THE WORLD ECONOMY

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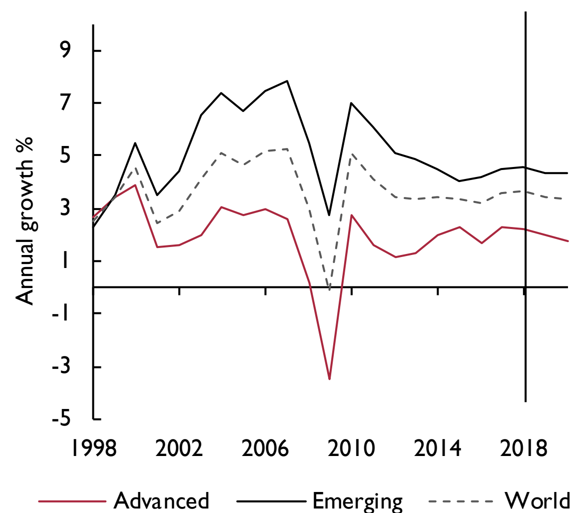
World Overview

After two years in which world economic growth has been boosted by tailwinds, such as accommodative financial conditions and a US fiscal stimulus, our forecast shows global economic growth slowing as headwinds, especially from increased uncertainty over trade prospects, have mounted. The rebound from under-performance in 2016 and the boost from the US stimulus is now waning as increased trade uncertainty, higher US interest rates and slowing Chinese growth moderate global growth.

Initial figures for GDP growth in the third quarter of last year showed a weaker than expected performance, particularly in the Euro Area and Japan. While some special factors – a fall in car production in the Euro Area in order to meet new standards and a combination of adverse events in Japan – explain a substantial part of that below par activity, there have been more general signs of slowing momentum in growth. As a result, we now expect that this year will show a slowing in growth. However, our 'big picture' view of global economic prospects, with world output growth continuing and running at near 3.5 per cent a year in 2019 and 2020, remains. If we have seen a peak in the global growth rate cycle, then, unless one of the potential risks that we consider occurs, we expect the slowing in the growth cycle to be gradual.

Along with some signs of potential weakening in growth, economic problems have arisen in the past six months in a few countries. Argentina and South Africa experienced falls in output in the first half of 2018. The experience of these countries does not, however, appear to be having material spillover effects onto other economies. Despite some slowdown in growth anticipated for 2019, our forecast shows that we expect the 2017–19 period to be the strongest three year period for growth in the global economy since 2011–13.

Figure 1. GDP growth in advanced and emerging economies



Source: NiGEM database and NIESR forecast.

As figure 1 shows, our central foreccast is for recent trends in growth in both the advanced economies (AE) and the developing and emerging economies (EM)

*All questions and comments related to the forecast and its underlying assumptions should be addressed to Iana Liadze (i.ladze@niesr.ac.uk). We would like to thank Jagjit Chadha, Amit Kara 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 25 January 2019. Exchange rate, interest rate and equity price assumptions are based on information available to 16 January 2019. Unless otherwise specified, the source of all data reported in tables and figures is the NiGEM database and NIESR forecast baseline.

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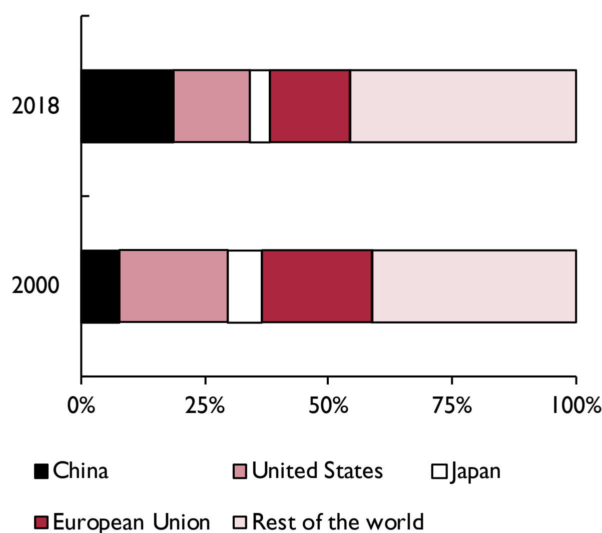
broadly to continue. Average annual growth since 2011 for both areas has been weaker than in the decade leading up to the Great Recession. For the advanced economies this reflects the slow expansion phase that has occurred despite policy interest rates being held at ultra-low levels in a substantial number of economies. The slow pace of the prolonged recovery phase in the USA relative to previous economic cycles was highlighted in the August 2018 *Review*[1] and this has also been a feature of the main economies in Europe. The relatively slow expansion phase has contributed, via trade linkages, to slower growth in EM economies too. For the emerging economies, the slowdown in the pace of output growth in China over the past decade accounts for around half of the reduction in the pace of EM growth. This slowing was expected to occur as the development phase of the Chinese economy changed. Nevertheless, the second decade of the 21st century has been one of sustained global growth, with the average annual rate of GDP growth only slightly lower than in the previous decade (although that decade did experience the financial crisis).

For emerging economies as a whole, our expectation of continued gradual slowing of annual GDP growth in China is an important factor for the overall pattern. While output growth in economies such as India, Brazil and Indonesia may strengthen, the scale of the Chinese economy is an important consideration. Over the past two decades China has grown to account for just below 20 per cent of global GDP (in PPP weighted terms), with the major advanced economies seeing their share fall (figure 2).

Figure 2. The changing distribution of global economic activity (percentage shares of global GDP, PPP weighted)



Source: NiGEM database and NIESR forecast.

Into the medium term, we continue to expect that, based on population growth projections and productivity growth remaining broadly unchanged, the pace of GDP growth in the advanced economies will moderate a little further (Aksoy *et al*.). If productivity growth were to increase back towards its rate experienced in the period before the financial crisis, then the growth projection would be stronger. Ollivaud *et al*. (2018) estimate OECD trend annual labour productivity growth at 1.7 per cent in 2000 fell to 1.0 per cent by 2007 and 0.8 per cent in 2015. At present, however, this remains a potential upside risk rather than a central expectation.

While our forecast judgement is for output growth to remain relatively steady, there are signs of a weakening in momentum. The falls in GDP in the third quarter of 2018 in Germany and Japan may reflect idiosyncratic shocks in individual economies but they may be early indicators of some of the risks in the global economic outlook starting to materialise. Rising policy interest rates in the US (and with Federal Reserve projections anticipating them increasing a little further) and the effective exchange rate of the US dollar having strengthened by around 8 per cent over the past year, may be putting increased pressure on sectors and economies that are exposed to such forces. Whilst we are not projecting substantially higher US interest rates or a sharp appreciation of the US dollar, at the margin the changes already seen may well start to have an impact on other economies. Our expectation that the current relatively rapid pace of US economic expansion will not last could also play into a reduced growth of demand for imports into the US, especially in an environment in which higher tariffs are being actively discussed and enacted.

As growth in the advanced economies progresses, this is likely to lead to more evident pressures on capacity and skills and be reflected in upward pressure on inflation. However, we expect inflation to proceed more slowly than previously anticipated, especially as the lower oil prices that have been seen in the second half of last year (oil prices fell by around 20 per cent in the second half of the year) are likely to reduce inflationary pressures in 2019.

So far in the expansion phase, inflation has not been a problem in the advanced economies, with, most notably in the US, the increases in policy rates being part of a process of normalisation rather than a response to above-target inflationary pressures. Our expectation remains that this process will spread slowly and our forecasts include gradual increases in policy rates in the UK and Euro Area over the medium term which are broadly in line with recent market expectations. That said, the extent of

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Table 1. Forecast summary *Percentage change*

	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	3.4
2015	3.5	2.5	6.9	4.8	2.0	2.9	1.3	1.5	1.0	0.8	2.3	0.7	3.0
2016	3.3	1.8	6.7	5.0	1.9	1.6	0.6	2.2	1.1	1.3	1.8	1.1	2.5
2017	3.7	2.6	6.9	5.5	2.5	2.2	1.9	2.5	2.3	1.6	1.8	3.0	5.2
2018	3.8	2.4	6.6	5.6	1.9	2.9	0.8	1.5	1.5	0.9	1.4	2.0	4.5
2019	3.6	2.0	6.2	5.2	1.7	2.5	1.1	1.3	1.6	0.9	1.5	1.9	4.1
2020	3.5	1.9	6.1	5.3	1.5	2.2	0.2	1.3	1.4	1.0	1.7	2.2	3.7
2021–25	3.4	1.8	5.5	5.1	1.3	1.9	0.8	1.2	1.4	1.0	1.8	1.8	3.8

	Private consumption deflator									Interest rates[c]			Oil ($ per barrel)[d]
	OECD	Euro Area	USA	Japan	Germany	France	Italy	UK	Canada	USA	Japan	Euro Area	
2009–14	1.6	1.1	1.5	–0.5	1.2	0.6	1.4	2.1	1.4	0.3	0.1	0.9	94.7
2015	0.8	0.3	0.3	0.4	0.6	0.3	0.2	0.5	1.0	0.3	0.1	0.1	52.1
2016	1.1	0.4	1.1	–0.5	0.7	–0.2	0.2	1.4	1.0	0.5	–0.1	0.0	42.9
2017	2.1	1.4	1.8	0.2	1.6	1.3	1.1	2.1	1.1	1.1	–0.1	0.0	54.0
2018	2.6	1.5	2.0	0.5	1.6	1.7	1.0	2.3	1.8	1.9	–0.1	0.0	70.4
2019	2.9	1.8	1.9	1.4	1.9	1.9	1.4	2.0	2.0	2.6	–0.1	0.1	62.4
2020	3.0	2.0	2.1	2.6	2.1	2.2	1.6	2.1	2.1	2.9	–0.1	0.4	68.0
2021–25	2.3	1.7	2.0	1.0	1.8	1.8	1.7	2.0	2.0	3.3	0.4	1.4	72.0

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.

increases implied by financial markets is lower than three or six months ago, a factor reflected in the US Federal Reserve's latest 'dot plot' chart of policy rate expectations. Into the medium term, a slowing of domestic demand growth arising from demographic trends and somewhat higher interest rates is expected to feed into subdued inflationary pressures in the advanced economies and will contribute to slower global growth. Reflecting anticipated trends in demographics, productivity and structural factors and an expectation of slower growth in China as that economy continues its transformation, our medium-term forecast continues to expect global GDP growth to run at around 3.5 per cent a year, with output growth in the advanced economies continuing at a slower pace than in the emerging economies.

Recent developments and the baseline forecast

Recent economic developments

Several economic developments stand out from the second half of 2018 and the start of this year. In terms of GDP growth, while the global economy continued to grow steadily in annual terms (figure 3), figures for Germany and Japan showed that economic activity fell in these economies in the third quarter of the year. While there are special factors in each case, recent industrial production figures for Germany point to a weak final quarter too. In addition to this, a further policy interest rate rise in the US and the ending of the quantitative easing programme by the ECB in the Euro Area indicate a less accommodative monetary policy for the start of the new year. In China, following a further slowing in factory sector activity, evidenced by the manufacturing PMI falling to 49.4 in December, its weakest reading since early 2016, the Chinese authorities announced a 100 basis point reduction in the reserve requirement ratio for major banks. This represents another easing of monetary policy to support annual GDP growth remaining around 6 per cent in the near term. Concerns over weakening demand in China have increased and GDP growth of 6.6 per cent in 2018 was the slowest since 1990.

The continuation of threats and talks about tariff changes involving the US and China was a feature of 2018. The fluctuations in the progress of the talks (and the rumours about progress or lack of it) added to global uncertainty and this very probably contributed to lower equity prices. The S&P 500 index fell in the year to end-

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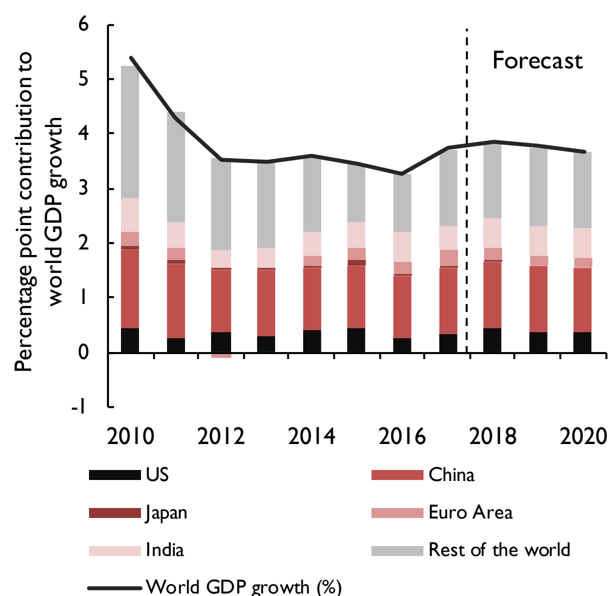
2018 by 6.2 per cent and the sharpness of the falls in December brought on discussions of the start of a bear market. While US equity markets have picked up from the December low, a positive resolution to the next round of trade talks could give a boost to equity markets. But it is also possible that a lack of agreement and the enactment of the increase in the rate of US tariffs (on certain goods from China) from 10 per cent to 25 per cent could lead to a further bout of negative sentiment.

Taken together, these developments point to a somewhat weaker outlook than previously forecast, but only to a cyclical slowing in growth after a period in which activity has been boosted by the fiscal stimulus in the US and a stronger performance in the Euro Area and Japan in 2017. Another development, the consolidation of the fall in oil prices seen in the third quarter of last year, should promote lower inflation and hence reduced pressure to raise policy interest rates (figure 4). In turn, this should 'add back' some growth to the projections, resulting in only a gradual slowing in the growth outlook.

The 2017 pace of GDP growth of 2.5 per cent in the Euro Area appeared unsustainable and it moderated last year, with signs of weakness in both the first and third quarters. We expect output growth to print at 1.9 per cent for last year and forecast GDP growth of 1.7 per cent this year and 1.5 per cent next. The unemployment rate has fallen over the past five years to reach 7.9 per cent in November 2018, but several economies still have unemployment rates that are high by pre-recession standards. With inflation within the Euro Area remaining subdued, the ECB is expected to continue its accommodative monetary policy, although the degree of accommodation will reduce now that the quantitative easing programme has ended. There are no immediate plans either to reverse the quantitative easing or increase policy interest rates, with the ECB having announced in June 2018 that rates would remain at their present levels at least through the summer of 2019.

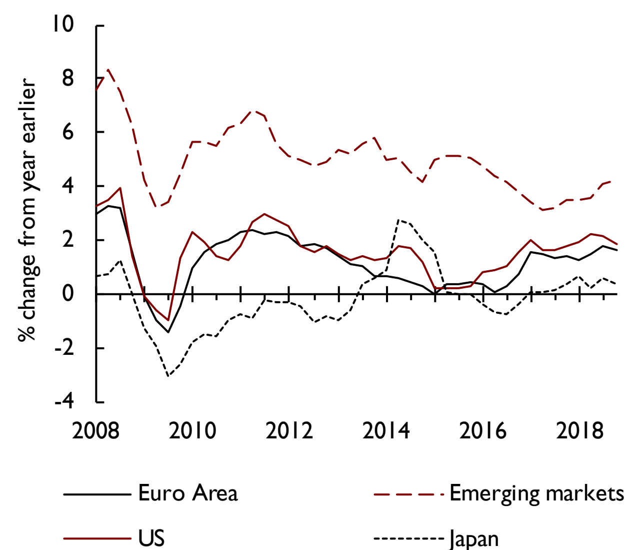
The emerging economies as a group continued to grow at a faster rate than the advanced economies in 2018 and that trend is expected to continue. India and China have continued to grow at a faster pace than the average and that trend is also expected to continue. Countries such as Vietnam and Indonesia are also growing strongly, without necessarily seeing inflation rise, while the 7.4 per cent GDP growth in Turkey in 2017 has been followed by a surge in inflation and a sharp slowing in economic activity in 2018. Very rapid inflation has also been the case in Argentina. The importance of controlling

Figure 3. World GDP growth and its components



Source: NiGEM database and NIESR forecast.

Figure 4. Consumer price inflation



Source: NiGEM database.
Note: 2018 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.

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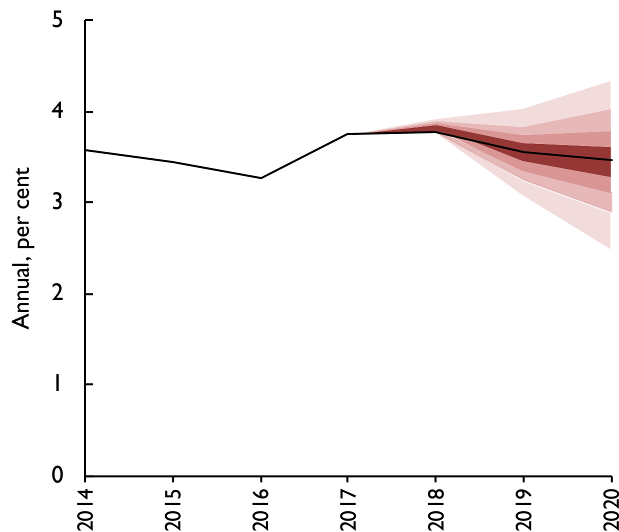
Figure 5. Global GDP growth outlook expectation



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.

Figure 6. GDP growth in advanced economies

Source: NiGEM database and NIESR forecast.

core inflation for the economic outlook for emerging economies is, with reference to Asia, examined in detail by Gagnon and Turner (2019).

Our revised baseline forecast

Recent economic news has been generally weaker than anticipated six months ago, perhaps reflecting the escalation of trade tensions and the uncertainty about how these will be resolved. But the weakening also reflects some specific factors such as the difficulties in the car industry in Germany and in demand in China. There appears to have been a growing sense of nervousness about some of the potential risks that we have previously discussed emerging, in turn perhaps related to the length of the US expansion phase and the continuation of the gradual tightening of US monetary policy. Most recently, in the US the impasse about funding for the wall on the border between the US and Mexico has probably been negative for sentiment in financial markets, as well as leading to the expectation of slower growth in the US in the first quarter of 2019 as a result of the shutdown.

As a consequence of the incoming data flow and these factors, we have reduced our forecast for global GDP growth slightly – in 2019 from 3.8 per cent to 3.6 per cent and in 2020 from 3.7 per cent to 3.5 per cent. It now appears that the peak of the global growth cycle has been passed. Our forecast is for a gradual slowing rather than an abrupt change in pace. As we noted in November, "now may be, in growth terms, 'as good as it gets'".[2]

The fall in oil prices in the second half of 2018 opens an opportunity for lower inflation this year than previously anticipated. This effect, together with some slowing in the pace of growth, is likely to reduce the impetus to any tightening of monetary policy which, in turn, should support growth. This combination is likely to be positive for sustainable growth. Into the medium term we expect the pace of growth to run at an annual rate of close to 3.5 per cent. This slower pace than in the period before the Great Recession reflects a continued narrowing of output gaps in the expansion phase, slower demographic growth and the deceleration in the pace of growth in China. There are clearly risks around the forecast and an indication of the extent of uncertainty is illustrated in the fan chart for global economic growth shown in figure 5.

While lower oil prices will support continued low inflation, the economic expansion, and the reductions in the headline unemployment rates that it has brought, has led to more reports of skilled labour shortages and rising wage pressures in some advanced 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 inflationary pressure. Our expectation is

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that, with a few exceptions such as Argentina and Turkey, the near-term prospects are for inflation to remain low and stable.

Monetary policy

The main focus in global markets with regard to monetary policy has been on the actions of the US Federal Reserve. After raising policy rates three times in 2017, rates were increased a further four times last year to reach the 2.25–2.50 per cent range. The more 'dovish' tone and the reduction in expectation of the rate in the longer term at the December FOMC meeting have been reflected in market expectations, which now show a less steeply rising rate profile.

Over the course of 2018, the extent of monetary policy accommodation was also reduced in the UK, Canada and Sweden, with interest rates rising. While the ECB has promised to continue to hold policy rates until the summer of 2019, it has now ended its quantitative easing programme. Our monetary policy interest rate expectations are for a rather gradual tightening in the advanced economies over the forecast horizon, reflecting both some 'normalisation' and a response to potential pressures from a narrowing of output gaps rather than any concern about significant inflationary pressures.

For emerging economies, a more mixed picture is likely. With some concerns about non-financial companies' debt and the possibility of a stronger US dollar, some economies may need to raise policy rates or adopt other measures to restrain any inflationary pressures (Naisbitt, 2018b). But other economies, perhaps notably China, may well be looking to further policy relaxation in order to stimulate growth. With economies at different phases of the cycle, the pattern of potential policy and market rate movements remains diverse.

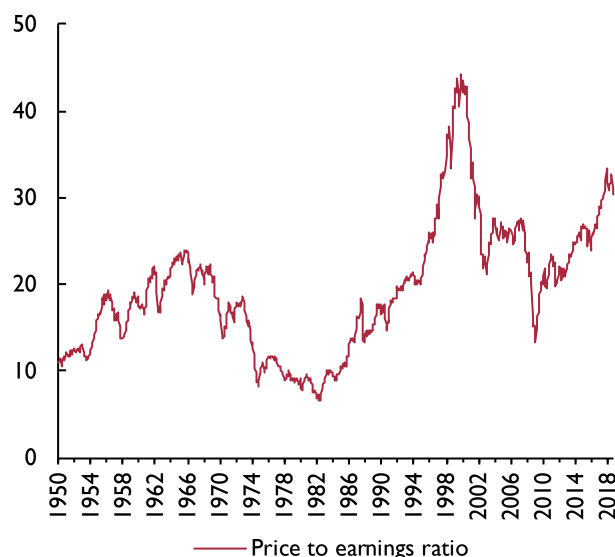
Financial and foreign exchange markets

While equity markets continued their multi-year rise through much of 2018, there were market commentaries discussing a possible over-valuation of stocks. This issue came to the fore in the US in February last year when some of the warnings seemed to materialise when the S&P index fell by 10 per cent in two weeks, in part reflecting uncertainties about tariff impositions. That fall was, however, reversed and by the end of September the S&P index had overcome the earlier setback. December saw a marked change, however, with the S&P index falling by 15 per cent up to Christmas. Since Christmas there has been a recovery, with the S&P up 11 per cent from the December low to mid-January. The worries about a US bear market were transmitted internationally, with the Nikkei falling 14 per cent to a low through December but increasing by 7 per cent since and the FTSE 100 falling less (by 6 per cent) and showing a smaller recovery since (of 4 per cent). Uncertainties about tariffs, the possibility of a sharp global slowdown, rising wages, further US monetary policy tightening, the possibility of a US recession, as well as the underlying concerns about possible market over-valuation (see figure 7), seemed to culminate in the correction in December.

Volatility also increased in the second half of 2018. The Vix index,[3] an indicator of financial market volatility or uncertainty, also spiked in late December (reaching 35.5, the highest since the equity falls in early February) but has since steadily fallen back. At 18.5 on 15 January, its level is similar to that of October and November last year. Given this pattern in 2018 and continued global uncertainties, the potential vulnerability of equity markets remains.

When US ten-year bond yields rose to 3.11 per cent last May, they touched their highest level since mid-2011. They subsequently eased back before rising again to 3.24 per cent in early November. In part this reflected the actual and anticipated future increases in policy interest rates as the Federal Reserve withdrew monetary accommodation. With the financial market correction and the more dovish tone from the Federal Reserve in the final month of 2018, 10-year government bond

Figure 7. Shiller cyclically adjusted price–earnings ratio for the S&P 500



Source: Datastream.

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yields have fallen again, reaching 2.56 per cent in early January. As a consequence of the rise in short-term rates and the recent fall in 10-year government bond yields, the yield curve spread, a much used lead indicator of recession (Lenoel, 2018), remains less than 1 percentage point and the New York Federal Reserve's model's probability of a recession in a year's time, has risen to its highest since late 2008, although it does not signal that a recession is likely over the next year.

In the Euro Area, with the ECB policy interest rate still on hold, 10-year German government bond yields remain below 1.50 per cent, after a slight rise above that last October. Although quantitative easing has now ended, the guidance that policy rates will be held at least through much of 2019 provides continued support for long-term rates to remain stable.

Although the US economy had a relatively strong performance and policy interest rates rose, the US dollar depreciated against the euro through 2017 by almost 20 per cent and hit a low point in early February last year. However, from that point until mid-December the US dollar appreciated, by around 6.5 per cent, against the euro. It has been broadly stable since then. The trade-weighted exchange rate showed a slightly stronger US dollar appreciation over the past year, and the stronger US dollar could put pressure on those non-US borrowers who have dollar denominated debt to repay. While the Japanese yen experienced a small appreciation against the US dollar in the final quarter of 2018, the currency movement was at the latter part of December, at the time of the heightened financial market volatility. Despite the fluctuations in the yen/dollar exchange rate over the past five years, at 108 in early January the yen/$ rate is only 3 per cent above its 5-year average.

Commodity markets

After peaking in early October at $85 pb, Brent crude oil prices fell steadily through the final quarter of last year and ended the year around 35 per cent down from that peak. The fall in prices has reflected both supply and demand factors, with US oil shale output rising and global demand not continuing to rise strongly. Oil prices are currently around $60 pb, at similar levels to a year ago. With oil prices lower than in our November forecast and oil futures showing a lower path than previously, the background forecast assumption implies a slight reduction in the global inflation outlook.

Other commodities have generally seen less volatile price movements, with The Economist all-items commodity price index (in dollar terms) showing a fall of 1.5 per cent in the final quarter of 2018, food prices up 1.9 per cent and metals down 2.5 per cent. Copper, sometimes seen as a bellwether indicator for global economic activity, saw prices fall by around 5 per cent in the final quarter. Following falls in the first two quarters, copper prices fell by over 15 per cent during the course of 2018, indicating fading momentum in the global growth picture.

Risks to the global forecast

With our outlook showing a slight weakening in output growth, one clear risk is that the slowing could be much more marked. The unsettled state of trade negotiations between the US and China and the possibility that this situation could develop into a 'trade war' is a clear risk factor here. Our estimates of the effects of US tariffs already imposed, using our NiGEM model, indicate that the downside effects on global growth are limited and consistent with a slight reduction in the pace of near-term growth (Liadze, 2018; Hantzsche and Liadze, 2018; Liadze and Hacche, 2017a). The possibility of further tariff impositions and retaliations is, therefore, a downside risk for the prospects for both world trade and global economic growth. The effect of the additional uncertainty that has been added to global economic trading relations from the change in direction of US trade policy is difficult to quantify but it is hard to believe that it is not contributing to slower trade growth. Currently, US tariff actions directly affect only a few economies, but spillover effects to other economies and the prospect of tariff impositions affecting more economies is an additional risk. To set against this, the USMCA agreement (which replaces NAFTA) and the trade agreement between the EU and Japan are more positive developments and should help to mitigate the downside risks at a global level.

Monetary policy has remained accommodative across most economies since the Great Recession, with the US providing the clearest example of a reduction in accommodation in the advanced economies. However, even in the US, inflation has not picked up above the target, although there are now some early signs, given the general picture of tighter labour markets, of average earnings increasing. In the Euro Area, annual wage growth, at 2.4 per cent in the third quarter of 2018, is up on 1.7 per cent a year earlier. In the US, real average hourly earnings growth in December 2018 was 1.1 per cent, up from 0.6 per cent a year earlier.

The fall in oil prices in the second half of last year is likely to keep inflation low and this should reduce the impetus to further tightening and support continued economic growth, in the US and in other advanced

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economies. One risk is that the lower oil price level may reflect a temporary demand reduction and not be sustained, leading to inflation rising again. The Federal Reserve might then increase policy interest rates more substantially than expected which, at a time when equity markets have been shaky and appear to be richly valued relative to what might be regarded as fundamentals (see figure 7), could lead to further falls in equity prices and household wealth, leading to weaker consumer spending and GDP growth.[4]

The potential downside risk to global economic prospects from the interaction of the build-up of debt – in both public and private sectors – and the gradual increases in interest rates has been discussed in previous issues of this *Review* (Naisbitt, 2018a, b). As in the 2000s, rapid growth in debt can create a potential vulnerability and, after such a long period of ultra-low interest rates, perhaps one issue is that borrowers and lenders may have grown accustomed to low debt service costs so that even gradual and limited increases in interest rates could have more substantial negative effects on confidence, spending and the prospects for continued economic growth than usually expected.

Allied to this is the recovery in real house prices in advanced economies, after the drops seen in the Great Recession (see Box A). Real house prices have risen strongly in the past six years in the US, Canada, Australia, New Zealand, Sweden and Ireland. In part this marks a recovery from falls in the recession, but, against a general background of slow real income growth, there may be a vulnerability being created in a period of ultra-low interest rates.

Over the past year economic problems have emerged in some countries (including Argentina, South Africa and Turkey) but these have not been sufficient to cause wider spillover effects. The geographical spread of the economies that have experienced difficulties may have limited such effects via trade and finance links but these channels may still provide downside risks should some other economies experience problems. It is possible that the sustained period of growth and low interest rates may, in itself, have led to vulnerabilities that have yet to be tested.

There are also possible upside risks in the global economy. The synchronised nature of relatively strong activity could continue, and a period of stronger investment spending, reflecting climate change initiatives and infrastructure improvements, could occur. Further stimulative fiscal measures in the US are possible and Chinese policy, too, could add more momentum than anticipated. The key issue is, however, probably that of trade negotiations. The US–China negotiations have blown hot and cold, affecting financial market and economic sentiment. A clear, positive resolution would likely reduce uncertainty and boost trade and growth prospects.

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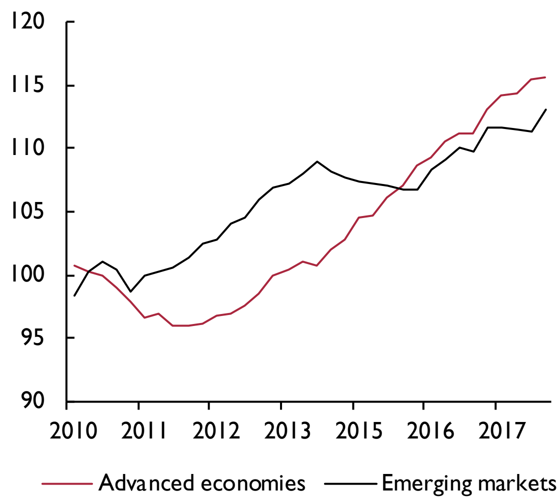
Box A. The risks from rising real house prices

In the August issue of this *Review*, we examined the risks from rising global indebtedness (Naisbitt, 2018). The commentary focussed on the increase in debt of non-financial companies and in emerging economies and how debt to GDP (or income) ratios had risen since the Great Recession. In analysing the causes of the recession, especially in the US, one issue that, combined with high levels of indebtedness, has been much discussed was the rapid rise in real house prices (or house price to income ratios) prior to the recession (see e.g. Mian and Sufi, 2014). With the long expansion phase since the recession bringing the rise in indebtedness into focus, it is natural to consider how real house prices in the advanced economies have fared in the expansion.

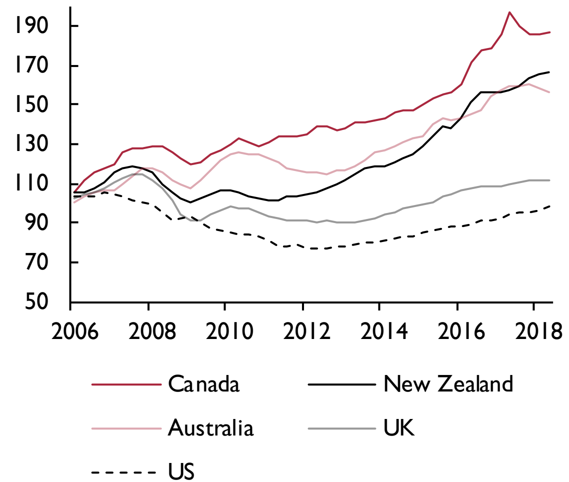
As figure A1 shows, in real terms (i.e. after being deflated by a consumer price index) house prices globally are about 15 per cent higher since economic growth resumed. Figures from the Bank for International Settlements (BIS) show that real house prices in

Figure A1. Real residential property prices (index, 2010=100)



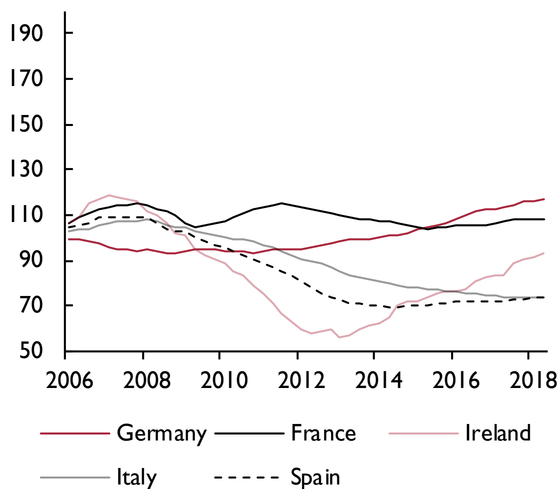
Source: BIS, Statistical release: BIS real residential property price statistics, 28 November 2018.

Figure A2. Real house prices, non-Euro Area advanced economies (index, 2005=100)



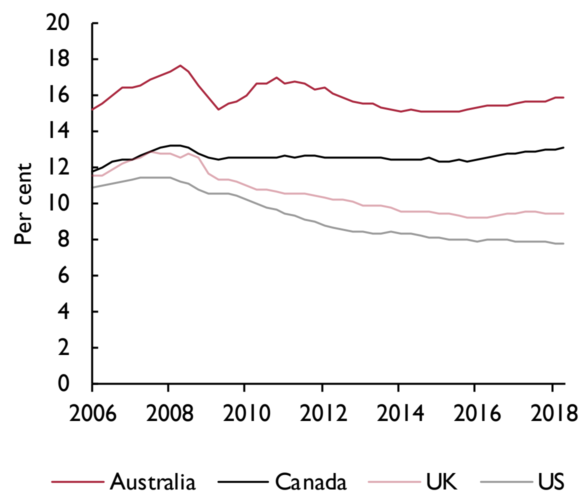
Source: Calculations from Dallas Federal Reserve database The author acknowledges use of the dataset described in Mack and Martínez-García (2011) .

Figure A3. Real house prices, Euro Area countries (index, 2005=100)



Source: Calculations from Dallas Federal Reserve database.

Figure A4. Household debt service ratios (per cent)



Source: BIS total credit statistics database.

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Box A. (continued)

the advanced economies have increased by just over 20 per cent since 2011. Emerging economies, too, have seen house prices rise in real terms since 2011, but at about half the pace of that in the advanced economies.

Figure A2 shows movements in real house prices relative to their pre-recession levels in selected advanced economies. The prolonged increases in house prices in Canada, Australia and New Zealand stand out. But real house prices in the US and the UK have also shown relatively rapid growth since 2012, even though the levels of real house prices in those economies have only broadly recovered the pre-recession levels. Figure A3 shows that the major economies in the Euro Area have had a different experience – real house prices in Ireland, Italy and Spain are still below pre-recession levels. In Germany, however, real house prices have risen by around 20 per cent since 2012, which is a marked contrast with the behaviour there of real house prices in the years leading up to the recession.

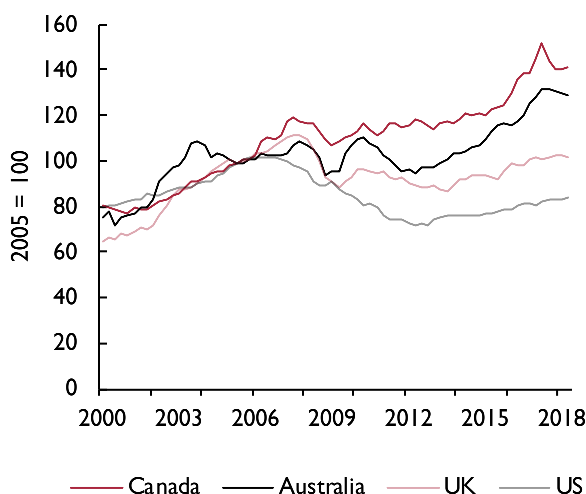
One driver of higher real house prices is lower interest rates. A feature of the economic expansion phase has been that interest rates have generally been held at ultra-low levels in many advanced economies. This has reduced the cost of mortgage borrowing and, as consequence, in the UK and US interest payments as a share of income are at much lower levels than before the recession, as illustrated in figure A4. Lower rates have supported the increase in both household borrowing and house prices.

A widely used measure of housing affordability is the ratio of house prices to income (or GDP). For the advanced economies highlighted here, this dimension of affordability is starting to look strained as real house prices have risen ahead of real incomes. The consequences are shown in figure A5, with house price to income ratios now at peak levels in Australia and Canada and close to previous peak levels in the UK and US.

The rise in real house prices to record (or near record) levels has been at a time when the pace of economic growth in the advanced economies over the past decade has generally disappointed expectations based on pre-recession growth trends and when households' real income growth has been slow. But the effect of low interest rates has been aided by the falls unemployment. In the US, the unemployment rate has fallen to nearly a 50 year low and in the UK and Canada to 40 year lows. Improved employment prospects may well have strengthened households' expectations for their future income streams. Whether any such effect can explain the sustained rise in house prices relative to income is difficult to judge and other factors are also important in determining real house prices internationally (see e.g. Muellbauer, 2018).

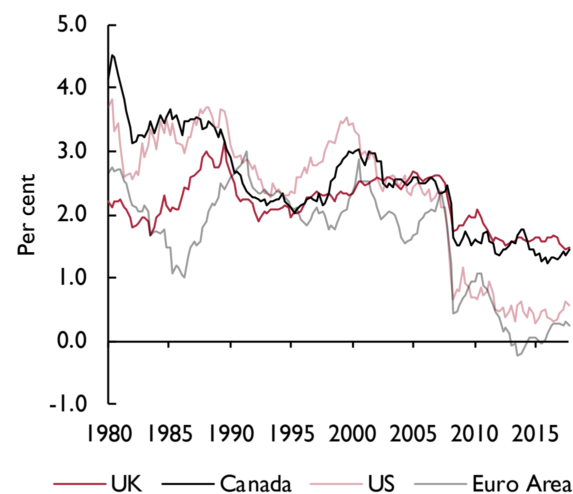
As with debt, the key issues for the economies concern the risks from the position and 'where next?'. Policy interest rates in the US have been on a steady, but gradual, upward path since late 2015. Elsewhere, countries with high and rising real house prices

Figure A5. House price to income ratio (index, 2005=100)



Source: Calculations from Dallas Federal Reserve database

Figure A6. Estimated natural rate of interest (per cent)



Source: New York Federal Reserve.

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Box A. (continued)

have seen only small increases in policy rates over the past five years. With high debt levels and high house prices in historic terms, it appears that the key vulnerability for housing markets will be to rising interest rates or downward revisions of expectations of future incomes. Estimates of natural rates of interest are lower than before the recession and the prospect for policy interest rates, as judged from market implied forward rates, is for gradual and limited increases. Such an outlook suggests that debt service ratios are unlikely to rise substantially.

As housing markets showed in the first half of the 2000s, it is very difficult to be at all definitive about house prices being 'too high' or, if they are thought to be 'too high', how they may adjust. But the extent of the recent increase in the US has been sufficient to lead Robert Shiller to write that "we are, once again, experiencing one of the greatest housing booms in United States history.… it [rising house prices] can't go on forever, of course. But when it will end isn't knowable. The data can't tell us when prices will level off, or whether they will plunge catastrophically. All we do know is that prices have been roaring higher at a speed rarely seen in American history….. How long this will last and where it is heading next are impossible to know now" (Shiller, 2018).

To the extent that the relatively high level of real house prices was a concern for financial stability before the recession, the increase in recent years should revive concerns. Compared to a decade ago, many central banks' policy remits have been broadened to include financial stability concerns and macro-prudential policies now provide additional policy tools for central banks to adopt to act on potential housing market and debt issues. So it is likely that housing markets, once again, will be a key focus for financial stability policy. If, after the increases this decade, house prices are now judged to be 'too high' in some economies, the challenge for policy makers could well be to ensure an orderly correction while maintaining sustained economic growth and on-target inflation.

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