

# Vanguard economic and market outlook for 2021: Approaching the dawn

Vanguard Research

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- While the global economy continues to recover as we head into 2021, the battle between the virus and humanity's efforts to staunch it continues. Our outlook for the global economy hinges critically on health outcomes. The recovery's path is likely to prove uneven and varied across industries and countries, even with an effective vaccine in sight.
- In China, we see the robust recovery extending in 2021 with growth of 9%. Elsewhere, we expect growth of 5% in the US and 5% in the euro area, with those economies making meaningful progress toward full employment levels in 2021. In emerging markets, we expect a more uneven and challenging recovery, with growth of 6%.
- When we peek beyond the long shadow of Covid-19, we see the pandemic irreversibly accelerating trends such as work automation and the digitisation of economies. However, other more profound setbacks brought about by the lockdowns and recession will ultimately prove temporary. Assuming a reasonable path for health outcomes, the scarring effect of permanent job losses is likely to be limited.
- Our fair-value stock projections continue to reveal a global equity market that is neither grossly overvalued nor likely to produce outsized returns going forward. This suggests, however, that there may be opportunities to invest broadly around the world and across the value spectrum. Given a lower-for-longer interest rate outlook, we find it hard to see a material uptick in fixed income returns in the foreseeable future.

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## Editorial note

This publication is an update of Vanguard's annual economic and market outlook for 2021 for key economies around the globe. Aided by Vanguard Capital Markets Model<sup>®</sup> 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 at 30 September 2020. 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 in 2021: *Closing the immunity gap*

The Covid-19 pandemic has produced the most pronounced economic shock in nearly a century. In 2020, recessions around the world were sharp and deep, with significant supply-chain disruptions. That said, more than in previous recessions, policymakers were aggressive in supporting financial markets and their economies. While the global economy continues to recover as we head into 2021, the battle between the virus and humanity's efforts to staunch it continues.

For 2021, our outlook for the global economy hinges critically on health outcomes. Specifically, our baseline forecast assumes that an effective combination of vaccine and therapeutic treatments should ultimately emerge to gradually allow an easing of government restrictions on social interaction and a lessening of consumers' economic hesitancy. But the recovery's path is likely to prove uneven and varied across industries and countries, even with an effective vaccine in sight. As we said in our midyear 2020 outlook, it will be some time before many economies return to their pre-Covid levels of employment and output.

The unevenness of our cyclical growth outlook is reflected in the world's major economies. China, where control of the pandemic has been more effective, has swiftly returned to near pre-pandemic levels of activity, and we see that extending in 2021 with growth of 9%. Elsewhere, the virus's prevalence has been less well-controlled. We expect growth of 5% in the US and 5% in the euro area, with those economies still falling short of full employment levels in 2021. In emerging markets, we expect a more uneven recovery, with aggregate growth of 6%.

Risks to our baseline growth forecast are biased to the upside, reflecting the chance of further breakthroughs in vaccine development. Both monetary and fiscal policy will remain supportive in 2021, but the primary risk factor is the pandemic's fate and path.

### Covid-19's long shadow: *A pivotal moment in history*

When we peek beyond the long shadow of Covid-19, our research and read of history suggest that the pandemic will have certain effects on the economy, markets and policy. We can split these effects into four categories:

- 1. A profound yet ultimately temporary setback.** Social activities and the industries most reliant on them will rebound, as they have following past pandemics. Consumer reluctance from fear of catching Covid-19 will determine the path but eventually social activities ranging from concert-going to travelling will resume. While the immediate pain of job losses is great for many families and industries, we believe that, assuming a reasonable path for health outcomes and additional policy support, the scarring effect of permanent job losses is likely to be limited.
- 2. An accelerated future.** Trends that Vanguard and others have previously discussed, ranging from work automation to digital technologies to certain business-model disruptions, have only been accelerated by the shock of Covid-19. This outlook lays out how pervasive the future of virtual work could be and what broader macroeconomic effects may result.
- 3. Pivots in policy.** This crisis has seemingly altered the expectations of, and preferences for, certain government policies, ranging from more forceful efforts by central banks to drive up inflation to more aggressive spending by fiscal authorities amid economic headwinds. These intentions are unlikely to be reversed quickly, producing potential new risks on the investment horizon.
- 4. Unaltered reality.** Despite the extraordinary events of 2020, some aspects of the global economy may ultimately stay as they are. In our view, these would include the multifaceted US-China relationship and the likelihood of increasing innovation in the years ahead, as suggested by Vanguard's "idea multiplier".

### Global inflation: *Modest reflation "yes"; a return to high inflation "no"*

In 2021, we anticipate a cyclical bounce in consumer inflation from pandemic lows near 1% to rates closer to 2% as spare capacity is used up and the recovery continues. However, as growth and inflation firm, and as the immunity gap closes, an "inflation scare" is possible. A risk is that markets could confuse this modest reflationary bounce with a more severe but unlikely episode.

Our baseline projections reflect our belief that inflation rates persistently above 3% are difficult to generate across many developed markets. Mounting debt loads, high fiscal spending and extraordinarily easy monetary policy all have the potential to feed inflation psychology,

but any such influence would have to more than counteract high levels of unemployment, as well as important structural deflationary forces at work in developed markets since before the pandemic.

### **The bond market: *Interest rates staying low in 2021***

Interest rates and government bond yields that were low before the pandemic are now even lower. We expect interest rates globally to remain low despite our constructive outlook for firming global economic growth and inflation as 2021 progresses. While yield curves may steepen, short-term rates are unlikely to rise in any major developed market as monetary policy remains highly accommodative. Vanguard expects bond portfolios, of all types and maturities, to earn returns close to their current yield levels. As 2021 unfolds, the greatest risk factor would appear to be higher-than-expected inflation.

### **Global equities: *Challenges and opportunities***

Yet again, disciplined investors were rewarded in 2020 by remaining invested in the stock market despite troubling headlines. The dramatic repricing of global equity risk

during the initial shock of the pandemic was fairly uniform across global markets, with the steep drop in discount rates explaining some (but not all) of this past year's rebound in equity prices. Our fair-value stock projections, which explicitly incorporate such effects, continue to reveal a global equity market that is neither grossly overvalued nor likely to produce such outsized returns going forward.

The outlook for the global equity risk premium is positive and modest, with total returns expected to be 3 to 5 percentage points higher than bond returns. This modest outlook for returns, however, belies opportunities for investors to invest broadly around the world and across the value spectrum.

And while this range is below recent returns based on valuations and interest rates, global equities are anticipated to continue to outperform most other investments and the rate of inflation.

### **Indexes used in our historical calculations**

The long-term returns for our hypothetical portfolios are based on data for the appropriate market indexes to September 2020. 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.

**Inflation:** German consumer price index: 2010=100, Code: CDASA. Source: Federal Statistical Office.

**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:** 15% euro-area equity and 85% 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.

**German inflation:** German consumer price index: 2010=100. Code: CDASA. Source: Federal Statistical Office.

**Commodity futures:** Bloomberg Commodity Index in EUR.

**German cash:** German 3 month sovereign yield.

# I. Global economic perspectives

## Global economic outlook: Approaching the dawn

The Covid-19 pandemic has produced the most pronounced economic shock in multiple generations. In 2020, recessions around the world were deep, supply chains disrupted and policymakers of all types aggressive in supporting financial markets and their economies. While the global economic recovery continues as we head into 2021, so does the battle between the virus and humanity's efforts to staunch it.

Our global economic outlook, along with more detailed regional outlooks that follow, is designed to:

- Emphasise the outsized role that health policy and outcomes have played, and will play, in the global economy and financial markets.
- Articulate a recovery path that will remain uneven and is likely to extend beyond 2021.

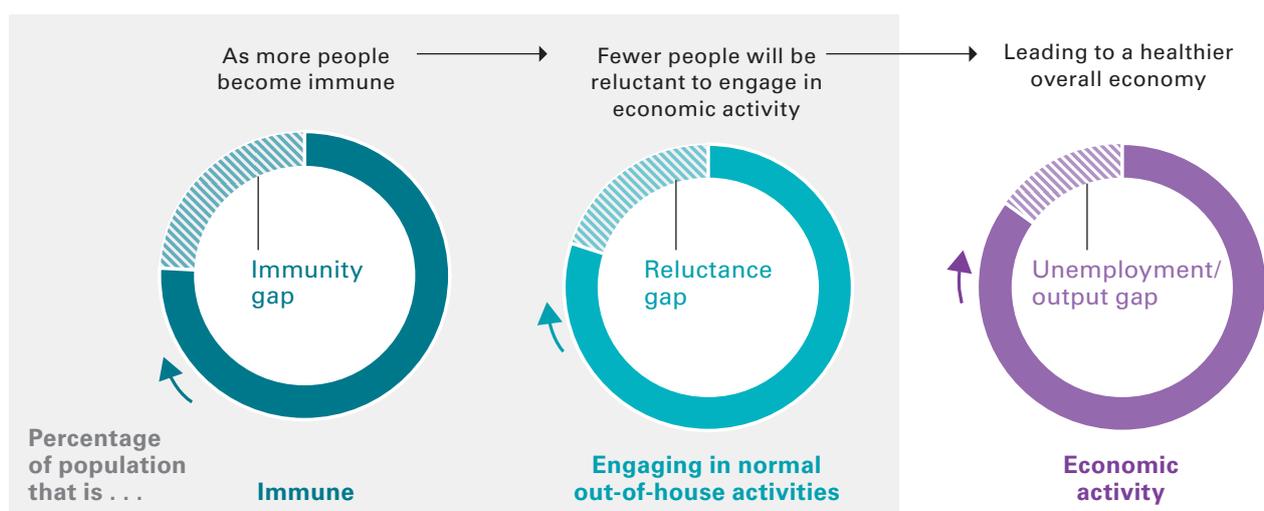
- Explain how the unprecedented support of central banks and policymakers is likely to continue beyond the pandemic, and how risks surrounding these intentions are low for now.
- Surmise that when the dust settles, lasting effects will be multifaceted, yet the global economic trajectory will be broadly similar to that of the pre-Covid world.

### A healthy economy begins with health

The global recovery stands at a critical stage as economic factors continue to take a back seat to public health policy and the path of the virus. We view the next phase of economic advances as more challenging than the sharp bounce-backs experienced in the third quarter of 2020, but ultimately a combination of effective vaccines and therapeutic treatments will emerge and become widely available in 2021. To that end, we believe the pace of the recovery will be driven by what we have termed the immunity gap (the percentage of the population lacking immunity to the virus) and the reluctance gap (the reluctance of a percentage of the population to engage in economic activity), as shown in Figure I-1.

FIGURE I-1

### Health outcomes drive consumer behaviour and, in turn, recovery



**Notes:** The immunity gap is the proportion of the population that remains susceptible to Covid-19, and it's calculated as the difference between herd immunity threshold (around 65% of the population) and the percentage of population with acquired immunity. The reluctance gap is the proportion of the population that continues to refrain from normal out-of-house activities in fear of catching the virus. This is directly related to the immunity gap. The higher the immunity gap, the higher the proportion of the population that is fearful of engaging in normal activities. The unemployment/output gap is the gap between what economic activity was before Covid-19 and what economic activity is today. That is directly related to the reluctance gap. The bigger the reluctance gap, the lower economic activity is. That translates to a bigger economic activity gap and a bigger output gap.

Source: Vanguard.

Closing the immunity gap will hinge most critically on the combination of the population willing to be vaccinated and the vaccine’s effectiveness. Another key element is the degree of immunity acquired by people who have already had the virus. **Figure I-2** illustrates how all these factors are combined in our estimate of the odds for achieving population immunity in 2021.

The immunity gap in turn affects the reluctance gap. As long as the population is not immune, a portion of consumers will be fearful of engaging in normal activities, and that will leave economic activity below potential.

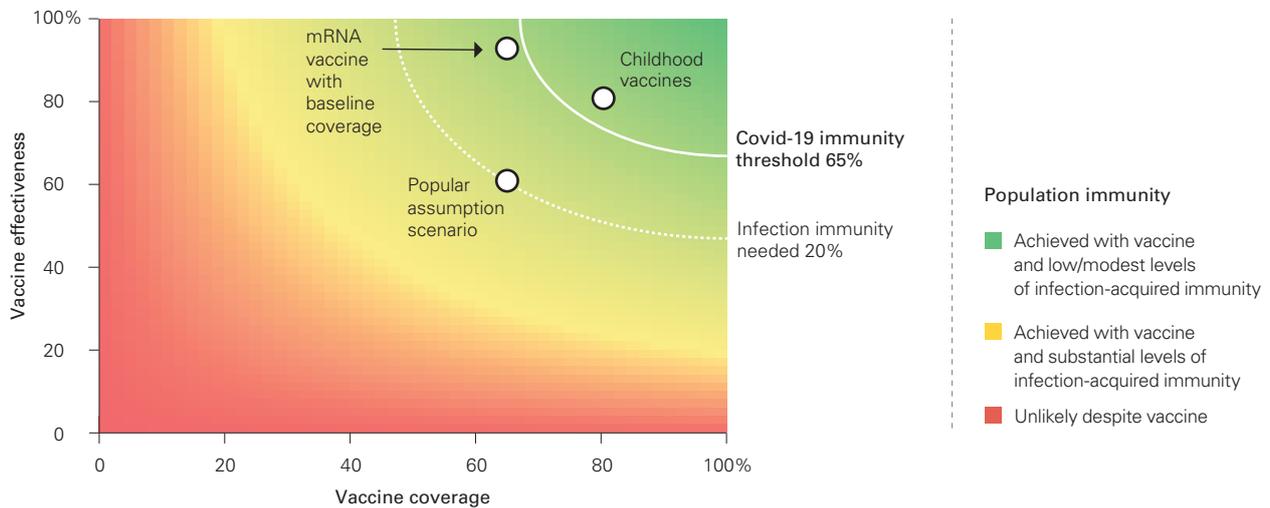
Along with the health policies restricting economic activity in the name of virus suppression, the reluctance gap has had an outsized impact on economic sectors that heavily depend on face-to-face interaction, and it explains most

of the remaining economic gaps in regions where the virus is still circulating widely. **Figure I-3** (on page 8) shows this pronounced effect on global labour markets as the consumer services sector—including restaurants, entertainment and transportation—remains in deep stress.

The pace of the next phase of recovery, then, is a function of immunity and reluctance. Greater immunity and reduced reluctance will drive a sharper recovery. Under our more optimistic scenarios for vaccine effectiveness, much of the economic loss stemming from the pandemic could be recovered in the next year, while a persistently large immunity gap—possibly a result of a less effective vaccine or an elongated distribution cycle—leaves economies with only marginal progress from current levels. Our central case projects a positive recovery path that will extend beyond 2021 before approaching the pre-pandemic trend

FIGURE I-2

**How close a vaccine gets a population to the immunity threshold depends on effectiveness and coverage**

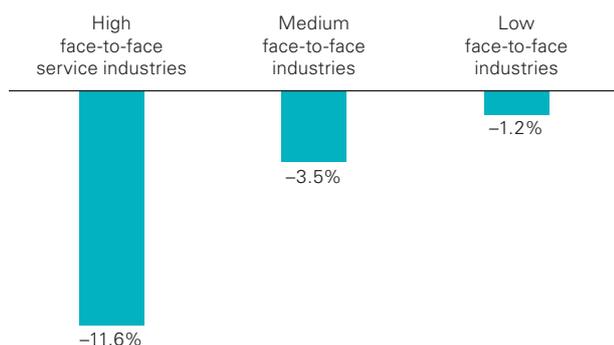


**Notes:** Immunity threshold is the percentage of the population immune to a pathogen at which point the pathogen runs out of susceptible hosts, thereby providing indirect protection to those who aren’t immune. Depending on how contagious a pathogen is, anywhere from 50% to 90% of the population needs immunity to reach the immunity threshold. Vaccine effectiveness is defined as the percentage of vaccinated people that are protected from infection. Vaccine coverage is the percentage of the population that chooses to be vaccinated. Our baseline vaccine scenario was for a 60% effective vaccine with 65% coverage estimate. At the time of writing, in early Phase 3 trial results, the Pfizer/BioNTech vaccine had shown 90%+ effectiveness and the Moderna vaccine had shown better than 94% effectiveness.

**Sources:** Vanguard and McKinsey, as at 11 November 2020.

FIGURE I-3

### Face-to-face intensive sectors have experienced outsized stress



Global employment levels 3Q 2020 relative to 4Q 2019

**Notes:** Employment levels are represented by a Gross Domestic Product (GDP)-weighted average of the US, euro area, United Kingdom and Japan. Euro-area employment data is a Vanguard estimate based on available data at time of publication. High face-to-face industries include hospitality, arts and entertainment, food services and transportation. Medium industries include manufacturing, construction, retail and wholesale trade, and healthcare. Low industries include professional services, information, financial activities, real estate and government.

**Sources:** US Bureau of Labor Statistics, US Bureau of Economic Analysis, European Central Bank, Statistics Bureau of Japan, Office for National Statistics and Moody's Data Buffet, as at 30 September 2020.

of output. **Figure I-4** shows our estimated recovery paths for the global economy, and **Figure I-5** shows downside, baseline and upside scenarios for 2021. (See page 9.)

The unevenness of our cyclical growth outlook is reflected in the world's major economies and our outlook for the year ahead (**Figure I-6**, on page 10). China has been an outlier in its swift return to near pre-pandemic output, and we see that extending in 2021 with growth of 9%<sup>1</sup>. We expect growth of 5% in the US and 5% in the euro area, with those economies ending at, or marginally below, their pre-pandemic output levels. In emerging markets, we expect an uneven and challenged recovery, aggregating to growth of 6%.

### Policy-supported recovery to continue; modest reflation expected

In response to the Covid-19 crisis, 2020 has witnessed one of the swiftest and most decisive sets of policy responses ever implemented by central banks and fiscal policymakers in major developed economies (**Figure I-7**, on page 11). By cutting interest rates, restarting (or expanding) asset purchases and providing additional liquidity support measures, central bankers were able to ensure that global financial conditions remained loose. By keeping borrowing costs low, central banks have facilitated highly expansionary fiscal stances.

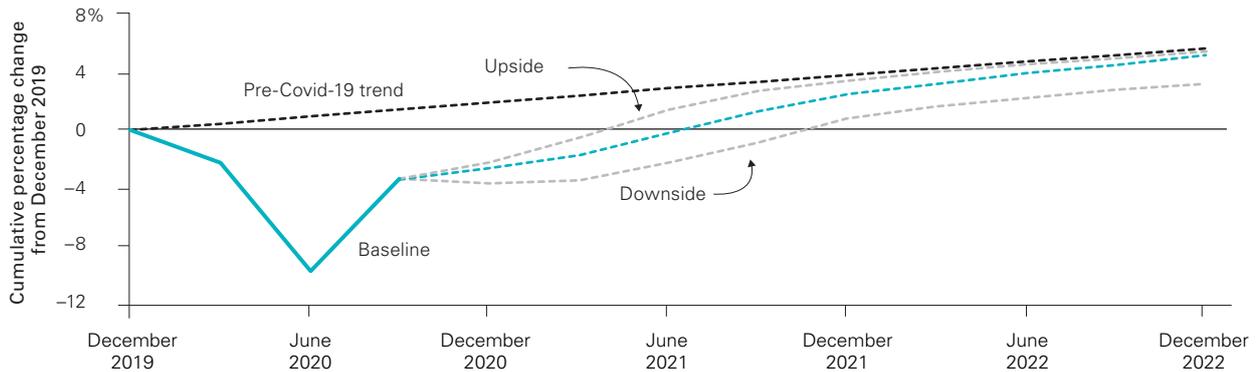
The substantial increase in public debt inevitably raises concerns about the debt's sustainability, but we view the fiscal positions of developed-market governments as broadly sustainable in the near term. This is centred on our view that, in all likelihood, nominal economic growth rates will exceed the cost of servicing this public debt over the medium term (**Figure I-8**, on page 11).

Although the pandemic is still affecting economic activity, we expect the supportive monetary and fiscal stance to persist. Compared with their pre-Covid trajectory, interest rates will be lower for longer and central-bank balance sheets will be larger. We expect fiscal policy to play a bigger role in sustaining the recovery over the next year than it did in previous recessions, including those that followed the global financial crisis.

Mounting debt loads, extraordinarily easy monetary policy, and, in the United States, an explicit assurance that policy will remain accommodative longer than in the past have all led to concerns about resurgent inflation. Our projections show that such concerns are premature and unlikely to materialise in 2021. High fiscal spending has the potential to influence inflation psychology, but any such influence would have to more than counteract high levels of unemployment, as well as important structural deflationary forces at work in developed markets since before the pandemic. We maintain our long-held assessment that sustainable inflation rates above 3% or more are difficult to generate across many developed markets.

FIGURE I-4

### Health outcomes drive next phase of recovery



**Notes:** The y-axis represents the GDP-weighted level impact from the baseline, which is December 2019 for major global economies. The blue and grey dotted lines represent three forecasts: our base case and upside and downside scenarios. The downside scenario is characterised by a failure to significantly reduce virus transmission in the short term, which would cause a slower recovery. Potential problems with the efficacy, adoption, distribution or safety of a vaccine could also surface. The upside scenario is characterised by a speedy large-scale distribution of an effective vaccine, which will see the economy return to normal more quickly than we currently expect.

**Sources:** Vanguard and Refinitiv, as at 30 November 2020.

FIGURE I-5

### Economic scenarios for 2021

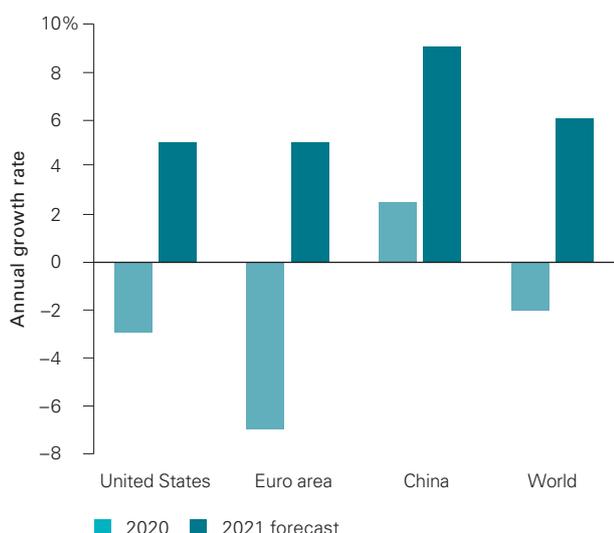
Vanguard assessment of risks			
	Downside risk	Base case	Upside surprise
	<b>10%</b>	<b>60%</b>	<b>30%</b>
<b>Immunity gap</b>	Little progress on infection immunity by end of 2021	Major economies achieve infection immunity by end of 2021	Major economies achieve infection immunity by mid-2021
<b>Reluctance gap</b>	Social and business activity hampered through 2021	Social and business activity normalises by the second half of 2021	Social and business activity normalises in the first half of 2021
<b>Economic recovery</b>	Labour market scarring possible given persistently high and long-term unemployment Inflation persistently below target Pre-pandemic level of output not achieved in 2021	Unemployment rate falls through year-end 2021 Inflation moves toward target in 2021 Pre-pandemic level of output reached by end of 2021	Unemployment rate falls and full employment is achieved by end of 2021 Inflation overshoots in 2021 Pre-pandemic level of output reached mid-2021

**Note:** The odds for each scenario are based on the assessment of members of Vanguard’s Global Economics and Capital Markets Outlook Team.

**Source:** Vanguard, as at 30 November 2020.

FIGURE I-6

## Global growth: Better in 2021



**Notes:** Growth for 2020 includes Vanguard estimates for the fourth quarter. Growth figures are rounded.

**Sources:** Vanguard and Refinitiv, as at 30 September 2020.

In 2021, we anticipate a cyclical bounce in consumer inflation from pandemic lows near 1% to rates closer to 2% for a time—though not persistently—as the uneven recovery continues. A risk is that markets could confuse this modest reflationary bounce with a return to a sustained period of above-target inflation.

### When the dust settles: Structural trajectory resembles pre-Covid

When we look beyond the long shadow of Covid-19, we expect history to show multifaceted effects from the pandemic on macroeconomic trends (Figure I-9, on page 12). The economic damage may prove temporary for consumers and labour markets if the race against time to defeat the pandemic is effective.

However, the balance of long-term risks will shift, as the pandemic has permanently altered the landscape by accelerating such trends as the digitalisation of economies and de-globalisation, and has influenced pivots in policy frameworks and the role of the state.

Some aspects of the global economy may ultimately stay as they are. In our view, these would include the contentious US-China relationship, Vanguard’s “idea multiplier”, and the likelihood of increasing innovation acting to boost productivity in the years ahead<sup>2</sup>.

One widely recognised trend that Covid has accelerated is increased work-location flexibility. Given that most businesses were forced to reorganise around remote working, the pros and cons of the shift will be under greater scrutiny than ever.

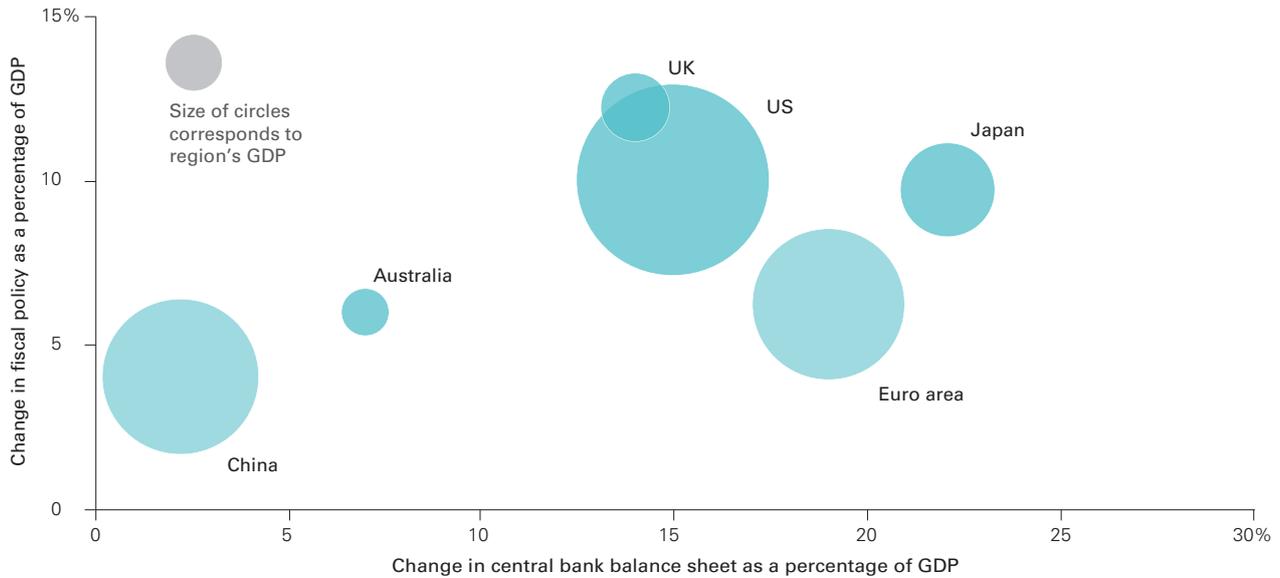
Our analysis finds that across developed economies, occupations in which a majority of workers are employed are well-suited for remote work. Thus, as shown in Figure I-10 (on page 12), the upper threshold globally for the population able to work remotely going forward appears quite high, and we would expect this trend to prove more enduring even after the pandemic has passed.

Although some have called for a rapid de-globalisation effort in the pandemic’s aftermath, we think such a view is overly pessimistic. Rather, the current wide extent of economic and financial linkages poses challenges to a widespread reshoring back home, suggesting that the more likely path forward is a gradual slowdown in trade (or “slowbalisation”), alongside a recalibration and moderate shortening of supply chains. Figure I-11 (on page 13) estimates the future change in trade volume globally. While this trajectory would suggest negative implications for near-term growth activity because of an inefficient allocation of resources and rising uncertainty, it would put aside fears of a more significant supply shock.

<sup>2</sup> 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 Davis, Wang, and Patterson et al., 2019, and Davis, Patterson, and Sathe et al., 2020.)

FIGURE I-7

### Unprecedented support from central banks and fiscal policy



Notes: Change in fiscal policy is represented by the change in the cyclically-adjusted primary balance from 2019 to 30 September 2020.

Sources: Vanguard, Congressional Budget Office, Board of Governors of the US Federal Reserve System and International Monetary Fund, as at 30 September 2020.

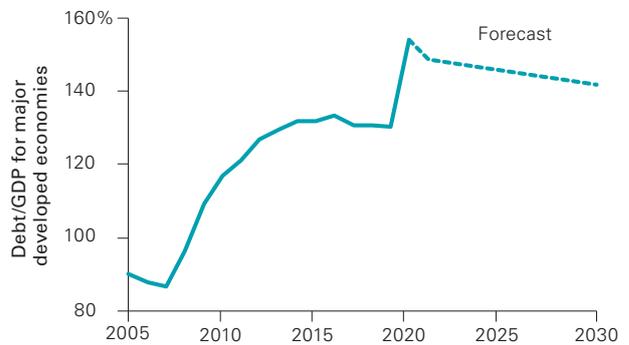
Perhaps most notably from a policy perspective, this crisis has seemingly caused a pivot in the expectations of, and preferences for, certain government policies, such as more aggressive spending by fiscal authorities amid economic headwinds. These intentions are unlikely to wane in the years ahead, in our view, and we expect fiscal policy to play a larger role, not only in sustaining the recovery but beyond as well.

We do not expect a return to fiscal austerity, which has been a common approach in the years that immediately followed previous crises. Instead, our assessment of the balance of risks leans toward governments tolerating higher levels of government debt for longer.

The rapid scientific advances related to a vaccine have been welcome news to the global economy. In fact, we're not surprised that this point was reached so quickly. The

FIGURE I-8

### Fiscal sustainability likely even without aggressive austerity

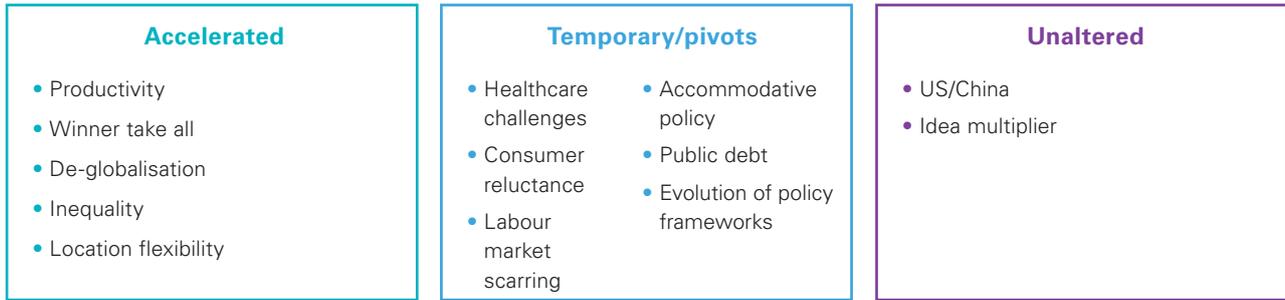


Note: The forecast represents 3.5% nominal GDP growth, an average debt interest cost of 1.2% and a 2.5% budget deficit.

Sources: Vanguard calculations, based on data from Refinitiv and the International Monetary Fund, as at 30 September 2020.

FIGURE I-9

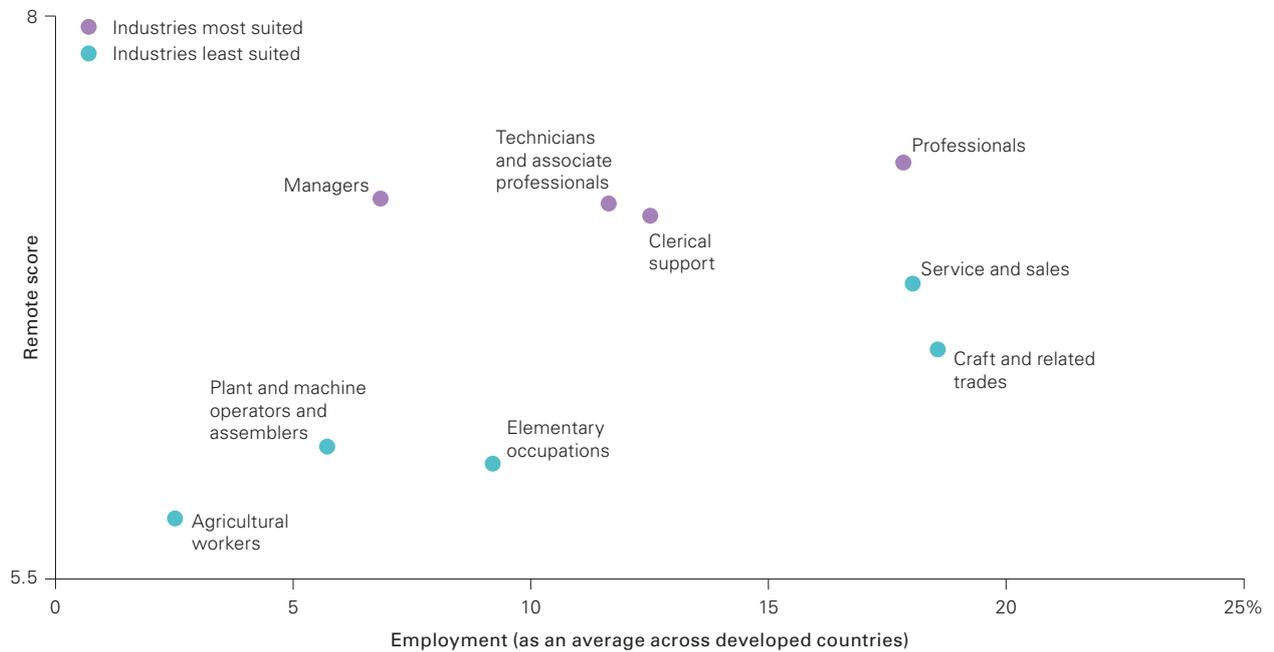
### History to show varying effects from Covid-19



Source: Vanguard, as at 30 November 2020.

FIGURE I-10

### Occupations most suited to remote work are nearly half of total developed-market employment

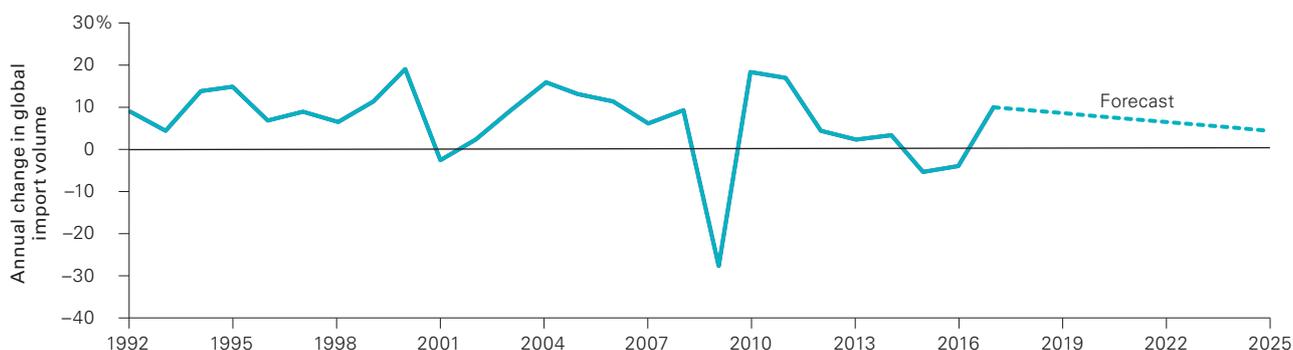


Notes: Data are limited to developed economies, namely the US, UK, European Union and Japan. The x-axis represents the percentage of total individuals employed globally. The y-axis represents our estimated remote score index and marks the remote score associated with an occupation. A score of 0 would represent occupations least suited for remote work and 8 would represent occupations most suited for remote work. The occupations indicated by blue dots are those with low remote scores, or less suited to be completely done remotely. Purple dots indicate occupations that have a high remote score or are better suited to remote work.

Sources: Office for National Statistics, Eurostat and Moody's Data Buffet, as at 30 September 2020.

FIGURE I-11

**‘Slowbalisation’ scenario expected**



**Notes:** We estimate trade growth as a function of an import-adjusted demand measure, Fraser Institute’s trade liberalisation index and changes in global value chains. The import-adjusted demand measure uses the OECD input-output tables to account for the import content of each expenditure component in each of the economies we track. Under the slowbalisation scenario, future trade growth is estimated by assuming our independent variables change at a pace lower than seen during the pre-global financial crisis globalisation wave, but above the pace seen during the post-global financial crisis trade slowdown.

**Sources:** Vanguard calculations, using data from the International Monetary Fund, OECD input-output tables and the Fraser Institute. Actual data as at December 2017, and the forecast ends December 2025.

fields of genetics and biomedicine have been rife with innovative ideas in the last decade, and successes seem poised to have a cascading effect on productivity in the decade ahead.

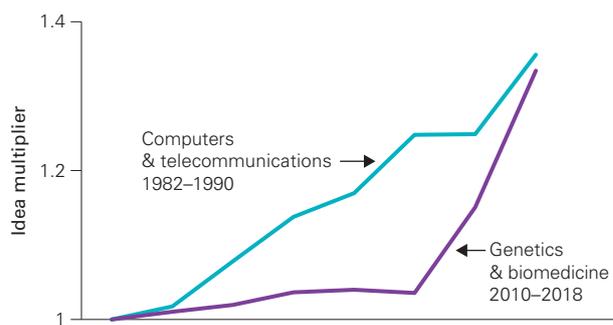
We identified this phenomenon in *The Idea Multiplier*, our 2019 research that found that future productivity is fundamentally driven by the generation, dissemination and further expansion of ideas (Davis, Wang, and Patterson et al., 2019).

**Figure I-12** shows how the idea multiplier, as it relates to genetics and biomedicine, has recently accelerated at a pace similar to that of computers and telecommunications nearly four decades ago. But rather than fears about computers replacing certain categories of workers, such gains are likely to result in benefits enjoyed across incomes and regions, with the development and distribution of a Covid-19 vaccine a case in point (Tufano et al., 2018).

Having developed our views on these trends, we take stock holistically of their effect on the economic fundamentals over the medium term.

FIGURE I-12

**The idea multiplier in genetics and biomedicine has started to grow faster than it did in computers and telecoms in the 1980s**



**Notes:** The vertical axis plots the idea multiplier index for the research fields of genetics and biomedicine and computers and telecommunications. 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 Davis, Wang, and Patterson et al., 2019, and Davis, Patterson, and Sathe et al., 2020.) The horizontal line plots the timeline for each idea multiplier index.

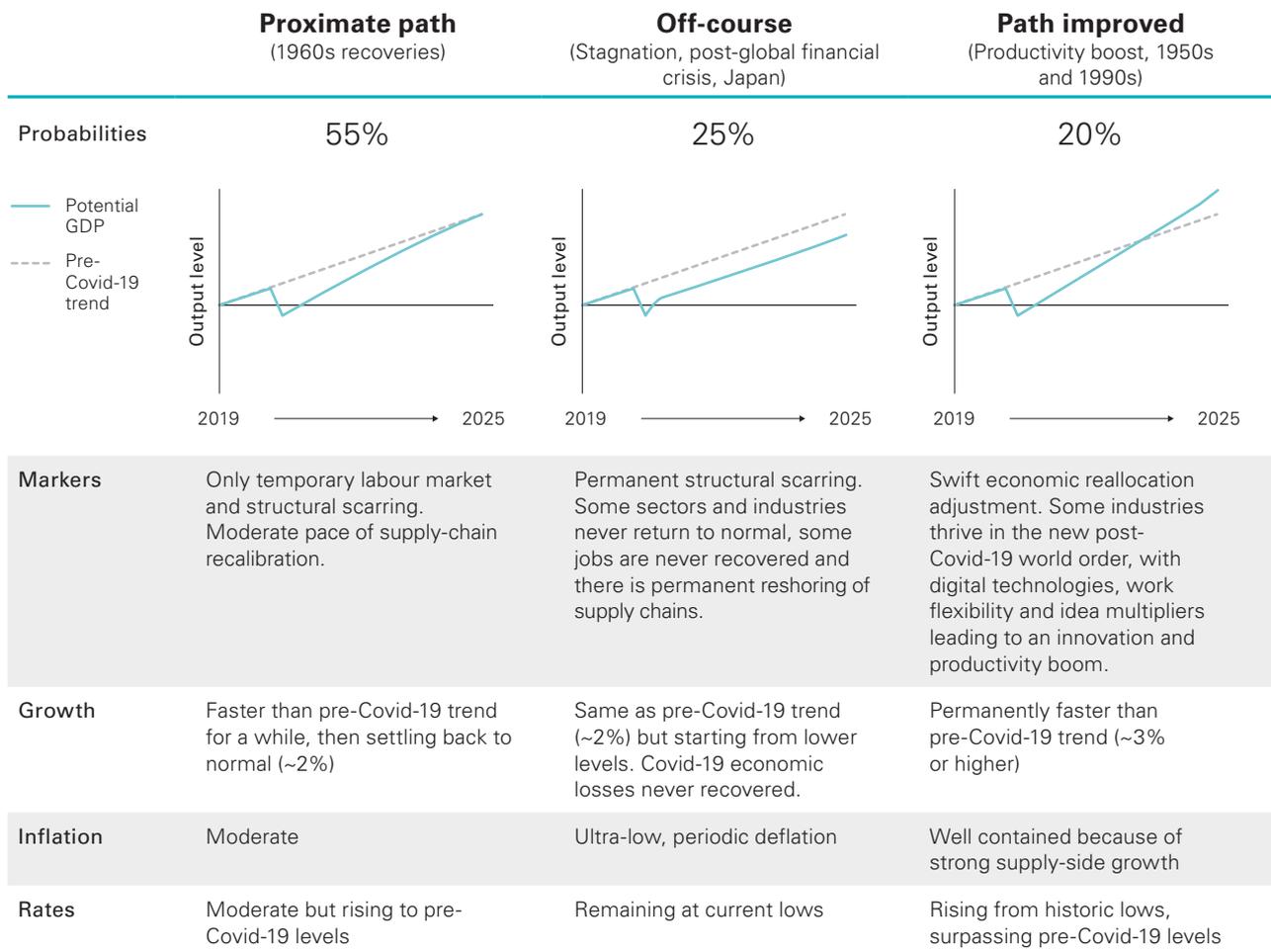
**Sources:** Vanguard calculations, based on data from Clarivate Web of Science and the Federal Reserve Bank of St. Louis, as at 30 December 2019.

Overall, the largest single risk to markets and the global economy remains health-related outcomes and the timeline for effective therapeutics. Under assumptions about near-term solutions providing significant aid in battling the pandemic, our central case projects a longer-run structural path for the economy that looks similar to its pre-pandemic one (Figure I-13).

Compared with falling into a prolonged stagnation (“off-course”) or a rapid reflation and surge in productivity gains (“path improved”), we see a global economy that will regain much of the footing it lost during the pandemic. We see a return to steady but still moderate growth, and interest rates normalising gradually from historic lows, though remaining low and supportive for some time.

FIGURE I-13

### Post-Covid secular states of the world



Source: Vanguard, as at 30 November 2020.

## United States: Improvement ahead

As discussed earlier in relation to the global economy, our near-term views for the US also are most heavily influenced by health outcomes at this stage of the recovery. At the time of writing, prospects for an effective vaccine have improved, leading to a more optimistic timeline to close the immunity and reluctance gaps (as discussed earlier with regard to Figure I-1 on page 6).

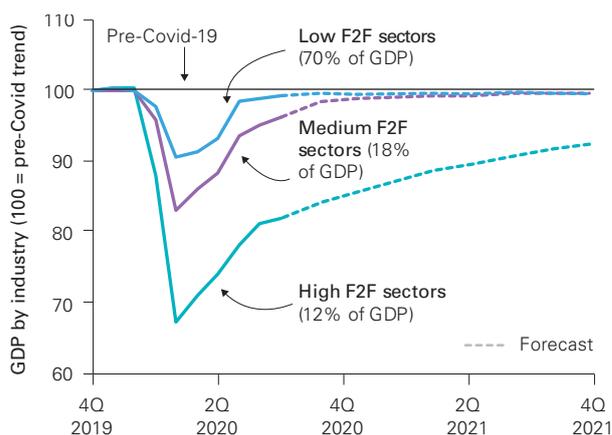
To that end, the reluctance gap has had an outsized impact on economic sectors that heavily depend on high degrees of face-to-face interaction, for production or output. These sectors make up a relatively small portion of output (about 12%), yet they have lagged and will continue to lag in recovery behind those sectors involving less personal contact (Figure I-14).

The pace of the next phase of recovery, then, is a function of immunity and reluctance. Reflecting this relationship and our assessment of likely vaccine effectiveness and distribution outcomes, our central case projects a positive recovery path in which the immunity and reluctance gaps are effectively closed within the second half of the year, achieving an annual growth rate of 5% and leaving an output gap to the pre-virus trend of roughly 1% at the end of 2021 (Figure I-15, on page 16).

Risks to this scenario are present, reflecting the uncertainty and fluidity of both the state of virus transmission and developments involved with the distribution of a vaccine, yet we currently view them as skewed to the upside. Under our most optimistic scenarios for vaccine effectiveness and distribution, many of the economic losses stemming from the pandemic could be recovered in the next year by closing the immunity and reluctance gaps in the first half of 2021. Downside risks would reflect a more severe winter season related to virus transmission and a persistently large immunity gap—related to a more prolonged vaccine distribution cycle—throughout the year, which leaves the US economy with only marginal progress from current levels.

FIGURE I-14

## Sectors with less human contact will reach pre-virus trends quicker than others



Notes: “F2F” refers to face-to-face contact. High F2F sectors include retail, transportation and arts and entertainment. Medium includes professional services, healthcare, education and other services. Low comprises the remaining sectors such as agriculture, utilities and manufacturing. 100 is the pre-virus trend for each of the sector groupings.

Source: Vanguard, as at 30 November 2020.

The uniqueness of this recession and the outsized effects on many service sectors of the economy have resulted in uneven labour market outcomes wherein those that have been better able to operate at near full capacity in this environment—such as professional service and goods-producing industries—have experienced only a fraction of the job losses that consumer service industries have. In the pandemic’s early months, these job losses in the services sector were considered temporary, as both employees and employers expected to recouple after the pandemic. However, as the pandemic persisted and consumers were slow to return to these sectors, this temporary unemployment relationship became permanent.

This is a challenge for the labour market recovery ahead, as it lengthens the expected time for displaced workers to find new employment and is one of the reasons why we believe additional fiscal support will prove necessary. At this stage of the recovery, we're paying less attention to the official unemployment rate and instead are closely monitoring broader measures of labour market participation and underemployment, most of which have experienced a more gradual recovery.

We expect the pace of monthly job growth to continue to moderate in the near term, leaving the unemployment rate centred near 6.5% as 2020 closes. As the winter fades and progress towards closing the immunity gap ramps up in the second half of 2021, we anticipate a sharp acceleration in job growth and an unemployment rate near 5% at the end of 2021.

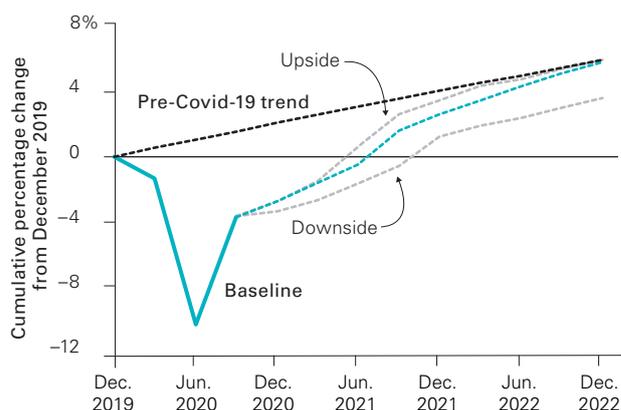
Business restrictions and the accompanying collapse in demand during the initial stages of the pandemic were a large negative shock for inflation, driving prices to historical lows across various sectors—most notably in the clothing, vehicle and transportation industries. In the subsequent months, we have seen a gradual normalisation, and we expect the core Personal Consumption Expenditures (PCE) Price Index to trend higher in early 2021 and produce a cyclical bounce as the economy continues to recover and the immunity gap closes. A weaker US dollar, the possibility of further fiscal stimulus and positive base effects will be additional factors firming the path of inflation.

Should our most optimistic economic and vaccine scenario unfold, these factors could produce an inflation scare, wherein the overshooting of Federal Reserve (Fed) targets is viewed as more persistent, influencing investor expectations, which could introduce market volatility.

Our base case assumes that these cyclical effects will prove transient, as more structural forces such as technology and unemployment continue to

FIGURE I-15

### Recovery path to extend beyond 2021



**Notes:** The y-axis represents the level impact from the baseline, which is December 2019. The blue and grey dotted lines represent three forecasts: our base case and upside and downside scenarios. The downside scenario is characterised by a failure of the current restrictions to significantly reduce virus transmission in the short term, which would cause a slower recovery. Potential problems with the efficacy, adoption, distribution or safety of a vaccine could also surface. The upside scenario is characterised by a speedy large-scale distribution of an effective vaccine, which will see the economy return to normal more quickly than we currently expect.

**Sources:** Vanguard and Refinitiv, as at 30 November 2020.

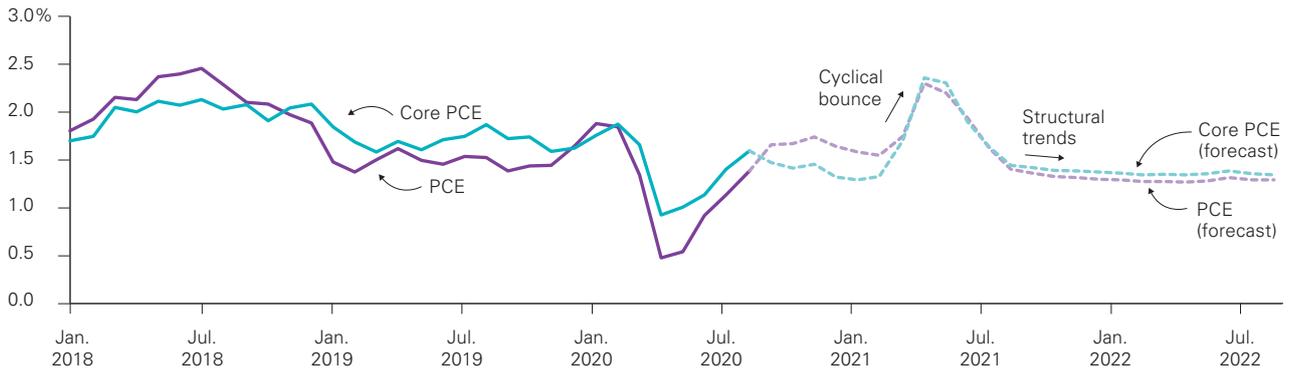
drive inflation lower. These factors contribute to our expectation that inflation will trend lower in the second half of the year, bringing PCE for 2021 in the range of 1.6%–1.8% year over year (Figure I-16, on page 17).

As with most countries, particularly developed markets, all eyes will be on policymakers in the US in 2021. The impact of the largest shock to economic conditions in multiple generations was mitigated by the fast, focused and significant efforts of policymakers. Absent these, the downturn would no doubt have been more severe, the rebound less robust and the financial market impact more significant.

FIGURE I-16

### After midyear cyclical bounce, outlook for inflation remains subdued

PCE and core PCE forecast



**Notes:** The dotted lines represent our forecast for the inflation index, which is indicated by solid lines. The forecast is obtained from Vanguard proprietary inflation forecasting models. Core PCE removes the more volatile food and energy components of inflation.

**Sources:** Vanguard calculations, based on data from Moody's Data Buffet and Refinitiv, as at 30 November 2020.

One reason the recovery from the global financial crisis was so prolonged was its impact on businesses' and households' balance sheets. **Figure I-17** (on page 18) shows that without monetary and fiscal policymakers helping businesses to remain solvent through loan, grant, interest-rate and other policies, they could not have retained nearly as many workers or, in many cases, continued to operate. Instead, we have seen business and personal bankruptcies appear more limited than many would have anticipated, remaining close to pre-virus levels. This is an area we will be keenly monitoring in the months ahead for lagged effects that are not currently visible.

Going forward, countercyclical fiscal and monetary policy will be essential in our view to keep households and businesses from suffering more lasting economic scarring. Fiscal policy aimed at supporting and, eventually, stimulating output would be critical to the success of accommodative monetary policy, including low policy rates and credible forward guidance, particularly with interest rates near the Fed's zero lower bound.

Our baseline outlook assumes that a targeted fiscal package of at least \$1 trillion, aimed at supporting the income losses of households and businesses, will be necessary and may be passed in 2021.

In regard to monetary policy, we believe the Fed will continue to use the tools at its disposal, including increasing the pace of asset purchases when needed and keeping interest rates at the zero lower bound of the fed funds target range. While we would not expect policy rates to move from current levels until at least

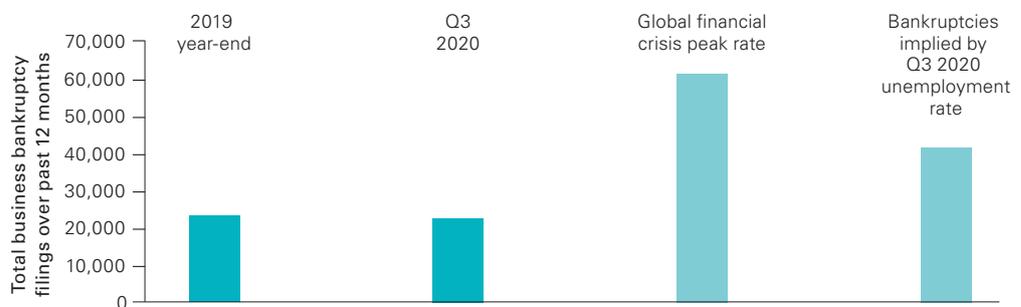
2023 under our base case economic outcomes, credible forward guidance and Fed communication would prove critical to influencing market behaviours should an “inflation scare” scenario unfold in mid-2021, as articulated above.

FIGURE I-17

### Bankruptcies remain contained for now

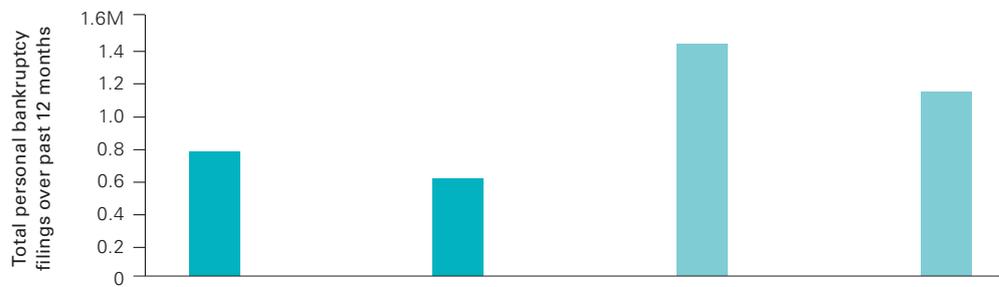
a. Business

bankruptcies show no major change from last year and are below where the unemployment rate might suggest



b. Personal

bankruptcies are also down from last year and from what the unemployment rate might suggest



**Notes:** Bankruptcy filings are on a 12-month trailing basis. The implied bankruptcy rates are based on a regression measuring the historical relationship between the unemployment rate and bankruptcy filings, as well as adjusting for the ratio of temporarily to permanently unemployed in another regression.

**Sources:** US Bureau of Labor Statistics and Administrative Office of the US Courts, as at 30 September 2020.

### Euro area: Pandemic accelerates fiscal integration

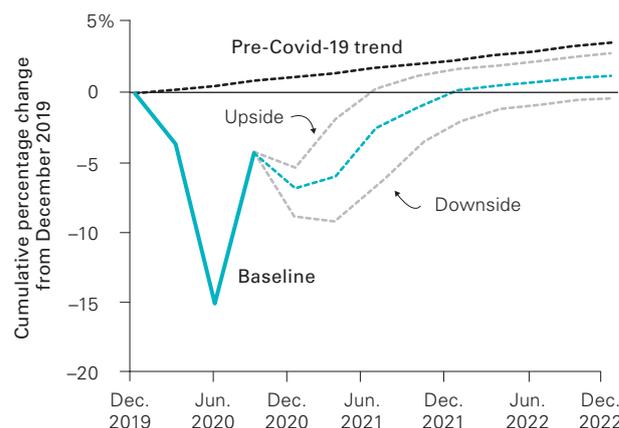
The Covid-19 outbreak, and the measures put in place to contain it, led the euro zone's economy to experience its deepest recession since its formation in 1999. In the second quarter of 2020, the output level was 15% below the level attained at the end of 2019 (Figure I-18). Supply was severely constrained by national lockdowns, while demand softened amid a reluctance to engage in social activities, along with lower aggregate incomes and higher uncertainty about the near-term economic outlook.

A moderate easing of government restrictions, plus a partial switch away from services toward goods consumption, led to an encouraging rebound in activity in the third quarter. This recovery, however, looks set to be short-lived, with another spike in virus transmission forcing authorities to retighten restrictions. We expect another contraction in GDP in the fourth quarter of 2020, though it will be much less severe than earlier in the year. Overall, the euro area economy is anticipated to have contracted by 6% to 8% in 2020 relative to 2019.

Looking ahead to 2021, we expect economic activity to gradually recover as governments gain control over the virus and as an effective vaccine becomes widely available and distributed. In our base case, we expect that growth will be about 5% in 2021 and that GDP will return to its pre-virus level by the end of the year—though still 2% below the trajectory we expected a year ago. The risks to this view are skewed to the upside. A better-than-expected clampdown of the renewed spike in infections and a speedy large-scale distribution of an effective vaccine will see a return to normal more quickly than we currently expect. The downside risk is predominantly the inverse of these upside risks. A failure of the current restrictions to significantly reduce virus transmission in the short term would mean a slower recovery. Potential problems with the efficacy, adoption, distribution or safety of a vaccine could also surface.

FIGURE I-18

### In our central scenario, we expect a gradual recovery in 2021



**Notes:** The y-axis represents the level impact from the baseline, which is December 2019. The blue and grey dotted lines represent three forecasts: our base case and upside and downside scenarios. The downside scenario is characterised by a failure of the current restrictions to significantly reduce virus transmission in the short term, which would cause a slower recovery. Potential problems with the efficacy, adoption, distribution or safety of a vaccine could also surface. The upside scenario is characterised by a better-than-expected clampdown of the second virus wave and a speedy large-scale distribution of an effective vaccine, which will see the economy return to normal more quickly than we currently expect.

**Sources:** Vanguard estimates and Bloomberg, as at 12 November 2020.

Inflation in the euro area dropped sharply in 2020. This drop was driven by sharply lower energy prices, short-term tax cuts and a widening output gap as the recession took hold. As all three factors are set to unwind in 2021, we expect both the core and headline Consumer Price Index (CPI) rate to rise (Figure I-19, on page 20). However, inflation is still expected to remain subdued and well below the European Central Bank's (ECB's) 2% target throughout 2021 due to the weak bargaining power of labour, a flat Phillips curve and subdued medium- to long-term inflation expectations. Even in our upside scenario, we do not expect inflation to surge sustainably above 2%.

In response to the pandemic and rapidly tightening financial conditions, the ECB acted swiftly and aggressively in restoring calm in 2020. It bought 500 billion euros of assets, primarily euro-area government bonds, through its Pandemic Emergency Purchase Programme (PEPP). By ensuring that borrowing costs remained low, the central bank partly facilitated highly expansionary fiscal stances by national governments. France, Italy and Spain will all record budget deficits over 10% in 2020, while Germany's deficit will be closer to 5%.

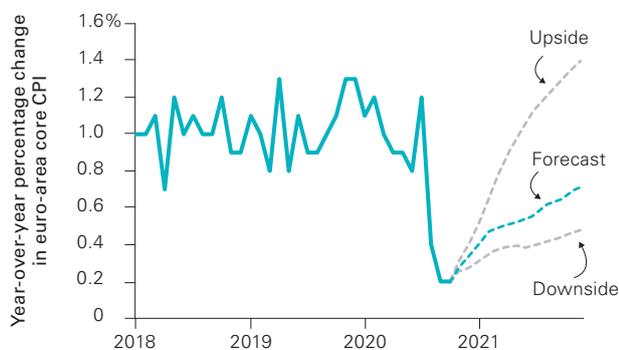
This coordinated response has kept unemployment in check through furloughs and wage-support efforts. As Figure I-20 shows, unemployment rates in most major euro zone countries have so far remained below the

peaks observed following the global financial crisis, despite a deeper economic recession this time. The outlook for the labour market, though, varies substantially across countries; Italy and Spain are particularly exposed, as a relatively large share of their economies is skewed towards sectors that are most vulnerable to the pandemic (Figure I-21, on page 21).

We expect the ECB to expand the PEPP by 500 billion euros at its December meeting and to continue these emergency purchases until at least mid-2021. Monetary conditions will remain highly accommodative and the deposit rate will stay below zero for at least the next 12 months.

FIGURE I-19

### Euro-area inflation will recover from its 2020 low but will remain well below the ECB's target

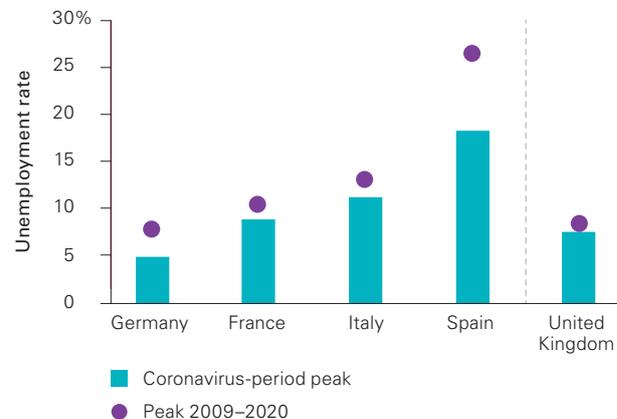


**Notes:** The downside scenario is characterised by a failure of the current restrictions to significantly reduce virus transmission in the short term, which would cause a slower recovery. Potential problems with the efficacy, adoption, distribution or safety of a vaccine could also surface. The upside scenario is characterised by a better-than-expected clampdown of the second virus wave and a speedy large-scale distribution of an effective vaccine, which will see the economy return to normal more quickly than we currently expect.

**Sources:** Vanguard estimates and Bloomberg, as at 12 November 2020.

FIGURE I-20

### Most euro-area unemployment rates have remained lower than the peak since the global financial crisis



**Notes:** The purple dots show the unemployment rate peak during 2009-2020. The blue bars show the expected peak because of the coronavirus pandemic. The UK is included for comparison.

**Sources:** Vanguard estimates and Bloomberg, as at 12 November 2020.

On the fiscal side, one unexpected benefit from the pandemic has been the approval of the “Next Generation EU” package, which is a significant step toward greater European fiscal integration. The stimulus, in the form of 390 billion euros in grants and 360 billion euros in loans, is expected to boost output by about 2% per year over the coming years. But even with the added support from this package, the fiscal impulse in 2021 will go into reverse as governments restore their budget deficits to more sustainable levels.

Despite the substantial increase in public debt in 2020, we see the fiscal positions of major euro-area economies as being sustainable. This view is primarily based on the assumption that, in all likelihood, nominal economic growth rates will exceed the cost of servicing this debt over the medium term, while budget deficits will normalise. A major risk to this view would be if the economy was subjected to a series of further negative growth and inflation shocks in the coming years, particularly in countries such as Italy, where the gap between expected growth and interest cost is narrow.

FIGURE I-21

### Spain’s and Italy’s labour markets are particularly exposed because of their outsized share of sectors that are vulnerable to the pandemic

	Furlough scheme generosity	Furlough scheme duration	Percentage of total employment			
			Wholesale and retail trade	Accommodation and food	Transport and storage	Arts, entertainment and recreation
Germany	1	Dec. 2021	13%	4%	5%	2%
France	2	Jun. 2021	14%	5%	5%	2%
Italy	3	Apr. 2021	15%	7%	5%	1%
Spain	4	Jan. 2021	17%	8%	5%	2%
UK	1	Mar. 2021	14%	7%	5%	3%

Notes: Furlough scheme generosity is indicated by a scale ranging from 1 to 5 and is based on factors including a firm’s contribution to employee salaries. Furlough scheme duration is based on the termination date. For the four columns on the right, the most vulnerable sectors, the share ranges from 2% to 17% of total employment. The colours represent conditional formatting of each column individually, except the last three columns, which are considered together given similar magnitude.

Sources: Vanguard estimates, Eurostat, Office for National Statistics and Bloomberg, as at 12 November 2020.

### United Kingdom: Brexit risks continue to weigh on outlook

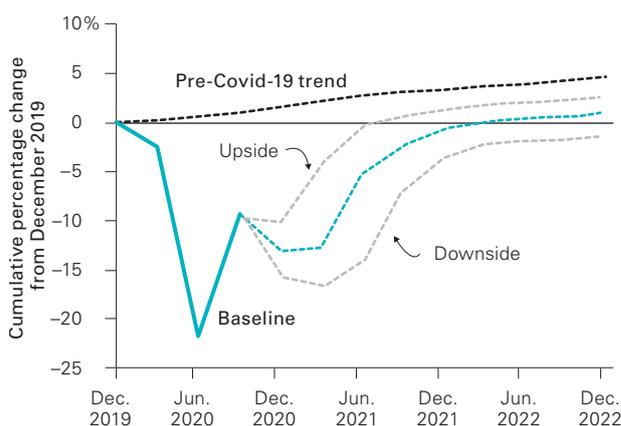
The path of UK economic output in 2020 was similar in shape to that of the euro area. A very deep contraction in the first half of the year was followed by a sizeable recovery in the third quarter as virus restrictions were partially eased. The government's "Eat Out to Help Out" programme to support the hospitality industry, coupled with cuts in the value-added tax (VAT) for the most vulnerable sectors, provided additional support in the summer. However, as with the rest of Europe, the economy was expected to contract again in the fourth quarter as countries imposed tighter restrictions to tackle a spike in infections.

The main difference between the euro area and the UK is that the UK will suffer a deeper recession in 2020 (Figure I-22). This is primarily because sectors that are most reliant on social activities, such as leisure, hospitality and tourism, account for a larger share of the economy than they do in most other European countries. A slightly longer lockdown during the spring and tighter-than-average restrictions in the winter are also partly to blame. The UK economy is expected to have fallen by 10% to 12% in 2020 relative to 2019.

In 2021, we expect the UK economy to gradually recover as restrictions ease and life returns closer to normal. Our central scenario pencils in UK growth of between 7% and 9%, which is slightly higher than the euro area, primarily because output is starting from a lower base. We expect output to return to its pre-pandemic level by the first quarter of 2022. Risks are again skewed to the upside, reflecting ongoing breakthroughs in vaccine development.

FIGURE I-22

### The UK economy experiences a deeper recession than its European counterparts



**Note:** The y-axis represents the level impact from the baseline, which is December 2019. The blue and grey dotted lines represent three forecasts: our base case and upside and downside scenarios. The downside scenario is characterised by a failure of the current restrictions to significantly reduce virus transmission in the short term, which would cause a slower recovery. Potential problems with the efficacy, adoption, distribution or safety of a vaccine could also surface. The upside scenario is characterised by a better-than-expected clampdown of the second virus wave and a speedy large-scale distribution of an effective vaccine, which will see the economy return to normal more quickly than we currently expect.

**Sources:** Vanguard estimates and Bloomberg, as at 12 November 2020.

The rate of consumer price inflation slowed materially throughout 2020, driven by lower energy prices, a VAT cut and weakening demand relative to supply. As with the euro area, we expect aggregate prices to gradually rise as these factors unwind in 2021. Both survey- and market-based measures of inflation expectations remain well-anchored in the UK. As a consequence, we expect inflation will approach the Bank of England's target of 2% over the next year.

On the policy front, the Bank of England eased monetary conditions considerably this year. The official Bank Rate was slashed from 0.75% to 0.10% and the target stock of bond purchases was increased from 445 billion pounds to 895 billion pounds<sup>3</sup>. As part of the expansion of this quantitative easing (QE) programme, the BoE bought over 50% of the government-issued new debt between March and September, which helped keep borrowing costs low for the UK government. The UK's primary deficit is set to exceed 10% of GDP in 2020 amid a very expansionary fiscal stance and, as with the euro area, the government's many support packages (including a programme to pay a portion of furloughed workers' wages) have helped to limit the rise in unemployment so far.

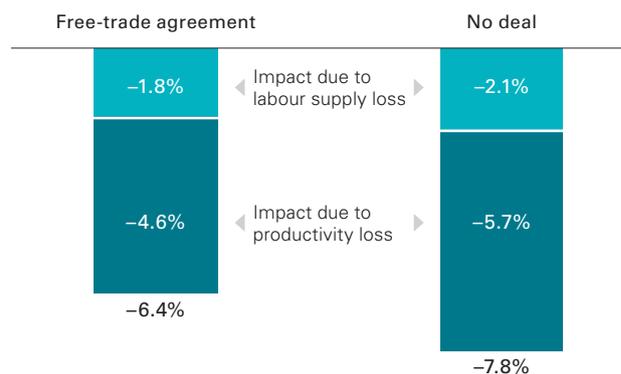
We expect the BoE's policy stance to remain highly accommodative and for its QE programme to last until at least mid-2021. Although the Monetary Policy Committee has warmed to the idea of implementing a negative interest-rate policy, we do not expect this to be executed unless economic conditions substantially deteriorate. The furlough programme will likely taper off after March 2021, and this should mark the beginning of a normalisation of the government's deficit spending.

A key risk to the UK economic outlook remains a no-deal Brexit. At the time of writing, the UK and European Union were still negotiating in an attempt to strike a bare-bones free trade agreement by the end of the transition period on 31 December 2020. In our central scenario, we expect a deal to be reached, albeit at the last minute. Departing the EU will likely cause significant disruption to many UK firms that have to adapt and change the way they do business. This is part of the reason we expect the UK economy to return to its pre-pandemic level of output slightly later than the rest of the euro area (though some euro-area firms will also suffer, just to a lesser extent than in the UK).

However, as **Figure I-23** illustrates, the long-term economic implications of a Brexit deal compared with no Brexit deal are not too far apart. Both scenarios would restrict the free movement of people and therefore the growth of the labour supply, and both scenarios would lead to a customs border and likely hamper productivity growth through less foreign direct investment and reduced innovation. Furthermore, even if no deal is reached with the EU in the short run, it could still happen. After all, the EU accounts for about half of the UK's trade, so a deal of some form is likely to be made eventually.

FIGURE I-23

### Deal or no deal, Brexit will hurt the UK economy



**Notes:** The figure examines the cumulative impact of Brexit on GDP by 2030. The productivity impact has been estimated using a vector error correction (VEC) model that incorporates a proxy for trade openness and foreign direct investment. We assume human capital growth is unaffected by Brexit. Labour supply growth is assumed to grow at a rate similar to that of total population growth.

**Sources:** Vanguard calculations, Macrobond and Office for National Statistics, as at 12 November 2020.

### China: First in, first out and first to normalise

In early 2020, Covid-19 and its economic effects were mostly seen as problems affecting China alone. Now China has emerged as one of the few countries to successfully contain the virus and the only economy expected to return to pre-Covid trend levels by the end of 2020 (Figure I-24). We expect the Chinese economy to grow by 9% in 2021, supported by the continued recovery in domestic consumption and service sectors, as well as an improving external environment.

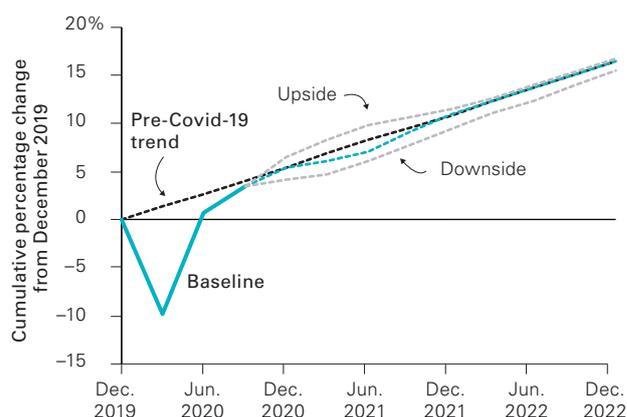
While the pace of recovery in 2020 has exceeded most expectations, its unevenness, as shown in Figure I-25 (on page 25), is as we expected in our earliest Covid economic research (Patterson et al., 2020). Specifically, export-driven manufacturing sectors have outperformed service and consumption, given consumer reluctance and the absence of developed-market-like household transfers in the government's Covid-19 relief package. Infrastructure and real estate investment have also rebounded sharply, owing to policymakers' choice of stimulating production and construction over consumption.

As we suggest in a forthcoming research paper, *In Search of Fluctuations: Dissecting China's True Growth Picture and Its Implications*, the use of infrastructure and real estate investment, as well as state-owned enterprises (SOEs), as cyclical backstoppers during slowdowns is not unique to the Covid pandemic; what is different is the size of the stimulus package delivered (Schickling, Yeo, and Wang, 2021). As Figure I-26 (on page 26) illustrates, the fiscal and monetary packages have paled in comparison to Chinese policymakers' response during the global financial crisis, while the extent of credit easing is lower than that delivered during the 2013 and 2015–2016 economic slowdowns. By contrast, most world governments and central banks have rallied to push through an unprecedented level of policy support, with the US delivering a fiscal package twice that of the global financial crisis. China's desire to balance near-term growth stability with medium-term financial stability will lead it to calibrate its policy response more prudently than its developed-market peers, making a replay of its role as a global saviour during 2009 unlikely.

Growing concerns about an overheated property market and a robust economic recovery create the risk of premature policy tightening in 2021. While further aggressive easing doesn't seem necessary and

FIGURE I-24

### China's V-shaped recovery



**Notes:** The y-axis represents the level impact from the baseline, which is December 2019. The blue and gray dotted lines represent three forecasts: our base case and upside and downside scenarios. The downside scenario is characterised by premature policy tightening and supply chain decoupling. A potential Covid resurgence leading to additional containment measures also poses a downside risk, although at this stage that seems unlikely. The upside scenario would entail surging global demand from a better-than-expected recovery in developed markets and China maintaining its elevated global export market share.

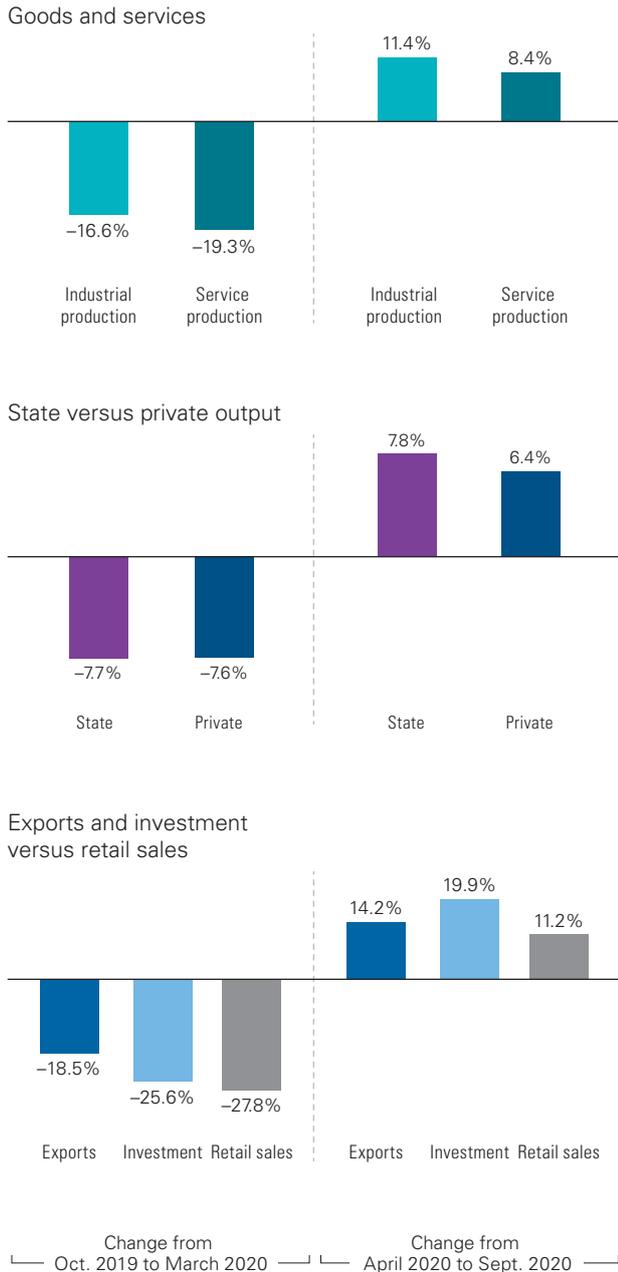
Source: Vanguard, as at 30 November 2020.

emergency policy measures will inevitably be phased out over time, broad tightening also appears unlikely given subdued inflation and uncertainties associated with Covid-19. Instead, policymakers will likely take a more data-dependent and targeted approach, such as providing funding support to small and medium-sized private enterprises and high-end manufacturers, while restricting the financing available to real-estate developers. Overall, we expect fiscal policy and broad credit growth to gradually normalise in 2021, resulting in slowing property and infrastructure investment.

On the currency side, strong fundamentals will keep the renminbi well supported in the near term, especially as the positive development of a vaccine could boost the potential for a stronger global recovery and a weaker US dollar. However, we also expect more two-way volatility, as long-term US-China relations remain contentious and the current account surplus may gradually fade amid the resumption in global production and increased domestic consumption of foreign services, such as international travel.

FIGURE I-25

### An uneven recovery between . . .



**Note:** State output is measured as the output of state-owned enterprises.  
**Sources:** Vanguard, using data from Bloomberg, as at 30 September 2020.

The pandemic has accelerated many trends, including a shift toward less globalisation, as nations seek to promote domestic manufacturing or diversify supply-chain risk across other developing economies. Although plans to recalibrate supply chains will take years to play out, Chinese policymakers have nonetheless expressed greater strategic emphasis on the rebalancing toward domestic demand as the driver of future growth, preparing for potential “slowbalisation,” or slowing in the rate of globalisation<sup>4</sup>. Against the backdrop of a less globalised world, we analyse three potential paths that China could take over the next decade (Figure I-27, on page 26). The context for evaluating these paths lies in two primary goals that policymakers announced at China’s fifth plenary session: reaching the threshold of a high-income country (~\$13,500 USD GDP per capita, based on World Bank standards) by 2025, and doubling real GDP per capita (~\$20,500 USD) by 2035. This would effectively elevate China to the status of a moderately developed economy by 2035.

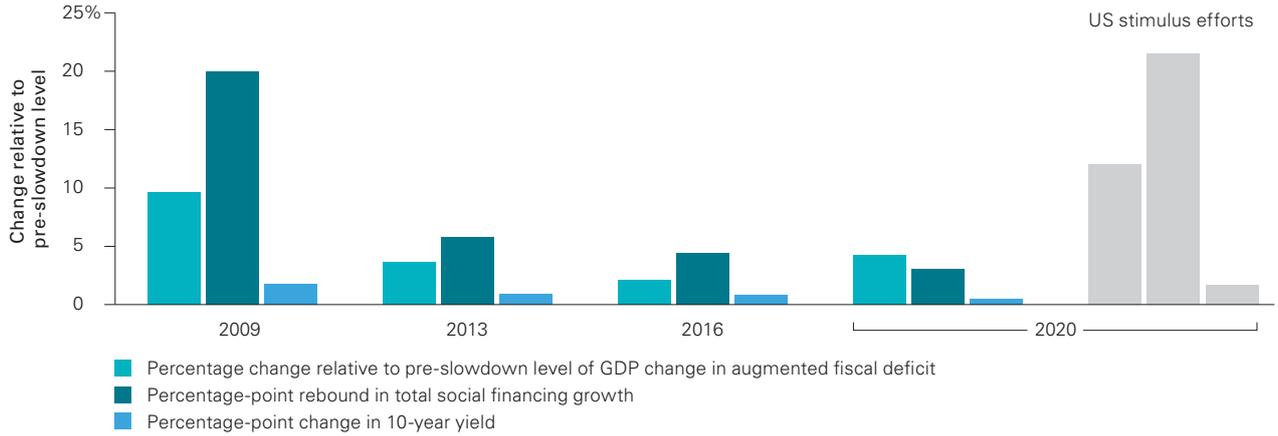
In assessing our three potential growth scenarios, the 2025 goal appears attainable, while the 2035 aspiration appears to be loftier, with only a restoration of a pre-global financial crisis globalisation wave, along with effective structural reforms and an adequate policy cushion (the “smooth rebalancing under reglobalisation” scenario), likely to lead to a doubling of China’s GDP per capita by 2035. Under the other scenarios, however, it will be challenging to achieve this target within the same timeline, given a more hostile and complex global environment. Under our assumption of successful structural reforms in a slowbalised world, the Chinese economy will only double its income several years post-2035. Should China fail to enact structural reforms, this goal will prove to be even more elusive, with a Japan-style scenario suggesting that China is unlikely to reach its 2035 target in the next two decades.

As nations throughout the world begin envisioning life post-Covid, China is entering the next decade at a critical junction where, in the past, middle-income countries have flourished or floundered. Amid significant external and demographic headwinds, productivity growth via market reforms and promoting innovation will be key in determining whether China escapes this middle-income trap and achieves the status of a moderately developed economy within the next decade.

<sup>4</sup> See reference to President Xi Jinping’s speech on the “dual circulation” strategy: [http://www.xinhuanet.com/english/2020-09/02/c\\_139337727.htm](http://www.xinhuanet.com/english/2020-09/02/c_139337727.htm).

FIGURE I-26

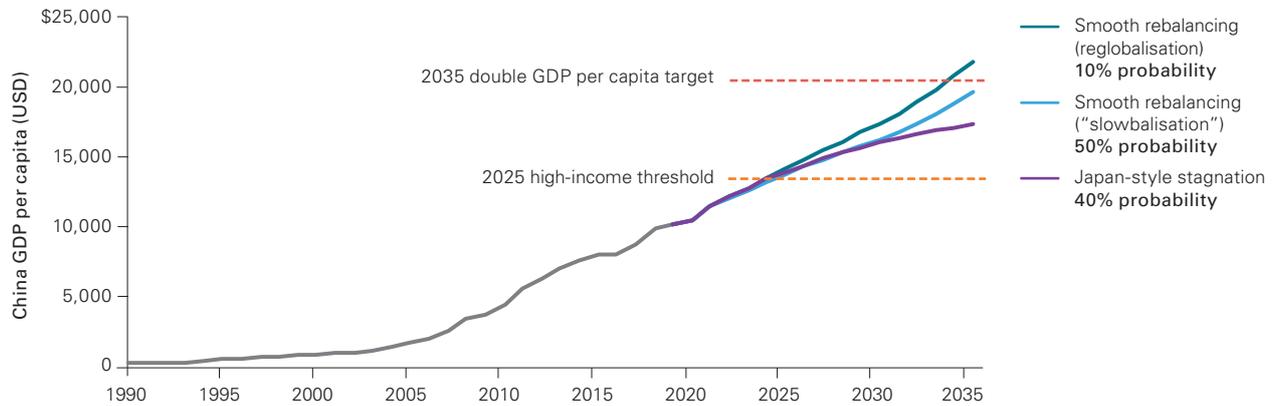
### China's stimulus is neither unprecedented nor 'whatever it takes'



Note: Total social financing is proxied by credit growth for the US comparison.  
Sources: Vanguard, using data from Bloomberg and WIND, as at 30 October 2020.

FIGURE I-27

### Mapping out the path to high income



	Smooth rebalancing (reglobalisation)	Smooth rebalancing (slowbalisation)	Japan-style stagnation
Average real GDP growth (2021 to 2035)	5.0%	4.3%	3.8%
Average real GDP growth (2025 to 2030)	4.3%	3.4%	2.2%
Average real GDP growth (2030 to 2035)	4.5%	3.9%	3.6%
Year China will reach 2025 high-income threshold	2024	2025	2025
Year China will double GDP per capita	2034	2037	2040

Notes: To convert our real GDP growth forecasts to nominal GDP per-capita growth, we assumed a roughly stable population growth of 0.5%. For simplicity, we also assumed a constant GDP deflator of 0.5% throughout.

Source: Vanguard, as at 30 November 2020.

## Japan: A new leader faces familiar challenges

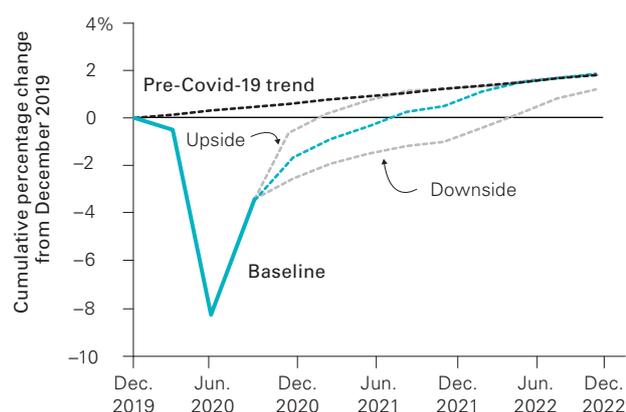
Japan was the first developed economy to officially enter a recession in 2020. This was triggered by China's first-quarter lockdown and the associated effects on Japan's tourism sectors, which rely heavily on Chinese Lunar New Year tourists, following the fourth-quarter 2019 VAT hike that stifled domestic consumption. Although Japan's close geographic ties to China and its ageing population raised concerns the country would be hit hard by the virus, so far it has managed to avoid widespread outbreaks and its deaths per capita are among the lowest in the developed world. Accordingly, the government's containment measures have been more lax and overall mobility indexes have indicated a much smaller decline than in the US or Europe. We expect the Japanese recovery to take a path similar to that of other developed economies, returning to the pre-Covid trend around the second half of 2022 (Figure I-28). This recovery will exhibit similar uneven characteristics, with strength in export/manufacturing sectors offsetting weakness in domestic service sector activity.

Another notable development in 2020 was the resignation of Japan's longest-serving prime minister, Shinzo Abe. Known for the eponymous Abenomics, Abe's tenure was associated with aggressive monetary easing and fiscal stimulus, with less robust success on the platform's "third arrow" structural reforms. Public debt levels surpassed 200% of GDP, while de facto debt monetisation in the form of the Bank of Japan's buying a large percentage of government bond issuance kept interest rates near zero and provided a much-needed, albeit still underwhelming, boost to inflation, as shown in Figure I-29 (on page 28). This playbook is being adopted by other developed economies that view Japan as evidence that sustainable debt levels are higher than previously thought. Although structural factors such as demographics, technology and rigid inflation expectations have thus far kept a lid on inflation, in the long term Japan's debt levels pose a financial stability risk and constrain fiscal options for the next downturn. In the near term, we expect a pause in monetary policy as the Bank of Japan eyes post-Covid normalcy.

FIGURE I-28

### An uneven and gradual recovery

a. GDP expected to reach pre-Covid trend in 2022



b. External demand industries have driven the recovery



**Notes:** In Figure a, the y-axis represents the level impact from the baseline, which is December 2019. The blue and grey dotted lines represent three forecasts: our base case and upside and downside scenarios. The downside scenario is characterised by a resurgence of cases depressing consumer sentiment and a softening of global durable goods demand. The upside scenario entails accelerated virus abatement boosting consumer confidence, propelling service consumption and restoring tourism industries in early 2021.

**Sources:** Figure a: Vanguard, as at 30 November 2020. Figure b: Vanguard calculations, based on data from Bank of Japan, as at 30 September 2020.

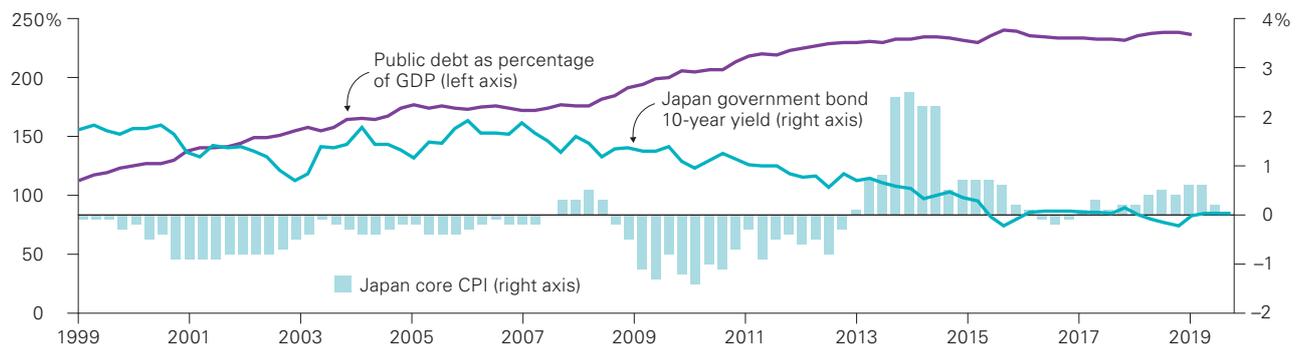
Abe's successor, Yoshihide Suga, largely represents a continuation of these policies but with a renewed focus on the structural reform component. In recent years, Japan's growth has stemmed from rising labour-force participation by women and the elderly, but further gains in these areas are unlikely, as they're already high compared with the average of other Organisation for Economic Co-operation and Development member countries. Therefore, structural reform in other areas is key.

One particular area of focus is the increasing need for the digitalisation of the Japanese economy, which according to the 2020 IMD World Digital

Competitiveness ranking is 27th in the world<sup>5</sup>. Investment in digital infrastructure is perhaps the country's best hope to escape the low productivity growth realm it has been mired in for several decades. As **Figure I-30** shows, Japan's GDP per hour worked is well below that of its peers, and business creation and employment in digitally intensive sectors is a fraction of the levels seen in other developed economies. Digitalising the economy will require conquering some of the same cultural barriers that preempted Abe's attempts at boosting immigration and foreign workers.

FIGURE I-29

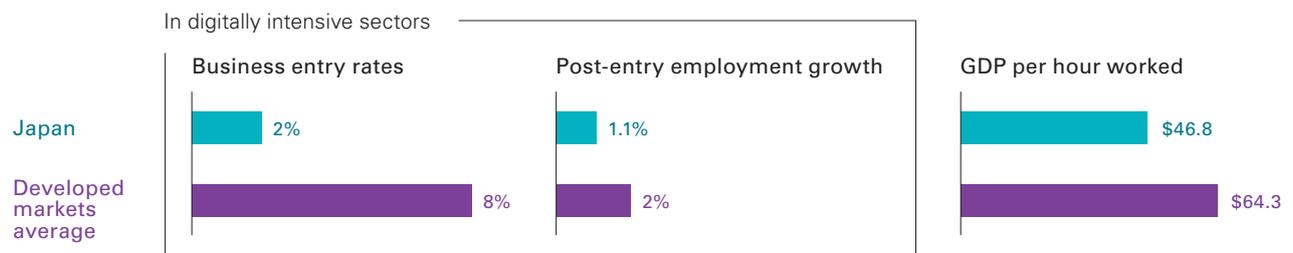
**Inflation remains below target even after years of expansionary fiscal and monetary policy**



**Note:** Core CPI measures the change in the price of goods and services purchased by consumers, excluding fresh food.  
**Sources:** Vanguard calculations, based on data from Moody's Data Buffet and Refinitiv, as at 31 December 2019.

FIGURE I-30

**Digitalisation may provide a needed productivity boost**



**Notes:** Employment and entry rates data are from 1998 to 2015. Business entry rates and post-entry employment growth are for highly digitally intensive sectors. GDP per hour worked is in US dollars.  
**Sources:** Vanguard calculations, based on data from the Organisation for Economic Co-operation and Development and World Bank, as at 31 December 2019.

### Emerging markets: Healthcare challenges but economic opportunities globally

As with developed economies, 2020 has brought severe challenges to emerging markets. Hardest hit have been Latin America, Africa and West Asia. Emerging markets have been particularly vulnerable to the economic and medical consequences of the pandemic and we expect this to continue until a vaccine is widely available. This will take longer for many emerging-market countries, which lack sufficient roads to rapidly transport the vaccine or the facilities to keep vaccine supplies refrigerated at extremely cold temperatures. At the time of writing, the apparent success of the Pfizer vaccine trial and others has buoyed hopes worldwide that there is a path to normalcy. But the poorest emerging-market countries may be last in line to receive this potential cure. However, should other vaccine candidates prove easier to distribute with little or no excess refrigeration, emerging markets may benefit from vaccines sooner than expected. Generally speaking, emerging-market countries have lagged developed-market economies when it comes to pandemic management, specifically in controlling the spread by testing widely for the coronavirus (Figure I-31).

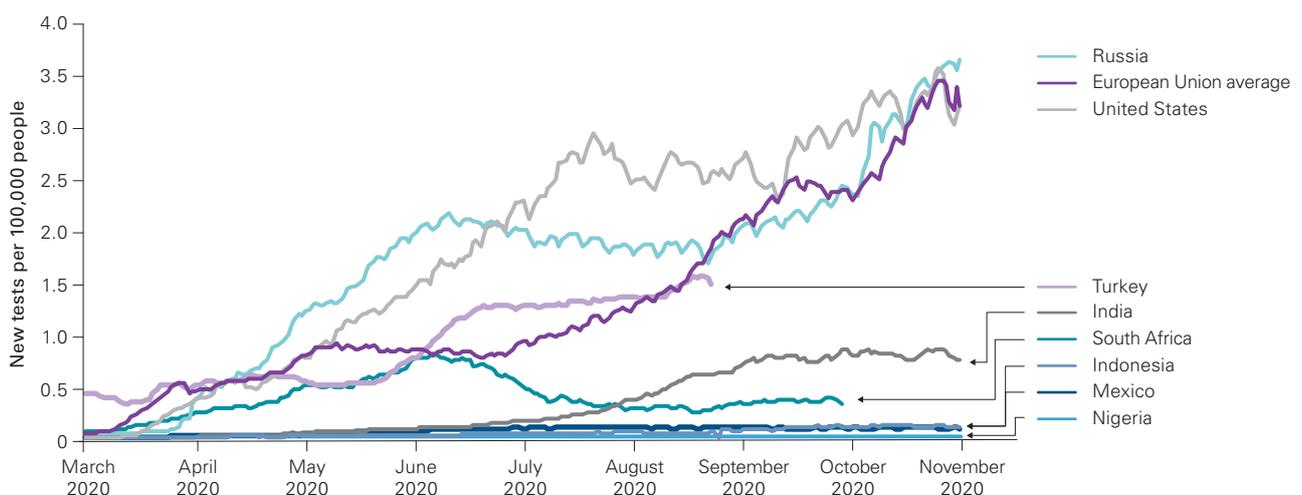
The exception to this is Southeast Asia. We would not be surprised if emerging markets in aggregate do not attain their pre-Covid early 2020 growth levels until mid-2023. However, much of developing Asia, including South Korea and Indonesia, may well buck this trend and return to early 2020 growth levels by mid-2021 (Figure I-32, on page 30). Broadly, the emerging market complex stands to gain from a global economic recovery in 2021, aided by positive vaccine developments in developed markets.

#### Ongoing risks

Thus far in 2020, the commodity-dependent emerging-market economies have seen depressed export levels as China and the developed world buy less of their petroleum and minerals. Most important, US-China trade tensions may well continue to disrupt global value chains. And in some countries, including Brazil and the Philippines, political leaders have been slow to impose pandemic-related lockdowns, thereby postponing the recovery process. Further, many emerging-market countries are dependent on remittances from migrant workers, which have declined substantially. In addition, throughout emerging markets, as in developed economies, tourism

FIGURE I-31

### Developed markets conduct more Covid-19 tests than emerging economies do



Notes: Data are reported by national authorities. When a series ends it is because that national authority stopped reporting the number of tests it was conducting. Some countries, such as Brazil, never reported testing. Testing data were smoothed using a seven-day moving average.

Source: Our World in Data, Oxford University, as at 31 October 2020.

revenues have plummeted. Of course, for the foreseeable future both emerging and developed markets will remain vulnerable to volatile financial market sentiment and its implications for global capital flows.

### Inflation

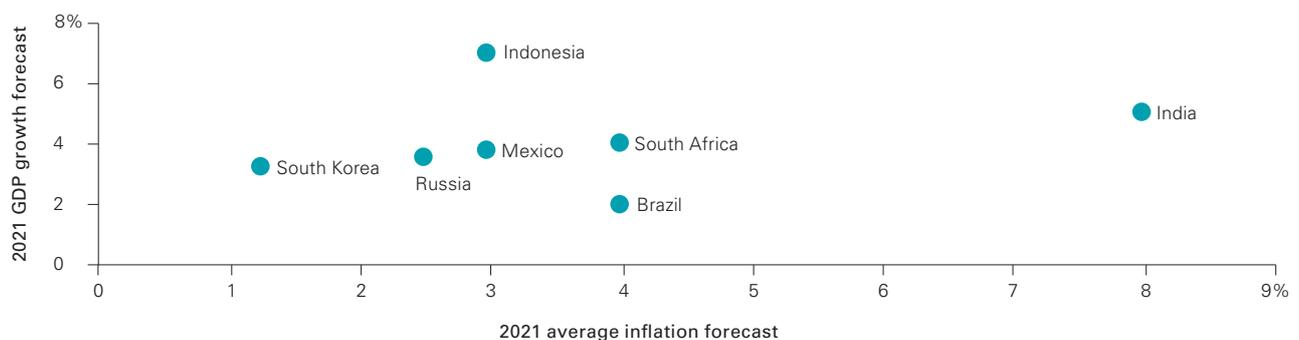
Modest pre-pandemic inflation gave way to disinflation as emerging-market economies contended with weak global demand as a result of Covid-19 lockdowns across the globe in March and April. Since then, the inflation picture has diverged across emerging-market regions. Disinflationary pressures abated in Latin America and emerging Europe as global demand recovered after economies emerged from lockdown. By contrast, much of emerging Asia continues to see disinflationary trends. We expect inflation to approach its pre-pandemic pace across emerging markets in 2021, though it may possibly fall short in emerging Asia given higher-than-average pre-pandemic inflationary pressures.

Across the globe in the first half of 2020, supply and demand pushed inflation in opposite directions. Supply shortages in the tradable goods sector, such as food and medical equipment, exerted upward pressure on prices. In turn, cratering demand because of the deep global recession put downward pressure on prices. Ultimately, the force of weaker demand prevailed, and pre-pandemic inflation gave way to disinflation across emerging markets in the first half of 2020.

Since then, we have seen recoveries in inflation rates throughout the second half of 2020 in Latin America and emerging Europe (Figure I-33, on page 31). Brazilian and Mexican central banks, for example, are monitoring resurgent inflation closely and will tailor monetary policy appropriately in 2021. In emerging Asia, however, inflation, led by food-price inflation, had spiked before the pandemic. After briefly abating, disinflationary pressures appear to have resumed across emerging Asia in the second half of 2020, a development we will watch closely in 2021.

FIGURE I-32

### Global growth rebound a tailwind for emerging-market growth in 2021

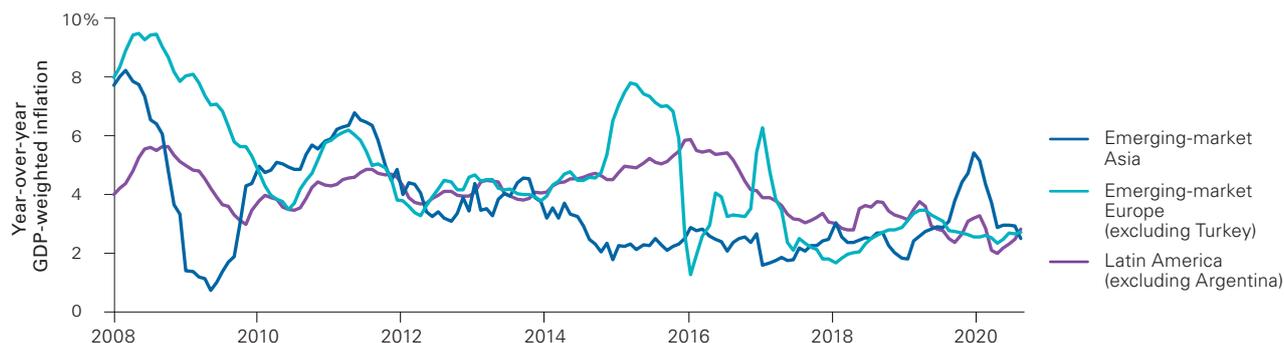


Notes: Inflation is measured as the average headline CPI measure. Dots represent central projections for GDP growth.

Source: Vanguard, as at 30 November 2020.

FIGURE I-33

### Disinflation in emerging-market Asia contrasts with return to pre-pandemic inflation in Latin America and emerging-market Europe



**Notes:** Inflation is measured as the year-over-year percentage change in CPI indexes. The series shown are GDP-weighted CPI series for a number of countries in each region. We exclude Argentina from Latin America and Turkey from emerging-market Europe because of their idiosyncratically high inflation rates.

**Sources:** National statistical bureaus via Moody's Data Buffet, as at 31 October 2020.

Overall, we expect demand to follow the recovery in supply throughout 2021 and to see modest increases in inflation across emerging markets. We do not expect inflation to stage another pre-pandemic spike in emerging Asia and instead see inflation settling around the longer-run average of 2%–3%. An exception to this trend may be India, where the inflationary pressures of 2019 and 2020 could continue to build in 2021.

#### Monetary policy

Emerging-market central banks cut interest rates in the first half of 2020 to keep financial conditions as accommodative as possible to support the economy as countries entered lockdowns. We expect these banks to continue this accommodative policy via low interest rates in 2021 (Figure I-34, on page 32). A surprise inflation spike has the potential to derail central bank plans for accommodative monetary policy in 2021, as we saw in Turkey in the second half of 2020. The September and November 2020 interest rate hikes in Turkey to contain inflation are evidence of this. Stubbornly high inflation in Mexico may prevent further monetary policy easing, while we would not be surprised to see rate hikes in Brazil in 2021 to combat inflation.

#### Debt burden

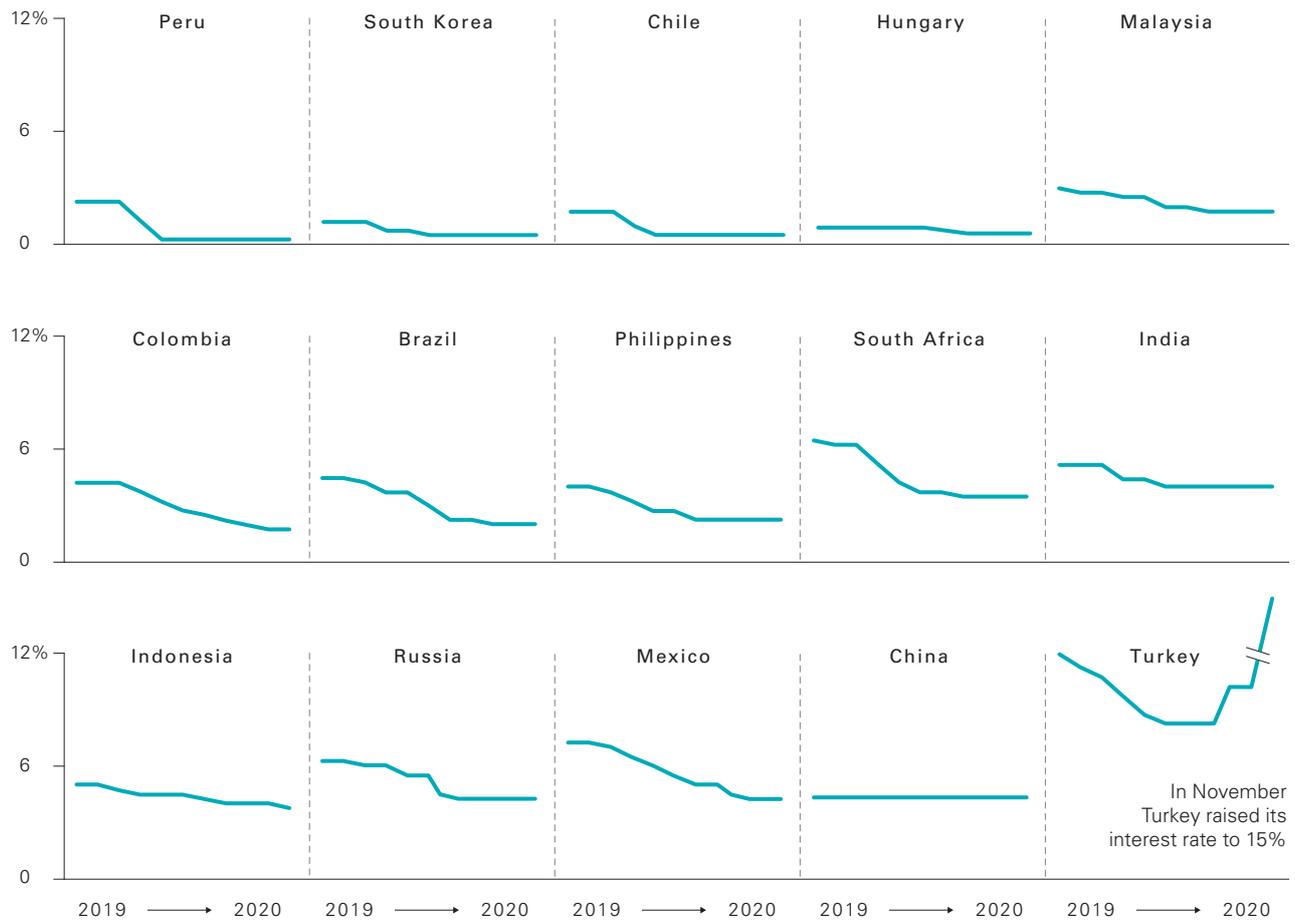
Combating the coronavirus pandemic has been an expensive undertaking for economies around the world, including emerging markets. Countries have paid for furlough programmes, medical supplies and stimulative fiscal measures by issuing more debt. This, in turn, increased debt levels as a proportion of GDP across emerging-market economies in 2020. We expect those debt burdens to remain high in 2021, as governments continue to support their economies through subsequent flare-ups in Covid infection rates (Figure I-35, on page 33). The saving grace is that interest rates on emerging-market debt remain low, presenting relatively cheap refinancing opportunities for indebted governments.

Countries that can grow their economies faster than the interest they are paying on their debt will be able to reduce their debt burdens in 2021. For example, China and India might begin reducing their debt load. As we have seen in the past, Brazil continues to have difficulty reining in its spending. As a consequence, debt sustainability will remain a focus as debt looks set to increase further as a proportion of GDP.

FIGURE I-34

### Emerging-market central banks will look to keep interest rates low in 2021

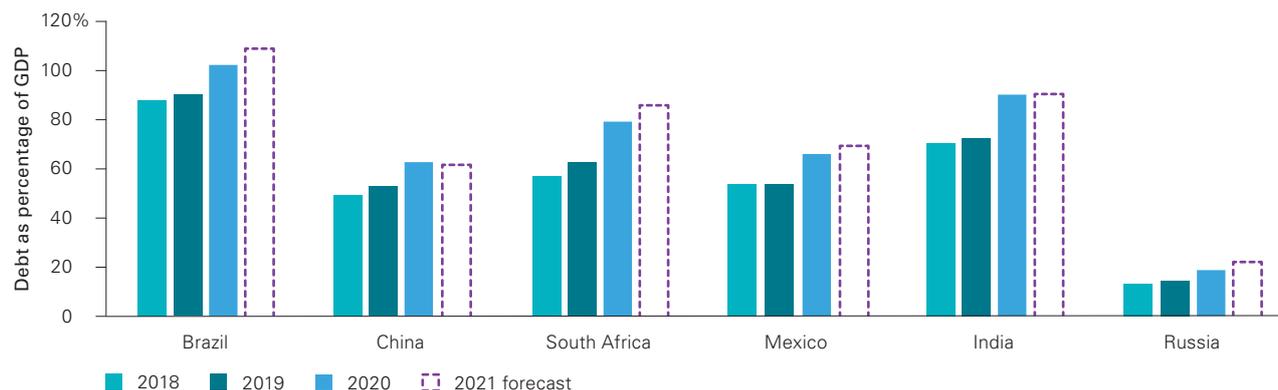
Central bank policy rates (December 2019 to November 2020)



Sources: National central banks via Refinitiv, as at 30 November 2020.

FIGURE I-35

## Debt burdens will remain stubbornly high unless emerging-market economic growth surprises on the upside



**Notes:** Debt figures are gross government debt annual totals. The figure uses forecasted 2021 growth rates and assumes constant government debt yields and small fiscal deficits persisting through 2021.

**Sources:** National government sources via Refinitiv, as at 30 November 2020.

### Foreign exchange

As often happens with the foreign exchange market, exchange rates between emerging-market currencies and the US dollar have reflected a number of different themes in 2020 that we think will continue to play a role in 2021 (Figure I-36, on page 34).

March and April 2020 saw emerging-market currencies depreciate dramatically against the US dollar as investors sought the safety of US assets. Most emerging-market currencies have strengthened against the USD in the second half of the year. The extent of that strengthening, or indeed further weakening, as was the case for the Brazilian real and the Turkish lira, reflects themes that we will continue to see in 2021.

The strengthening South African rand and Mexican peso reflect hopes of a global growth rebound as countries exit lockdown. Both these trade-dependent currencies are still a bit weaker than they were going into the pandemic, reflecting a continued uncertainty about trade growth in 2021. Global trade recovery will be a key theme for emerging markets in 2021 and will be reflected in their exchange rates.

A continually weakening Turkish lira reflects another important theme for 2021: inflation risk. Spiralling inflation has forced a currency depreciation against the dollar. Although we think Turkey's inflation woes are idiosyncratic, inflation risk is a theme to watch in 2021 with currency implications.

Finally, pandemic management is another important theme for 2021; this has been reflected in currency movements so far in 2020. Emerging-market governments have

adopted different strategies regarding pandemic mitigation, including fiscal expenditures. These differences will continue to be reflected in currencies in 2021.

FIGURE I-36

### Emerging markets currency movements



**Notes:** The broad emerging markets currency index is proxied by the MSCI Emerging Markets Currency Index. For each emerging-market currency pairing with the US dollar, a value above 100 is a strengthening of the USD versus that emerging-market currency.

**Source:** Bloomberg data, as at 30 November 2020.

## II. Global capital markets outlook

The path of global capital markets in 2020 can largely be described in three phases. The first phase occurred during the first month-and-a-half of the year and generally involved rising equity prices as lower rates and a reduction in trade uncertainty bolstered risk assets. The second phase occurred as the realities of the Covid-19 pandemic and related lockdowns set in around mid-February and March. Equity markets plummeted, credit spreads widened, central banks quickly cut interest rates and employed novel tools to stabilise markets and governments unleashed a wave of support. The third phase began in April and has seen a more pronounced recovery in some regions than others.

As we look ahead to 2021 and beyond, our outlook for global asset returns remains guarded. This is most true for equities, where high valuations and lower economic growth rates mean we expect lower returns over the next decade relative to the experience of previous decades. For fixed income, lower interest rates and flatter yield curves are expected to weigh on returns for the foreseeable future.

A consistent theme emerging from our economic outlook of persistent low inflation and low interest rates across developed-market economies supports our view of a lower-return environment. This theme affects our outlook for bond yields and therefore future bond returns, equity valuations and earnings growth rates, and even the growth versus value debate. We view the prospects for higher inflation and higher rates over the foreseeable future as unlikely due to the secular and cyclical factors described in the economic section.

All of these factors serve to reaffirm the lower-return orbit we have been writing about for the past few years. Common asset-return-centric portfolio tilts that seek higher return or yield are still unlikely to escape the

strong gravity of low returns. However, a modest steepening in the efficient frontier suggests an increase in the expected return for taking on equity risk relative to this time last year.

### Global equity markets: A wild ride back to where we started

Despite the rapid fall in equity prices, which saw global equity markets lose almost a third of their value in March, markets rebounded sharply over the next eight months. In EUR terms, global equities—as measured by the MSCI All Country World Index—returned minus 4.3% year-to-date as at the end of October. The recovery also saw a continuation of trends in equity markets from the past decade, with US stocks outperforming other regions and large-capitalisation (large-cap) growth stocks dominating their value counterparts.

Despite the rollercoaster ride that equity markets have had this year, our outlook is remarkably similar to last year's. Our expectation for lower-trend GDP growth, which will impact corporate revenue growth, along with only a modest contraction in global valuations, has led to our continued guarded outlook for global equities, which we expect to return 4%–6% annualised over the next decade. Furthermore, we do not expect the trends that have defined the last decade to persist. Namely, we expect equity markets in the UK and euro area to outperform the US equity market largely due to lower valuations. Likewise, we expect value stocks to outperform growth over the next decade based on our fundamental assessment.

### More attractive valuations in the euro area; but downside risks and volatility are likely to stay elevated

While US equity markets have more than made up the losses they incurred in early 2020, in the euro area, valuations have not recovered. **Figure II-1a** plots the cyclically-adjusted price/earnings ratio (CAPE) for the MSCI Germany Index versus our “fair-value” model, which accounts for current interest rates and inflation levels. This provides, in our opinion, a more useful time-varying benchmark that accounts for changes in

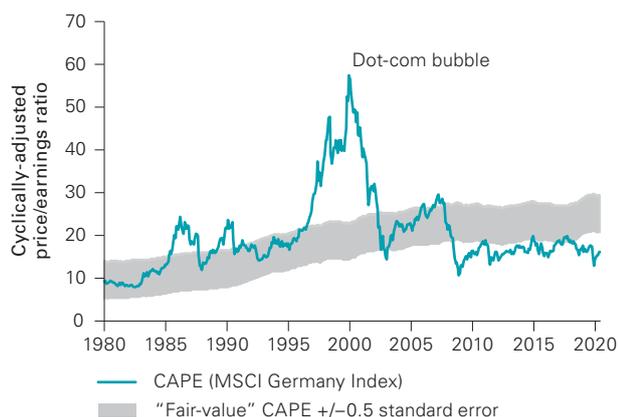
### Vanguard's distinct approach to forecasting

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 European investor with a euro-denominated portfolio.

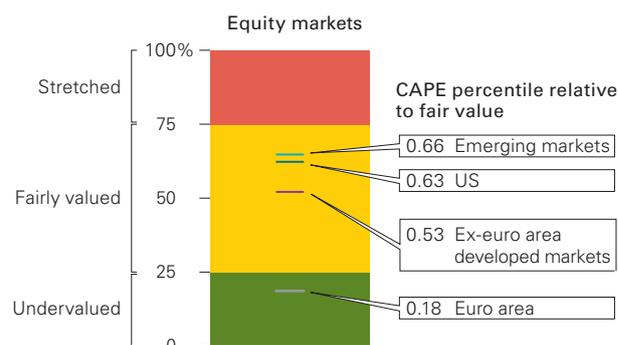
FIGURE II-1

## Divergence in global equity valuations

a. CAPE for the MSCI Germany Index is in undervalued territory



b. Other developed markets are in fairly-valued territory



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

**Notes:** “Fair-value” CAPE (cyclically-adjusted price/earnings ratio) is based on a statistical model that corrects CAPE measures for the level of inflation expectations and for lower interest rates. The statistical model specification is a three-variable vector error correction (VEC), including equity-earnings yields, ten-year trailing inflation and ten-year US Treasury yields estimated over the period January 1940–September 2020. For details, see Vanguard’s economic and investment outlook (Davis, Aliaga-Díaz, Westaway, Wang, Patterson and Ahluwalia 2018).

**Sources:** Vanguard calculations, based on Robert Shiller’s website, at [aida.wss.yale.edu/~shiller/data.htm](http://aida.wss.yale.edu/~shiller/data.htm), US Bureau of Labor Statistics and Federal Reserve Board, as at 30 December.

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

**Notes:** Developed-market equity valuation measures are the current CAPE percentile relative to the “fair-value” CAPE for the local MSCI index. The aggregate developed-markets valuation measure is the weighted average of each region’s (US, Australia, UK, euro area, Japan and Canada) valuation percentile. The emerging markets and China valuation measures are composite metrics of the relative valuation to the US, and current US CAPE percentile relative to its fair-value CAPE. Estimated over the period beginning from January 1940 for the US, January 1970 for Australia and the UK, January 1980 for other developed markets and January 1990 for EM and China, ending September 2020.

**Sources:** Vanguard calculations, based on Robert Shiller’s website, at [aida.wss.yale.edu/~shiller/data.htm](http://aida.wss.yale.edu/~shiller/data.htm), US Bureau of Labor Statistics, Federal Reserve Board and Refinitiv, as at 30 September 2020.

economic and financial market conditions against which the traditional CAPE ratios can be compared, instead of the frequently used historical average as a benchmark. The CAPE has signalled attractive valuations in recent years and it compressed even further in March, after which it has remained in undervalued territory. This is justified by a market performance that has not been as strong as the US equity market, as well as by a further reduction in yields that caused the fair-value range to increase. On the other hand, equity markets in the other global developed markets appear, overall, fairly valued, after adjusting for lower rates and inflation (Figure II-1b). In particular, valuations in the US equity market appear to be stretched as they stand in the upper part of our estimate of fair value. In the UK, equity valuations look similarly attractive to those in the euro area. Valuations in emerging markets, on the other hand, are higher than in other regions after adjusting for the higher risk and higher earnings yields required by investors. Given the non-uniform recovery in global equity prices and elevated valuations in the US equity market, the risk of a sharp downturn (defined as a >20% drop) in the global equity market over the next three years remains elevated.

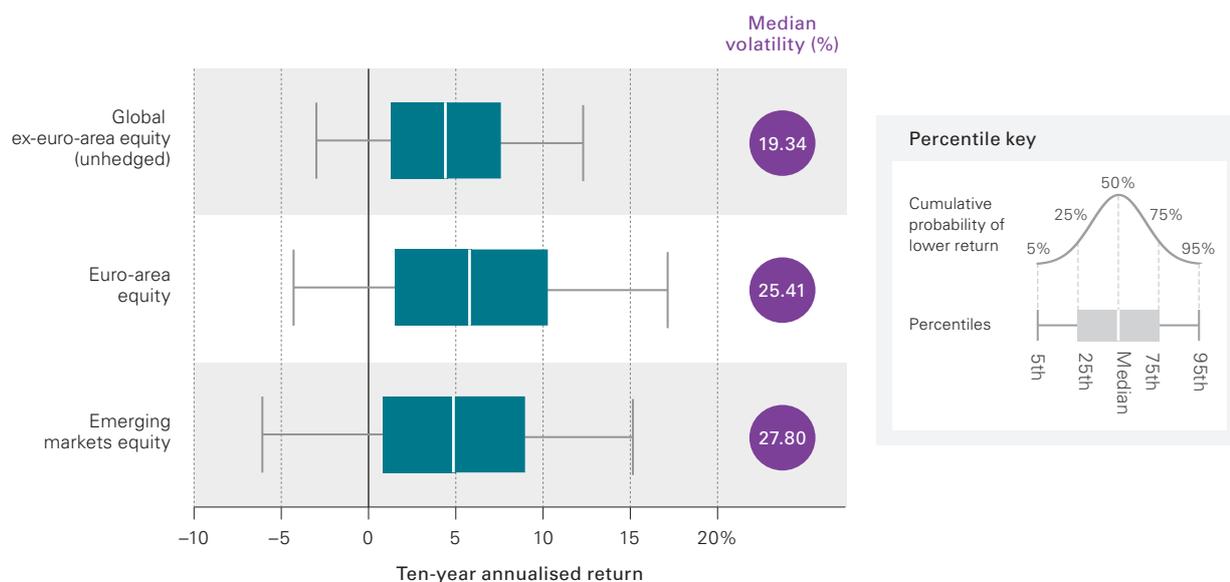
### Outlook for global equities and the diversification of domestic risks

Given our outlook for the slowing rate of recovery in global growth, subdued inflation, lower interest rates and elevated current market valuations, our long-term return outlook for global equities remains guarded relative to the experience of previous decades, based on our Vanguard Capital Markets Model (VCMM) projections. However, our expected return for the euro-area equity market over the next ten years is marginally higher than it was last year.

From a European investor’s perspective, the expected annualised return outlook for the euro-area equity market is in the 4.7%–6.8% range, higher than the 3.4%–5.4% range for global ex-euro area equity (Figure II-2), thanks to more attractive valuations.

FIGURE II-2

## Equity markets' ten-year return outlook: Setting reasonable expectations



**Notes:** Forecast corresponds to distribution of 10,000 VCOMM simulations for ten-year annualised nominal returns as at 30 September 2020 in EUR for asset classes highlighted here. Median volatility is the 50th percentile of an asset class's distribution of annualised standard deviation of returns. See appendix section titled "Index simulations" for further details on asset classes.

**Sources:** Vanguard, as at 30 September 2020.

### The end of the "value coma" is coming – we're just not sure when

A key market theme of the post-global financial crisis era has been the outperformance of growth stocks (mainly large-caps in the US market) versus value stocks. Many explanations have been proposed, ranging from value definitions to industry concentration, and this has even led some to question the existence of the value premium.

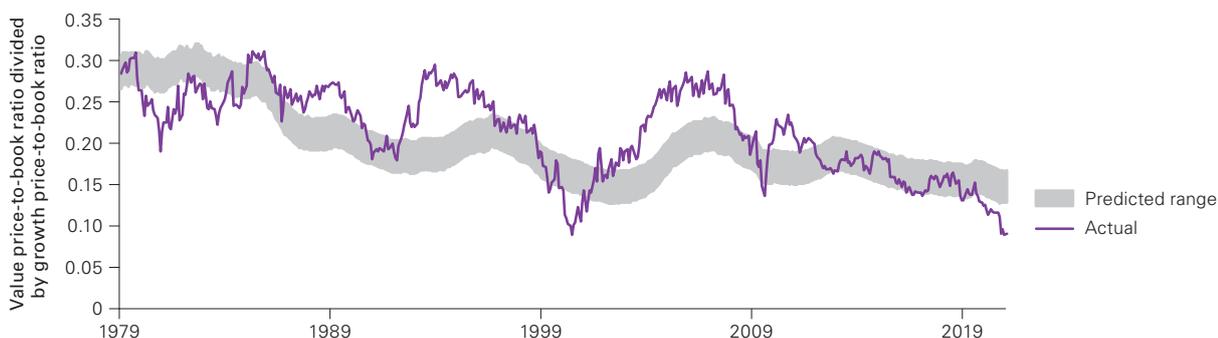
Our research indicates that a value premium does exist and that the recent outperformance of growth stocks can be partially explained by the downward trend in long-term inflation levels and the lack of material acceleration in earnings growth over the last decade. Lower inflation levels are more beneficial to growth stocks because of the longer-term nature of their expected dividends. Value stocks pay out a larger share of their earnings as dividends today, whereas the promise of dividends from growth stocks is further in the future, making their value much more sensitive to changes in inflation. Though inflation levels have been moving lower since the 1980s,

value stocks have experienced prolonged periods of outperformance on a few occasions. We have found that these style rotations have occurred in periods of accelerating earnings growth across the economy. Focusing on the US market, which has driven the global outperformance of growth stocks in recent years, **Figure II-3** shows our estimate of the "fair value of value" based on these variables in addition to long-term real interest rates, short-term equity market volatility and technology spend as a percentage of GDP.

Over the next decade, we do expect global value stocks to outperform growth, although their total return will still be constrained by our outlook for broad US equities. Given the continued expectations of low inflation, our view is that this outperformance will be driven primarily by a contraction in the valuation of growth stocks, rather than as a result of valuations returning to the levels seen in prior decades.

FIGURE II-3

**“Fair value of value” has been trending lower due to lower long-term levels of inflation**



**Notes:** The statistical model specification is a seven-variable vector error correction (VEC), including value/growth basis-point ratio, ten-year trailing inflation, ten-year real Treasury yields, equity volatility, earnings growth, change in earnings growth and IT spending estimated over the period January 1979–September 2020.

**Sources:** Vanguard calculations, based on data from Factset, US Bureau of Labor Statistics, Federal Reserve Board, Refinitiv and Global Financial Data, as at 30 September 2020.

**Global fixed income markets: A gradually evolving curve**

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%–0.7% annualised (Figure II-4a). Expected returns for non-euro-area bonds are in line with euro-area bond expectations (although with lower dispersion). Despite low expected returns, the diversification through exposure to hedged non-euro area bonds should help to offset some risk specific to the euro-area fixed income markets (Phillips et al., 2014). Within the euro-area aggregate bond market, investors are still expected to be fairly compensated (in relative terms) for assuming credit risk, with an expected return in the 0.6%–1.2% range. Importantly, while future returns for fixed income look low, the recent crisis has re-affirmed the role they play in a multi-asset portfolio.

**Euro-area interest rates: Low yields and lower expected returns compared with last year**

As the pandemic took hold globally in the spring, yields on developed-market government bonds plummeted and central banks around the world cut rates to (and in some cases below) zero. These dynamics led to low and flat sovereign yield curves around the world. Given our view that developed-market central banks will keep policy rates low and that the risk of a material rise in long-term interest rates remains modest, we expect German government bond performance to be in the -0.11%–+0.22% range, as illustrated in Figure II-4a.

**Corporate bonds: Higher risk, higher return**

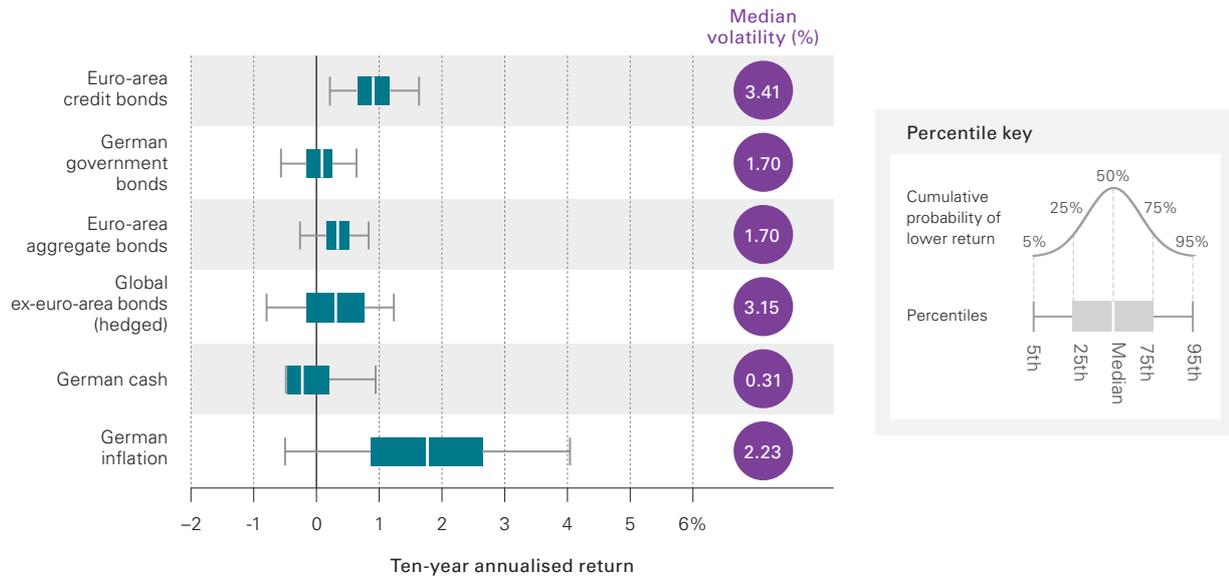
Global central bank purchases of credit bonds have supported investment-grade and high-yield bond markets. Our outlook suggests that the expected risk premium associated with credit bonds is fairly valued given the current level of credit spreads. Declines in long-term interest rates also make our central tendency for euro-area credit bonds lower than last year, around the 0.63%–1.17% range.

**Bonds as ballast in a multi-asset portfolio**

With economic growth and inflation staying even lower for longer after the first phase of the economic recovery and with the markets expecting loose monetary policy to persist, we find it hard to see any material uptick in fixed income returns in the foreseeable future. However, instead of viewing this asset class as a primary return-generating investment, investors are encouraged to view bonds from a risk-mitigating perspective. Our analysis in last year’s outlook suggested that bonds maintain their diversification benefits despite low-to-negative global yields—the events of 2020 only confirmed that.

FIGURE II-4a

### Lower rates have pushed expected fixed income returns lower



**Notes:** Forecast corresponds to distribution of 10,000 VCMM simulations for ten-year annualised nominal returns as at 30 September 2020 in EUR for the asset classes highlighted here. Median volatility is the 50th percentile of an asset class’s distribution of annualised standard deviation of returns. See appendix section titled “Index simulations” for further details on asset classes.

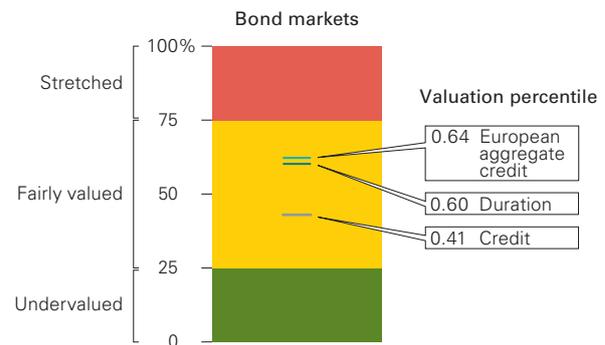
**Sources:** Vanguard, as at 30 September 2020.

### Portfolio implications: Low-return environment persists, but marginal equity risk is better compensated

Investors have experienced spectacular returns over the last few decades because of two of the strongest equity bull markets on record and a secular decline in interest rates from the highs of the 1980s. **Figure II-5a** contrasts our 2.4%–4.4% annualised return outlook for a global 60% equity/40% bond portfolio for the next decade against the extraordinary 9.9% and 5.2% annualised returns since 1970 and 1990, respectively. While a lower-return orbit may be concerning to investors, it is important to look at returns over and above inflation. Given the higher historical core-inflation levels and our economic outlook suggesting that central banks will have difficulty achieving inflation above 2% over the next ten years, the differences between historical and future returns might not be as large, after adjusting for inflation.

FIGURE II-4b

### Fixed income appears to be fairly valued



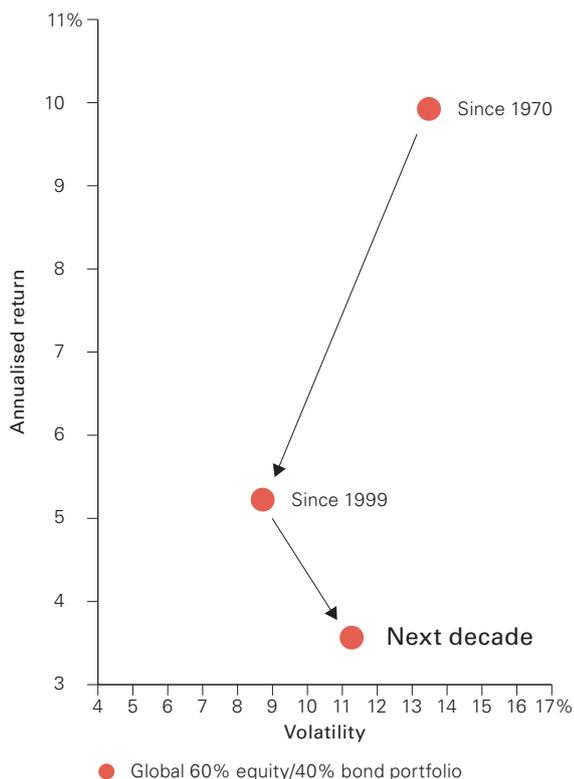
**Notes:** Valuation percentiles are relative to year 30 projections from VCMM. Euro-area aggregate bond valuations are current spreads relative to year 30 from VCMM. Duration is measured by the current spread between 20-year and 2-year rates relative to year 30 from VCMM.

**Sources:** Vanguard, as at 30 September 2020.

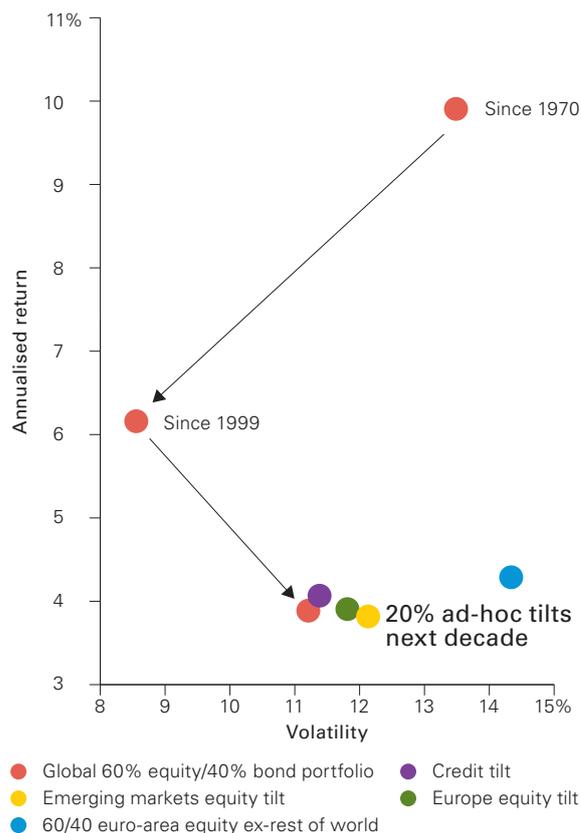
FIGURE II-5

### Asset allocation for a challenging decade

a. A lower return orbit...



b. ... that popular “active tilts” will likely fail to escape



c. Projected ten-year annualised nominal returns

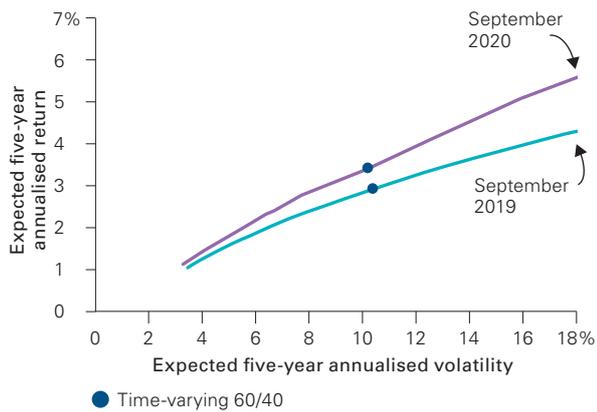
Portfolios	5th percentile	25th percentile	Median	75th percentile	95th percentile	Median volatility
Global balanced portfolios	20/80 stock/bond	-0.1%	0.8%	1.5%	2.2%	4.2%
	40/60 stock/bond	-0.4%	1.3%	2.5%	3.8%	7.7%
	60/40 stock/bond	-1.0%	1.6%	3.4%	5.3%	11.2%
	80/20 stock/bond	-1.7%	1.7%	4.2%	6.7%	15.5%
	100% equity	-2.6%	1.7%	4.8%	8.0%	19.5%
<b>60/40 stock/bond</b>	<b>-1.0%</b>	<b>1.6%</b>	<b>3.4%</b>	<b>5.3%</b>	<b>8.2%</b>	<b>11.2%</b>
Portfolios with common 20% tilts	Credit tilt	-0.8%	1.7%	3.7%	5.6%	11.4%
	Emerging markets equity tilt	-0.7%	1.9%	3.8%	5.8%	12.1%
	Europe equity tilt	-1.0%	1.8%	3.9%	6.0%	11.9%
	60/40 euro-area equity ex-rest of world	-1.8%	1.7%	4.3%	7.0%	14.4%

**Notes:** Summary statistics of 10,000 VCMM simulations for projected ten-year annualised nominal returns as at September 2020 in EUR before costs. Historical returns are computed using indexes defined in “Indexes used in our historical calculations” on page 5. The global equity is 15% euro-area equity and 85% global ex-euro-area equity. The global bond portfolio is 25% euro-area bonds and 75% 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.

**Source:** Vanguard, as at 30 September 2020.

FIGURE II-6

**The efficient frontier has steepened because of the increase in expected equity risk premium**



**IMPORTANT:** The projections or 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.  
**Notes:** Lines indicate the range of portfolios that achieve the highest expected return per unit of volatility across local and international equity and bond asset classes.  
**Source:** Vanguard calculations based on VCMM projections as at 30 September 2019 and 30 September 2020.

As highlighted in previous sections and previous years, elevated equity valuations in the US and low rates have pulled the market’s efficient frontier of portfolio expected returns to a lower orbit. This year, however, the efficient frontier has steepened (that is, larger increases in expected return for increases in equity risk), as seen in **Figure II-6**. Clients for whom a time-varying approach to asset allocation<sup>1</sup> is appropriate are expected to be better compensated for taking equity risk. In particular, a tilt towards euro-area equities should reward investors over the long term.

It is important to note that while overweighting certain higher-expected-return assets or higher-yield assets 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-5b**).

<sup>1</sup> *The implications of time-varying return on portfolio construction*, Vanguard Research. Wallick, et al. 2020.

**Note:** Time-varying portfolios are defined as multi-asset portfolios where the allocation varies over time based on changing long-term expectations.

### Portfolio construction strategies for three potential economic scenarios

Based on our global economic perspectives, we examine in **Figure II-7** three possible economic scenarios, occurring over the next three years. The “proximate path” scenario depicts an economic environment of trend economic growth, low inflation and low policy rates. The “off-course” scenario is defined by low growth and minimal productivity. The “path improved” scenario involves a strong surge in growth and inflation as well as rising rates and a productivity boom that combine to push us above pre-pandemic trend growth.

**Figure II-7** shows optimal portfolios for each scenario that vary their exposures to the following four factors, or risk premiums: equity risk premium, term premium and credit premium. In a high-growth “path improved” scenario, expected global equity returns would be high, and steepening is seen in the efficient frontier. Long and short rates would also rise faster than expected, resulting in an optimal portfolio with large weights to equities.

A recessionary, “off course” scenario portfolio would underweight equity and overweight globally-diversified long-duration bonds. It is not a surprise that the allocation to euro-area equity remains relatively large thanks to attractive valuations that will likely drive the outperformance of the euro-area equity market over the long term.

The portfolio strategy in our “proximate path” baseline scenario is well diversified with a 60%/40% equity/bond split. 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 (Wallick et al., 2020).

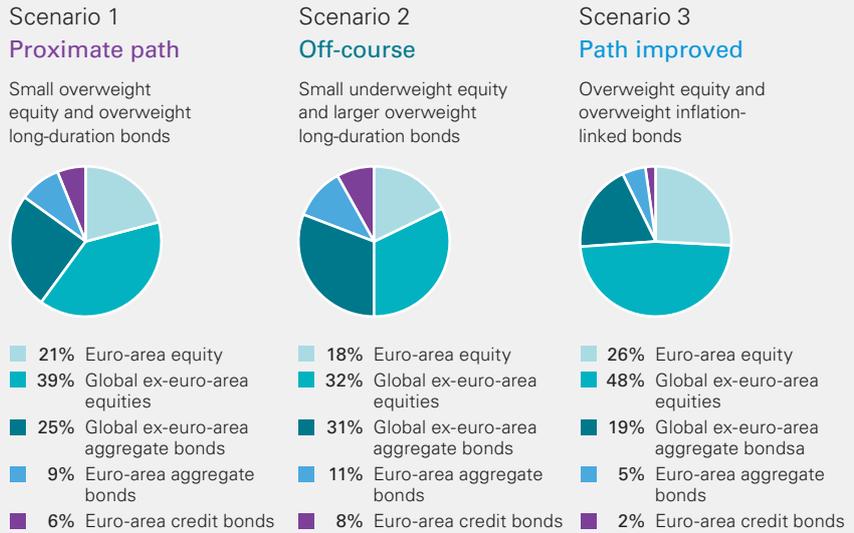
Using our VCMM simulations, we are able not only to illustrate the effectiveness of various portfolio strategies designed for each scenario, but also show the risks of such strategies. The following conclusions can be drawn from our analysis:

- 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 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 constructed within an optimisation framework:** Ad-hoc tilts ignore correlations among assets and therefore do not properly take into account potential diversification benefits among asset classes. This ultimately leads to inefficient portfolios.

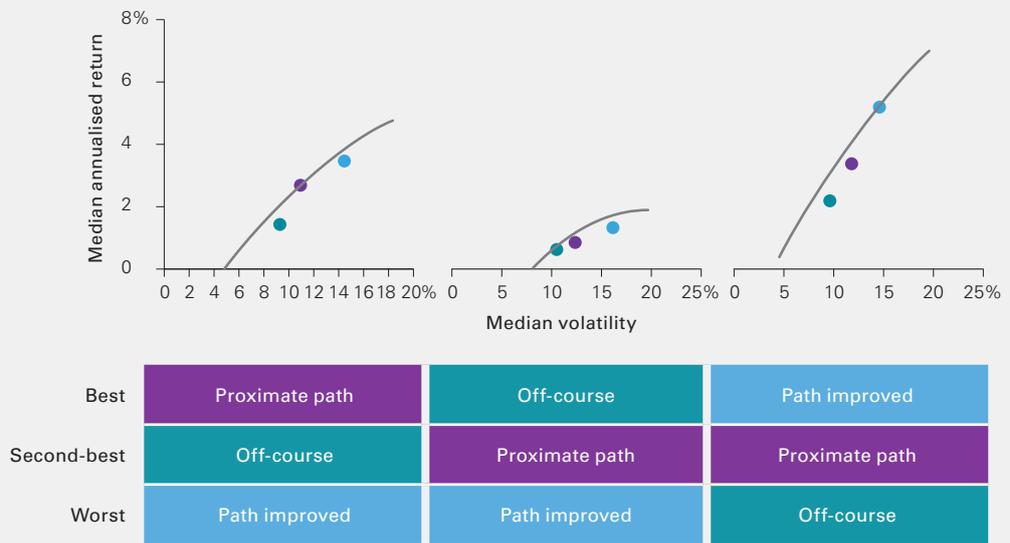
FIGURE II-7

### Cyclical surprises and asset allocation tradeoffs

a. Optimal portfolios vary for different economic environments.



b. The proximate path portfolio is not always the best, but it's never the worst. Ranking is based on risk-adjusted returns.



Notes: Performance is relative to the efficient frontier. Portfolios are selected from an efficient 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 at 30 September 2020. Scenarios are based on sorting the VCMM simulations based on the rates, growth, volatility and inflation. The three scenarios are a subset of the 10,000 VCMM simulations. See the Appendix section titled "Index simulations" for further details on asset classes shown here.

Sources: Vanguard.

**IMPORTANT: The projections and other information generated by the Vanguard Capital Markets Model regarding the likelihood of various investment outcomes are hypothetical in nature, do not reflect actual investment results, and are not guarantees of future results.**

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## III. Appendix

### About the Vanguard Capital Markets Model

*IMPORTANT: The projections and other information generated by the Vanguard Capital Markets Model 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 important, 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 Vanguard Capital Markets Model 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 modelled 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.

## Indexes for VCMM simulations

The long-term returns of our hypothetical portfolios are based on data for the appropriate market indexes to 30 September 2020. 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:

- **Inflation:** German consumer price index: 2010=100, Code: CDASA. Source: Federal Statistical Office.
- **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:** 15% euro-area equity and 85% 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.
- **German inflation:** German consumer price index: 2010=100. Code: CDASA. Source: Federal Statistical Office.
- **Commodity futures:** Bloomberg Commodity Index in EUR.
- **German cash:** German 3 month sovereign yield.

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**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 important, the VCMM may be underestimating extreme negative scenarios unobserved in the historical period on which the model estimation is based.**

The Vanguard Capital Markets Model® is a proprietary financial simulation tool developed and maintained by Vanguard's primary investment research and advice teams. 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 Vanguard Capital Markets Model 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 from as early as 1960. 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.



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The value of investments, and the income from them, may fall or rise and investors may get back less than they invested.

Past performance is not a reliable indicator of future results.

Simulated past performance is not a reliable indicator of future results.

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

Performance may be calculated in a currency that differs from the base currency of the fund. As a result, returns may decrease or increase due to currency fluctuations.

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