Asset allocation report

March quarter 2022

Contents

How should investors respond to rising real rates?

Should investors adjust their portfolios in response to the U.S. Federal Reserve enacting the first in what is likely to be a series of interest rate hikes? For most investors, the answer will be no, other than regular rebalancing. But history shows that certain sub-asset classes have consistently outperformed during rising real rate environments.

"Our research suggests that the current environment may present opportunities for those investors who have the ability and willingness to take some active risk and be a little more targeted in their approach," said Ian Kresnak, an investment strategist at Vanguard and a member of the Vanguard Capital Markets Model (VCMM) research team[1].

Rare conditions prompt action
Kresnak noted that we are in an unusual market and economic environment, which is likely to mean that the Fed will raise interest rates over the coming years to levels not seen since before the global financial crisis. Although the recent events in Ukraine and uncertainty about the effects policy normalisation will have on the broader economy raise the risks that rates may not rise as much as we anticipate, it is unlikely that they will stay at or below current levels due to high inflation rates.

This environment is likely to lead to rising real interest rates, which differ from nominal interest rates in that real rates are adjusted to remove the effects of inflation. The VCMM team investigated how some sub-asset classes performed during rising real rate environments and what drove performance. Given Vanguard's expectation that the Fed may raise the nominal rate to 3%, the team focused on similar periods with relatively large rate hikes that also led to spikes in real rates.

The analysis examined a mix of economic environments during which real rate increases occurred, including during an improving economy in 1992–1994 and a period of low growth and low interest rates in 2014–2019.

"It was important to include a wide range of economic cycles to capture as many of the conditions that exist today," Kresnak said. "This allows us to get a better understanding of how and why different sub-asset classes performed."

Three key findings
The team's research resulted in three key findings:

1. **Certain sub-asset-classes have consistently outperformed, and some have consistently underperformed.** **Figure 1** (overleaf) shows how 13 common sub-asset classes in investors' portfolios performed over six periods when real rates rose. The sub-asset classes that outperformed on average also tended to outperform across the six periods. The same was true for those sub-asset classes that on average underperformed, as they consistently underperformed across the different environments when real rates rose.

   "Although it is not a perfect relationship, there is a clear pattern that exists between rising real rates and sub-asset class performance," Kresnak said. "When real interest rates are rising, investors tend to prefer the certainty of more immediate cash flows in their equity portfolios, which is what we typically see in high-quality value stocks, the best-performing sub-asset class during rising real rate environments."

   The VCMM team found that the relationship between rising real rates and performance is stronger with bonds than with equities, given the more fixed nature of bonds' cash flows. "Equity cash flows are more uncertain, and performance tends to be influenced more by other factors, such as the business environment," he said. "In general, bonds tend to be adversely affected in a rising real rate environment."

Figure 1. Prolonged and persistent periods of real rate increases favour some sub-asset classes

	1 FEB. 1975– 30 JUN. 1976	1 JUL. 1980– 31 AUG. 1981	1 JAN. 1983– 30 SEP. 1984	1 OCT. 1992– 31 DEC. 1994	1 SEP. 2002– 31 JUL. 2007	1 AUG. 2014– 30 APR. 2019
Above median relative returns on average						
High-quality value	Top quartile	Top quartile	Top quartile	Top quartile	Top quartile	4th quartile
International equities	Not applicable	Not applicable	2nd quartile	Top quartile	Top quartile	Top quartile
Emerging markets	Not applicable	Not applicable	Not applicable	4th quartile	Top quartile	2nd quartile
Value stocks	Top quartile	3rd quartile	Top quartile	2nd quartile	2nd quartile	3rd quartile
U.S. equities	2nd quartile	2nd quartile	2nd quartile	2nd quartile	Median	Top quartile
Small-cap stocks	Not applicable	Top quartile	3rd quartile	Top quartile	2nd quartile	2nd quartile
High quality growth	2nd quartile	2nd quartile	Median	4th quartile	3rd quartile	Top quartile
Below median relative returns on average						
Growth stocks	3rd quartile	3rd quartile	3rd quartile	3rd quartile	3rd quartile	4th quartile
High-yield bonds	Not applicable	Not applicable	4th quartile	2nd quartile	4th quartile	Median
Home prices	4th quartile	Median	3rd quartile	3rd quartile	4th quartile	2nd quartile
Commodities	Median	4th quartile	4th quartile	Median	3rd quartile	3rd quartile
Low-quality growth	3rd quartile	4th quartile	4th quartile	4th quartile	2nd quartile	3rd quartile
U.S. aggregate bonds	4th quartile	4th quartile	2nd quartile	3rd quartile	4th quartile	4th quartile

Sources: Vanguard calculations, based on data from the U.S Treasury, the U.S. Bureau of Economic Analysis, Bloomberg, CRSP, Kenneth R. French's website, at mba.tuck.dartmouth.edu/pages/faculty/ken.french/data library.html, Robert Shiller's website, at aida.wss.yale.edu/~shiller/data.htm, Standard & Poor's, MSCI, Dow Jones, and Russell, as of 31 December 2021. 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.

2. **Rising real rates hedge inflation.**
Despite the current high inflation, it may not be advisable to overweight traditional inflation hedges such as Treasury Inflation-Protected Securities and commodities, Kresnak said. "Traditional inflation hedges have typically underperformed when real interest rates rise, because policymakers are acting with the goal of bringing down inflation, and investors generally believe they will succeed," he said.

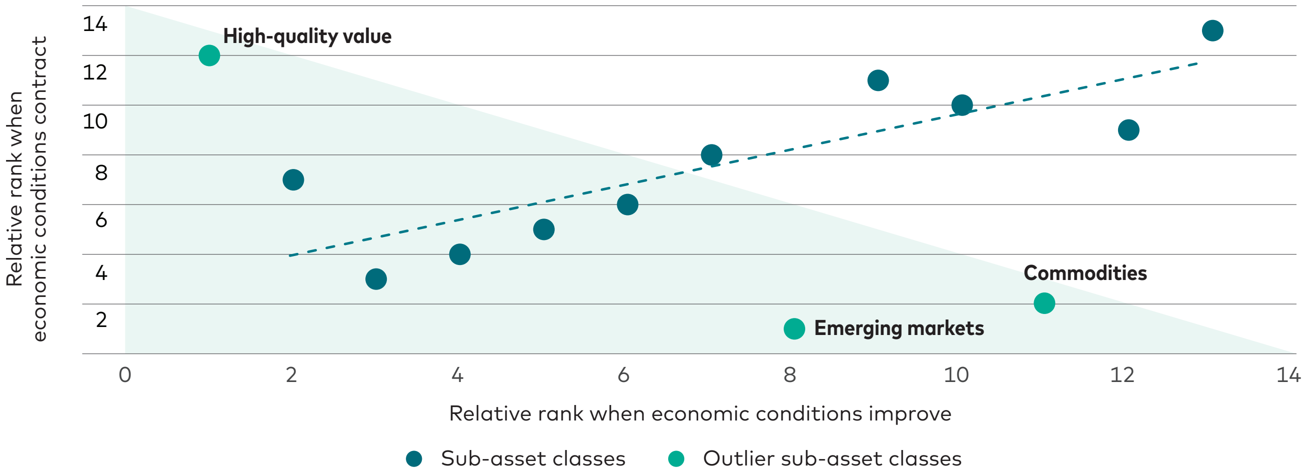
3. **The growth environment is not a distinguishing factor.**
Rising real rates typically are associated with improving economic conditions and higher inflation. But they can also rise because of excessive monetary tightening or deflation, which causes economic conditions to contract.

Figure 2 (overleaf) compares performance in a rising real rate environment when economic conditions are contracting and when they are improving. It clearly shows a positive slope for most sub-asset classes, suggesting that relative performance is similar whether the economy is expanding or contracting, as long as real rates are rising. If economic conditions were a key driver of relative performance, we would expect the dots to be positioned along the solid diagonal line sloping downward.

The analysis revealed three notable outliers—emerging markets, commodities, and high-quality value. Vanguard research shows that valuations for emerging markets stocks are sensitive to the economic environment[2]. Commodity returns also depend heavily on the economic cycle, because demand is higher when the economy is growing. And high-quality value stocks tend to outperform when economic conditions are strong, because investors are less willing to pay a premium for growth when it is plentiful.

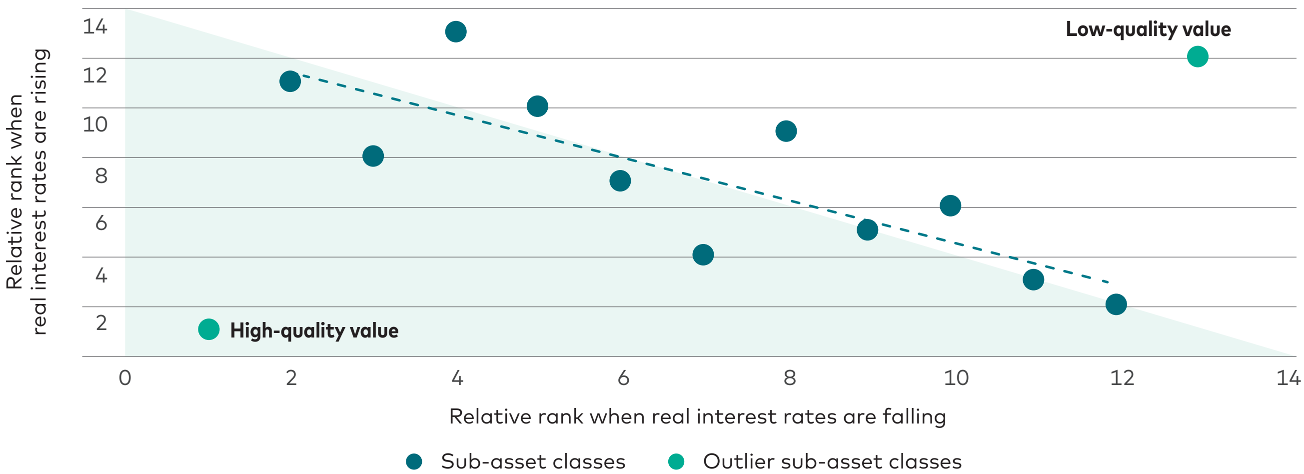
The analysis also looked at sub-asset class performance during periods of rising and falling real interest rates (**Figure 3**). The negative slope in the chart below suggests that changes in real rates are a significant factor in explaining relative performance.

Figure 2. Economic conditions don't matter for most sub-asset classes when real rates rise



Notes: Each dot represents a sub-asset class listed in the first chart. The dots are plotted based on their historical relative performance rank when economic conditions are expanding and when they are contracting. 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.
Source: Vanguard calculations as of 31 December 2021.

Figure 3. Economic conditions don't matter for most sub-asset classes when real rates rise



Notes: Each dot represents a sub-asset class listed in the first chart. The dots are plotted based on their historical relative performance rank when real interest rates are rising and when they are falling. 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.
Source: Vanguard calculations as of 31 December 2021

Kresnak added that many sub-asset classes that stand to gain in a rising real rate environment have been out of favour for years. As real rates increase, the risks are that active investors will stick with the best active decisions of the past decade and that passive investors will fail to rebalance.

"The opportunity is that the sub-asset classes that stand to gain the most from normalizing policy are more attractively priced precisely because they underperformed in the last decade," he said. "In that sense, both active and passive investors stand to benefit."

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1 The VCMM 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.

2 See *Vanguard Economic and Market Outlook for 2022: Striking a Better Balance*.

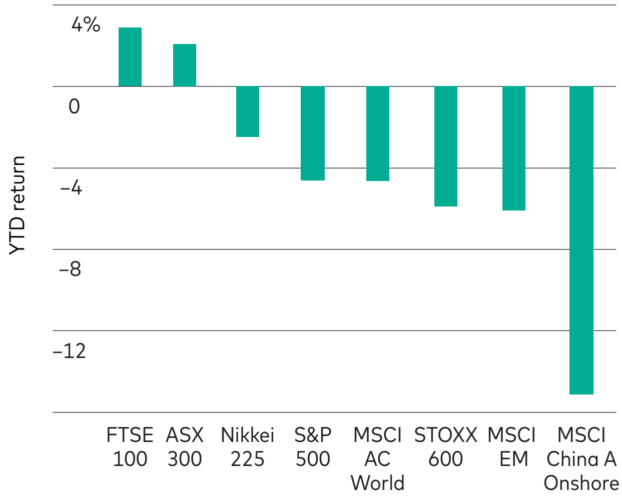
Quarter in review

Global markets entered the new year facing familiar headwinds, as rising inflation pressures and the prospect of higher interest rates remained top of mind for investors. Equity markets became more dispersed in January as policy tightening weighed on rate-sensitive growth stocks and dampened risk appetite. However, the conflict in Ukraine further stoked inflation and supply chain concerns as commodity prices were sent soaring.

Volatility remained elevated as equities sold off over the quarter, with tech stocks leading global equities lower to a 4.6% loss (**Figure 4**). Meanwhile, energy and materials companies capitalised on elevated commodity prices and financials benefitted from higher interest rates. Heavy exposure to these sectors saw the Australian equity market among the few ending the quarter in positive territory, up 2.1%. Emerging markets continued to be weighed down as the impacts of the Ukraine war and COVID outbreaks in China pulled the overall index down 6.1%.

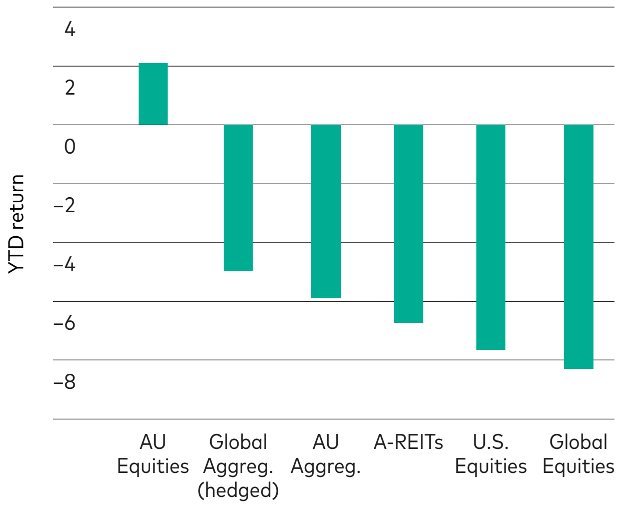
Fixed income markets similarly sold off as yields climbed (as prices fell) throughout the quarter. Despite a brief rally in bonds as the war began in Ukraine, the overwhelming trajectory of yields was upwards. Markets priced in increasingly hawkish responses from central banks as concerns focused on the compounding effects of surging commodity prices and further supply chain shocks on already heated and inflationary economies. 10-year government bonds in the United States and Australia rose by 81 basis points and 116 basis points respectively, translating to losses of 5% and 5.9% across international and domestic bonds (**Figure 5**).

Figure 4. Australian and U.K. equities lead YTD



Notes: Returns are cumulative total returns in local currency.
Source: FactSet, as of 31 March 2022.

Figure 5. AUD indices broadly retreated



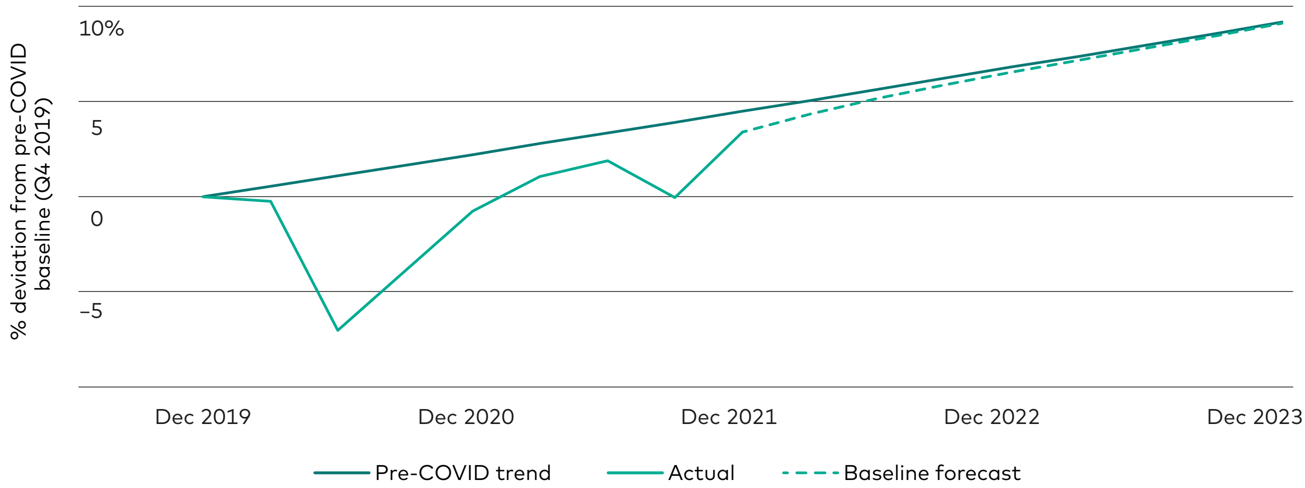
Notes: Returns are cumulative total returns denominated in AUD.
Source: FactSet, Refinitiv, as of 31 March 2022.

Economic outlook

Since lockdowns ended in late 2021, the Australian economy has come back to life. Many restaurants, cafes and retail stores are bustling again, tourists are slowly returning to Australia's shores, and unemployment is lower than before the pandemic. This has prompted the Reserve Bank of Australia (RBA) to shift its tone on the outlook, which suggests that interest rates are likely to rise this year.

The pandemic took a big toll on the Australian economy. During the first major outbreak of COVID in 2020, GDP contracted by around 7%, the largest decline in modern history (**Figure 6**). As the initial lockdowns ended, the economy quickly recovered. It was only when a second major outbreak occurred that the economy contracted once more, this time by only 2%. With the rollout of the vaccine and the end of lockdowns, GDP has once again bounced back, and is likely to recover its pre-crisis trend in 2022.

Figure 6. GDP has nearly recovered to its pre-COVID trend



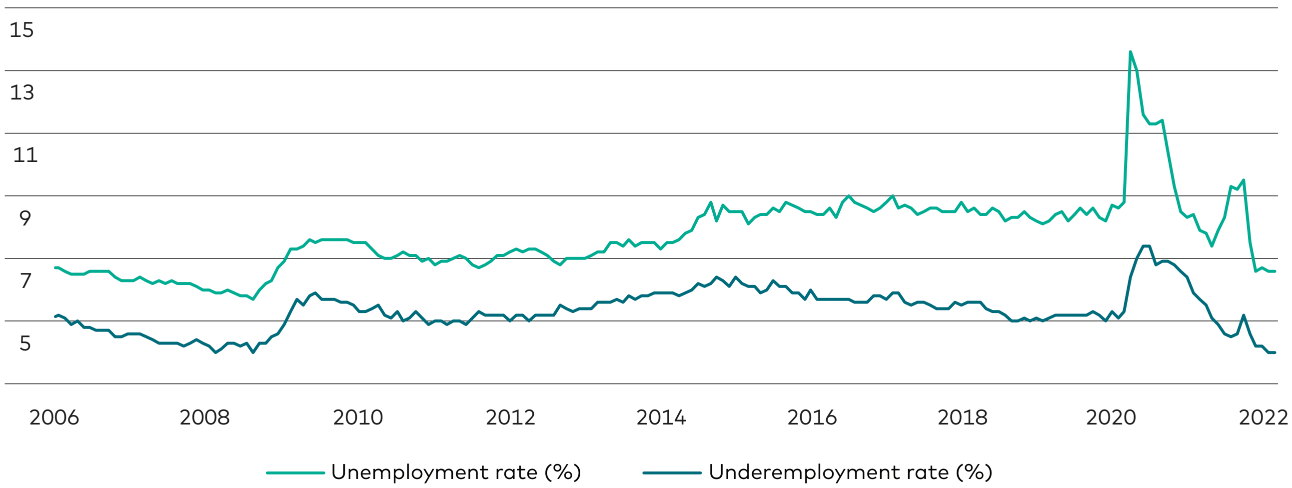
Source: Vanguard calculations based on data from Bloomberg, as of 31 March 2022.

Past performance information is given for illustrative purposes only and should not be relied upon as, and is not, an indication of future performance.

This publication contains certain 'forward looking' statements. Forward looking statements, opinions and estimates provided in this publication are based on assumptions and contingencies which are subject to change without notice, as are statements about market and industry trends, which are based on interpretations of current market conditions. Forward-looking statements including projections, indications or guidance on future earnings or financial position and estimates are provided as a general guide only and should not be relied upon as an indication or guarantee of future performance. There can be no assurance that actual outcomes will not differ materially from these statements. To the full extent permitted by law, Vanguard Investments Australia Ltd (ABN 72 072 881 086 AFSL 227263) and its directors, officers, employees, advisers, agents and intermediaries disclaim any obligation or undertaking to release any updates or revisions to the information to reflect any change in expectations or assumptions.

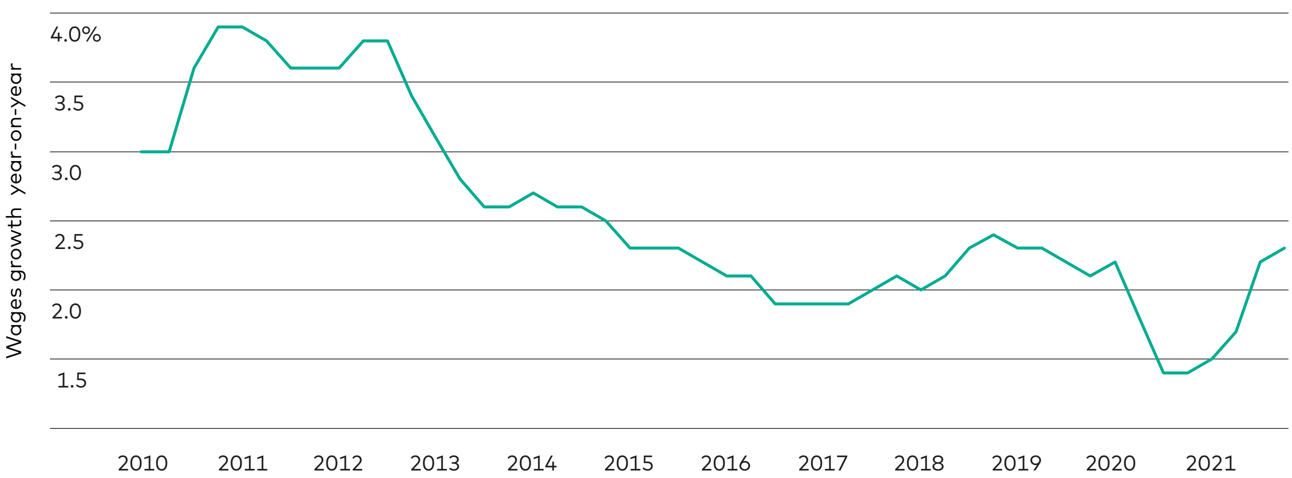
The economic recovery has also helped the labour market bounce back from the pandemic shock. Unemployment peaked at over 7% during 2020 (see **Figure 7**). This does not include furloughed workers who were technically still employed, so the true peak in unemployment was likely much higher. By February this year, unemployment had fallen to 4% for the first time since 2008, and underemployment, which includes people insufficiently employed relative to what they desire, is also back at pre-GFC levels. We expect unemployment to fall below 4% and remain at low levels for the foreseeable future. Consequently, we expect wage growth to steadily rise (**Figure 8**), although this process tends to be drawn out due to multi-year enterprise agreements that cannot be immediately renegotiated.

Figure 7. Unemployment and underemployment have fallen to pre-GFC levels



Source: Bloomberg, as of 31 March 2022. Past performance information is given for illustrative purposes only and should not be relied upon as, and is not, an indication of future performance.

Figure 8. Wages growth is recovering



Source: Bloomberg, as of 31 March 2022. Past performance information is given for illustrative purposes only and should not be relied upon as, and is not, an indication of future performance.

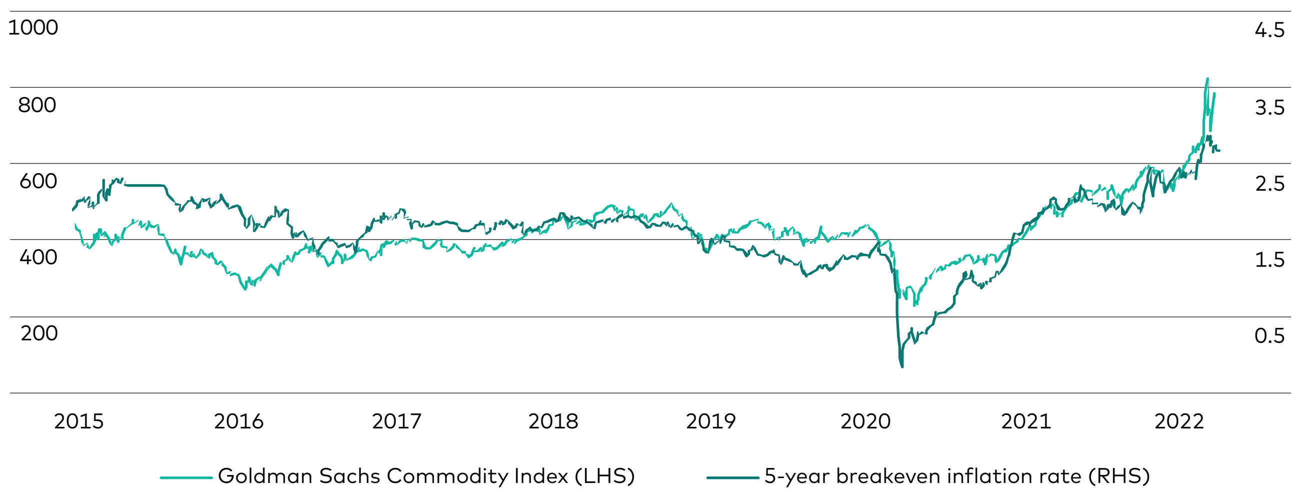
These events are broadly positive news for Australia. The one major downside is that, due to the strong economic recovery coupled with supply chain bottlenecks, headline inflation has now risen to 3.5%, putting upward pressure on the cost of living. The Russian invasion of Ukraine and the associated rise in fuel prices have added to the problem and are likely to push inflation above 4% this year. Indeed, medium-term inflation expectations, as measured by the 5-year breakeven inflation rate, have followed the rise in commodity prices (**Figure 9**).

This is a key source of concern for the RBA, whose aim is to keep inflation within the 2–3% target range and to anchor inflation expectations. At a recent event in Sydney, RBA Governor Phillip Lowe stated that "it is only possible to achieve a sustained period of low unemployment if inflation remains low and stable". This hints that the RBA will not tolerate runaway inflation and may soon be forced to start raising interest rates.

Our view is that the RBA will wait until after the federal election, in May. This means that the first rate rise is likely to occur midyear. In the past, the RBA has tended to raise interest rates once per quarter during hiking cycles. This is a rough guide to what may happen this cycle. Hence, we expect two rate hikes in 2022 and four in 2023, taking the cash rate to 0.5% by year end, and to 1.5% by the end of 2023.

For many Australians, a rise in interest rates is unwelcome news. With cost of living pressures already an issue, a rise in rates will lead to higher mortgage payments and greater financial strain. For this reason, it will be difficult for interest rates to climb too high, although we do expect the cash rate to climb towards 2.5% to 3.0% this cycle. The one silver lining is that, after years of near-zero interest rates, a rise in rates will mean that the expected return on less risky assets, such as fixed income and cash, will slowly improve.

Figure 9. Rising commodity prices have pushed inflation expectations higher



Source: Bloomberg, as of 31 March 2022. Past performance information is given for illustrative purposes only and should not be relied upon as, and is not, an indication of future performance.

Market outlook

Following a strong 2021, the March quarter saw markets process the realities of higher inflation and tightening monetary policy as stocks and bonds sold off. Uncertainty and volatility are expected to persist as the conflict in Ukraine continues and China navigates COVID outbreaks.

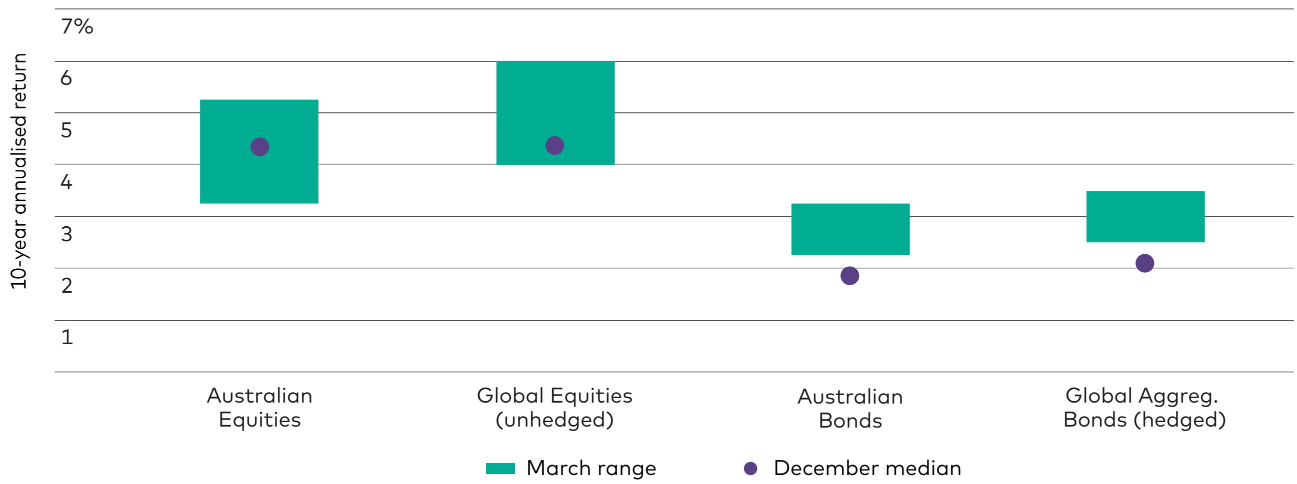
Given the pace of change in the investment environment over the past quarter, we have contrasted our December forecasts with our interim March expectations, accounting for market movements and volatility. The median 10-year annualised return for December is shown alongside a range of central expectations for March (**Figure 10**).

Cheaper but still elevated valuations in international markets have driven an upgrade in our long-term outlook on global equities of around 70 basis points to 5% per annum over the next ten years. We maintain a constructive but guarded view of risk assets, particularly when compared with the returns of the past decade.

Meanwhile, bond yields have risen materially across many regions, improving our international and local fixed income outlooks by 80 to 100 basis points over the next decade. Echoing previous commentary, rising yields can provide long -term investors with improved return prospects as income is reinvested at higher rates. However, equities are still expected to do the heavy lifting when it comes to delivering returns.

As markets continue to navigate a period of heightened uncertainty, we encourage investors to maintain a long-term view of their investment journey and focus on the factors within their control. This means keeping sight of investment goals, aligning their portfolios and plan, and maintaining the discipline to tune out the noise and stay the course.

Figure 10. An improved outlook



Source: Vanguard, March 2022 using interim March 2022 and 31 December 2021 VCMM Simulations

Long-term market outlook

The chart below shows the Vanguard Capital Markets Model (VCMM) return forecasts over the next 10 years for a range of asset classes and Vanguard's Diversified Funds.

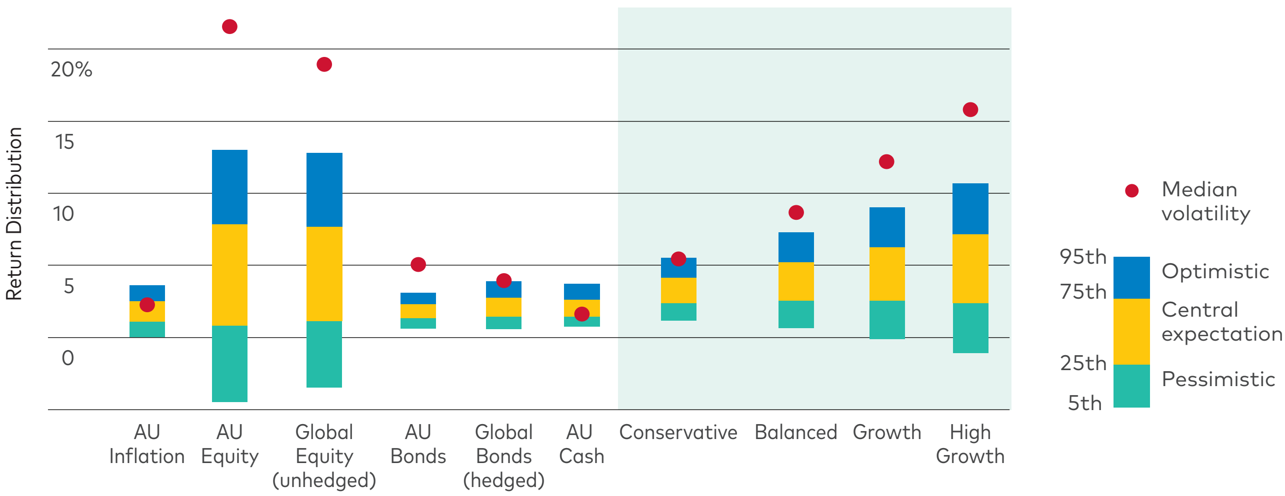
It shows two concepts: the range of annualised 10-year nominal returns and the median volatility experienced.

The bars show the range of return outcomes over a 10-year period. The central return expectations for the asset class or portfolio are shown in the middle of the bars. Observations in the optimistic or pessimistic regions should not come as a surprise though; goals and portfolios should always be positioned with these possibilities in mind.

The red circles show the median volatility forecasts. This represents the volatility of the asset classes that can be expected over the 10-year period. The chart shows that equities are expected to produce a higher return over a 10-year period than bonds, however the trade-off is that an investor can expect a more volatile experience and greater uncertainty over the end point, which could be a much wider range of outcomes.

An important point to remember is that asset returns are not perfectly correlated, which means that if an Australian equity return over 10 years is in the optimistic range, this does not necessarily mean that Australian bond returns will also be in the optimistic range. Combining assets can therefore present strong diversification benefits.

Figure 11a. Projected 10-year nominal return outlook



Source: Vanguard, March 2022 using 31 December 2021 VCMM Simulation.

Figure 11b. Projected 10-year nominal return outlook

	RETURN PERCENTILE					
	5TH	25TH	MEDIAN	75TH	95TH	MEDIAN VOL.
Australian Inflation	0.0%	1.1%	1.8%	2.5%	3.6%	2.3%
Australian Equity	–4.5%	0.8%	4.3%	7.9%	13.0%	21.5%
Global Equity (unhedged)	–3.5%	1.1%	4.3%	7.7%	12.8%	18.9%
Australian Bonds	0.7%	1.3%	1.8%	2.3%	3.1%	5.0%
Global Agg Bonds (hedged)	0.6%	1.5%	2.1%	2.8%	3.9%	3.9%
Australian Cash	0.8%	1.4%	2.0%	2.7%	3.7%	1.6%
Conservative	1.2%	2.4%	3.3%	4.2%	5.5%	5.4%
Balanced	0.7%	2.6%	3.9%	5.2%	7.3%	8.7%
Growth	–0.1%	2.6%	4.4%	6.3%	9.0%	12.2%
High Growth	–1.1%	2.4%	4.8%	7.2%	10.7%	15.8%

Source: Vanguard, March 2022 using 31 December 2021 VCMM Simulation.

The next two charts show the trade-off between targeting a CPI+ return target and the risk of a loss along the way.

Taking more risk means that an investor increases the probability that they will achieve their target over 10 years.

Highlighting the importance of managing expectations, it also means there is the increased probability of experiencing a negative return or a large annual loss in at least one year over the 10 year period.

Figure 12a. Probability of achieving real return

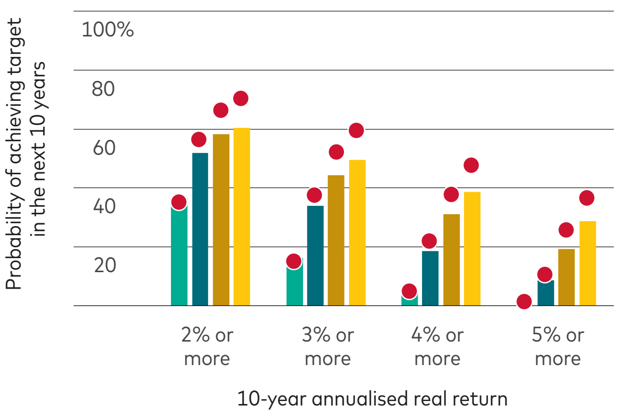
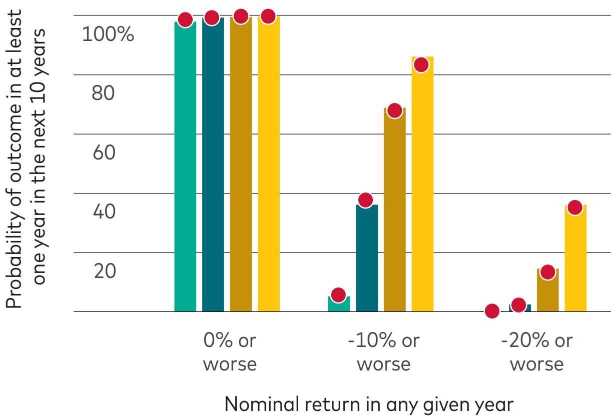


Figure 12b. Downside risks



Conservative Balanced Growth High Growth December 2020

Notes: 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. Distribution of return outcomes from the VCMM are derived from 10,000 simulations for each modelled asset class in AUD. Results from the model may vary with each use and over time.

Source: Vanguard, March 2022 using 31 December 2021 VCMM and 31 December 2020 VCMM Simulations.

About Vanguard's Investment Strategy Group
Vanguard's Investment Strategy Group is a global team of economists and investment and portfolio construction strategists with a wide variety of specialties, ranging from monetary policy to index construction to market trends. Their research serves as the basis for Vanguard's investment principles and methodology, guides Vanguard's global leadership and influences decisions about our investment offerings and portfolio construction.

Research-based investment approach
As part of Vanguard's broader Investment Management Group, ISG plays an essential role in developing Vanguard's investment methodology, which is carried through in the implicit and explicit advice solutions available to our clients. Our global chief economist and head of ISG reports directly to Vanguard's global chief investment officer. We work closely with Vanguard's in-house portfolio managers. Notably, our global chief economist is integrated into Vanguard Fixed Income Group through our portfolio management process. Through that process, ISG advises our fixed income investment managers on the macroeconomic outlook, expected monetary policy and other factors to support day-to-day portfolio management. Vanguard's investors around the world benefit from our collaborative approach to investment management, research and thought leadership.

Vanguard Capital Markets Model
The Vanguard Capital Markets Model® (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 simulator developed and maintained by Vanguard's Investment Strategy Group. It is a long-term tool that takes into account current macroeconomic conditions and equity and bond valuations to forecast distributions of future returns for a wide range of asset classes and portfolios. 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 diversification benefits of various asset classes.

Asset allocation

Vanguard's approach to asset allocation is to provide long-term returns that match investors' desired level of risk. The broad allocations to defensive (fixed income) and growth (equities) are the main factors influencing the risk-return profiles of our asset allocation strategies.

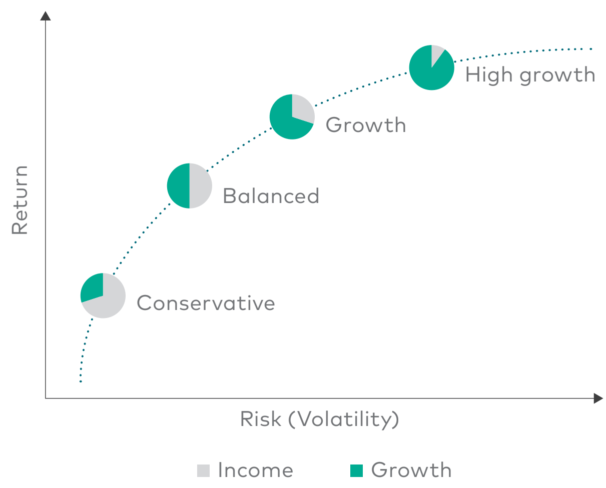
Our asset allocation approach is designed with a medium to long-term investor in mind (a time horizon of at least five years), reflecting the reality that the majority of Australian investors need to accept some market risk in order to reach their investment goals.

Why diversification matters
We believe that a successful investment strategy starts with an asset allocation suitable for its objective. In practice, diversification is a rigorously tested application of common sense: markets will often behave differently from each other—sometimes marginally, sometimes greatly—at any given time.

Owning a portfolio with at least some exposure to many or all key market components ensures the investor of some participation in stronger areas while also mitigating the impact of weaker areas.

Many investors lack the time, interest, or skills, and can become overwhelmed by the choice of investment options, asset classes, and other implementation hurdles such as choosing between index and active management. Investors also face behavioural risks in adhering to their investment plan over time due to the temptation of performance chasing or overreacting to market events.

Vanguard Diversified Funds provide professionally managed portfolio solutions designed to help medium to long-term investors achieve their goals and overcome these challenges.



Understanding Vanguard's SAA process
For multi-asset funds, such as Vanguard Australia's Diversified Funds, Vanguard's Investment Strategy Group (ISG) conducts an annual review of the strategic asset allocation (SAA) of the funds. The team considers new asset classes, currency exposure, home bias, regulatory and tax impact, investment costs, investor behaviours, and implementation factors amongst others. The ISG team presents a recommendation to maintain or change the SAA to Vanguard's global Strategic Asset Allocation Committee (SAAC), which oversees all of Vanguard's multi-asset funds. The SAAC is comprised of senior leaders from the Investment Management Group and Vanguard's advice businesses and is co-chaired by Vanguard's global chief economist. Upon approval of a change to the SAA, Vanguard assesses the feasibility, tax impact, and costs of the recommended changes and presents to the Board of Vanguard Australia for approval prior to implementing the changes.

The shaded boxes display the total return percentile rank of the Vanguard fund within its peer group*, as shown by the colour code, with the number reflecting the Vanguard fund return in excess of the peer group median return (%). The numbers below the shaded boxes indicate the number of funds in the peer groups across each time period.

Figure 13. Vanguard Diversified Funds peer group comparison as at 31 March 2022

VANGUARD FUND ASSET WEIGHTED PEER GROUP MER (% P.A.)	3 MTHS	6 MTHS	1 YR	3 YRS	5 YRS	7 YRS	10 YRS
Conservative	–1.36	–1.53	–1.68	0.32	0.75	0.74	0.91
0.66	48	48	48	45	44	39	38
Balanced	–1.87	–2.04	–2.24	0.50	0.66	0.58	0.96
0.80	57	57	55	49	46	39	35
Growth	–0.99	–1.13	–1.17	1.04	1.06	0.93	1.09
0.79	76	75	74	68	66	61	57
High Growth	–0.79	–0.32	–0.19	1.28	1.18	0.90	1.19
0.84	57	57	57	52	49	43	42

PEER GROUP PERCENTILE
Top 5%
1st quartile
2nd quartile
3rd quartile
4th quartile

Sources: Vanguard, March 2022. Calculations using data from Morningstar Inc. Past performance information is given for illustrative purposes only and should not be relied upon as, and is not, an indication of future performance. All returns are net of fees and assume reinvestment of income distributions. Returns greater than 12 months are annualised. There has been no adjustment for survivorship bias.

* The peer groups were constructed by first sourcing a universe of funds from Morningstar having the same category as the Vanguard Funds, but excluding Vanguard strategies. An automated filter was then applied to these original peer groups with the aim of removing identified duplicate investment strategies and retain unique strategies.

Figure 14. Vanguard Diversified Funds return contributions for the quarter as at 31 March 2022

FUND	3 MONTH GROSS RETURN (%)	3 MONTH RETURN CONTRIBUTION (%)			
		VCIF	VBIF	VGIF	VHIF
Vanguard Cash Reserve Fund	0.02	0.0	0.0	0.0	0.0
Vanguard Australian Fixed Interest Index Fund	–5.97	–1.1	–0.9	–0.5	–0.2
Vanguard Australian Shares Index Fund	2.09	0.3	0.4	0.6	0.7
Vanguard International Shares Index Fund	–8.34	–0.7	–1.2	–1.7	–2.2
Vanguard International Small Companies Index Fund	–9.59	–0.2	–0.3	–0.5	–0.6
Vanguard Emerging Markets Shares Index Fund	–9.89	–0.2	–0.3	–0.4	–0.5
Vanguard International Shares Index Fund (Hedged) – AU Class	–4.91	–0.3	–0.4	–0.6	–0.8
Vanguard Global Aggregate Bond Index Fund (Hedged)	–5.54	–2.3	–1.9	–1.2	–0.4
Total Return Contribution (%)		**–4.5**	**–4.7**	**–4.3**	**–3.9**

* Figures in the return contribution table are calculated as the product of the monthly gross return and the corresponding actual asset allocation.

What the yield curve is—and isn't—telling us

The recent flattening of the U.S. yield curve has left many investors wondering whether a recession is on the horizon and whether they should adjust their portfolios in response. But investors should not overreact, according to Andrew Patterson, senior international economist in Vanguard Investment Strategy Group, and John Madziyire, head of U.S. Treasuries/TIPS in Vanguard Fixed Income Group.

"In the past, inversions of the yield curve have been reasonably reliable indicators of recession," Patterson said. "But interpreting the signals can be challenging, particularly in an environment like this with so much uncertainty over inflation, Federal Reserve policy, the labour market, and now the war in Ukraine. Against this unusual backdrop, we need to be careful in drawing parallels to history."

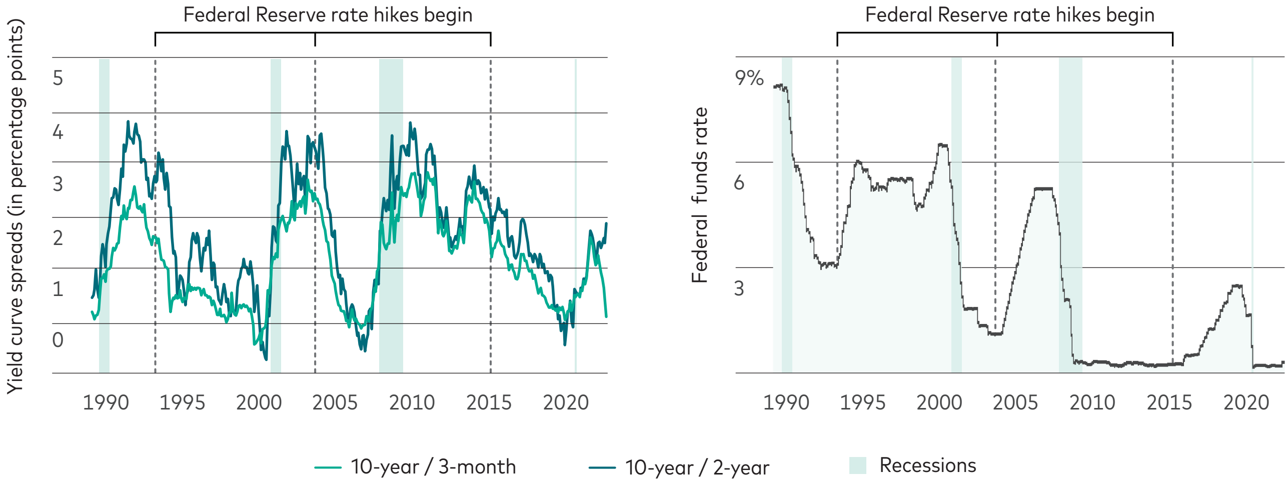
Yield curves normally slope upward because investors naturally demand a higher return for tying up their principal for longer periods. Longer-term bonds carry a greater risk of exposure to inflation. A steepening curve signals expectations for a healthy economy, whereas a flattening of the curve and, beyond that, an inversion reveal some concerns.

Recession isn't a foregone conclusion

Historically, an inverted yield curve—where the yield on longer-term Treasury bonds is lower than that of shorter-term Treasury bonds—has foreshadowed a recession in the next year or two. The inversion implies that investors' outlook for the economy over longer periods has deteriorated compared with their near-term views.

But there are several other reasons why part of the yield curve has flattened. The Fed has embarked on quantitative easing (QE) during the last two interest rate cycles. The first came in response to the global financial crisis and the second to the COVID-19 pandemic. As shorter-term Treasury rates approached zero, the Fed could stimulate the economy only by lowering yields on the long end of the curve, thus creating a flatter curve.

Figure 15. The spread between the two-year and 10-year Treasuries is at historic lows at this stage of the rate hike cycle



Notes: A spread is the difference between the yield of a bond with one maturity compared with a bond of another maturity.

Sources: Vanguard, based on data as of 1 March 2022, from the U.S. Department of the Treasury, the Federal Reserve, and the National Bureau of Economic Research.

In the post-COVID cycle, accelerated QE plus strong demand for Treasuries from overseas markets and pension funds have helped drive down longer-term yields.

Now the uncertainty over how much the Fed will continue to tighten monetary policy is flattening the curve, this time by short-term rates rising more than longer-term rates. "The Federal Reserve has already signaled its plans to raise rates above the neutral rate to about 2.75%," Madziyire said. "The risk is that with inflation already running at a 40-year high, the Fed may have to raise rates higher than anticipated."

The result has been a rapid narrowing of spreads between 2-year and 10-year Treasury bonds, to just 6 basis points on March 29[1].

"With the Fed just starting to raise the federal funds rate, a 6-basis-point spread is significantly narrower than normal at this early stage of the cycle," Madziyire said. "Many investors may think a recession is a foregone conclusion."

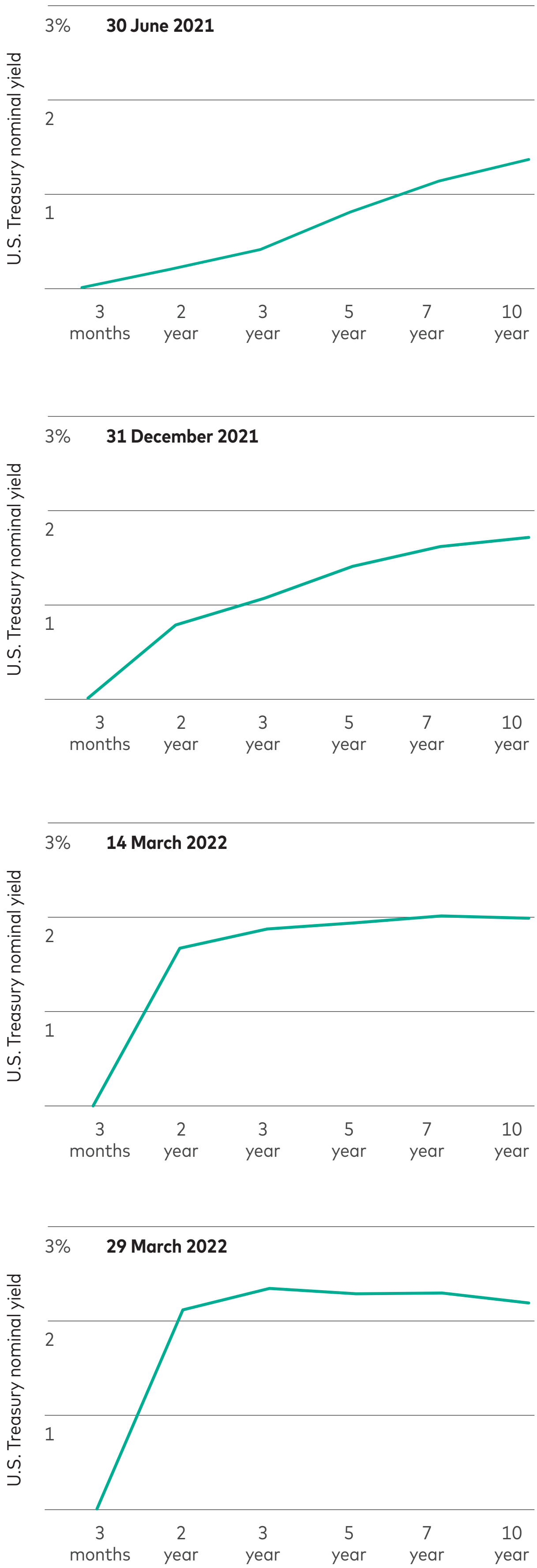
But Madziyire noted that yield curve inversions have typically happened further into an economic expansion when rates were already relatively high.

Patterson echoed the point: "Today we're talking about inversions when the federal funds rate remains very close to zero, certainly below anything most people would estimate to be a neutral rate," he said.

The spread between 3-month and 10-year Treasuries may be a better indicator of an economic slowdown—and that spread isn't sending recessionary signals, Patterson said.

"Because the 3-month Treasury is much shorter than the 2-year, it is much more sensitive to Fed policy and reflective of current economic conditions, so its narrowing spread with the 10-year is generally a better indicator of potential recessions," he said. "The 3-month/10-year spread has actually widened in recent weeks, and the yield curve has steepened at the shorter end."

Figure 16. Mixed signals from a rising, flattening yield curve



Sources: Vanguard, based on data from the U.S. Department of the Treasury.

1 A basis point is one-hundredth of a percentage point.

What investors might do next

Madziyire said he and his team have been overweighting 10-year bonds and underweighting 2-year bonds. "Given the expected market reaction to the recent and upcoming Fed moves, we expect the rate at which the 2-year goes up to be faster than the rate at which the 10-year bond rises," he said[2].

He added that investors should continue to hold fixed income in their portfolios despite the short-term challenges associated with a rising rate environment. Short-duration bond portfolios will do relatively well in a diversified portfolio in such an environment because they are less sensitive to rising rates. But even when stock returns and bond returns decline in tandem, bonds provide diversification benefits, as the magnitude of losses in fixed income portfolios is often significantly less than that of stocks.

Rising interest rates can be good for bond investors and savers, as current and future income benefits from being reinvested at higher rates.

"Fixed income investors may feel some pain in the short term," Madziyire said. "But if you are a long-term investor, higher yields mean more income."

2 The neutral rate is typically defined as the equilibrium federal funds rate at which policy is putting neither upward nor downward pressure on the economy.

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