An increasingly unpredictable policy environment is undermining economic activity globally through postponed investments and declines in production. In the year ahead, we do not foresee a significant reversal of trade tensions or expect that policymaking will become more predictable. This new age of uncertainty will act as a drag on demand, and if it persists, long-run potential growth will be lower.

Inflation is likely to remain soft in 2020. While labour markets are expected to remain tight, secular forces and widening output gaps continue to put downward pressure on prices. These forces support our outlook for subdued inflation trends across major economies, consistent with the inflation expectations held by consumers and financial markets.

The pivot to looser policy by central banks around the world will persist in this environment of low growth and low inflation. Despite increased doubts about the effectiveness of monetary policy, we expect central banks to continue to adopt unconventional measures, while significant fiscal stimulus remains unlikely unless there is a more severe downturn.

Slowing global growth and elevated uncertainty create a fragile backdrop for markets in 2020 and beyond. More favourable valuations have led to a modest upgrade in our equity outlook over the next decade, while fixed income returns are expected to be lower given declining policy rates and lower long-term bond yields. The risk of a large drawdown for equities and other high-beta assets remains elevated.
Editorial note
This publication is an update of Vanguard’s annual economic and market outlook for 2020 for key economies around the globe. Aided by Vanguard Capital Markets Model® simulations and other research, we also forecast future performance for a broad array of fixed income and equity asset classes.

Acknowledgments
We thank Corporate Communications, Strategic Communications, and the Global Economics and Capital Markets Outlook teams for their significant contributions to this piece. Further, we would like to acknowledge the work of Vanguard’s broader Investment Strategy Group, without whose tireless research efforts this piece would not be possible.
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Notes on asset-return distributions

The asset-return distributions shown here represent Vanguard’s view on the potential range of risk premiums that may occur over the next ten years; such long-term projections are not intended to be extrapolated into a short-term view. These potential outcomes for long-term investment returns are generated by the Vanguard Capital Markets Model® (VCMM) and reflect the collective perspective of our Investment Strategy Group. The expected risk premiums—and the uncertainty surrounding those expectations—are among a number of qualitative and quantitative inputs used in Vanguard’s investment methodology and portfolio construction process.

IMPORTANT: The projections and other information generated by the VCMM regarding the likelihood of various investment outcomes are hypothetical in nature, do not reflect actual investment results, and are not guarantees of future results. Distribution of return outcomes from the VCMM are derived from 10,000 simulations for each modelled asset class. Simulations are as of September 30, 2019. Results from the model may vary with each use and over time. For more information, see the Appendix section “About the Vanguard Capital Markets Model.”
Global outlook summary

Global economy: Trade tensions and broader uncertainty drag on demand and supply
The continued slowdown in global growth foreseen a year ago has been accentuated during 2019 by a deterioration in the global industrial cycle. A broad escalation of policy uncertainty, especially tensions between the US and China, has largely driven this downturn through postponed investments and declines in production.

In the year ahead, we do not foresee a significant reversal of the trade tensions that have occurred so far. And with continued geopolitical uncertainty and unpredictable policymaking becoming the new normal, we expect that these influences will weigh negatively on demand in 2020 and on supply in the long run. A continuing contraction of world trade relative to GDP and a persistent state of high uncertainty both tend to undermine potential output. This happens by restricting investment and hampering the propagation of technologies and ideas that stimulate growth in productivity. As such, we expect growth to remain subdued for much of the next year.

We see US growth falling below trend to around 1%1 in 2020, with the risk of recession still elevated. China, too, has seen its growth fall short of target this year and will likely slow to a below-trend pace of 5.8% in 2020. The euro area economy has continued to slow because of the importance of industrial trade to its economy and some drag from Brexit-related uncertainty. Growth in the euro area is likely to stay weak at around 1%. Emerging markets will continue to face challenges linked to the trade disputes in 2020, particularly in Asia.

Global inflation: Full (symmetric) credibility remains elusive for central banks
Recent years have been characterised by a continuing failure of major central banks to achieve their inflation targets. This can partly be explained by a combination of persistent structural factors—including technology advancement and globalisation—pushing down some prices, and by a seeming failure of product and labour markets to respond to falling unemployment and rising capacity utilisation.

As these secular forces endure and output gaps widen in the current downturn, inflation will likely remain soft. We expect inflation to barely reach 2% in the US, with the Federal Reserve’s core inflation gauge staying below its 2% policy target. Similarly, inflation will likely undershoot central banks’ targets in the euro area and Japan.

Policy credibility is a critical determinant of inflation. For years the inflation expectations held by consumers and financial markets have consistently fallen short of most policy targets, implying increasing doubts about the effectiveness of monetary policy for a variety of reasons, some technical, others political. These low inflation expectations support our outlook for subdued inflation trends.

Monetary policy: The pivot to looser policy continues
In 2019, global central banks turned on respective dimes, cents, and sixpences, reversing from actual and expected policy tightening to additional policy stimulus in the face of the deteriorating growth outlook and consistent inflation shortfalls. With the Fed having cut rates by 75 basis points so far in 2019, we expect it to further reduce the federal funds rate by 25 to 50 basis points before the end of 2020. The European Central Bank has cut its policy rate further into negative territory, by 10 basis points, to –0.5%. In 2020 we expect the ECB to leave policy broadly unchanged, with risks skewed toward further easing.

Despite the doubts relating to the effectiveness of further monetary policy stimulus, we do not expect that fiscal policy measures will be forthcoming at sufficient scale to materially boost activity. China, for example, has already halted its active encouragement of deleveraging and will probably step up both monetary and fiscal stimulus amid growing headwinds. These efforts would be calibrated to engineer a soft landing rather than a sharp rebound in growth, given policymakers’ financial stability concerns.

Increasing downside risks to growth and subdued inflation may prompt the Bank of Japan to marginally adjust its policy, with offsetting measures to cushion the negative impact on financial institutions. Emerging-market countries are likely to loosen policy along with the Fed.

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1 Economic growth rates throughout this paper are expressed in annual terms defined as the percentage change between the final quarter of consecutive years, unless otherwise noted.
Global investment outlook: Subdued returns are here to stay

As global growth slows further in 2020, investors should expect periodic bouts of volatility in the financial markets, given heightened policy uncertainties, late-cycle risks, and stretched valuations. Our near-term outlook for global equity markets remains guarded, and the chance of a large drawdown for equities and other high-beta assets remains elevated and significantly higher than it would be in a normal market environment. High-quality fixed income assets, whose expected returns are positive only in nominal terms, remain a key diversifier in a portfolio.

Returns over the next decade are anticipated to be modest at best. Our expectation for fixed income returns has fallen because of declining policy rates, lower yields across maturities, and compressed corporate spreads. The outlook for equities has improved slightly from our forecast last year, thanks to mildly more favourable valuations, as earnings growth has outpaced market price returns since early 2018. Annualised returns for US fixed income are likely to be between 2% and 3% over the next decade, compared with a forecast of 2.5% – 4.5% last year. The outlook for global ex-US fixed income returns is centred in the range of 1.5% – 2.5%, annualised. For the US equity market, the annualised return over the next ten years is in the 3.5% – 5.5% range, while returns in global ex-US equity markets are likely to be about 6.5% – 8.5% for US investors, because of more reasonable valuations.

Over the medium term, we expect that central banks will eventually resume the normalisation of monetary policy, thereby lifting risk-free rates from the depressed levels seen today. This will lead to more attractive valuations for financial assets. Nonetheless, the return outlook is likely to remain much lower than in previous decades and the post-crisis years, when global equities have risen over 10% a year, on average, since the trough of the market downturn. Given our outlook for lower global economic growth and subdued inflation expectations, risk-free rates and asset returns are likely to remain lower for longer compared with historical levels.

Indexes used in our historical calculations

The long-term returns for our hypothetical portfolios are based on data for the appropriate market indexes through September 2019. We chose these benchmarks to provide the best history possible, and we split the global allocations to align with Vanguard’s guidance in constructing diversified portfolios.


**Euro area equity**: MSCI European Economic and Monetary Union.

**Euro area bonds**: Bloomberg Barclays Euro-Aggregate Bond Index.

**Global ex-euro area equity**: MSCI AC World ex EMU Index.

**Global ex-euro area bonds**: Bloomberg Barclays Global Aggregate ex Euro Index.

**Global equity**: 25% euro area equity and 75% global ex-euro area equity as defined above.

**Global bonds**: 35% euro area bonds and 65% global ex-euro area bonds as defined above.
I. Global economic perspectives

Global economic outlook: The new age of uncertainty

We expect growth in 2020 to be lower than we had previously expected and to stay lower for longer. As a result, policy rates will also stay lower for longer. For this deterioration in prospects, we identify the main culprit as an emerging era of elevated uncertainty caused by increasingly unpredictable policymaking that is undermining decision-making in the real economy. This, above all else, is depressing activity.

Our global economic outlook, described in more detail in the regional outlooks that follow, is designed to:

• explain the global industrial downturn and emphasise the role of increased uncertainty in propagating the shock;

• elaborate on the likelihood of recessions, and on why a more appropriate focus may be on the likelihood and propagation of serious growth slowdowns;

• consider the extent to which policymakers will be able to mitigate the effects of the downturn; and

• surmise that the current bout of deglobalisation may have persistent effects on sustainable growth rates.

Uncertainty is dampening activity

The deterioration in global growth throughout the course of 2019 was more severe than expected, led by the manufacturing sector (Figure I-1). We believe that increasing policy uncertainty was the primary driver of this deterioration—specifically, trade tensions related to tariffs, especially between the United States and China, and Brexit negotiations. In the year ahead, despite oscillating headlines, we do not foresee any immediate reversal of the tariff escalation or a meaningful resolution to broader trade and geopolitical tensions. With continued geopolitical uncertainty and unpredictable policymaking defining a new age of uncertainty, we believe these influences will weigh negatively on activity during the coming year and likely beyond.

Figure I-2 confirms how global policy uncertainty, along with trade policy uncertainty, has remained elevated and more erratic since the global financial crisis, particularly in the last two years given the escalation in trade tensions and persistence of populist policymaking, including Brexit. We have previously argued that an increase in uncertainty acts like a tax, effectively causing firms and households to discount the future more heavily and thereby dampening spending. In fact, our analysis shows that the current environment of persistently elevated policy uncertainty is holding back economic activity more than ever. Firms and households perceive that there has been a change in the rules of the game—for example, in global norms of international cooperation and in the stability of future trading arrangements; Federal Reserve Chair Jerome Powell’s saying that the Fed has “no playbook” echoes

FIGURE I-1

A maturing global business cycle

a. Global growth is expected to continue falling in 2020

![Bar graph showing world GDP growth, year over year](image1)

Sources: International Monetary Fund and Vanguard forecasts.

b. The global economic slowdown is largely driven by a decline in global manufacturing growth

![Line graph showing quarterly year-over-year growth](image2)

Note: Data show the weighted average of annual growth in each sector in the United States, China, France, Italy, Canada, and the United Kingdom as of September 30, 2019.

Sources: National accounts data and Bloomberg.

This has introduced an element of uncertainty into decision-making that hinders long-term planning and hampers economic activity. And in cases where a spending decision hinges on a particular event happening—think here of Brexit, trade deals, or an election result—it is rational for firms and households to postpone expenditures, exploiting the so-called option value of waiting. In our view, this mechanism explains why global activity has slowed more than an analysis of the underlying shocks might otherwise predict.

**FIGURE I-2**

Global policy uncertainty is on the rise

a. Global policy uncertainty

![Graph showing global policy uncertainty](image)


b. US trade policy uncertainty

![Graph showing US trade policy uncertainty](image)


---

Figure I-3 shows our estimate of how policy uncertainty affects economic fundamentals and markets by separating historical periods into high- and low-uncertainty phases. We estimate that in periods of high uncertainty, year-over-year global growth averages around 4%, whereas in periods of low uncertainty, it averages close to 7%. This difference is apparent in other measures of economic activity, such as oil production, steel production, and financial conditions.

**FIGURE I-3**

Spillover effects of uncertainty on fundamentals

<table>
<thead>
<tr>
<th>Year-over-year change</th>
<th>Global oil production</th>
<th>Global financial conditions</th>
<th>Economic growth</th>
<th>Global steel production</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Notes: The bars represent the average year-over-year change in each of the indicators in high- versus low-uncertainty periods. Periods of low versus high uncertainty are obtained through a Markov-switching model for global growth. Global financial conditions are an aggregate measure of risk sentiment and include variables such as equity returns, credit spreads, and lending behaviour. Lower values denote easier financial conditions and risk-on attitudes. Z-scores measure how far a value differs from the historical average, accounting for the measure’s typical fluctuations.

Sources: Vanguard calculations, based on data from Moody’s Analytics Data Buffet and Thomson Reuters Datastream.
We expect this high-uncertainty regime to persist as a drag on global growth through 2020. Although there may be some progress in the various global trade talks, we do not foresee a timely and comprehensive resolution to the US-China trade tensions or the Brexit negotiations, which remain the two primary sources of policy uncertainty. Figure I-4 displays the upside and downside risks we see for each of these policy areas.

Worrying about recessions and downturns
If any of our downside risks materialise, it is possible that this will be characterised by a recession in one or more countries. There is strong historical evidence to suggest that an inverted yield curve in the US is a reliable harbinger of a recession. And yield curves have inverted in 2019 across many developed economies. Based on these signals, the risk of a recession in some major developed economies remains elevated. At the same time, we are concerned that if any of our downside risks materialise, it will be characterised by a recession in one or more countries.

Figure I-4
Sources of policy uncertainty are likely to persist

<table>
<thead>
<tr>
<th>2020 global risks</th>
<th>Vanguard assessment of risks</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Downside scenario</td>
</tr>
<tr>
<td>US/China trade tensions</td>
<td>50% The trade truce ends because of a lack of common ground, and the US implements tariffs on remaining Chinese imports.</td>
</tr>
<tr>
<td>Brexit</td>
<td>30% The UK Parliament fails to approve the Withdrawal Agreement Bill in early 2020. This is followed either by a disorderly exit or by a series of Brexit extensions.</td>
</tr>
<tr>
<td>US/EU trade tensions</td>
<td>35% The US imposes tariffs on EU products and continues to threaten further tariffs.</td>
</tr>
<tr>
<td>US-Mexico-Canada Agreement (USMCA)</td>
<td>10% The Trump administration moves to withdraw from NAFTA to expedite ratification of USMCA.</td>
</tr>
</tbody>
</table>

Note: The odds for each scenario are based on the judgment of members of Vanguard’s Global Economics and Capital Markets Outlook Team.
Source: Vanguard.
time, there are factors that cause us to place less weight on these signals now, in particular the distortions to government debt markets caused by central bank balance-sheet operations.

In any case, placing excessive focus on episodes of economic contraction may be inappropriate. For some countries such as China or Australia where average growth is high, sustained falls in GDP are much less likely. And as cross-country average growth rates have tended to fall in recent decades, then a higher frequency of negative growth rates is inevitable but may not be informative about economic welfare. A measure of how far a country’s activity falls below productive potential may be a better gauge of costly episodes of economic weakness.

Figure I-5 adopts this alternative approach by comparing the current shortfall in GDP relative to productive potential with the depth of the downturns across different episodes in major countries. It shows how global

<table>
<thead>
<tr>
<th>Event</th>
<th>United States</th>
<th>European Union</th>
<th>UK</th>
<th>China</th>
<th>Japan</th>
<th>Australia</th>
<th>Global</th>
</tr>
</thead>
<tbody>
<tr>
<td>Iran/energy crisis 1981–1982</td>
<td>−5.2%</td>
<td>−0.6%</td>
<td>−1.7%</td>
<td>−0.7%</td>
<td>−0.4%</td>
<td>−1.7%</td>
<td>−1.5%</td>
</tr>
<tr>
<td>Gulf War 1990–1991</td>
<td>−3.5%</td>
<td>−0.9%</td>
<td>−1.3%</td>
<td>−2.3%</td>
<td>−0.8%</td>
<td>−1.1%</td>
<td>−1.0%</td>
</tr>
<tr>
<td>Asian financial crisis 1997–1999</td>
<td>1.7%</td>
<td>−0.7%</td>
<td>0.1%</td>
<td>−4.8%</td>
<td>−1.8%</td>
<td>0.7%</td>
<td>0.2%</td>
</tr>
<tr>
<td>Dot-com bubble 2001–2002</td>
<td>−2.5%</td>
<td>0.8%</td>
<td>−0.3%</td>
<td>−0.8%</td>
<td>−2.0%</td>
<td>0.1%</td>
<td>−0.7%</td>
</tr>
<tr>
<td>Global financial crisis 2008–2009</td>
<td>−4.6%</td>
<td>−1.3%</td>
<td>−2.2%</td>
<td>−3.6%</td>
<td>−2.4%</td>
<td>−0.8%</td>
<td>−2.0%</td>
</tr>
<tr>
<td>European sovereign crisis/China liquidity crisis 2011–2013</td>
<td>−2.5%</td>
<td>−1.9%</td>
<td>−0.5%</td>
<td>−0.5%</td>
<td>−0.5%</td>
<td>−0.5%</td>
<td>−0.2%</td>
</tr>
<tr>
<td>China slowdown 2015–2016</td>
<td>−1.2%</td>
<td>−1.1%</td>
<td>0.4%</td>
<td>−2.6%</td>
<td>−0.2%</td>
<td>−0.7%</td>
<td>−0.3%</td>
</tr>
<tr>
<td>The present (last four quarters)</td>
<td>0.8%</td>
<td>−0.2%</td>
<td>−0.3%</td>
<td>−1.1%</td>
<td>1.5%</td>
<td>−0.3%</td>
<td>0.1%</td>
</tr>
<tr>
<td>2020 (forecast)</td>
<td>−0.3%</td>
<td>−0.6%</td>
<td>−1.1%</td>
<td>−2.0%</td>
<td>0.2%</td>
<td>−0.2%</td>
<td>−0.3%</td>
</tr>
</tbody>
</table>

Notes: Numbers reflect the output gap as a percentage of potential GDP, where the output gap is the difference between the level of actual GDP and of potential GDP. Historical global recession dates are those identified by the International Monetary Fund.

Source: Vanguard.
downturns involving one to two standard deviation hits to output tend to be synchronised across countries, as in the global financial crisis, the oil shocks through the early 1980s, and the Gulf War in the early 1990s. Strikingly, by this definition, the current environment is still a long way from a serious global contraction, with most large developed countries operating close to or above estimates of full capacity. Even after factoring in the expected slowdown in 2020 in the US and China, the extent of the global downturn is by no means unprecedented, with most major economies expected to be less than one standard deviation from trend.

What is also unusual about the current global slowdown is the synchronous nature of the weakness in the industrial sectors of the world’s largest economies. None of the previous global slowdowns identified have been characterised by a trade-led slowing in growth. A broader analysis of over 100 recessions globally suggests that such “external demand” shocks contribute as a primary driver less than 20% of the time.

Although the industrial sector is a valuable bellwether of the overall economy, it represents a small minority of economic activity (roughly 16% globally). As Figure I-6 depicts, this results in a directionally consistent but muted direct impact on the much larger services sector, similar to that shown in Figure I-1b—on average 25 basis points, given a 1 percentage point change in manufacturing.4 Rather, we find that a much deeper industrial contraction is necessary to cause weakness in the more resilient services sector. Based on the expected severity of the current slowdown, this is not our main case.

Can policymakers save the day?

One important consequence of the global slowdown in 2019 has been the marked pivot by central banks around the world from gradual policy normalisation to increased policy accommodation. There is increased scepticism, however, that monetary policy is still capable of playing the cyclical stabilisation role being demanded of it. As a result, inflation expectations, both survey-based and derived from financial market instruments, remain relatively unresponsive to policy measures. This lack of credibility largely explains why major central banks have failed to achieve their stated inflation targets and are not expected to any time soon; the European Central Bank and the Bank of Japan are the prime offenders in this regard.

Given this outcome, there is increasing debate about whether central banks should change their operating frameworks, perhaps by introducing new policies such as price-level targeting or by revising their numerical targets. In our view, these mechanisms are unlikely to move the dial enough.
An alternative much-advocated approach—one we support—is for fiscal policy to take more of the burden of cyclical adjustment. Figure I-7 shows our forecast for the expected fiscal impulse in a range of major economies for 2020, using the commonly adopted convention of measuring fiscal impulse by the change in the cyclically adjusted fiscal balance. On this basis, fiscal policy is likely to contribute only a neutral impulse to global growth, with policy set to be mildly supportive in China, the euro area, and the UK; contractionary in Australia, and neutral in the US and Japan.

These forecasts beg the question of whether certain countries ought to do more to promote growth. One frequently cited criterion for judging how easy it might be for countries to relax fiscal policy is based on the concept of “fiscal space,” defined for example by the International Monetary Fund as “the room for undertaking discretionary fiscal policy relative to existing plans without endangering market access and debt sustainability” (International Monetary Fund, 2018). In practice, providing precise estimates of this measure of appropriate fiscal policy can be rather subjective, and in any case, political willingness to use fiscal policy actively is more often the relevant constraint (as discussed in the regional section on Europe, in the case of Germany).

A lower growth equilibrium?
We have already emphasised that policy uncertainty is likely to be acting as a drag on current and near-term global growth. But there is ample theoretical and empirical evidence that these influences can be longer-lasting, causing productive potential to be lower and even resulting in slower economic growth into the medium term. Lower investment spending is one of the important channels through which the global slowdown has progressed, and if the lost investment is not recovered, supply-side potential will be permanently lower.

The retreat of globalisation since the global financial crisis is explained by a range of forces, including increased protectionism ranging from US-China trade wars to Brexit and geopolitical uncertainty, which makes

**FIGURE I-7**

Fiscal stimulus in 2020 is expected to be broadly neutral

<table>
<thead>
<tr>
<th>Country</th>
<th>% of potential GDP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australia</td>
<td>-0.6</td>
</tr>
<tr>
<td>Japan</td>
<td>-0.2</td>
</tr>
<tr>
<td>United States</td>
<td>-0.4</td>
</tr>
<tr>
<td>Euro area</td>
<td>0</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>0.2</td>
</tr>
<tr>
<td>China</td>
<td>0.8</td>
</tr>
</tbody>
</table>

Notes: Fiscal impulse is defined as the change in the cyclically adjusted fiscal balance as a percentage of GDP. Sources: Vanguard calculations.
investors less confident about global expansion plans. Less trade and less foreign direct investment lead to less exploitation of potential productivity gains through comparative advantage.

These effects are difficult to calibrate accurately, not least because they filter through slowly (as shown, for example, in many of the empirical estimates of the long-run costs of the United Kingdom leaving the European Union; see the UK outlook that begins on page 22). Similar effects are in part contributing to slower worldwide productivity growth since the financial crisis. It shows that disruptive policymaking and uncertainty can have a pervasive and persistent impact on global growth prospects for some time to come.

A less visible but equally consequential side effect of deglobalisation is the potential reduction in global knowledge sharing. Forthcoming Vanguard research finds that knowledge sharing, or the generation and global expansion of ideas (which we refer to in our research as the “Idea Multiplier”), is a leading indicator of productivity growth and is resurging after a decades-long hiatus (Figure I-8). But this resurgence, and any associated productivity impacts, may be short-lived if physical and digital barriers are enacted and impede this sharing. Based on our calculations, new idea creation would be 67% lower if ideas were confined to geographical borders. As the current slowdown highlights, a stall or reversal in the globalisation process will have varied consequences for both short- and long-term growth prospects globally and for individual countries.

FIGURE I-8
A higher Idea Multiplier = higher future growth

Notes: The Idea Multiplier is a proprietary metric that tracks the flow and growth of academic citations. It has been shown to be a leading indicator of productivity growth. For more information, see the forthcoming Vanguard paper The Idea Multiplier: An Acceleration in Innovation Is Coming. The horizontal axis is the five-year change in the Idea Multiplier. The vertical axis is the productivity growth over the subsequent five-year period minus the growth in the lagging five-year period. The date range is 1975–2018. Productivity growth is represented by total factor productivity at constant national prices for the United States.

Sources: Vanguard calculations, based on data from Clarivate Web of Science and the Federal Reserve Bank of St. Louis.
United States: Downshifting for an uncertain road ahead

As the temporary boost from the tax cuts of 2017 waned, 2019 saw a return to trendlike growth of 2% amid a strong labour market and associated support from consumption. Noticeably absent in 2019 was a contribution from business investment, which grew less in the past 12 months and detracted from growth in consecutive quarters for the first time since the 2015 – 2016 global manufacturing slowdown (Figure I-9a). Much as in our global outlook, we believe this was due in large part to elevated levels of uncertainty that we expect to persist through at least 2020 and continue to weigh on business sentiment (Figure I-9b), leading to a growth rate centred on 1% (between 0.5% and 1.5%).

FIGURE I-9
Business investment is again trending lower

a. Metrics point to continued slowdown

b. Sentiment weighs on investment

Notes: The leading business investment indicator models investment activity in the nonresidential sector in order to produce a forward-looking signal of capital expenditures by US businesses. It is a principal-component-weighted index of activity related to business equipment and capital goods, business capital expenditure plans, demand for commercial and industrial loans, and energy prices.

Sources: Vanguard and Moody’s Analytics Data Buffet.

Note: The Vanguard Beige Book Sentiment Index uses Natural Language Processing techniques in order to monitor the polarity in language used in the Federal Reserve Beige Book.

Sources: Vanguard, Moody’s Analytics Data Buffet, and the Federal Reserve Bank of New York.
Past Vanguard research has highlighted the drag that shocks to uncertainty can have on economic fundamentals, including growth and inflation, and how the persistence of such shocks amplifies the drag. Given that we expect elevated levels of uncertainty to persist through 2020 and beyond, a historical assessment of the impact on economic conditions of prolonged periods of high uncertainty—as opposed to one-off shocks—can lend further support to our view. As introduced in the Global Economic Outlook section, we have also estimated a Markov-switching model for the US economy that identifies regimes of high and low uncertainty. Figure I-10 shows clearly that periods of high uncertainty are associated with lower growth, tighter financial conditions, and lower asset prices.

Labour markets also tend to weaken in periods of high uncertainty, with average monthly new jobs during such periods being 85,000 lower than in low-uncertainty regimes. This makes intuitive sense, since demand for workers is likely to fall as uncertainty about the future economic environment rises. Business surveys, including those featured in Figure I-9b, point to a slowdown in the pace of hiring in 2020. Even without this drag, we had expected the pace of monthly job creation to continue falling in 2020, from 170,000 jobs per month to closer to 100,000 per month, as the current pace of job growth is unsustainable in a tight labour market. Figure I-11 shows the current labour force participation rate relative to a proprietary estimate of the expected participation rate accounting for changes in demographics, education,
and generational behavioural tendencies (that is, how likely a given generation is to participate in the labour market at any age and educational level). For the first time since the global financial crisis, the US labour market appears somewhat tight, meaning the pace of new entrants to the labour force is likely to slow.

Were participation rates to fall, as our model suggests, there is a risk that unemployment rates could fall as well even as the number of new jobs created each month declined. In such an environment, inflationary concerns could heat up, as predicted by the Phillips curve; however, this relationship between unemployment and inflation is far from stationary over time. We do not mean to imply that persistently low and falling unemployment rates would never lead to inflation. Instead, we caution against assuming that high inflation is a foregone conclusion in an economy with low unemployment rates.

Despite the likelihood of persistently low unemployment rates, not much has changed in our inflation outlook. Inflation below the Fed’s target, in our view, remains the most likely outcome. Breaking inflation components into those affected by the business cycle and those less sensitive to measures of slack (Figure I-12) suggests that with growth expected to slow below potential, the Fed would likely find it even more difficult to achieve its 2% target. This, in turn, leads to our expectation that inflation will remain below that target in 2020.

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**FIGURE I-11**

**Structural factors put downward pressure on labour markets**

Notes: Model estimates for participation are obtained from our proprietary models. For more details please refer to the Vanguard Global Macro Matters paper Labor Force Participation: Is the Labor Market Too Hot, Too Cold, or Just Right? (2019).


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**FIGURE I-12**

**Low inflation remains the risk**

Cyclical components have been driving inflation

Note: Core PCE is broken down into 53 granular components. We estimate the sensitivity of each component to economic slack (the difference between U3 and NAIRU) by regressing the year-over-year component rate on constant and slack. Cyclical components are responsive to slack (coefficient is statistically significant) and noncyclical components are not responsive to slack.

Sources: Vanguard calculations and Refinitiv Datastream.

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7 See the 2019 Vanguard Global Macro Matters paper Labor Force Participation: Is the Labor Market Too Hot, Too Cold, or Just Right?

8 The Phillips curve suggests that as unemployment falls, relative to its natural rate, inflationary pressure builds as employers compete for a dwindling supply of labour. The natural rate of unemployment is the rate at which it puts neither upward nor downward pressure on inflation. That is often aptly referred to as the non-accelerating inflation rate of unemployment, or NAIRU. Please see the Vanguard Global Macro Matters papers Why Is Inflation So Low? The Growing Deflationary Effects of Moore’s Law and From Reflation to Inflation: What’s the Tipping Point for Portfolios?

9 Growth rates below potential would represent "slack."
As the pace of job growth slows, the consumer sector’s support for growth may begin to wane. Although consumption has not historically been as responsive to downturns (Figure I-13a) or uncertainty (Figure I-13b) as business and residential investment are, signs are pointing to a slowdown. Should job growth slow further than we expect and, in turn, if income gains lose momentum, we see a strong case for GDP growth in 2020 near 0.5%, the lower end of our forecast range.

**FIGURE I-13**

**The consumer typically remains resilient through recessions and periods of uncertainty**

a. Consumption persists through downturns  

b. Impact of uncertainty shock on GDP components

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**Note:** These are the growth trajectories of various GDP components in the quarters preceding and following a recession.  
**Sources:** Vanguard calculations, based on data from Moody’s Analytics Data Buffet and the National Bureau of Economic Research.

**Note:** This is the quarterly impulse response function of GDP components to an uncertainty shock at time 0 (instant increase in uncertainty).  
**Sources:** Vanguard calculations, based on data from Moody’s Analytics Data Buffet and www.policyuncertainty.com.
Given support from the consumer and persistently elevated uncertainty, we believe the Fed will cut interest rates one or two more times before the end of 2020. And should our baseline expectations play out in 2020, models leveraged by the Fed in its policy discussions also imply additional support in the coming year (Figure I-14). We believe that the US economy, and in turn the Fed, will shift into a lower gear in 2020 as policymakers, businesses, and consumers navigate a more uncertain road ahead.

**FIGURE I-14**

Fed models imply more cuts in the event of slow growth and low inflation in 2020

Notes: Model 1 is a first-difference Taylor Rule model wherein changes in the output and inflation gaps drive changes in the federal funds rate (FFR). Model 2 is the Fed’s proprietary macroeconomic model (FRB/US), which represents model-based changes in the FFR when growth and inflation are shocked for one year with Vanguard’s base case expectations for 2020 (0.5%–1.5% GDP growth, 1.8% core PCE, and 100,000 new non-farm payroll jobs per month for the duration of 2020). Vanguard estimate includes model-based expectations and those of Vanguard’s Investment Strategy Group.

Sources: Vanguard calculations, based on data from the US Bureau of Economic Analysis, the Federal Open Market Committee, Bloomberg, and Moody’s Analytics Data Buffet.
Euro area: No strong rebound in sight given limited fiscal stimulus

The euro area economy slowed significantly in 2019, driven by a sharp contraction in manufacturing activity. Global trade tensions, Brexit uncertainty, and struggles in the auto sector have all contributed. Germany and Italy have been affected most given the openness of their economies and their relatively large manufacturing bases.

Services activity has remained relatively robust so far. However, there are tentative signs that the manufacturing weakness is feeding into supply chains and the services sector, especially in Germany (Figure I-15). A more significant spillover into services, which accounts for about 75% of the euro area economy, is a key risk as we look ahead to next year.

Based on our economic leading indicators and supplementary analysis, we expect the euro area economy to grow by 1% in 2020, slightly below our assessment of potential. In our base case, we anticipate that the region will avoid slipping into recession, supported by easier global financial conditions and a modest fiscal impulse. The relative strength of the French and Spanish economies, which are more domestically oriented than those of Germany and Italy, is also encouraging. Nevertheless, the risk of recession remains elevated, and we attach a 35% probability to this outcome occurring in 2020.

Underlying inflationary pressures in the euro area remain subdued, and we expect the European Central Bank to continue to fall well short of its 2% inflation target in 2020. What will worry the ECB most is that, despite its cutting rates further below zero and restarting quantitative easing in September 2019, market-based measures of inflation expectations remain at multiyear lows (Figure I-16).

One of the biggest challenges that new ECB President Christine Lagarde will face is convincing investors that monetary policy in the euro area is still an effective and credible tool in supporting growth and inflation. We expect that the ECB will adopt a wait-and-see approach to analyse the full impact of its September stimulus package and will keep policy largely unchanged for the first six months of 2020.

If inflation expectations fail to rise meaningfully, however, the ECB may be forced to consider easing further. There is a limit to cutting interest rates deeper into negative
FIGURE I-17

Germany has the ability to provide meaningful fiscal stimulus, but not the willingness

Notes: Germany’s total fiscal space is calculated as the maximum change in the primary balance that can be implemented without the debt-to-GDP ratio rising, based on assumptions of future growth and interest financing costs. Germany currently abides by two fiscal rules: (1) the “black zero” and (2) the “debt brake.” The black zero is a commitment to avoid running a budget deficit in any given year. The debt brake permits a cyclically adjusted federal deficit of 0.35% of GDP only.
Source: Vanguard.

territory given the impact on bank profitability. But there may be more room on asset purchases. If the ECB raises the issue and issuer limits on eligible securities from 33% to 50%, we calculate that this will increase the universe of bonds available to purchase by 1 trillion to 1.5 trillion euros. In our view, this will enable asset purchases to run at a pace of 60 billion euros a month for about two years.

With monetary policy struggling to boost growth and inflation on its own, the burden is increasingly falling on fiscal authorities to provide an additional boost. The draft budgets submitted to the European Commission in October, however, imply only a modest fiscal impulse in 2020 of about 0.3% to 0.5% of GDP for the euro area as a whole.

Much of the focus is on Germany, the only major euro area economy with significant fiscal space to act. As Figure I-17 illustrates, we estimate that Germany could provide a fiscal boost of around 2% of GDP without causing its debt-to-GDP ratio to rise. However, there is little appetite among the fiscal authorities to actually use this space. As a base case, we expect German fiscal stimulus of around 0.5% of GDP in 2020, with an additional 0.5% of upside should the growth outlook deteriorate even further.
United Kingdom: Brexit uncertainty slowly taking its toll

The outlook for the UK economy in 2020 hinges once more on progress toward Brexit. Under our base case, we assume that by early 2020 the UK Parliament will approve and legislate the Withdrawal Agreement Bill (WAB) negotiated by Boris Johnson. That approval will confirm that the UK will pay a divorce bill to the European Union, protect EU citizens’ rights in the UK, commit to a dual customs zone for Northern Ireland with no hard border on the island of Ireland, and enter a transition period that concludes in December 2020. The UK will then need to negotiate future trading arrangements with the EU by the end of that period.

At this stage, the UK seems very likely to leave the European Single Market and the EU Customs Union, which means that free movement of people, services, and capital will end. The UK has expressed a strong desire to negotiate a free-trade deal on goods, but the EU will apply strict conditions to such a deal, including regulatory alignment on goods, which the UK may be unwilling to accept. This makes it likely that the transition period will need to be extended by agreement with the EU, although it is possible that the UK could leave the EU without a trade deal, a potentially damaging outcome for economic prospects.

Given these assumptions, we forecast the UK to achieve trend growth of 1.2% in 2020. On the one hand, we believe that approval of the WAB will relieve uncertainty and provide a modest short-term tailwind to growth. Moreover, the UK government is expected to provide additional fiscal stimulus that will contribute roughly 0.5% to GDP. On the other hand, the likely ongoing lack of clarity about future trading relationships with the EU is likely to continue to act as a drag on activity. And growth among the UK’s trading partners in Europe, Asia, and North America is expected to be relatively soft, which will reduce demand for UK exports and serve as a further headwind. In this environment, we expect unemployment to remain relatively stable at about 4%, with wage pressures muted. This implies that inflation pressures will be contained and that the Bank of England will leave interest rates on hold throughout 2020.

The key risks to our view are a continued drag on growth from an even weaker global backdrop and more prolonged Brexit uncertainty. Since the 2016 referendum on EU membership, UK business investment has lagged that of the rest of the Group of Seven (G7) economies by a total of 9% (see Figure I-18). The Bank of England’s own assessment is that Brexit has generated a long-lasting increase in uncertainty and may have thus far

FIGURE I-18

UK business investment has stalled since the 2016 EU referendum

Notes: The G7 (ex-UK) countries are Canada, France, Germany, Italy, Japan, and the United States. Data are weighted by nominal GDP using purchasing power parity (PPP) and rebased on June 2016 to equal 100. Data are as of November 6, 2019.

Sources: National accounts, Bloomberg, and the International Monetary Fund.
reduced UK productivity by 2% – 5%. A continued period of heightened uncertainty in 2020 would be likely to reduce growth and increase the probability of rate cuts.

Looking beyond 2020, based on our modelling, the UK economy is expected to be about 8% smaller by 2030 in the event of a no-deal Brexit than if Brexit had never happened (Figure I-19). It will be roughly 7% smaller if the UK enters a Canada-style free-trade agreement with the EU. These estimates fall to 3% under a Customs Union arrangement and 1% under the Common Market 2.0 proposal. Finally, given our assumptions that UK GDP returns to its pre-referendum trend if the Brexit decision is reversed, there is no difference in this no-Brexit scenario.

FIGURE I-19
The estimated impact of Brexit on the UK economy

Notes: This is an estimation of both long- and short-run impacts of Brexit on UK GDP. Long-run growth estimates were used for the trend level of GDP, with percentage deviation from trend GDP (calculated in short-run estimates) overlaid on top.
Sources: Vanguard calculations, based on data from Bloomberg, Macrobond, and the Office for National Statistics.

11 See the 2019 Vanguard research paper It’s Not EU, It’s Me: Estimating the Impact of Brexit on the UK Economy.
China: No hard landing, uncertainty impedes stimulus

China’s economy faced threats on multiple fronts in 2019 as economic consequences of the multiyear escalation in US trade tensions became evident and stimulus measures struggled to rejuvenate a fraught private sector. Although policymakers have modestly shifted the balance of their focus toward protecting short-term economic stability, slowing global economic growth and expectations for persistent US-China tensions place China’s economy in an environment of perpetual high policy uncertainty. These factors constitute a sizable headwind for both immediate and medium-term growth prospects.

We expect this uncertainty to drag down China’s near-term growth by 0.8%, with the effects magnified when examining the new economy—private enterprise industries reflecting domestic consumption, high-skill manufacturing, and service industries (Figure I-20).

The impact of this uncertainty against a backdrop of continued structural deceleration in the economy leads us to lower our 2020 growth forecast to 5.8%. This is a noticeable decline from the high-6% growth China experienced over the past three years and represents a continued slowdown from 2019’s expected 6% growth. On a positive note, the expectation for policymakers to continue implementing targeted stimulus measures and a dovish turn from global central banks place the odds of a hard landing, or growth below 5%, as relatively low (about 10%) (Figure I-21).

Policy efforts to stabilise growth will continue, but concerns about medium-term financial stability risks will keep these measures in moderation relative to prior easing cycles, reducing the tailwinds for global growth prospects in 2020 (Figure I-22). Wide-scale stimulus measures that might propagate property bubbles will rightfully be avoided, and policymakers will instead focus more on boosting infrastructure spending and providing targeted monetary easing to small and midsize private enterprises that have faced funding pressures since the shadow banking crackdown of 2016–2017.

FIGURE I-20
Uncertainty is a significant drag on the new economy

Notes: Vanguard’s Nowcast Index is designed to track China’s economic growth in real time using a dynamic factor approach to weight economic and financial market indicators, accounting for co-movement between the factors. The Nowcast comprises two distinct economies. The old economy is based on state-owned enterprises; low-end and heavy manufacturing industries such as textile, coal, steel, and concrete production; and real estate. The new, consumer-driven economy is led by private enterprises and based on domestic consumption, high-skill manufacturing, and service industries.

Sources: Vanguard calculations, based on data from Thomson Reuters Datastream, CEIC, Bloomberg, and the National Bureau of Statistics of China.
FIGURE I-21
Further slowdown is likely, but the odds of a sharp downturn are low

Notes: Implied probabilities are derived using a probit regression model that uses Vanguard’s Leading Economic Indicator (VLEI) for China and other financial market variables. The model was estimated using monthly data from January 2000 to September 2019. A 1-standard-deviation slowdown is defined as the deviation from trend output level.
Sources: Vanguard calculations, using data from Bloomberg and Thomson Reuters Datastream.

FIGURE I-22
China will stimulate but won’t reflate the global economy

Note: Total social finance is the volume of financing provided by the financial system to the real economy (domestic nonfinancial enterprises and households).
Sources: Vanguard calculations, using data from Bloomberg and Thomson Reuters Datastream.
Questions remain as to how effective these policies will be in stabilising growth. The new economy has historically been less responsive to stimulus measures, and the old economy, which historically has responded more strongly, is likely to be less responsive this time because of the elevated uncertainty (Figure I-23). Under these circumstances, policymakers may have to concentrate more efforts on improving the policy transmission effects on the real economy, as they did with recent reforms to China’s loan prime rate mechanism.

The ability to push forward domestic structural reforms while manoeuvring a more complex and hostile global political environment holds the key to China’s medium-term outlook. As Figure I-24 illustrates, regime changes in trading relationships, as well as politics and governance, have complicated China’s transition to a developed economy. Rising uncertainty externally may increase the temptation for Chinese policymakers to kick the can down the road by emphasising short-term growth stability to the detriment of longer-term financial stability and structural reforms. The result over time will be an increase in the risks of a “Japan-style stagnation” or an “emerging-market-style instability” scenario, in which falling productivity growth and lower capital investment eventually lead to a much lower growth environment.

FIGURE I-23
Stimulus measures are less effective in a high-uncertainty environment

FIGURE I-24
China’s medium-term outlook is complicated by external tensions

Notes: Data represent the responsiveness of the new and old economies in high- and low-uncertainty environments. Financial easing is defined as a 1-standard-deviation easing of financial conditions.
Sources: Vanguard calculations, based on data from Thomson Reuters Datastream, CEIC, and Bloomberg.

Notes: The scenarios show year-over-year GDP growth. The percentages for the likelihood of a scenario occurring are based on Vanguard estimates.
Sources: Vanguard calculations, based on data from the International Monetary Fund, World Bank, and CEIC.
On the other hand, we recognise that recent US-China tensions can also be seen as a double-edged sword, with external pressure incentivising China’s government to resume its reform agenda and increase productivity gains. Under such circumstances, the chance of a smooth-rebalancing or hard-landing scenario will increase, with smooth rebalancing more likely at this point given adequate macroeconomic policy cushions and recent progress on overcapacity issues.

Clearly, policymakers must strike the right balance among China’s economic, financial, and social stability agendas in this increasingly uncertain environment.

As China becomes more integrated with the global economy, domestic growth outcomes will have more of a tendency to spill over to other economies. Actions to boost private-sector sentiment and propel the new economy will be a positive development for global growth given the world’s growing sensitivity to these industries (Figure I-25). We remain optimistic about China in the long term, but its economic outlook will be a consequence of many complex, deeply rooted factors that will become clearer with time. Close monitoring of its economic, financial, policy, social, and political development is warranted.

**FIGURE I-25**

**China’s new economy is important to many developed nations**

![Diagram showing the impact of China's new economy on various regions.](image)

**Notes:** A vector autoregression (VAR) model was used to measure the effects of China’s old and new economy growth momentum on the respective regions’ growth. The sample period covers the years 2006 to 2018.

**Sources:** Vanguard calculations, based on data from Thomson Reuters Datastream, CEIC, and Bloomberg.
Japan: Bank of Japan stuck in a tough spot

Japan has been decoupled from the 2017 tightening party and now is late to the easing cycle that began with the US Federal Reserve in July 2019. Although economic and financial factors have been supportive of the Bank of Japan’s (BOJ) keeping monetary policy steady, potential global growth scares and domestic risk factors in 2020 may increase pressure to loosen policy. We expect 2019 fourth-quarter GDP to modestly contract as October’s value-added-tax hike slows consumption; however, the pass-through of additional funding to social programs should mitigate downside risk. Historically, developed nations have enjoyed a 25-basis-point stimulus from pre-Olympic investment and consumption expenditures (see Figure I-26), but this will fade in 2020, when the Summer Olympics are held in Tokyo, and is one reason we expect average GDP growth to slow to 0.6%.

A trade pact finalised in October bolstered the US-Japan trading relationship, but Japanese firms are highly susceptible to the uncertainty surrounding US-China trade, as well as the slowdown in China’s economy (Figure I-25). With more than 13,000 Japanese companies operating in China as of May 2019,12 Japan’s medium-term economic outlook is clouded by expectations of continued US-China tensions. A recent Nikkei survey of 1,000 Japanese companies with operations in China revealed that only 10% of them expect the US-China trade conflict to be resolved in under three years.13

Indications of the downturn have started to appear in our recession probability indicator, which captures the likelihood of both a “true recession” as defined by Japan’s Cabinet Office and a “sharp downturn” as defined by a two-standard-deviation slowdown from trend (see Figure I-27). Although a true recession appears unlikely, the risks of a sharp downturn are

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Recession is unlikely, but the risk of a sharp downturn is rising

Notes: Implied probabilities are derived using a probit regression model that uses Vanguard’s Leading Economic Indicator (VLEI) for Japan and other financial market variables. The model has been estimated using monthly data from January 1990 to July 2019. A sharp downturn is defined as a 2-standard-deviation slowdown from trend.

Sources: Vanguard calculations, using data from Bloomberg and Thomson Reuters Datastream.

material, owing to weakening domestic growth momentum exacerbated by declining business and consumer sentiment. Alongside still-weak inflation (see Figure I-28), the increased downside risks to growth may encourage additional economic support by policymakers.

We find there are few options in the BOJ’s toolkit that would be effective in achieving growth and inflation mandates without negative consequences to the financial system (see Figure I-29). The most feasible tools would be lowering interest rates and increasing asset purchases, but these moves would inevitably raise concerns about side effects, such as dampening financial profitability and shrinking market liquidity. It’s also questionable whether further monetary accommodation alone would be effective, given that inflation is still below 1% even after more than five years of the BOJ’s quantitative and qualitative easing program. It is becoming clear that monetary policy is racing toward its limit.
On the fiscal side, public infrastructure spending has a higher economic growth multiplier than monetary policy, but such spending is less feasible in Japan given the concerns that it would add to already high government debt. However, continuation of yield-curve control measures may be able to keep interest rates lower, which can provide some room for looser fiscal policy.

Most likely, we think the BOJ will again be left to shoulder a disproportionate share of supporting the economy. Although reducing the short-term interest rate further is still an option, the bank will likely resort to strengthening its forward guidance before taking more concrete policy actions, given the negative side effects.

**FIGURE I-28**

**The Bank of Japan has multiple mandates to balance**

<table>
<thead>
<tr>
<th>Growth stability</th>
<th>Inflation stability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Output gap</td>
<td>Core CPI</td>
</tr>
<tr>
<td>Capital expenditure</td>
<td>Inflation expectations</td>
</tr>
<tr>
<td>Consumption</td>
<td>Full-time wages</td>
</tr>
<tr>
<td>Exports</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Financial stability</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year-over-year change in outstanding JGB purchase</td>
</tr>
<tr>
<td>Net interest income</td>
</tr>
<tr>
<td>Percentage ownership of Japanese government bond (JGB) market</td>
</tr>
</tbody>
</table>

Sources: Vanguard, using data from Thomson Reuters Datastream.
Over the long term, Japan will continue growing in the sub-1% range, well below expectations for other G7 economies. But the divergence may not last all that long, as the developed world faces the same structural issues that have plagued Japan over the past several decades: demographics, elevated inequality, weak inflation, and narrowing fiscal space. Abenomics has gradually made progress on needed structural reforms—value-added taxes, corporate governance, and labour market equality—but demographic challenges are unlikely to materially change given the lack of appetite for immigration reform.

FIGURE I-29

There is limited room for further effective monetary easing

Source: Vanguard.
Emerging markets: Headwinds loom amid global trade slowdown

Economic growth for emerging markets in the aggregate is expected to be 4.6% in 2020. However, we expect there to be vast heterogeneity both within and among regions. In the Latin American region, the growth projection is 1.8% (see Figure I-30). Emerging European growth is expected to increase moderately, at a 2.5% pace. Forecasts for emerging Asia, though slightly downgraded, remain robust, at an average of 6%. In general, emerging markets’ inflationary pressures are subdued, with most countries’ inflation rates at or below target.

Some of the recent slowdown across emerging markets reflects the spillover effects of a slowing China, policy tightening by the US Federal Reserve in 2018, and a decline in global trade. The global trade reduction stems mostly from uncertainty surrounding the US-China trade dispute and the proposed United States-Mexico-Canada Agreement. This heightened uncertainty has led to a decline in manufacturing sectors across emerging markets (see Figure I-31). In aggregate, purchasing managers’ indexes (PMIs) have fallen 3.3% from April 2018 to September 2019, with industrial production across regions showing a similar decline.

In addition, populism and geopolitical risks present challenges. Across most emerging markets, fiscal policy and monetary policy have turned expansionary to counter slowing consumer demand (see Figure I-32). Developed-world monetary policy has turned dovish, which should prevent global financial conditions from tightening further, thereby spurring consumer demand. Corporate leverage has increased in the emerging markets since the financial crisis, with high levels of corporate debt issuance in nonlocal currencies. Sudden movements of the dollar in either direction could severely damage corporate balance sheets.

**FIGURE I-30**
Emerging markets growth is projected to stabilise

Average percentage-point change in real GDP growth

- **Emerging Asia**: 6.0 (2019), 5.9 (2020)
- **China**: 6.1 (2019), 5.8 (2020)
- **India**: 7.0 (2019), 6.1 (2020)
- **Emerging Europe**: 2.5 (2019), 1.8 (2020)
- **Latin America**: 1.8 (2019), 0.2 (2020)
- **Brazil**: 2.0 (2019), 0.9 (2020)

Notes: Regional growth forecasts are inclusive of country forecasts displayed here. For a full list of countries included in each regional forecast, please refer to the IMF World Economic Outlook (https://www.imf.org/external/pubs/ft/weo/2019/02/weodata/groups.htm).
Source: International Monetary Fund.
Industrial production has slowed down since late 2017

Notes: Regional industrial production (IP) indexes are GDP-weighted aggregates of individual country IP indexes. Emerging markets Asia includes India, Indonesia, Malaysia, and the Philippines. Latin America includes Brazil, Chile, Colombia, Mexico, and Peru. Emerging markets Europe and South Africa includes Poland, Turkey, Hungary, and South Africa.

Sources: Vanguard calculations, based on data from Moody’s Data Buffet and Thomson Reuters Datastream.

Monetary policy across emerging markets has turned expansionary

Sources: Moody’s Analytics Data Buffet and Thomson Reuters Datastream.
II. Global capital markets outlook

The confluence of slowing global growth and persistent geopolitical uncertainty creates a fragile backdrop for markets in 2020 and beyond. While more favourable valuations have led to a modest upgrade in our equity outlook over the next decade, the risks of a large drawdown for equities and other high-beta assets remain elevated. Fixed income returns are also expected to be subdued at best, with our lower projections factoring in declining policy rates, sharply lower long-term bond yields and compressed credit spreads globally. Nonetheless, the time-tested principles of portfolio construction are expected to hold, with high-quality bonds retaining their risk-reduction and diversification properties in portfolios.

Importantly, the market’s efficient frontier of expected returns for a unit of portfolio risk is still in a lower return orbit and common asset-return-centric portfolio tilts, seeking higher return or yield, are unlikely to escape the strong gravity of the low-return forecasts in play. In addition, a relatively flat efficient frontier suggests that increases in expected portfolio returns for taking marginal equity risk are not as well compensated when compared to historical precedent.

Global equity markets: High risk, low return

In the face of elevated uncertainty and a synchronised global slowdown, equity markets have remained surprisingly robust; year to date, global equities have returned more than 21% in euro terms as of September 30, 2019. However, investors should caution themselves against extrapolating present gains into the future. In fact, if one takes into account the fourth-quarter declines of 2018, global equities would have returned 8% when annualised over the 13 months ending September 30, 2019. This is only slightly above the performance of global aggregate bonds, which returned over 6% annualised over the same period.

Upon factoring in our outlook for even-lower-for-longer global growth, inflation and interest rates, the outlook over the next decade for global equities remains guarded at 2.5% - 4.5%. This is slightly higher than last year given improved valuations and significantly lower than the experience of post-crisis years.

European equities appear attractively priced relative to other developed stock markets

The strong recovery in equity markets following the losses of 2018 explains why valuations are only modestly lower than this time last year. The probability of a global stock market correction or bear market over the next three years is broadly in line with what we would expect in a normal market environment (Figure II-1).

FIGURE II-1
Probability of equity market drawdown in the next three years

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Vanguard’s distinct approach to forecasting

To treat the future with the deference it deserves, Vanguard has long believed that market forecasts are best viewed in a probabilistic framework. This annual publication’s primary objectives are to describe the projected long-term return distributions that contribute to strategic asset allocation decisions and to present the rationale for the ranges and probabilities of potential outcomes. This analysis discusses our global outlook from the perspective of a EU investor with a euro-denominated portfolio.
Figure II-2a plots Robert Shiller’s cyclically adjusted price/earnings ratio (CAPE) for the MSCI Germany Index versus our fair-value model. Vanguard’s fair-value CAPE accounts for current interest rates and inflation levels. It also provides a more useful time-varying benchmark that accounts for changes in economic and financial market conditions against which the traditional CAPE ratios can be compared, instead of the popular use of the historical average as a benchmark. Today, the German equity market appears undervalued, with the CAPE currently in the 12th percentile relative to its historical distribution.

When we extend this fair-value concept to other regions, we find that non-European developed market equities and emerging market equities appear to be fairly valued, after adjusting valuations for lower rates and inflation (Figure II-2b).

**FIGURE II-2**

Global equities appear fairly valued

a. CAPE for the MSCI Germany Index within fair-value range

b. Euro area undervalued compared to other equity markets

Any projections should be regarded as hypothetical in nature and do not reflect or guarantee future results.

**Notes:** The fair-value CAPE ratio is based on a statistical model that corrects CAPE ratio measures for the level of inflation expectations and for lower interest rates. The statistical model specification is a five-variable vector error correction (VEC), including equity earnings yield (MSCI Germany Index), German ten-year trailing inflation, 10-year bund yield, and ten-year trailing equity and bond volatility estimated over the period from January 31, 1970 to September 30, 2019.

**Sources:** Vanguard calculations, based on Thomson Reuters DataStream and Factset.
Elevated valuations in some markets, late-cycle risks, and persistent geopolitical uncertainty are likely to keep global financial market volatility elevated over the course of the next year. We also find that the annualised standard deviation of equity returns, a measure of equity volatility, has a high positive correlation with the economic policy uncertainty level. As highlighted in our global economic outlook, our Markov-switching model indicates that the global economy is currently operating in a high-uncertainty environment, and higher uncertainty coincides with, or often leads to, higher volatility. With this combination of late-cycle dynamics and high uncertainty, investors may well have to get used to the new normal of more market noise in 2020 and beyond (see Figure II-3).

Outlook for global equities and the diversification of domestic risks

Given our outlook for lower global economic growth, subdued inflation expectations and lower interest rates, our long-term return outlook for equities remains guarded relative to the experience of previous decades and of post-crisis years, based on our Vanguard Capital Market Model (VCMM) projections.

Looking ahead to the next ten years, we expect European equity returns to be more subdued than in the past at around 4.5% - 6.5% (see Figure II-4).

FIGURE II-3

High uncertainty regimes often coincide with higher equity market volatility

Notes: Fair-value volatility range is calculated with an OLS regression using Vanguard’s leading economic indicator (VLEI), financial conditions index (VFCI), and policy uncertainty index as independent variables. Volatility is measured as the standard deviation of daily returns on a 30-day rolling time period, annualised. The forecasted range of volatility for 2020 is based on Vanguard’s economic projections.

Sources: Vanguard calculations, based on data from Thomson Reuters Datastream and policyuncertainty.com.
From a euro area investor’s perspective, the expected return outlook for non-euro area equity markets is in the 2.5% - 4.5% range, which is lower than that of euro area equities (Figure II-4), mainly explained by the relative undervaluation of domestic markets. However, it is important to stress that exposure to other global equity markets provides a diversification benefit to help manage financial market volatility and avoid excessive concentration risk.

For the purposes of asset allocation, we caution investors against implementing tactical tilts based on just the median expected return—that is, ignoring the entire distribution of asset returns and their correlations, particularly given our expectation for elevated levels of uncertainty and volatility in 2020 and beyond.

Global fixed income markets: Diversification properties hold in spite of lower return outlook

Global fixed income markets rallied in 2019, with most central banks revising down their assessment of long-run neutral policy rates. Additionally, most central banks reversed their tightening or expected tightening policies by adding back policy stimulus in the face of a deteriorating growth outlook. As 2020 growth continues to downshift in a macro environment entrenched with uncertainty, central banks should remain in action and there is room for short-end rates to fall further in the near term. Long-end rates, having normalised somewhat on the back of fading fears of an imminent recession, will continue to be well anchored at lower-than-historical levels by structural factors such as long-term productivity growth and inflation expectations.

Against a backdrop of lower yields across the curve, the fixed income return outlook for the next decade has been revised downwards from last year’s projections, to 0% - 1%, as shown in Figure II-5. Expected returns for euro area and non-euro area bonds should be very similar over the next decade, yet the diversification through exposure to hedged non-euro area bonds should help offset some risk specific to the euro area fixed income markets. Within the euro area aggregate bond market, investors are expected to be only modestly compensated for assuming credit risk, with broad euro investment grade expected to generate an additional 0.2% of excess return over German bunds on an annualised basis over the next decade.
Importantly, while future returns for fixed income look low, there’s little reason to believe their fundamental role in a portfolio has changed, with high-quality bonds still expected to play a key role in risk-reduction and stability.

German interest rates: Despite low yields, duration fairly valued
As expectations for growth and inflation remain structurally low in Germany, the risk of a material rise in long-term interest rates relative to short-term rates remains modest. As illustrated in Figure II-6, duration strategies are fairly valued and less risky than investors may be inclined to believe in a low-yield environment.

Corporate bonds: Higher risk, higher return
The risk premium associated with investing in corporate bonds is also within fair-value territory. The fall in long-term euro area government bond yields over the past 12 months, coupled with yield spread compression, means that our estimate of expected returns for euro area investment grade bonds has fallen to around 0% - 1%, compared to 1% - 2% last year.
FIGURE II-7

High-quality fixed income is expected to provide the most ballast from global equity losses

Notes: VCMM asset-return forecast distributions coincide with bottom 10th percentile quarterly global equity projections.
Source: Vanguard calculations.

The benefits of bonds as a key diversifier remain
With economic growth and inflation staying even lower for longer and the markets almost addicted to loose monetary policy, we find it hard to see any material uptick in fixed income returns in the foreseeable future. Instead of viewing this asset class as a primary return-generating investment, investors are encouraged to view bonds from a risk-mitigating perspective.

Based on VCMM projections over a ten-year horizon, Figure II-7 plots the distribution of projected 10th percentile worst quarterly outcomes for global equity returns across 10,000 simulations along with the distribution of the same quarterly outcomes for other asset categories. This analysis suggests that bonds maintain their diversification benefits despite low-to-negative global yields.

We expect the diversification benefits of global fixed income in a balanced portfolio to persist under most scenarios. Yields in most developed markets are at historically low levels, particularly in Europe and Japan, yet the diversification through exposure to hedged global ex-euro area bonds should help offset some risk specific to the euro area fixed income market. Less than perfect correlation between two of the main drivers of bond returns – interest rates and inflation – is expected. Diversification with global ex-euro area bonds also helps diversify risks specific to the euro area economy.

Portfolio implications: A lower return orbit
Investors have experienced spectacular returns over the last few decades because of two of the strongest equity bull markets in history in addition to a secular decline in interest rates from 1980s highs. Figure II-8a contrasts our 2.5% - 4.5% outlook for a global 60% equity / 40% bond portfolio for the next decade against the 5.9% return since 1999. As highlighted in previous sections, elevated equity valuations and low rates have pulled the market’s efficient frontier of expected returns into a lower orbit. The efficient frontier is also flatter (that is, smaller increases in expected return for increases in equity risk), as seen from the return and volatility expectations of balanced portfolios in Figure II-8a.

Over the medium term, we expect that central banks will eventually resume the normalisation of monetary policy, thereby lifting risk-free rates from the depressed levels seen today. This will lead to more attractive valuations for financial assets and a higher return outlook compared to our forecasts. Nonetheless, the return outlook is still likely to remain much lower than the experience of previous decades and, in particular, of the post-crisis years. Given our outlook for lower global economic growth and subdued inflation expectations, risk-free rates and growth in corporate revenues and earnings mean that asset returns will remain lower for longer compared to historical levels.

To try to increase portfolio returns, a popular strategy is to overweight higher-expected-return assets or higher-yield assets. A few common “reach-for-return” strategies include overweighting corporate bonds or emerging market equities to take advantage of higher-growth prospects. While some of these strategies could improve the risk-return profile marginally, they are unlikely, by themselves, to escape the strong gravitational pull of low-return forces in play and restore portfolios to the higher orbit of historical returns (Figure II-8b).
Ten-year annualised return

Volatility

3

4

5

6

7

8

9

10

11

12

13

14

Since 1970

1990 onwards

Next decade

Global 60% equity/40% bond portfolio

b. that popular active tilts will likely fail to escape

Notes: Summary statistics of 10,000 VCMM simulations for projected ten-year annualised nominal returns as of September 2019 before costs. Historical returns are computed using indexes defined in “Indexes used in our historical calculations” on page 5. The global equity is 25% euro area equity and 75% global ex-euro area equity. The global bond portfolio is 35% euro area bonds and 65% global ex-euro area bonds. Portfolios with tilts include a 20% tilt to the asset specified funded from fixed income allocation for the fixed income tilt and equity allocation for the equity tilt. Portfolio tilts include a 20% tilt to the asset specified funded from fixed income allocation for the fixed income tilt and equity allocation for the equity tilt.

Source: Vanguard.
Portfolio construction strategies for three potential economic scenarios

Based on our global economic perspectives, we examine in Figure II-9 three possible economic scenarios, occurring over the next three years. The high-growth scenario illustrates an upside-risk scenario of above-trend economic growth with tighter labour markets, and a moderate pick-up in wages and inflation. The two others are our slowdown scenario characterised by a further slowdown, but not a collapse, in global growth accompanied by further central bank easing, and a recessionary scenario incorporating a sharp downturn in the business cycle and a bear market.

Figure II-9 shows optimal portfolios for each scenario that vary their exposures to the following three factors, or risk premia: equity risk premium, term premium and credit premium.

In a high-growth scenario, expected global equity returns would be high, steepening the efficient frontier, resulting in an optimal portfolio loading on equity.

A recessionary-scenario portfolio would underweight equity and overweight both global and local bonds. The portfolio strategy in our slowdown scenario is well diversified, but underweight risky assets by 6 percentage points compared to a 60% equity/40% bond portfolio. As asset return expectations materially change through time, the asset allocation in our baseline scenario also changes accordingly. These changing asset expectations drive what are known as time-varying portfolios, which use forward-looking asset return expectations as the basis for potential strategic allocation changes.

Our research suggests that investors who have the willingness and ability to accept forecast model risk may be able to improve risk-adjusted returns over the long term relative to a static portfolio (see our forthcoming research paper, The Implications of Time-Varying Return on Portfolio Construction).

Using our VCMM simulations, we are able not only to illustrate the effectiveness of various portfolio strategies designed for each scenario, but also show the risks of such strategies. The following conclusions can be drawn from our analysis:

1. Portfolios designed for specific macroeconomic scenarios entail important trade-offs. If the scenario for which the portfolio was designed does not take place, then the portfolio performance is typically the worst performing of all the options.

2. A balanced portfolio works well for investors who are agnostic about the future state of the economy. The baseline balanced portfolio is an “all-weather” strategy, with either top- or middle-of-the-road performance in each scenario.

3. Portfolio tilts should be done within an optimisation framework. Ad-hoc tilts ignore correlations among assets and lead to inefficient portfolios.
a. Optimal portfolios for different economic environments

b. The slowdown portfolio is not always the best, but it’s never the worst

c. Order of risk-adjusted returns varies by scenario

d. Portfolios designed for a single scenario can be risky

Notes: Performance is relative to the efficient frontier. Portfolios are selected from the frontier based on a fixed risk aversion level using a utility function based optimisation model. Forecast displays simulation of three-year annualised returns of asset classes shown as of September 30, 2019. Scenarios are based on sorting the VCMM simulations based on the rates, growth, volatility and equity return. The three scenarios are a subset of the 10,000 VCMM simulations. See appendix section titled "Index simulations" for further details on asset classes shown here.

Source: Vanguard.
Portfolio construction strategies: Time-tested principles apply

Our global market outlook suggests a somewhat more challenging environment ahead. The market’s efficient frontier of expected returns for a unit of portfolio risk is now in a lower orbit and its relatively flat shape suggests that increases in expected portfolio returns for taking marginal equity risk is not well compensated by historical standards.

Based on simulated ranges of portfolio returns and volatility, the diversification benefits of global fixed income and global equity remain compelling. Investors who have conviction in a particular future scenario and have the willingness and ability to accept forecast model risk may be able to modestly improve risk-adjusted return over the long term with asset-return centric tilts or time-varying portfolio strategies, but are unlikely to escape the lower return orbit. For the best chance of success, these strategies require a portfolio-centric approach that leverages the benefits of diversification by simultaneously weighing risk, return, and correlation.

Our prior research shows that investment success is within the control of long-term investors. Factors within a long-term investor’s control, such as saving more, increasing their investment horizon, spending less, and controlling investment costs, far outweigh the less-reliable benefits of ad-hoc return-seeking portfolio tilts, market timing, and forecasting future scenarios. Thus decisions around saving more, spending less, and controlling costs will be much more important than portfolio tilts.

Investment objectives based either on fixed spending requirements or on fixed portfolio return targets may require investors to consciously weigh their options in conjunction with their risk-tolerance levels. Ultimately, in this challenging investment environment, investors with an appropriate level of discipline, diversification and patience are likely to be rewarded over the long term. Adhering to investment principles such as long-term focus, disciplined asset allocation, and periodic portfolio rebalancing will be more crucial than ever.
References


III. Appendix

About the Vanguard Capital Markets Model

IMPORTANT: The projections or other information generated by the Vanguard Capital Markets Model (VCMM) regarding the likelihood of various investment outcomes are hypothetical in nature, do not reflect actual investment results, and are not guarantees of future results. VCMM results will vary with each use and over time.

The VCMM projections are based on a statistical analysis of historical data. Future returns may behave differently from the historical patterns captured in the VCMM. More importantly, the VCMM may be underestimating extreme negative scenarios unobserved in the historical period on which the model estimation is based.

The VCMM is a proprietary financial simulation tool developed and maintained by Vanguard’s Investment Strategy Group. The model forecasts distributions of future returns for a wide array of broad asset classes. Those asset classes include US and international equity markets, several maturities of the US Treasury and corporate fixed income markets, international fixed income markets, US money markets, commodities, and certain alternative investment strategies. The theoretical and empirical foundation for the VCMM is that the returns of various asset classes reflect the compensation investors require for bearing different types of systematic risk (beta). At the core of the model are estimates of the dynamic statistical relationship between risk factors and asset returns, obtained from statistical analysis based on available monthly financial and economic data. Using a system of estimated equations, the model then applies a Monte Carlo simulation method to project the estimated interrelationships among risk factors and asset classes as well as uncertainty and randomness over time. The model generates a large set of simulated outcomes for each asset class over several time horizons. Forecasts are obtained by computing measures of central tendency in these simulations. Results produced by the tool will vary with each use and over time.

The primary value of the VCMM is in its application to analysing potential client portfolios. VCMM asset-class forecasts—comprising distributions of expected returns, volatilities and correlations—are key to the evaluation of potential downside risks, various risk-return trade-offs, and the diversification benefits of various asset classes. Although central tendencies are generated in any return distribution, Vanguard stresses that focusing on the full range of potential outcomes for the assets considered, such as the data presented in this paper, is the most effective way to use VCMM output. We encourage readers interested in more details of the VCMM to read Vanguard’s white paper (Davis et al., 2014).

The VCMM seeks to represent the uncertainty in the forecast by generating a wide range of potential outcomes. It is important to recognise that the VCMM does not impose “normality” on the return distributions, but rather is influenced by the so-called fat tails and skewness in the empirical distribution of modeled asset-class returns. Within the range of outcomes, individual experiences can be quite different, underscoring the varied nature of potential future paths. Indeed, this is a key reason why we approach asset-return outlooks in a distributional framework.
Index simulations

The long-term returns of our hypothetical portfolios are based on data for the appropriate market indexes through September 2019. We chose these benchmarks to provide the most complete history possible, and we apportioned the global allocations to align with Vanguard’s guidance in constructing diversified portfolios. Asset classes and their representative forecast indexes are as follows:

- **Euro area bonds**: Bloomberg Barclays Euro Aggregate Bond Index.
- **Global ex-euro area bonds**: Bloomberg Barclays Global Aggregate ex Euro Index.
- **Euro area equity**: MSCI European Economic and Monetary Union (EMU) Index.
- **Global ex-euro area equity**: MSCI AC World ex EMU Index.
- **Global equity**: 25% euro area equity and 75% global ex-euro area equity as defined above.
- **Global bonds**: 35% euro area bonds and 65% global ex-euro area bonds as defined above.
- **German bunds**: Bloomberg Barclays Global Treasury German Index.
- **German short-term bunds**: Bloomberg Barclays Global Treasury 1-5 Year Index.
- **German long-term bunds**: Bloomberg Barclays Global Treasury 10+ Year Index.
- **Euro area credit bonds**: Bloomberg Barclays Euro Aggregate Credit Bond Index.
- **Euro area aggregate bonds**: Bloomberg Barclays Euro Aggregate Bond Index.
- **Commodity futures**: Bloomberg Commodity Index in EUR.

Notes on risk

All investing is subject to risk, including the possible loss of the money you invest. Past performance is no guarantee of future returns. Investments in bond funds are subject to interest rate, credit, and inflation risk. Foreign investing involves additional risks, including currency fluctuations and political uncertainty. Diversification does not ensure a profit or protect against a loss in a declining market. There is no guarantee that any particular asset allocation or mix of funds will meet your investment objectives or provide you with a given level of income. The performance of an index is not an exact representation of any particular investment, as you cannot invest directly in an index.

Stocks of companies in emerging markets are generally more risky than stocks of companies in developed countries. US government backing of Treasury or agency securities applies only to the underlying securities and does not prevent price fluctuations. Investments that concentrate on a relatively narrow market sector face the risk of higher price volatility. Investments in stocks issued by non-US companies are subject to risks including country/regional risk and currency risk.

Bond funds are subject to the risk that an issuer will fail to make payments on time, and that bond prices will decline because of rising interest rates or negative perceptions of an issuer’s ability to make payments. High-yield bonds generally have medium- and lower-range credit-quality ratings and are therefore subject to a higher level of credit risk than bonds with higher credit-quality ratings. Although the income from US Treasury obligations held in the fund is subject to federal income tax, some or all of that income may be exempt from state and local taxes.
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