in US dollar terms, have fallen since our last forecast three months ago by about 50 per cent.

Expectations for the oil price by the end of 2020 are lower compared to expectations three months ago, which leaves oil prices in excess of 40 per cent lower than their nominal level in mid-2014.

Our equity price assumptions for the US reflect the expected return on capital. Other equity markets are assumed to move in line with the US market, but are adjusted for different exchange rate movements and shifts in country-specific equity risk premia. After relatively strong stock market performance at the end of 2019 the sentiment since the beginning of this year has reversed and equity prices have fallen dramatically in all economies reflecting worsening financial conditions and risk appetite following the Covid-19 spread. Figure A6 illustrates the key short-term equity price assumptions underlying our current forecast.

NOTES

- 1 With the exception of Iceland and Israel.
- 2 Interest rate assumptions are based on information available for the period to 10 April 2020.

Appendix B: Forecast detail

Table B1. Real GDP growth and inflation

	Real GDP growth (per cent)						Annual inflation ^(a) (per cent)					
	2017	2018	2019	2020	2021	2022–26	2017	2018	2019	2020	2021	2022–26
Argentina	2.7	-2.5	-2.2	-7.7	9.9	2.1	26.3	34.2	52.8	47.1	32.9	13.3
Australia ^(a)	2.5	2.7	1.8	-4.7	6.1	3.2	1.3	1.6	1.8	1.6	1.7	1.7
Austria ^(a)	2.6	2.3	1.5	-4.0	4.4	1.3	2.2	2.1	1.5	1.3	1.2	1.7
Belgium ^(a)	2.0	1.5	1.4	-4.8	5.2	1.4	2.2	2.3	1.3	0.8	1.4	1.4
Bulgaria ^(a)	3.5	3.2	3.4	-5.6	10.5	2.4	1.2	2.6	2.5	0.5	1.2	1.5
Brazil	1.3	1.3	1.1	-7.7	8.4	2.0	3.5	3.7	3.7	2.5	13.9	3.8
Chile	1.4	4.0	1.0	-6.7	6.8	1.2	2.2	2.7	2.3	3.9	2.9	2.2
China	6.9	6.8	6.2	2.2	8.4	5.1	1.5	2.1	2.9	4.4	2.5	2.6
Canada	3.2	2.0	1.6	-6.1	6.3	2.3	1.0	1.7	1.7	2.1	1.7	1.5
Czechia ^(a)	4.5	2.8	2.5	-6.4	5.6	2.1	2.4	2.0	2.6	4.3	1.1	2.3
Denmark ^(a)	2.0	2.4	2.4	-5.6	5.4	1.4	1.1	0.7	0.7	1.1	1.7	1.6
Estonia ^(a)	5.6	4.7	4.4	-7.7	11.4	2.7	3.7	3.4	2.3	-0.3	2.7	1.7
Finland ^(a)	3.1	1.6	1.0	-6.5	7.4	1.1	0.8	1.2	1.1	0.3	0.7	1.6
France ^(a)	2.4	1.7	1.3	-5.3	5.0	1.5	1.2	2.1	1.3	0.7	0.8	1.3
Germany ^(a)	2.8	1.5	0.6	-5.6	4.5	1.4	1.7	1.9	1.4	1.0	1.6	1.8
Greece ^(a)	1.4	1.9	1.9	-6.8	5.3	1.8	1.1	0.8	0.5	-0.3	0.5	1.6
Hong Kong	3.8	2.9	-1.4	-3.1	5.2	2.4	2.5	3.1	2.7	1.4	2.0	1.9
Hungary ^(a)	4.5	5.1	4.9	-6.6	13.8	1.5	2.4	2.9	3.4	4.7	2.4	4.1
India	6.6	6.8	5.3	-2.7	7.2	7.2	3.3	3.9	3.7	3.8	2.8	2.9
Indonesia	5.1	5.2	5.0	-3.7	8.9	4.1	3.8	3.2	3.0	3.0	4.0	3.0
Ireland	8.2	8.3	5.5	-5.4	7.0	3.2	0.2	0.7	0.9	0.1	1.4	2.0
Italy ^(a)	1.7	0.7	0.3	-7.3	3.1	1.2	1.3	1.3	0.6	0.0	1.1	1.7
Japan	2.2	0.3	0.7	-6.3	3.4	1.0	0.2	0.6	0.3	0.3	0.6	1.2
Lithuania ^(a)	4.4	3.7	3.9	-5.8	12.1	1.0	3.7	2.5	2.2	0.5	3.0	1.5
Latvia ^(a)	3.8	4.5	2.2	-5.9	8.8	2.5	2.9	2.6	2.7	1.1	2.5	1.7
Mexico	2.4	2.1	-0.1	-4.8	4.8	3.3	6.0	4.9	3.6	6.6	4.2	2.6
Netherlands ^(a)	3.0	2.5	1.8	-6.1	7.9	1.3	1.3	1.6	2.7	0.3	0.8	1.7
New Zealand	3.8	3.2	2.2	-5.8	9.3	2.4	1.6	1.3	1.5	2.2	2.0	1.9
Norway	2.7	1.5	1.2	-3.8	5.8	2.0	2.0	2.3	2.2	2.6	2.6	2.5
Poland ^(a)	4.9	5.2	4.1	-6.1	9.9	2.6	1.6	1.2	2.1	3.2	1.8	2.2
Portugal ^(a)	3.5	2.6	2.2	-7.4	10.7	1.5	1.6	1.2	0.3	-0.8	1.4	1.8
Romania ^(a)	6.9	4.5	4.2	-5.0	10.8	2.6	1.1	4.1	3.9	-0.7	2.8	1.5
Russia	1.8	2.5	1.3	-6.0	11.1	1.3	3.7	2.9	4.5	4.3	5.5	3.8
Singapore	4.3	3.5	0.7	-5.4	10.1	2.3	0.6	0.4	0.6	0.8	2.7	1.9
South Africa	1.4	0.7	0.1	-6.6	5.9	1.5	4.5	4.1	3.6	2.8	4.1	3.5
S. Korea	3.2	2.7	2.0	-2.6	4.5	2.7	1.9	1.5	0.4	-0.3	2.3	1.6
Slovakia ^(a)	3.0	4.0	2.3	-5.7	9.1	1.3	1.4	2.5	2.8	2.2	2.9	2.2
Slovenia ^(a)	5.1	4.2	2.4	-3.6	6.4	1.8	1.6	1.9	1.7	1.5	2.8	2.1
Spain ^(a)	2.9	2.4	2.0	-5.3	4.7	1.6	2.0	1.7	0.8	0.7	0.9	2.0
Sweden ^(a)	2.7	2.3	1.3	-3.1	5.1	1.5	1.9	2.0	1.7	1.1	1.9	1.9
Switzerland	1.9	2.7	0.9	-4.6	4.8	2.2	0.6	1.1	0.1	0.4	1.2	1.0
Taiwan	3.3	2.7	2.7	-3.2	5.5	2.6	0.0	1.0	0.6	-0.9	1.4	0.6
Turkey	7.4	2.9	0.9	-4.2	9.5	3.3	11.1	16.3	15.2	11.6	10.3	4.8
UK ^(a)	1.9	1.3	1.4	-7.2	6.8	1.9	2.7	2.4	1.8	1.5	0.9	1.8
US	2.4	2.9	2.3	-5.5	4.8	1.7	1.8	2.1	1.4	1.1	1.5	2.0
Vietnam	6.7	7.1	7.0	3.6	8.9	5.8	3.5	3.6	2.8	1.9	2.3	2.1
Euro Area ^(a)	2.7	1.9	1.2	-5.7	5.0	1.5	1.5	1.8	1.2	0.6	1.2	1.7
EU-28 ^(a)	2.7	2.0	1.5	-6.0	5.6	1.6	1.7	1.9	1.5	1.0	1.3	1.8
OECD	2.7	2.3	1.7	-5.5	5.3	1.8	2.0	2.5	2.1	2.0	2.1	2.1
World	3.8	3.6	2.9	-3.5	7.0	3.5	3.8	3.9	4.1	3.9	4.2	3.2

Note: (a) Harmonised consumer price inflation in the EU economies and inflation measured by the consumer expenditure deflator in the rest of the world.

Table B2. Fiscal balance and government debt

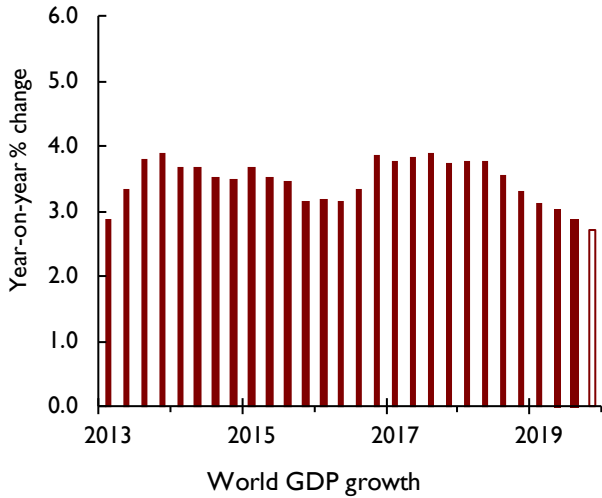
	Fiscal balance (per cent of GDP) ^(a)						Government debt (per cent of GDP, end year) ^(b)					
	2017	2018	2019	2020	2021	2026	2017	2018	2019	2020	2021	2026
Australia	-0.8	0.0	0.4	-11.3	-4.7	-1.3	43.1	42.8	41.8	52.5	55.3	48.0
Austria	-0.7	0.2	0.4	-4.8	-1.4	-0.8	78.1	73.9	70.5	76.3	72.6	61.8
Belgium	-0.7	-0.7	-0.4	-3.5	0.9	-0.3	101.8	100.0	98.9	106.8	98.5	82.2
Bulgaria	1.1	1.8	2.0	-2.3	1.9	0.1	-	-	-	-	-	-
Canada	-0.1	-0.4	-0.4	-9.1	-4.6	-1.2	92.5	93.2	93.0	103.3	101.8	88.6
Czechia	1.6	1.1	0.7	-4.9	-3.2	-1.9	33.7	31.7	31.4	36.6	37.0	37.9
Denmark	1.7	0.8	1.3	-2.9	-0.7	-0.2	35.5	33.8	33.0	37.5	35.1	28.9
Estonia	-0.8	-0.6	-0.6	-0.7	-0.7	-1.2	-	-	-	-	-	-
Finland	-0.7	-0.8	-0.2	-2.7	0.7	-1.0	60.9	59.0	60.2	66.5	60.8	53.7
France	-2.8	-2.5	-2.8	-5.9	-3.5	-2.6	98.4	98.3	99.2	109.6	107.5	103.6
Germany	1.2	1.9	1.3	-4.2	-0.9	-0.8	65.3	61.9	60.2	67.5	63.2	49.1
Greece	0.7	1.0	0.4	-5.8	-2.0	-0.1	176.6	181.9	179.5	210.6	196.4	158.8
Hungary	-2.4	-2.3	-2.8	-5.9	-2.4	-2.9	71.7	69.0	65.5	66.7	64.4	60.6
Ireland	-0.3	0.1	0.0	-2.0	-0.2	-0.8	67.8	63.6	58.9	64.2	58.5	45.2
Italy	-2.4	-2.2	-1.8	-4.5	-2.9	-2.4	134.0	134.9	135.5	150.9	147.3	135.3
Japan	-3.0	-2.4	-2.4	-3.7	-2.3	-2.7	220.2	225.0	227.7	234.2	237.6	217.6
Lithuania	0.5	0.6	0.7	0.7	0.7	-0.6	-	-	-	-	-	-
Latvia	-0.5	-0.7	-0.9	-0.9	-0.9	-1.0	-	-	-	-	-	-
Netherlands	1.3	1.5	1.1	-2.3	-1.5	-1.6	56.9	52.4	49.1	54.8	51.7	50.6
Poland	-1.5	-0.2	0.3	-3.5	-0.7	-1.7	49.5	47.3	45.8	49.8	46.2	42.0
Portugal	-3.0	-0.5	0.4	-6.2	-1.5	-0.6	126.0	122.2	116.2	130.7	118.0	99.0
Romania	-2.6	-3.0	-3.0	-9.6	-3.9	-2.2	-	-	-	-	-	-
Slovakia	-1.0	-1.1	-0.4	-0.1	0.1	-0.4	-	-	-	-	-	-
Slovenia	0.0	0.8	0.9	0.7	0.6	-1.0	-	-	-	-	-	-
Spain	-3.0	-2.5	-1.9	-4.0	-2.5	-1.8	98.6	97.6	96.3	105.4	100.4	87.3
Sweden	1.4	0.8	0.3	-6.2	-1.5	-1.0	40.7	38.7	35.8	42.3	40.7	36.7
UK	-2.5	-2.2	-2.1	-9.2	-5.6	-2.7	85.5	85.0	84.7	98.9	97.2	93.9
US	-4.3	-6.6	-7.2	-15.3	-9.8	-4.7	103.8	105.3	106.8	120.5	128.5	132.5

Notes: (a) General government financial balance; Maastricht definition for EU countries. (b) Maastricht definition for EU countries.

Table B3. Unemployment and current account balance

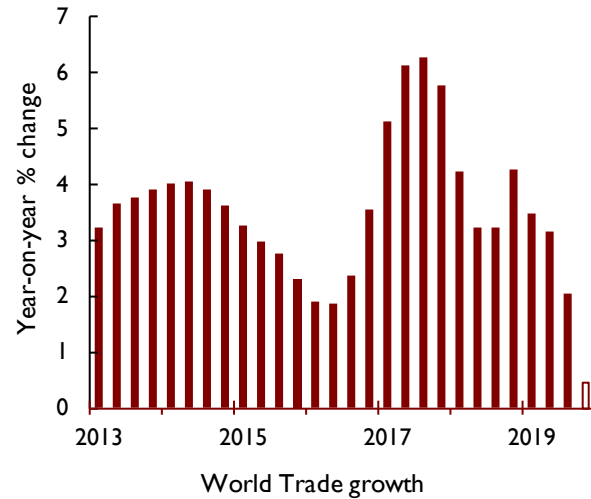
	Standardised unemployment rate						Current account balance (per cent of GDP)					
	2017	2018	2019	2020	2021	2022–26	2017	2018	2019	2020	2021	2022–26
Australia	5.6	5.3	5.2	6.5	5.1	4.8	-2.6	-2.1	0.5	-0.3	2.2	1.6
Austria	5.5	4.9	4.5	5.5	4.9	4.2	1.5	2.4	1.9	2.9	0.8	1.5
Belgium	7.1	5.9	5.3	9.7	6.6	5.5	1.2	-1.0	-1.2	-0.6	2.2	1.7
Bulgaria	6.2	5.2	4.2	11.6	5.0	4.3	3.6	1.3	4.0	4.4	6.6	3.0
Canada	6.3	5.8	5.7	10.9	7.7	6.6	-2.8	-2.5	-2.0	-0.6	-0.1	-0.2
China	–	–	–	–	–	–	1.6	0.2	1.0	1.1	1.2	1.2
Czechia	2.9	2.3	2.0	5.7	4.1	3.5	1.5	0.5	-0.3	3.4	3.2	0.9
Denmark	5.8	5.1	5.0	6.8	5.8	5.5	7.8	7.0	7.8	6.6	8.1	9.0
Estonia	5.8	5.3	4.4	11.3	8.1	6.6	2.7	2.0	2.2	-3.2	0.8	-0.2
Finland	8.6	7.4	6.7	8.4	7.1	6.8	-0.7	-1.6	-0.8	2.1	2.6	3.4
France	9.4	9.0	8.5	11.0	9.9	8.0	-0.7	-0.6	-0.8	-0.8	-1.0	-0.9
Germany	3.8	3.4	3.2	5.7	4.3	3.1	7.8	7.5	7.3	6.2	6.8	4.1
Greece	21.5	19.3	17.3	23.0	18.0	12.7	-1.7	-2.9	-1.4	-3.9	-2.1	0.3
Hungary	4.2	3.7	3.5	14.4	5.3	4.5	2.3	0.0	-0.8	1.7	2.9	0.4
Ireland	6.8	5.8	5.0	9.6	8.6	5.0	0.0	10.7	-9.3	6.0	10.2	10.6
Italy	11.3	10.6	9.9	11.2	11.3	10.7	2.7	2.6	3.0	2.5	0.7	4.2
Japan	2.8	2.4	2.4	3.8	4.2	3.0	4.2	3.5	3.6	4.2	2.5	2.1
Lithuania	7.1	6.2	6.3	13.2	10.2	7.4	0.6	0.2	3.7	1.5	3.3	2.4
Latvia	8.7	7.4	6.3	9.7	6.7	6.4	0.6	-0.8	-0.7	-2.9	-1.2	0.2
Netherlands	4.8	3.8	3.4	6.1	4.9	3.9	10.8	10.9	10.2	11.1	12.7	10.6
Poland	4.9	3.8	3.3	7.3	4.6	2.7	0.0	-1.0	1.1	3.2	2.6	2.4
Portugal	9.0	7.0	6.6	10.0	7.6	6.9	1.3	0.4	-0.1	2.9	2.5	2.8
Romania	4.9	4.2	3.9	9.6	5.7	4.5	-3.2	-4.5	-4.7	-6.3	-1.7	-2.4
Slovakia	8.1	6.5	5.8	11.6	7.0	6.4	-2.0	-2.5	-3.0	-6.5	-1.9	-0.2
Slovenia	6.6	5.2	4.4	5.6	5.1	5.8	6.2	6.1	6.5	7.2	1.2	2.0
Spain	17.3	15.3	14.1	17.1	16.2	12.3	2.7	1.9	2.0	3.3	2.8	2.7
Sweden	6.7	6.3	6.8	8.2	7.2	6.9	3.1	1.7	3.9	5.1	4.9	7.2
UK	4.4	4.1	3.8	8.5	6.5	4.6	-3.5	-3.9	-3.8	-0.6	-2.5	-2.5
US	4.4	3.9	3.7	8.5	6.0	5.2	-2.3	-2.4	-2.3	-1.6	-1.9	-1.4

Figure B1. World GDP is estimated to have expanded by about 2.7 per cent in the fourth quarter of 2019



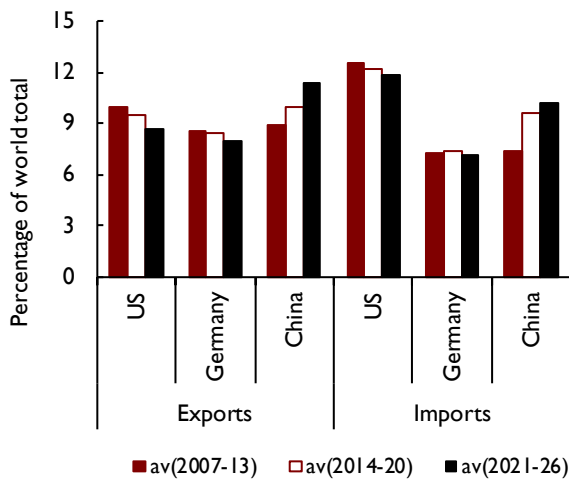
Source: NiGEM database and NIESR forecasts.

Figure B2. NIESR estimates that world trade grew by just under 0.5 per cent in 2019Q4



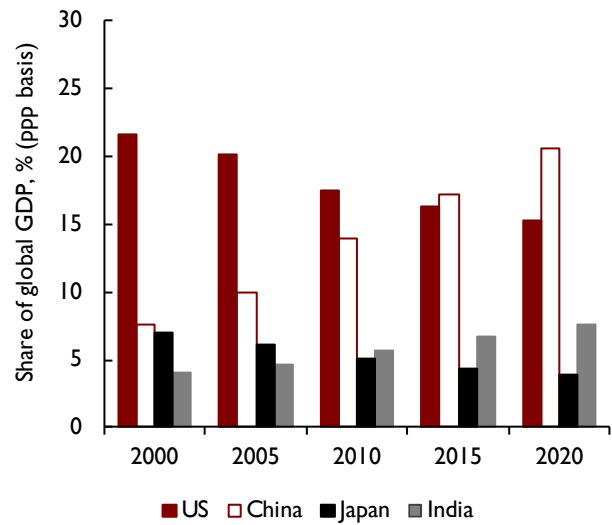
Source: NiGEM database and NIESR forecasts.

Figure B3. US is expected to remain the world's largest importer of goods and services until the end of our forecast horizon



Source: NiGEM database and NIESR forecasts.

Figure B4. Changing composition of world GDP



Source: NiGEM database and NIESR forecasts.

	Percentage change						
	2016	2017	2018	2019	2020	2021	Average 2022–26
GDP	1.6	2.4	2.9	2.3	−5.5	4.8	1.7
Consumption	2.7	2.6	3.0	2.6	−7.8	7.7	2.0
Investment : housing	6.5	3.5	−1.5	−1.5	−3.5	4.5	4.0
: business	0.7	4.4	6.4	2.1	−21.9	16.8	2.7
Government : consumption	1.8	0.6	1.7	1.8	14.7	−6.6	0.3
: investment	1.8	1.2	1.9	4.4	16.8	−8.4	0.1
Stockbuilding ^(a)	−0.6	0.0	0.1	0.1	−0.3	0.0	0.0
Total domestic demand	1.8	2.6	3.2	2.4	−6.1	5.7	1.9
Export volumes	0.0	3.5	3.0	0.0	−9.4	12.1	2.7
Import volumes	2.0	4.7	4.4	1.0	−11.7	15.2	3.4
Average earnings	1.2	2.8	3.0	3.5	−0.4	−0.3	3.5
Private consumption deflator	1.0	1.8	2.1	1.4	1.1	1.5	2.0
RPDI	1.8	2.8	3.9	2.8	−0.2	0.6	1.7
Unemployment, %	4.9	4.4	3.9	3.7	8.5	6.0	5.2
General Govt. balance as % of GDP	−5.4	−4.3	−6.6	−7.2	−15.3	−9.8	−6.1
General Govt. debt as % of GDP ^(b)	105.1	103.8	105.3	106.8	120.5	128.5	132.2
Current account as % of GDP	−2.3	−2.3	−2.4	−2.3	−1.6	−1.9	−1.4

Note: (a) Change as a percentage of GDP. (b) End-of-year basis.

	Percentage change						
	2016	2017	2018	2019	2020	2021	Average 2022–26
GDP	1.0	3.2	2.0	1.6	−6.1	6.3	2.3
Consumption	2.1	3.6	2.1	1.6	−12.8	8.6	2.7
Investment : housing	3.9	2.2	−1.6	−0.6	−4.8	2.9	1.7
: business	−10.9	3.5	1.8	−0.7	−3.6	9.6	2.3
Government : consumption	1.8	2.3	3.0	2.1	2.8	1.3	1.6
: investment	−0.1	6.3	5.2	−0.7	1.3	1.7	1.7
Stockbuilding ^(a)	0.0	0.9	−0.2	0.1	−0.2	0.0	0.0
Total domestic demand	0.5	4.2	1.9	1.3	−7.7	6.3	2.3
Export volumes	1.4	1.4	3.1	1.2	−11.1	14.2	3.2
Import volumes	0.1	4.2	2.6	0.3	−16.1	14.8	3.4
Average earnings	−0.5	3.0	2.7	2.3	1.9	1.6	3.7
Private consumption deflator	0.9	1.0	1.7	1.7	2.1	1.7	1.5
RPDI	0.0	3.7	2.4	2.9	0.1	0.8	2.4
Unemployment, %	7.0	6.3	5.8	5.7	10.9	7.7	6.6
General Govt. balance as % of GDP	−0.5	−0.1	−0.4	−0.4	−9.1	−4.6	−1.1
General Govt. debt as % of GDP ^(b)	96.4	92.5	93.2	93.0	103.3	101.8	93.4
Current account as % of GDP	−3.1	−2.8	−2.5	−2.0	−0.6	−0.1	−0.2

Note: (a) Change as a percentage of GDP. (b) End-of-year basis.

Table B6. Japan

Percentage change

	2016	2017	2018	2019	2020	2021	Average 2022–26
GDP	0.5	2.2	0.3	0.7	-6.3	3.4	1.0
Consumption	-0.3	1.3	0.0	0.2	-8.0	6.4	0.8
Investment : housing	5.9	1.7	-6.7	2.0	-4.2	4.7	5.1
: business	-1.5	4.1	2.2	0.7	-9.4	0.0	3.2
Government: consumption	1.4	0.1	0.9	1.9	0.5	-0.6	0.2
: investment	-0.2	0.5	0.3	2.8	0.4	-1.0	0.1
Stockbuilding ^(a)	-0.1	0.1	0.0	0.1	-0.1	0.0	0.0
Total domestic demand	-0.1	1.6	0.3	0.9	-6.1	3.4	1.1
Export volumes	1.7	6.8	3.4	-1.8	-8.1	9.6	2.2
Import volumes	-1.6	3.4	3.3	-0.7	-6.5	9.5	3.0
Average earnings	1.7	0.7	2.0	3.0	0.0	-3.1	2.0
Private consumption deflator	-0.5	0.2	0.6	0.3	0.3	0.6	1.2
RPDI	1.5	0.7	2.1	0.8	-3.4	0.5	1.5
Unemployment, %	3.1	2.8	2.4	2.4	3.8	4.2	3.0
Govt. balance as % of GDP	-3.5	-3.0	-2.4	-2.4	-3.7	-2.3	-1.7
Govt. debt as % of GDP ^(b)	222.5	220.2	225.0	227.7	234.2	237.6	224.9
Current account as % of GDP	3.9	4.2	3.5	3.6	4.2	2.5	2.1

Note: (a) Change as a percentage of GDP. (b) End-of-year basis.

Table B7. Euro Area

Percentage change

	2016	2017	2018	2019	2020	2021	Average 2022–26
GDP	1.9	2.7	1.9	1.2	-5.7	5.0	1.5
Consumption	1.9	1.8	1.4	1.3	-8.0	8.9	0.9
Private investment	4.7	3.9	2.5	4.6	-9.6	2.7	3.1
Government : consumption	1.9	1.3	1.1	1.6	4.6	-1.3	0.6
: investment	-0.9	2.3	2.8	2.7	0.9	1.9	1.0
Stockbuilding ^(a)	0.1	0.1	0.0	-0.4	-0.2	0.0	0.0
Total domestic demand	2.4	2.2	1.5	1.6	-5.5	5.1	1.2
Export volumes	2.9	5.7	3.3	2.5	-8.9	14.2	2.6
Import volumes	4.2	5.2	2.7	3.8	-8.8	15.0	2.2
Average earnings	1.2	1.7	2.0	2.3	-0.8	0.2	3.4
Harmonised consumer prices	0.2	1.5	1.8	1.2	0.6	1.2	1.7
RPDI	2.0	1.4	1.6	1.3	-1.7	0.2	1.8
Unemployment, %	10.0	9.1	8.2	7.6	10.2	9.0	7.3
Govt. balance as % of GDP	-1.4	-0.9	-0.5	-0.6	-4.3	-1.8	-1.0
Govt. debt as % of GDP ^(b)	90.7	88.5	86.6	85.5	92.3	90.0	82.8
Current account as % of GDP	3.2	3.2	3.1	3.0	3.3	3.1	2.8

Note: (a) Change as a percentage of GDP. (b) End-of-year basis; Maastricht definition.

	Percentage change						
	2016	2017	2018	2019	2020	2021	Average 2022–26
GDP	2.1	2.8	1.5	0.6	−5.6	4.5	1.4
Consumption	2.0	1.6	1.2	1.6	−7.7	9.2	0.9
Investment : housing	4.7	1.4	3.1	4.1	−6.1	0.8	3.9
: business	3.0	3.8	3.5	1.7	−13.9	−1.8	4.2
Government : consumption	4.1	2.4	1.4	2.6	9.2	−3.8	−0.1
: investment	4.5	4.3	4.8	3.9	0.4	3.2	0.6
Stockbuilding ^(a)	0.2	0.4	0.3	−0.9	0.1	0.0	0.0
Total domestic demand	3.0	2.6	2.1	1.0	−4.5	3.9	1.3
Export volumes	2.2	5.5	2.3	0.9	−11.7	18.1	1.9
Import volumes	4.2	5.7	3.7	1.9	−8.4	16.2	1.6
Average earnings	2.7	2.4	2.9	3.5	−0.6	0.5	4.0
Harmonised consumer prices	0.3	1.7	1.9	1.4	1.0	1.6	1.8
RPDI	2.4	1.7	1.9	1.5	−1.2	−1.2	1.4
Unemployment, %	4.2	3.8	3.4	3.2	5.7	4.3	3.1
Govt. balance as % of GDP	1.2	1.2	1.9	1.3	−4.2	−0.9	0.1
Govt. debt as % of GDP ^(b)	69.2	65.3	61.9	60.2	67.5	63.2	53.6
Current account as % of GDP	8.4	7.8	7.5	7.3	6.2	6.8	4.1

Note: (a) Change as a percentage of GDP. (b) End-of-year basis; Maastricht definition.

	Percentage change						
	2016	2017	2018	2019	2020	2021	Average 2022–26
GDP	1.0	2.4	1.7	1.3	−5.3	5.0	1.5
Consumption	1.6	1.6	0.9	1.2	−8.3	7.5	0.9
Investment : housing	2.8	6.6	2.0	2.1	−4.1	4.9	6.2
: business	3.1	5.5	3.2	4.1	−6.5	6.8	1.8
Government : consumption	1.4	1.5	0.8	1.3	4.0	−0.8	1.1
: investment	0.0	0.5	2.4	3.9	2.0	1.7	1.5
Stockbuilding ^(a)	−0.4	0.1	−0.3	−0.4	−0.5	0.0	0.0
Total domestic demand	1.4	2.4	1.0	1.4	−5.1	4.9	1.4
Export volumes	1.8	4.0	3.5	1.9	−10.1	16.5	2.7
Import volumes	3.0	4.1	1.2	2.2	−9.2	15.8	2.4
Average earnings	0.7	2.1	1.8	1.7	0.2	0.5	3.3
Harmonised consumer prices	0.3	1.2	2.1	1.3	0.7	0.8	1.3
RPDI	1.6	1.4	1.2	2.0	−3.1	2.0	2.2
Unemployment, %	10.0	9.4	9.0	8.5	11.0	9.9	8.0
Govt. balance as % of GDP	−3.5	−2.8	−2.5	−2.8	−5.9	−3.5	−2.5
Govt. debt as % of GDP ^(b)	98.0	98.4	98.3	99.2	109.6	107.5	105.3
Current account as % of GDP	−0.6	−0.7	−0.6	−0.8	−0.8	−1.0	−0.9

Note: (a) Change as a percentage of GDP. (b) End-of-year basis; Maastricht definition.

Table B10. Italy Percentage change

	2016	2017	2018	2019	2020	2021	Average 2022–26
GDP	1.4	1.7	0.7	0.3	-7.3	3.1	1.2
Consumption	1.2	1.5	0.9	0.4	-8.8	10.3	-0.1
Investment : housing	0.5	1.5	2.5	3.1	-3.7	0.4	-0.2
: business	6.6	5.1	4.4	0.8	-9.3	-7.7	2.2
Government : consumption	0.7	-0.1	0.1	-0.4	1.4	0.1	0.2
: investment	-1.0	-2.5	3.0	1.9	1.1	0.0	0.1
Stockbuilding ^(a)	0.4	0.2	-0.1	-0.7	-0.4	0.0	0.0
Total domestic demand	2.0	1.7	1.0	-0.3	-6.8	5.4	0.2
Export volumes	1.9	6.0	1.7	1.4	-13.1	13.1	3.6
Import volumes	4.1	6.5	2.8	-0.2	-11.4	20.8	0.5
Average earnings	0.2	0.7	1.7	1.1	-1.7	-0.8	2.1
Harmonised consumer prices	-0.1	1.3	1.3	0.6	0.0	1.1	1.7
RPDI	1.4	1.1	0.7	0.5	-0.2	-1.1	0.5
Unemployment, %	11.7	11.3	10.6	9.9	11.2	11.3	10.7
Govt. balance as % of GDP	-2.4	-2.4	-2.2	-1.8	-4.5	-2.9	-2.2
Govt. debt as % of GDP ^(b)	134.7	134.0	134.9	135.5	150.9	147.3	139.0
Current account as % of GDP	2.6	2.7	2.6	3.0	2.5	0.7	4.2

Note: (a) Change as a percentage of GDP. (b) End-of-year basis; Maastricht definition.

Table B11. Spain Percentage change

	2016	2017	2018	2019	2020	2021	Average 2022–26
GDP	3.0	2.9	2.4	2.0	-5.3	4.7	1.6
Consumption	2.7	3.0	1.8	1.1	-8.1	8.7	1.6
Investment : housing	8.9	11.5	7.7	3.0	-2.6	5.6	3.0
: business	4.4	3.1	2.9	1.6	-15.6	9.4	2.8
Government: consumption	1.0	1.0	1.9	2.3	3.2	0.0	0.9
: investment	-19.9	4.4	9.7	-1.3	-0.3	2.1	1.1
Stockbuilding ^(a)	-0.2	0.0	0.2	0.1	0.0	0.0	0.0
Total domestic demand	2.1	3.1	2.7	1.5	-6.0	6.5	1.6
Export volumes	5.4	5.6	2.2	2.6	-7.6	7.4	2.3
Import volumes	2.6	6.6	3.3	1.2	-10.1	13.5	2.5
Average earnings	-0.2	1.4	0.7	2.2	0.7	3.0	3.2
Harmonised consumer prices	-0.3	2.0	1.7	0.8	0.7	0.9	2.0
RPDI	2.5	1.2	2.2	-1.5	-1.9	3.0	2.3
Unemployment, %	19.6	17.3	15.3	14.1	17.1	16.2	12.3
Govt. balance as % of GDP	-4.3	-3.0	-2.5	-1.9	-4.0	-2.5	-1.6
Govt. debt as % of GDP ^(b)	99.2	98.6	97.6	96.3	105.4	100.4	91.9
Current account as % of GDP	3.2	2.7	1.9	2.0	3.3	2.8	2.7

Note: (a) Change as a percentage of GDP. (b) End-of-year basis; Maastricht definition.

