

THE WORLD ECONOMY

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World Overview

Overview

After a period of relatively strong GDP growth in 2017 and early 2018, global output growth has slowed. In particular, growth in industrial production and world trade has stalled since the third quarter of last year, raising worries that this will lead to a widespread and significant slowing in economic growth. Tariffs, increased uncertainty over future trade policy and reduced business confidence have all played some part in this stalling in industrial activity as industrial production is the area of economic activity most heavily involved in international trade. While industry accounts for only around 25 per cent of global value-added, the prospect of slower growth here and increased uncertainty has led to lower long-term bond yields and leading central banks announcing a more accommodative policy bias.

Our central case forecast recognises the downside effect on activity from the stalling in industrial production growth but also notes that monetary policy loosening in major economies, together with the prospect of fiscal stimulus in some economies, should result in the global economic expansion continuing. GDP growth is expected to be slower this year and next than last year, when the global economy grew by 3.6 per cent. We forecast global GDP growth of $3\frac{1}{4}$ per cent this year, probably the slowest since 2009 and $\frac{1}{2}$ percentage point lower than we forecast a year ago, and $3\frac{1}{2}$ per cent next.

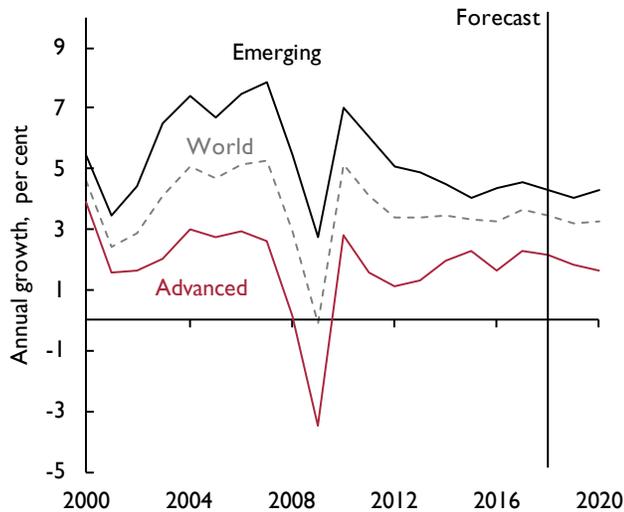
The weaker global economic outlook reflects a series of factors that have hit global activity after a period in which accommodative monetary policy and a US fiscal stimulus have boosted activity. The cumulative effects

of the US monetary policy tightening from 2016 as the Federal Reserve followed a policy of normalisation, the sudden imposition of tariffs by the US, the uncertainty over future tariffs, wider credit spreads and the slowing growth in China have all played a role in stalling growth in trade and industrial production. In response to these developments, expectations of more accommodative monetary and fiscal policies in advanced economies, aided by a continued weak inflationary outlook, which helps to make looser monetary policy possible, support the continued economic growth in our forecast. While 2019 and 2020 are expected to be years during which global GDP growth will under-perform its post-financial crisis average pace, the policy response should prevent a sustained downturn. However, the fluidity of speculations about a trade war add a downside caution to this view.

Between 2011 and 2016, annual global GDP growth averaged 3.6 per cent, with advanced economies growing at 1.7 per cent and emerging economies at 4.8 per cent. The pace of growth sped up in 2017, with global GDP growth at a cyclical peak of 3.8 per cent. Despite this pick-up, the pace of GDP growth remained well below the 4.2 per cent annual average seen in the decade before the financial crisis, reflecting in large part the inevitable slowing of the pace of economic expansion in China. In retrospect, 2017 was a stand-out year, with China, the US and the Euro Area all seeing faster GDP growth than in the previous year. Last year had a more mixed picture and we expect the pace of GDP growth in each of these three areas to slow this year.

*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 Nathaniel Butler-Blondel for preparing the charts and compiling the database underlying the forecast. The forecast was completed on 15 July 2019. Exchange rate, interest rate and equity price assumptions are based on information available to 5 July 2019. Unless otherwise specified, the source of all data reported in tables and figures is the NiGEM database and NIESR forecast baseline.

Figure 1. GDP growth in advanced and emerging economies



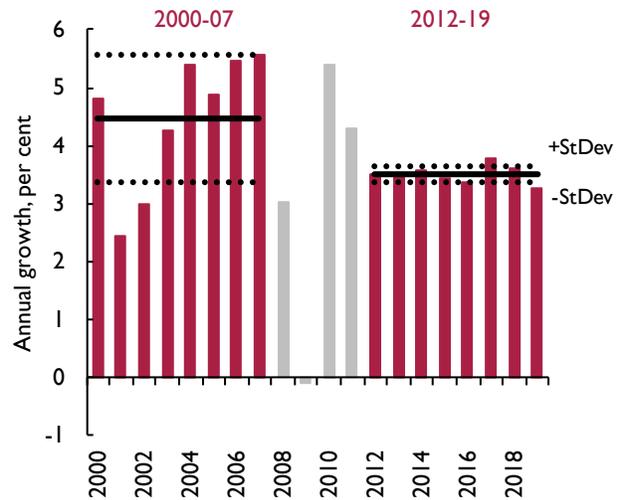
Source: NiGEM database and NIESR forecast.

Figure 1 shows the recent pace of and our forecasts for annual GDP growth in both the advanced economies (AE) and the developing and emerging economies (EM). The subdued pace of expansion in the advanced economies, despite policy interest rates being held at ultra-low levels for an extended period in several economies, is expected to continue. Since the Great Recession the slowing pace of annual output growth in the emerging economies – the slower average annual pace of growth (5 per cent between 2011 and 2018 compared to 6.6 per cent between 2000 and 2007) – is almost entirely due to the slower pace of growth in China (7.5 per cent in the later period compared with 10.5 per cent in the earlier), as China accounts for around one third of emerging economies' GDP.¹

The slowdown in growth in China was anticipated, reflecting the changing development phase of its economy after many years of very rapid expansion. Economic growth in China last year dropped to 6.6 per cent, its slowest rate since 1990 and would have been weaker had it not been for the policy stimulus (Hurst and Liadze, 2019). Growth of around 6 per cent a year is expected in both 2019 and 2020, with the pace of growth thereafter dropping below 6 per cent a year.

While the overall growth picture shows a gradual slowing, this pattern is not universal. Argentina, Venezuela, and Turkey are experiencing recessions, as did Italy in the second half of last year. While there may be some further

Figure 2. Global output growth across decades



Source: IMF WEO database, annual data, NIESR forecast for 2018 and 2019 and authors' calculations.

de-synchronisation ahead, compared to previous decades the current decade has seen surprisingly stable rates of global GDP growth. Figure 2 shows that the variation over time of annual global GDP growth over the years since the financial crisis has been lower than in the years leading up to the crisis (Naisbitt, 2019b).

While many emerging economies are continuing to show steady economic growth, slowing GDP growth in three economic areas that comprise around half of global GDP (USA, China and the Euro Area) is likely to have a longer reach through trade effects. Indicators of world trade growth showed a substantial slowing in the final quarter of 2018 that has continued into this year. The slowdown was particularly marked in emerging Asia and China. Part of this is likely to be in response to the US and Chinese tariff changes last year. Earlier this year, the news from trade negotiations seemed reasonably positive, but this changed in May when President Trump unexpectedly increased US tariff rates on \$200 billion of Chinese goods, from 10 per cent to 25 per cent. Both the direct action and its unexpectedness will have a depressing effect on the global outlook. The latest news from the G20 Osaka summit in late June was, once again, more positive for a trade deal, but uncertainty remains. Potential further tariff increases, such as on the automobile sector, give a downside risk to the outlook, particularly if they are accompanied by reductions in business confidence (as discussed in Box A).

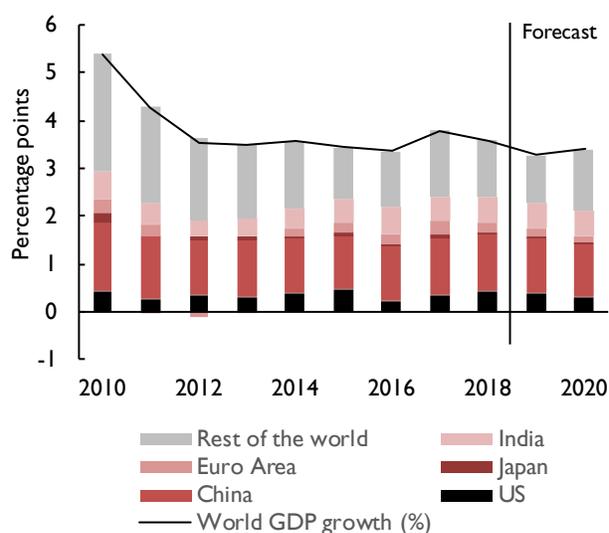
Table 1. Forecast summary

	Real GDP ^(a)												World trade ^(b)
	World	OECD	China	BRICS+	Euro Area	USA	Japan	Germany	France	Italy	UK	Canada	
2009–14	3.4	1.1	8.7	6.1	-0.1	1.4	0.4	0.9	0.5	-1.3	0.9	1.7	3.5
2015	3.4	2.5	6.9	4.8	2.0	2.9	1.3	1.5	1.0	0.8	2.3	0.7	2.8
2016	3.4	1.8	6.7	5.1	1.9	1.6	0.6	2.2	1.0	1.2	1.8	1.1	2.4
2017	3.8	2.6	6.8	5.5	2.5	2.2	1.9	2.5	2.4	1.8	1.8	3.0	5.5
2018	3.6	2.3	6.6	5.4	1.9	2.9	0.8	1.4	1.7	0.7	1.4	1.9	3.9
2019	3.3	1.8	6.2	4.9	1.2	2.6	0.9	0.6	1.4	0.1	1.2	1.3	3.7
2020	3.4	1.7	6.0	5.1	1.4	2.0	0.3	1.2	1.5	0.4	1.1	2.0	4.3
2021–25	3.4	1.8	5.4	4.9	1.3	1.8	0.8	1.1	1.5	0.7	1.7	1.6	4.1

	Private consumption deflator						Interest rates ^(c)						Oil (\$ per barrel) ^(d)
	OECD	BRICS+	Euro Area	USA	Japan	Germany	France	Italy	UK	USA	Japan	Euro Area	
2009–14	1.6	5.2	1.1	1.5	-0.5	1.2	0.6	1.4	2.1	0.3	0.1	0.9	94.7
2015	0.8	5.1	0.3	0.3	0.4	0.6	0.3	0.2	0.5	0.3	0.1	0.1	52.1
2016	1.1	4.3	0.4	1.1	-0.5	0.7	0.2	0.2	1.4	0.5	-0.1	0.0	42.9
2017	2.1	3.3	1.3	1.8	0.2	1.6	0.9	1.1	2.1	1.1	-0.1	0.0	54.0
2018	2.5	3.8	1.4	2.0	0.5	1.4	1.5	1.1	2.3	1.9	-0.1	0.0	70.4
2019	2.3	4.1	1.3	1.6	0.5	1.2	1.1	0.8	1.8	2.4	-0.1	0.0	66.2
2020	2.6	3.9	1.6	2.2	2.2	1.7	1.5	1.1	2.1	2.2	-0.2	0.0	66.3
2021–25	2.1	3.1	1.6	2.0	1.1	1.7	1.4	1.4	2.0	2.6	0.1	0.5	69.9

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.

Figure 3. Percentage point contribution to global economic growth (PPP weighted)



Source: NiGEM database and NIESR forecast.

Despite, importantly for households, unemployment rates continuing to fall, inflationary pressures have remained largely absent in the advanced economies, which, together with the weakening short-term outlook, has enabled policymakers to move to a more dovish monetary policy approach in the US, Euro Area, Japan and India in order to support output growth continuing in the near term. Lower long-term bond yields over the past quarter and lower policy interest rate expectations, are helping to support continued economic growth at a time when inflation expectations remain subdued. Our view is that we have now seen a peak in the global growth rate cycle and, unless one of the potential downside risks that we consider occurs, we expect the slowing in the growth cycle to continue to be gradual rather than abrupt, as outlined in table 1 and figure 3.

For the medium-term outlook, based on population growth projections and productivity growth failing to show a return to pre-recession growth rates, we continue to expect that the pace of output growth in the advanced economies will remain moderate relative to the pre-financial crisis experience. Our medium-term forecast continues to expect global GDP growth to

run at around 3½ per cent a year, with growth in the advanced economies continuing to be slower than in the emerging economies. The possibility that productivity growth could rebound back to its rate seen in the decade before the financial crisis remains a potential upside risk to our GDP growth projection.

Recent developments and the baseline forecast

Recent economic developments

The economic data available up to early July paints a mixed picture for the advanced economies. On the positive side, GDP growth in the first quarter was slightly stronger than both the final quarter of 2018 and our expectations for the first quarter included in our May forecast. However, some of that relative strength has come from stockbuilding, which might subsequently reverse, and the weakness in industrial production and merchandise trade growth has continued. US tariffs on China have also been increased. These factors point to a weaker underlying outlook than three months ago, with potential concerns for a more substantial weakening. Services activity, in contrast, has remained robust, providing an underlying stability to GDP growth.

In the US, the most high profile monthly data point, the monthly non-farm payroll net change in employment, has recorded smaller net gains in four of the six months this year than last year. The latest, June, reading, however, showed a substantial increase. Indicators

from PMI activity data have been weak and industrial production is below its recent peak. The weakening pace of underlying economic activity first contributed to a more cautious ('patient') approach at the Federal Reserve and has recently been instrumental in financial markets now expecting the Federal Reserve to cut rates this year, with the interest rate projections for 2019 of the FOMC Board members up to 0.5 percentage points lower than those reported in March.²

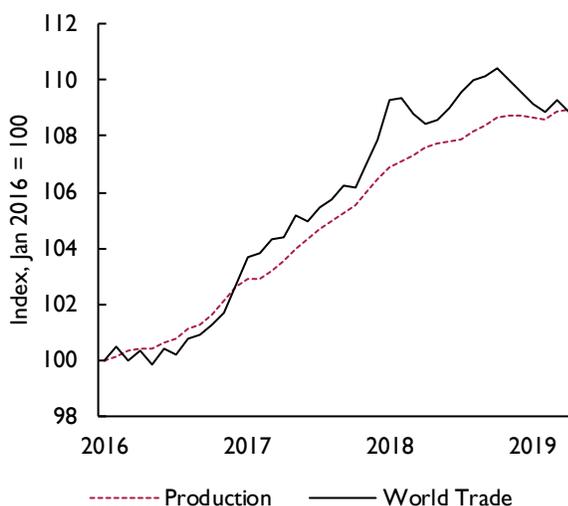
Some slowing in US activity does not, however, explain the global stalling in industrial production and trade which are illustrated in figure 4. The effects of the initial rounds of tariff impositions between the US and China appear to have coincided with a domestic slowdown in China late last year and underlying changes in the car market, which have adversely affected both German and Euro Area output growth. Purchases of new cars in China in the first half of this year are 14 per cent lower than a year earlier. The greater slowdown in merchandise trade than production may reflect some disruption to global value chains, which may also have been affected by the stronger US dollar operating through companies' financing, especially of working capital (Shin, 2019). Increased uncertainty over trading conditions due to tariffs and widening credit spreads have reinforced the slowdown in production.

Figures from the Netherlands Bureau for Economic Policy Analysis (CPB) show that the volume of world trade fell in both November and December last year, with the falls centred in Asia. The level of world trade has picked up a little in the most recent (April) figures but remains below the peak level of last October.

The stalling of activity in global industrial production and trade has, however, so far had relatively little effect on global service sector activity. As a consequence, the service sector has continued to provide an underlying picture of growth for individual economies and the global economy as a whole.

Even with slower economic growth in China last year, the emerging economies as a group continued to grow at a faster pace than the advanced economies. This year, as tariffs have hit Chinese export growth to the US, some other economies (notably Vietnam) have seen faster export growth to the US. India, the Philippines and Vietnam have continued to grow strongly, possibly benefitting from trade displacement. But growth in Turkey in 2017 has seen a rapid turnaround as sanctions have hit, the exchange rate has depreciated and inflation has risen. Argentina and, especially, Venezuela have also

Figure 4. Industrial production and merchandise trade



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

seen rapid inflation but, so far at least, their experiences have not spread to other economies.

Our revised baseline forecast

The mix of slightly stronger GDP growth than anticipated in the first quarter for advanced economies and signs of weaker GDP growth in the second quarter have led us to mark down our global GDP growth forecast for 2019 from 3.4 per cent to 3¼ per cent. This would be the weakest growth since 2009, although annual output growth was 3.4 per cent in both 2015 and 2016.

The forecast assumes that the tariff arrangements at early July remain in place and that US tariffs are not increased further. With this assumption, trade patterns settle and world trade growth is stronger next year than this. The forecast continues to show a slight rebound in output growth in 2020 as the effects of monetary loosening feed through and, at 3½ per cent, global GDP growth would remain close to the average for the current decade. Our forecast is for global growth to be at a sustainable pace, with inflation continuing broadly within target ranges.

Boosted by fiscal policy, the US recorded growth of 2.9 per cent in 2018. With that boost receding and the lagged effect of the earlier tightening of monetary policy taking hold, we expect growth to slow this year to around 2½ per cent and to 2 per cent in 2020, closer to estimates of a long-term trend rate. The weaker

recent activity data and concerns about an exposure from the extended length of the recovery and the falling yield spread have led to some speculation about a US recession in 2020. With the Federal Reserve having signalled a change in policy direction, our central expectation is that monetary policy relaxation will support continued GDP growth (figure 5). The US expansion since the financial crisis is set to become the longest on record in the US and our forecast anticipates it continuing unless severe downside risks materialise. The forecast does not assume that expansions die of old age (Rudebusch, 2016).

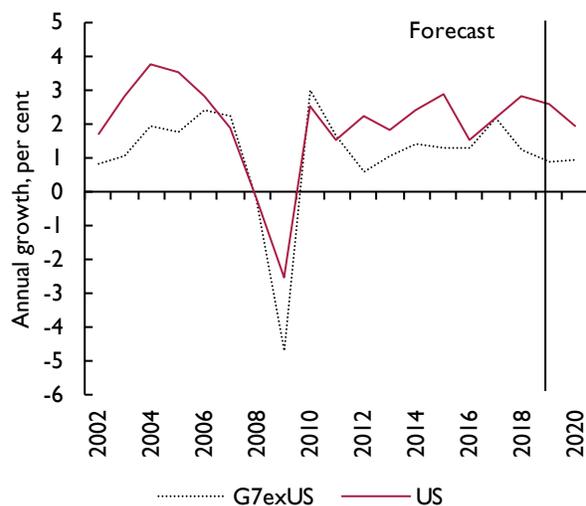
While 2.5 per cent GDP growth in the Euro Area in 2017 looked unsustainable, the pace has unwound, to 1.9 per cent last year and our forecast is for a further reduction, to 1¼ per cent this year, a rate closer to its estimated potential. Italy was in recession in the second half of last year and in the first quarter of this year GDP grew by 0.1 per cent, indicating that fragility remains. Germany narrowly avoided recession late last year and industrial production indicators, especially for cars, remain negative. Our forecast for German GDP growth this year remains below 1 per cent as a consequence. The ECB has again pushed back the possible date of any monetary tightening and promised to act to support Euro Area economic growth, especially with no sign of inflation threatening the target, although the ECB does not have the scope to cut rates to the same extent as the Federal Reserve.

We assume that the rise in the consumption tax in Japan will go ahead later this year and, based on previous experience, anticipate that this is likely to bring forward some consumer spending and give a boost to Japanese GDP growth this year at the expense of next. A temporary boost to measured inflation will result from the tax change.

Emerging economies are expected to continue to grow at a faster rate than the advanced economies over the forecast period. Within the grouping, India and China will continue to grow at a faster pace than the average. With longer-term US yields having fallen, some emerging market economies will experience less pressure from rising US dollar interest payments and that might be a positive for global growth relative to six months ago. Vietnam, Indonesia, Mexico and Singapore are all forecast to contribute to the continued steady growth of the emerging economies group.

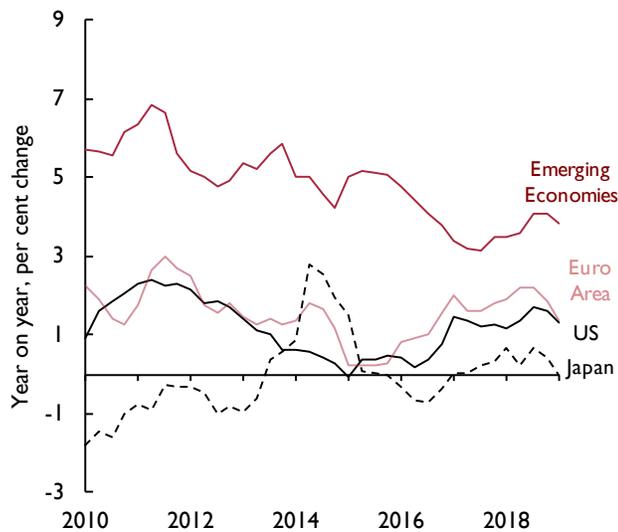
Lower oil prices than a year ago (Brent Crude at the start of July is about 15 per cent lower than a year earlier)

Figure 5. GDP growth in advanced economies



Source: NiGEM database and NIESR forecast.

Figure 6. Consumer price inflation



Source: NiGEM database.

Note: 2019 includes forecast. Consumer expenditure deflator is used for the US, Euro Area and Japan, CPI for emerging markets. Emerging markets – weighted average of Brazil, China, India, Indonesia, Mexico, Russia and Turkey.

should help continue to restrain inflation (figure 6). But oil prices have risen over the past six months, with the recent trough being at the end of last year, and so this downward bias is likely to end. The continued economic expansion, which has brought lower unemployment, may be leading to shortages of skilled labour and rising wage pressures in some economies. To the extent that these reflect a build-up of pressures on capacity and may lead to rises in unit labour costs, these could increase upward pressure on inflation. However, with a few exceptions, such as Argentina and Turkey, inflation generally remains low and stable, and we expect that to continue.

Overall, monetary policy loosening, a policy response supported by the general under-shooting of inflation targets, is expected to broadly compensate for the increased tariff uncertainty and so support growth. In addition, fiscal policy tightening cycles have ended in some major economies and there now appears to be scope for fiscal policy loosening to support growth should it be required.

Monetary policy

Global financial markets always have a keen focus on US monetary policy and that focus has become sharper over the past six months as the Federal Reserve has moved from a position of ‘normalisation’ to one of potential

policy loosening. After being raised three times in 2017, policy rates increased four times last year to reach the 2.25–2.50 per cent range. Following weaker activity indicators, especially for the manufacturing sector, at the 20 March FOMC meeting, the near-term median projections for the policy rate were reduced, in effect implying that the rate hiking cycle was over. Continued low inflation and concerns about uncertainty led to a further reduction at the June meeting, and financial markets are now expecting two policy rate cuts this year.

The monetary policy landscape has also changed in other economies. In the Euro Area, guidance on rates being held was extended by the ECB in June, to at least the first half of 2020.³ It had initially given guidance that it would continue to hold policy rates in negative territory until the summer of this year and ended its quantitative easing programme. However, the downturn in economic activity in Germany and Italy and the slowdown in growth of world trade, together with continued below target inflation, led to the date for the forward guidance on policy rates being pushed back to “at least through the end of 2019” and a new series of targeted longer-term refinancing operations were launched.

In Australia, policy rates were reduced by 0.25 per cent to 1.25 per cent in June, a record low, and policy rates have also been reduced this year in other economies, including India, Malaysia and Chile. In Japan, the central bank governor noted in June that a combination of lower rates and higher asset purchases could be adopted. As a consequence, our monetary policy interest rate expectations for the advanced economies are for a more accommodative policy than assumed in our May forecast, which helps to support economic growth.

In China, policy relaxation to support growth has already been taken (Hurst and Liadze, 2019; Kara and Liadze, 2019), but the negotiations on trade relations with the US will be a key issue, along with internal debt levels, in order to deliver the growth projections within the formal plans.

Financial and foreign exchange markets

This year has seen a prolonged recovery in equity markets from the falls late last year, with the S&P index at 5 July up 19 per cent from the end of 2018. This rebound has been replicated internationally, with the Nikkei rising 9 per cent since the start of the year, the FTSE 100 up by 12 per cent and the Eurostoxx up by 18 per cent. Despite uncertainties about tariffs and a slowdown in global economic growth, the latest support for equities appears to have come from the expectation

of looser monetary policy. The Vix index,⁴ an indicator of financial market volatility or uncertainty, spiked in late December as equities fell (reaching 36, the highest since the equity price falls in early February 2018) but has since steadily fallen back. At 13.3 on 5 July, it has shown little reaction to the uncertainties created by the tariff actions.

Following the more dovish recent tone from the Federal Reserve, US 10-year bond yields have fallen, reaching a low of 1.96 per cent on 3 July. These lower long-term rates have been transmitted internationally, so that the potential pressure from higher long-term rates in advanced economies (Naisbitt, 2018a, b) seen last year when US 10-year bond yields hit their highest since early 2011, has eased for emerging economies. For the US, as a consequence, the slope of the yield curve, a much-watched lead indicator of recession, has become negative, giving a stronger warning signal of a recession in prospect (Lenoel, 2018, 2019). In the Euro Area, 10-year government bond yields have also fallen. Notably for Italy, however, the political and economic uncertainty combined with the budget dispute with the European Commission has led to a steep increase in sovereign spreads, increasing borrowing costs, which have recently eased.

The US trade-weighted exchange rate has shown a US dollar appreciation of around 8 per cent over the period since February last year, potentially putting pressure on those non-US borrowers who have dollar denominated debt to repay. The value of the dollar remains a focus of President Trump and he has recently added the Euro Area to China as economies that have 'managed' their exchange rate to give a favourable boost to their export prospects to the US.⁵

Commodity markets

After peaking in early October 2018 at \$85 pb, Brent oil prices fell through the final quarter of last year to end the year around 35 per cent down from that peak. Oil prices firmed in the first quarter and at early July were around \$65 pb, slightly lower than 3 months ago but 15 per cent lower than a year ago. The fall from the peak has reduced concerns about potential overshooting of inflation targets in advanced economies. The forecast assumption broadly follows forward markets, supporting a continuation of the low global inflation outlook from this perspective.

For other commodities, the World Bank commodity price data shows (in dollar terms) that both food and metals prices peaked in mid 2018 and their falls since then have reflected the drop in global trade and industrial production

growth that started in the second half of last year. Metals prices in May were down almost 10 per cent on a year earlier, with food prices down 6 per cent. After falling during the final quarter of 2018, copper prices rose during the first quarter of this year, but have fallen by 8 per cent since the high in March. Since March, food prices have risen 2 per cent but metals have fallen 3 per cent.

Risks to the global forecast

Since late 2018 there has been a marked slowdown in the pace of growth of industrial production at a global level, with the auto sector being at its centre. While the tariffs on steel and aluminium, the new vehicle emissions standards in the European Union and the tariff war between the US and China have contributed to this slowdown, it is far from clear that they explain it fully. The slowdown may mark a more widespread turn in the economic cycle, giving rise to the risk that it may not be temporary. Alongside this, and with tariffs again playing a role, the rate of growth of world trade has slowed substantially. Again, this might mark the start of a more prolonged phase of slower trade growth, perhaps with some global value chains adversely impacted by the uncertainty over future tariffs and the appreciation of the US dollar. The concerns about slower world trade growth that were expressed after the financial crisis (Constantinescu *et al.*, 2014; Carreras and Kirby, 2016) could return and the trade growth of the past few years might, in hindsight, be judged as an exception.

Since the unexpected escalation of tariffs by the US on China on 29 May, the degree of optimism about a positive resolution of the talks has fluctuated. The US dispute over Huawei being involved in US security IT systems further dampened prospects. Our estimates of the effects of US tariffs previously imposed, using our NiGEM model, indicated that the direct downside effects on global growth were limited and consistent with a small reduction in the pace of near-term growth (Liadze, 2018; Hantzsche and Liadze, 2018; Liadze and Haache, 2017a). Furthermore, a fiscal policy response by China could mitigate the direct downside effects (Hurst and Liadze, 2019; Kara and Liadze, 2019). But the persistent uncertainty could add to the negative effect, especially with the potential for trade negotiations between the US and China to break down and the possibility of much higher US tariffs on German car imports. This adds a downside risk for the prospects for both world trade and, via added uncertainty over investment, global economic growth.

Together with the slowing in global industrial production and world trade growth, some measures of business

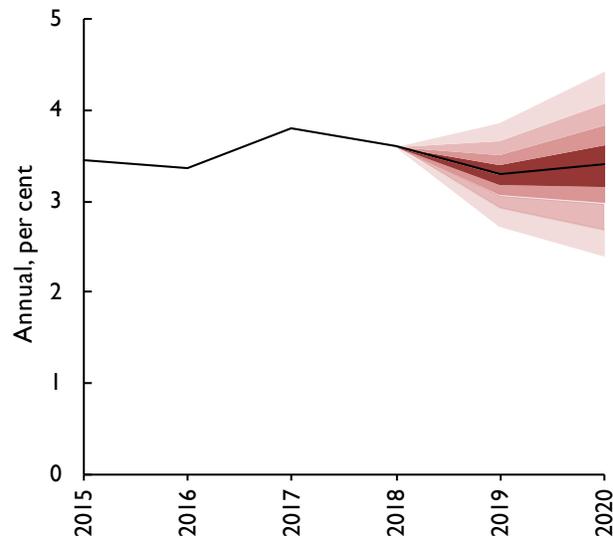
sentiment have dipped, possibly reflecting an increased sense of nervousness about the likelihood of some of the downside risks materializing. In the US, the extended length of the expansion phase – the current expansion is set to become a record breaker in July in terms of length – and the drop in the yield spread into negative territory have attracted financial market attention as possible warning signs of recession risk.

Recessions in Italy, Argentina, Turkey and Venezuela have not caused wider spillover effects, perhaps because the causes have been largely internal or because the geographical influence of these economies via trade and financial effects is limited. Recent military tensions around the Strait of Hormuz are a reminder that oil remains a vital commodity and that an escalation of geopolitical tensions could adversely affect global economic prospects.

The sustained period of economic growth and low interest rates may, in itself, have created potential vulnerabilities that may be tested by a downside shock (perhaps from equity markets seeing confidence drain away). The build-up of debt – in both public and private sectors (Naisbitt, 2018a, b) – and the rise in house prices in several advanced economies, may have created a potential vulnerability not only to increases in interest rates but to the reliability of the income needed to service the debt. With real house prices in a number of economies now back to their pre-recession levels after having risen strongly in the past six years or at record highs (Naisbitt, 2019a), a downside shock that leads to higher unemployment may reveal a vulnerability that has been masked by the sustained period of ultra-low interest rates. If there are issues about how monetary policy can respond to a downside shock in some economies, this could lead to a greater reliance on fiscal policy and a renewed increase in government borrowing.

In terms of our forecast for global growth, an indication of the extent of ‘standard’ risks is illustrated in the fan chart for global economic growth shown in figure 7.

Figure 7. Global GDP growth outlook expectation



Source: NiGEM database, NIESR forecast and NiGEM stochastic simulations.
Notes: The fan chart is intended to represent the uncertainty around the central forecast shown by the central line. There is a 10 per cent chance that GDP growth in any particular year will lie in any given shaded segment in the chart. There is a 20 per cent chance that GDP growth will lie outside the shaded area of the fan.

However, even at a time when global GDP growth has slowed and some adverse signs have appeared, there are still possible upside risks for the pace of global economic activity. The relatively strong activity could emerge, especially with China having announced a fiscal stimulus, the move to more accommodative monetary policy and the period of fiscal tightening appearing to have drawn to an end. Importantly, the uncertainty that has resulted from the period of tariff and trade disputes could reduce quickly if negotiations turn out more positively than seemed likely a few months ago, which would boost both trade and investment growth and support stronger global GDP growth.

Box A. The impact of a tariff on automobiles

by Amit Kara, Iana Liadze and Marta Paczos

By starting an investigation into auto and automobile parts imports, the US has signalled the possibility of a new round of tariffs on this sector. We build on earlier analysis published in the *Review* on the impact of tariffs on trade, output and prices – Carreras and Ramina (2017), Hantzsche and Liadze (2018), Liadze and Hacche (2017), Liadze (2018a) and Liadze (2018b) and Kara and Liadze (2019) – and use NIESR's Global Econometric Model (NiGEM)¹ to investigate the impact of tariff increase on US car imports from selected EU economies and Japan. Our main conclusions are:

- A 25 per cent tariff will subtract an average of around 0.1 per cent each year over five years from GDP across the countries covered.
- The indirect exposure to US tariffs through global value chains could be greater than the impact from directly affected automobile exports for many European economies and especially for economies like Hungary or Slovakia where, in addition to high indirect exposure, the automobile sector is large relative to the size of the economy.
- Our simulations suggest that the uncertainty that is triggered by the introduction of the tariff could have a bigger negative impact on the economy than the direct effects of the tariff.
- While the Federal Reserve can offset the adverse impact of that uncertainty on activity and inflation by lowering the Federal Funds rate, the ECB and the Bank of Japan have little room for manoeuvre with conventional policy. Depending on the size of the shock, a 25-50 basis point reduction in the Federal Funds rate is possible.

We run the following set of stylised scenarios:

Scenario 1: 25% increase in tariffs on US cars imports from selected economies in Europe and Japan.

Scenario 2: Scenario 1 along with a retaliation by European economies and Japan, with tariffs on exports from the US to European economies and Japan of a similar magnitude to the tariffs imposed by the US.

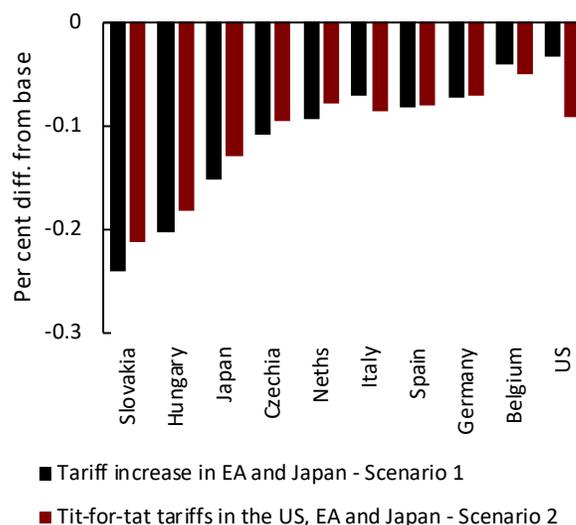
Scenario 3: Scenario 2 plus 40 basis point increase in investment risk premia in European economies, Japan and the US.

The 25 per cent import tariff is applied to the individual EU countries, the US and Japan, and scaled to match the share of automobile exports to total goods exports to the US, based on data from the UN COMTRADE database. Among large economies, the automobile sector in Japan accounts for around 30 per cent of total goods exports to the US and is almost twice as important as Germany's, where the sector accounts for around 16 per cent of total goods exports to the US. The risk premium shock is calibrated to be in line with the increase in risk premium observed in developed economies recently.

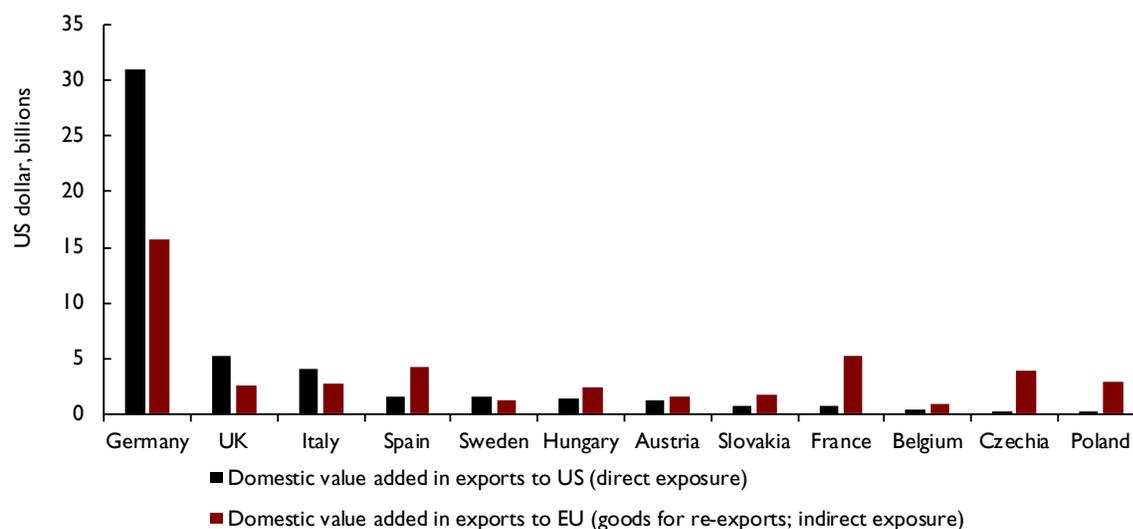
In each of the simulations the tariff increases were assumed to be permanent, while hikes in investment premia are assumed to last for one year. Monetary policy in all countries affected by the tariff increases is assumed to be exogenous for five years and the simulations are run in forward-looking mode.

Our simulations show that the tariff shock will subtract an average of around 0.1 per cent each year from GDP for the countries considered over five years whether that shock is imposed unilaterally by the US or under the tit-for-tat scenario (figure A1). The US will suffer a similar sized GDP loss of around 0.1 percentage point if the EU and Japan retaliate with a 25 per cent tariff that covers a similar proportion of US exports. In so far as there is a difference, countries such as Slovakia and Hungary appear most vulnerable because of the size of the automobile sector relative to their economy. The overall impact on output will be determined by a combination of factors such as size of the shock, price elasticity of exports, share of exports in the economy, import sensitivity to changes in exports, as well as the pass through of import prices into domestic prices. We assume that the increases in tariffs leads to a corresponding increase in import prices, and hence inflation rises in all countries under both scenarios.

Figure A1. GDP (level) per cent difference from base (average over five years)



Source: NiGEM simulations.

Box A. (continued)**Figure A2. Direct and indirect exposure of the automobile industry**

Source: NIESR, OECD-WTO International Input-Output tables.

Notes: Exports refer to exports from industry “Motor vehicles, trailers and semi-trailers” (code 29 in ISIC, Revision 4).

In a separate set of simulations, we introduced a 40-basis point shock to the investment premium. This shock primarily reflects the uncertainty of the policy environment and its impact on the economy and it is assumed to be broad-based. The risk premium shock reduces aggregate demand by an average of 0.3 per cent, which is three times larger than the pure tariff shock. Inflation also falls. The fall in output and inflation will encourage central banks to respond with a more accommodative monetary policy stance, which includes a reduction in the policy rate. The Federal Reserve is most likely to respond and, in our view, a 25–50 basis point reduction in the Federal Funds rate is likely to be enough to offset the impact on aggregate demand of the tit-for-tat tariff plus risk premium shock scenario.

Introducing global value chains

The tariff scenarios as modelled in NiGEM affect only the direct trade relationships between the involved countries. However, global trade in the 21st century is dominated by trade within global value chains (GVC) and the ultimate impact of auto tariffs on an EU country will depend on a mix of direct and indirect effects. As a consequence, any tariff escalation between the US, EU and Japan could impact countries that do not directly trade with the US. In this sense the simulations above might be thought of as providing lower bound estimates.

To shed some light on the possible GVC channels at work we apply a Wang-Wei-Zhu decomposition (Wang *et al.*, 2014) to the latest available version of the OECD-WTO International Input-Output tables (for year 2015), and we study several dependencies along the value chain. The Wang-Wei-Zhu decomposition is an analytical method of tracing the value added of exports back to the country of origin, while at the same time providing information on how and where that value added is subsequently used (e.g. as exports of final goods destined to the US or as intermediate exports to France aimed for re-exporting). In chart A2 we focus on the two main indicators that help to describe the car industry value chain relationships for the selected countries: domestic value added in final and intermediate goods exports to the US and domestic value added in exports to the EU aimed at further re-exports to third countries.

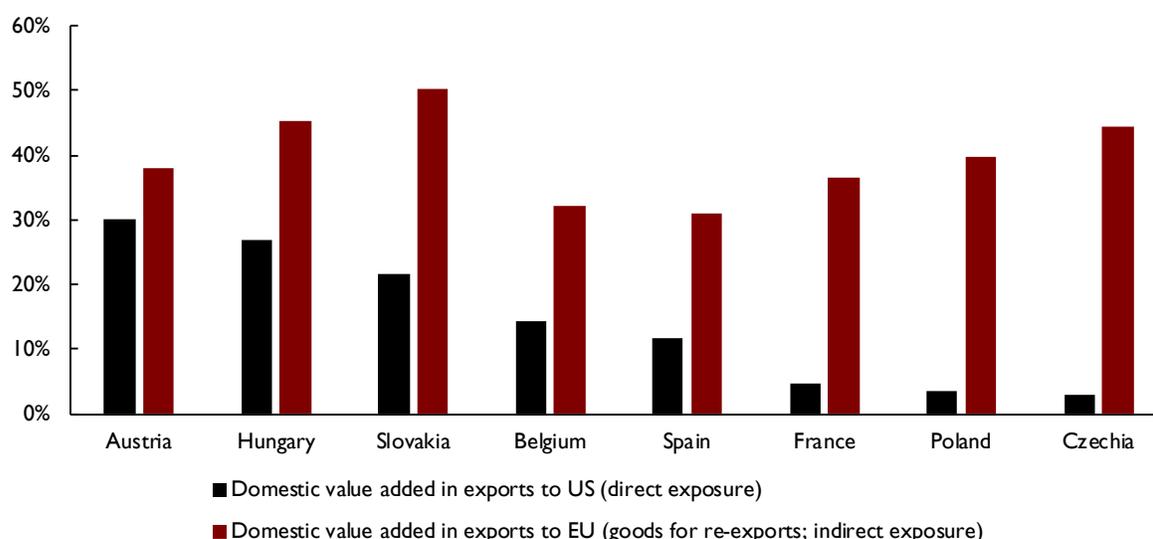
As illustrated in figure A2, for many EU countries the domestic value added from direct automobile exports to the US is relatively small (with the notable exception of Germany), but the indirect exposure via other EU countries may be much higher because some of those exports may be ultimately destined for the US. Moreover, as is clearly illustrated in figure A2, for countries like Poland, Czechia or France the gap between direct and indirect exposure is particularly stark. For instance, in Czechia the share of domestic value added that is directly exposed to US tariffs does not exceed 3 per cent (figure A3), however, the domestic value added to other EU country exports is 15 times larger than that associated with direct exports to the US (figure A2). In addition, countries

Box A. (continued)

like Hungary or Austria could be particularly vulnerable to tariff tensions due to their combination of high direct and high indirect trade exposure (figure A3).

Does the impact of a trade shock change materially when global value chains are considered? In a recent IMF paper (Huidrom *et al.*, 2019) the authors use network analysis and a simple accounting exercise to capture these value chains and assess the impact of a 25 per cent US tariff on auto and auto car parts. Their analysis shows that the tariff will subtract 0.1–0.2 percentage points from German GDP and 0.2–0.3 percentage points from Japanese GDP, and that the impact will be transmitted across a wide range of European economies. The direct impact is somewhat larger than our NiGEM simulation, but the difference is not material and, what is more, our primary message that the impact on GDP from uncertainty is likely to be larger than the effects of the tariff itself continues to hold.

Figure A3. Domestic value added in exports (% of total auto industry value added)



Source: NIESR, OECD-WTO International Input-Output tables.

Notes: Exports refer to exports from industry "Motor vehicles, trailers and semi-trailers" (code 29 in ISIC, Revision 4).

NOTE

I An expanded version of NiGEM – v2.19_v2, which enables tariffs to be imposed between the US and all the countries and regions, was used.

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