Vanguard economic and market outlook:
Mid-year 2022 update

The inflation fight steps forward

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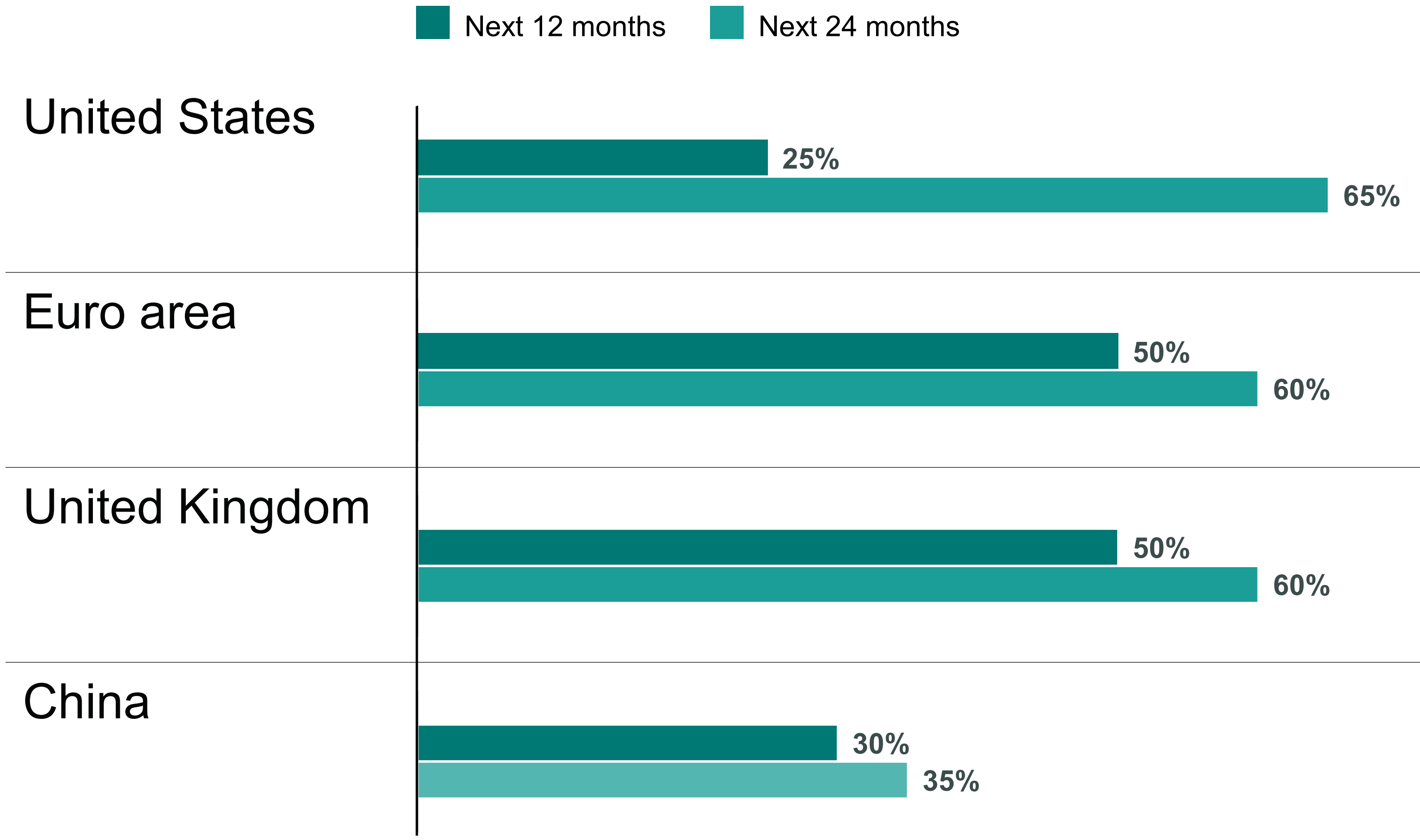
Probability of recession for select regions



DRIVERS / KEY RISKS

United States
- Federal Reserve tightening path
- Inflation eroding consumer purchasing power

Euro area
- Ukraine war impact
- European Central Bank tightening path
- Tighter global financial conditions

United Kingdom
- Bank of England tightening path
- Squeeze on real incomes

China
- Further Covid-19 outbreaks resulting in renewed lockdowns

Source: Vanguard, as at 7 July 2022.

Vanguard’s forecasts for year-end 2022

	Economic growth	Headline inflation	Monetary policy	Unemployment rate
United States	c.1.5%	7%–7.5%	3.25%–3.75%	3%–3.5%
Euro area	2%–3%	c.8%–8.5%	0.5%–0.75%	c.7%
United Kingdom	3.5%–4%	c.10%	2.25%–2.5%	c.4%
China	c.3%	<2.5%	2.75%	c.5.5%

Notes: Figures related to economic growth, inflation, monetary policy and unemployment rate are Vanguard forecasts for the end of 2022. Growth and inflation are comparisons with year-end 2021; monetary policy and unemployment rate are absolute levels.

Source: Vanguard, as at 7 July 2022.

United States

c.1.5%

Economic growth

We have downgraded our forecast by 2 percentage points since the start of the year because of factors that we expect will continue throughout 2022—namely, tightening financial conditions, wages not keeping up with inflation and the lack of demand for US exports. The probability of a recession is 25% over the next 12 months and 65% over 24 months.

7% to 7.5%

Headline inflation

Surging energy and food prices keep our projections for headline CPI around 7% to 7.5% by year-end 2022 before it moderates in 2023. In the current environment, headline inflation will matter more for monetary policy than it typically does.

3.25% to 3.75%

Monetary policy

The Federal Reserve (Fed) turned hawkish in recent weeks, further emphasising inflation as a clear priority over potential implications for economic growth. We expect the target federal funds rate to end the year in a range of 3.25% to 3.75% and expect a terminal rate of at least 4% in 2023—much higher than what we consider to be the neutral rate (2.5%) and what's currently priced into the market.*

3% to 3.5%

Unemployment rate

Labour market trends are likely to keep downward pressure on the unemployment rate to the end of the year, though increases in 2023 are likely as the impacts of Fed policy and slowing demand take hold.

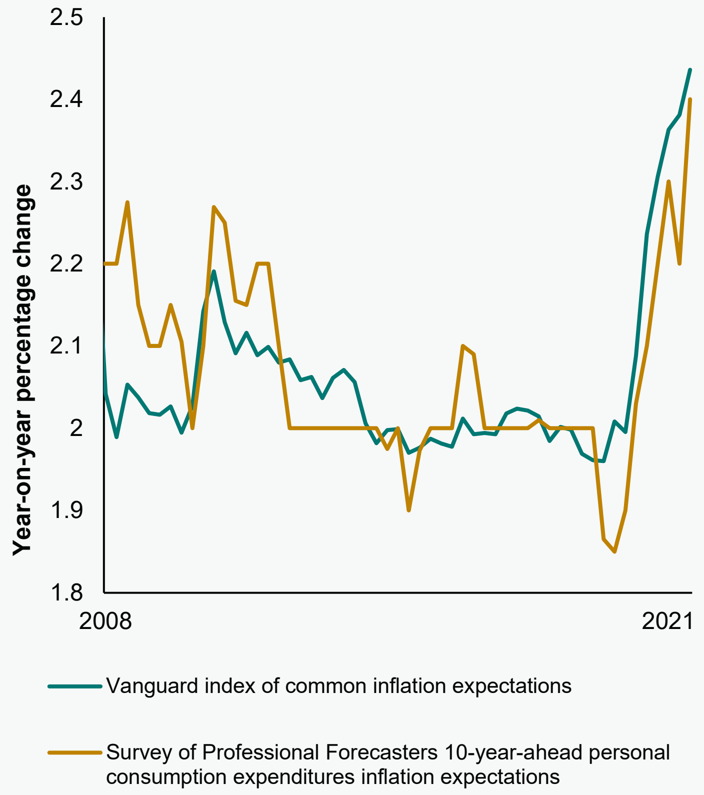
* The neutral rate is the theoretical interest rate at which monetary policy neither stimulates nor restricts an economy.

Notes: Figures related to economic growth, inflation, monetary policy and unemployment rate are Vanguard forecasts for the end of 2022. Growth and inflation are comparisons with year-end 2021; monetary policy and unemployment rate are absolute levels.

WHAT TO WATCH

Rising inflation expectations

In raising its policy interest rate target by 75 basis points on 15 June, a greater increase than it had signalled at its previous meeting, the Fed cited worrisome signs that longer-term inflation expectations were rising. Vanguard's index of common inflation expectations, calculated across a range of survey measures, has moved higher than traditional longer-term measures over the last two years.



Sources: Vanguard model estimates and Federal Reserve Bank of Philadelphia data, as at 29 June 2022.

Euro area

2% to 3%

Economic growth

We've twice downgraded our outlook this year because of higher energy prices—once before and once after Russia's invasion of Ukraine. Risks are growing, though recession in the next 12 months isn't a foregone conclusion. But a complete cut-off from Russian natural gas would almost certainly lead to rationing and recession.

c.8% to 8.5%

Headline inflation

We expect headline inflation to peak close to 10% in the third quarter, higher than current record levels. But by the end of 2023, we foresee inflation falling back towards the ECB's 2% target. For now, European consumers grapple with rapid price rises that extend to an array of goods and services.

0.5% to 0.75%

Monetary policy

The European Central Bank (ECB) has signalled a July interest rate hike. We expect the deposit rate to move into positive territory in the third quarter for the first time since 2012. The ECB has turned hawkish recently given broadening inflation pressures. "Fragmentation risk"[1] complicates matters.

c.7%

Unemployment rate

We foresee the labour market remaining historically strong with a comparatively low unemployment rate by year-end. Wage pressures continue to build as job vacancy rates have risen to new records.

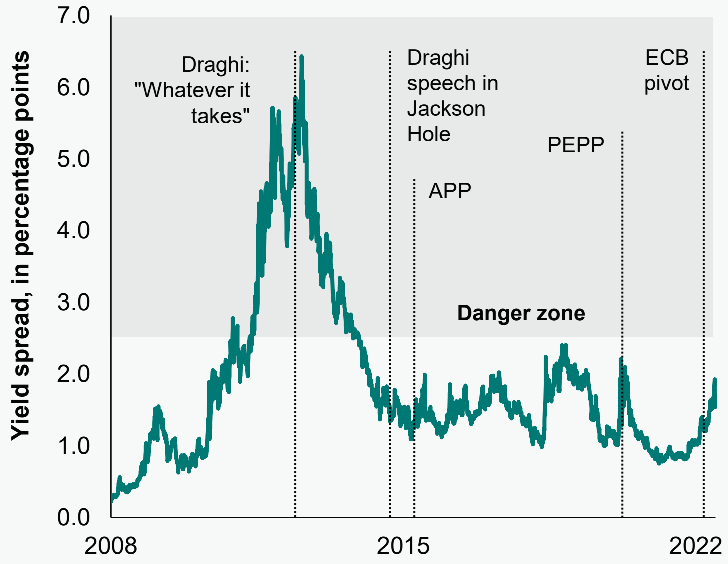
[1] Fragmentation risk is a widening of sovereign debt spreads in some countries because of non-fundamental factors.

Notes: Figures related to economic growth, inflation, monetary policy and unemployment rate are Vanguard forecasts for the end of 2022. Growth and inflation are comparisons with year-end 2021; monetary policy and unemployment rate are absolute levels.

WHAT TO WATCH

Many nations, one policy rate

The ECB has accelerated the development of a tool to fight "fragmentation risk", a widening of sovereign debt spreads because of non-fundamental factors. The tool's creation supports our base case that the ECB will be able to raise interest rates more aggressively while avoiding a scenario of sovereign stress.



Notes: Yield spread represents the interest rate premium to 10-year German bunds of a market-capitalisation-weighted composite of 10-year yields in Spain, Italy, Greece, Portugal and Ireland. Key events affecting spreads include then-ECB President Mario Draghi's July 2012 pledge to do "whatever it takes" to preserve the euro; Draghi's August 2014 Jackson Hole, Wyo., speech heralding monetary stimulus; the January 2015 introduction of the non-standard Asset Purchase Programme (APP) monetary policy vehicle; the March 2020 introduction of the non-standard Pandemic Emergency Purchase Programme (PEPP) monetary policy vehicle; and a June 2022 ECB news conference heralding aggressive monetary policy tightening. Spreads above 2.5% are typically said to have entered a "danger zone" likely to spur policy action.

Sources: Vanguard calculations, based on data from Bloomberg to 20 June 2022.

United Kingdom

3.5% to 4%

Economic growth

Our 2022 growth forecast is down sharply from 5.5% at the start of the year. Higher commodities prices, tighter financial conditions and diminished consumer and business confidence mean that risks are pointedly to the downside. Fiscal policy measures and anticipated wage increases are unlikely to prevent a drop in real incomes.

c.10%

Headline inflation

Energy prices are likely to drive year-on-year inflation briefly past 10% in the fourth quarter as a higher price cap lets suppliers charge more. We foresee year-end headline inflation about three times what we had expected at the start of the year, before the war in Ukraine sent energy and commodities prices soaring.

2.25% to 2.5%

Monetary policy

We believe the Bank of England (BoE) will raise the bank rate by an additional 1.25 percentage points, towards our estimate of a 2.5% neutral rate, over the next 12 months*. The bank has signalled rate hikes potentially larger than 25 basis points depending on the economic and inflationary outlook.

c.4%

Unemployment rate

Unemployment near a 50-year low amid record job vacancies suggests that the labour market will remain strong for the rest of the year even as the economy slows. The push-pull of wage growth, inflation and economic activity will be important as the BoE considers appropriate monetary policy levels.

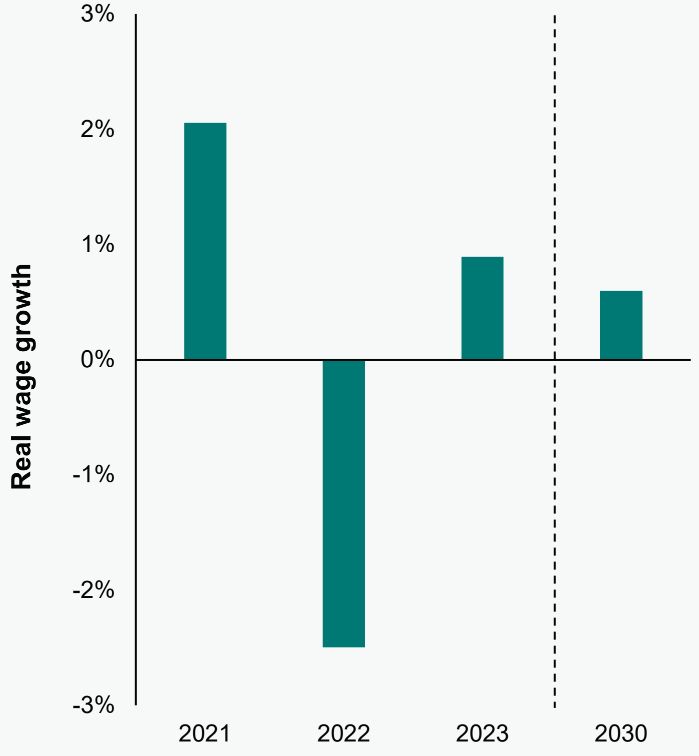
*The neutral rate is the theoretical interest rate at which monetary policy neither stimulates nor restricts an economy.

Notes: Figures related to economic growth, inflation, monetary policy and unemployment rate are Vanguard forecasts for the end of 2022. Growth and inflation are comparisons with year-end 2021; monetary policy and unemployment rate are absolute levels.

WHAT TO WATCH

Real incomes under pressure

A sharp decline in real (after-inflation) earnings in 2022 is likely to weigh on economic growth. We foresee the trend moderating alongside headline inflation in 2023 as it returns to equilibrium over the longer term.



Notes: Real wage growth is calculated as the year-on-year percentage change in average nominal weekly earnings minus the year-on-year percentage change in the headline inflation rate. The figure for 2022 reflects actual data and forecasts using proprietary indicators. The figures for 2023 and 2030 are Vanguard forecasts.

Sources: Vanguard calculations, based on data from Bloomberg and Macrobond, as at 27 June 2022.

China

c.3%

Economic growth

We foresee China's 2022 growth falling short of our 5% forecast at the start of the year as three priorities clash. A commitment to financial stability and a zero-Covid policy leave policymakers' target for growth "around 5.5%" vulnerable amid a weak domestic labour market and slowing global growth.

<2.5%

Headline inflation

Inflation has increased towards the middle of the year but remains unlikely to reach policymakers' 3% target. Spillover from building global inflation pressures is likely to be offset by the weakening domestic growth picture. Producer price inflation remains elevated but in recent years has had little pass-through to consumer prices.

2.75%

Monetary policy

We expect only one further 10-basis-point cut in the one-year medium-term lending facility rate, in line with consensus. We expect intensified policy efforts this year to focus on fiscal policy. Monetary policy is constrained by external and domestic forces: global central banks' tightening paths and a desire not to overstimulate China's property sector.

c.5.5%

Unemployment rate

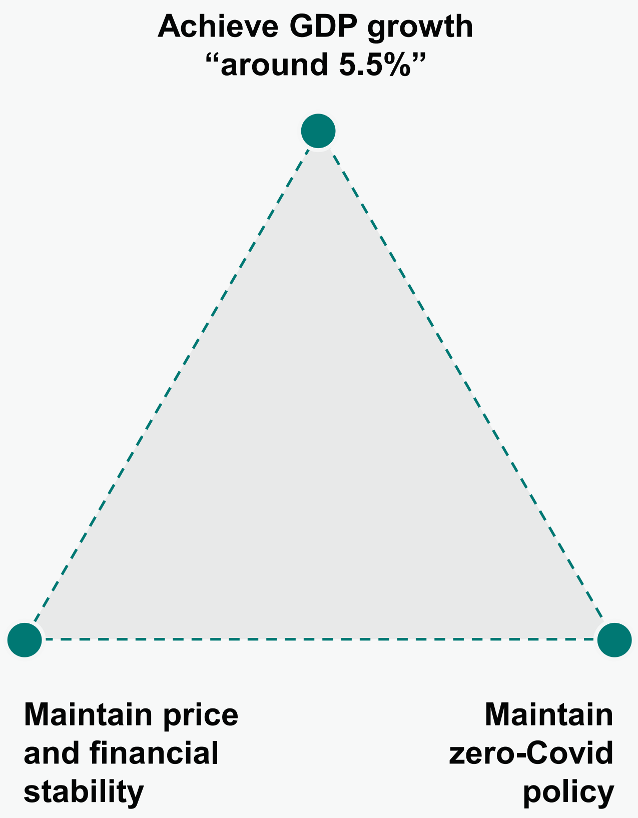
Our year-end forecast for the unemployment rate is higher than consensus and 100 basis points above the level that would be expected to promote inflation. China's below-trend growth translates to slack in the labour market, with recent university graduates faring worst.

Notes: Figures related to economic growth, inflation, monetary policy and unemployment rate are Vanguard forecasts for the end of 2022. Growth and inflation are comparisons with year-end 2021; monetary policy and unemployment rate are absolute levels.

WHAT TO WATCH

China's "policy trilemma"

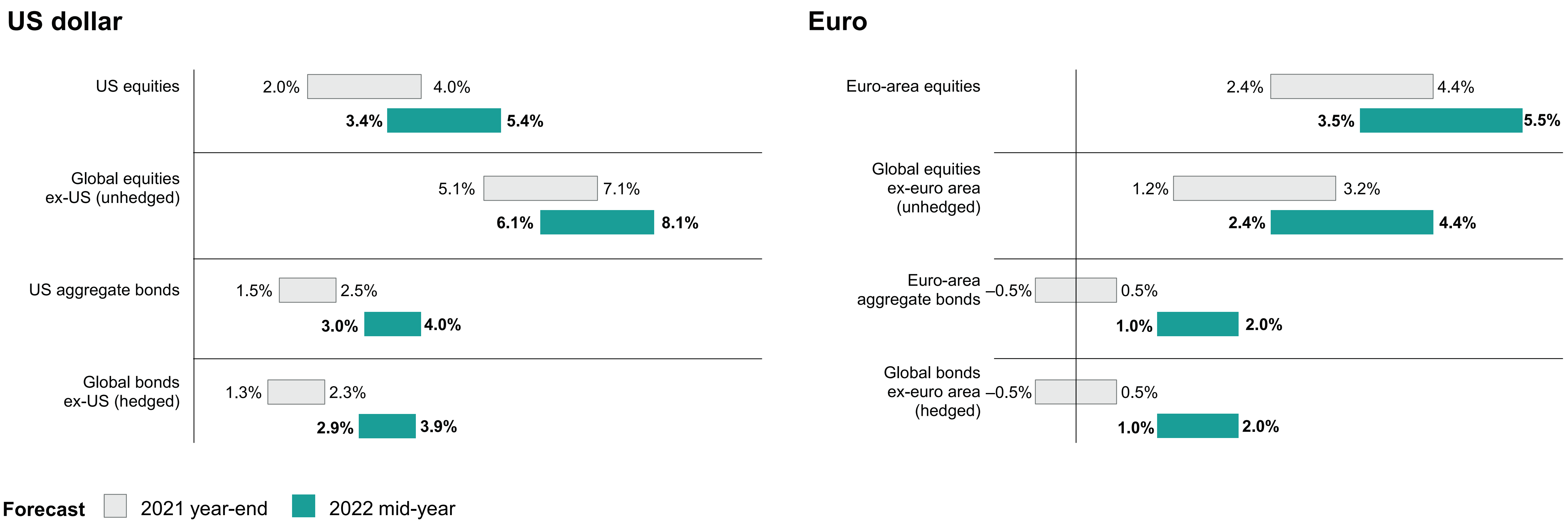
China isn't in a position to achieve all three of its 2022 goals. We believe that policymakers will remain committed to a zero-Covid policy and maintaining price and financial stability, leaving the growth target vulnerable.



Source: Vanguard as at 20 June 2022.

Global equity and fixed income outlook

Falling equity valuations and rising interest rates have largely increased our 10-year annualised developed market return forecasts in the first five months of 2022 by about 1 percentage point for stocks and 1.5 percentage points for bonds. Forecasts are from the perspective of local investors in local currencies.



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

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. Distribution of return outcomes from the VCMM are derived from 10,000 simulations for each modeled asset class. Simulations are as at 31 December 2021 and 31 May 2022. Results from the model may vary with each use and over time. Returns with income reinvested (total return indices used). For more information on indices used in this chart, please see page 12 for the indices used in simulations.

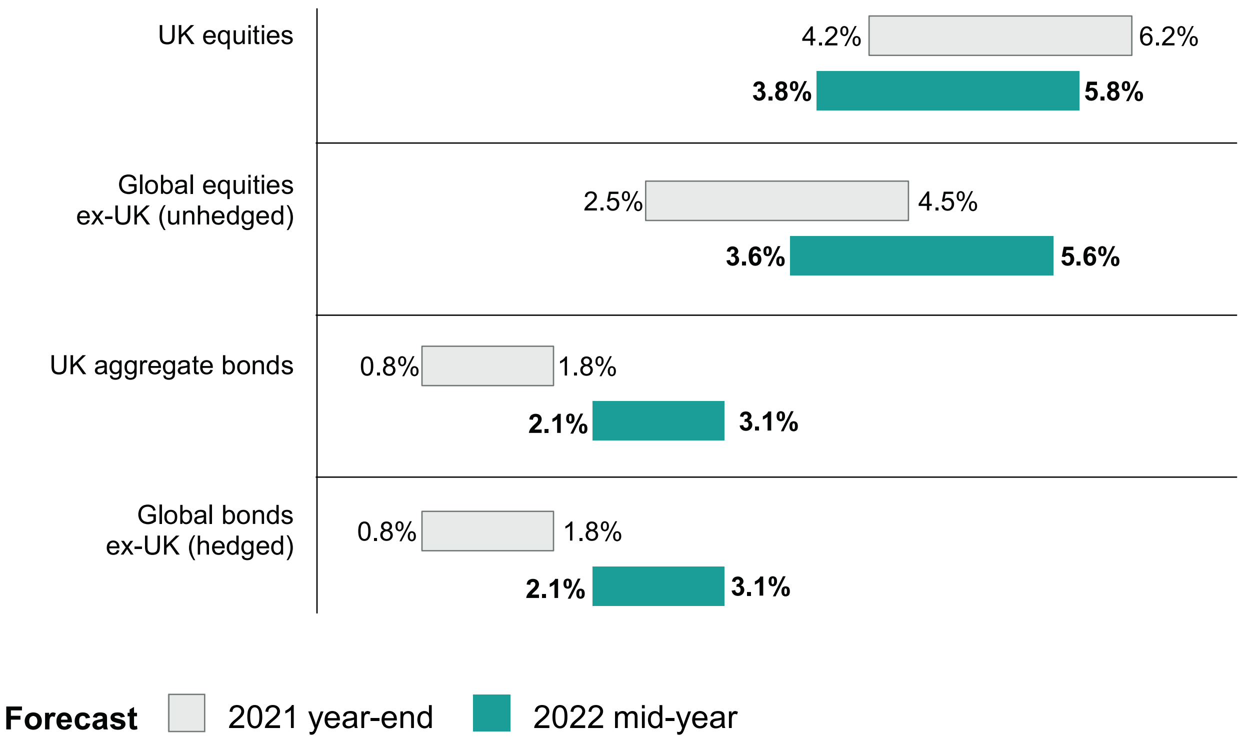
Note: Figures are based on a 1-point range around the 50th percentile of the distribution of return outcomes for equities and a 0.5-point range around the 50th percentile for fixed income.

Source: Vanguard as at 31 May 2022.

Global equity and fixed income outlook

Falling equity valuations and rising interest rates have largely increased our 10-year annualised developed market return forecasts in the first five months of 2022 by about 1 percentage point for stocks and 1.5 percentage points for bonds, although they are slightly lower for the domestic UK market where projections were already more elevated. Forecasts are from the perspective of local investors in local currencies.

British pound



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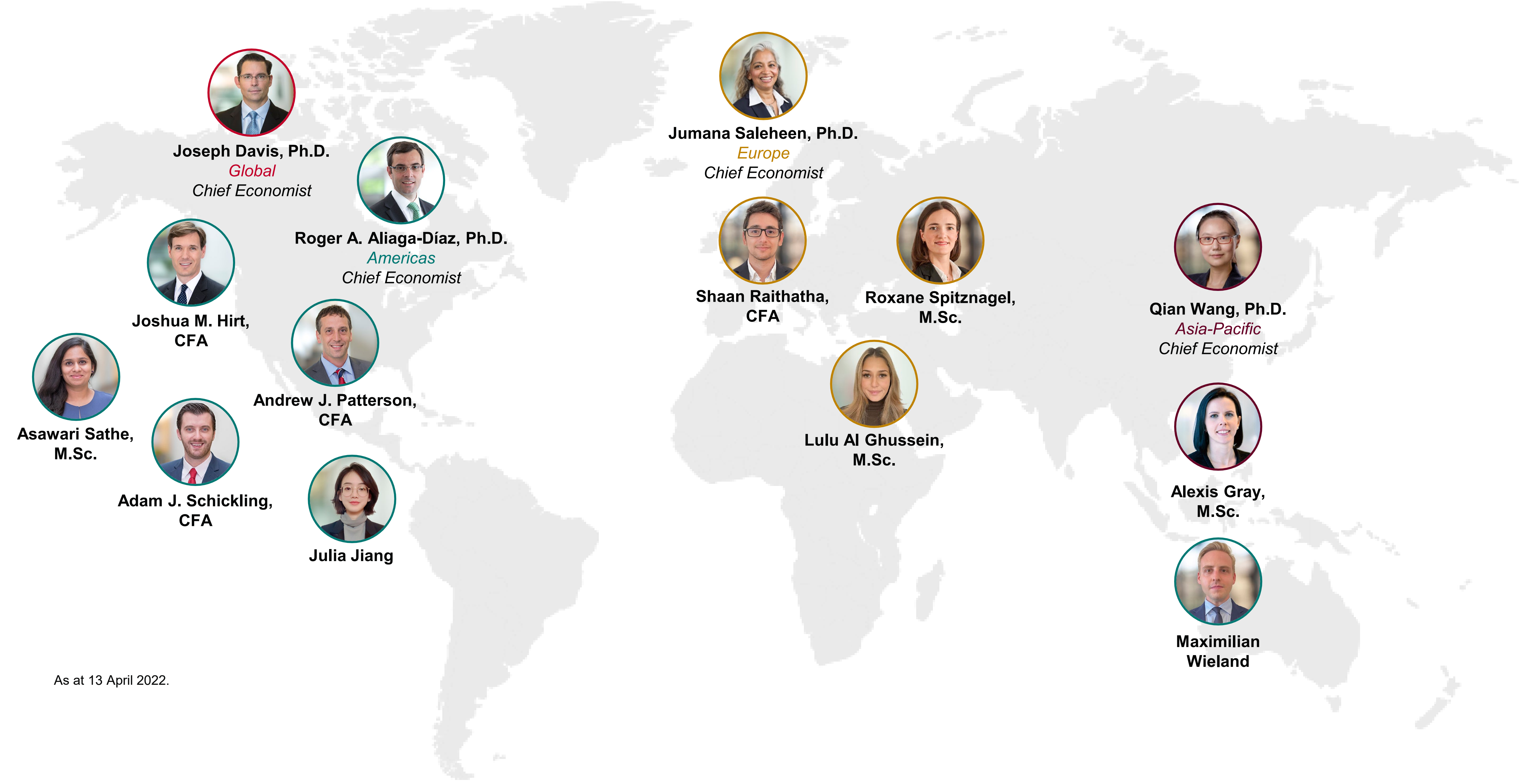
Source: Vanguard as at 31 May 2022.

Vanguard Investment Strategy Group's Global Economics Team



As at 13 April 2022.

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As at 13 April 2022.

Important information

Indices used in Vanguard Capital Markets Model simulations

The long-term returns of our hypothetical portfolios are based on data for the appropriate market indices as at 31 December 2021 and 31 May 2022. 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 indices are as follows:

US equities: MSCI US Broad Market Index.
Global ex-US equities: MSCI All Country World ex USA Index.
US aggregate bonds: Bloomberg U.S. Aggregate Bond Index.
Global ex-US bonds: Bloomberg Global Aggregate ex-USD Index.

UK equities: Bloomberg Equity Gilt Study from 1900 to 1964; Thomson Reuters Datastream UK Market Index 1965 to 1969; MSCI UK thereafter.
Global ex-UK equities: Standard & Poor's 90 Index from January 1926 to 3 March 1957; S&P 500 Index from 4 March 1957 to 1969; MSCI World ex UK from 1970 to 1987; MSCI AC World ex UK from 1988 onward.
UK aggregate bonds: Bloomberg Sterling Aggregate Bond Index.
Global ex-UK bonds: Standard & Poor's High Grade Corporate Index from 1926 to 1968; Citigroup High Grade Index from 1969 to 1972; Lehman Brothers US Long Credit AA Index from 1973 to 1975; Bloomberg US Aggregate Bond Index from 1976 to 1990; Bloomberg Global Aggregate Index from 1990 to 2001; Bloomberg Global Aggregate ex GBP Index from 2001 onward.

Euro-area equities: MSCI European Economic and Monetary Union (EMU) Index.
Global ex-euro area equities: MSCI AC World ex EMU Index.
Euro-area aggregate bonds: Bloomberg Euro-Aggregate Bond Index.
Global ex-euro area bonds: Bloomberg Global Aggregate ex Euro Index.

Important information

Vanguard®

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 Vanguard Capital Markets Model® 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 U.S. and international equity markets, several maturities of the U.S. Treasury and corporate fixed income markets, international fixed income markets, U.S. 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 analyzing 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.

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

Investment risk information

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.

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