Global macro matters

As the cycle turns: Late-cycle macro risks and asset allocation

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Authors: Qian Wang, Ph.D.; Josh Hirt, CFA; Shaan Raithatha, CFA; and Olga Lepigina

In the annual Vanguard economic and market outlook, we described a moderating global growth environment marked by periodic growth scares across the world's largest economies—rather than an imminent recession—as a central theme as we enter the less stable, later stages of the business cycle. (See *Vanguard Economic and Market Outlook for 2019: Down but Not Out*).

Through the early part of 2019, incoming data have been consistent with this view across the United States, Europe, and China, and the more moderate activity has been a key aspect in the monetary policy pivot from the U.S. Federal Reserve, which is now likely to hold off on rate increases this year.

In this note, we look back over previous, later-stage economic expansions for the impact on asset returns and look forward to three pressing risks currently on the horizon—the uncertainty surrounding the path of monetary policy in the U.S., the instability of the Chinese economy, and the direction of the euro area's growth trajectory—to consider the potential impact on an investor's asset allocation decisions.

Our analysis uncovers three specific takeaways for asset allocation in the environment ahead:

- Previous late-stage expansions have coincided with elevated market and economic volatility, yet have rewarded disciplined investors. Our capital market projections for the environment ahead are more modest than for other similar periods. We project that fixed income assets will benefit from the higher interest rate environment and that inflation pressures will remain modest and thus improve the real return characteristics of portfolios.
- In portfolio simulations under economic conditions consistent with each of the risks we identified, we find that designing a portfolio for a specific economic environment entails important trade-offs. It offers the opportunity to improve portfolio risk and return characteristics, but also exposes investors to suboptimal outcomes if events develop differently than expected. Portfolio volatility can be mitigated by developing a more globally diversified portfolio, which is consistently competitive across multiple scenarios.
- For investors who lack conviction that a particular scenario will take place, the impact on a portfolio of whatever does happen can be minimized by extending the investment horizon. Over longer periods, portfolio fundamentals are more prominent in driving investment returns, and in our simulations we find that the range of portfolio return outcomes diminishes significantly over longer periods of time.

Late-stage expansion and portfolio returns

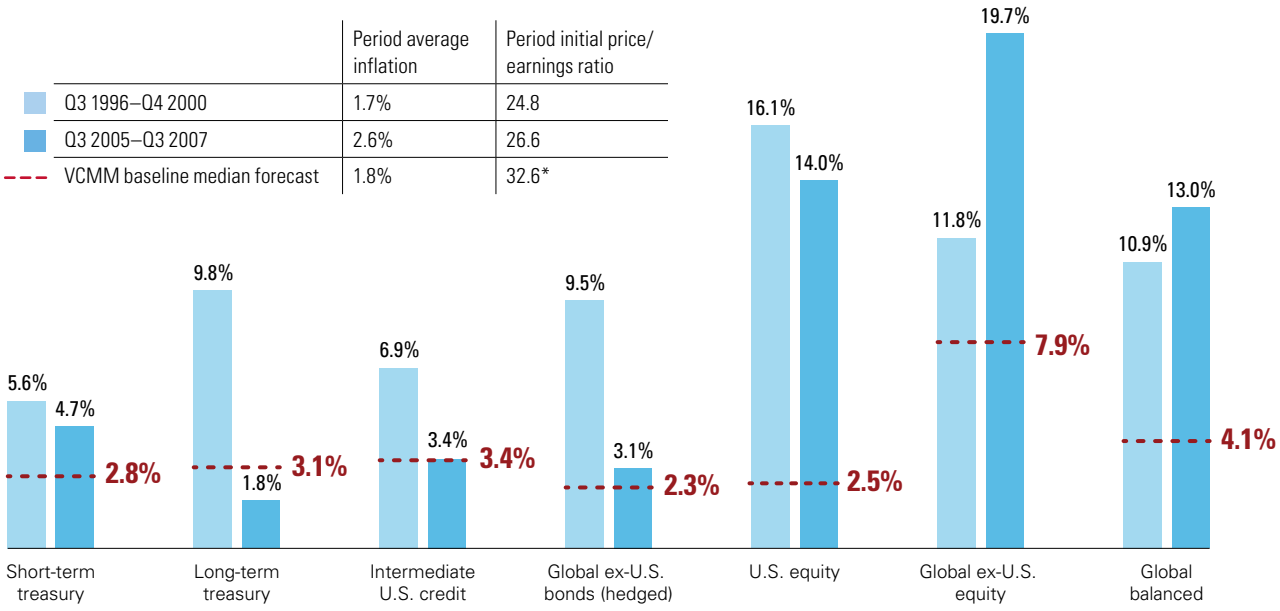
As the world's largest economy, the United States is an important catalyst for the global business cycle, and our assessment of macroeconomic fundamentals continues to suggest that the U.S. economy has only recently begun moving into the later stages of its expansion. Traditionally, this has been a period when an economy begins to exceed full capacity and experiences a slowdown from peak growth, greater uncertainty in policy decisions, and heightened risks of recession.

We continue to view the risks surrounding a global recession in 2019 as modest (see *Known Unknowns: Uncertainty, Volatility, and the Odds of Recession*); however, through the early part of 2019 the world's largest economies have indeed begun to shift toward a less robust pace of growth than they demonstrated over the previous two years. While this slowdown has occurred more quickly than anticipated, we expect the global economy to stabilize in coming quarters.

Later-stage expansion periods have typically been marked by greater market and economic volatility as well as by uncertainty over how long the late-cycle environment would persist.[1] However, asset returns have rewarded investors who stayed invested amid the shifting landscape and periodic skepticism of market participants as a whole. Our capital market projections for the period we're entering now call for returns that are more modest than investors achieved in similar periods, principally within equity assets (**Figure 1**).[2] This is largely because of more extended valuations for stocks. At the same time, we expect subdued inflation to improve the real return characteristics of a portfolio.

Given this backdrop, expected returns for a globally balanced portfolio are in the 3%–5% range for U.S. dollar-based investors. We observe that equities outside the U.S. are projected to have higher returns and that fixed income assets are projected to benefit from marginally higher interest rates, providing diversification in a period when equity markets are expected to experience heightened volatility.

Figure 1. Lower orbit: Forward-looking returns appear more modest than in past late-cycle periods



Notes: * The price/earnings ratio is represented by the cyclically adjusted price/earnings ratio (CAPE). The period initial price/earnings ratio of 32.6 denotes the CAPE level as of September 30, 2018, rather than a VCMM-based forecast. Returns displayed are annualized. The baseline VCMM forecast covers a 36-month horizon. The business cycle is determined by historical observations of the output gap. Inflation is represented by the Personal Consumption Expenditures (PCE) Index. See "Portfolio simulations" on page 7.

Sources: Moody's Analytics Data Buffet, Factset, and Vanguard calculations based on data from Robert Shiller's website (aida.wss.yale.edu/~shiller/data.htm).

1 We estimate a 47% increase in equity market volatility when moving from the middle stage of expansion to the late stage, as measured by the CBOE Market Volatility Index (VIX) since 1990. We estimate that the late cycle in the mid-1990s lasted 54 months and that the late cycle in the mid-2000s lasted 27 months. Going back to 1955, we estimate a median late-cycle stage of 24 months, with a minimum of 15 months (late 1950s) and a maximum of 75 months (1960s).

2 Projections are from the Vanguard Capital Markets Model.

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 VCMM are derived from 10,000 simulations for each modeled asset class. Simulations as of December 31, 2018. Results from the model may vary with each use and over time. For more information, please see page 7.

Investor asset allocation decisions for the economic risk outlook

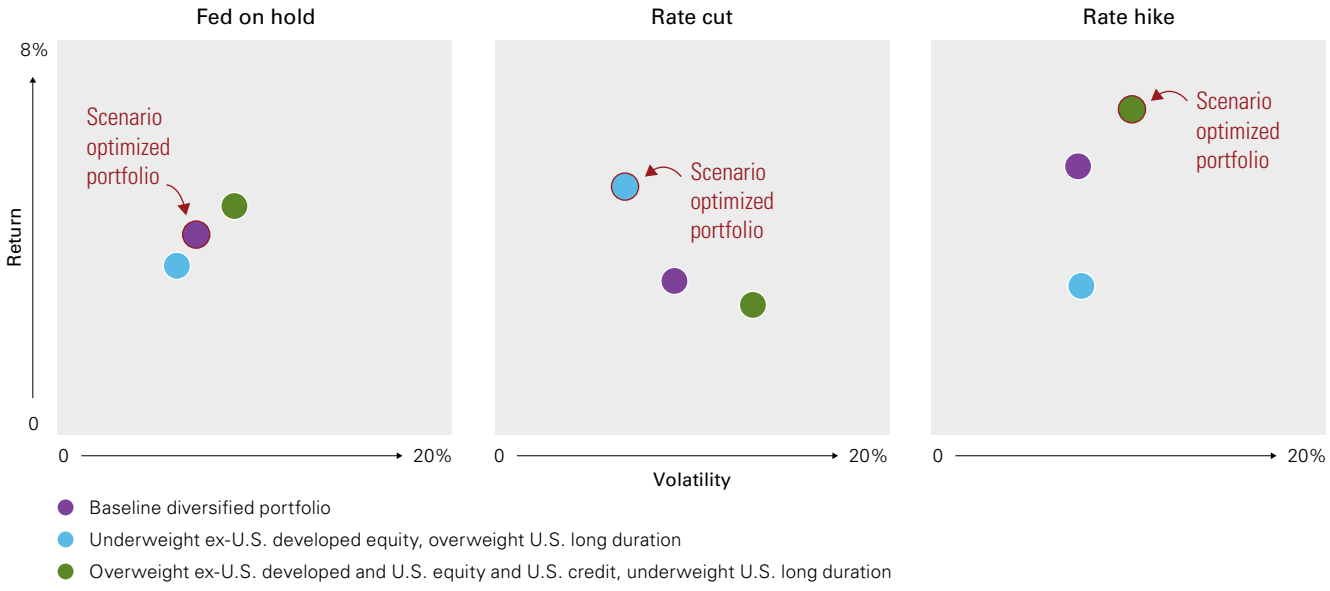
We next extend our risk outlook to isolate three pressing risks that have the potential to add considerable uncertainty to global macroeconomic conditions and volatility to capital markets—the uncertainty surrounding the path of monetary policy in the U.S., the instability of the Chinese economy, and the direction of the euro area's growth trajectory. We then analyze potential asset allocation trade-offs by modeling asset class returns under upside and downside scenarios related to each risk, and present optimized portfolio allocations relative to that of a diversified baseline portfolio (Figures 2, 3, and 4). We use the Vanguard Capital Markets Model® (VCMM) to simulate market returns under the macroeconomic conditions likely to develop under the risk scenarios.

U.S. monetary policy path

While the risk that the Federal Reserve will be overly aggressive in normalizing monetary policy has likely diminished, it is now unclear whether the next move will be a rate hike or a rate cut. With the sharp uptick in market volatility, the rise in policy uncertainty, and weaker global economic activity data through the first quarter of the year, the Fed has stressed that it will take a patient approach and will be guided largely by incoming data. Current market sentiment expects the Fed to be on hold for the duration of 2019.

The asset allocation trade-offs from constructing a portfolio tailored to monetary policy scenarios are presented in **Figure 2**. In a rate increase scenario, with a likely stabilization of economic growth in the U.S. and abroad and a potential pickup in productivity growth, our simulations overweight equity allocations both in the U.S. and abroad and credit bonds, given the supportive growth outlook, and significantly underweight bonds with longer durations, given the rising rate environment. In a rate cut scenario entailing higher volatility, weaker than anticipated global growth, and a muted inflationary environment, our simulations underweight global equity exposure and overweight longer duration exposure to take advantage of falling rates.

Figure 2. Optimized portfolio trade-offs for federal funds rate hike/cut scenarios



Notes: The figure shows the optimized portfolio for a given scenario relative to the optimized portfolios for the alternative scenarios to show the trade-offs of constructing a portfolio for a specific environment. Portfolios are selected from the frontier based on a fixed risk-aversion level using a utility function-based optimization model. Overweighted and underweighted asset classes are relative to the baseline portfolio. Complete baseline portfolio allocations can be found on page 7. The forecast displays a simulation of three-year annualized returns of the asset classes shown in the "Portfolio simulations" section on page 7, as of December 31, 2018. Scenarios are derived from sorting the VCMM simulations based on rates, growth, volatility, and equity return. The three scenarios are a subset of the 10,000 VCMM simulations.

Source: Vanguard.

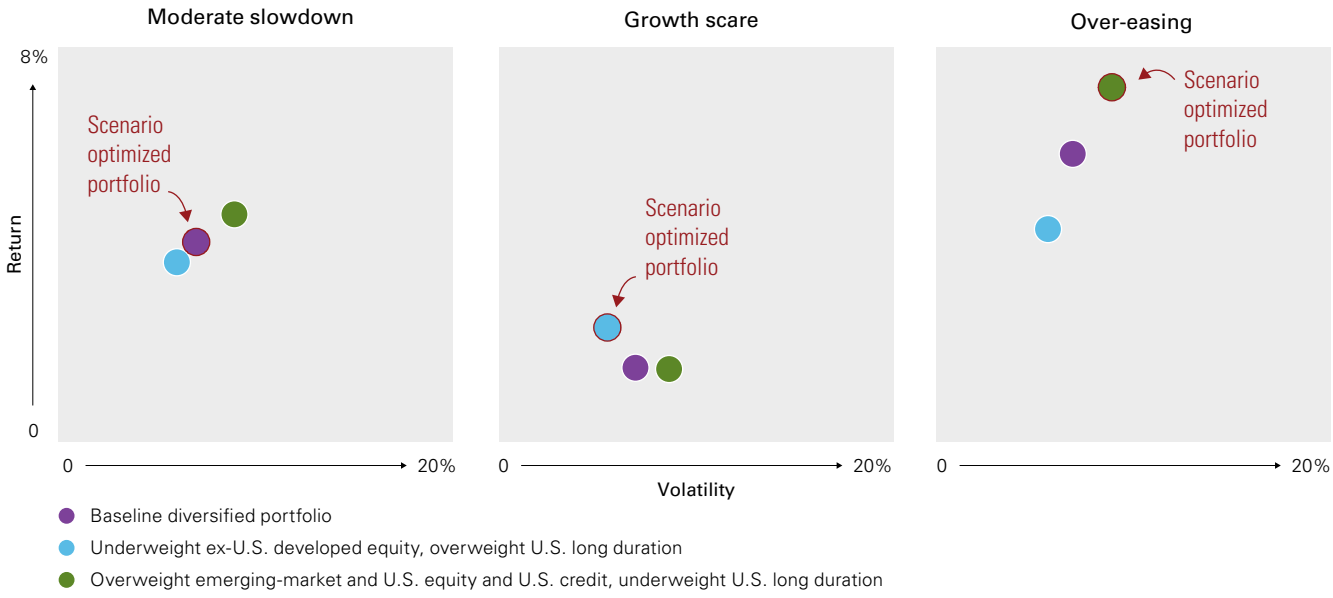
Instability of the Chinese economy

We continue to view the risks of a hard landing in China as low, and our base case is for a continued moderate economic slowdown, as policymakers have geared up monetary and fiscal stimulus to offset the lagged impact of past deleveraging campaigns and uncertainties associated with trade talks with the U.S.

While policymakers in China continue to struggle with the balance between near-term growth stability and medium-term financial stability, we see balanced odds of "over-easing" and "lack of stimulus" risks within their policy framework. Over-easing could provide near-term upside growth, but it likely raises financial stability risk in the medium term.

In an over-easing scenario, or given significant improvement in China-U.S. relations, our portfolio simulations overweight both emerging-market and U.S. equities, given a better growth environment and the likely removal of downside risks to trade negotiations (see **Figure 3**). U.S. credit bond allocations also are overweighted. In the case of a growth scare, portfolio allocations build significantly on the safety of U.S. treasuries of longer duration, because the Fed would find it difficult to raise rates any further and would likely embark on monetary easing.

Figure 3. Optimized portfolio trade-offs for China growth scenarios



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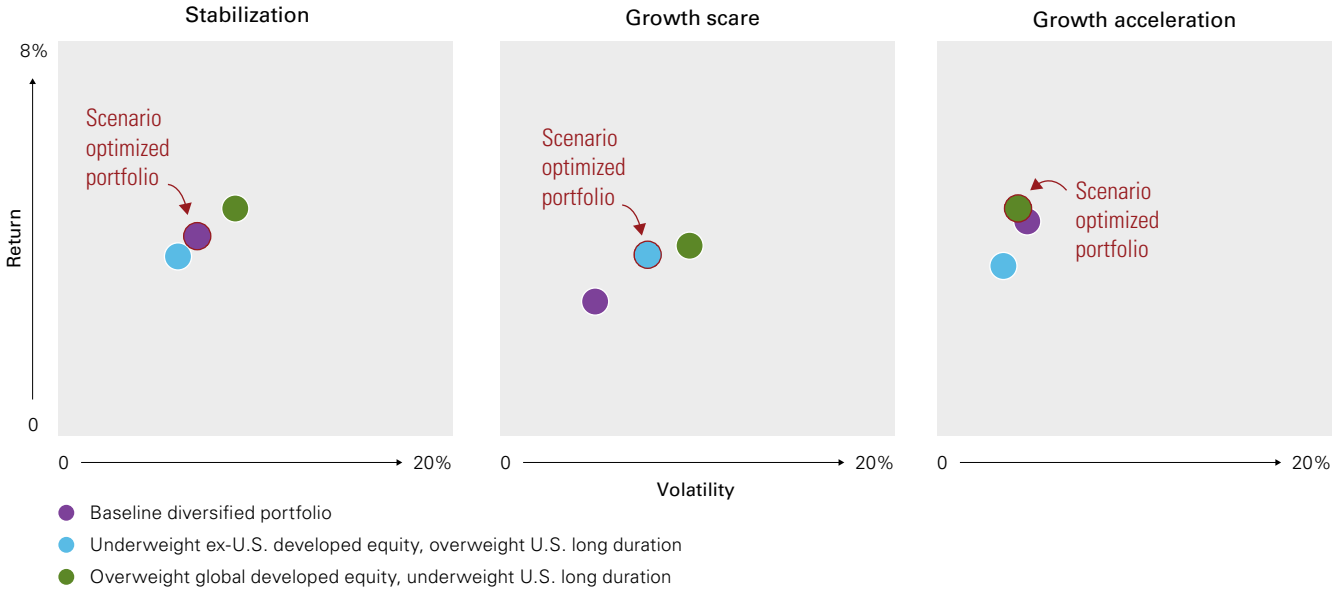
Source: Vanguard.

Direction of euro area growth trajectory

After a sharp slowdown in European economic growth in 2018, the manufacturing sector has deteriorated further and has the potential to slow activity even more. The European economy has also been beset by factors that have affected other regions as well, such as tightened financial conditions and an uptick in policy uncertainty. And Brexit negotiations threaten to have a greater impact on the euro area because of the lack of progress toward an exit agreement. While our base case remains that growth will stabilize toward the second half of the year, the risk has increased that the slowdown will extend longer than previously expected.

In a growth acceleration scenario within the euro area, equity allocations globally outperform because of the improved growth outlook (see **Figure 4**), with the largest overweights to ex-U.S. developed-market equities. U.S. bonds of longer duration underperform in the rising rate environment. If instead growth deteriorates further, the European Central Bank will be likely to push a rate hike even further out, and portfolio simulations underweight global equity exposure while increasing allocations to long Treasury exposure.

Figure 4. Optimized portfolio trade-offs for European economic growth scenarios



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Source: Vanguard.

Longer-term investment horizons mitigate the impact of macroeconomic shocks

For investors who lack conviction in a given scenario or who do not have a need for shorter-term portfolio optimizations, the most appropriate strategy may be to simply step back and tune out the headlines about volatility.

Extending the time horizon can be a tool for such investors to mitigate the risk of an adverse scenario developing. As shown in **Figure 5**, the dispersion of expected investment returns for a globally balanced portfolio can be mitigated considerably at longer time horizons, whether the scenario is to the upside or downside.

Why is there such a stark difference between near-term and long-term return dispersion? Over short time horizons, asset class returns can be greatly affected by any number of global developments. Geopolitics, earnings surprises, and multiple idiosyncratic risks affect asset prices. The emotions and psychology of investors nearly ensure that asset classes will respond to such events with immediacy. However, over longer periods, fundamentals such as valuations and earnings command more prominent weight in the assessments by capital market participants.

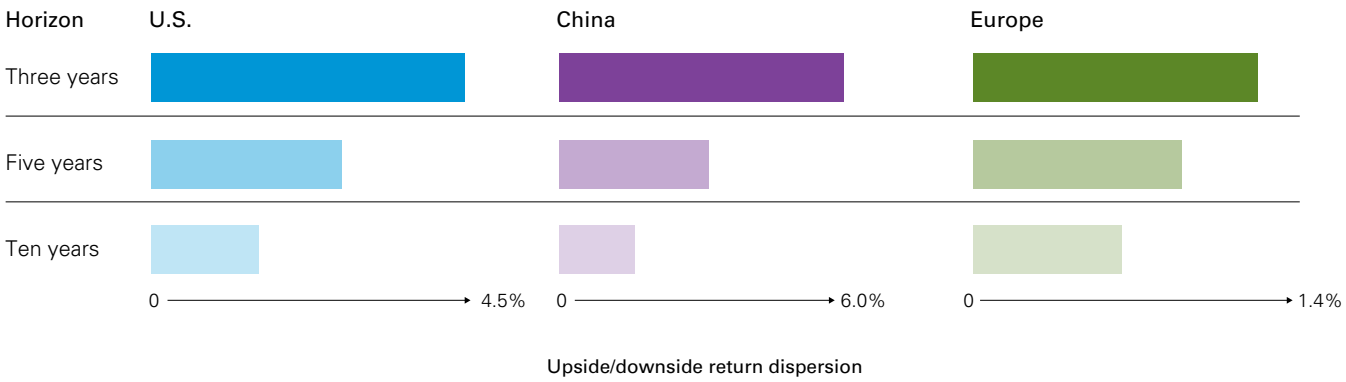
Conclusion

As the global economic expansion shifts toward later-stage characteristics, we foresee a moderating growth environment rather than an imminent recession. Our capital market projections are more modest than for other similar periods, yet we expect better real return characteristics, and increased diversification from fixed income and international equity assets.

Tailoring a portfolio to a specific environment involves important considerations. It can enhance risk and return characteristics, but it also exposes investors to suboptimal portfolios if scenarios develop differently than expected.

For investors who lack conviction that a specific risk environment will unfold, we find that the best tool available may be to stay disciplined and extend the investment horizon. Doing so can significantly limit the impact of macro shocks on portfolio returns.

Figure 5. Expected return volatility for a globally balanced portfolio dissipates at longer investment horizons



Notes: The figure shows summary statistics for a subset of 10,000 VCMM simulations (consistent with macroeconomic conditions that would be present if the scenario unfolded) as of December 31, 2018, in U.S. dollars before costs, projected over various investment horizons. Displayed are the median annualized return ranges of simulation (upside scenario returns minus downside scenario returns). The global equity portfolio is 60% U.S. equity and 40% global ex-U.S. equity. The global bond portfolio is 70% U.S. bonds and 30% global ex-U.S. bonds. See "Portfolio simulations" on page 7.

Source: Vanguard.

References

Vanguard Investment Strategy Group, 2018. *Vanguard Economic and Market Outlook for 2019: Down but Not Out.* Valley Forge, Pa.: The Vanguard Group.

Vanguard Investment Strategy Group, 2019. *Known Unknowns: Uncertainty, Volatility, and the Odds of Recession.* Valley Forge, Pa.: The Vanguard Group.

Important information

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.

Baseline portfolio allocations

Asset classes and allocations for the baseline portfolio are: U.S. equities, 35%; U.S. TIPS, 5%; emerging-market equities, 5%; global ex-U.S. bonds, 5%; U.S. short-term Treasury bonds, 5%; U.S. long-term Treasury bonds, 27%; developed ex-U.S. equities, 18%.

Portfolio simulations

The returns of our hypothetical portfolios are based on data for the following market indexes. We apportioned the global allocations to align with Vanguard's guidance in constructing diversified portfolios. A subset of these indexes was used to calculate the historical and forward-looking returns in Figure 1. Asset classes and their representative forecast indexes are as follows:

- U.S. equities: MSCI US Broad Market Index.
- Emerging-market equities: MSCI Emerging Markets Index.
- Developed ex-U.S. equities: MSCI World ex USA Index.
- U.S. short-term Treasury bonds: Bloomberg Barclays U.S. 1–5 Year Treasury Bond Index.
- U.S. long-term Treasury bonds: Bloomberg Barclays U.S. Long Treasury Bond Index.
- U.S. intermediate-term credit bonds: Bloomberg Barclays U.S. Intermediate Credit Bond Index.
- U.S. short-term credit bonds: Bloomberg Barclays U.S. 1–3 Year Credit Bond Index.
- U.S. high-yield corporate bonds: Bloomberg Barclays U.S. High Yield Corporate Bond Index.
- U.S. bonds: Bloomberg Barclays U.S. Aggregate Bond Index.
- Global ex-U.S. bonds: Bloomberg Barclays Global Aggregate ex-USD Index.
- U.S. TIPS: Bloomberg Barclays U.S. Treasury Inflation Protected Securities Index.
- U.S. short-term TIPS: Bloomberg Barclays U.S. 1–5 Year Treasury Inflation Protected Securities Index.

Notes on risk

Please remember that all investments involve some risk. 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.

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Joseph Davis, Ph.D., Global Chief Economist

Europe

Peter Westaway, Ph.D., Europe Chief Economist
Alexis Gray, M.Sc.
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Jack Buesnel

Asia-Pacific

Qian Wang, Ph.D., Asia-Pacific Chief Economist
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Vanguard®

Vanguard Research

P.O. Box 2600
Valley Forge, PA 19482-2600

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