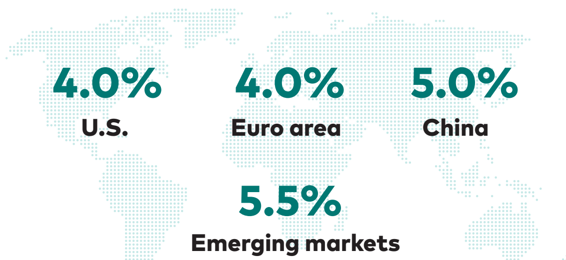
2022 outlook at a glance

Although health outcomes will remain important in 2022 given the emergence of the Omicron variant, the outlook for macroeconomic policy will be more crucial as support and stimulus packages enacted to combat the pandemic-driven downturn are gradually removed.

We expect the low-hanging fruit of rebounding activity to give way to slower growth whether supply-chain challenges ease or not (see figure).

Estimated global growth in 2022



Source: Vanguard calculations, as of September 30, 2021.

Asset-class return outlooks

Our ten-year annualized nominal return projections, as of September 30, 2021, are shown below. Please note that the figures are based on a 1.0-point range around the rounded 50th percentile of the distribution of return outcomes for equities and a 0.5-point range around the rounded 50th percentile for fixed income.

U.S. equities

2.3%–4.3%

16.7% median volatility

U.S. aggregate bonds

1.4%–2.4%

4.6% median volatility

Global equities ex-U.S. (unhedged)

5.2%–7.2%

18.4% median volatility

Global bonds ex-U.S. (hedged)

1.3%–2.3%

3.8% median volatility

These probabilistic return assumptions depend on current market conditions and, as such, may change over time.

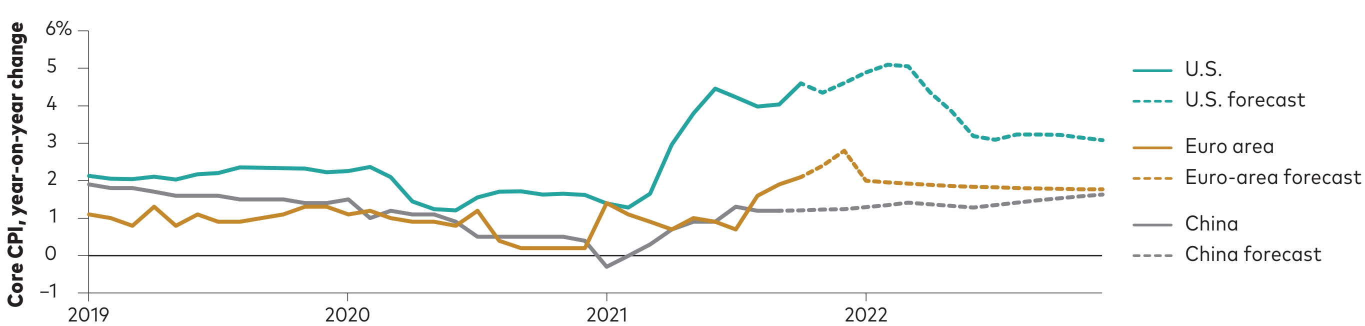
IMPORTANT: The projections or other information generated by the Vanguard Capital Markets Model® regarding the likelihood of various investment outcomes are hypothetical in nature, do not reflect actual investment results, and are not guarantees of future results. Distribution of return outcomes from the VCMM are derived from 10,000 simulations for each modeled asset class. Simulations are as of September 30, 2021. Results from the model may vary with each use and over time. For more information, see page 6.

Source: Vanguard Investment Strategy Group.

Global inflation: Lower but stickier

Inflation has remained high across most economies, driven both by a higher demand as pandemic restrictions were lifted and by lower supply resulting from global labor and input shortages.

How long will high inflation last?



Note: Data and Vanguard forecasts are for year-on-year percentage changes in the core Consumer Price Index, which excludes volatile food and energy prices. Actual inflation is through September 2021 for the U.S. and China and through October 2021 for the euro area. Vanguard forecasts are presented thereafter.

Sources: Vanguard calculations, using data from Bloomberg and Refinitive.

Stocks: Valuations and projected returns

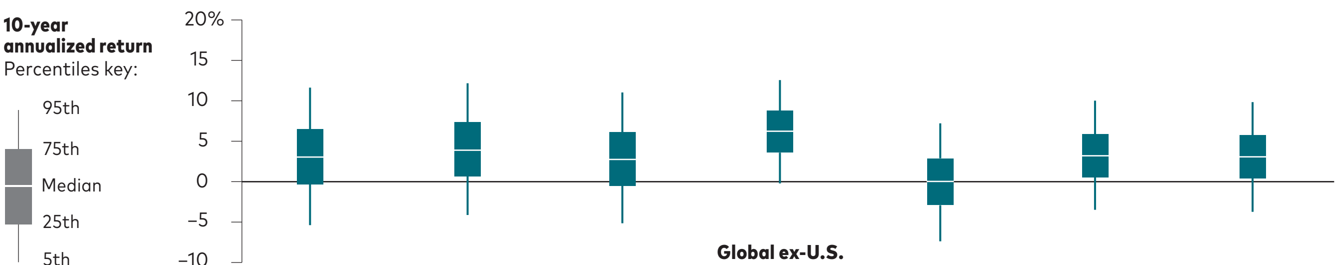
With valuations that have exceeded pre-pandemic highs, elevated inflation and the prospect of policy normalization are creating a fragile backdrop for markets.

U.S. equities have not been this overvalued since the dot-com bubble. Despite the global divergence in health and economic outcomes, we believe that there is a high probability that international equities will outperform U.S. equities in the coming decades, but note that the broad emerging-market valuation appears stretched.

We expect value stocks to outperform by as much as the historical equity risk premium over the next decade, mostly because of a decay in the overvaluation of growth stocks, not because the "fair value of value" has returned to historical norms.

Low expected returns for global equities, but opportunities exist

U.S. equity market 10-year outlook: Setting reasonable expectations



	U.S. small-cap	U.S. value	U.S. REITs	Global ex-U.S. equities (unhedged)	U.S. growth	U.S. equity	U.S. large-cap
Median return	**3.2%**	**4.1%**	**2.9%**	**6.2%**	**0.1%**	**3.3%**	**3.2%**
Median volatility	22.5%	19.2%	19.1%	18.4%	17.5%	16.7%	16.3%

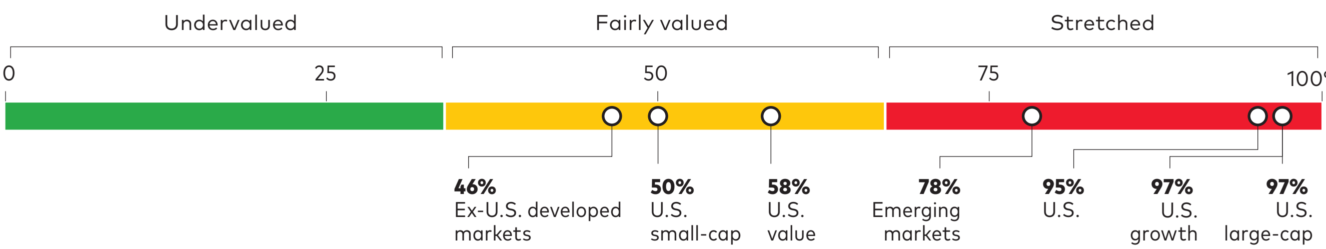
Notes: The forecast corresponds to the distribution of 10,000 VCMM simulations for 10-year annualized nominal returns in USD for asset classes highlighted here. Median volatility is the 50th percentile of an asset class's distribution of annualized standard deviation of returns. Asset class returns do not take into account management fees and expenses, nor do they reflect the effect of taxes. Returns do reflect reinvestment of dividends and capital gains. Indexes are unmanaged; therefore, direct investment is not possible.

Source: Vanguard calculations, as of September 30, 2021.

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.

Valuations drifting higher

Global equity markets valuation percentile relative to fair value



Notes: Developed-market equity valuation measures are the current CAPE percentile relative to the fair-value CAPE for the local MSCI index. The U.S. valuation measure is the current CAPE percentile relative to fair-value CAPE for the S&P 500 Index from January 1940 to September 2021. The ex-U.S. developed markets valuation measure is the weighted average of each region's (Australia, U.K., euro area, Japan, and Canada) valuation percentile. The emerging markets, U.S. value, and U.S. small-cap relative valuations are based on the estimated relative percentile rank to fair value. The U.S. growth and large-cap valuations are composite valuation measures of the style factor to U.S. relative valuations and the current U.S. CAPE percentile relative to its fair-value CAPE. The relative valuation is the current ratio of the style factor to U.S. price/book metrics relative to its historical average from January 1979 through September 2021. The estimates cover the period beginning from January 1940 for the U.S., January 1970 for Australia and the U.K., January 1980 for other developed markets, and September 1998 for emerging markets, and ended September 30, 2021.

Sources: Vanguard calculations, based on Robert Shiller's website, at aida.wss.yale.edu/~shiller/data.htm, the U.S. Bureau of Labor Statistics, the Federal Reserve Board, and Refinitiv, as of September 30, 2021.

Bonds: Valuations and projected returns

Broad U.S. investment-grade bonds should outperform U.S. Treasury bonds by 50 basis points on an annualized basis.

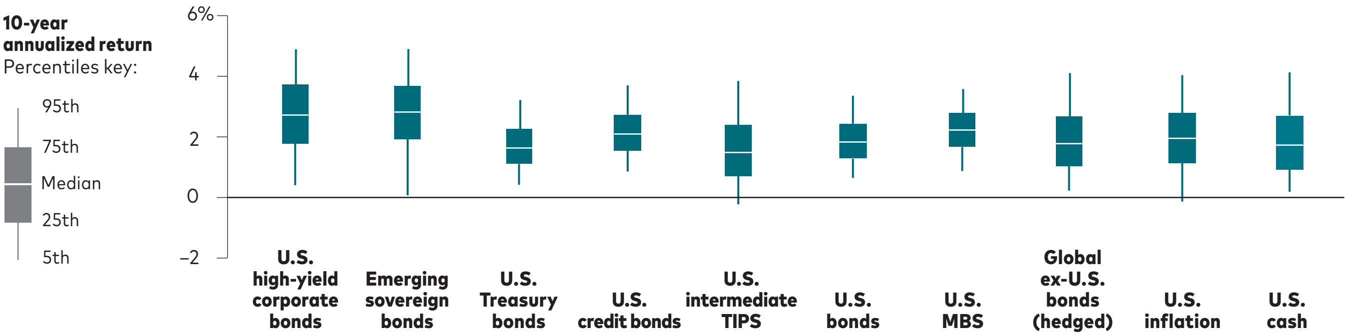
Within the U.S. aggregate bond market, investors are still expected to be compensated for assuming credit risk.

Expected returns for non-U.S. bonds are marginally lower than for those of U.S. bonds.

Treasury Inflation-Protected Securities (TIPS) appear less attractive amid moderated inflation expectations but could be a valuable inflation hedge.

High-yield funds are expected to return only one percentage point over Treasuries, but with volatility that is more than two times higher. Mortgage-backed securities are projected to deliver a higher yield than Treasuries as compensation for bearing interest-rate volatility risk.

Valuation expansion has chipped away at investors' sources of extra yield



	U.S. high-yield corporate bonds	Emerging sovereign bonds	U.S. Treasury bonds	U.S. credit bonds	U.S. intermediate TIPS	U.S. bonds	U.S. MBS	Global ex-U.S. bonds (hedged)	U.S. inflation	U.S. cash
Median return	**2.7%**	**2.8%**	**1.7%**	**2.1%**	**1.5%**	**1.9%**	**2.2%**	**1.8%**	**2.0%**	**1.7%**
Median volatility	10.4%	10.1%	4.7%	4.7%	4.6%	4.6%	4.1%	3.8%	2.3%	1.2%

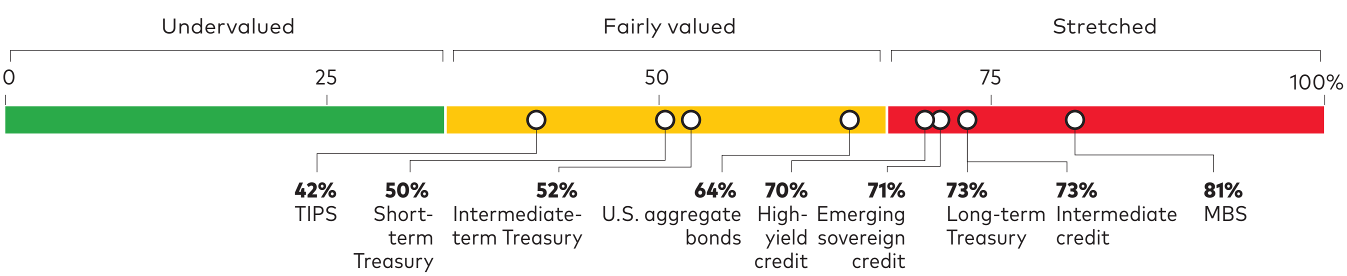
Notes: The forecast corresponds to the distribution of 10,000 VCMM simulations for 10-year annualized nominal returns in USD for asset classes highlighted here. Median volatility is the 50th percentile of an asset class's distribution of annualized standard deviation of returns. Asset class returns do not take into account management fees and expenses, nor do they reflect the effect of taxes. Returns do reflect reinvestment of dividends and capital gains. Indexes are unmanaged; therefore, direct investment is not possible. U.S. inflation is the 10-year average of year-over-year U.S. headline CPI.

Source: Vanguard calculations, as of September 30, 2021.

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.

Aggregate fixed income appears to be fairly valued, but pockets are stretched

Bond markets valuation percentile relative to fair value



Notes: Valuation percentiles are relative to Year-30 projections from the VCMM. Credit (emerging sovereign, high yield, and intermediate) and MBS valuations are based on current spreads relative to Year 30. Treasury valuation is the key rate duration weighted average of the fundamental fair value model outlined. U.S. aggregate bonds are the weighted average between intermediate-term credit and Treasury valuation percentiles. TIPS valuation is the 10-year-ahead annualized inflation expectation relative to Years 21–30.

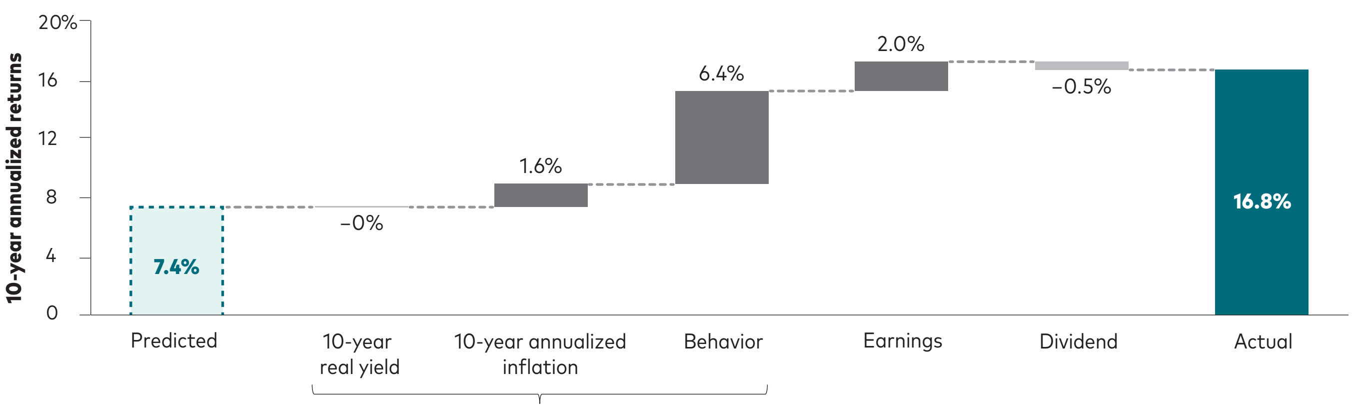
Sources: Vanguard calculations, as of September 30, 2021.

About our forecast: A probabilistic framework

To treat the future with the deference it deserves, Vanguard has long believed that market forecasts are best viewed in a probabilistic framework. Our 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.

In the U.S., valuation changes and, to a lesser extent, earnings growth pushed realized returns 9.4 percentage points higher than our expectations on an annualized basis during the last decade. Low interest rates and inflation, along with higher-than-expected earnings, justify some, but not all, of the error in our forecast (see figure).

Investor psychology and higher earnings explain most of the error in our forecast



	Valuation (P/E) change	Earnings growth	Dividend	Total return
2011 forecast	–0.1%	5.0%	2.5%	7.4%
Actual 2011–2021	7.9%	7.0%	2.0%	16.8%

Notes: The chart decomposes the difference between our 2011 forecast for U.S. equities as of September 30, 2011, and actual returns over the subsequent 10-year period. Returns are based on the MSCI US Broad Market Index. Changes in valuations are broken down into the 10-year real yield and 10-year annualized inflation based on our proprietary fair-value cyclically adjusted price/earnings (CAPE) model. "Behavior" is the estimated level of overvaluation, which is described as the difference between actual CAPE and our median estimate of fair value as of September 30, 2021. We classify this deviation as "behavioral" because it is unexplained by the long-term, fundamental drivers of valuations based on our research. The numbers in the table may not sum perfectly because of rounding.

Source: Vanguard calculations, as of September 30, 2021.

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.

Past performance is no guarantee of future returns. The performance of an index is not an exact representation of any particular investment, as you cannot invest directly in an index.

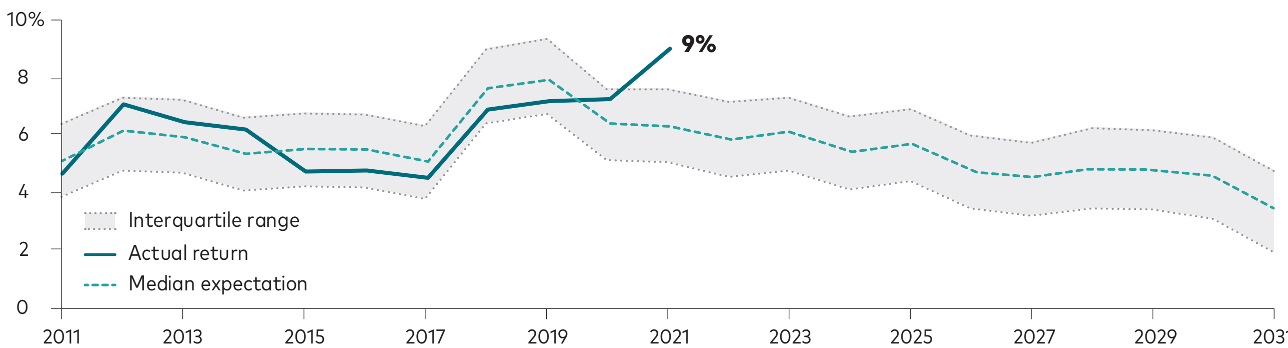
About our forecast: Confidence in a low-return outlook

In order for the gap that defined the last decade to persist into the next, one would have to believe that economic growth will not be broad-based, that interest rates will decline further, that inflation pressures will completely subside, and that risk-seeking behavior will continue to push valuations away from fair value. These assumptions are inconsistent with our economic analysis and the market-based expectations that serve as inputs to our Vanguard Capital Markets Model (VCMM).

Although our economic outlook calls for modestly higher inflation and a normalization in interest rates over the next decade, it will not be enough to raise our returns forecast to historical averages. Achieving such returns will require a shift in the underlying secular forces that have kept rates low across developed economies since the late 2000s. For this reason, our confidence in our low-return outlook has only grown stronger (see figure).

Returns on a 60/40 balanced portfolio are expected to be roughly half of what investors realized over the last decade

10-year annualized returns



Notes: The chart shows the actual 10-year annualized return of a 60/40 stock/bond portfolio compared with the VCMM forecast for the same portfolio made 10 years earlier. For example, the 2011 data point at the beginning of the chart shows the actual return for the 10-year period 2001–2011 (solid line) compared with the 10-year return forecast made in 2001 (dotted line). After 2021 the dotted line is extended to show how our forecasts made between 2012 and 2021 (ending between 2022 and 2031) are evolving. The interquartile range represents the area between the 25th and 75th percentile of the return distribution. The portfolio is 36% U.S. stocks, 24% international stocks, 28% U.S. bonds, and 12% international bonds.

Source: Vanguard calculations, as of September 30, 2021.

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.

Past performance is no guarantee of future returns. The performance of an index is not an exact representation of any particular investment, as you cannot invest directly in an index.

Connect with Vanguard® • advisors.vanguard.com • 800-997-2798

All investing is subject to risk, including the possible loss of the money you invest. Be aware that fluctuations in the financial markets and other factors may cause declines in the value of your account. There is no guarantee that any particular asset allocation or mix of funds will meet your investment objectives or provide you with a given level of income.

Diversification does not ensure a profit or protect against a loss.

Investments in stocks or bonds issued by non-U.S. companies are subject to risks including country/regional risk and currency risk. These risks are especially high in emerging markets.

Bond funds are subject to the risk that an issuer will fail to make payments on time, and that bond prices will decline because of rising interest rates or negative perceptions of an issuer's ability to make payments.

U.S. government backing of Treasury or agency securities applies only to the underlying securities and does not prevent share-price fluctuations. Unlike stocks and bonds, U.S. Treasury bills are guaranteed as to the timely payment of principal and interest.

High-yield bonds generally have medium- and lower-range credit-quality ratings and are therefore subject to a higher level of credit risk than bonds with higher credit-quality ratings.

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 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 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 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.

Vanguard®

FASVEMOT 122021

Investment Products: Not a Deposit • Not FDIC Insured • Not Guaranteed by the Bank • May Lose Value • Not Insured by Any Federal Agency