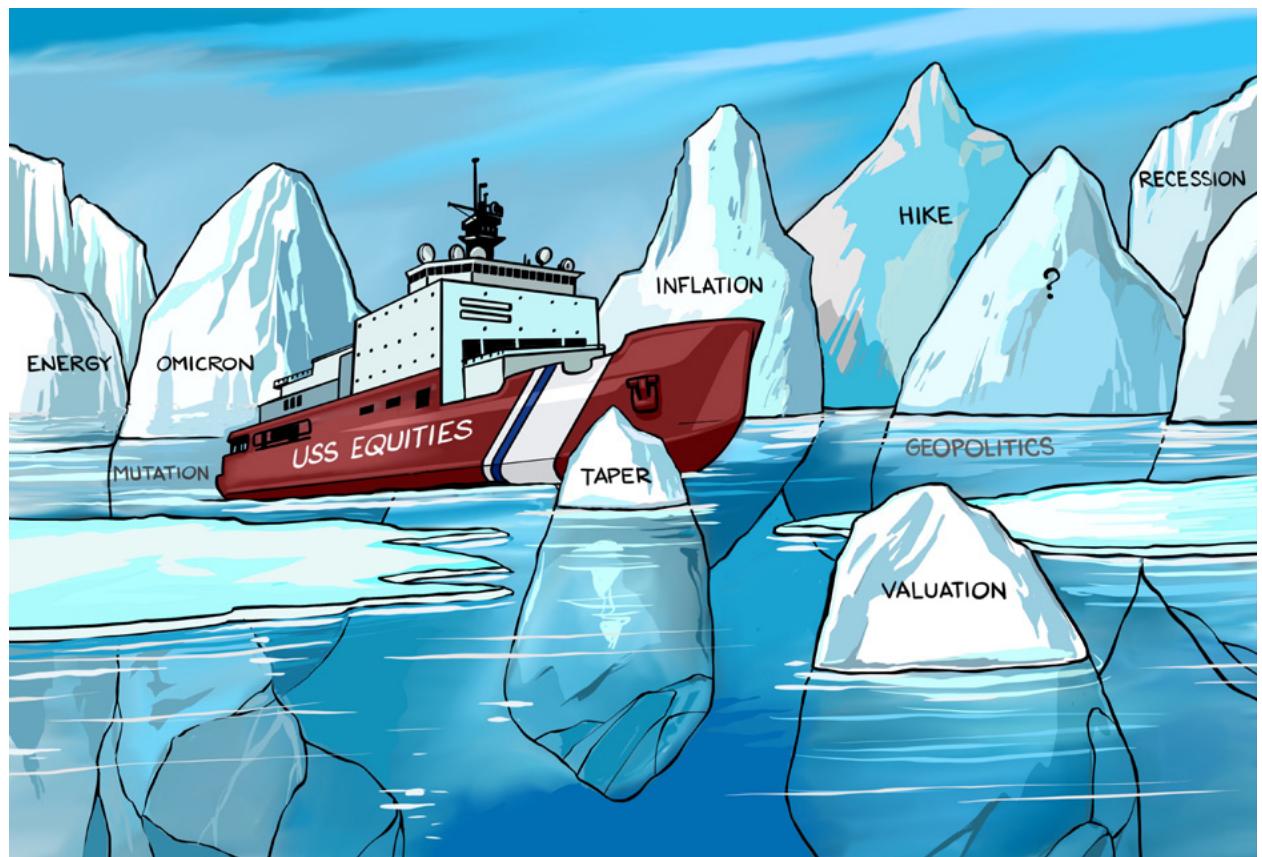


Outlook

Consumer and Wealth Management

Piloting Through



Have you not succeeded? Continue! Have you succeeded? Continue!

– Fridtjof Nansen (1861–1930), Norwegian Polar Explorer, Nobel Laureate,
First High Commissioner for Refugees, Creator of Nansen Passports



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Dear Clients,

2021 was a remarkable year for US financial assets.

US equities returned an eye-popping 28.7%, compared with a more modest 19.9% for other developed countries' equities in local currency terms and a dismal 0.1% for those of emerging markets, again in local currency terms. Equities of the world's second-largest economy, China, not only significantly underperformed US equities but also recorded the worst performance of any major equity market, with a total return of -21.2% in renminbi terms.

In fixed income, US municipal bonds, with a 0.5% return, outperformed government debt in the US (-1.7% return), Eurozone (-1.4% return), UK (-3.0% return) and Japan (-0.1% return), as measured by one- to 10-year market indices in local currency terms. US high yield municipal bonds returned 7.8%. Among other high yield fixed income asset classes, US high yield corporate bonds returned 5.3%, compared with 4.2% for the Eurozone, -8.8% for emerging market local debt and -1.8% for emerging market dollar debt. Again, Chinese high yield corporate debt not only significantly underperformed that of the US but was one of the worst-performing markets, with a return of -26.3%.

On the currency side, the Dollar Index (DXY) appreciated by 6.4% relative to developed countries' currencies. The Dollar Trade-Weighted Index (TWI), which measures the dollar against the currencies of the key US trading partners, appreciated 4.8%. The dollar also appreciated relative to gold by 3.6%.

Such strong 2021 performance came in the wake of an already extended bull market in US equities. Since the trough of the global financial crisis (GFC) in March 2009, US equities have returned 812%, while other developed countries' equities have returned 297% and emerging markets have returned 296%.

As many of our clients know, we in the Investment Strategy Group have been strong proponents of US Preeminence and Staying Invested for the nearly 13 years that we have been writing these yearly *Outlook* reports. We have consistently

recommended clients stay invested in equities and strategically allocate a greater portion of their equity portfolios to US stocks, with the higher allocation funded by a lower allocation to non-US developed and emerging market countries. We have not once recommended clients underweight US equities.

Frankly, the magnitude of the returns and the outperformance of US equities relative to non-US equities have far exceeded our expectations.

Inevitably, such outsized returns in US financial assets have prompted clients, and even colleagues, to ask, as they regularly have over the last several years, whether we are finally at a tipping point where the stay invested recommendation has reached the end of its shelf life and the time has arrived to underweight US equities. They have cited a litany of concerns, including high equity valuations, a shift in the US Federal Reserve toward tightening of monetary policy, risks of higher inflation, rising geopolitical risks with Russia and China, a virulent strain of domestic politics in the US (which some posit is an existential threat to US democracy), and, importantly, the incertitude about the impact of known and new mutations of SARS-CoV-2, including the highly contagious Omicron variant.

Notwithstanding, we believe that the two investment themes of US Preeminence and Staying Invested remain valid.

US Preeminence

2021 showed the resilience of the US economy, and of its households and businesses, with a strong recovery in growth, employment and profitability. The factors that account for US preeminence are intact:

- Higher labor productivity
- Higher quality of corporate management

- Greater earnings per share growth
- Higher research and development budgets
- Greater innovation
- More favorable demographics

In the interest of brevity, we will not repeat the detailed analysis underlying our view, which was provided in our 2021 *Outlook, US Resilient*. We will be providing an in-depth analysis of these factors in our next *Insight*, which will be an update of our 2016 *Insight* on China, *Walled In: China's Great Dilemma*. We believe that during the last six years, China has become even more walled in than it was in early 2016, and we will examine the consequences for our investment outlook.

Staying Invested

Our tactical asset allocation recommendation to stay invested is also unchanged. Since the trough of the GFC, we have recommended staying invested on 106 separate occasions—this report represents the 107th!

Exhibit 1 highlights all past 106 occasions. Some recommendations were made during market downdrafts when our clients, fearing much steeper declines, were tempted to exit the equity market. Others were made after strong market rallies when high valuations and economic and geopolitical risks prompted clients to consider locking in their gains and exiting the equity market.

We are currently in one of those latter environments. We have had three consecutive years of double-digit returns: last year's 29% return followed an

Outlook

Consumer and Wealth Management

US Resilient

Durability is one of the chief elements of strength. Nothing is either loved or feared but that which is likely to endure.
—Anne de Tocqueville, Democracy in America

Investment Strategy Group | January 2021

Insight

Investment Management Division

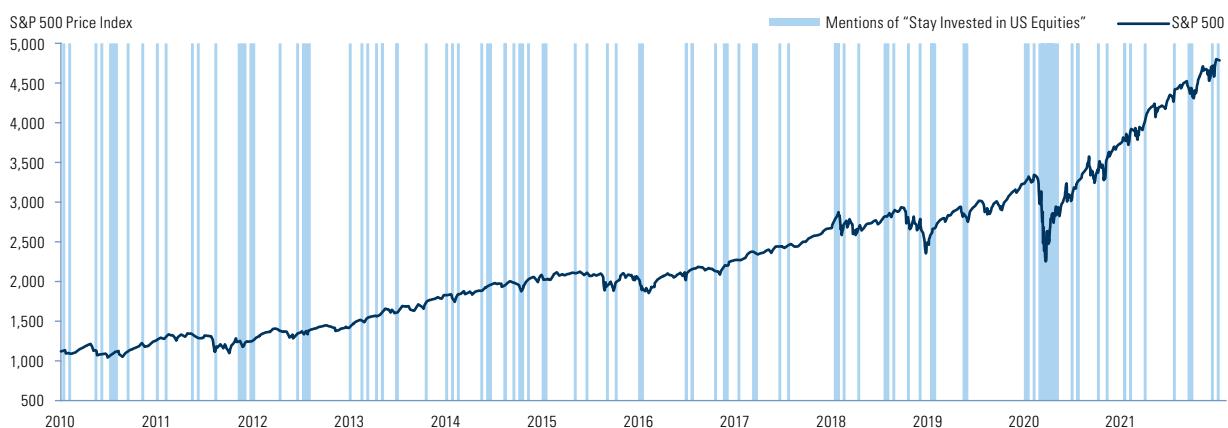
**Walled In:
China's Great Dilemma**

With today's debt burden, the inevitable rebalancing of the economy, unfavorable demographics, structural fiscal lines and the weight of history will bear down on its growth rates.

Investment Strategy Group | January 2016

Exhibit 1: S&P 500 Price Index and ISG Recommendations to Stay Invested

Over the post-GFC period, we have recommended staying invested in US equities 106 times.



Data through December 31, 2021.

Source: Investment Strategy Group, Bloomberg.

18% return in 2020 and a 31% return in 2019, for an annualized return of 26%. These strong returns, and a nearly 13-year bull market, have led to a plethora of warnings of bubbles bursting and imminent corrections. We do not lightly dismiss such warnings. In fact, we have been addressing concerns about bubbles since our 2014 *Outlook, Within Sight of the Summit*, with a section titled “No Bubble Trouble Yet.”

We are very cognizant of the fact that valuations are high and that late 2021 appears eerily similar to early 2000. Yet, after careful analysis, we continue to recommend clients remain invested.

Outlook



Investment Management Division

Within Sight of the Summit



We have had a great climb.

Investment Strategy Group | January 2014

This report provides the data and analysis underpinning our recommendation to stay invested. In Section I, we explain the investment rationale, focusing on valuations, the earnings outlook given the global economic backdrop, and the absence, in reality, of what some have termed froth or irrational exuberance in US equities based on financial market flows and portfolio positioning. Importantly, we will compare and contrast the current financial market backdrop to that of the dot-com bubble of late 1999 and early 2000 in order to address a frequently and not unreasonably asked question: are we at the precipice of another major downdraft such as the 49% peak-to-trough drop in equities between March 2000 and October 2002?

We then turn to our one- and five-year expected returns and our more opportunistic tactical tilts. We conclude with the key risks to our US outlook, including the pandemic, inflation, tightening of monetary policy, recession and high-impact geopolitical flare-ups.

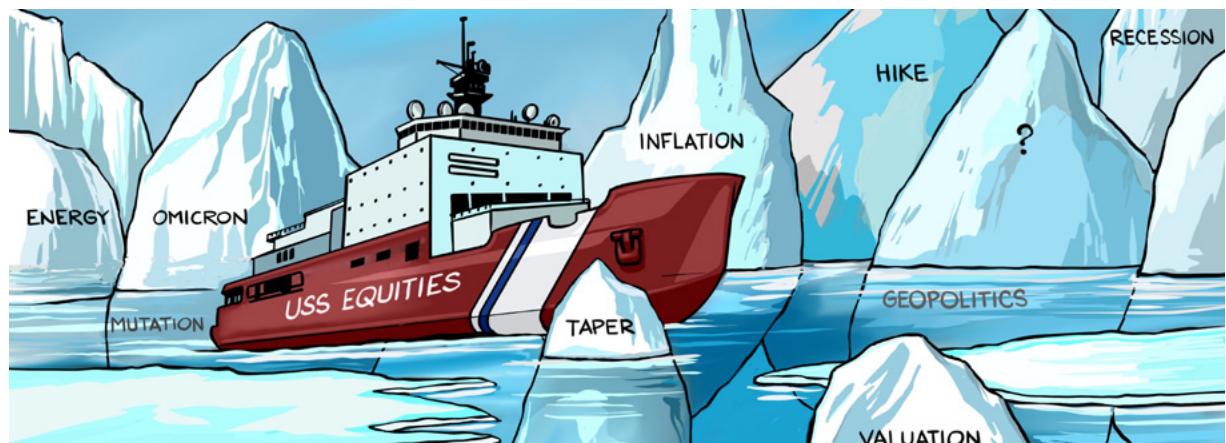
In Section II, we provide a detailed review of our economic outlook for key developed and emerging market countries. In Section III, we provide our financial market outlook for the same.

As we often remind our readers, we do not have the benefit of a wizard's or seer's orbuculum, and we always present our reports and recommendations with a strong dose of humility. We have gone back and counted 11 references to "humility" across our 13 *Outlook* reports, but the term is especially fitting as we enter the third year of a global pandemic that has exacted a terrible toll on so many and continues to surprise us.

We take this opportunity to wish you a healthy, unrestricted and, yes, prosperous 2022.

With our warm regards,
The Investment Strategy Group

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Staying Invested

THE DRIVERS OF OUR INVESTMENT RECOMMENDATIONS fall into two categories.

The first category consists of short- and intermediate-term metrics. Examples are current market valuations, market valuations of past peaks and troughs, corporate earnings over the next two years based on our expectations about economic growth and fiscal and monetary policy measures, and investment sentiment and impact on flow of funds into or out of equities.

The second category consists of long-term strategic investment insights that have led us to set a high hurdle for underweighting equities. Examples of these insights include the risk of underweighting equities too early, the benefit of strategies that overweight equities relative to strategies that both

overweight and underweight equities, and the decline in equity prices required to offset the tax payments on realized capital gains following sales by taxpaying clients.

Our recommendation to stay invested has been underpinned by both sets of drivers since March 2009, and they continue to point in the same direction today. In our base case scenario, to which we assign a 65% probability, we expect a 6.3% total return for the S&P 500 this year. We also assign a 20% probability to a good case scenario with a return of 12.6%, and a 15% probability to a bad case scenario with a return of -18.9%. Details of our equity market outlook are presented in Section III.

We begin with the short- and intermediate-term metrics that drive our recommendation to stay invested. But first we present a summary of the favorable US and global economic backdrop against which we have formulated our recommendation (details are presented in Section II).

Summary of the Economic Backdrop

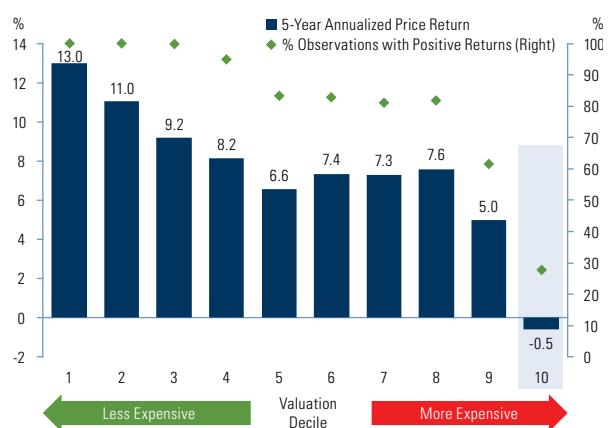
We expect global growth to be well above trend in 2022 at 4.5%, and slightly above trend in 2023 at 3.3%. In the US, we expect 3.9% growth in 2022 and over 2% in 2023. In our base case scenario, US unemployment will steadily decline to 3.1% by the end of 2022, supply shortages for most goods will abate over the course of the year and inflation as measured by the core Personal Consumption Expenditures (PCE) price index will reach 2.8% by year-end (comparing the fourth quarter of 2022 to the fourth quarter of 2021). We believe the risk of a recession in 2022 is low, at about 10%.

The Federal Reserve will begin to tighten monetary policy as it has already signaled. Its asset purchases will end in early 2022 and we expect at least three 25-basis-point hikes in the federal funds rate. If faster growth or higher inflation merits additional interest rate hikes, rates will be raised further. In the event of a global disruption, including a resurgent pandemic, rates could be raised at a slower pace or not at all.

We should note that the confidence interval around our forecasts is wider than usual. As Jason Furman, former chairman of the Council of Economic Advisors and professor at Harvard University, noted on a recent Investment Strategy Group client call, “substantial humility is in order”

Exhibit 2: US Equity Price Returns from Each Valuation Decile

Equities have been cheaper at least 90% of the time.



Data as of December 31, 2021.

Note: Based on five valuation metrics for the S&P 500, beginning in September 1945: Price/Trend Earnings, Price/Peak Earnings, Price/Trailing 12-Month Earnings, Shiller Cyclically Adjusted Price/Earnings Ratio (CAPE) and Price/10-Year Average Earnings. These metrics are ranked from least expensive to most expensive and divided into 10 valuation buckets (“deciles”). The subsequent realized, annualized 5-year price return is then calculated for each observation and averaged within each decile.

Source: Investment Strategy Group, Bloomberg, Robert Shiller, Datastream, S&P Global.

Past performance is not indicative of future results.

in this environment.¹ Of course, this is not the first nor will it be the last time humility is called for. We have gone back and counted 11 references to “humility” across our 13 *Outlooks*.

Short- and Intermediate-Term Drivers

Current Valuations

Three consecutive years of outsized returns since 2019, and a nearly 13-year bull market, have prompted many market participants to warn of bubbles and frothy markets, even irrational exuberance.

There is no doubt that current valuations are high. As shown in Exhibit 2, the S&P 500 is in the 10th decile of valuations in the post-World War II period. Equities have been cheaper at least 90% of the time. We use five metrics—four of which are based on intermediate-term data and one of which is based on earnings over the prior four quarters—to determine the valuation deciles. These metrics are:

- Price-to-trend reported earnings
- Price-to-10-year average reported earnings
- Price-to-peak reported earnings



Market may be in the biggest bubble of my career

– CNBC guest,² August 9, 2021



Market's record price action is mimicking late 1999 and it could spark a 10% to 20% correction

– CNBC guest,³ August 30, 2021



US equities: tick, tick, tick

– *Financial Times*, November 24, 2021



Part of the stock market is a complete, total speculative bubble

– CNBC guest,⁴ October 31, 2021



Veteran investors are unnerved by bubble-like conditions

– *Wall Street Journal*, April 25, 2021



Be wary of the bubble

– Reuters, November 23, 2021



I think the dot-com boom was crazier in terms of valuations than even what we have now. But overall, I consider this era even crazier than the dot-com era.

– Charlie Munger, Vice Chairman of Berkshire Hathaway in *The Sydney Morning Herald*, December 3, 2021

Exhibit 3: S&P 500 Total Returns After Crossing Into the 9th and 10th Deciles of Valuation

Equities continued to rally even after valuations became more expensive in the last two bull markets.

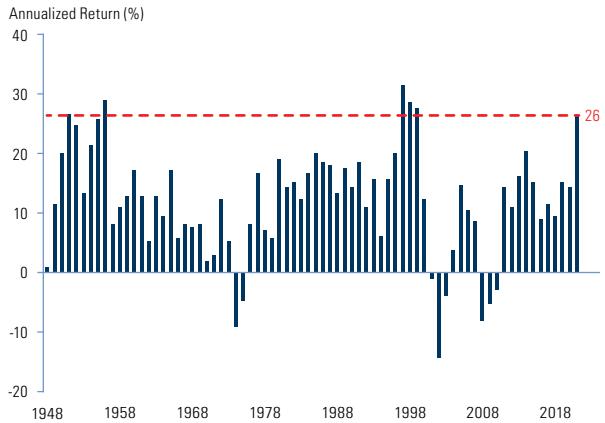


Data through December 31, 2021.

Source: Investment Strategy Group, Bloomberg.

Exhibit 4: S&P 500 Rolling 3-Year Total Return

The strong gains over the past three years have rarely been exceeded in the post-WWII period.



Data through December 31, 2021.

Source: Investment Strategy Group, Bloomberg.

- Shiller cyclically adjusted price-to-earnings (CAPE) ratio
- Price-to-trailing 12-month reported earnings

However, equity valuations alone are not a reliable market timing indicator. As shown in Exhibit 3, equity valuations entered the 10th percentile in December 2016. Since then, the S&P 500 has returned 133%. When equity valuations entered the 10th percentile in July 1995, the S&P 500 returned 194% before peaking in March 2000. Our clients would not have been served well if we had relied on expensive valuations alone to recommend exiting equity markets.

Outsized returns over three consecutive years are also not a reason to exit equity markets. Such returns are highly unusual. As shown in Exhibit 4, the S&P 500 has registered outsized cumulative returns over three consecutive years only three times in the post-WWII period: 1951, 1956 and 1997. In the early 1950s, most of the total returns were driven by the 10% dividend yield, so 1951 can be discarded. What differentiates the other two occurrences was that 1956 was followed by a recession and negative price returns, while 1997 was followed by continued economic expansion and equity market returns of 62% before the peak in March 2000.

While one of the pillars of our investment philosophy is that history is

a useful guide (see Exhibit 5), it is impossible to draw any firm conclusions from just two episodes. We simply note that the direction of the economy determined the direction of the equity market in both those episodes. Given that we forecast a 10% probability of recession this year, we believe the economic backdrop is more akin to 1997, which supports staying invested, than it is to 1956, which would support exiting the equity market.

Current Valuations in Context

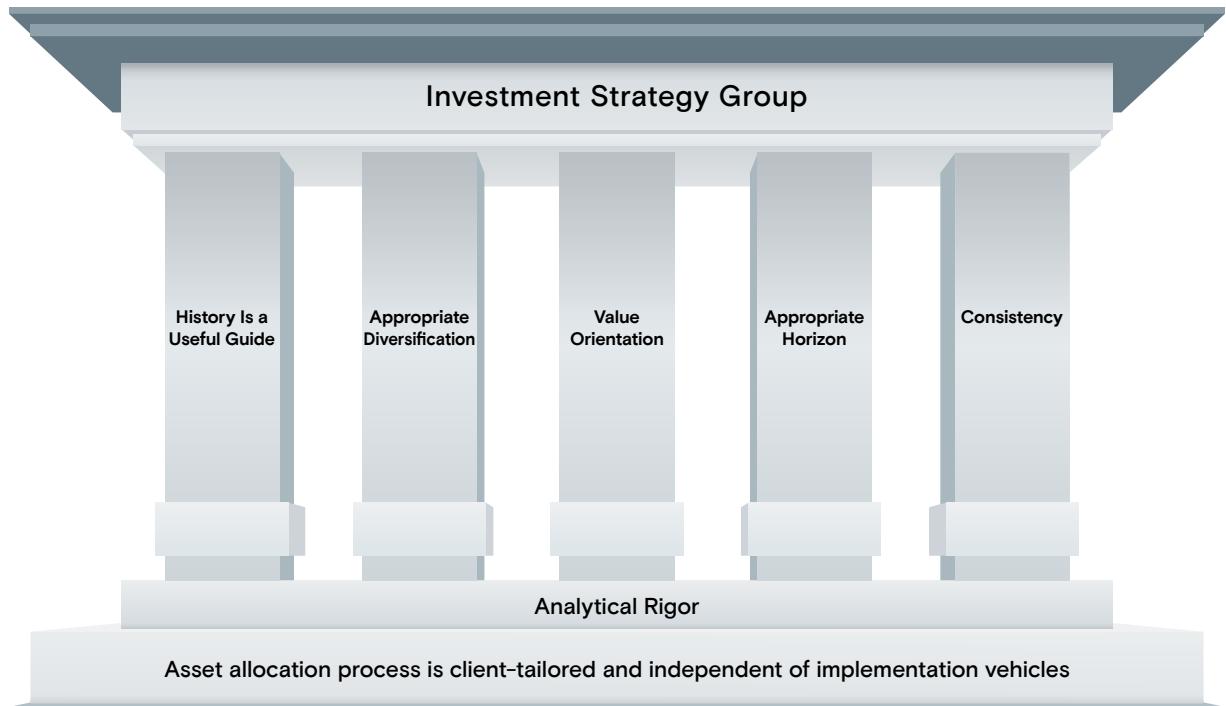
If equity valuations and outsized returns are not reason enough to underweight equities, then what other factors should be considered? We incorporate two factors:

- The inflation and interest rate backdrop
- The trajectory of forward earnings

We believe it is important to use the inflation backdrop to frame equity valuations. When inflation is low and stable—between 1% and 3%—equity market valuations are consistently higher (as discussed in prior *Outlook* reports, we have used a

Equity valuations alone are not a reliable market timing indicator.

Exhibit 5: Pillars of the Investment Strategy Group's Investment Philosophy



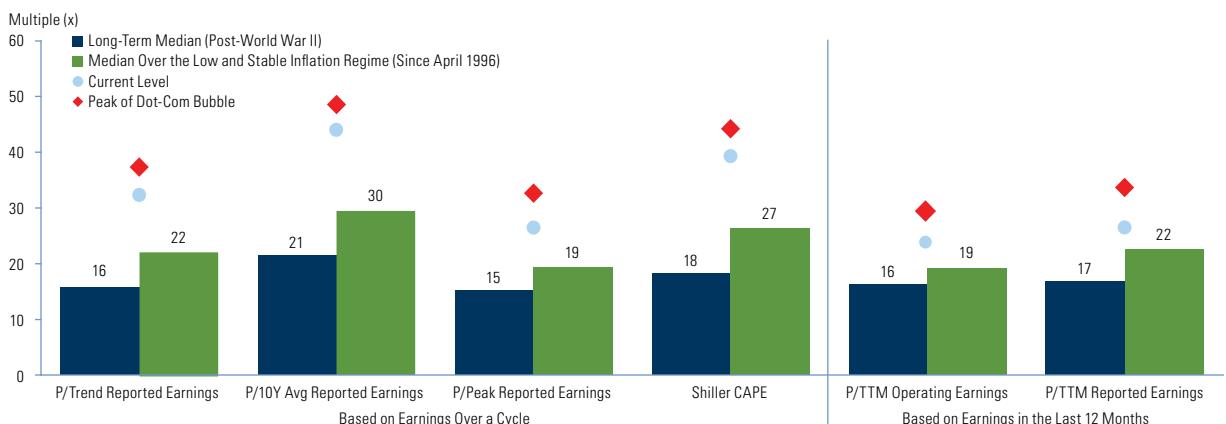
Hidden Markov Model to identify post-April 1996 as a period of low and stable inflation). As shown in Exhibit 6, median valuations across six metrics are consistently higher than median levels in the post-WWII period. In aggregate, valuations are about 35% higher (the green bars are 35% higher than the blue bars). Since we forecast that inflation

will likely fall below 3% by the end of 2022, we continue to assess equity valuations in the context of the post-April 1996 period.

As shown in Exhibit 7, equities are much less expensive when observed in the context of low interest rates and low and stable inflation. We compare the earnings yield of the S&P 500 to the

Exhibit 6: S&P 500 Valuation Multiples

Valuations have been higher during periods of low and stable inflation than over the entire post-WWII period.



Data as of December 31, 2021.

Source: Investment Strategy Group, Bloomberg.

Exhibit 7: S&P 500 Implied Equity Risk Premium (ERP)

Today's ERP is above its long-term average during periods of low and stable inflation.



Data through December 31, 2021.

Note: The ERP is estimated as forward 12-month earnings yield less 10-year US Treasury yield.
Source: Investment Strategy Group, FactSet, Bloomberg.

Exhibit 8: US 10-Year Treasury Yield Since WWII

Current yields stand much lower than long-run median levels.



Data through December 31, 2021.

Source: Investment Strategy Group, Bloomberg, Robert J. Shiller.

yield on 10-year Treasuries to derive what is called the implied equity risk premium (ERP). At 3.3%, the ERP is above its long-term average of 2.7% in periods of low and stable inflation.

We have been using this framework of valuations in the context of the inflation and interest rate backdrop for a number of years, and the approach has been an important driver of our recommendation to stay invested. In November 2020, Robert Shiller, Nobel laureate and creator of the Shiller CAPE, also introduced the concept of excess CAPE yield as a more effective tool than the original CAPE for understanding the role of interest rates in equity valuations.⁵ At 3.2%, Shiller's excess CAPE yield also shows that equities are attractively priced relative to their long-term average of 2.6% in periods of low and stable inflation.

Against this inflation backdrop, US equities are about 40% overvalued—certainly expensive, but not as overvalued as they would be when compared to post-WWII median levels. The current interest rate backdrop is also very different when compared to the post-WWII median levels. As shown in Exhibit 8, the median level for the 10-year Treasury yield in the post-WWII period was 4.6%, compared to 3.6% since April 1996 and 1.5% at year-end 2021. Lower interest rates have clearly supported higher valuations. While interest rates are forecast to rise, they will remain well below the median levels seen since April 1996.

We also think that clients should stay invested in equities when the US and other large economies are expanding and earnings are rising. Given the low likelihood of a recession in 2022 and our base case of continued economic expansion next year, we expect US earnings to grow between 8% and 10% on an annualized basis through 2023.

We now turn to the additional concerns about the current levels of the S&P 500 that are top of mind for our clients and colleagues:

- Parallels to the 2000 peak, after which equity prices declined 49%
- Concentration of the recent rally, with a handful of technology stocks accounting for the bulk of market returns
- The mean reversion of equity market valuations, which implies substantially lower forward returns
- Irrational exuberance, which signals a bubble about to burst

Current Valuations Not at 2000 Levels

Despite many pronouncements to the contrary, we do not believe that current valuations are higher than or even approximating those seen at the peak of the dot-com bubble. As shown in Exhibit 6, peak valuations during the dot-com bubble, marked by the red diamonds, were substantially above current valuations, marked

by the blue circles. Peak valuations in aggregate were 65% above the median levels of the low and stable inflation period, compared to 40% as of year-end 2021.

The ERP, shown in Exhibit 7, was also significantly less attractive in 2000 compared to current levels. The ERP reached a low of -2.5% in January 2000 and was -2.1% in March 2000, at the peak of the dot-com bubble. Currently, the ERP not only is much higher but also stands above its long-term average. The Shiller excess CAPE yield, too, is above its long-term average and well above the -1.1% at the peak of the dot-com bubble.

Still, we are not expecting the S&P 500 to reach March 2000 valuations, and our recommendation to stay invested is not predicated on any such expectation. We are simply providing the data that demonstrates that year-end 2021 is very different from March 2000.

Market Concentration

Another major concern is the level of equity market concentration. Some market participants have observed that this bull market has been driven by a handful of technology-related stocks that represent a much bigger percentage of the overall capitalization of the equity market than seen in the dot-com bubble.

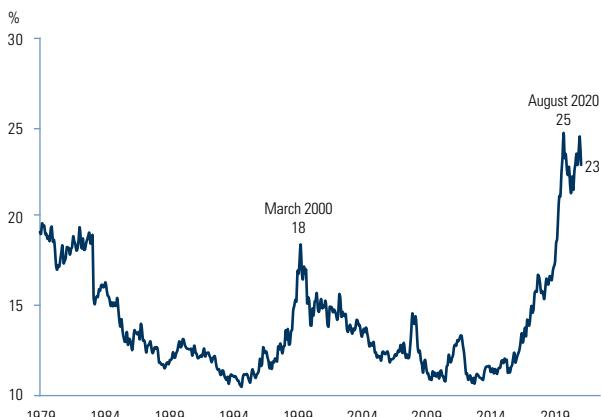
It is correct to say that the top five stocks in the S&P 500 account for a larger percentage of its market capitalization at year-end 2021 compared to March 2000, and close to the highest percentage seen in 40 years (see Exhibit 9). While this observation makes for catchy headlines, it is undermined by three important facts:

- Market returns in 2021 and since the trough of the market in March 2009 have been broad-based.
- Market concentration has had no bearing on forward one-year returns.

Comparing an equal-weighted index of the S&P 500 to the market capitalization-weighted index confirms that market returns in 2021 were broad-based.

Exhibit 9: Market Cap Weight of Top 5 Stocks in the S&P 500

The weight of the top 5 stocks is near its highest level in the last 40 years.



Data through December 31, 2021.

Source: Investment Strategy Group, Goldman Sachs Global Investment Research, Bloomberg.

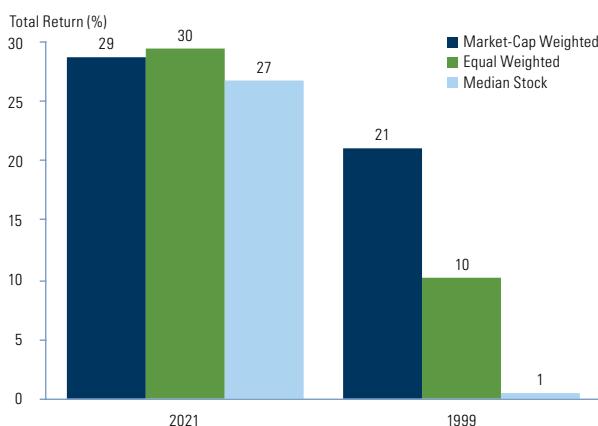
- Market concentration is relevant only when it coincides with excessive valuations in that small group of stocks.

The S&P 500 returned 28.7% in 2021. The FANGMANT (Facebook/Meta, Apple, Netflix, Google/Alphabet, Microsoft, Amazon, Nvidia and Tesla) stocks, which account for 27% of the market capitalization of the S&P 500, returned 39.8%. However, if we exclude the impact of these eight stocks and assume they did not exist (in other words, if the remaining 73% of S&P 500 market capitalization were reweighted to represent 100% of the total), then S&P 500 returns would still have been high at 24.9%. Strong absolute returns were broad-based across many stocks and many sectors. The energy sector was, in fact, the best-performing sector in 2021, with a total return of 54.6%, far exceeding the returns of the FANGMANT stocks.

Comparing an equal-weighted index of the S&P 500 to the market capitalization-weighted index also confirms that market returns in 2021 were broad-based—the equal-weighted index actually generated a marginally higher return. In 1999, market returns were much more skewed: the market capitalization-weighted index returned 21%, compared to the equal-weighted index return of 10% and median stock return of only 1% (see Exhibit 10). We reference 1999 as

Exhibit 10: S&P 500 Returns in 2021 and 1999

Returns were much more skewed in 1999 than in 2021.



Data as of December 31, 2021.

Source: Investment Strategy Group, Bloomberg, S&P Global.

Exhibit 11: S&P 500 Total Return

This bull market has not been driven by only a handful of stocks.



Data as of December 31, 2021.

Source: Investment Strategy Group, Bloomberg.

the full year preceding the March 2000 peak in the S&P 500.

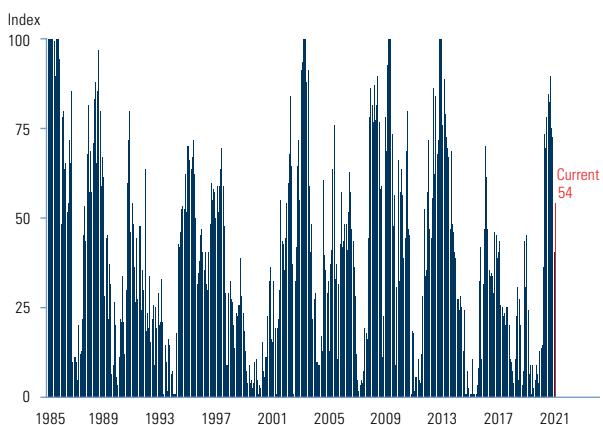
A similar comparison between market capitalization-weighted returns and equal-weighted returns of the S&P 500 over different periods in the last 22 years also confirms that this bull market has not been driven by a handful of stocks (see Exhibit 11).

Since the trough of the GFC, the equal-weighted returns have actually been higher than the returns of the market capitalization-weighted index—clearly negating the view that a handful of large-capitalization, technology-related stocks have driven this bull market. For those concerned about the base effects of starting the analysis at the trough of the GFC, we have also compared returns since the peak of the S&P 500 in October 2007. The returns are virtually identical. Finally, we even provide the returns since the peak of the dot-com bubble: there is no evidence of market concentration.

Our colleague David Kostin, Goldman Sachs' US equity strategist in Global Investment Research (GIR), has designed an equity market breadth index that measures the extent to which S&P 500 returns "are driven by a broad-based rally or narrow slice of the market."⁶ This index typically looks at the prior six months, but we prefer looking at market breadth over a longer horizon. As shown in Exhibit 12, the index currently stands at 54, which ranks in the 70th percentile since 1986. Market breadth has been well above average over the last 12 months.

Exhibit 12: Goldman Sachs Breadth Index

Market breadth has been well above average over the last 12 months.



Data through December 2021.

Note: 12-month lookback.

Source: Investment Strategy Group, Goldman Sachs Global Investment Research.

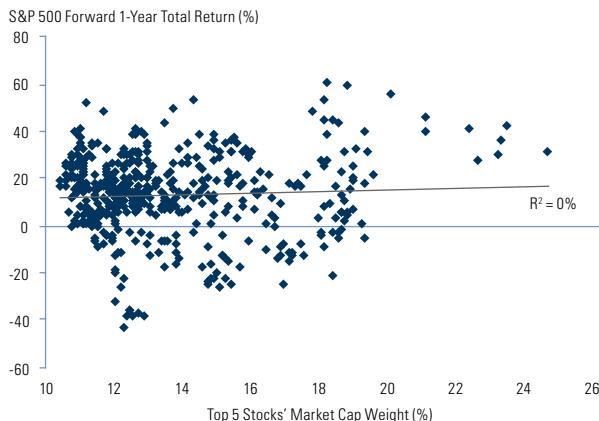
With respect to the significance of market concentration for estimating forward returns, Exhibit 13 shows that the weight of the top five stocks has had no bearing on forward one-year S&P 500 returns. The correlation between market concentration and forward returns has been basically zero.

Finally, while the equity market is more concentrated given the weight of the top five stocks in the S&P 500, we believe that the valuation

Exhibit 13: S&P 500 Top 5 Stocks' Weight vs.

1-Year Forward Returns

Market concentration has had no bearing on forward 1-year S&P 500 returns.



Data through December 31, 2021.

Source: Investment Strategy Group, Goldman Sachs Global Investment Research, Bloomberg.

of these top stocks is much more relevant to our investment recommendation. Exhibit 14 compares the percentage of the top 10 stocks that are overvalued today relative to the percentage of stocks overvalued in March 2000. As of year-end 2021, only three of the top 10 stocks had a negative ERP (the forward earnings yield relative to the 10-year Treasury yield discussed above): Amazon, Tesla and Nvidia. In March 2000, all top 10 stocks had a negative ERP.

No Mean Reversion in Equity Valuations

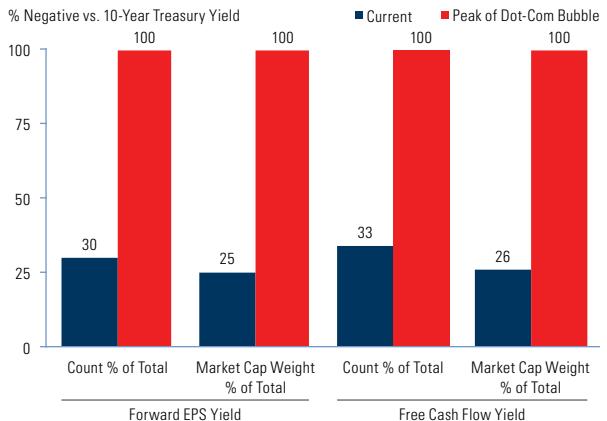
While valuations feature importantly in our toolbox to estimate forward equity returns, we should dispel an oft-repeated myth that equity valuations are mean-reverting. We addressed this myth in Investment Strategy Group *Outlook* reports in 2013, 2014, 2018 and 2019, and do so again this year.

While valuations feature importantly in our toolbox to estimate forward equity returns, we should dispel an oft-repeated myth that equity valuations are mean-reverting.

Exhibit 14: Top 10 Stocks with Negative Yield

Relative to US Treasury 10-Year Yield

The percentage of the top 10 stocks that were overvalued in March 2000 is much greater than today.



Data as of December 31, 2021.

Note: Percentages are calculated based on companies with available forward earnings yield or free cash flow yield data.

Source: Investment Strategy Group, Bloomberg, S&P Global.

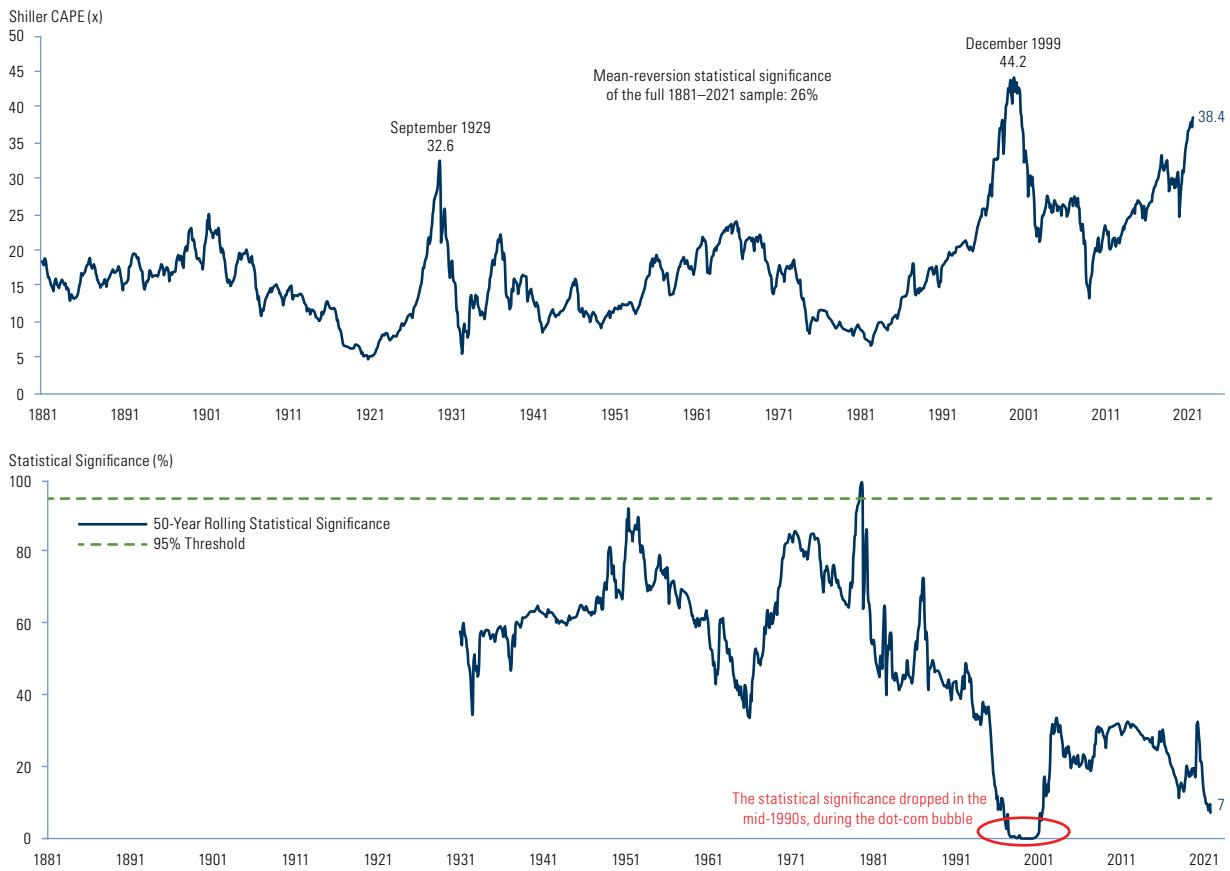
Mean reversion assumes that market valuation metrics such as those described earlier are stationary and their long-term means do not change. For example, the long-term average of the Shiller CAPE in the post-WWII period is 19. This metric stood at 38 at year-end 2021. With mean reversion, this measure would have to revert to its long-term mean through a combination of a significant decline in equity prices and some increase in earnings, implying substantially lower forward returns.

We have examined 10 different valuation metrics across the US, Europe and Japan. We have not found any statistical evidence of mean reversion. Equity valuations are a bounded time series: there is some upper bound since valuations cannot reach infinity, and there is a lower bound since valuations cannot go below zero. However, having upper and lower bounds does not imply valuations are stationary and revert to the same long-term mean.

We use the Shiller CAPE to illustrate this point, since it has the most extensive historical data among valuation metrics. As shown in Exhibit 15, the mean-reversion statistical significance of the Shiller CAPE has ranged between 0% and 100%. The statistical significance over the full sample is 26%. This means that there is only 26% confidence

Exhibit 15: Shiller CAPE Ratio and 50-Year Rolling Statistical Significance of Mean Reversion

The mean-reversion statistical significance of the Shiller CAPE metric since 1881 is very low, at just 26%.



Data through December 31, 2021.

Note: Statistical significance from the Augmented Dickey-Fuller stationarity test.

Source: Investment Strategy Group, Robert J. Shiller.

that the Shiller CAPE is mean-reverting, and 74% confidence that it is not. The traditional threshold to consider a relationship statistically significant is 95%.

Even if we ignored this threshold, the time between valuations crossing into their 10th decile and reverting to their long-term average is beyond a reasonable investment horizon for a tactical decision. For example, the Shiller CAPE entered its 10th decile in August 1989 but did not revert to its long-term mean for 13 years.

Why offer this nuanced analysis of mean reversion? Because we want to emphasize that valuations alone are not sufficient measures for underweighting equities. High valuations do not reach some magical target and then revert to some stable mean; furthermore, the time period for valuations to reach some long-term average is highly variable and therefore uncertain.

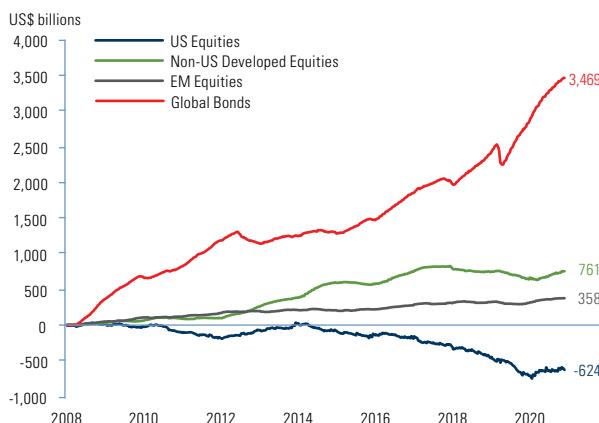
Irrational Exuberance

Another short- to intermediate-term driver of our investment recommendation is the absence of widespread irrational exuberance in today's market. While some market participants warn of "bubble-like" sentiment and a "crazier era" than the dot-com bubble, as highlighted earlier, this post-GFC bull market has not been driven by investment flows into US equities. In fact, the opposite has been true, with funds exiting US equities on a cumulative basis since the GFC.

Exhibits 16 and 17 go hand in hand. As shown in Exhibit 16, cumulative flows by investors into US equities through mutual funds and exchange-traded funds (ETFs) have been negative since the trough of the GFC: \$624 billion has exited US equities, while \$761 billion has gone into non-US developed equities and \$358 billion into emerging market equities.

Exhibit 16: Cumulative Mutual Fund and ETF Flows

Investors have favored bonds and non-US equities throughout this bull market.



Data through November 29, 2021.

Note: Based on ICI weekly estimates.

Source: Investment Strategy Group, Investment Company Institute.

US equities have been shunned by investors despite the 812% return of the S&P 500 since the trough of the GFC. Exhibit 17 shows that US equities have been the best-performing equity market during this period, far outperforming non-US developed and emerging market equities. Yet investors have allocated more assets to these underperforming markets than to US equities. Last year was the first year that investors added to US equities since 2014, and these inflows in 2021 barely offset the outflows of 2020.

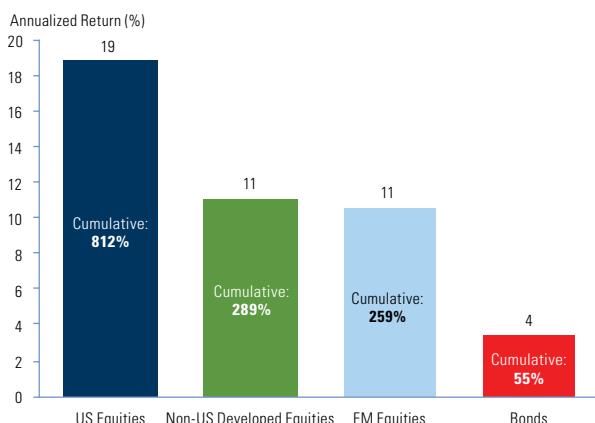
Looking at flows more broadly beyond mutual funds and ETFs, US households have been net sellers of US equities, with \$1.6 trillion of net sales, and have been net buyers of non-US equities, with \$1.9 trillion of purchases, since March 2009, as shown in Exhibit 18.

US corporate defined-benefit pension plans have also been steady sellers of equities, including US equities. Our colleague Michael Moran of Goldman Sachs' Asset Management Division has estimated that public equity allocations have steadily decreased from a peak of 64% in 2004 to 32% at the end of 2020 (see Exhibit 19).

Of course, for every seller there is a buyer. The most significant buyers over the last nearly 13 years have been S&P 500 corporations, which have bought an estimated \$7 trillion of their own stocks since March 2009. Kostin forecasts that buybacks will continue to be the largest source

Exhibit 17: Annualized and Cumulative Asset Class Returns Since March 9, 2009

US equities have far outperformed non-US developed and emerging market equities.



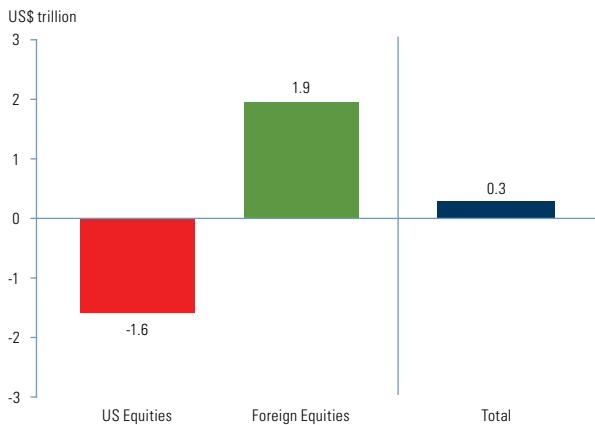
Data through December 31, 2021.

Note: US Equities: S&P 500, Non-US Developed Equities: MSCI World ex. US (\$US), EM Equities: MSCI EM(\$), Bonds: Bloomberg Barclays Multiverse Total Return Index Value Unhedged USD.

Source: Investment Strategy Group, Bloomberg.

Exhibit 18: Cumulative US Household Net Equity Demand Since Q2 2009

US households have been net sellers of US equities and net buyers of non-US equities.



Data through Q3 2021.

Note: Includes direct purchases and mutual fund purchases.

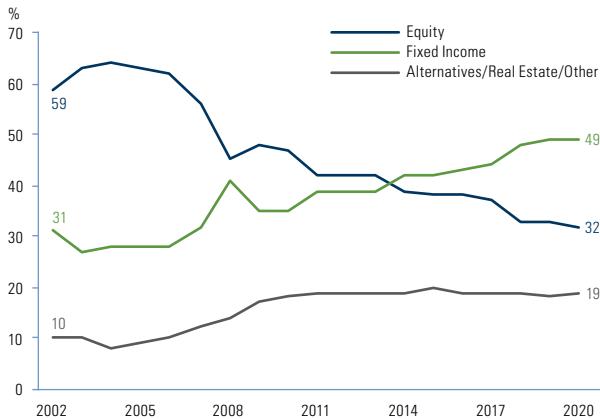
Source: Investment Strategy Group, Goldman Sachs Global Investment Research, Federal Reserve Board.

of demand for US equities in 2022, especially in light of the record-high \$1 trillion of buyback authorizations in 2021.

Two other data points have been used by market participants as further evidence of bubble-like conditions:

Exhibit 19: US Corporate Defined-Benefit Pension Fund Asset Allocation

Public equity allocations have decreased steadily over the last 17 years.



Data through 2020.

Source: Investment Strategy Group, Goldman Sachs Asset Management.

Exhibit 20: US Equity Market Cap as a Percentage of GDP

The ratio of US market capitalization to GDP is at a record high.



Data through Q3 2021.

Source: Investment Strategy Group, Bloomberg, Federal Reserve, Haver.

- Portfolio allocations to equities at record highs
- Equity market capitalization as a percentage of US GDP at post-WWII highs

Given the steady decrease in pension plan allocations to equities, we focus on US household portfolio allocations. Global equities account for 48% of household financial assets today, the highest share ever and marginally higher than March 2000 levels. However, we note that these allocations were not the result of an active decisions by households: they were attributable to equity market appreciation, not investor enthusiasm for purchasing equities.

The ratio of US market capitalization to US GDP, a metric popularized by Warren Buffett and sometimes referred to as the Buffet Indicator, is also at a record high. It is 36% above the prior March 2000 high and 86% above the pre-GFC 2007 peak (see Exhibit 20). Visually, the graph appears alarming. Yet we are less alarmed by this indicator than we might be because US corporate profits as a share of GDP are also at a record high, 92% above their March 2000 highs and 38% higher than the corresponding 2007 pre-GFC peak levels (see Exhibit 21). The conclusion is the same whether we use pre-tax or after-tax corporate profits: market capitalization as a share of GDP is at an all-time high, but so are corporate profits.

The increase in the free cash flow margins of US corporations provides another perspective on

Exhibit 21: US After-Tax Corporate Profits as a Percentage of GDP

US corporate profits are at a record high.



Data through Q3 2021.

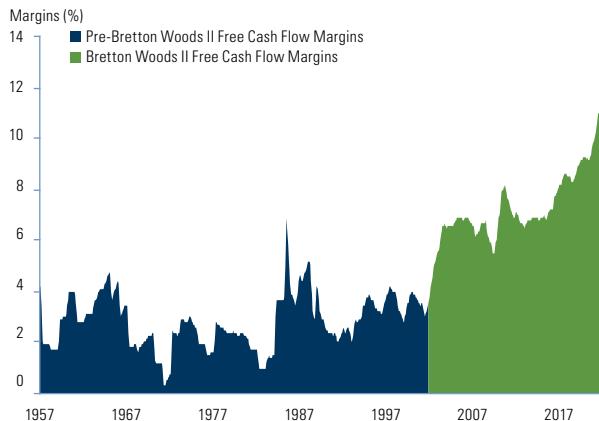
Source: Investment Strategy Group, Bloomberg, Federal Reserve.

the increased profitability of the broad US equity market. As shown in Exhibit 22, the free cash flow margins of large-capitalization corporations in the US have been rising since China joined the World Trade Organization in late 2001. Average margins between 2002 and the present have been 7.4%, compared to 2.9% between 1957 and 2001. Average margins were 3.2% between 1981 and 2001, a period when inflation and interest rates declined steadily from peak levels in the fall

Exhibit 22: US Large-Cap Stocks' Free Cash Flow Margins

Free Cash Flow Margins

Free cash flow margins have been rising since China joined the World Trade Organization in late 2001.



Data through December 2021.

Note: Excludes financials, REITs and utilities; data smoothed on a trailing three-month basis.

Source: Investment Strategy Group, Corporate Reports, Empirical Research Partners.

of 1981. Free cash flow margins currently stand at 11.1%.

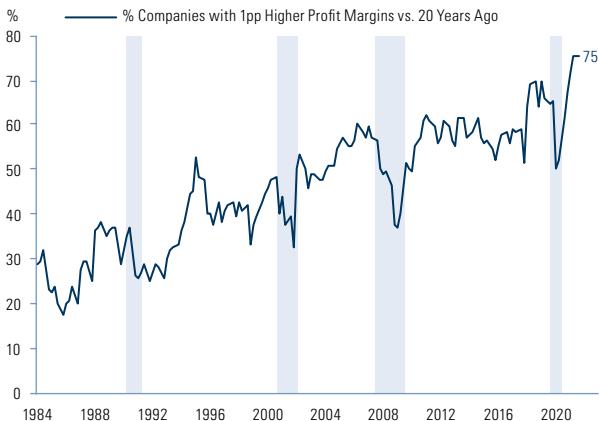
The expansion in profit margins has been broad-based. Some 82%, a record high level, of S&P 500 corporations have higher profit margins than they did 20 years ago, and 75%, also a record high level, have increased their margins by at least one percentage point compared to 20 years ago (see Exhibit 23).

We also examined short-term indicators in search of evidence of froth. We found the opposite:

- The GIR Sentiment Indicator measures equity positioning across retail, institutional and foreign investors relative to the past 12 months. In the last several weeks of 2021, it stood between 0.7 and 1.0 standard deviations below the mean, indicating below-average positioning in equities.
- The latest Global Fund Manager Survey from Bank of America shows that fund managers have raised their cash allocations to 5.1%, which is the highest since May 2020 and stands in the 83rd percentile based on data since 2011—meaning cash allocations have been higher only 17% of the time in the past 11 years.
- The American Association of Individual Investors Sentiment Survey showed very low levels of bullish sentiment in December.
- The ratio of put options to call options was more than two standard deviations above the

Exhibit 23: S&P 500 Companies with Expanding Margins

A record number of S&P 500 corporations have margins at least one percentage point higher than 20 years ago.



Data through Q3 2021.

Note: Shaded periods denote recessions.

Source: Investment Strategy Group, S&P Global.

mean of the last 12 months on December 29, indicating conservative investor sentiment and preference for put options. This indicator is volatile and changes daily.

In short, we do not see much evidence of widespread irrational exuberance. In our 2018 *Outlook* report, *(Un)Steady as She Goes*, we quoted Steve Einhorn, a former Goldman Sachs partner who led Global Investment Research, who said “This has been one of the most hated bull market advances.” Four years later, we believe that is still the case.

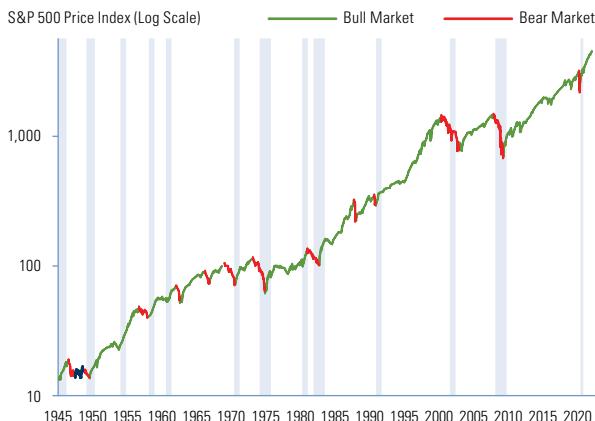
We conclude that our selection of short- and intermediate-term drivers does not warrant, at least not yet, an underweight to equities. These drivers do, however, propel us toward increasing vigilance and careful monitoring of triggers that would prompt us to underweight equities.

Long-Term Strategic Insights: The High Hurdle for Underweighting US Equities

While many of the readers of this report focus on our short-term financial market and economic outlook for 2022, we believe that our long-term strategic insights that establish a high hurdle for underweighting equities, if acted upon, will have the highest positive impact on our clients' portfolios in the long run.

Exhibit 24: S&P 500 Index Over the Post-WWII Period

US equities have generated positive returns most of the time over the long run.



Data through December 31, 2021.

Note: Shaded periods denote recessions. 1947–48 is colored blue because it was neither a bull nor a bear market.

Source: Investment Strategy Group, Bloomberg, NBER.

Importantly, we remind our clients and colleagues that having a high hurdle rate for underweighting equities is not the same as endorsing a buy-and-hold strategy for US equities. Our Investment Strategy Group consists of 25 professionals dedicated to tactical asset allocation across global equities, global bonds, currencies and commodities. On average, the team has had 14 new tactical tilt recommendations per year and has consistently overweighted US equities and US high yield bonds after the major downdrafts in 2002, 2008–09 and 2020.

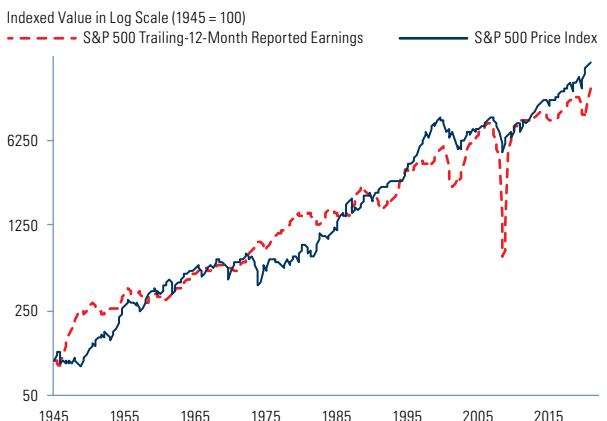
We believe the hurdle to underweight equities is very high because the odds of success with such a strategy are very low, as described below. Conversely, the hurdle to overweight equities when valuations are attractive is low and the odds of the eventual success of such a strategy are 100%. US equities always recover from setbacks: every downdraft, marked in red in Exhibit 24, has been followed by a rally, marked in green.

There are three main arguments for embracing a high hurdle for underweighting US equities and a low hurdle for overweighting equities. There is a fourth argument for taxpayers with high capital gains tax rates. These are discussed further below. In brief:

- Underweighting equities is fighting an upward trend in earnings and prices.

Exhibit 25: S&P 500 Price Index vs. Earnings

Prices of US equities follow the path of corporate earnings in the long run.



Data through Q3 2021.

Source: Investment Strategy Group, Bloomberg, S&P Global.

- Underweighting equities when valuations are high creates the risk of exiting the equity market too soon, while overweighting equities when valuations are low does not pose any long-term risk. The overweight will eventually succeed in adding value to a portfolio as equities will eventually resume their upward trend.

- A systematic strategy of both underweighting and overweighting equities underperforms a strategy of solely overweighting equities.
- Taxpayers in states such as New York and California, who face high state taxes on capital gains, have an even higher hurdle for selling equities, because those investments have to drop enough to more than offset the total federal and state capital gains taxes paid on the sales.

The Upward Trend

Underweighting equities is fighting an upward trend in earnings and prices, as shown in Exhibit 25. S&P 500 earnings have grown 6% per year on average in the post-WWII period, increasing 69% of the time while declining 31% of the time. The S&P 500 price index has followed the path of earnings over the long term, increasing 7.8% annualized since the end of WWII; the S&P 500 total return index, which includes dividends, has increased 11.5% annualized.

Given the current high equity valuations, we also considered price returns from the market peak

of March 2000 when valuations were in bubble territory for a soberer assessment of the upward trend. The S&P 500 price index increased 5.4% annualized and the total return index increased 7.4% annualized between March 2000 and year-end 2021.

Prices, like earnings, have increased most of the time. As shown in Exhibit 24, the S&P 500 has experienced a bear market only 18% of the time, where a bear market is defined as a decline of greater than 20% based on closing prices.

Given the higher frequency of increases in earnings and prices relative to the frequency of decreases, the odds are stacked against an investor who seeks to avoid the declines by exiting the market, especially as there are no consistently reliable investment tools that can be used to identify those declines.

Early Exit

A second argument for having a high hurdle rate is the high cost of exiting too early.

In our 2020 *Outlook* report, *Room to Grow*, we referred to the writings of Howard Marks, a highly respected investor and prolific writer on the principles of investing. In his book, *Mastering the Market Cycle: Getting the Odds on Your Side*, Marks highlights two important risks in tactical asset allocation: “the likelihood of permanent capital loss” and “the likelihood of missing out on potential gains.”⁷

In exiting the equity market too early, one permanently misses out on potential gains. As shown earlier in Exhibit 3, if an investor exited US equities in July 1995 when the S&P 500 entered the 10th decile of valuations, this investor never had a chance to reenter the equity market at a cheaper level. This early exit resulted in a permanent opportunity cost.

Investors who exited the current bull market too early, say in December 2016 when valuations entered

Given the higher frequency of increases in earnings and prices relative to the frequency of decreases, the odds are stacked against an investor who seeks to avoid the declines by exiting the market.

the 10th decile, would have incurred an opportunity cost of 133%. Equities would have to decline 57% from current levels, and be acquired at that level, to offset the opportunity cost of the early exit.

Of course, the opportunity cost decreases if an investor exits the market closer to the peak. We do not know of any investor who has consistently exited the market close to peak levels. Many high-profile investors have called market declines, but the vast majority have been years too early.

In the Investment Strategy Group, our triggers for exiting the market are:

- Excessive valuations across several metrics, including the equity risk premium
- High likelihood of an imminent recession due to aggressive Federal Reserve tightening
- Severe financial market and economic imbalances

Given the difficulty of forecasting recessions, it is more likely that we will exit the market when a recession has already begun and the market has experienced about a quarter of a typical 30–40% recession downdraft. We discuss the likelihood of a 2022 recession later in Section I.

Scenario Analyses of Overweighting and Underweighting Equities

In our prior *Outlook* reports, we have presented back-tested strategies demonstrating that a strategy that overweights equities when valuations are attractive outperforms a strategy that underweights and overweights equities symmetrically.

For this year’s *Outlook*, we repeated the exercise to show that the conclusion remains valid even with a different set of parameters. The benchmark is a 50% stock/50% bond moderate-risk portfolio. The results are summarized in Exhibit 26.

The strategy overweights equities by 5% when equities have had a 20% drawdown, adds 5% when the peak-to-trough decline is 25% and adds a further 5% when the drawdown reaches 30%. Once the market recovers to its pre-drawdown levels, the overweights are removed. The strategy underweights equities by 5% when valuations reach the ninth decile and by an additional 10% when equities enter the 10th decile. The underweight is removed when valuations enter the fifth decile.

Exhibit 26: Market Timing Back-Test Results

The overweight-only strategy outperforms and has a higher information ratio.

	Remove Overweight When Markets Fully Recovered	
	Overweight & Underweight	Overweight Only
Strategy		
Pre-Tax Return	8.91%	9.04%
Volatility	7.92%	8.37%
Benchmark		
Pre-Tax Return	8.68%	8.68%
Volatility	7.66%	7.66%
Strategy vs. Benchmark		
Pre-Tax Excess Return	0.23%	0.37%
Tracking Error	1.79%	1.29%
Information Ratio	0.13	0.28
After-Tax Excess Returns	-0.06%	0.20%

Data from September 1945 to December 2021.

Note: Based on data since 1945. These hypothetical strategies are described in the text and are for illustrative purposes only. Returns are gross of fees. See the disclosures for a discussion on how fees can affect the returns. Federal tax rates are assumed: Stocks' dividends are taxed at the long-term capital gains federal tax rate of 23.8%. Stocks' long-term (short-term) capital gains are taxed at the long-term (short-term) capital gains federal tax rate of 23.8% (40.8%). Bonds are assumed to be tax-exempt. Excess return refers to the return of the hypothetical strategy versus the benchmark. Benchmark. Based on data for the S&P 500 (Ibbotson/Datastream) and US Treasuries (Ibbotson Intermediate Treasuries/Bloomberg US Treasury Index).

Source: Investment Strategy Group, Datastream, Robert J. Shiller, Ibbotson.

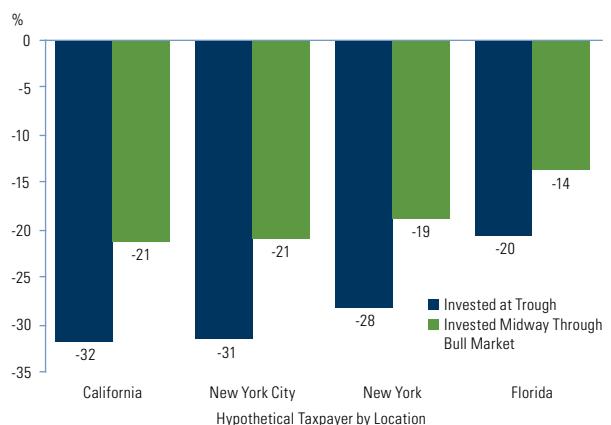
The overweight strategy outperforms the overweight and underweight strategy by 14 basis points a year and has a higher information ratio—a measure of excess return over the incremental volatility of the strategy compared to a buy-and-hold portfolio that is rebalanced monthly. If one incorporates the impact of federal capital gains taxes on the two strategies, the outperformance increases to 26 basis points. The strategy that both overweights and underweights equities also underperforms a buy-and-hold passive portfolio on an after-tax basis.

The purpose of this back test was to demonstrate the asymmetry of tactical asset allocation with respect to overweighting and underweighting equities.

We note that a similar conclusion was reached by Elroy Dimson, Paul Marsh and Mike Staunton of the London Business School. They conducted an extensive study across 23 countries between 1900 and 2012 and performed a back test in which they “sold” a country’s equities when real returns were forecast to be negative over the following five years based on expensive valuations. They then “invested” the proceeds in Treasury bills. In every country, the strategy of underweighting equities based on a high valuation signal that implied

Exhibit 27: Required Decline in US Equities to Offset Tax Consequences of Selling

Capital gains taxes increase the hurdle to exit the equity market for tax-paying investors.



Data as of December 31, 2021.

Source: Investment Strategy Group, Datastream.

negative real returns underperformed a strategy of remaining in equities the whole time.⁸

High Hurdle Rate Due to Capital Gains Tax Burden for Taxpayers

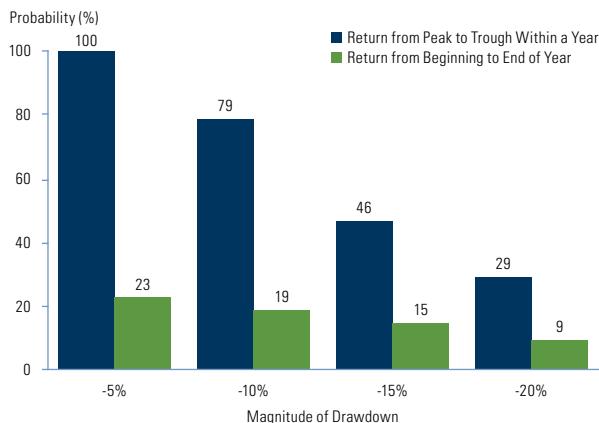
A final argument for having a high hurdle for underweighting equities is that it is very hard to offset the cost of taxes incurred when selling assets with high embedded capital gains. To offset such costs, the downdraft has to be significant and the timing of going underweight close to perfect—again, a virtually impossible task.

Exhibit 27 allows clients to compare the impact of federal and state capital gains taxes across different jurisdictions and different cost bases for the equities they might consider selling. For example, for a high-tax investor residing in California, equities have to decline 32% simply to offset the cost of taxes incurred for every dollar invested in the trough of the equity market in March 2009. For every dollar invested midway in this bull market, equities have to decline by 21% to offset the costs of the federal and state capital gains taxes. In Florida, which does not have state income taxes, the required equity decline to offset only federal taxes is much lower. An underweight to equities can be justified for investors in high-tax

Exhibit 28: S&P 500 One-Year Drawdown

Probability When Valuations Are High

The probability of a 5% correction at any point over the course of a year has been 100%.



Data through December 31, 2021 - excluding 2017.

Note: Conditional on US equity valuations being in the 9th or 10th deciles.

Source: Investment Strategy Group, Bloomberg.

jurisdictions with low-cost-basis equities only if one is forecasting a significant decline in equities to offset the capital gains taxes. Otherwise, the underweight strategy would create a loss for that tax-paying investor.

Advisory Alert

We recommend clients stay invested given our base case return assumption of 6.3% for US equities, a near-zero return for cash and moderately negative returns for high-quality fixed income assets. We also assign a higher probability to a good case scenario in which US equities return 12.6% and a lower probability to a bad case scenario in which US equities return -18.9%.

We note that since the GFC, we have assigned a higher probability to our bad case scenario only once, and that was in our 2012 *Outlook*. We still recommended clients stay invested because our base case return forecast for that year was 10%; the S&P 500 returned 16%.

Our recommendation to stay invested is based on our view of equity returns on an absolute basis, on our view of equity returns relative to other asset classes, and on our assignment of probabilities to our base case, good case and bad case scenarios. It is the same combination of short- and intermediate-term drivers and the high hurdle for underweighting equities that has led us to recommend clients stay invested since March 2009.

However, staying invested brings with it the associated volatility of equities when valuations are at high levels. As shown in Exhibit 28, the historical frequency of a 5% downdraft at any point over the course of a year is 100%, the frequency of a 10% downdraft is 79% and that of a 15% downdraft is 46%. These frequencies reflect downdrafts that have occurred since WWII. Clients should be prepared to withstand such volatility over the course of 2022. The probability of such downdrafts declines if the investor's holding period is 12 months.

We have excluded 2017 from the analysis in Exhibit 28 because the equity market had extremely low realized volatility of 7% that year, only half the long-term volatility of US equities. If we include 2017, a clear outlier, the frequency of downdrafts is somewhat lower.

To summarize, we have been carefully screening the US equity market for signs of bubble trouble since 2013. While we have remained vigilant, and we have shared our view with our clients regularly (including through these annual *Outlook* reports), we recognize the obvious: every additional year of positive returns brings us closer to the last innings of this bull market. Not to belabor the point, but as we wrote in our 2016 *Outlook* report, *Last Innings*, “we know we are in the last innings, we just do not know how many more innings remain.”

Outlook



Investment Management Division

The Last Innings



"It ain't over till it's over."
Yogi Berra (1925-2015), American Baseball Legend

Investment Strategy Group | January 2016

Exhibit 29: ISG Prospective Total Returns



Data as of December 31, 2021.

Source: Investment Strategy Group. See endnote 9 for list of indices used.

Note: Forecasts have been generated by ISG for informational purposes as of the date of this publication. There can be no assurance the forecasts will be achieved.

As baseball legend Yogi Berra put it more succinctly: "It ain't over till it's over." He also sagely said, "It's déjà vu all over again."

Our One- and Five-Year Expected Total Returns

After an 812% total return—19% annualized—since the trough of the market on March 9, 2009, and a 100% return over the last three years, it may seem implausible that we are putting forth yet another forecast of positive total returns for US equities, with a higher probability assigned to our good case scenario. But here we are.

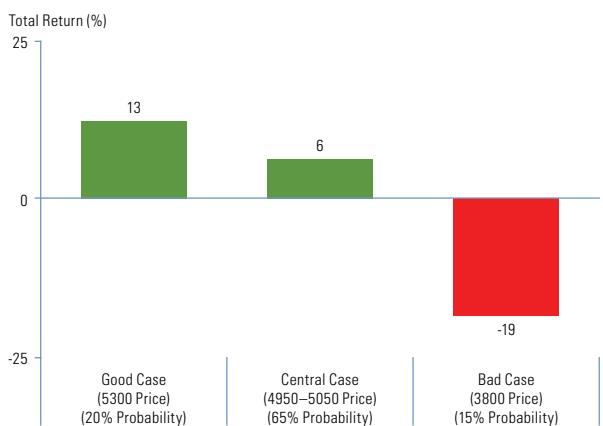
As shown in Exhibit 29, we expect a base case total return of 6.3% for US equities and 7.0% for the MSCI All Country World Index, driven by:

- Economic growth of 3.9% in the US and 4.5% globally
- Earnings growth of 12% in the US, moderately lower earnings growth across non-US developed equities and much lower earnings growth of 6% in emerging market (EM) equities
- A low probability of recession, estimated at 10% for the US, 10% for other developed economies and 20% for EM economies

We also assign a probability of 20% that 2022 US equity returns will exceed our base case

Exhibit 30: ISG S&P 500 Total Return Forecast Scenarios—Year-End 2022

We assign higher odds to our good case than to our bad case scenario.



Data as of December 31, 2021.

Source: Investment Strategy Group, Bloomberg.

Note: Forecasts are estimated, based on assumptions, are subject to revision and may change as economic and market conditions change. There can be no assurance the forecasts will be achieved. Indices are gross of fees and returns can be significantly varied. Please see additional disclosures at the end of this *Outlook*.

expectations and 15% odds that they will fall short of our expectations, leaving a 65% probability for our base case. For the US, we estimate a low-double-digit return in our good case scenario and -18.9% in our bearish scenario (see Exhibit 30).

Our clients may well ask why we provide three scenarios. Given the long-term volatility of 15% for equities, the immense difficulty of forecasting financial markets, and the tremendous uncertainties and risks we have faced and continue to face since the GFC, it seems only prudent for us to provide a range of possible outcomes and convey the probabilities surrounding our views. We want to ensure that clients know that investing in financial markets requires weighing the probabilities of various outcomes and acting accordingly.

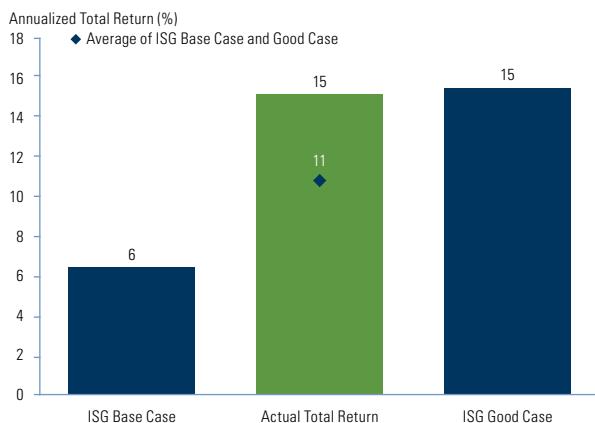
A look back at our scenarios and the probabilities we have assigned to those scenarios since the GFC explains one of the drivers that has underpinned our recommendation to stay invested. Since the beginning of 2010, the S&P 500 has returned 15% annualized. Our base case forecasts for this period, based on the expected returns published in our annual *Outlook* reports, were 6% annualized. Our good case scenario forecasts were 15% annualized. Given that we had assigned a higher probability to the good scenarios than the bearish scenarios in nine of the last 12 annual forecasts, we believe that we should examine both our base case and good case scenarios to see if our forecasts were generally right. A simple average of the two sets of forecasts is 11%, somewhat lower than the 15% annual return that has been realized (see Exhibit 31). While returns have far exceeded our base case scenarios, having a higher probability assigned to the more bullish scenarios than the bearish scenarios has been a critical factor in our decision to recommend staying invested. The same holds true in our outlook for 2022.

Our base case expected returns rest on the assumption that the COVID-19 pandemic will be under control by the middle of 2022 in the US and the rest of the developed world. Our base case also assumes that the Delta and Omicron surges will abate by the spring of 2022. We are less certain about the pandemic in EM countries.

Having a higher probability assigned to the more bullish scenarios than the bearish scenarios has been a critical factor in what has motivated us to recommend staying invested.

Exhibit 31: S&P 500 Returns vs. ISG Expectations During 2010–21

The average of ISG's base and good case projections was lower than the S&P 500's annualized gains since 2010.



Data as of December 31, 2021.

Source: Investment Strategy Group, Bloomberg.

The more bullish scenario is driven by our assumptions of a faster decline in inflation as supply constraints subside, and by higher economic growth. The downside scenario is driven by the materializing of one or more of the risks reviewed later in this report, including the risk of further virus mutations that evade the current and forthcoming vaccines, higher inflation that prompts more aggressive Federal Reserve tightening that in turn leads to recession, and rising geopolitical tensions between the Western world and Russia, China or both.

We expect non-US developed market equities and EM equities to outperform US equities this year and moderately exceed US equities over the next five years, with the exception of Japan. Even though non-US developed and EM equities are respectively valued at a significant 49% and 56% discount to US equities, we do not recommend an overweight to non-US equities beyond the few select tactical tilts outlined below and any other

tactical tilts we might initiate in 2022. While the base case returns are higher, we allocate a higher probability to the downside scenario than is the case with US equities. Should the downside scenario materialize, we also expect a sharper decline in those equity markets. This less favorable skew between downside returns and upside returns in non-US equity markets has been observed over five-year rolling horizons since

Exhibit 32: Non-US Developed Equity Valuation Premium / Discount to US Equities

Non-US developed equities' discount to the US has widened and remains well below its long-term average.



Data through December 2021.

Note: Non-US developed equity valuation is based on MSCI EAFE. Each region's valuations are based on an average of the following metrics: price to 10-year earnings, price to 10-year cash flow, price to book, price to peak earnings, price to peak cash flow, and price to dividend.

Source: Investment Strategy Group, Datastream.

Exhibit 33: EM Equity Valuation Premium / Discount to US Equities

EM equities continue to trade at a large valuation discount to US equities.



Data through December 2021.

Note: EM and US market valuations are based on an average of the following metrics: price to 10-year earnings, price to 10-year cash flow, price to book, price to peak earnings, price to peak cash flow, and price to dividend.

Source: Investment Strategy Group, Datastream.

1993, using data since the inception of the MSCI Emerging Markets Index.

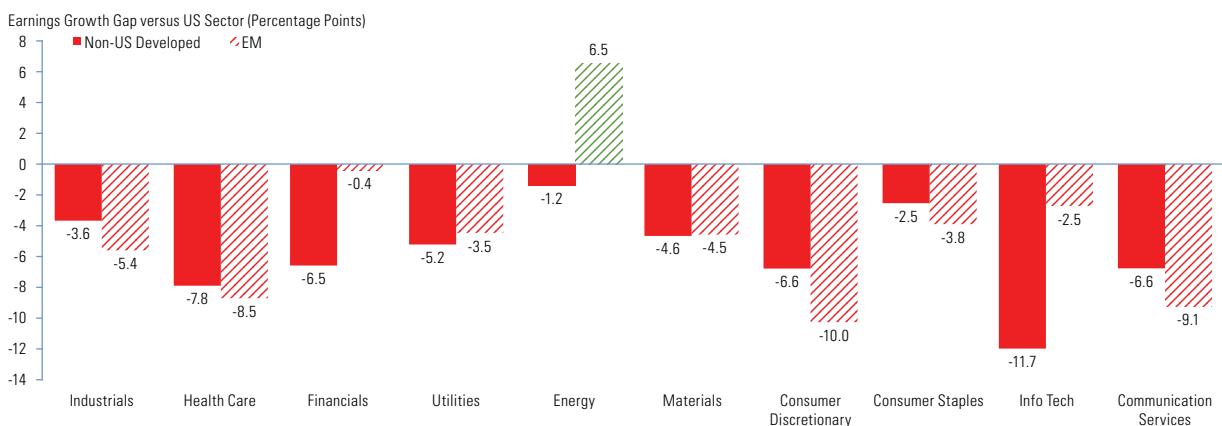
Our long-term rationale for not overweighting non-US developed market equities is the same as that of prior years. First, historically, discounted valuations to US equities have not led to outperformance in subsequent one- and five-year periods. As can be seen in Exhibit 32, the discount

in non-US developed equities has continued to widen since 2006 and has remained below its long-term average for over 12 years. In EM equities, the premium peaked in 2008 and has been below its long-term average for over eight years (see Exhibit 33).

Second, earnings outside the US have substantially lagged those of the US across most

Exhibit 34: Annualized US vs. Non-US Earnings Growth Gap Since 2007

Earnings outside the US have substantially lagged those of the US across most sectors.



Data through December 2021.

Note: Indices are based on MSCI data, beginning in December 2007. Analysis uses 12-month trailing earnings.

Source: Investment Strategy Group, MSCI, Datastream.

sectors since the prior peak in earnings growth in 2007. For example, earnings growth in the health-care sector in the US has outpaced that of non-US developed and EM companies by 7.8 and 8.5 percentage points per year, respectively, for over 14 years (see Exhibit 34). We expect earnings outside the US to lag those of the US again in 2022.

The divergence in earnings and valuations can be partly attributed to the higher exposure of the US equity market to the information technology sector. This sector accounts for 22.1% of earnings in the S&P 500, 8.3% of non-US developed equities, 17.2% of EM equities and 4.4% of Chinese equities. Once we adjust for such sector weights, non-US equities are not as cheap as they appear. In fact, non-US equities are only about 12% cheaper than US equities when adjusted for sector weights, and the price per unit of earnings growth as measured by the price/earnings-to-growth (PEG) ratio is actually higher.

Finally, as we have written extensively over the years, including in our 2013 *Insight* on emerging markets, *As the Tide Goes Out*, we are concerned about the structural fault lines of EM countries, especially those of China. These fault lines were not addressed during the Goldilocks period of 2003–07, when—fueled by China’s entry into the World Trade Organization—China’s economic growth took off and its demand for commodities boosted the exports of several large EM countries. It is unlikely that these countries can address the fault lines in the near future, given the damage

Insight



Investment Management Division

Emerging Markets: As the Tide Goes Out



"It's only when the tide goes out that you learn who's been swimming naked."
Warren Buffett, 1992 Letter to Berkshire Hathaway Shareholders

Investment Strategy Group | December 2013

Exhibit 35: Annualized and Cumulative Returns of Municipal and Treasury Bonds Since 2013

The return differential of Treasury bonds has been modest since we began publishing expected returns.

	1–10 Muni	1–10 Treasuries	5-Year Treasuries	10-Year Treasuries
Annualized	2.4%	1.7%	1.6%	2.2%

Data through December 31, 2021.

Source: Investment Strategy Group, Bloomberg.

done to their economies from the GFC and the pandemic. Emerging market equities have underperformed US equities by 516 percentage points since the trough of the GFC and by 29 percentage points in 2021 alone; we do not expect any meaningful outperformance and are concerned about China’s long-term growth trajectory.

With respect to our prospective returns for high-quality fixed income, we expect negative returns across US Treasuries and municipal bonds in 2022. We expect the 10-year Treasury yield to increase from 1.5% to 1.75–2.25%.

Over the last several years, clients have often asked for more detailed guidance on the optimal maturity profile for their fixed income holdings. Our response each time has been that the returns would not be meaningfully different for short- and intermediate-maturity bonds over the next five years. Shorter-maturity bonds would generally offer lower yields and provide less of a deflation hedge and less shock protection to a portfolio; in turn, when interest rates eventually rose, the price decline would be less. On the other hand, intermediate-maturity bonds would generally offer higher yields and provide more of a deflation hedge and more shock protection; however, when interest rates eventually rose, the price decline would be greater. We also suggested it would be hard to pick the optimal maturity; however, since the differences would not be meaningful over a five-year window, the choice would not have a material impact on a client’s portfolio.

As shown in Exhibit 35, the return differential of Treasury bonds with varying maturities has been generally modest since we began publishing one- and five-year expected returns.

The near-average returns forecast for equities and the below-average returns forecast for fixed income securities result in an expected total return of 4.0% for our moderate-risk portfolios for taxable

clients and 3.7% for tax-exempt clients for 2022. The returns for the five-year period (2022–26) drop to 2.4% and 2.7% for the taxable and tax-exempt portfolios, respectively, reflecting a 60% probability of a recession sometime over the next five years.

Our Tactical Tilts

The financial markets presented the tactical asset allocation team with significant opportunities to add value to our clients' portfolios last year. At peak levels, we had 22 individual tactical tilts in the portfolio, well above our long-term average of 10. Although we entered the year positive on equities, the magnitude of gains and the low level of volatility exceeded our expectations. Realized equity volatility was just 13% in 2021—less than half of 2020's level.

We estimate that these tactical tilts added about 76 basis points to a taxable moderate-risk portfolio in 2021. The overall volatility of the tilts was 3.7%, and the beta to the S&P 500 was a low 0.17 based on daily data.

The tactical asset allocation team has two mandates. The first and most important is to provide investment recommendations for the two largest asset classes in clients' portfolios: equities and fixed income. The recommendation to stay invested is an example of this mandate. The second mandate is to take advantage of opportunities across all asset classes as they present themselves. Typically, these tactical tilts have been funded from fixed income assets and driven by attractive valuations and market dislocations. As shown in the pillars of our investment philosophy (see Exhibit 5), we have a value orientation that underpins our investment process.

Underweight High-Quality Fixed Income:

We have recommended underweighting high-quality fixed income since the trough of the GFC, and we continue to do so.

This year, however, we have not only used fixed income assets to fund tactical tilts, but we have forecast the most negative returns for US Treasuries that we have ever forecast in our *Outlook* reports. With the 10-year Treasury yield at 1.5% and the prospect of the Federal Reserve raising the federal funds rate at least three times this year, the most likely

trajectory of interest rates is upward, with a target of 1.75–2.25% for the 10-year Treasury yield by the end of 2022. This interest rate move results in the largest negative one-year return we have ever forecast for the 10-year Treasury, at -2.4%. Other high-quality fixed income assets are also projected to have negative returns.

An inevitable question from clients and colleagues throughout the last decade of very low interest rates is: why hold any fixed income if returns are anemic at best and negative at worst—isn't it better to hold cash instead? Although the expected return for cash and cash equivalents is higher, cash, unlike Treasury bonds, does not provide any hedge from external shocks to a portfolio. We therefore recommend always maintaining some exposure to intermediate-term high-quality fixed income securities to protect the portfolio from shocks that are sure to arise every few years.

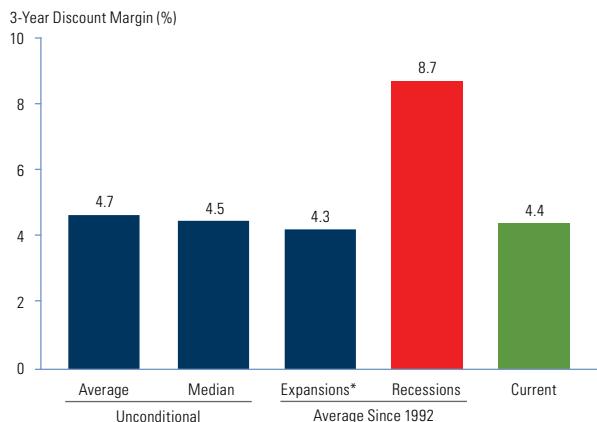
Allocation to a 30-Year Treasury Swap: A Treasury swap occurs when a buyer of the swap makes a fixed interest rate payment over the life of the swap in exchange for receiving a floating interest rate payment. If the floating rates received are greater than the fixed rate paid, the buyer's swap is profitable. We recommended this tilt in July 2020 as the US economy was on a path to recovery. At the time, the swap rates were close to the trough levels seen in March 2020, when the economy was headed into a recession caused by an uncertain pandemic.

This tilt has outperformed fixed income assets, and we believe it offers further upside. In our view, 30-year Treasury swaps are mispricing the path of interest rates over the next 30 years—the fixed payment was too low in July 2020 when we initiated this tilt, and it remains so now. In fact, the swap market pricing is inconsistent with other market-based measures of inflation expectations, such as inflation-linked securities.

We recommend always maintaining some exposure to intermediate-term high-quality fixed income securities to protect the portfolio from shocks that are sure to arise every few years.

Exhibit 36: Leveraged Loan Spreads

The current incremental yield from bank loans is in line with median levels since 1992.



Data as of December 31, 2021.

Source: Investment Strategy Group, Credit Suisse.

* Excluding periods six months prior to recessions.

Exhibit 37: S&P 500 Volatility Skew

The skew in implied volatility between put and call options is near the highest levels over the last 10 years.



Data through December 31, 2021.

Note: Skew is defined as the difference in implied volatility of a 4-month 10% out-of-the-money put and a 2-month 1.5% out-of-the-money call.

Source: Investment Strategy Group, Bloomberg.

Allocation to Bank Loans: This tilt was initiated in 2020. Even though this tilt has delivered the mid-single-digit returns that we targeted, we continue to recommend an allocation to bank loans. Our investment rationale is fourfold:

- Valuations are attractive. Bank loans currently offer about 439 basis points of incremental yield relative to three-month LIBOR. This incremental yield is marginally above the long-term average during expansions, and in line with the median levels since 1992 (see Exhibit 36). We expect some further tightening of spreads as investors search for incremental yield.
- As the Federal Reserve raises interest rates, the coupons on these floating-rate instruments will be reset higher, providing incremental returns.
- While default rates are likely to rise from last year's extremely low levels, we expect them to stay below the long-run averages as the economic expansion continues. Nevertheless, bank loans will experience some losses from defaults, and we have factored those into our return expectations.
- We expect the flow of funds into bank loan mutual funds and ETFs to continue as the mid-single-digit yield levels of bank loans attract investors—but perhaps not quite at the same pace as in 2021, when bank loan funds attracted \$47 billion of inflows.

We expect bank loans to outperform cash by mid-single digits in 2022.

Allocation to S&P 500 Option Strategies: Given our general recommendation to stay invested and our view that short-term investor sentiment toward equities is marginally negative, we initiated two tactical tilts in early December 2021 as fears of Omicron raised implied volatility in equity markets.

The first tactical tilt was selling a 15% out-of-the-money put option on the S&P 500 when volatility first spiked in early December. The purpose of this tilt was to collect a mid-single-digit premium with the view that there is a low probability of a recession in 2022 and a similarly low likelihood of a 15% market drop.

The second tactical tilt, also initiated in early December, was designed to capture further upside in the S&P 500 while also providing a buffer against further downside, unlike an outright overweight. The tilt took advantage of a mismatch between the implied volatility of S&P 500 put and call options by selling a put option with high volatility to buy a call option with substantially lower volatility.

The skew in implied volatility between put and call options, as shown in Exhibit 37, was near the highest levels over the last 10 years. This skew reflects the risk aversion of investors toward the

end of the year: they preferred buying protection in the form of put options on the S&P 500 given more immediate concerns about Omicron, inflation and Federal Reserve rate increases, while they were less interested in capturing upside potential.

Overweight to US Energy Infrastructure Master Limited Partnerships (MLPs): The allocation to MLPs has been our longest-standing tactical tilt. We have frequently adjusted the weight of this tilt, which we initiated as an option trade in 2015 and transformed into a long MLP position in January 2016. Although this tilt has an inception-to-date return of 28%, it has also been our most volatile tilt. That volatility has been driven by the volatility in oil prices, which have ranged from a low of \$10 per barrel in 2020 (excluding the technically driven one-day price of -\$37) to a high of \$82 per barrel in October 2021.

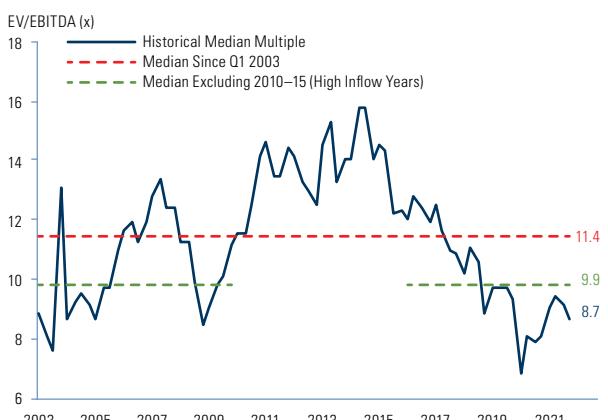
With a total return of 55%, the energy sector was the best-performing sector in the S&P 500 in 2021. The Alerian MLP Infrastructure Index, which is the appropriate benchmark for this tilt, had a total return of 41%, consisting of 30% price return and 11% dividend yield. This tilt was a major contributor to the incremental return generated by the tactical tilts last year.

Despite such strong performance, we are retaining the tactical tilt for the following reasons:

- Valuations are still attractive even after such strong returns. Valuation as measured by the ratio of enterprise value to earnings is 1.2 standard deviations below its long-term median as a result of strong earnings growth (see Exhibit 38).
- Corporate management was disciplined in its capital expenditures, reducing them by 47% in 2021 and planning to reduce such expenditures further in 2022.
- The tax-advantaged distribution yield of 8% is enticing for investors in an era of low interest rates and negative returns on Treasury and municipal fixed income assets.
- We expect companies to buy back their stock on a larger scale than they did in 2021. Analysts expect \$2.1 billion in buybacks in 2022 compared to \$1.4 billion in 2021.

Exhibit 38: MLP Valuation Levels

Valuations are still attractive even after recent strong returns.



Data through December 31, 2021.

Source: Investment Strategy Group, Thomson Reuters Eikon.

While we do not expect a repeat of last year's performance, we expect a price appreciation in the midteens and a distribution yield of 8%. Our view is based on a West Texas Intermediate (WTI) oil price range of \$70–90 per barrel.

Overweight to Energy Stocks: Energy stocks were the best-performing sector of 2021, with a total return of 55%, compared to 29% for the S&P 500 and 55% for WTI. This was a strong rebound from 2020, when the energy sector was the worst-performing, with a total return of -34%.

We initiated this tilt with a put option in January 2020. As the pandemic led to a drop in oil prices, including a one-day dip in spot prices to -\$37, we added to the tactical tilt through owning an energy ETF. We maintain this tactical tilt for the following reasons:

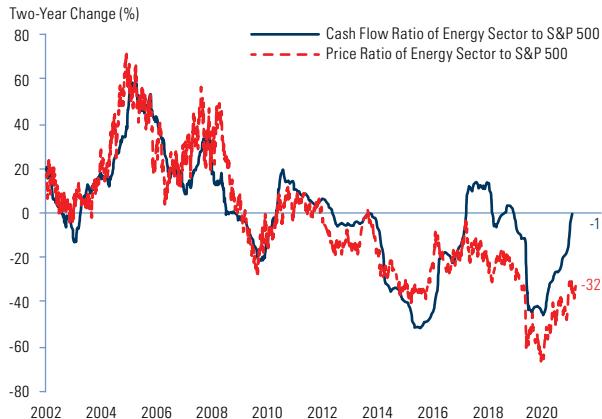
- Valuations are attractive as the sector is priced 26% below its five-year average price-to-cash flow ratio.

Energy stocks were the best-performing sector of 2021, with a total return of 55%, compared to 29% for the S&P 500 and 55% for WTI.

Exhibit 39: Energy Sector Cash Flow and Prices

Relative to the S&P 500

Energy sector earnings have recovered while prices have not.



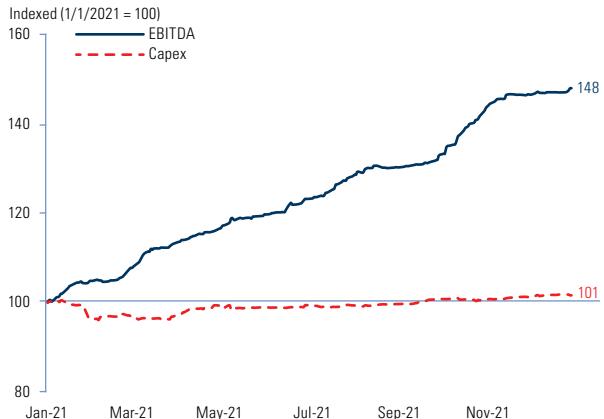
Data through December 31, 2021.

Source: Investment Strategy Group, FactSet.

Exhibit 40: Consensus Estimates of Energy Sector

EBITDA and Capital Expenditures for 2022

Energy firms have been disciplined about capital expenditures and are returning cash flow to shareholders.



Data through December 31, 2021.

Source: Investment Strategy Group, Thomson One Eikon, Bloomberg.

- While earnings have recovered to levels last seen in the fourth quarter of 2017 and third quarter of 2018, energy stock prices are still about 20% below levels seen during those two periods (see Exhibit 39).
- Energy corporations have been disciplined about their capital expenditures (see Exhibit 40) and are returning cash flow to shareholders.

We expect about a third of last year's returns in 2022, again assuming that WTI ranges between \$70 and \$90 per barrel.

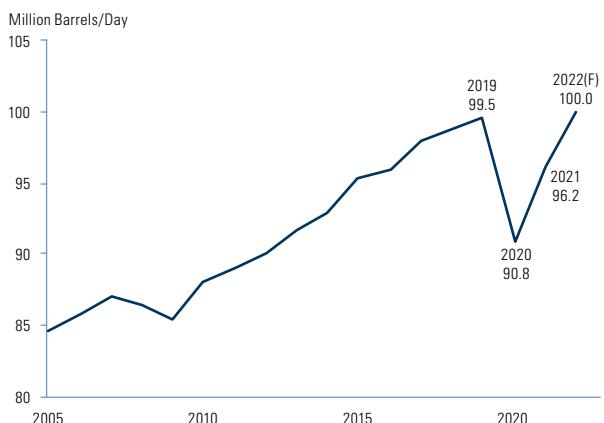
Allocation to Crude Oil: The recovery of global demand from the pandemic-driven lows of 2020, combined with supply constrained by the capital-expenditure discipline of oil companies highlighted above in Exhibit 40, creates a high risk in 2022 of oil demand exceeding supply.

We initiated an option structure to take advantage of this potential mismatch:

- Demand is expected to increase above 2019 levels (see Exhibit 41).
- Inventories have dropped below the pre-pandemic average of 2016–19 and reached the lowest levels since at least 2016 (see Exhibit 42).
- Spare capacity in OPEC countries may be limited.

Exhibit 41: Global Petroleum Demand

Oil demand is expected to reach new highs in 2022.



Data through 2021, average of forecasts through 2022.

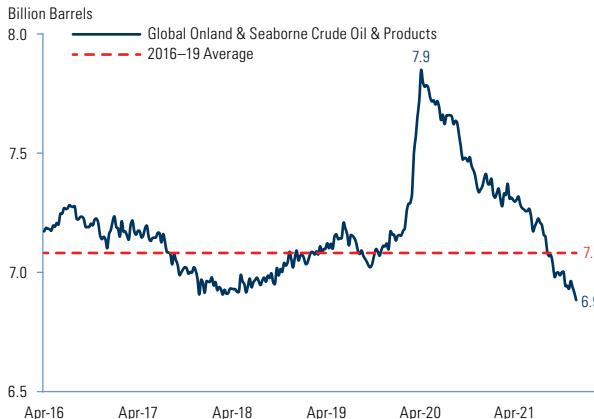
Source: Investment Strategy Group, IEA, DOE, OPEC, S&P Global Platts, Energy Aspects, Goldman Sachs Global Investment Research, JP Morgan, Morgan Stanley, Citigroup.

- US companies may not be able to increase production given their recent history of limited capital expenditures.

We took advantage of elevated volatility in crude oil pricing in late November 2021 and structured an option-based tactical tilt to capitalize on the risks of further upside in energy prices with some downside protection. Expected returns from this tactical tilt are in the mid-single digits.

Exhibit 42: Observable Global Petroleum Inventories

Inventories steadily declined in 2021 and now stand below pre-pandemic levels.



Data through December 2021.

Source: Investment Strategy Group, Bloomberg, Kayrros, IEA, EIA, S&P Global Platts, PJK, PAJ, ClipperData, International Enterprise Singapore.

Exhibit 43: Health-Care Sector Relative Valuation to S&P 500

Health-care stocks are cheap relative to the S&P 500.



Data through December 2021.

Note: Based on the average z-score across price-to-book value, price-to-forward earnings and free cash flow yield.

Source: Investment Strategy Group, FactSet.

Overweight to Health-Care Stocks: Health-care stocks are cheap relative to the S&P 500 across three valuation metrics: price-to-book value, price-to-forward earnings and free cash flow yield, as shown in Exhibit 43. All three valuation metrics are in their bottom quintile based on data going back to 1990, and the combined valuation metric indicates that the sector has been more expensive at least 85% of the time over the last 30 years.

This tactical tilt was initiated in December 2020 as a relative-value trade between the health-care sector of the S&P 500 and the S&P 500 itself. The position was then changed to an outright long position. We also added to this long position by selling a 5% out-of-the-money put expiring in December 2022. We expect the health-care sector to outperform the S&P 500 in 2022, given that:

- Since 2000, the sector's earnings have grown at 7.5% per year, far exceeding the 6.0% pace for the S&P 500. The earnings per share growth has also been half as volatile as the broader market.
- The worst-case fears for drug price reform are not likely to be realized, and this cloud over the health-care sector will be removed.

We expect a high-single-digit return for this tilt in 2022.

Allocation to Three Systematic Strategies: We deploy systematic strategies as a way to provide uncorrelated sources of alpha by taking advantage of market dislocations. They are:

- **Systematic Downside Mitigation Tilt:** This equity strategy is designed to hedge some of the risk of the overall portfolio without incurring the high cost of buying put options or risking exiting the market too early. We believe this strategy has given us greater staying power to stay invested. We have deployed this strategy since November 2017. Given our expectation of a long-lasting recovery and a 6.3% return for US equities in 2022, we have maintained the allocation of this strategy at 0.25%. We expect this diversification strategy to provide zero returns in an appreciating market.
- **Systematic Upside Improvement Tilt:** This equity strategy is designed to take advantage of dislocations in value versus growth stocks. Given the outperformance of growth stocks relative to value stocks over the last several years, the valuation spread between our basket of cheap stocks and our basket of expensive stocks is 2.2 standard deviations above its long-term average, higher than the widest level reached in 2020 and the highest since the dot-com bubble. We believe that this

strategy provides a more effective approach to capturing the dislocation between growth and value stocks because it screens for cheap stocks that also have high earnings quality, favorable technical signals and what we consider favorable positioning of market participants. We expect a midteens total return in 2022 driven by continued above-trend economic growth that serves as a catalyst for the outperformance of value stocks relative to growth stocks.

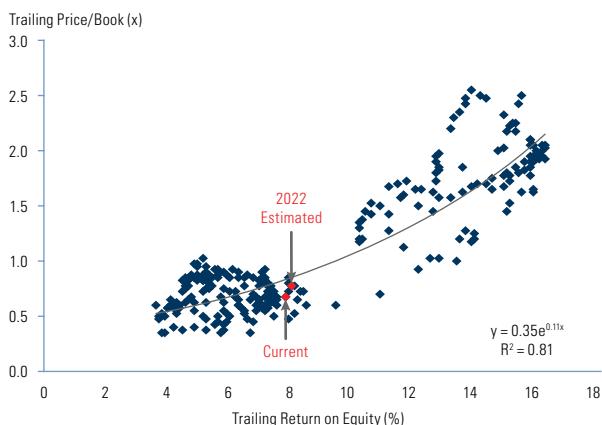
- Trend-Based Rotation: This is a systematic strategy that we introduced in July 2021. The goal is to rotate among 10 asset classes: US and non-US equity indices, gold, US corporate bonds, US Treasury bonds and US cash based on the trend in each asset class, its volatility and the likelihood the trend reverses course once it has become extended. The strategy incorporates the momentum of an asset class, thereby acting as a diversifier against our value orientation in other tactical tilts. We expect the strategy to deliver a high-single-digit return this year.

Overweight to Eurozone Banks: The Eurozone bank exposure was initiated in June 2018. It is our second-longest-standing sector tilt, after MLPs. It has also been one of our most volatile allocations. We increased our exposure after the sector declined 52% from peak to trough over two months after the onset of the pandemic and have adjusted the position 14 times since its inception. Last year was the best-performing year for the tilt, as Eurozone banks were the top-performing sector in the Eurozone, with a return of 42%, compared to the broad index at 23%. Despite such robust outperformance, we think there is further upside. We will continue holding this tilt for the following reasons:

Eurozone banks were the top-performing sector in the Eurozone, with a return of 42%, compared to the broad index at 23%. Despite such robust outperformance, we think there is further upside.

Exhibit 44: Eurozone Banks' Return on Equity vs. Price-to-Book Multiple

We expect multiples to increase to levels in line with their historical relationship with return on equity.



Data through December 31, 2021, forecast through December 31, 2022.
Source: Investment Strategy Group, FactSet.

- Valuations are still cheap. We expect Eurozone banks' current price-to-book ratio of 0.67 to increase to 0.78, converging toward the historical relationship between price-to-book and return on equity, as shown in Exhibit 44.
- We expect banks' return on equity to rise given continued lower-than-expected provisions for losses on loans.
- Consensus earnings for 2022 and 2023 have been revised upward.
- Banks are expected to increase the pace of dividend distributions and share buybacks after the European Central Bank (ECB) removed its capital distribution policies in September 2021.

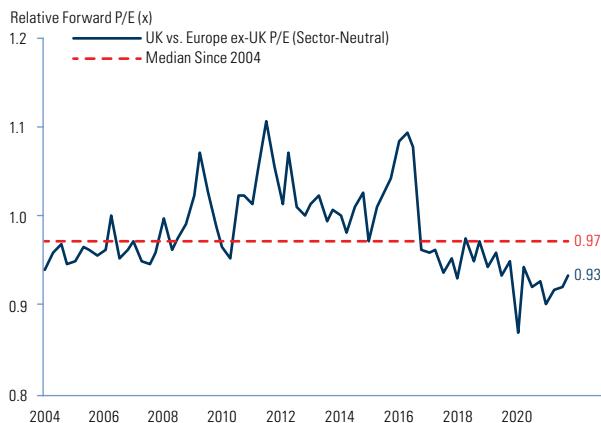
Allocation to UK Equities: This tactical tilt was initiated in August 2021 using an option structure consisting of selling a put option and buying a call option. The same elevated skew in volatility that existed in options on the S&P 500 was present in options on the UK FTSE 100 Index.

The tilt is driven mainly by the greater probability that UK equities will rise during the life of the options than that they will fall the 17% required for this tilt to start losing money. We think investors will look to UK equities as a potential "catch-up" trade given the extent to which they have lagged their European peers and their cheaper

Exhibit 45: UK Price-to-Earnings Valuation

Relative to the Rest of Europe

UK equities offer a large valuation discount relative to the rest of Europe.



Data through Q4 2021.

Source: Investment Strategy Group, Datastream.

valuations, as shown in Exhibit 45. UK equities have been one of the worst-performing equity markets among large European economies. Since the trough of the GFC, UK equities have returned 238%, compared to 330% and 341% for German and French equities, respectively.

We expect a modest single-digit return from this strategy given that the options expire in March 2022.

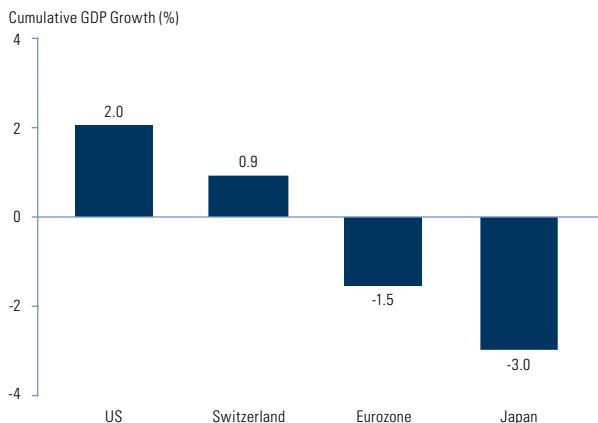
Long Dollar Versus Basket of Developed Market Currencies: We initiated in March 2021 a tactical tilt to the US dollar versus a basket of developed market currencies: the euro, the Japanese yen and the Swiss franc. The drivers of this tilt are:

- Stronger post-pandemic recovery in the US relative to its major developed market peers (see Exhibit 46)
- The Federal Reserve's tightening monetary policy trajectory relative to that of the ECB, the Bank of Japan (BOJ) and the Swiss National Bank (SNB)
- The overvaluation of the Swiss franc by about 12%, as shown in Exhibit 47, and a central bank (SNB) that is actively seeking to weaken its currency

We expect a modest single-digit return, in line with the performance of the dollar in 2021.

Exhibit 46: Developed Market Countries' GDP Growth for 2020–21

The US has witnessed a stronger post-pandemic recovery relative to its major developed market peers.



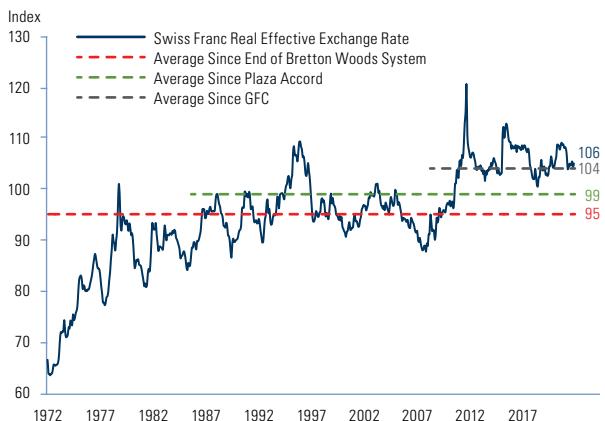
Data as of December 31, 2021.

Note: 2021 GDP is based on ISG projections, except Switzerland which is based on Bloomberg consensus projections.

Source: Investment Strategy Group, Bloomberg.

Exhibit 47: Swiss Franc Real Effective Exchange Rate

The current real effective exchange rate is 12% above its long-term average.



Data through November 2021.

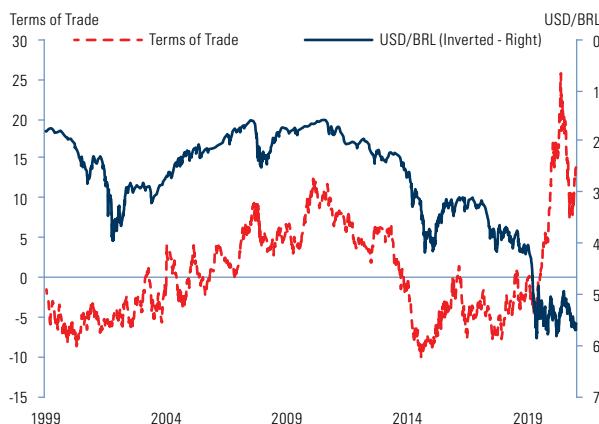
Note: The real effective exchange rate is based on CPI.

Source: Investment Strategy Group, Bloomberg, IMF.

Long Brazilian Real Versus Dollar: The Brazilian real has been one of the worst-performing currencies since the end of 2019, depreciating a total of 28% on a spot basis, compared to 55% for the Turkish lira and 14% for emerging market currencies as measured by the JP Morgan Emerging Market Currency Index. Brazil has

Exhibit 48: Brazilian Real vs. Terms of Trade

The Brazilian real does not reflect the country's improving terms of trade.



Data through December 31, 2021.
Source: Investment Strategy Group, Macrobond.

also experienced a sharp increase in inflation, to over 10%. The increase in inflation has led to aggressive tightening by the Central Bank of Brazil to a policy rate of 9.25%. As a result, the Brazilian real now offers the highest incremental yield of any major emerging market country except Turkey.

We initiated a tactical tilt to the Brazilian real in December 2021 through an option structure that limits downside should the currency depreciate further. The investment rationale for this tilt includes the following factors:

- The currency is nearly 3.5 standard deviations cheap relative to our estimate of fair value.
- The incremental yield is very high, which will attract emerging market investors and macro hedge funds. Such a high yield also makes it very expensive for investors to short the currency, especially in the face of probable further tightening by the Central Bank.
- Brazil has benefited from the increase in prices of commodities it exports, yet the currency has not reflected the improving terms of trade (see Exhibit 48).

We expect a modest single-digit return over the three-month tenor of the options.

Our one-year expected returns across asset classes and the tactical tilts just reviewed are driven by our view of a continued global economic recovery and a favorable monetary and fiscal

policy backdrop. However, there are a number of risks that could derail our economic and financial market outlook. We now turn to those risks.

Risks to Our 2022 Outlook

As has been the case since the GFC, there is no shortage of risks that could derail our economic and financial market outlooks.

Many of the risks have remained the same as last year.

In our view, the top risk remains the COVID-19 pandemic and the virus's new more transmissible variants. Supply chains continue to be impacted (especially with China's zero-COVID policy), businesses are affected by infections either through quarantine requirements or missed work, and labor supply remains constrained as workers with savings refrain from rejoining the workforce in the face of rising cases.

The second most important risk—and a new addition to the list—is inflation and its effect on the pace of Federal Reserve interest rate hikes. If inflation is greater than our expectations, the Federal Reserve could raise interest rates more aggressively, which could, in turn, lead to a recession, our third risk.

Other risks we consider:

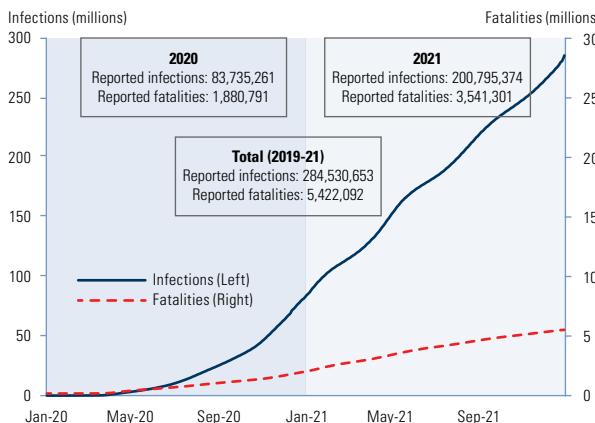
- Geopolitical flare-ups involving China, Russia, Iran and North Korea, with greater risks emanating from Russia and Iran compared to last year
- "Techlash" and the impact of possible antitrust regulation on the growth trajectory of the broader technology sector in the US and S&P 500 earnings
- Cyberattacks
- Terrorism and the risks associated with the US departure from Afghanistan

COVID-19 Pandemic

In the second year of the pandemic, both infections and fatalities increased at a faster rate than in 2020 despite vaccinations, anti-viral therapeutics and more effective care of hospitalized COVID-19 patients. As shown in Exhibit 49, infections in 2021 were 140% higher than in 2020 on a global basis and fatalities were 88% higher. In the US, infections were 66% higher and fatalities were 34% higher (see Exhibit 50).

Exhibit 49: Global Daily Cumulative COVID-19 Infections and Fatalities

Global infections and fatalities in 2021 were 140% and 88% higher than in 2020, respectively.



Data through December 29, 2021.

Source: Investment Strategy Group, JHU.

Most economies and equity markets shrugged off the pandemic: globally, economies are estimated to have grown by 5.8% in 2021 and the MSCI All Country World Index returned 21.4%. In the US, 2021 growth is estimated at 5.6% and the S&P 500 Index returned 28.7%.

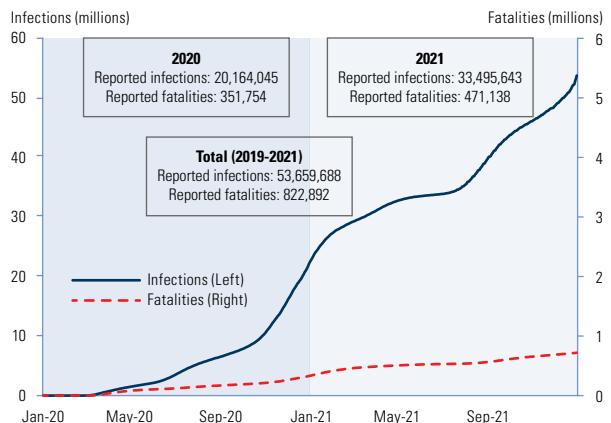
While we are mindful of the risks posed by this pandemic, we also recognize that no one can be sure of its evolution. The only thing we have learned with certainty about COVID-19 is that we do not know what surprises lurk around the corner. Since our first COVID-19 client call on February 4, 2020, Professor Barry Bloom of Harvard University and Dr. Luciana Borio, former acting chief scientist at the Food and Drug Administration and former director for medical and biodefense preparedness policy at the White House, have warned about the tremendous uncertainty caused by this novel coronavirus. Nearly two years later, the level of uncertainty about the future course of the pandemic remains the same.

Many predictions and expectations from experts in the field have not materialized:

- Professor Trevor Bedford of the Fred Hutchinson Cancer Research Center, a leading researcher in using complex statistical methods to study the spread and evolution of viruses, had predicted in September 2021 that “it seems highly likely that the next

Exhibit 50: US Daily Cumulative COVID-19 Infections and Fatalities

US infections and fatalities in 2021 were 66% and 34% higher than in 2020, respectively.



Data through December 29, 2021.

Source: Investment Strategy Group, JHU.

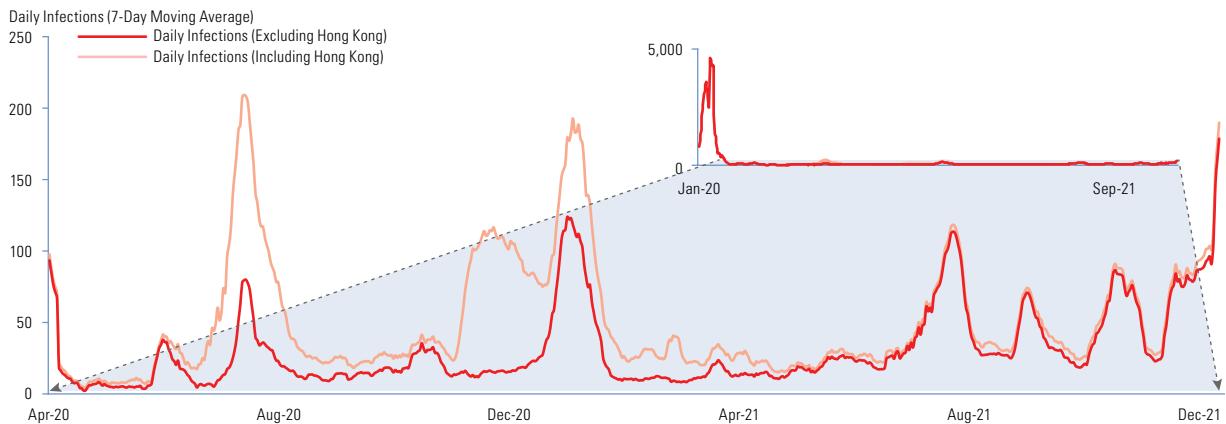
impactful variant will emerge as a sub-lineage from within Delta diversity, bearing additional mutations on top of Delta’s mutations.”¹⁰ Omicron is not of the Delta lineage.

- Dr. Anthony Fauci, director of the National Institute of Allergy and Infectious Diseases and the chief medical advisor to the president, said “one thing, historically, people need to realize, is that even if there is some asymptomatic transmission, in all the history of respiratory-borne viruses of any type, asymptomatic transmission has never been the driver of outbreaks.”¹¹ Asymptomatic transmission has been prevalent.
- Dr. Scott Gottlieb, former Food and Drug Administration (FDA) commissioner, member of the boards of Pfizer and Illumina, and author of *Uncontrolled Spread: Why COVID-19 Crushed Us and How We Can Defeat the Next Pandemic*, at a recent session on Talks@GS shared: “I had said many times that Delta will be the last major wave of infections,

The only thing we have learned with certainty about COVID-19 is that we do not know what surprises lurk around the corner.

Exhibit 51: China COVID-19 Infections

Since July 2021, China has experienced four waves of infections.



Data through December 29, 2021.

Source: Investment Strategy Group, JHU.

barring something unexpected ... There was a presumption that future variants would be within the Delta lineage.”¹²

The information from health-care authorities has been inconsistent. On November 29, 2021, the US Centers for Disease Control and Prevention (CDC) recommended all adults get a booster shot. Yet an argument against boosters was made the same day by Dr. Paul Offit, professor of pediatrics in the Division of Infectious Diseases at Children’s Hospital of Philadelphia, co-inventor of the rotavirus vaccine and, importantly, a member

of the FDA vaccine advisory committee, in an article co-authored with the former director and the former deputy director of the FDA’s Office of Vaccines Research and Review.¹³ One of the many reasons cited was the risk of what is called “original antigenic sin”: the repeated use of a booster that targets the original virus risks training the immune system to fight the original virus, thereby reducing the effectiveness of a variant-specific booster in the future.

Most recently, the CDC has shifted its estimates of the Omicron variant’s prevalence as of December 18 from 73% to 23%. The latest report estimates that 59% of all infections in the US were caused by the Omicron variant and 41% by the Delta variant.

Two risks associated with COVID-19 pose a significant threat to our economic and financial market outlook.

First, a more transmissible variant that causes severe disease and evades vaccines and prior immunity would certainly wreak havoc on world economies and financial markets. Dr. William Haseltine, former professor at Harvard Medical School and author of several books on health care, recently wrote that “Omicron is sending a message, loud and clear: this virus is capable of far more changes and far more variation than most ever thought possible and it will keep coming back and back to haunt us again and again.”¹⁴ A recent study by the UK government on hypothetical scenarios for the trajectory of COVID-19 suggested that “a variant that causes severe disease in a greater proportion of

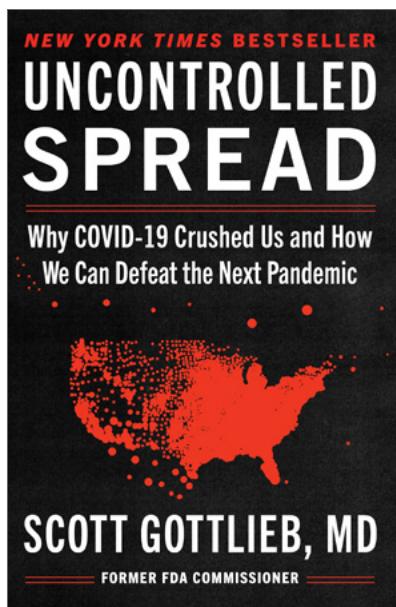
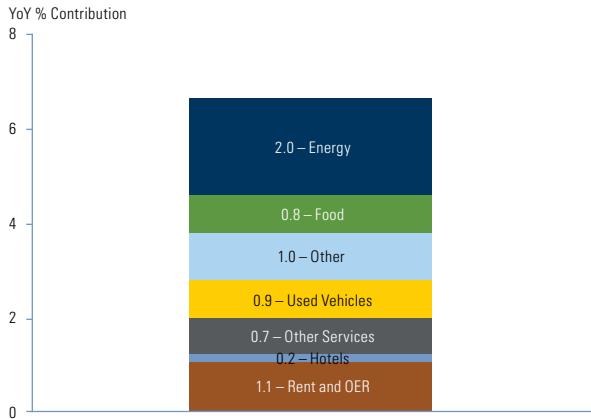


Exhibit 52: Contribution to Year-on-Year Change in US Headline CPI—November 2021

The largest component was the energy sector, which was up 33% over the prior 12 months.



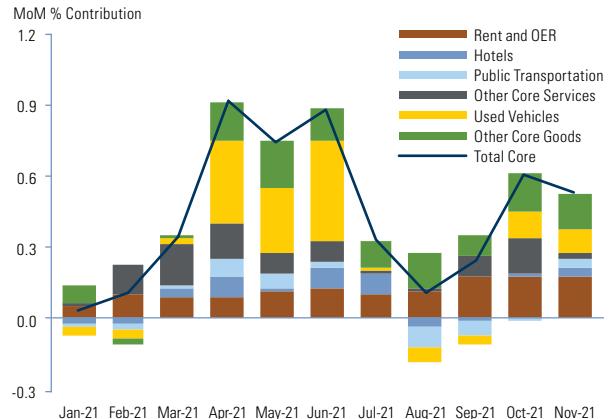
Data as of November 2021.

Note: OER = Owners' Equivalent Rent.

Source: Investment Strategy Group, BLS.

Exhibit 53: Contribution to Month-on-Month Change in US Core CPI

The impact of used vehicles on inflation was most pronounced in April, May and June of last year.



Data through November 2021.

Note: OER = Owners' Equivalent Rent.

Source: Investment Strategy Group, BLS.

the population is a realistic possibility.”¹⁵ It is too early to position a portfolio for such an outcome, which may or may not transpire in 2022.

The second risk is continued disruptions to supply chains as China pursues its zero-COVID policy. Since July 2021, China has experienced four waves of infections, as shown in Exhibit 51. Its response to each wave has been lockdowns of cities and shutdowns of ports. The city of Xi'an in Shaanxi province, with a population of 14 million people, was locked down in December. Samsung Electronics and Micron Technology both have memory chip manufacturing facilities in Xi'an. In August, China partly shuttered Meidong Terminal, which is the world's third-busiest port, after a single worker tested positive. Earlier in 2021, the world's fourth-busiest port at Yantian was shut down due to 150 positive cases.

China faces difficult decisions with respect to COVID-19. It has reported 115,000 total infections since the beginning of the pandemic (compared to 189,836 new infections in the UK on December 31, 2021, alone), which translates to very limited natural immunity from prior infections. Its two primary vaccines, from Sinovac and Sinopharm, are also less effective than the Pfizer and Moderna mRNA vaccines. Three recent independent studies (two Chinese and one from Yale University) have shown that boosters of the Chinese vaccines are not very effective against the Omicron variant.¹⁶

Without effective vaccines and with limited natural immunity from prior infections, China cannot readily abandon its zero-COVID policy. A recent report by the Chinese Center for Disease Control and Prevention said China could risk more than 630,000 COVID-19 infections a day if it dropped its zero-COVID policy and removed its travel bans.¹⁷ Such numbers would overwhelm the medical system. As a result, China will continue to pursue its zero-COVID policy which may, in turn, hamper some supply chains for longer than anticipated.

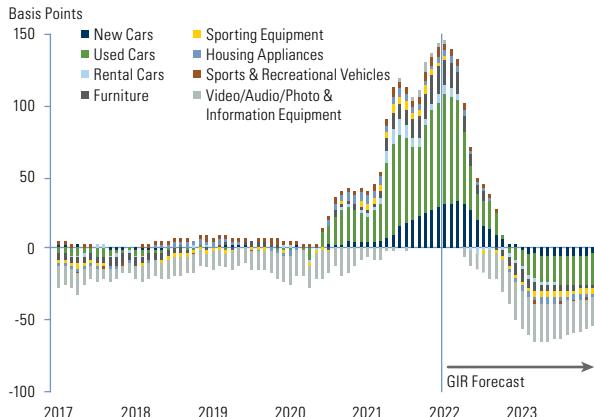
Risk of Persistently Higher Inflation

One of the biggest surprises in 2021 was the surge in inflation. The latest US consumer price index (CPI) rose 6.8% between November 2020 and November 2021 (not seasonally adjusted). It was the largest increase since June 1982. The biggest contributor to the increase was energy: prices were up 33% over the prior 12 months (see Exhibit 52). As discussed when reviewing the tactical tilts, oil prices were heavily impacted by the pandemic, so it is unlikely that energy prices will contribute to inflation as much as they did last year. We therefore focus on inflation indexes excluding food and energy.

The core CPI, which excludes food and energy, was up 4.9% in November, led by a 31% jump in the cost of used cars and trucks. New vehicles

Exhibit 54: Supply-Constrained Categories' Contributions to US Core PCE Inflation

Prices of certain pandemic-impacted inflation categories will normalize in 2022.



Data through November 2021, GIR forecasts through December 2023.

Source: Investment Strategy Group, Goldman Sachs Global Investment Research, Bureau of Economic Analysis.

were up 11%. Exhibit 53 shows the different components of inflation that contributed to the increase in prices over the course of last year: the impact of used vehicles on inflation was pronounced in April, May and June.

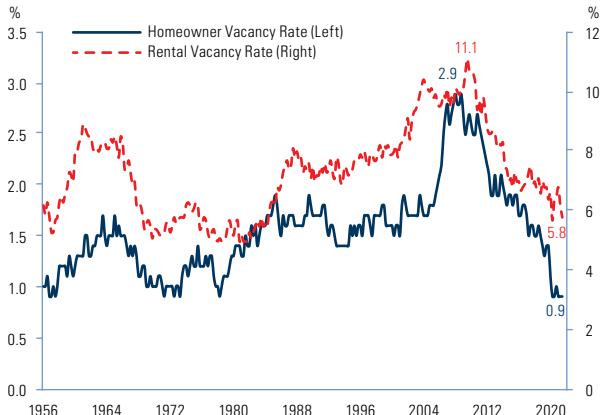
The biggest debate among economists and market participants regarding inflation is whether the increases we have seen are transitory or more persistent. Those who argue that inflation is more transitory point out that once the pent-up post-pandemic demand is met and the supply shortages have been alleviated, inflation will trend back down. For example, it is unlikely that the demand for used vehicles will lead to persistently high inflation. Similarly, the increases in hotel rates and airfares from the depressed levels of 2020 are unlikely to persist. Leaving aside the pandemic-driven volatility in availability of flights and worker absenteeism, the world is not in short supply of airline seats.

Others argue that with the US economy growing at 5.6%, extraordinarily easy monetary policy and negative real rates will inevitably lead to inflation. They point to the breadth of price increases across most components of inflation indexes, especially home prices and labor.

We believe that certain components of inflation are indeed transitory and others will be more persistent. We agree with our colleagues in GIR that the contribution to inflation of goods that have been impacted by pandemic-induced supply constraints

Exhibit 55: US Homeowner and Rental Vacancy Rates

Both homeowner and rental vacancy rates are at extremely low levels.



Data through Q3 2021.

Source: Investment Strategy Group, Haver.

will abate by the second half of 2022. They estimate that inflation from supply-constrained goods will swing from a 130-basis-point boost to core PCE inflation—the Federal Reserve's preferred metric—at end-2021 to a 55-basis-point drag at end-2022 (see Exhibit 54). While there is certainly a possibility that supply constraints may linger beyond the first half of 2022, they will eventually abate.

We are less sanguine about two other price components: housing and wages.

Housing/Shelter Inflation: There is a shortage of housing in the US. As shown in Exhibit 55, both the homeowner vacancy rate and the rental vacancy rate are at extremely low levels. The homeowner vacancy rate is at 0.9%, the lowest level since 1978. The rental vacancy rate is at 5.8%, the lowest level since 1984 except for the second quarter of 2020 during the depths of the pandemic.

The shortage of housing has been driven by three factors:

- High housing affordability that has only recently declined (see Exhibit 56)
- Millennials' demographics (see Exhibit 57)
- Cumulative gap in homeownership since the GFC

Until its recent decline, the Goldman Sachs housing affordability index was at a historically

Exhibit 56: GS Housing Affordability Index

Housing affordability is one of the main drivers of the shortage in housing.

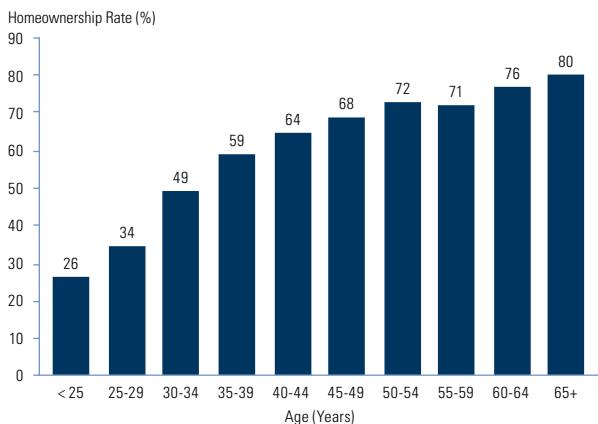


Data through December 2021.

Source: Investment Strategy Group, Goldman Sachs Global Investment Research.

Exhibit 57: US Homeownership Rate by Age Cohort

Demand for homeownership tends to rise with age.



Data as of Q3 2021.

Source: Investment Strategy Group, Empirical Research Partners, Census Bureau.

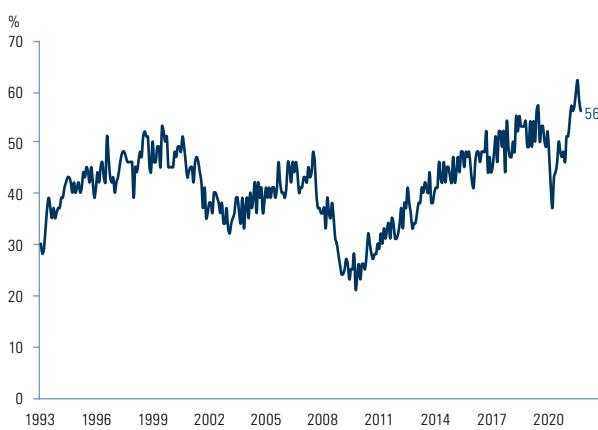
high level relative to its 25-year history, partly driven by low mortgage rates. Such affordability coincided with an increase in household formation as millennials—born between 1981 and 1996 and also known as Generation Y—pass through the age cohorts that increase their homeownership rate. As seen in Exhibit 57, homeownership jumps from 34% in the 25–29 age group to 59% in the 35–39 age group. The two forces combined to drive strong demand for housing.

There has also been additional demand from those who delayed homeownership after the weak labor market following the GFC. Empirical Research estimates that the gap between trend homeownership and actual ownership among 24- to 44-year-olds was about 2.5 million units in 2020.¹⁸ This compares to 1.5 million units built every year.

As a result of this strong demand, we expect inflation to persist in the housing sector, which in turn will put upward pressure on overall inflation. Rent and owners' equivalent rent, which measure the cost of shelter for households, account for 32% of the CPI. Our colleagues on the Goldman Sachs Economics Research team estimate that housing headline CPI inflation will increase to 5.5% by year-end 2022, contributing 1.8 percentage points to headline inflation. They expect an above-average rate of shelter inflation to persist through 2024.¹⁹

Exhibit 58: Percentage of Firms Reporting Few or No Qualified Applicants

Firms have had an increasingly difficult time filling open positions in the last two years.



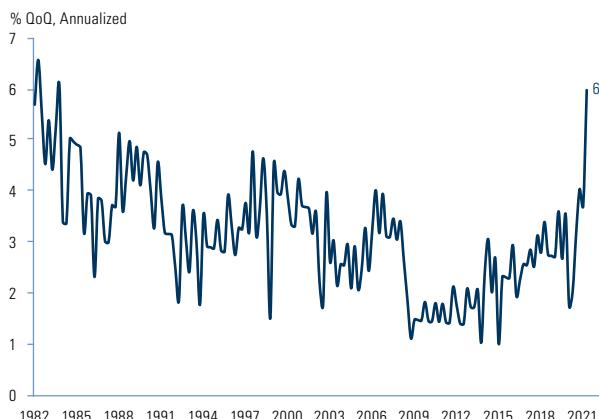
Data through November 2021.

Source: Investment Strategy Group, NFIB.

Wages: Since the sharp economic recovery following the pandemic in 2020, firms have had an increasingly difficult time filling open positions. As shown in Exhibit 58, a record number of firms have been reporting few or no qualified applicants for openings for the last several months. This shortage of workers has led to an increase in wage growth as employers have had to raise compensation to attract workers. As shown in Exhibit 59, wages and salaries have increased at a

Exhibit 59: Employment Cost Index

Wages and salaries have increased at a pace not seen since the early 1980s.



Data through Q3 2021.

Source: Investment Strategy Group, Bureau of Labor Statistics.

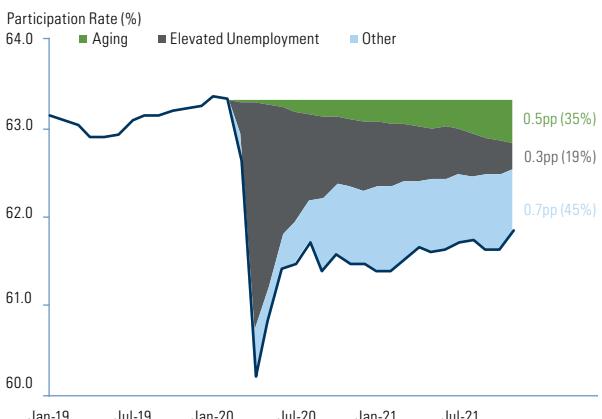
pace not seen since the early 1980s as measured by the employment cost index.

The question is whether this shortage of labor is transitory or permanent. One of the puzzling employment issues since the pandemic has been the “Great Resignation” and the lower-than-expected labor force participation rate. Have workers decided to use their savings accumulated during the pandemic from the various fiscal packages before returning to work? Have people opted for a better work-life balance and decided not to return to the labor force indefinitely? Alternatively, are people still concerned about returning to work and using public transportation when the pandemic is not yet over?

As shown in Exhibit 60, the labor force participation rate is one percentage point below where it should be, adjusted for retirements. Some of this gap is driven by the unemployment rate recovering from the high levels seen during the worst of the pandemic. Some of the gap, however, is unexplained. Furman, on the same client call referenced earlier, suggested that it was the “lingering social and psychological effects of

Exhibit 60: Decomposition of Decline in US Labor Force Participation Rate

The labor force participation rate is below where it should be.



Data through November 2021.

Source: Investment Strategy Group, BLS, Jason Furman.

COVID-19” and that it would take some time before workers came back.

Spencer Hill and David Mericle of the Goldman Sachs US Economics Research team estimate that some 2 million younger workers who left the workforce as a result of the pandemic are unlikely to return (the US civilian labor force is 162 million people). They estimate that wage growth will remain high at 4% in 2022 and 4.5% in 2023 and 2024. Importantly, they believe that wage inflation will not push inflation above the Federal Reserve’s inflation objectives.²⁰

Paul Krugman, Nobel laureate in economics, also believes that labor shortages are transitory: he calls himself a “card-carrying member of Team Transitory” and is not concerned about inflation racing ahead as long as the Federal Reserve begins the hiking process in 2022. However, he also warns that “we know very little about where we are in this strange economic episode.”²¹

We think inflation is not going to be persistently high and will not lead to a pace of tightening by the Federal Reserve that could prompt a recession and a decline in equities. After all, it was less than three years ago—just before COVID-19—when investors were concerned that the US would follow the path of Japan and the Eurozone into a deflationary mindset. And it was less than a decade or so ago when investors asked if automation and technology would take

“We know very little about where we are in this strange economic episode.”

— Paul Krugman

Exhibit 61: Past Federal Reserve Tightening Cycles

	Core CPI (%YoY):			Months from Start of Tightening Until:		Total Returns from Start of Tightening to Market Peak (%)
	Trough to Peak Change in Rates (%)	Number of Rate Increases	Six Months Prior to Tightening	At Start of Tightening	Recession	
Average When Tightening Was Associated With a Recession	5.7	11	4.2	4.0	30	24*
Average When Tightening Was Not Associated With a Recession	2.7	8	3.4	3.0	-	-
Overall Average	4.5	10	3.9	3.6	-	-
Overall Median	3.3	9	3.3	2.8	-	-
Equivalent Core CPI if Tightening Cycle Starts in:						
March 2022				4.0	?	
June 2022				4.9**	?	

Data as of December 31, 2021.

Source: Investment Strategy Group, Bloomberg.

* Median time from the start of a hiking cycle to the peak of the S&P 500 is 25 months.

** Reflects core CPI inflation in November 2021, the most recent reading available as of publication.

away all blue-collar jobs and the US would become a nation of hamburger flippers.

Risk of Recession

The greatest risk of a recession in the US and most other countries in the world is posed by an unexpected worsening of the pandemic, caused by new variants that result in much greater disease severity than Delta or Omicron, as discussed earlier.

Otherwise, we assign a 10% probability to a recession in the US and the global economy this year. Since 1980, the US economy has been in recession 11% of the time, compared to 14% of the time in the entire post-WWII period. The probability of recession when the economy is in expansion—as is the case now—is 13%, so we have a slightly lower probability than the unconditional odds based on history.

We rely on a series of models, listed below, to estimate the probability of recessions. All point toward a low probability:

- Our team's recession scorecard, which includes some leading economic indicators and National Bureau of Economic Research criteria for dating business cycles
- Our team's recession dashboard based on a series of deteriorating economic indicators
- The New York Federal Reserve recession probability Treasury yield curve spread model, which currently stands at 7.98%
- The Engstrom-Sharpe model, developed by members of the Federal Reserve Board, that

also looks at the spread between different parts of the Treasury yield curve and currently stands at 8%

While we have assigned 10% to the probability of recession, we are also cognizant of the fact that many models have predicted recessions that never occurred and others have missed recessions that did occur. We therefore examine the three factors that have caused recessions in the past:

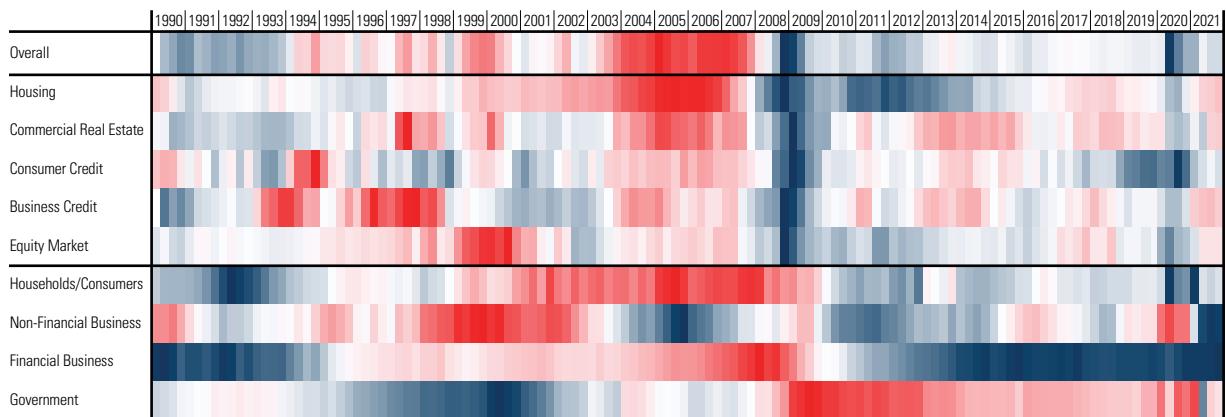
- Aggressive tightening of monetary policy by the Federal Reserve in response to higher-than-anticipated inflation.
- Imbalances in the economy that create an unstable economic backdrop.
- Exogenous shocks—by definition not predictable—such as the COVID-19 pandemic in 2020 and the Arab oil embargo in 1973. One such potential shock is a much greater deterioration of this pandemic. Other shocks are geopolitical, most likely emanating from Russia or Iran as discussed further below.

Federal Reserve Tightening: There have been 15 Federal Reserve tightening cycles in the post-WWII period. Contrary to received wisdom, not all tightening cycles have led to a recession. Only nine, or 60%, of the cycles did so. Of the last four cycles, only one resulted in a recession: the tightening cycle between June 2004 and September 2006.

The cycles that led to recessions can be differentiated from those that did not based on a greater number of hikes and larger increases

Exhibit 62: Global Investment Research Financial Excess Monitor

The types of imbalances that preceded the dot-com bubble and GFC are notably absent today.



Data as of Q4 2021.

Note: Red shading indicates periods of financial excess, blue shading indicates periods of benign conditions.

Source: Investment Strategy Group, Goldman Sachs Global Investment Research.

in rates, as shown in Exhibit 61. Core CPI was also higher in the tightening cycles that ended in recession than in those that did not.

Most importantly, the period between the start of a tightening cycle that led to a recession and the peak of the equity market has averaged 24 months (with a median of 25 months) and the average return between the start of the tightening cycle and the peak of the equity market was 36%. The median return was 32% and the trimmed mean, where we exclude the highest and the lowest returns, was 33%.

If inflation moderates as we expect it to later in 2022, this tightening cycle is unlikely to lead to a recession in 2022 or even in 2023. However, even if we are mistaken and this tightening cycle does lead to a recession, the recession and equity market peaks are not imminent: history suggests they are more likely to be a couple of years away and the equity market is more likely to generate positive returns in the interim—another reason to stay invested and not exit prematurely.

The average return between the start of the tightening cycle and the peak of the equity market was 36%.

Imbalances in the Economy: Another factor that has contributed to recessions is significant imbalances in the economy and financial markets. Examples are imbalances such as those seen during the dot-com bubble in stock prices, and household and financial sector leverage prior to the GFC, which led to imbalances in the housing sector.

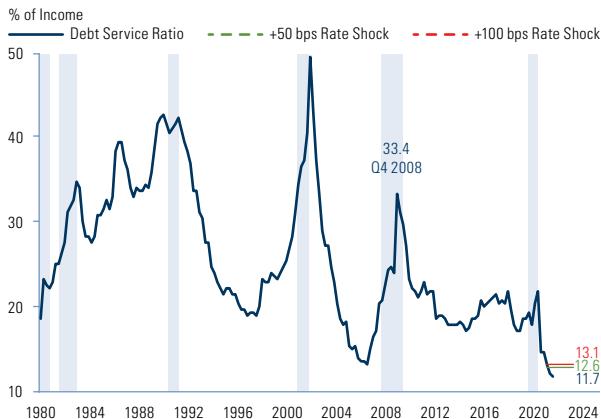
To measure imbalances, we leverage the Financial Excess Monitor (see Exhibit 62) created by Mericle and the US Economics Research team in March 2018. We think it is a very helpful visual to highlight pockets of risk in the US economy and financial markets. Red signifies excesses while blue signifies a well-balanced sector or measure.

Government debt had turned red as a result of the two large COVID-19 fiscal packages, yet this debt is now less concerning in the Financial Excess Monitor due to the significant increase in GDP in 2021. Non-financial corporate debt has also improved from levels in 2020, when companies issued debt to build liquidity during the pandemic. The 20% increase in the Case-Shiller national home price index and the 8–10% increase in commercial real estate prices have led to greater imbalances in those sectors relative to last year. The overall measure shows the US economy is very well balanced, as indicated by the light blue.

One of the concerns about the economy is the impact of an increase in interest rates over the next two years that would burden households

Exhibit 63: Non-Financial Corporate Sector Debt Service Ratio

The debt-servicing burden of corporations is at its lowest in over 40 years.



Data through Q3 2021.

Note: Shaded periods denote recessions.

Source: Investment Strategy Group, Federal Reserve, Haver.

and corporations, lead to higher defaults and widen credit spreads. We believe that concern is misplaced. As shown in Exhibit 63, the debt-servicing burden of non-financial corporates is at the lowest it has been in over 40 years. An increase of 50 basis points in 2022 would raise the ratio of net interest expense to earnings before interest and taxes from 11.7% to 12.6%. An additional 50 basis points would increase the debt service burden to 13.1%. Most of corporate debt is fixed and the weighted average maturity of that debt is over 10 years.

Exhibit 64 shows a similarly muted impact for households. The ratio for households is measured as the ratio of debt service payments for mortgages and consumer debt to disposable personal income. A 50-basis-point increase in interest rates raises the debt service ratio from 9.2% to 9.3%, and a 100-basis-point increase in rates raises the debt service ratio to 9.4%. None of these increases in the interest burden raises the likelihood of a recession.

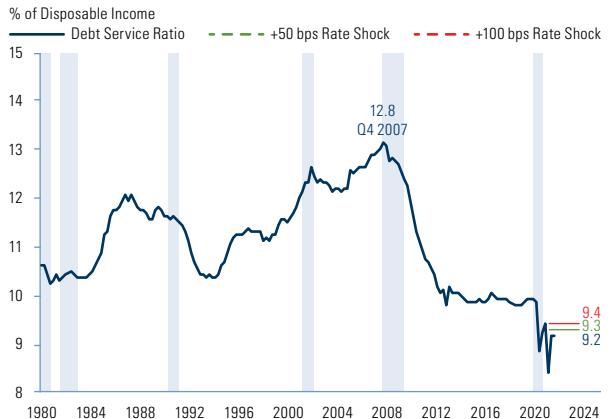
Geopolitical Risks

We expect Russia and Iran to be the two most likely sources of geopolitical risks in 2022.

Russia: Former Secretary of Defense Ashton Carter, with whom we consult on geopolitical and international security issues, considers the

Exhibit 64: Household Sector Debt Service Ratio

Households' debt service ratio would remain low even with higher rates.



Data through Q3 2021.

Note: Shaded periods denote recessions.

Source: Investment Strategy Group, Federal Reserve, Haver.

Russia-Ukraine crisis “the most dangerous, dire and imminent of all the geopolitical risks.”²² Russia has amassed over 50 battalion tactical groups compared to eight such groups in 2014 when it seized Crimea, and it has positioned an estimated 100,000 troops near Ukraine.²³

Russia has used the threat of an attack on Ukraine to make a series of demands, the most important of which are:



For Russia, the benefits of a military invasion of eastern Ukraine are limited, and the price of economic sanctions could be high.

- Legal guarantees not to deploy weapons on Russia's western borders that are a threat to Russia.
- NATO must refrain from allowing Ukraine and Georgia to join the organization.
- A “legally binding agreement”²⁴ not to deploy strike weapon systems in NATO and non-NATO countries adjacent to Russia (see map).

The most likely path forward in the near term is negotiations between the US and Russia. For Russia, the benefits of a military invasion of eastern Ukraine are limited, and the price of economic sanctions from the US and Europe, united in their stand against Russia, could be high. The probabilities of an invasion increase later in the year. Carter assigns a 50% probability and Signum Global assigns a 35% probability to the risk of a Russian invasion.

Iran: President Joe Biden's special envoy for Iran, Rob Malley, said it best: Iran is “a cauldron always being one step or misstep away from a much more dangerous conflagration.”²⁵

Iran poses two risks:

- A year after President Donald Trump abandoned the Joint Comprehensive Plan of Action (JCPOA), Iran abandoned various restrictions on its nuclear program:
 - It has installed faster and more efficient centrifuges for enriching uranium.²⁶
 - It has increased enrichment from the 3.67% level of enrichment agreed upon under the JCPOA to 60%, which has reduced breakout timelines for producing weapons-grade uranium. The Institute for Science and International Security estimates a worst-case scenario of three weeks to produce 25 kilograms of weapons-grade uranium, sufficient for a single bomb.²⁷

US-China relations will be a source of uncertainty and volatility for the indefinite future.



While the Biden administration would like to reach a deal with Iran, such an agreement seems unlikely.

- It has hindered the ability of the International Atomic Energy Agency (IAEA) to monitor Iran's nuclear activities.²⁸
- Iran has built an extensive missile program and has become one of the top missile producers in the world.²⁹ According to Kenneth “Frank” McKenzie Jr., Marine general and the commander of the US Central Command covering the Middle East and South Asia: Iran has reached “overmatch” where its “strategic capacity is now enormous,” and it has “the ability to overwhelm.” Its missiles “can strike effectively across the breadth and depth of the Middle East … with accuracy and volume.”³⁰

While the Biden administration would like to reach a deal in line with the JCPOA, such an agreement seems unlikely. Ian Bremmer, president and founder of the Eurasia Group, believes that the US and Iran will not “get the deal back.”³¹ A smaller deal, referred to as “less-for-less” or “freeze-for-freeze,” is possible but also unlikely.³²

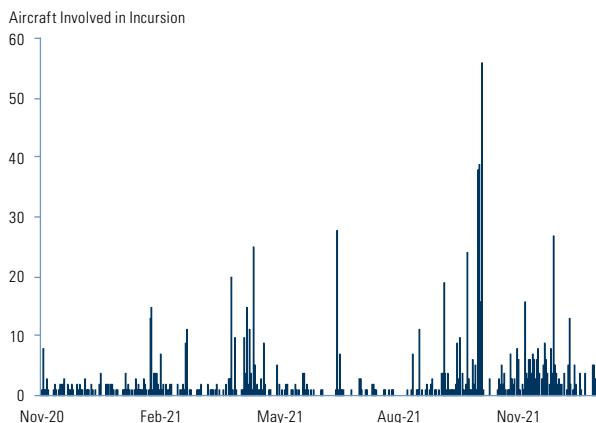
Israel will not stand by passively. Carter believes that the likelihood of Israeli activities that hinder Iran's nuclear capabilities is 100%.

And, in the meantime, the cauldron will continue to simmer.

China: US-China relations will be a source of uncertainty and volatility for the indefinite future. As outlined in the Annual Threat Assessment of the US Intelligence Community, the Chinese Communist Party (CCP) “will continue its whole-of-government efforts” to:

Exhibit 65: Chinese Flight Incursions Into the Taiwanese Air Defense Identification Zone

The number of Chinese military incursions into Taiwan's Air Defense Identification Zone has increased.



Data through December 31, 2021.

Source: Investment Strategy Group, Ministry of National Defense of Taiwan.

- Spread China's influence
- Undercut US influence
- Drive wedges between Washington and its allies and partners
- Maintain China's innovation and industrial policies
- Use opportunities to reduce tensions with Washington³³

These are long-term goals that do not pose an immediate threat to global growth or financial markets in 2022. The most serious geopolitical risk is a Chinese takeover of Taiwan. As shown in Exhibit 65, Chinese military incursions into Taiwan's Air Defense Identification Zone have increased in frequency and in terms of the number of aircraft involved over the past year. While neither Carter nor Bremmer expect an imminent invasion of Taiwan, both warn of increased rhetoric and provocations. Of course, there is always a risk of misstep or accident such as the 2001 collision of a US Navy spy plane and a Chinese fighter jet.

Aside from Taiwan, both President Xi Jinping and President Biden have other priorities in 2022.

President Xi is most likely to be focused on securing his third term at the 20th National Congress of the CCP in October 2022, keeping COVID-19 under control and maintaining growth while addressing the debt overhang epitomized by the financial problems of property developers like Evergrande.

Similarly, President Biden is most likely to be focused on bringing COVID-19 under control, advancing the Build Back Better agenda—albeit on a smaller scale than originally envisioned—and trying to minimize the losses from the midterm elections where Democrats are projected to lose a large number of seats in the House of Representatives.

North Korea: We are least worried about rising geopolitical tensions with North Korea. Its leader, Kim Jong Un, made considerable progress during the Trump administration in building its nuclear weapons and increasing its long-range missile capabilities. While experts say that North Korea continues its military capabilities, Kim Jong Un's focus seems to have turned to domestic issues.

In a speech at a five-day plenary meeting of the Workers' Party's Central Committee in late December 2021, the North Korean leader emphasized fighting COVID-19 as the top priority, followed by boosting agricultural production.³⁴

"Techlash"

The backlash against technology companies that we highlighted last year has continued.

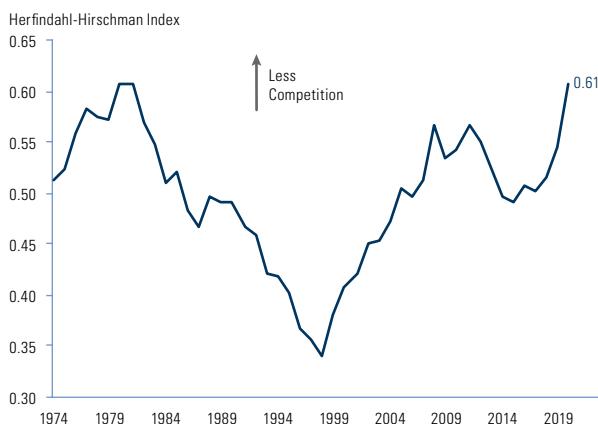
As discussed by Kostin in his 2022 US equity outlook, the Federal Trade Commission under the Biden administration has undertaken



A Chinese takeover of Taiwan is a serious geopolitical risk.

Exhibit 66: Market Concentration

Levels of concentration of large-capitalization technology-related firms are at a record high.



Data through 2020.

Source: Investment Strategy Group, Goldman Sachs Global Investment Research, Compustat.

several initiatives to curtail the market share of large technology companies. It will be virtually impossible for technology companies to argue against their near-monopoly market share. As shown in Exhibit 66, the Herfindahl-Hirschman index, which measures market concentration, indicates record-high levels of concentration of the large-capitalization technology-related companies, with the index marginally higher than its peak in the early 1980s.



Cyberattacks remain a significant threat from both state and non-state actors.

Exhibit 67: S&P 500 2022 Price and Return Scenarios

The S&P 500 can still deliver mid-single-digit returns in 2022 even if the FANGMANT stocks underperform.

	FANGMANT Price Return			
	-10%	-5%	0%	5%
0%	4635	4701	4766	4832
5%	4808	4874	4939	5004
10%	4981	5046	5112	5177
15%	5154	5219	5285	5350

Data as of December 31, 2021.

Note: FANGMANT = Facebook/Meta, Apple, Netflix, Google/Alphabet, Microsoft, Amazon, Nvidia and Tesla.

Source: Investment Strategy Group, Goldman Sachs Global Investment Research, Bloomberg.

While we expect the regulatory process to be slow and not materially impact the earnings growth of the top technology-related stocks in the next year or two, we are not relying on strong outperformance of the FANGMANT basket of stocks to drive the equity market.

As shown in Exhibit 67, our base case scenario for a 5% price return in the S&P 500 can be achieved if the FANGMANT basket matches or even lags the returns of the remaining stocks.

Cyberattacks

Cyberattacks remain a significant threat from both state and non-state actors. The 2021 Annual Threat Assessment of the US Intelligence Community reports that the biggest cyber threats continue to emanate from Russia, China, Iran and North Korea.³⁵

The most disruptive risk is a cyberattack on physical and digital infrastructure. The Colonial Pipeline ransomware attack in early May 2021 was an example of how such attacks on critical infrastructure can affect an important part of the economy and have serious disruptive consequences. Carter has suggested that the US needs to push back on such attacks; otherwise, they will continue if not increase.

The discovery, in mid-December 2021, of a vulnerability in Log4j's software, a tool widely used to collect information across computer networks, websites and applications, is the most recent example of the magnitude of the threat from



As the US marked the 20th anniversary of the September 11 terrorist attacks last year, the threat of terrorism in the US has become primarily internal.

cyberattacks. It is believed that this vulnerability threatens global computer networks. China, Iran, North Korea and Turkey have reportedly attempted to exploit this vulnerability, while government cybersecurity teams in the US, UK and 27 European Union countries are providing guidance and recommendations to deal with it.³⁶

The Log4j vulnerability and the Colonial Pipeline attack in 2021 are reminders of the constant threat of cyberattacks that we will face in 2022.

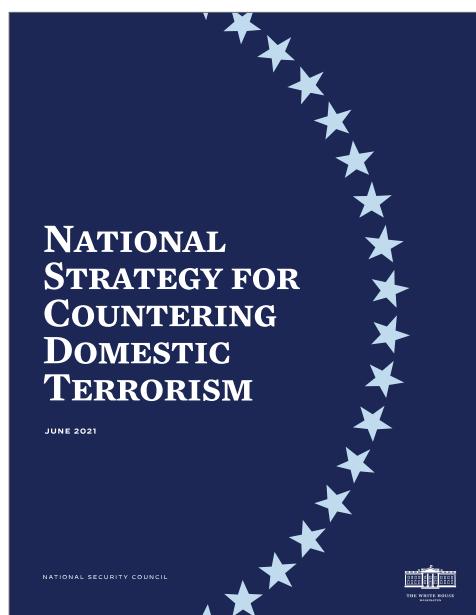
Terrorism

When we evaluate the risks of terrorism, we typically think of terrorist groups like al Qaeda, ISIL and Boko Haram. However, we now broaden our perspective to include domestic terrorism. In June 2021, the Biden administration released its first National Strategy for Countering Domestic Terrorism. The report concluded that domestic violent extremists motivated by “recent political and societal events” such as “narratives of fraud in the recent general election … and conspiracy theories promoting violence” will continue to attempt to engage in violence.³⁷

Bremmer agrees that the threat of terrorism in the US is primarily internal.

On the international front, US troops’ departure from Afghanistan allows terrorist organizations to establish themselves in Afghanistan and also makes counterterrorism activities harder to implement. Carter told us: “We would have never gotten to Abbottabad [Osama bin Laden’s compound in Pakistan] if we couldn’t fly from Jalalabad” [city in Afghanistan that is a 15-minute flight away on US military aircraft from Pakistan’s borders].

However, the risks of international terrorism have not changed since 2021.



In June 2021, the Biden administration released its first National Strategy for Countering Domestic Terrorism.

“We would have never gotten to Abbottabad [Osama bin Laden’s compound in Pakistan] if we couldn’t fly from Jalalabad.”

— Dr. Ash Carter

Key Takeaways

Every year we pull together key takeaways so that our clients and colleagues can easily glean the key messages from our *Outlook*. The most consistent takeaway for more than a decade has been to stay invested with an overweight to US assets.

While this takeaway has served our clients well, we also note that the past year has been full of surprises. US equities outperformed beyond our expectations. Chinese and other emerging market equities underperformed our bad case scenarios. Inflation increased much faster and sooner than we expected, as a result of which the shift in monetary policy in the US and UK also happened sooner than we expected.

This year promises more surprises. We often underscore the difficulty, under the best of circumstances, of forecasting economic growth and asset class returns. And these are certainly not the best of circumstances. While we believe that our two key investment themes of “US preeminence” and “staying invested” will endure, our team has put forth this 2022 *Outlook* with an even stronger dose of humility than last year.

Key takeaways from our 2022 *Outlook* are:

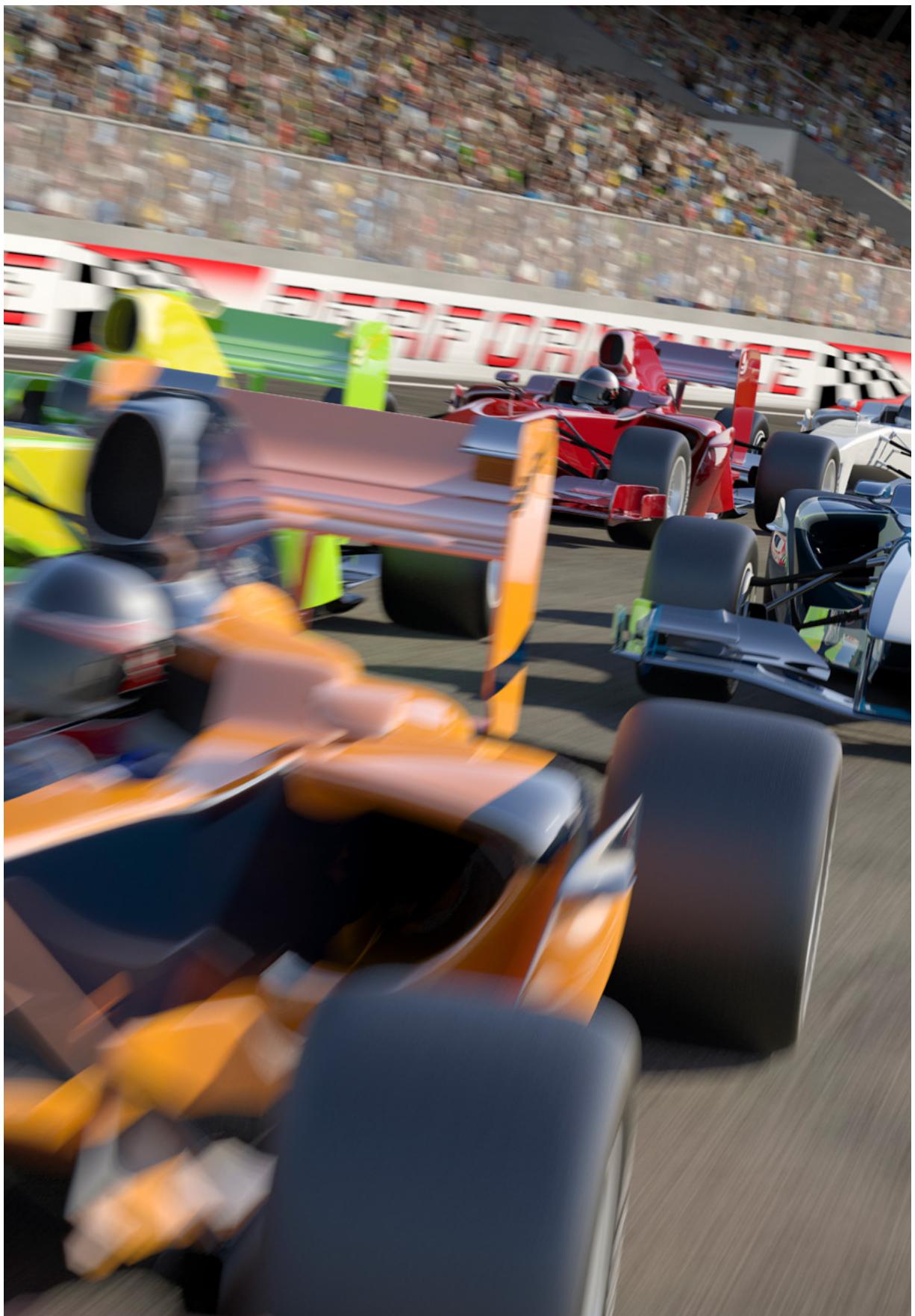
- **Above Trend Growth:** We expect global economic growth to slow from last year but remain above trend.
- **Less Uniform Monetary Policy:** We believe some central banks, such as the European Central Bank and the Bank of Japan, will maintain their accommodative policies; some, like the People’s Bank of China, will become more accommodative; and others, such as the Federal Reserve and Bank of England, will tighten policy.

- **Abundant Risks:** Investors face a longer litany of risks than they did last year, including SARS-CoV-2, higher inflation, a more aggressive pace of Federal Reserve tightening, rising geopolitical tensions with Russia and Iran, and cyberattacks.
- **Low Recession Odds:** We do not assign a high probability to any risk undermining the global expansion and have accordingly assigned 10% odds to a recession in the US and globally in 2022.
- **Mid-Single-Digit Portfolio Returns:** After three years of strong equity returns and the bottoming of interest rates, portfolio returns will be more muted this year. We expect moderate-risk and well-diversified portfolios to return 4% in 2022, driven by a 6–9% return from US and non-US equities and negative returns in high-quality fixed income securities.
- **Stay Invested:** While the margin of safety has declined given the currently high valuations in equities, we recommend clients stay invested at this time. As we witnessed in 2020 and 2021, financial markets' reaction to the pandemic was unpredictable. However, we remain vigilant with respect to the risks outlined in this report and are watchful for early signs of other risks that will surely surface.

2022 Global Economic Outlook: The Fast Lane

ECONOMIES AROUND THE GLOBE HAVE BEEN driving at full throttle. According to the International Monetary Fund, nominal world GDP grew by nearly 12% in US dollar terms last year, the fastest expansion in more than a decade. This rapid growth is particularly evident in manufacturing activity; the Global Manufacturing Purchasing Managers' Index has been lower than its current level 83% of the time since 1998.³⁸

Of course, operating at such speeds also increases the risk of overheating. Today's combination of sharply rebounding economic activity and pandemic-related labor and supply shortages has already pushed inflation to multi-decade highs across the major economies of the world. Although some of these pricing pressures will fade with the pandemic, a persistent rise in wages and housing costs runs a greater risk of becoming entrenched in inflation expectations.



In response, investors are increasingly worried that global central banks could tap the brakes prematurely. The Federal Reserve—which began tapering its asset purchases last year—is set to hike rates for the first time since 2018. Similarly, many emerging market central banks have already raised policy rates, and the Bank of England (BOE) delivered its first hike late last year.

Still, it is important to differentiate between less accommodative monetary policy and restrictive monetary policy. Despite the measures mentioned above, the total balance sheet of the top five central banks is expected to expand this year. Moreover, the policy rates of the Federal Reserve and BOE will remain well below restrictive levels even after this year's expected hikes. If anything, the withdrawal of some accommodation could prevent the type of cyclical excesses that have wrecked past business cycles.

There is also ample fuel to power the global economy this year. Excess savings are likely to support consumption despite the unwinding of pandemic-related stimulus measures. At the same time, easing supply bottlenecks should help businesses restock their shelves while providing some pricing relief. We are also heartened by the fact that the economic impact of each successive COVID-19 wave has diminished in the face of rising immunity, behavioral changes and improved therapeutics.

Taken together, these elements support our forecast for another year of above-trend global GDP growth (see Exhibit 68) and just 10% odds of a US recession.

United States: A Thorny Problem

They say every rose has its thorn. Such is the case with the V-shaped economic recovery in the US, whose robust growth has been tarnished by uncomfortably high inflation. As seen in Exhibit 69, US real GDP exceeded consensus expectations in 2021, but inflation did so by a larger margin. Even excluding food and energy prices, last year's estimated 3.3% reading in the Federal Reserve's preferred inflation measure—core Personal Consumption Expenditures (PCE)—was still the highest since 1991 and far above the 2.0% peak in annual average inflation realized in the last economic expansion.

Several factors are contributing to this thorny issue. Pandemic-related bottlenecks and health concerns have put upward pressure on prices by constraining the supply of both goods and labor. At the same time, demand for goods has rebounded much faster than normal because access to spending on services was limited by the pandemic, and the recovery was not hindered by the financial and economic excesses that typically precede recessions. This already robust demand was further invigorated by generous fiscal stimulus and highly accommodative monetary policy. The result has been a sharp rebound in activity—and upward pressure on prices from lingering supply bottlenecks—that is more typical following a natural disaster than a recession (see Exhibit 70).

To be sure, our forecast for another year of above-trend growth is unlikely to assuage these inflationary worries. As seen in Exhibits

Exhibit 68: ISG Outlook for Developed Economies

	Real GDP Growth Annual Average (%)				Headline Inflation*		Core Inflation*		Policy Rate**		10-Year Bond Yield*** End of Year (%)		
	2021	2022 Base Case	2022 Good Case	2022 Bad Case	2020–22 Combined Base Case	2021	2022	2021	2022	2021	2022	2021	2022
United States	5.6	3.6–4.2	4.7	3.1	6.1	4.7	4.8–5.4	3.6	4.5–4.9	0.125	0.875	1.51	1.75–2.25
Eurozone	5.1	3.9–4.3	4.9	3.2	2.5	2.6	2.3–2.9	1.4	1.5–1.9	-0.50	-0.50	-0.18	-0.15–0.35
United Kingdom	7.0	4.6–5.0	5.8	3.8	1.3	2.5	3.8–4.4	2.3	3.2–3.6	0.25	0.75	0.97	0.90–1.50
Japan	1.7	2.9–3.4	4.0	1.5	0.2	-0.2	0.8–1.0	-0.2	0.8–1.0	-0.10	-0.10	0.06	-0.25–0.25

Data as of December 31, 2021.

Source: Investment Strategy Group, Haver Analytics, Bloomberg.

* Inflation refers to CPI inflation. Japan core inflation excludes fresh food, but includes energy.

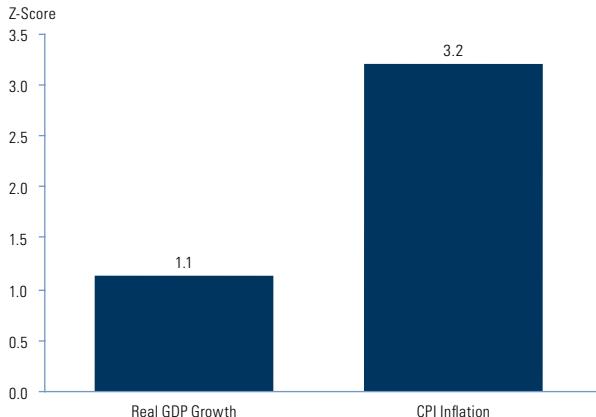
** The US policy rate refers to the midpoint of the Federal Reserve's target range. The Eurozone policy rate refers to the ECB deposit facility. The Japan policy rate refers to the BOJ deposit rate.

*** For Eurozone bond yield, we show the 10-year German bund yield.

Note: Forecasts are estimated, are based on assumptions, are subject to revision and may change as economic and market conditions change. There can be no assurance the forecasts will be achieved.

Exhibit 69: 2021 US Macroeconomic Forecasts: Standard Deviations from Consensus (Z-Score)

US growth exceeded expectations, but inflation did so by a larger margin.



Data as of December 31, 2021.

Note: Forecast errors are based on deviations of actual results from Bloomberg consensus expectations.

Source: Investment Strategy Group, Bloomberg.

Exhibit 71: US Household Leverage

Consumers' strong balance sheets should continue to support US growth in 2022.



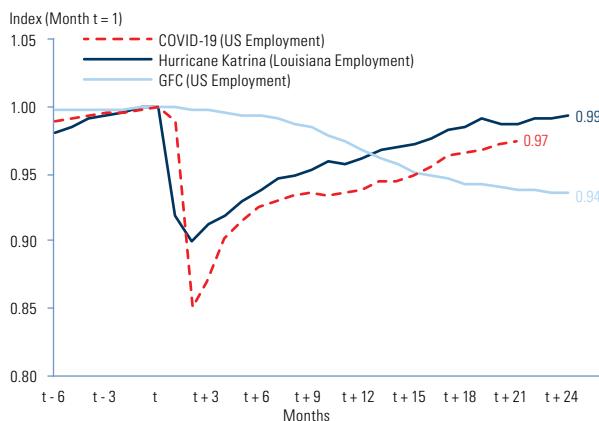
Data through Q3 2021.

Note: Shaded periods denote recessions.

Source: Investment Strategy Group, Haver Analytics.

Exhibit 70: Total US Private Employment at Start of Various Downturns

The path of employment during the pandemic has been closer to that of a natural disaster than a typical recession.

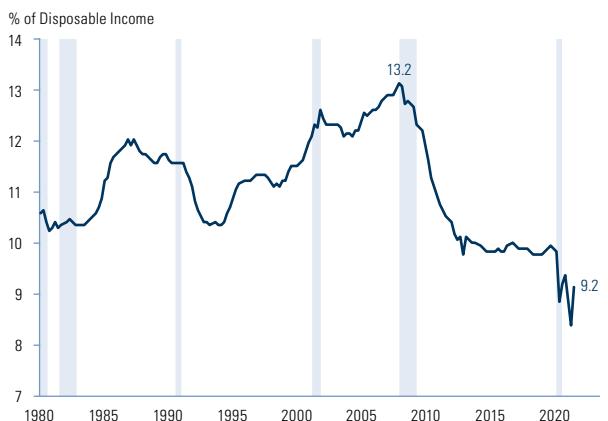


Data through November 2021.

Source: Investment Strategy Group, Haver Analytics.

Exhibit 72: US Household Debt Service Ratio

Low debt-servicing costs free up spending for other areas of consumption.



Data through Q2 2021.

Note: Shaded periods denote recessions.

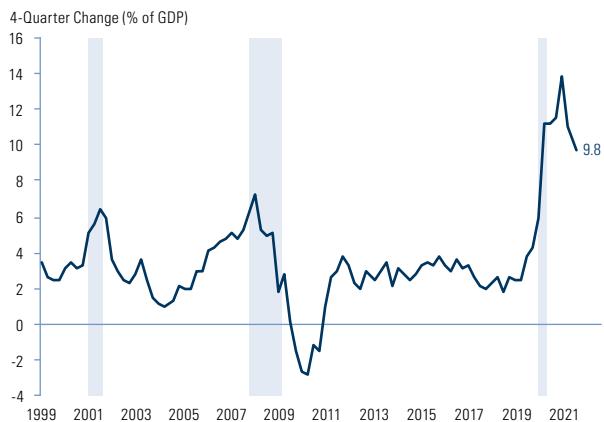
Source: Investment Strategy Group, Haver Analytics.

71–73, strong household balance sheets, low debt-servicing costs and an abundance of excess savings are aligned to support strong consumer spending. The same could be said for last year's unprecedented rise in net worth (see Exhibit 74), because consumers typically spend some portion of gains from stock market and home price

appreciation in the following year. Strong labor income is another tailwind to consumption (see Exhibit 75). Here, we expect strong wage gains at the low end of the income distribution to mitigate the drag from expired unemployment benefits (see Exhibit 76).

Exhibit 73: US Household Cash and Equivalents

An abundance of excess savings will support strong consumer spending.



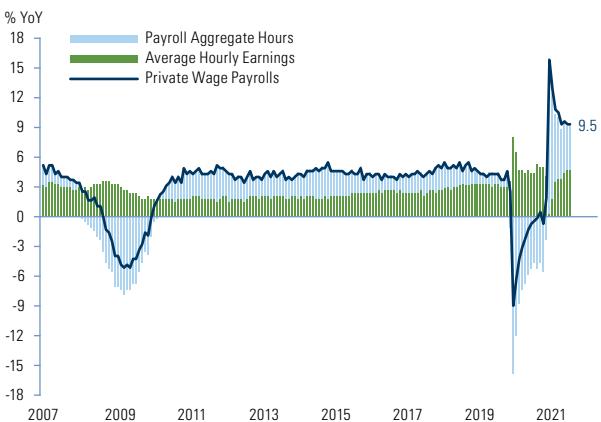
Data through Q3 2021.

Note: Cash and equivalents include time, savings, and checkable deposits; money market shares; and currency. Shaded periods denote recessions.

Source: Investment Strategy Group, Haver Analytics.

Exhibit 75: US Private Wage Payrolls

Strong labor income growth should provide a boost to consumer spending this year.

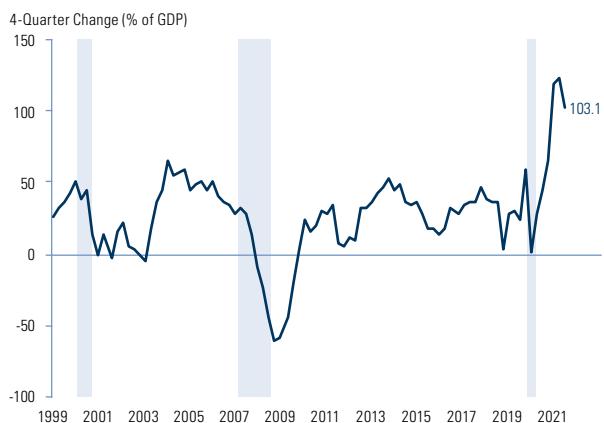


Data through November 2021.

Source: Investment Strategy Group, Haver Analytics.

Exhibit 74: Net Worth of US Households and Nonprofit Organizations

Consumers are likely to spend a portion of last year's sharp increase in their net worth.



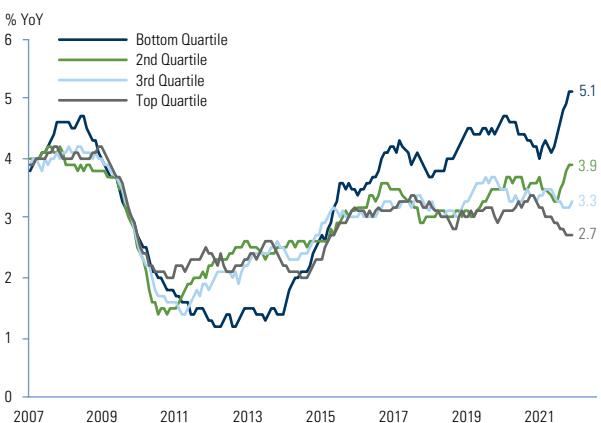
Data through Q3 2021.

Note: Shaded periods denote recessions.

Source: Investment Strategy Group, Haver Analytics.

Exhibit 76: Federal Reserve Bank of Atlanta US Wage Tracker by Wage Quartile

Strong wage gains for the bottom quartile should mitigate the drag from expired unemployment benefits.



Data through November 2021.

Source: Investment Strategy Group, Haver Analytics.

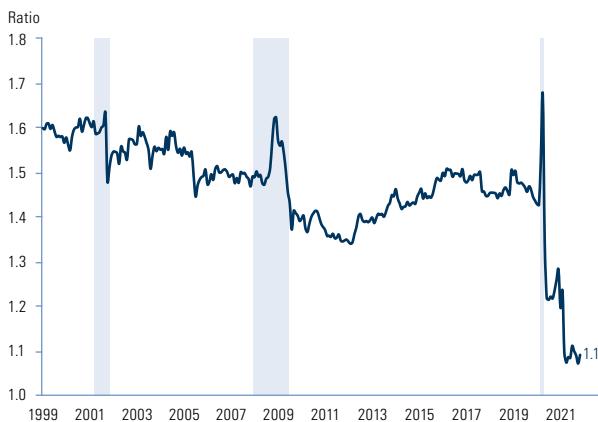
The outlook for investment is positive as well. Many companies, facing limited supply at a time of recovering demand, have depleted their existing inventories. The collapse in retail inventories relative to sales is a case in point, as demand for goods such as automobiles has far outstripped the available pandemic-constrained supply (see Exhibit 77). Eventual restocking of these depleted supplies

should bode well for future production, with most businesses now indicating that inventories are too low (see Exhibit 78).

The story is much the same for residential investment. As seen in Exhibit 79, there is a strong impetus for new construction now that surging demand has driven homeowner vacancy rates down to levels not seen since the 1970s. Construction

Exhibit 77: US Real Retail Inventory-to-Sales Ratio

Retail inventories collapsed relative to sales, as demand for certain goods far outstripped the constrained supply.



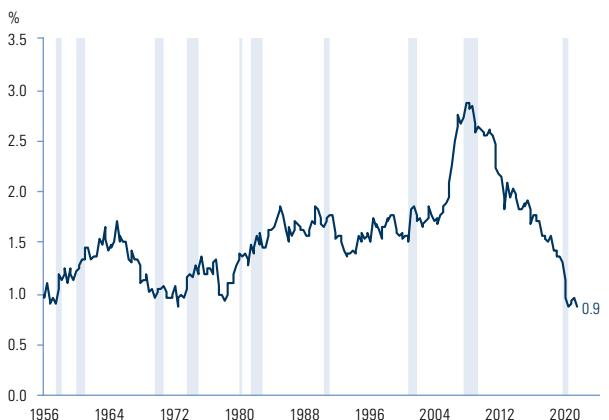
Data through November 2021.

Note: Shaded periods denote recessions.

Source: Investment Strategy Group, Haver Analytics.

Exhibit 79: US Homeowner Vacancy Rate

Surging housing demand drove vacancy rates to their lowest levels since the 1970s.



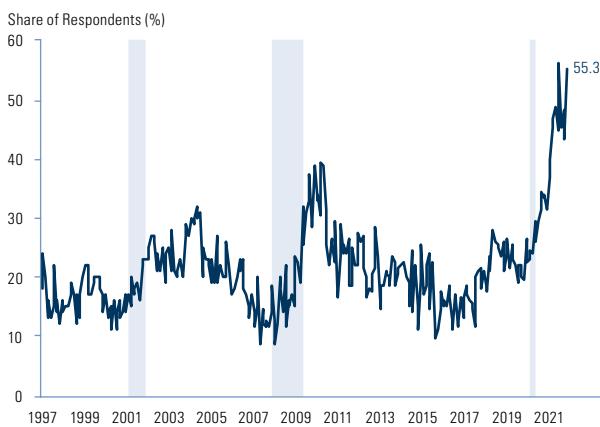
Data through Q3 2021.

Note: Shaded periods denote recessions.

Source: Investment Strategy Group, Haver Analytics.

Exhibit 78: Share of Firms Saying Inventories Are Too Low on US ISM Manufacturing Survey

Businesses' restocking of depleted inventories should bode well for future production.



Data through November 2021.

Note: Shaded periods denote recessions.

Source: Investment Strategy Group, Haver Analytics, Institute of Supply Management.

Exhibit 80: US OpenTable Seated Diners

Seated-dining indicators have become less sensitive to new COVID-19 waves.



Data through December 31, 2021.

Source: Investment Strategy Group, OpenTable.

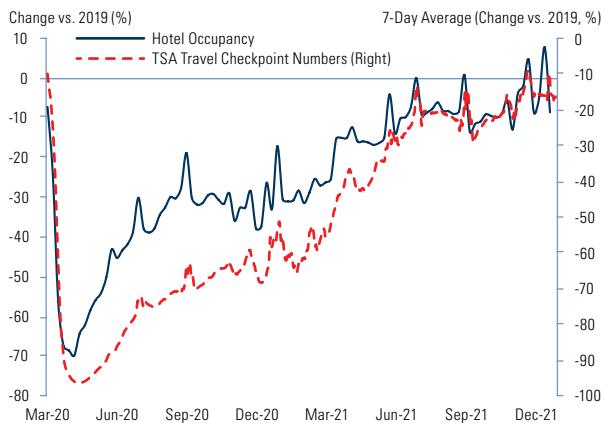
spending will also benefit from the recently passed Infrastructure Spending and Jobs Act, although most of this impact will occur after 2022.

While the Omicron variant poses downside risks to these expectations, it is worth noting that the economic impact of each successive COVID-19 wave has diminished in the face of rising immunity, improving therapeutics and consumers' ability

to adapt their activities to a world with the virus (see Exhibits 80-81). Moreover, US policymakers have repeatedly resisted implementing national lockdowns that would cripple economic growth despite successive virus waves. So while case counts are likely to rise in the coming weeks, we do not expect Omicron to undermine above-trend US growth this year.

Exhibit 81: US Air Travel and Hotel Occupancy

The impact of each successive COVID-19 wave on travel indicators has diminished.

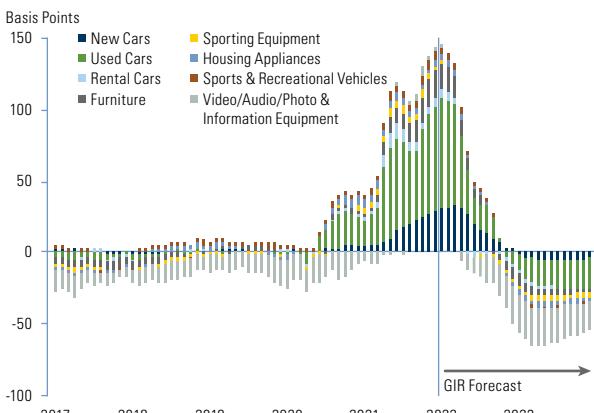


Data through December 31, 2021.

Source: Investment Strategy Group, TSA, STR.

Exhibit 83: Supply-Constrained Categories' Contributions to US Core PCE Inflation

Prices of certain pandemic-impacted inflation categories will normalize in 2022.

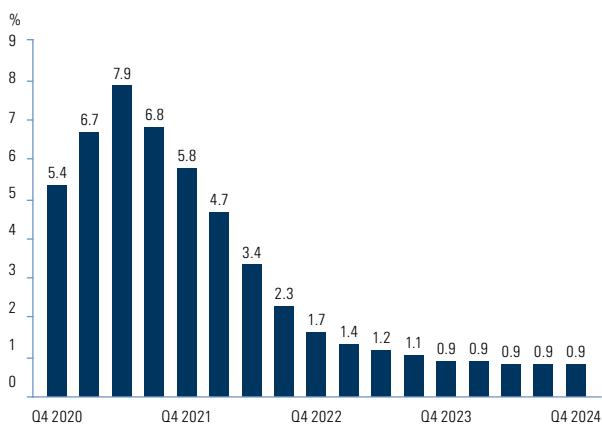


Data through November 2021, GIR forecasts through December 2023.

Source: Goldman Sachs Global Investment Research, Bureau of Economic Analysis.

Exhibit 82: Effect of US Fiscal Spending on the Level of GDP

The boost from fiscal spending will wane this year.



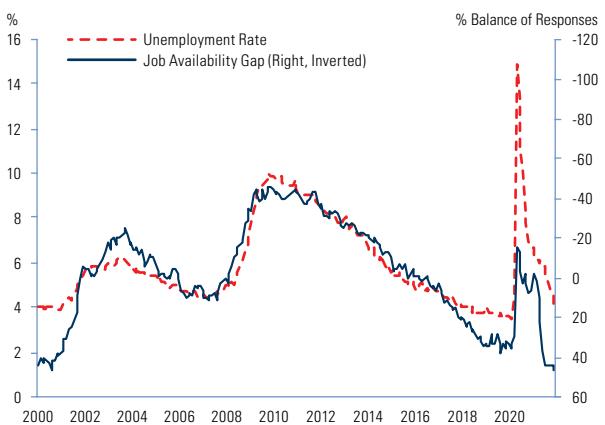
GIR forecasts through Q4 2024.

Note: Effect of fiscal spending from Phases 1-5 of pandemic-relief legislation, bipartisan infrastructure bill and budget reconciliation bill.

Source: Congressional Budget Office, Goldman Sachs Global Investment Research.

Exhibit 84: US Unemployment Rate and Job Availability Gap

The labor market is tighter than the unemployment rate suggests.



Data through November 2021.

Note: Job availability gap reflects the percentage of respondents to the Conference Board consumer survey who say jobs "are plentiful" less those who say jobs "are hard to get."

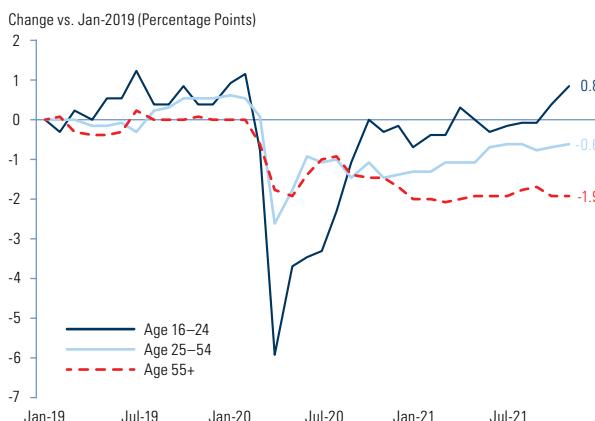
Source: Investment Strategy Group, Haver Analytics.

We also don't think inflation will topple the US expansion, but we acknowledge it is a growing risk. Parsing signal from noise in upcoming inflation reports will be particularly challenging. On the one hand, several factors should help ease pricing pressures as we move through 2022. These include a fuller reopening of the economy, fewer

supply chain disruptions, a normalization in the prices of certain pandemic-impacted inflation categories and a waning boost from fiscal spending (see Exhibits 82-83). Commodity inflation, for example, should moderate as long as prices rise at a slower pace than they did last year. Additionally, there are many structural headwinds to runaway

Exhibit 85: US Labor Force Participation Rate by Age Cohort

A meaningful share of workers retired early during the pandemic.



Data through November 2021.

Source: Investment Strategy Group, Haver Analytics.

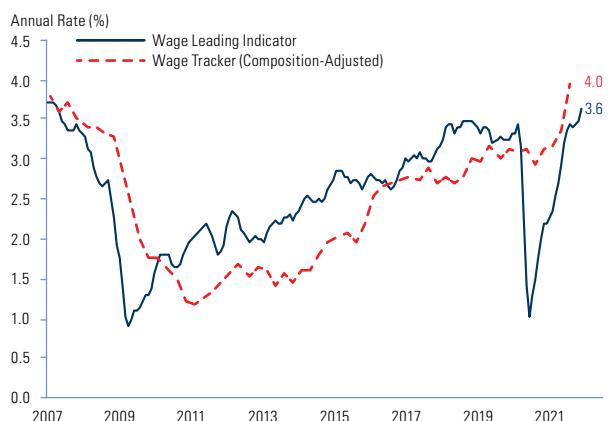
inflation, such as today's much lower level of labor unionization, the prevalence of inflation-targeting central banks around the world and frequent disinflationary technological disruptions, such as online retail. In fact, today's still well-anchored long-run inflation expectations likely reflect these structural drivers.

On the other hand, a tight labor market and rising rents are likely to make it difficult for the Federal Reserve to ignore falling but still above-target inflation. As seen in Exhibit 84, other measures show the labor market is much tighter than the unemployment rate suggests, particularly given the number of workers who have retired (see Exhibit 85). In turn, wage growth is likely to remain elevated (see Exhibit 86).

The upshot is that although core PCE inflation will likely fall from 4.5% in Q4 last year to 2.8% in Q4 2022, it will still sit well above the Federal Open Market Committee's (FOMC's) 2% target. According to last year's December FOMC meeting, this satisfies one of the Federal Reserve's preconditions for raising interest rates: "inflation has risen to 2% and is on track to moderately exceed 2% for some time." We also expect the central bank's second condition for liftoff—that "labor market conditions have reached levels consistent with the Committee's assessments of maximum employment"—to be met this

Exhibit 86: GIR US Wage Tracker and Wage Leading Indicator

Leading indicators suggest that wage growth is likely to remain elevated.



Data through November 2021.

Source: Goldman Sachs Global Investment Research.

year as the unemployment rate falls below the 4% threshold that is often considered a proxy for full employment. As a result, the Federal Reserve is likely to deliver at least three interest rate hikes this year.

Even so, we do not expect rate hikes to undermine the solid foundation for growth provided by healthy household balance sheets and businesses' need to restock depleted inventories. In fact, our forecast for above-trend real GDP growth of 3.6–4.2% would be considerably higher were it not for lingering supply constraints; and in a supply-constrained environment with steep supply curves, any incremental reduction in demand from tighter monetary policy should reduce inflation more than real GDP growth. Moreover, this expansion has already surpassed many of the macroeconomic milestones that preceded rate hikes in the last expansion, suggesting the Federal Reserve is not tightening policy prematurely (see

We do not expect rate hikes to undermine the solid foundation for growth provided by healthy household balance sheets and businesses' need to restock depleted inventories.

Exhibit 87: US Macroeconomic Conditions at the Onset of the Last Federal Reserve Hiking Cycle

This expansion has already surpassed many of the macroeconomic milestones that preceded liftoff in the last cycle.

	GDP Growth QoQ Annualized (YoY)	U-3 Unemployment Rate	U-6 Unemployment Rate	Employment-to-Population Ratio	Labor Force Participation Rate	Core PCE (YoY)	Core CPI (YoY)
December 2015	0.6% (1.9%)	5.0%	9.9%	59.6%	62.7%	1.1%	2.1%
December 2016	2.0% (2.0%)	4.7%	9.2%	59.7%	62.7%	1.8%	2.2%
Current	2.3% (4.9%)	4.2%	7.8%	59.2%	61.8%	4.7%	4.9%

Data as of December 31, 2021.

Note: U-3 unemployment rate reflects total unemployed, as a percentage of the labor force. U-6 reflects total unemployed, plus persons marginally attached to the labor force, plus total employed part time for economic reasons, as a percentage of the labor force plus persons marginally attached to the labor force.

Source: Investment Strategy Group, Haver Analytics.

Exhibit 87). Against this backdrop, we estimate below-average recession odds of just 10% in 2022.

The Eurozone: Back to the Future

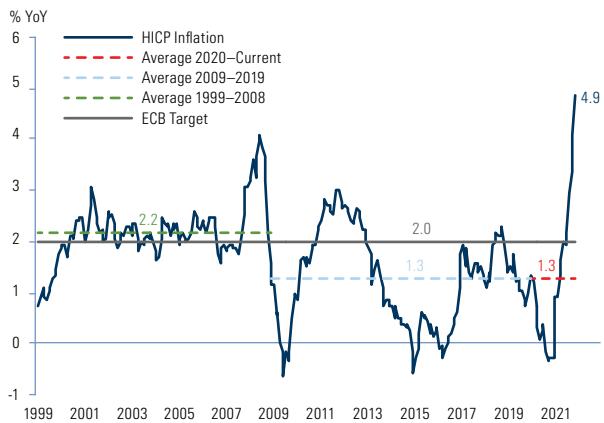
The Eurozone economy begins 2022 where it ended 2019, as last year's strong rebound lifted GDP back to about its pre-pandemic level. We expect that momentum to extend into this year, reflecting a combination of pent-up savings and favorable financial conditions that should support consumption and investment alike. Fiscal policy will also remain supportive, with increasing disbursements from the European Union (EU) Recovery Fund and an ongoing suspension of the EU fiscal rules that limit budget deficits.

While the backdrop for Eurozone growth is favorable, there are a number of potential headwinds. As COVID-19 cases have surged worldwide, Europe is currently generating most daily infections, which could warrant further mobility restrictions that weigh on growth. The same could be said for elevated energy prices, although ongoing government interventions should mitigate the drag on growth. Meanwhile, a number of political risks are on the horizon, including presidential elections in Italy and France and ongoing Brexit tensions. Finally, supply chain bottlenecks continue to hamper growth, particularly in Germany, while also stoking inflationary pressures.

This last point is important, as there has been growing concern that the European Central Bank will be forced to tighten monetary policy in response to burgeoning inflation. Yet we see several reasons that the ECB will remain broadly accommodative, with asset purchases continuing at least through the end of this year and policy rates on hold. First, we believe that as supply bottlenecks ease and the ascent in energy prices slows, we

Exhibit 88: Eurozone Headline HICP Inflation

Today's above-target inflation follows a long period of sizable undershoots.



Data through November 2021.

Note: HICP=Harmonised Index of Consumer Prices.

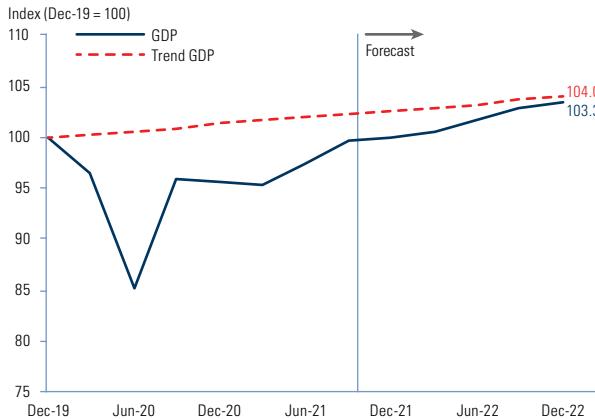
Source: Investment Strategy Group, Eurostat.

will see Eurozone inflation end the year below the ECB's 2% target. Second, the ECB is likely to be patient in reacting to currently elevated inflation because it comes after a long period of large and persistent undershoots (see Exhibit 88). Third, we expect the level of GDP this year to remain below the trend path that prevailed prior to the pandemic, signaling to the ECB that the recovery remains incomplete despite the strong rebound in 2021 (see Exhibit 89). Fourth, surprisingly soft wage growth suggests medium-term inflationary pressures remain below the ECB's target (see Exhibit 90). Put simply, easy monetary policy is likely to remain a key pillar of support for the Eurozone economy.

Weighing the pros and cons, our forecast calls for Eurozone GDP growth of 3.9–4.3% in 2022, slower than last year's 5.1% but still significantly above trend.

Exhibit 89: Eurozone Real GDP—Realized and ISG Baseline Forecast

The level of GDP will remain short of its pre-pandemic trend through end-2022.



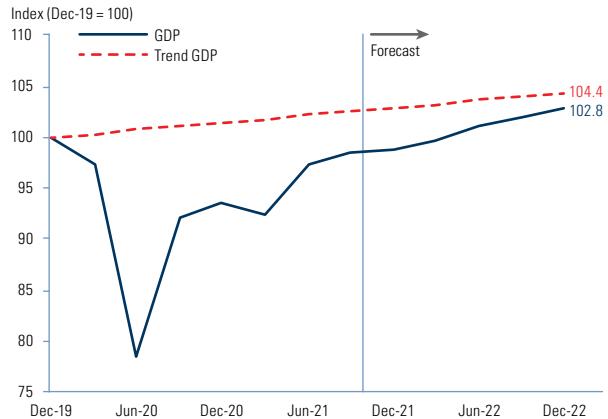
Data through Q3 2021, forecasts through Q4 2022.

Note: Trend GDP is based on an estimated pre-pandemic trend.

Source: Investment Strategy Group, Eurostat.

Exhibit 91: UK Real GDP—Realized and ISG Baseline Forecast

UK GDP remains 4% below its pre-pandemic trend.



Data through Q3 2021, forecasts through Q4 2022.

Note: Trend GDP is based on an estimated pre-pandemic trend.

Source: Investment Strategy Group, ONS.

Exhibit 90: Eurozone Negotiated Wage Growth

Surprisingly soft wage growth suggests medium-term inflationary pressures remain muted.



Data through Q3 2021.

Source: Investment Strategy Group, ECB.

United Kingdom: Potholes on the Road to Recovery

The UK economy staged a sharp rebound in 2021, recording the fastest rate of growth in the country's post-WWII history. Yet it was not a smooth ride, as a strong recovery in the first half of 2021—driven by surging vaccinations—was hobbled by supply constraints later in the year. As a result,

the economy ended last year 4% below the trend growth path that prevailed prior to the pandemic (see Exhibit 91).

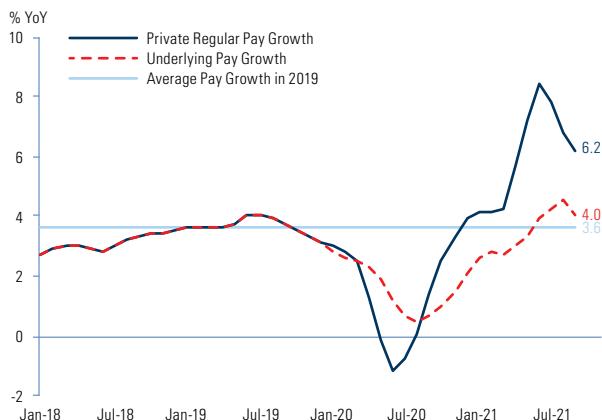
We expect several factors to refuel the UK economy this year, with our forecast calling for above-trend growth of 4.6–5.0%. For one, excess savings and a strong labor market should embolden household consumption. In addition, business investment—which has suffered in the face of economic uncertainty in recent years—should receive a boost from the generous tax credits announced last year. Lastly, overall activity should rise as global supply bottlenecks are cleared over the course of the year.

That said, the recovery still has to overcome a few speed bumps. The UK faces structural challenges—mostly arising from new trading and migration regimes following Brexit—that will dampen trend growth for some time. Moreover, our forecast for consumption would be even stronger were it not for slower real disposable income growth among households facing large tax increases, higher financing costs and higher inflation, especially in their energy bills. Meanwhile, the economy will get less policy support this year as pandemic-related fiscal spending is withdrawn and monetary policy is gradually tightened.

On the last point, we think generally high inflation and wage growth in excess of its pre-

Exhibit 92: UK Pay Growth

Underlying pay growth, adjusted for COVID-19 distortions, is above its pre-pandemic rate.



Data through September 2021.

Source: Investment Strategy Group, Bank of England.

pandemic trend path (see Exhibit 92) will prompt the Bank of England to raise its policy rate this year to at least its pre-pandemic level of 0.75%. This shift will trigger a passive reduction in the BOE's balance sheet as the central bank plans to stop reinvesting maturing bonds once the policy rate reaches 0.5%. Given these shifts, along with normalization of pandemic disruptions, we expect inflation to peak close to 6% in the spring before gradually easing back below 3% by the end of the year.

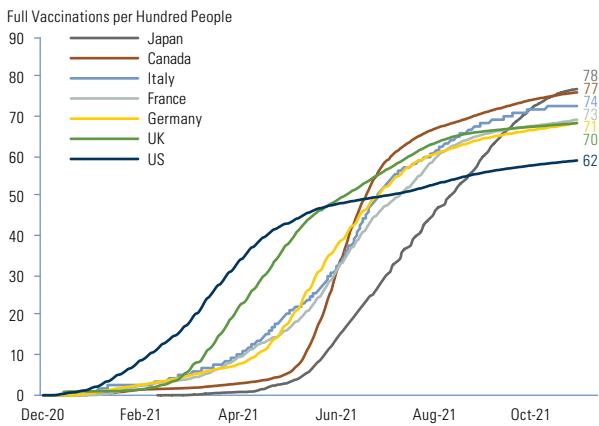
Two potential sources of political risk that could cause localized market volatility also merit watching. First, the UK-EU dispute over the Northern Ireland Protocol has yet to be resolved, although a compromise looks likely given strong incentives on both sides for an agreement. Second, the Scottish government could push for another independence referendum, although it is unlikely that a vote will take place before the next UK general election in 2024.

Japan: Unfinished Business

The pandemic continued to wreak havoc on Japan's economy in 2021. Repeated waves of the virus—aggravated by an initially slow vaccine rollout—caused widespread mobility restrictions and a contraction in GDP in both the first and third quarters. The result was an incomplete recovery for the Japanese economy, as the level

Exhibit 93: COVID-19 Vaccination Rates

After a slow start, Japan achieved the highest vaccination rate among G-7 countries.



Data through December 31, 2021.

Source: Investment Strategy Group, Our World in Data.

of GDP ended last year still 2.7% below its pre-pandemic high.

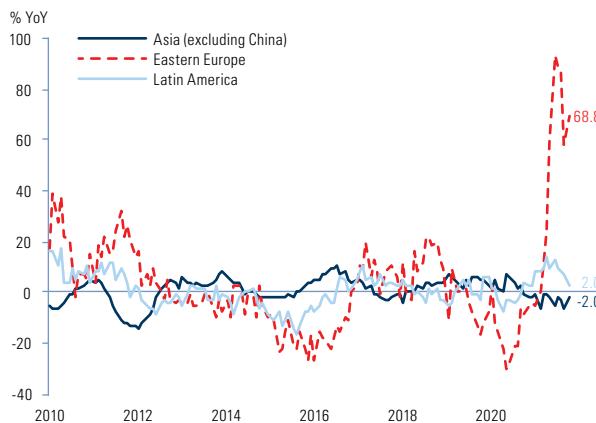
The outlook for this year is much brighter. After a slow start, Japan's vaccination program has inoculated 78% of the population, the highest vaccination rate among G-7 countries (see Exhibit 93). While vaccines may be less effective at preventing infection by the Omicron variant, their protection against serious disease and death seems largely intact, based on initial studies. Meanwhile, Japanese households have considerable excess savings from which to spend, particularly if mobility restrictions continue to ease. We also think fixed investment and demand for Japanese exports will benefit from an ongoing global economic recovery and subsiding supply chain disruptions.

A final tailwind to the recovery arises from policy that is still accommodative, albeit moderately less so than in 2021. In the case of fiscal spending, the passage of last year's large supplementary budget in late November is expected to boost GDP growth in 2022. At the same time, inflation running well below the Bank of Japan's (BOJ's) 2% target will keep policy rates anchored at their current near-zero levels. In our view, this will be sufficient to offset the modest tightening in financial conditions resulting from the BOJ's likely reduction in the pace of asset purchases.

Based on the foregoing, we expect Japan's recovery to gather pace this year, with GDP growth accelerating to 2.9–3.4%. That should lift the level of GDP back to its 2019 peak in the second half

Exhibit 94: Emerging Market Terms of Trade

Considerable terms of trade gains supported economies in EMEA and Latin America in 2021.



Data through October 2021.

Note: Terms of trade gains reflect a rise in the unit value of exports relative to imports, allowing a country to purchase more imports for the same amount of exports.

Source: Investment Strategy Group, Haver Analytics.

of 2022, more than a year after the US economy achieved the same feat. While our base case for the Japanese economy is constructive, the risks to our outlook are tilted to the downside given the uncertain path of the virus and the near-term trajectory of the Chinese economy.

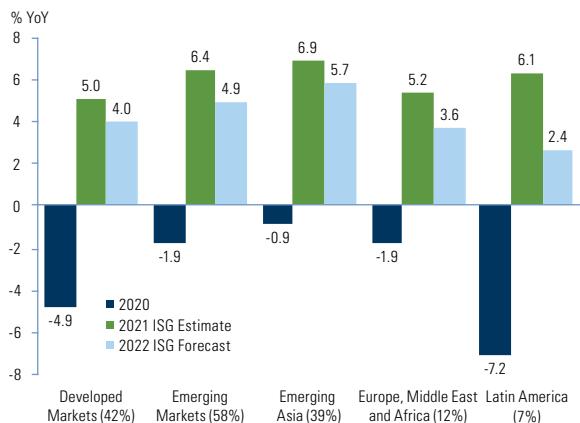
Emerging Markets: A Difficult Balancing Act

Emerging market economies bounced back by 6.4% last year, the fastest rate of growth since 2010. This rebound was even more impressive considering the significant headwinds EM economies faced, including repeated waves of COVID-19 and global supply bottlenecks. Growth in most EM countries exceeded what the consensus expected at the start of last year, but commodity-exporting countries in Latin America and Europe, Middle East and Africa (EMEA) benefited especially from strong terms of trade gains (see Exhibit 94).

Despite this spirited growth, EM GDP still remains about 5% below the trend path that prevailed prior to the pandemic. Given this incomplete recovery, we expect another year of above-trend EM growth, albeit with considerable variation across regions (see

Exhibit 95: Developed and Emerging Market Real GDP Growth

We expect increased variation in GDP growth across EM regions in 2022.



Data through Q3 2021, forecasts through 2022.

Note: Numbers in parentheses denote regions' shares in world GDP in PPP terms.

Source: Investment Strategy Group, Haver Analytics.

Exhibit 95). For example, we expect only a modest deceleration in Asian growth, as there is still considerable economic slack in several countries and inflation pressures are relatively muted. In contrast, Latin America and EMEA are likely to see a more substantial slowdown as last year's strong trade gains are unlikely to be repeated.

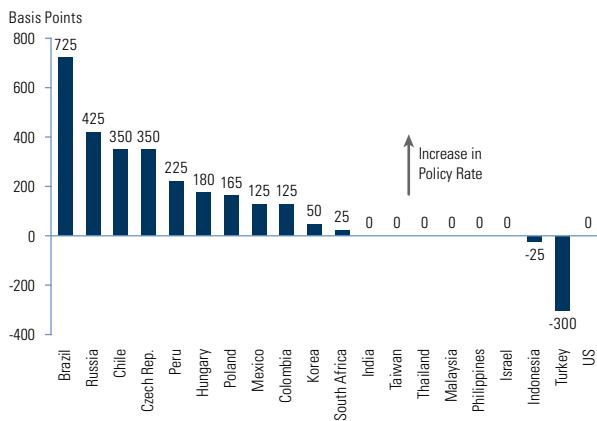
The different growth and inflation dynamics across EM economies highlight the difficult balancing act policymakers will face as they seek to provide adequate support to their recoveries while also remaining vigilant against burgeoning inflationary pressures (see Exhibit 96). Although the right policy mix will vary by country, we expect most countries will see a further unwinding of pandemic-related stimulus measures.

At the same time, the recent hawkish pivot by the Federal Reserve—in which it doubled the pace of tapering of asset purchases and indicated three

EM GDP still remains about 5% below its pre-pandemic trend. We therefore expect another year of above-trend EM growth, albeit with considerable variation across regions.

Exhibit 96: Emerging Market Policy Rate Changes Since End-2020

Central banks in EMEA and Latin America have started to hike policy rates to keep inflation under control.

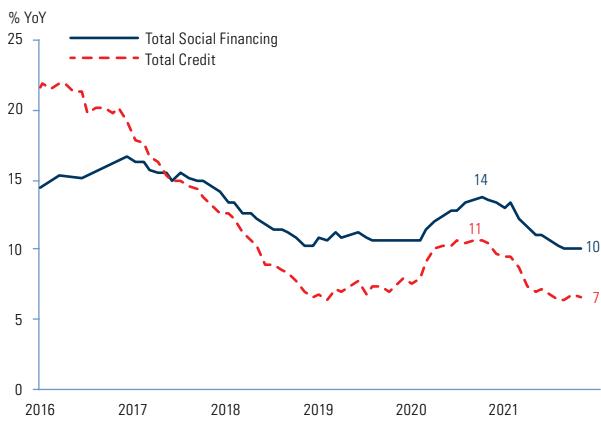


Data as of December 31, 2021.

Source: Investment Strategy Group, Bloomberg.

Exhibit 97: China Credit Growth

Credit growth has slowed since late 2020 as policymakers gradually dialed back stimulus.



Data through November 2021.

Note: ISG credit measure includes total social financing (excluding equities), government bonds, "missing" shadow credit and external debt.

Source: Investment Strategy Group, CEIC, Haver Analytics.

hikes for this year—could force EM central banks to hike rates faster than is currently expected by the market. Even so, we think the odds of a 2013-style “taper tantrum” appear low, as the Federal Reserve’s taper decision was well telegraphed and the majority of EM countries have fewer external vulnerabilities today. We are also closely monitoring other risks that could tip the scales in the EM balancing act, including weaker growth in China, more persistent supply bottlenecks and more severe COVID-19 variants, especially given the low vaccination rates in many EM countries.

China

After an initial rapid recovery, the Chinese economy has lost steam. We estimate that GDP

growth in last year’s final quarter likely moderated to less than half of the 8.1% average annual rate for 2021. The slowdown was even more pronounced in the property sector, with total new housing starts falling an estimated 9% from 2020.

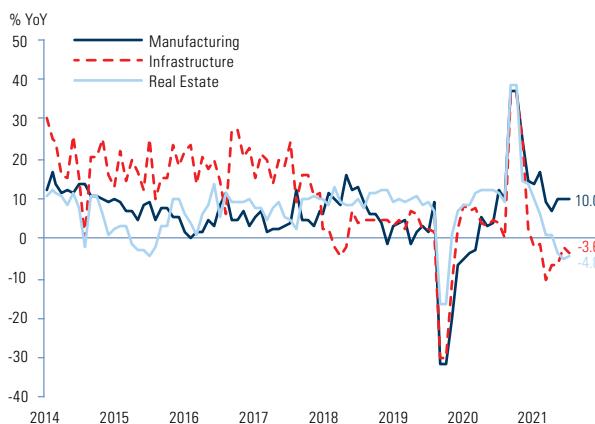
While this slowdown partly reflected the economic drag from successive waves of COVID-19, it also featured several restrictive policy actions that hobbled growth. As seen in Exhibits 97 and 98, the reduction of fiscal and monetary stimulus weighed on both credit growth and infrastructure investment. Regulators also tightened policies affecting the property sector, creating financial stress among property developers and a sharp drop in real estate activity, which normally accounts for nearly a quarter of GDP. At the same time, China’s energy policies caused severe power shortages late in the year as local governments tried to meet energy-control targets amid high demand from industries. Business sentiment was further dampened by a regulatory clampdown on tech platforms.

To avoid an even sharper slowdown in economic activity, China’s policymakers have begun to relax some of these tightening measures. For example, the People’s Bank of China (PBOC) has recently taken steps to provide more liquidity to banks in order to support the flow of credit to the economy (see Exhibit

The different growth and inflation dynamics across EM economies highlight the difficult balancing act policymakers face as they seek to provide support to their recoveries while also remaining vigilant against inflation.

Exhibit 98: China Fixed Investment by Sector

Real estate and infrastructure investment decelerated sharply in 2021.

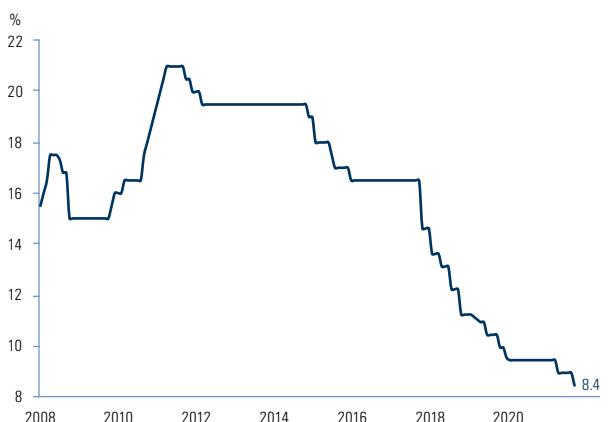


Data through November 2021.

Source: Investment Strategy Group, Haver Analytics.

Exhibit 99: China Required Reserve Ratio

The PBOC cut the required reserve ratio twice in 2021, freeing up more liquidity at commercial banks.



Data through December 2021.

Source: Investment Strategy Group, Haver Analytics.

99). Meanwhile, local governments have increased the issuance of special bonds, which are used to fund infrastructure projects (see Exhibit 100). More recently, we have even seen some loosening of property sector regulations.

We expect additional policy support in 2022, motivated by China's desire to avoid discord in a year when it is hosting the Winter Olympics and when the 20th National Party Congress is expected to appoint President Xi Jinping for a third term. Moreover, the downside risks posed by an already fragile property sector and lingering pandemic flare-ups require some recalibration of policy. That said, China is likely to undertake more measured and targeted stimulus than in past cycles in order to avoid a renewed buildup of debt.

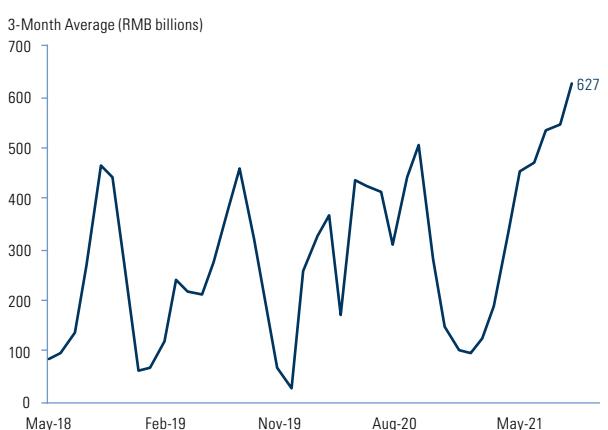
Against this backdrop, we project China will grow by 4.7–5.3% in 2022, a slower pace than last year and a modest one by Chinese standards. Although headline inflation is expected to be higher despite this slower growth, it is likely to remain muted at 1.5–2.0%.

India

Despite a significant wave of COVID-19 infections last summer, the Indian economy grew at an above-trend pace of 7.9% in 2021. The rebound in the second half of the year was largely driven by the loosening of mobility restrictions as the pace of vaccinations accelerated. The economy also benefited from a rebound in domestic and external demand, as well as fiscal stimulus.

Exhibit 100: China Local Government Special Bond Issuance

New issuance has picked up as local governments prepare for greater spending on infrastructure.



Data through October 2021.

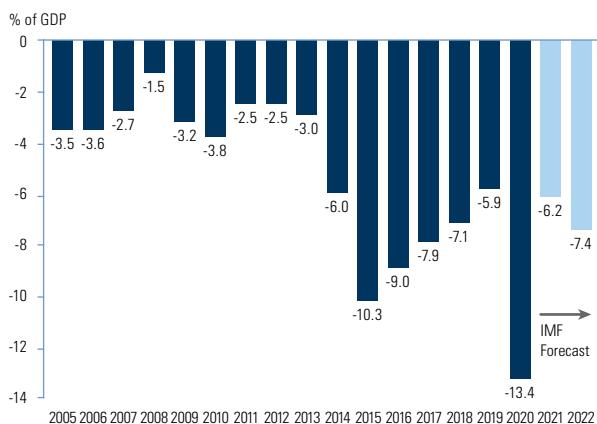
Source: Investment Strategy Group, Haver Analytics.

We expect these same factors to underpin another year of above-trend growth, with our forecast pointing to an 8.4–9.2% expansion. At that pace, India could emerge from this pandemic as the fastest-growing major economy in the world.

To be sure, part of this growth reflects the accommodative stance of the Reserve Bank of India (RBI). It broke ranks with other EM central banks, which tightened monetary policy last year, because headline inflation in India remained mostly

Exhibit 101: Brazil Fiscal Balance

Brazil's large fiscal deficit remains an important headwind to its economic outlook.



Data through 2020, forecasts through 2022.

Source: Investment Strategy Group, Haver Analytics, IMF.

inside the RBI's 2.0–6.0% target band. But we think the central bank will need to start hiking rates in the second half of 2022 to keep inflation within these bounds.

Brazil

Although the Brazilian economy grew 4.5% last year, it suffered a technical recession in Q2-Q3. We expect the economy to remain on its back foot in 2022, as the same restrictive monetary policies that tightened financial conditions sharply last year remain in place. As a result, our forecast calls for GDP to expand at just 0.3–1.1% this year.

The root cause of this restrictive policy stance is Brazil's surging inflation. At above 10%, headline CPI inflation has more than doubled from its pre-pandemic level. In response, the central bank has been forced to aggressively hike policy rates, from 2.0% in early 2021 to 9.25% currently. We expect this trend to continue, as the central bank will likely need to offset the inflationary impact of higher fiscal spending now that the government has weakened the fiscal spending cap.

We see the policy rate reaching 11% by March of this year, significantly above the 6.0–7.0% range of estimates for the neutral rate. As seen in Exhibit 101, this is likely to put upward pressure on the government's interest bill and add to higher fiscal deficits for years to come.

Russia

The recovery in the energy sector supported Russia's economic growth of 4.3% in 2021, which was well above consensus expectations of 3% at the start of the year. We expect GDP growth to slow to 2.4–3.2% this year, reflecting a more modest boost from commodity price appreciation and the likelihood that Russia will be subjected to new economic sanctions.

As occurred in other economies around the world, Russia's recovery also brought an unwelcome rise in inflation. At more than 8%, Russia's headline inflation in December of last year was more than double the central bank's 4% inflation target. The Central Bank of Russia has responded forcefully, lifting its policy rate from 4.25% to 8.50% last year. Although the hiking cycle is nearing its end, we expect monetary policy to remain tight this year to ensure the upward inflation trend is reversed and to guard against capital outflows.

2022 Financial Markets Outlook: Going the Distance

EVEN FOR THE BULLISH AMONG US, the run in global stocks last year was exceptional. More than 90% of the primary equity indices tracked by Bloomberg had a positive total return, with an average gain in excess of 23%.³⁹ Along the way, the S&P 500 achieved 70 all-time closing highs and the MSCI EAFE index finally exceeded the high-water mark it had reached prior to the GFC. Collectively, global equity market value increased by more than \$18 trillion in 2021.⁴⁰

After such a strong sprint, it would be natural for investors to question the endurance of global stocks. To be sure, there is no shortage of concerns, including the evolution of the coronavirus, high inflation, less accommodative monetary policy and geopolitical tensions. Today's historically high valuations also leave investors with a narrower margin of safety for absorbing any adverse developments. This is particularly true in the US, where valuations have been cheaper at least 90% of the time historically. Even global bonds are expensive,



as their low yields likely imply negative returns after adjusting for inflation for years to come. The same could be said for the negative real returns expected from holding cash.

Still, there are several reasons that remaining invested in risk assets is warranted despite our expectation for more moderate returns in 2022 (see Section I, Staying Invested). First, we expect another year of above-trend global GDP growth to lift corporate profits and limit the odds of a recession to just 10% in the US. When the economy was growing in past post-WWII periods, the S&P 500 generated a positive annual total return 88% of the time. Second, we believe higher valuations are justified by today's extraordinarily low interest rates and believe that rates have room to rise before becoming a headwind for US stocks. Third, the returns of investment alternatives—such as cash and bonds—are unappealing, particularly for bonds in the rising interest rate environment that we expect. Fourth, stock returns often surprise investors to the upside, as the last several years have demonstrated. We have assigned greater odds to our good case than to our bad case US equity scenario in 2022, as we have in nine of the past 12 years.

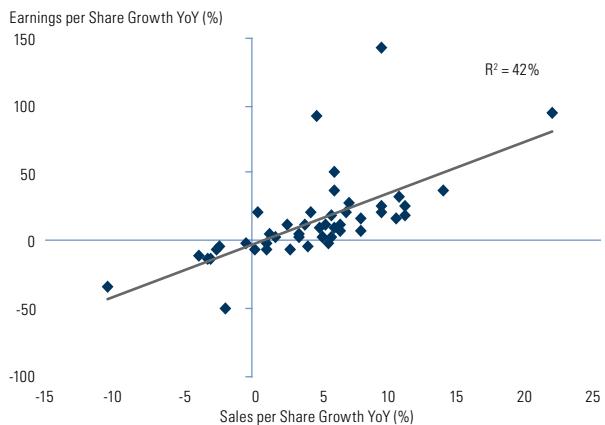
With our forecast placing low odds on the types of stumbling blocks that could prematurely end the run this year, we think stocks can go the distance (see Exhibit 102).

US Equities: Stay Invested

We expect an ongoing economic expansion in the US to support above-consensus earnings growth for S&P 500 companies this year, leading to mid-single-digit total returns that are superior to

Exhibit 103: S&P 500 Earnings per Share Growth vs. Sales per Share Growth

Sales growth has explained about 42% of the variation in earnings growth since 2010.



Data through Q3 2021.

Note: Based on quarterly data since 2010.

Source: Investment Strategy Group, S&P Global.

cash and bonds. Although we would normally detail our rationale for recommending that clients stay invested here, we have instead moved that discussion to Section I of this report.

For convenience, we summarize the key elements of our 2022 view on US equities below:

- **Above-Consensus Earnings:** We expect S&P 500 earnings to grow by 11–13% this year on the back of strong economic growth and resilient profit margins. The resulting \$230–235 level of earnings per share stands above the current consensus estimate of \$228.
 - Earnings continue to benefit from underappreciated operating leverage—

Exhibit 102: ISG Global Equity Forecasts—Year-End 2022

	2021 YE	End 2022 Central Case Target Range	Implied Upside from End 2021 Levels	Current Dividend Yield	Implied Total Return
S&P 500 (US)	4,766	4,950–5,050	4–6%	1.4%	5–7%
Euro Stoxx 50 (Eurozone)	4,298	4,500–4,650	5–8%	2.7%	7–11%
FTSE 100 (UK)	7,385	7,700–7,900	4–7%	3.6%	8–11%
TOPIX (Japan)	1,992	2,075–2,125	4–7%	2.2%	6–9%
MSCI EM (Emerging Markets)	1,232	1,255–1,305	2–6%	3.3%	5–9%

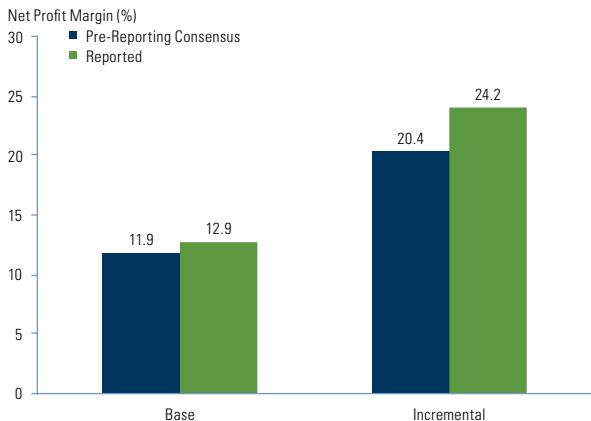
Data as of December 31, 2021.

Source: Investment Strategy Group, Datastream, Bloomberg.

Note: Forecasts are estimated, based on assumptions, are subject to revision and may change as economic and market conditions change. There can be no assurance the forecasts will be achieved. Indices are gross of fees and returns can be significantly varied. Please see additional disclosures at the end of this *Outlook*.

Exhibit 104: S&P 500 Base and Incremental Net Profit Margins in Q3 2021

The incremental profit margin was almost double the base margin for S&P 500 firms in Q3 2021.



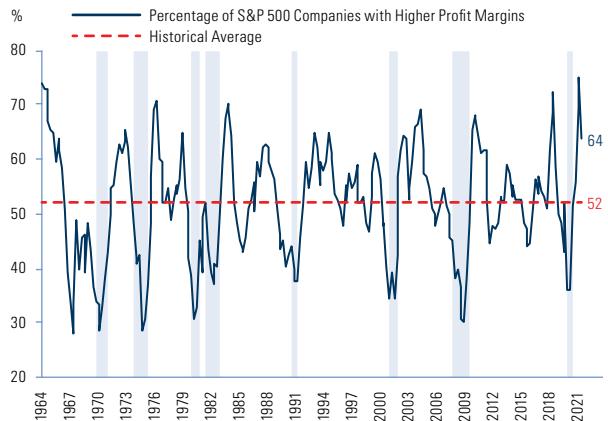
Data as of Q3 2021.

Note: Base profit margin is net profit divided by sales in Q3 2021, while incremental profit margin is the incremental net profit from Q3 2020 to Q3 2021 divided by the incremental sales during the same period.

Source: Investment Strategy Group, FactSet.

Exhibit 105: Percentage of S&P 500 Companies with Higher Net Profit Margins vs. Prior Year

Despite rising cost pressures, 64% of S&P 500 companies saw higher margins in Q3 2021 relative to the prior year.



Data through Q3 2021.

Note: Shaded periods denote recessions.

Source: Investment Strategy Group, S&P Global, FactSet, NBER.

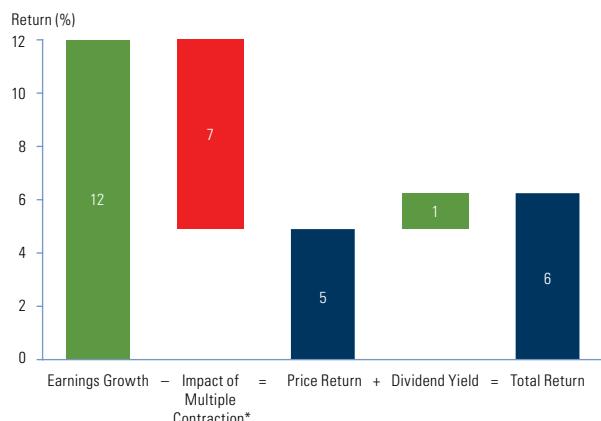
the increase in profits for a given increase in sales—as double-digit revenue growth has enabled margins to absorb rising cost pressures (see Exhibits 103–105).

- Recent political developments make the passage of corporate tax increases less likely. Even if tax reform were to pass in its current form, we expect it to have little impact on earnings this year and be only a modest drag on 2023 earnings.
- While earnings growth will likely be slower than last year, about three-fourths of past market peaks occurred more than two years after the peak in earnings growth.

- Attractive Returns Relative to Cash and Bonds:** Our base case calls for the S&P 500 to reach 4,950–5,050 by the end of 2022, implying mid-single-digit total returns when including a dividend yield of about 1.4% (see Exhibit 102). The implied returns compare favorably to our expected returns for cash and bonds.
 - Although we expect valuation multiples to compress this year as interest rates rise, double-digit earnings growth more than offsets that drag in our forecast (see Exhibit 106).
 - History also reminds us that periods of rising real yields accompanied by slowing but still positive GDP growth—as we expect this

Exhibit 106: Decomposition of ISG Central Case S&P 500 Return at Year-End 2022

We expect double-digit earnings growth to more than offset a lower P/E multiple in 2022.



Data as of December 31, 2021.

Note: The returns and decomposition are based on the midpoint of ISG's central case forecast range.

Source: Investment Strategy Group, Bloomberg.

* Includes the compounding effect between earnings and valuation multiples.

year—have still been associated with decent 7% average returns (see Exhibit 107).

- As seen in Exhibit 108, we assign higher odds to our good case than we do to our bad case scenario.

Exhibit 107: S&P 500 Return in Different Periods of Real GDP Growth and Real Treasury Yields

Equity returns have still been attractive in periods with rising real rates and slowing but still positive GDP growth.

	US Real 10-Year Treasury Yield			
	Falling	Stable	Rising	All
US Real GDP Growth	Accelerating	12%	16%	18%
	Stable	10%	15%	10%
	Decelerating but Positive	3%	3%	7%
	Decelerating and Negative	-4%	N/A	-12%
All		7%	12%	11%
				9%

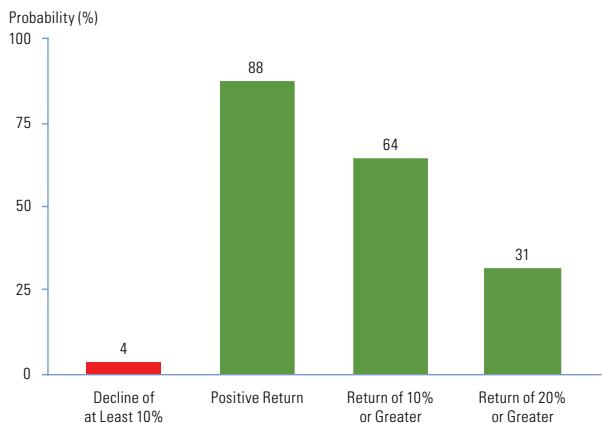
Data as of Q3 2021.

Note: Numbers shown are S&P 500 average one-year price returns since 1947. The field with an N/A value has too few data points.

Source: Investment Strategy Group, Goldman Sachs Global Investment Research, Bloomberg, Haver Analytics.

Exhibit 109: Odds of Various S&P 500 One-Year Total Returns During US Economic Expansions

Investors enjoy high odds of a positive return and a greater likelihood of large gains when the economy is expanding.



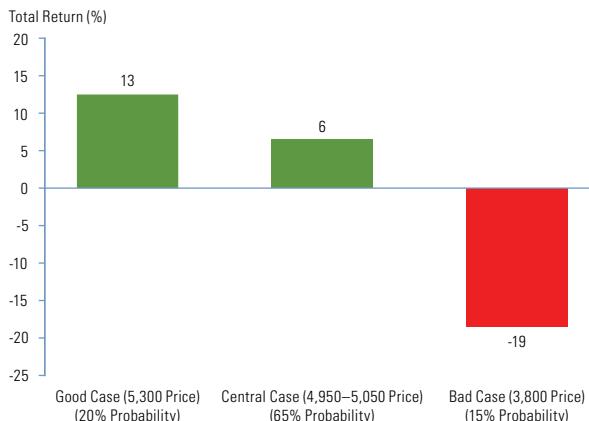
Data as of December 31, 2021.

Note: Based on data since 1945.

Source: Investment Strategy Group, Bloomberg.

Exhibit 108: ISG S&P 500 Total Return Forecast Scenarios—Year-End 2022

We assign higher odds to our good case than to our bad case scenario.



Data as of December 31, 2021.

Source: Investment Strategy Group, Bloomberg.

Note: Forecasts are estimated, based on assumptions, are subject to revision and may change as economic and market conditions change. There can be no assurance the forecasts will be achieved. Indices are gross of fees and returns can be significantly varied. Please see additional disclosures at the end of this *Outlook*.

- Our good case sees the S&P 500 reaching 5,300 on the back of a more complete reopening of the economy and better-than-expected GDP growth.

– Our bad case implies the S&P 500 falls to 3,800 in response to an unexpected shock or growth scare that leads markets to price in a recession.

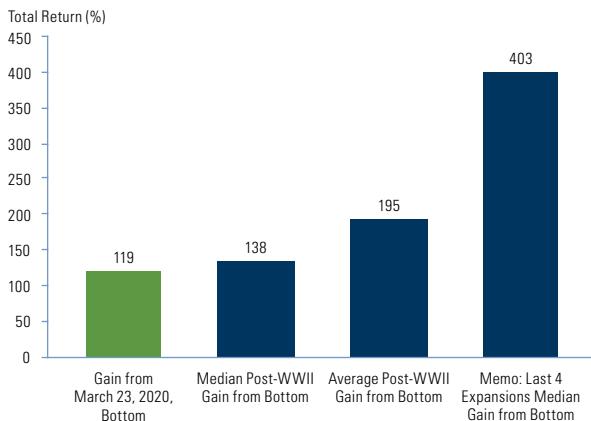
- Stay Invested:** Our base case remains that none of the risks currently worrying the market are disruptive enough to tip the US economy into recession. As we often highlight, investors enjoy 88% odds of a positive return—and greater likelihood of large gains than large losses—when the economy is expanding (see Exhibit 109). Moreover, past economic expansions have been associated with sizable cumulative equity gains, implying further upside despite the impressive gains seen already (see Exhibit 110). Given the low 10% probability we assign to a recession over the next year, we think these odds continue to work in investors' favor.

Non-US Developed Market Equities: Better Late Than Never

It took more than a decade but it finally happened. Last year, the MSCI EAFE index surpassed the peak it had reached prior to the global financial crisis (GFC), a full eight years after US equities accomplished the same feat, as seen in Exhibit 111. The continued gains generated by US stocks after achieving this milestone in 2013 provide

Exhibit 110: S&P 500 Total Return from Equity Trough to Beginning of Next Recession

Past economic expansions imply further upside for stocks despite the impressive gains seen already.



Data as of December 31, 2021.

Note: Recession start date is defined as the first date of the NBER business cycle peak month.
Source: Investment Strategy Group, Bloomberg, NBER.

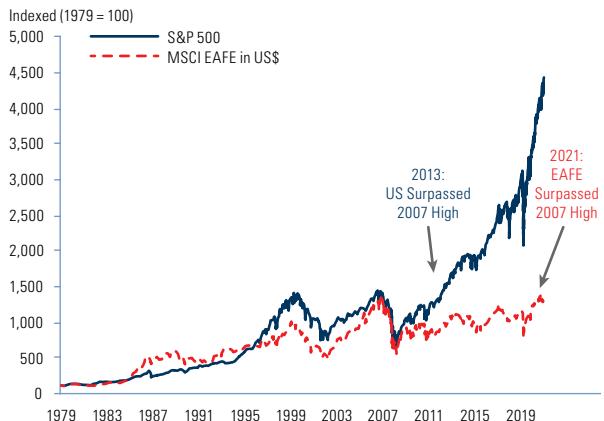
a promising precedent for non-US developed market equities. That's because the fundamental momentum that pushes equities to new all-time highs tends to persist. But there are also important differences between the backdrop then and now, which collectively imply that future gains for MSCI EAFE are likely to fall short of the US experience.

The first of these differences is the rate of earnings growth, which in the case of non-US developed market companies is set to slow from last year's blistering pace and will likely lag what US firms achieved over the past eight years. This more tepid profit trajectory reflects slower non-US developed economic growth, less exposure to fast-growing sectors—such as technology—and less efficient capital allocation, including fewer share buybacks, which often lift earnings per share. We also think higher interest rates in coming years will suppress valuations of non-US developed stocks, a headwind that US stocks did not face after 2013. Finally, non-US developed equities are unlikely to benefit from the same magnitude of net equity demand as their US counterparts, especially since already bullish sentiment toward the former leaves fewer incremental buyers (see Exhibit 112).

While the resulting mid-single-digit returns we expect for non-US developed equities in the next five years will fall short of the US experience after 2013, they still compare favorably to the return prospects for cash and bonds. This is particularly

Exhibit 111: S&P 500 and MSCI EAFE Indexed Price Performance

Non-US developed equities finally surpassed their pre-GFC high last year.

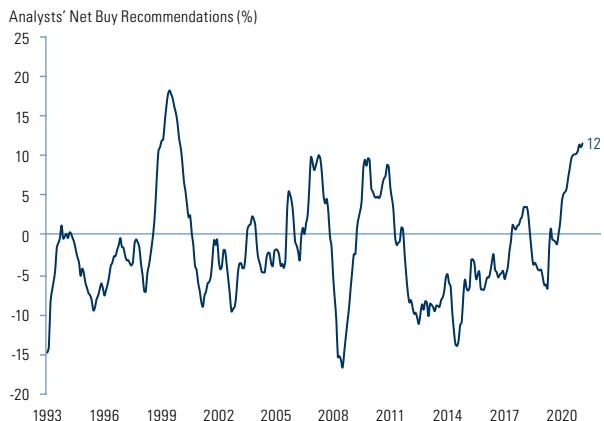


Data through December 31, 2021.

Source: Investment Strategy Group, Datastream.

Exhibit 112: Analysts' Net Buy Recommendations for Non-US Developed Equities

Investment analyst sentiment around non-US developed equities is already bullish.



Data through December 2021.

Note: Net buy recommendations is calculated by dividing the number of analyst "Buy" recommendations less the number of "Sell" and "Neutral" recommendations by the total number of analyst recommendations.

Source: Investment Strategy Group, Datastream.

true in 2022, when we expect non-US developed equities to deliver solid high-single-digit total returns on the back of a 2.7% dividend yield, modestly lower valuation multiples and 6–10% earnings growth (see Exhibit 113). Although the risks around this forecast are balanced, we

Exhibit 113: Non-US Developed Equity Trailing 12-Month EPS

Earnings growth for non-US developed equities is poised to slow from 2020's rapid pace.

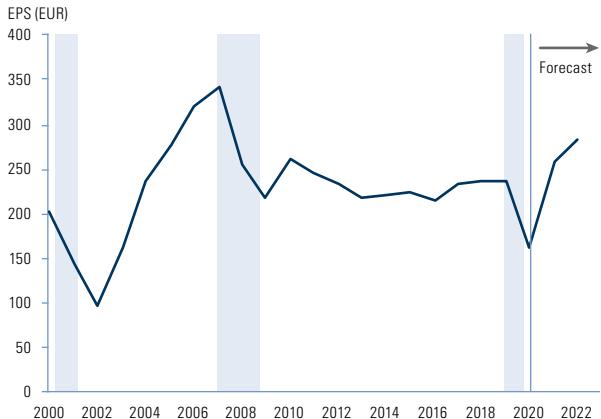


Data through 2020, forecast through 2022.

Source: Investment Strategy Group, Datastream.

Exhibit 114: Eurozone Equity Trailing 12-Month EPS

Earnings have already surpassed the peak from prior to the last recession unlike the period that followed the GFC.



Data through 2020, forecast through 2022.

Note: Shaded periods denote recessions.

Source: Investment Strategy Group, I/B/E/S, Datastream.

do see more asymmetric upside in several non-US developed markets where we are tactically overweight (see Section I, Our Tactical Tilts).

Eurozone Equities: Another Pleasant Surprise

For a region whose economic growth has largely underwhelmed during the years following the GFC, last year's stronger-than-expected recovery in the Eurozone was a nice surprise. The same could be said for the region's corporate profits, which exceeded their beginning-of-year estimates by more than 30%—the largest upside surprise on record. The resulting level of earnings has already surpassed the peak it reached prior to the last recession, a feat that eluded Eurozone corporate profits for the entirety of the economic expansion that followed the GFC (see Exhibit 114).

We think this string of favorable surprises will continue in the year ahead, albeit to a smaller degree than in 2021. Our forecast calls for Eurozone earnings to grow by 7–13% this year, above the 8% consensus expectation. This earnings growth is likely to exceed Eurozone equity returns, as valuation multiples are expected to modestly contract after recapturing their pre-pandemic levels last year. Combined with the region's 2.7% dividend yield, these assumptions imply Eurozone

equities will generate a high-single-digit total return in our base case (see Exhibit 102).

As discussed in Section I of this report, we remain overweight Eurozone banks. Although this sector rallied 42% last year, that gain actually lagged the recovery in the banks' earnings, which more than doubled on a year-over-year basis. In turn, the banks' valuation discount to other Eurozone equities has been narrower than current levels 95% of the time since the GFC. From this starting point, even a small increase in banks' relative valuations would generate meaningful returns. This potential valuation tailwind—combined with the sector's hefty 5.0% dividend yield and continued earnings growth—justifies a tactical overweight in our view, particularly since the sector is a natural beneficiary of rising interest rates.

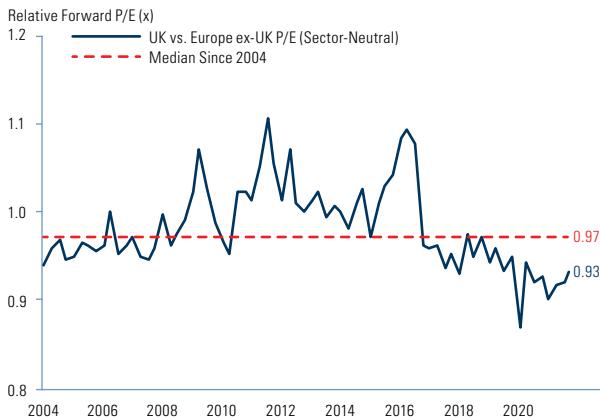
UK Equities: Room to Run

It would be hard to call the 18% return in UK equities last year disappointing. But on a relative basis, it did fall short of the gains registered by nearly every other developed equity market. It also left the FTSE 100 about 2% below its pre-pandemic level, making the UK a laggard among many other global equity markets, which have already surpassed this milestone.

Exhibit 115: UK Price-to-Earnings Valuation

Relative to the Rest of Europe

UK equities offer a large valuation discount relative to the rest of Europe.



Data through Q4 2021.

Source: Investment Strategy Group, Datastream.

We think last year's shortfall provides UK equities with room to close the gap in 2022. That view is corroborated by UK stocks' combination of solid fundamentals, attractive valuations and appealing dividend yield. Our base case calls for a high-single-digit total return in 2022, reflecting above-trend earnings growth, a flat P/E multiple and the FTSE 100's 3.6% dividend yield (see Exhibit 102).

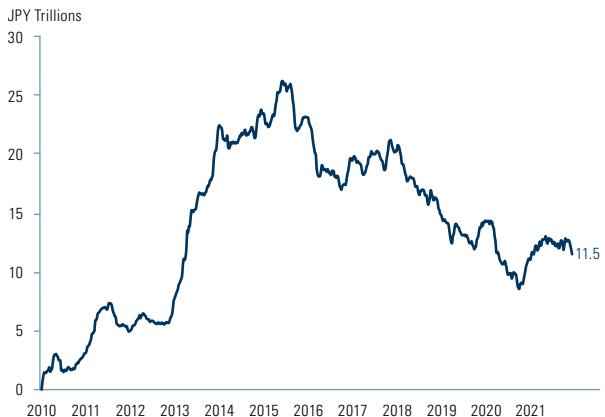
This supportive backdrop is the bedrock of our tactical overweight to the FTSE 100. We think that FTSE 100 companies—which derive 77% of their revenues from outside the UK⁴¹—should benefit from the above-trend pace of global economic growth we expect this year. At the same time, ongoing fiscal spending by the UK government—even though less than last year—will still provide some tailwind to the remaining quarter of FTSE revenues that are sourced domestically. UK equities also offer a large valuation discount relative to the rest of Europe, having been cheaper on a relative basis only 11% of the time historically (see Exhibit 115). This relative valuation discount will likely sustain elevated levels of cross-border M&A in the UK,⁴² providing a potential floor to UK valuations.

Japanese Equities: Playing Catch-Up

Like the FTSE 100, Japanese equities underwhelmed last year by lagging most

Exhibit 116: Cumulative Net Purchases of Japanese Equities by Foreign Investors Since 2010

Equity inflows from foreign investors remain well below their Abenomics peak.



Data through December 24, 2021.

Source: Investment Strategy Group, Tokyo Stock Exchange.

other developed equity markets. A number of factors contributed to this shortfall, including prolonged COVID-19 restrictions, an initially slow vaccination campaign and rising political and government policy uncertainties. As is often the case in Japan, these types of worries hamper supportive equity inflows from foreign investors, which remain well below their peak during former Prime Minister Shinzo Abe's "Abenomics" policies (see Exhibit 116).

There are several reasons that we expect the backdrop for Japanese equities to improve in 2022. First, a backloaded but eventually successful vaccination campaign has allowed domestic restrictions to ease, which should boost domestic demand. Second, the surprisingly strong showing for Prime Minister Fumio Kishida at last October's general elections has alleviated near-term political concerns. Third, both monetary and fiscal policy are supportive—especially given the large fiscal stimulus package passed in November—which will lift both economic activity and earnings in coming quarters. Finally, Japanese stocks broke above a technical resistance level that had capped prices for multiple decades, potentially clearing the path for continued gains.

Considering these factors, we expect Japanese equities to generate 8% earnings growth this year. This moderately above-consensus profit forecast should drive the bulk of Japan's high-single-digit total return, given our assumption of modestly

lower valuation multiples combined with the index's 2.2% dividend yield (see Exhibit 102).

Emerging Market Equities: Bear in a China Shop

Last year should have been a banner year for emerging market equities. After all, the typical drivers of outperformance were firmly in place, including strong global growth, high commodity prices and accommodative policy around the world. Yet much to the chagrin of bulls, the total return of EM equities was actually negative, at -2.2%. That loss meaningfully lagged the 22.3% gain for developed market stocks last year, with the spread between them having been larger only 7% of the time historically. While this underperformance was broad-based, returns for EM equities would have been positive were it not for the sizable drag from Chinese equities, which comprise a third of the MSCI EM index (see Exhibit 117).

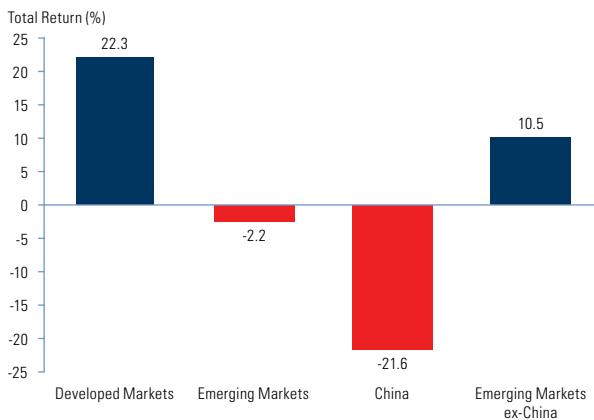
The 21.6% slump in Chinese shares in 2021 reflected a host of factors, including slowing economic growth, tightening regulations on internet companies, stress in the property sector and tensions with the US. Last year's selloff marked MSCI China's 13th bear market in its 29-year history—a period during which S&P 500 investors experienced only three. This greater downside risk should require Chinese stocks to deliver superior returns over time, but that has not been the case historically. In fact, the MSCI China price index ended last year 16% below where it stood at its inception on December 31, 1992—despite 4,063% cumulative growth in China's economy since then.

We expect some of the headwinds facing Chinese equities to persist in the year ahead, as the government's desire to rebalance its economy and lower its debt financing constrains its ability to boost GDP growth in the near term. Although policymakers have taken steps recently to avoid an even sharper economic slowdown, we expect any loosening measures to be more limited than seen in previous business cycles and hence provide less of a tailwind to equities.

This slower Chinese growth is likely to weigh on the revenue of companies across emerging markets. At the same time, intense cost pressures—evident in the widest-ever gap between EM producer and consumer price inflation—suggest EM profit margins will likely fall from their current

Exhibit 117: 2021 Total Equity Returns

Returns for EM equities would have been positive in 2021 were it not for the sizable drag from Chinese equities.



Data as of December 31, 2021.

Note: The developed markets return is measured through the MSCI World Index, and the emerging markets return is measured through the MSCI EM Index.

Source: Investment Strategy Group, Datastream.

14-year highs. Based on these dual headwinds, we expect EM earnings per share growth to decelerate sharply from 49% in 2021 to about 6% in both 2022 and 2023. Combined with some pressure on valuation multiples from higher interest rates and a 3.3% dividend yield, these elements imply a high-single-digit total return this year (see Exhibit 102).

In our view, these returns are not sufficient compensation for the numerous risks facing EM equities, which extend well beyond China and include a busy political calendar in 2022. For this reason, we currently recommend a tactically neutral allocation to the asset class.

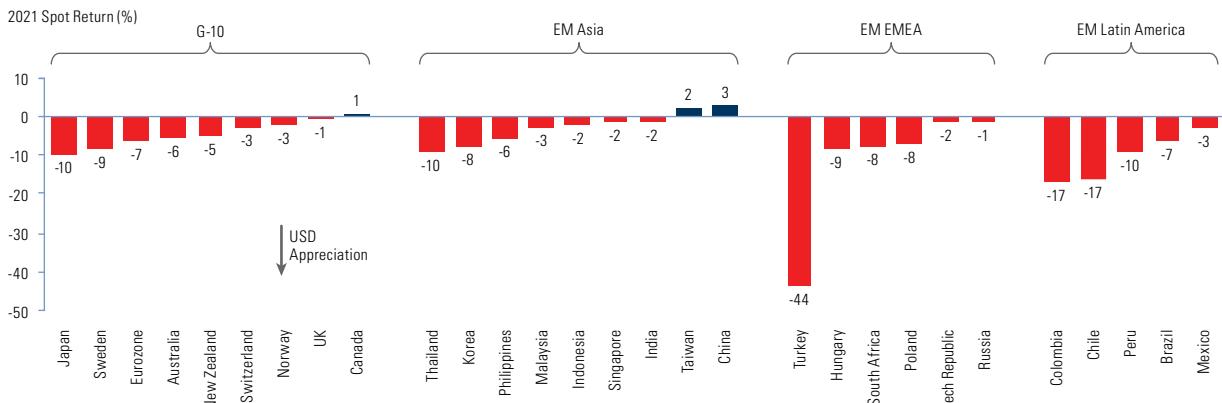
2022 Global Currency Outlook

What a difference a year makes. After weakening against every major currency in 2020, the US dollar reversed nearly all of those cumulative losses last year on the back of a powerful rally that began with the June FOMC meeting. As seen in Exhibit 118, the greenback bettered nearly every major currency in 2021 with the exception of the Canadian and Taiwan dollars and Chinese renminbi.

Last year's US dollar outperformance reflected several factors, some global and some idiosyncratic. In the case of developed market currencies, the superior pace of the US recovery and the comparatively tighter stance of US monetary policy were the dominant drivers. This

Exhibit 118: 2021 Currency Moves (vs. US Dollar)

Nearly every major currency depreciated against the US dollar last year.



Data as of December 31, 2021.

Source: Investment Strategy Group, Bloomberg.

was particularly evident in the euro and yen, as slower relative growth and more dovish central banks in the Eurozone and Japan weighed on their currencies. Emerging market currencies were not spared either, as slower deployment of vaccines, heightened tensions over global trade and several unique political flare-ups led to widespread losses.

We expect the interplay of global growth and central bank policy to remain a critical driver of the US dollar's path. With the Federal Reserve embarking on a less accommodative path and the US economy likely to sustain its above-trend pace of growth, our forecast calls for the US dollar to appreciate by mid-single digits versus the euro, yen and most EM currencies in 2022.

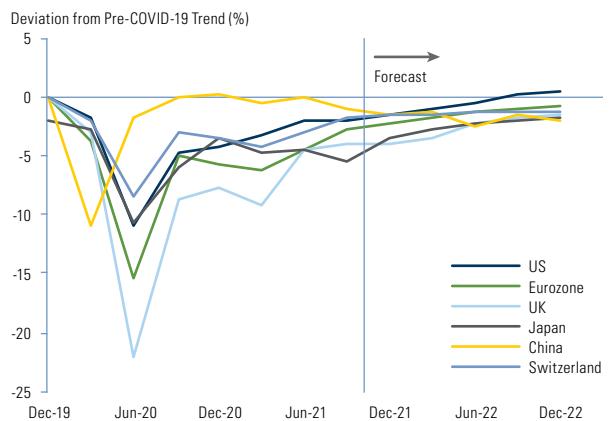
Given further dollar upside, we continue to recommend that clients fully hedge their offshore fixed income. We are also tactically long the dollar against the euro, yen and Swiss franc (see Section I, Our Tactical Tilts). Regardless of our tactical views, we recommend that US and non-US clients hedge 50% and 70%, respectively, of their non-local developed market equity holdings in order to reduce portfolio volatility and provide diversification.

US Dollar

After falling to a three-year low against its key peers, the US dollar's turn higher last year was striking in both its magnitude and its breadth. Not only was its 6% appreciation the best annual showing in six years, but it also outpaced the performance of every other developed market currency in 2021, with the exception of the

Exhibit 119: Major Economies Real GDP vs. Pre-COVID-19 Trend

The US economy is likely to exceed its pre-COVID-19 trend ahead of other major developed market economies.



Data through Q3 2021, forecast through Q4 2022.

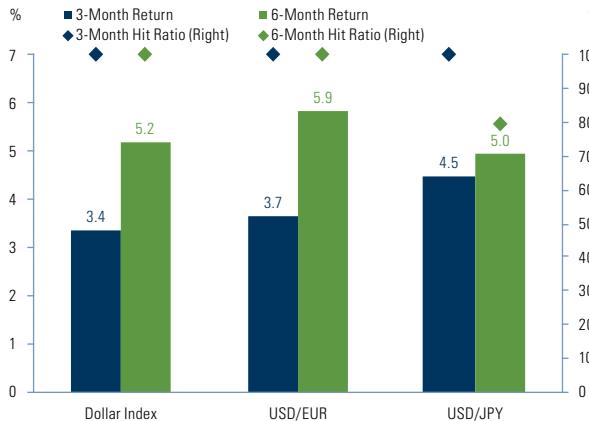
Source: Investment Strategy Group, Haver Analytics.

Canadian dollar (see Exhibit 118). With the dollar now back to its pre-pandemic levels, investors are rightly asking whether it can continue to push higher.

To be sure, several of the drivers behind the dollar's recent outperformance remain in place. As seen in Exhibit 119, US GDP is likely to exceed its pre-pandemic trend in the second half of this year, well ahead of other major developed market economies. At the same time, neither the BOJ nor the ECB is likely to follow the Federal Reserve

Exhibit 120: US Dollar Performance Before the Start of Federal Reserve Hiking Cycles

The dollar has typically appreciated before the start of past Federal Reserve hiking cycles.



Data through December 2021.

Note: The bars show the average spot return preceding hiking cycles that started in 1994, 1999, 2004, 2015 and 2016. The December 2015 and December 2016 rate hikes are included as two separate observations due to the gap between the first and second rate hikes in the 2015-18 cycle. Performance includes the return on the day of the rate hike.

Source: Investment Strategy Group, Bloomberg.

in discontinuing quantitative easing or hiking rates this year. The resulting monetary policy differentials should again entice foreign investors to favor US assets at the expense of lower-yielding alternatives, providing a tailwind for the dollar. Already, cross-border US portfolio flows are running above their pre-pandemic pace, a trend we expect to continue.

Three additional factors support dollar bulls. First, the greenback has typically appreciated by 5–6% in the six months preceding the start of a Federal Reserve hiking cycle (see Exhibit 120). We expect the Federal Reserve to begin rate hikes in the first half of this year. Second, the US currency has scope for further upside on the basis of its historical trading range, although we think that repeating the

Monetary policy differentials should again entice foreign investors to favor US assets at the expense of lower-yielding alternatives, providing a tailwind for the US dollar.

Exhibit 121: US Dollar Real Effective Exchange Rate

The dollar has scope for further upside based on the highs of its historical trading range.



Data through November 2021.

Note: The real effective exchange rate is based on CPI. Current-to-peak percentages shown in the graph use the current value as base value.

Source: Investment Strategy Group, Haver Analytics, IMF.

magnitude of gains seen in the 1985 and 2002 bull cycles is unlikely (see Exhibit 121). Third, investors begin 2022 lightly positioned in the dollar, providing capacity to increase their exposure.

Of course, the risks to the dollar are not completely one-sided. Any developments that derail the US economic expansion and impede the Federal Reserve's tightening plans would represent a meaningful headwind to the US dollar. After all, there is a relatively low bar for dollar-unfriendly policy surprises given that the market has already priced in tighter monetary policy in the US but much less in the Eurozone or Japan.

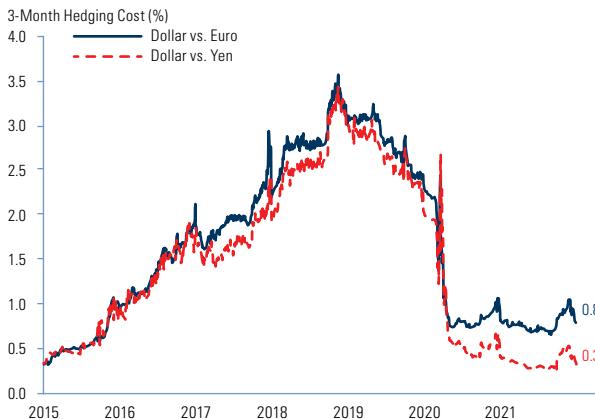
We think the balance of these risks still favors a stronger dollar, with our forecast calling for mid-single-digit appreciation in 2022. Accordingly, we enter the year tactically long the dollar versus the euro, yen and Swiss franc (see Section I, Our Tactical Tilts).

Euro

The euro was once again on the losing side of the US dollar rally in 2021, affirming the typically negative correlation between the two currencies. Last year's 7% loss marked the euro's sixth annual depreciation in eight years and nearly erased the entirety of its 2020

Exhibit 122: Hedging Costs of Dollar Assets for Eurozone and Japanese Residents

The risk of higher hedging costs from today's low levels may incentivize non-US investors to take more currency risk.

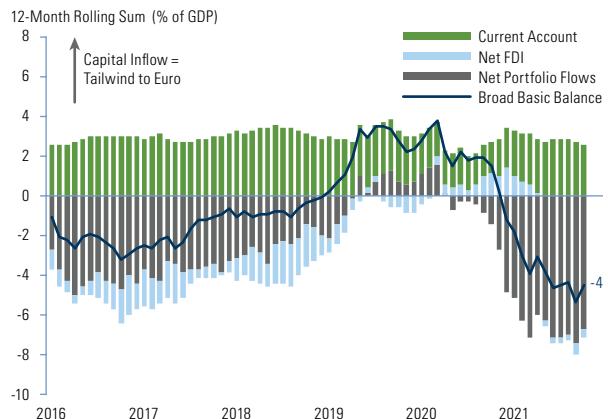


Data through December 31, 2021.

Source: Investment Strategy Group, Bloomberg.

Exhibit 123: Eurozone Broad Basic Balance

Net foreign direct investment has turned negative after a period of inbound flows.



Data through October 2021.

Note: The broad basic balance reflects the sum of the current account, net FDI and net portfolio flows. October 2021 data point is calculated as percentage of Q3 2021 GDP.

Source: Investment Strategy Group, Haver Analytics.

gain. These persistent declines have left the euro within 10% of its weakest levels since the ECB introduced negative interest rates in 2014.

Despite last year's weakness, the euro is unlikely to stage a quick reversal. That's because widening interest rate differentials in favor of the US—reflecting relatively tighter monetary policy on the part of the Federal Reserve—continue to weigh on the euro through several channels. For one, higher relative interest rates in the US increase the risk of higher hedging costs for European asset managers and may incentivize them to take on more currency risk in their US investments (see Exhibit 122). Domestic investors are similarly incentivized to sell euro-denominated assets in order to purchase higher yielding offshore investments, while foreigners purchase fewer euro-denominated assets given better yields elsewhere. Already, net foreign direct investment (FDI) has turned negative, after a period of inbound flows (see Exhibit 123).

Still, there are factors that will dampen the degree of any further euro weakness. Investors have scope to add to their currently light euro positions, which was not the case a year earlier (see Exhibit 124). Moreover, market participants will be reticent to aggressively short the euro at a time when persistent inflationary pressures could force the ECB to unexpectedly tighten policy.

Exhibit 124: Percentile Rank of Euro Positioning vs. US Dollar

Euro positioning begins 2022 at less extreme levels compared to last year.



Data as of December 28, 2021.

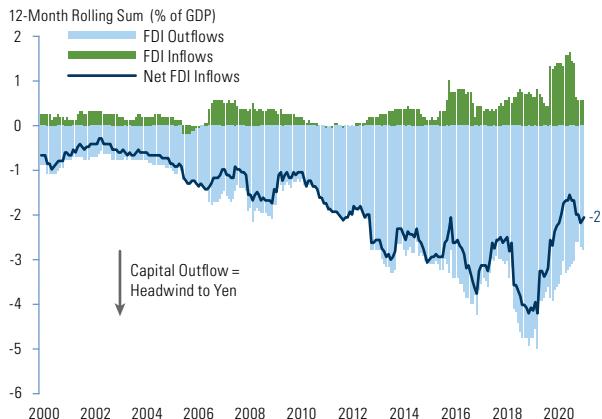
Note: Percentile ranks are relative to the 5-year windows preceding December 2020 and December 2021, respectively.

Source: Investment Strategy Group, CFTC.

Against this backdrop, we expect a low-to mid-single-digit loss for the euro relative to the dollar in 2022 and hold a tactical short position in the currency as a result (see Section I, Our Tactical Tilts).

Exhibit 125: Japanese Net Foreign Direct Investment

We expect the pace of capital outflows from Japan to return to its pre-pandemic level.



Data through October 2021.

Note: October 2021 data point is calculated as percentage of Q3 2021 GDP.

Source: Investment Strategy Group, Haver Analytics.

Yen

Last year reminded yen investors that hot streaks eventually end. Following five consecutive winning years, the Japanese currency suffered its largest decline since 2014. Its 10% depreciation against the US dollar in 2021 ranked as the worst performance among developed market currencies (see Exhibit 118).

An imminent reversal of last year's weakness against the US dollar is doubtful for several reasons. The BOJ is unlikely to mirror the Federal Reserve in tightening monetary policy at a time when inflation continues to run below its target. The resulting interest rate differential will weigh on the yen for many of the same reasons we expect it to weigh on the euro. For example, higher relative US rates increase the risk of higher hedging costs for Japanese asset managers. This implies fewer net purchases of yen to hedge the dollar exposure of their US investments (see Exhibit 122).

Japanese corporations are also likely to generate pressure on the currency, as they continue to sell yen in order to invest in foreign ventures with better long-term growth prospects. Although these outflows slowed during the initial stages of the pandemic, we expect their pace to continue quickening toward pre-pandemic levels (see Exhibit 125).

Despite these headwinds, we are mindful that the yen is already approximately 30% below

Exhibit 126: Percentile Rank of Yen Positioning vs. US Dollar

Unlike last year, investors have scope to add to their light yen positions in 2022.



Data as of December 28, 2021.

Note: Percentile ranks are relative to the 5-year windows preceding December 2020 and December 2021, respectively.

Source: Investment Strategy Group, CFTC.

where it stood at the onset of Abenomics and that investors could flock back into the yen as a liquid hedge at any time in response to unexpected shocks. That risk of flight-to-safety purchases is particularly acute now that investors have scope to add to their currently light yen positions, unlike the crowded positioning that prevailed a year earlier (see Exhibit 126).

Still, we think the balance of risks favors further single-digit depreciation in the yen relative to the US dollar this year and hold a tactical short position in the currency as a result (see Section I, Our Tactical Tilts).

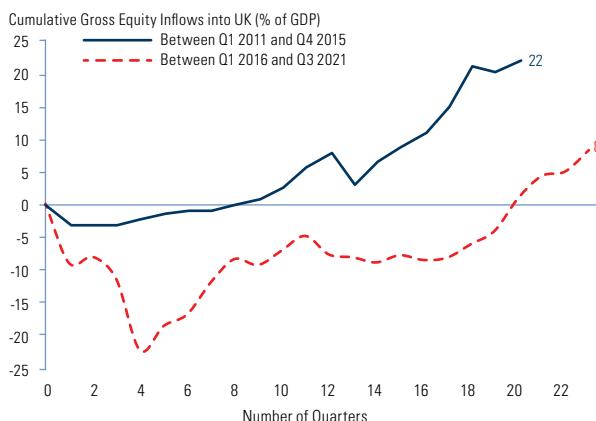
Pound

In 2021, for the first time in several years, developments around the UK's exit from the European Union were not the primary driver of the pound's performance. Instead, traders focused on more traditional metrics, like the relative speed at which the BOE intends to normalize monetary policy. This shift in focus helps explain the pound's 6% appreciation against the euro and 1% decline against the US dollar last year, as the market expects the BOE to tighten more than the ECB but less than the Federal Reserve.

The pound's uneven performance against other major developed market currencies is likely to persist this year, reflecting a mix of crosscurrents. On the one hand, increased foreign investment

Exhibit 127: Foreign Purchases of UK Equities

Increased foreign investment flows should help the pound close its modest undervaluation gap.



Data through Q3 2021.

Source: Investment Strategy Group, Haver Analytics, Office for National Statistics.

flows should help the pound close its modest undervaluation gap (see Exhibit 127). The pound may also benefit from tighter BOE policy, as the UK faces intense inflationary pressures resulting from supply disruptions in the wake of Brexit and the pandemic.

On the other hand, unresolved political tensions represent an ongoing source of uncertainty for the pound. Final negotiations for the Northern Ireland Protocol are proceeding with no clear resolution time frame in sight. Moreover, another vote on Scottish independence is gaining support after last year's election victory for the Scottish National Party. This sets the stage for fresh conflicts in Westminster, as the conservative majority in London has promised to reject demands for a second referendum on Scottish independence.

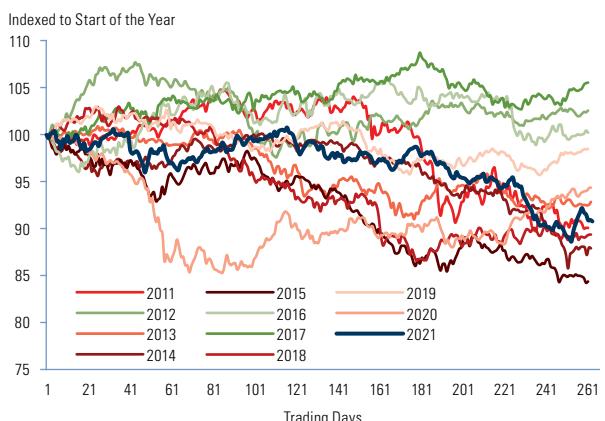
Considering these difficult-to-handicap political developments along with the potential for further capital inflows, we are tactically neutral the pound at this time.

Emerging Market Currencies

EM currency investors' hope that dovish central banks across emerging markets would boost growth and carry the asset class higher proved misbegotten last

Exhibit 128: Emerging Market Currency Spot Returns

EM currencies extended a disappointing streak of underperformance with last year's loss.



Data through December 31, 2021.

Note: EM currency returns are measured through JP Morgan's EM Currency Index.

Source: Investment Strategy Group, JP Morgan, Bloomberg, Macrobond.

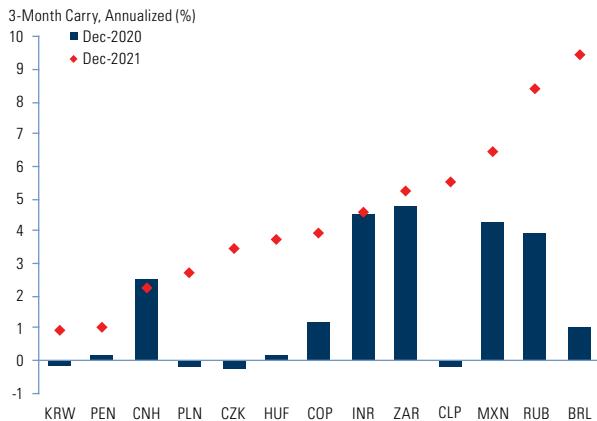
year. Instead, a mix of idiosyncratic developments and pandemic-related pricing pressures led to widespread depreciation across EM currencies and forced many EM central banks to tighten policy in 2021 in order to fight the resulting inflationary pressures. The 9% loss for the asset class last year extended a disappointing streak of underperformance, which has seen it fall in eight of the past 11 years (see Exhibit 128).

We expect this losing streak to extend to 2022. That view is rooted in our call for continued US dollar strength on the back of tighter Federal Reserve policy, as both of these developments have weighed on EM currencies historically. We also think investors in the asset class will continue to demand a risk premium for the currency

A mix of idiosyncratic developments and pandemic-related pricing pressures led to widespread depreciation across EM currencies in 2021 and forced many EM central banks to tighten policy to fight inflation.

Exhibit 129: Implied Carry of EM Currencies

Attractive interest rate differentials are now more likely to entice buyers into EM currencies.



Data as of December 31, 2021.

Source: Investment Strategy Group, Macrobond, Bloomberg.

depreciation that episodically arises from EM economies' still-unaddressed structural fault lines. Last year's more than 50% peak-to-trough decline in the Turkish lira is a case in point.

Of course, there are upside risks to EM currencies as well. With EM central banks having front-loaded hikes last year, attractive interest rate differentials are now more likely to entice buyers into EM currencies (see Exhibit 129). At the same time, Chinese authorities could further ease the tight policy mix that weighed on growth last year, providing support to overall EM economic activity and currencies. The same could be said if political uncertainty in Latin America recedes, as this uncertainty was a significant drag on that region's currencies in 2021.

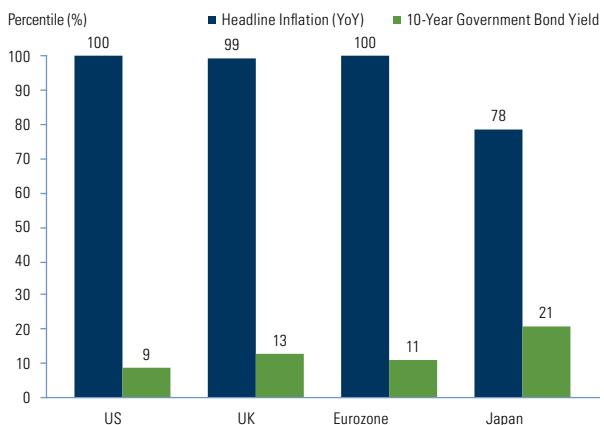
Weighing the balance of these risks, our forecast calls for EM currencies to depreciate by low single digits against the US dollar in 2022. Even so, we expect the Brazilian real to buck that trend in the near term and are tactically long as a result (see Section I, Our Tactical Tilts).

2022 Global Fixed Income Outlook

Last year *should* have been a bonanza for investors betting on higher interest rates. A combination of sharply rebounding economic activity and pandemic-related labor and supply shortages

Exhibit 130: Historical Percentile of Current Inflation and 10-Year Yield Levels

Inflation stands at multi-decade highs while bond yields sit near their historical lows.



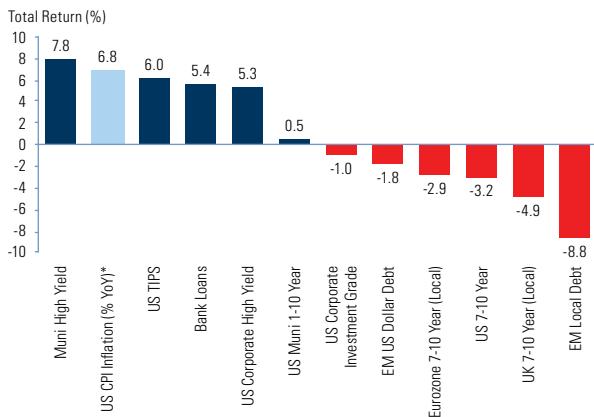
Data as of December 31, 2021.

Note: Eurozone 10-year yield based on German bunds. Percentile ranking is based on data since 2000. Data for headline inflation as of November 2021.

Source: Investment Strategy Group, Bloomberg.

Exhibit 131: 2021 Fixed Income Returns by Asset Class

Aside from high yield credit, inflation-linked bonds and munis, global duration delivered negative returns.



Data as of December 31, 2021.

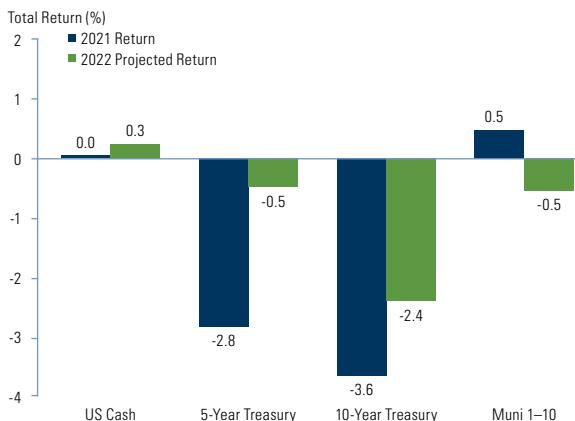
Source: Investment Strategy Group, Bloomberg.

* Inflation data as of November 2021.

pushed inflation to multi-decade highs at a time of historically low bond yields (see Exhibit 130). Although 10-year Treasury rates did rise during the early part of 2021, the move higher was partially reversed by year-end amid repeated virus waves and growing concerns that central banks might be removing support prematurely. The net effect was

Exhibit 132: 2022 US Treasury and Municipal Bond Return Projections

We expect cash to outperform duration again this year.



Data as of December 31, 2021.

Source: Investment Strategy Group, Bloomberg.

Note: Past performance is not indicative of future results.

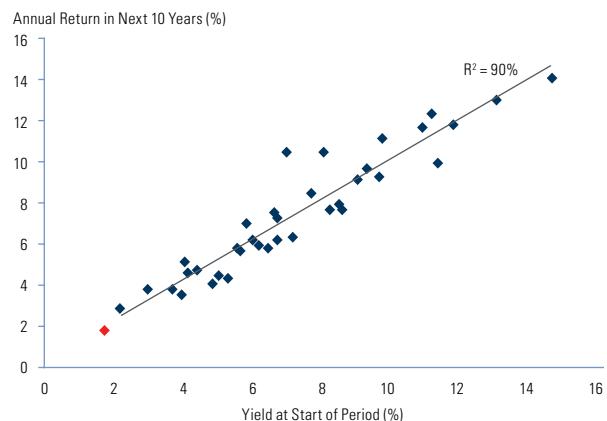
surprisingly modest losses for most fixed income assets (see Exhibit 131). Within fixed income, only high yield municipal bonds generated a positive return in excess of inflation.

We see several factors continuing to weigh on bond portfolios this year. Chief among these is our expectation for higher interest rates, reflecting a mix of ongoing above-trend economic growth, elevated inflation and less accommodative central bank policy. Note a few EM central banks have already brought policy rates into restrictive territory, the BOE hiked policy rates last year, the Federal Reserve is expected to do so this year and the ECB could follow suit in 2023 if inflation pressures continue to build. The reduction of central bank asset purchases will further weigh on bond prices, especially since net government bond supply remains elevated. We also see limited scope for credit spreads to absorb these higher yields, given their already historically tight starting point.

Still, there are limits to the extent that yields can increase this year. Investors will want to gauge the economy's ability to absorb hikes before pricing in significantly higher policy rates, especially since there are plausible scenarios where excessive tightening or an unexpected shock causes a recession. The ceiling on policy rates is probably lower today too, as estimates of the unobservable neutral rate—at which point monetary policy is neither expansionary nor contractionary—

Exhibit 133: Starting Bond Yield vs. Subsequent 10-Year Annualized Returns

History suggests today's low bond yields imply equally meager future returns.



Data as of December 31, 2021.

Note: Based on Bloomberg US Aggregate Bond Index.

Source: Investment Strategy Group, Bloomberg.

have fallen over time along with working-age population growth.

Although we expect only a moderate increase in global interest rates as a result of these constraints, most bonds are still likely to underperform cash this year (see Exhibit 132). In fact, today's low bond yields imply equally meager annualized returns over the next decade (see Exhibit 133). Even so, investors should not completely abandon their bond allocation in search of better returns. As the last few years reminded us, high quality fixed income is the only asset that has effectively hedged against past deflationary shocks.

Within fixed income, we favor credit risk over duration risk, evident in our small tactical overweight to bank loans versus investment grade fixed income. In the sections that follow, we will review the specifics of each major fixed income market.

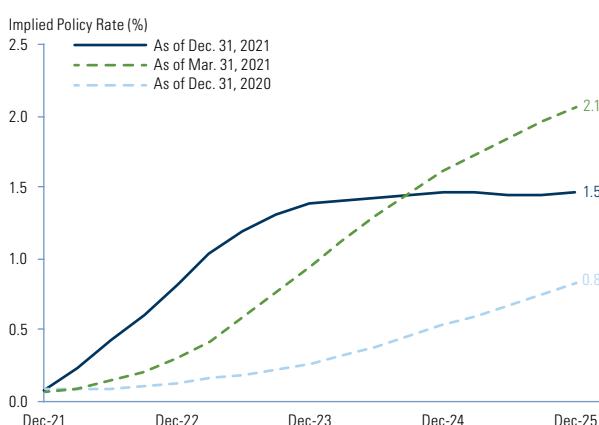
US Treasuries

Last year was a roller-coaster ride for Treasury investors. Although 10-year Treasury rates rose precipitously during the early part of 2021, they just as quickly gave back some of the increases. As a result, the 7% loss suffered by investors in the first quarter receded to less than 4% by the end of last year.

We expect yields will rise further in 2022 on a mix of above-trend economic growth, elevated

Exhibit 134: Market-Implied Path for US Policy Rates

Markets priced in both earlier hikes and lower terminal rates in 2021.



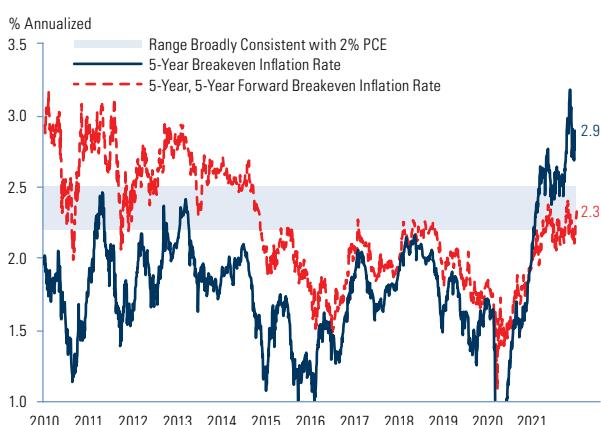
Data through December 31, 2021.

Note: Based on Secured Overnight Financing Rate futures.

Source: Investment Strategy Group, Bloomberg.

Exhibit 135: US 5-Year and 5-Year, 5-Year Breakeven Inflation Rates

Investors expect inflation well above 2% in the near term, but close to the Federal Reserve's target further out.



Data through December 31, 2021.

Note: Breakeven inflation rates track CPI inflation, which has historically run above PCE inflation, the Federal Reserve's preferred metric. The gap has widened substantially as pandemic-related outliers have a larger weight in the CPI basket.

Source: Investment Strategy Group, Bloomberg.

inflation and less accommodative central bank policy. We see three additional factors that could also put upward pressure on interest rates. First, there is scope for the market's view of terminal rates to shift higher, as we find the currently implied one percentage point discount to the Federal Reserve's 2.5% estimate excessive (see Exhibit 134). Moreover, persistently above-target inflation could ultimately justify a policy rate above neutral. Second, there is also upside to term premiums—or the compensation for bearing inflation risk—as they have exceeded current levels 95% of the time historically. Third, the net supply of Treasuries with maturities of more than one year is expected to stay elevated at around \$1.5 trillion in 2022.⁴³

While some investors worry that the Federal Reserve is tightening prematurely, we disagree. As discussed in Section II, this expansion has already surpassed many of the macroeconomic milestones that preceded liftoff in the last cycle. Moreover, even if the three hikes currently priced by markets materialize in 2022, this would represent a tightening pace that is slower than the historical median, slow relative to what economic models of US monetary policy would prescribe and just in line with the FOMC's own median projections.

Our forecast calls for the 10-year Treasury yield to rise from 1.5% currently to 1.75–2.25% by the end of this year, implying modestly negative

returns akin to those seen last year (see Exhibit 132). Although we expect cash will outperform US Treasuries this year, we continue to emphasize the important role of duration in diversified portfolios. As 2020 reminded us, high quality fixed income is the only asset that has effectively hedged against past deflationary shocks.

While today's scant yields may call that hedging role into question in some investors' minds, we note that 10-year Treasuries would still generate a gain of more than 10% if yields were to revisit their pandemic lows. Moreover, the silver lining to the dark cloud of rising interest rates is that bond investors will ultimately benefit from higher reinvestment yields. As a result, 10-year Treasuries would still deliver positive annualized returns even if their yield were to double to 3% over the next five years.

Treasury Inflation-Protected Securities (TIPS)

TIPS were a bright spot in fixed income portfolios last year, benefiting from the shift higher in inflation expectations after nearly a decade of persistent shortfalls (see Exhibit 135). In fact, the burgeoning gap between breakeven inflation rates and nominal yields pushed real rates to all-time lows in 2021. As a result, TIPS' 6% return handily exceeded that of similar-duration nominal bonds by the largest margin in 12 years.

Exhibit 136: Spread between Muni 1–10 Yield-to-Worst and Matched-Duration Treasury Yield

The spread of municipal bond yields to Treasuries has reverted to pre-pandemic levels.

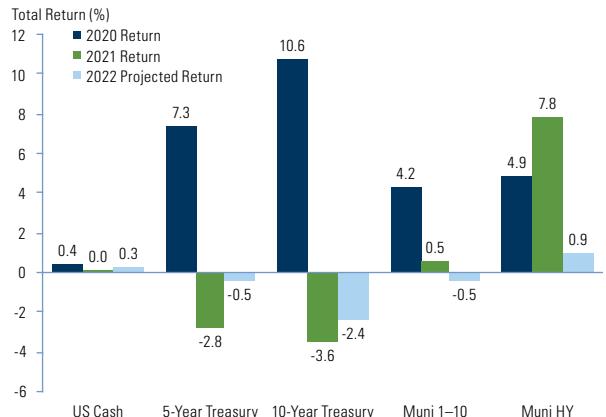


Data through December 31, 2021.

Source: Investment Strategy Group, Bloomberg.

Exhibit 137: 2022 US Treasury and Municipal Bond Return Projections

We expect municipal bond returns to be in line with matched-duration Treasuries this year.



Data as of December 31, 2021.

Source: Investment Strategy Group, Bloomberg, Barclays.

Note: Past performance is not indicative of future results.

We think an encore is unlikely in 2022. We begin the year with 10-year breakeven inflation rates already near all-time highs, limiting the scope for additional upside. At the same time, the supply and demand dynamics in the TIPS market are worsening. Not only is the Federal Reserve winding down its purchases after accumulating nearly a quarter of the outstanding stock of TIPS, but inflows into TIPS-related funds are also likely to slow from last year's pace, which was the fastest on record by a factor of two.⁴⁴ This waning demand arrives just as the US Treasury is expected to increase the net supply of TIPS this year.

TIPS face additional challenges as well. For one, their eight-year duration will make it difficult for their coupon income to exceed principal losses in the rising rate environment we expect, especially given that breakeven inflation rates are already elevated. TIPS also lack the hedging qualities of traditional bonds, since breakeven inflation rates tend to fall during cyclical downturns. Finally, they are not tax efficient for taxable clients. For all these reasons, we continue to advise US clients with taxable accounts to use municipal bonds for their strategic allocation.

US Municipal Bonds

Municipal bonds outperformed similar-duration Treasuries last year, as the spread widening that weighed on their relative returns in 2020 reversed

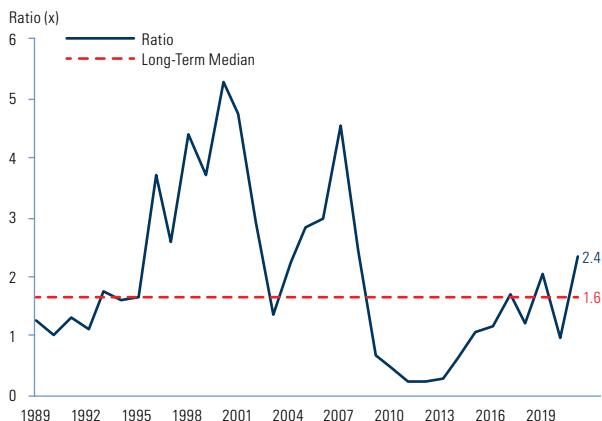
(see Exhibit 136). In fact, municipal bonds were one of only a few areas within fixed income to deliver positive returns in 2021 (see Exhibit 137).

Municipalities' improving fundamentals are a key driver behind their tighter bond spreads. A combination of federal stimulus measures, strong demand for goods that are widely taxed and a US Supreme Court decision that expanded online sales tax collection all contributed to improving state finances. Consider that 47 states reported general fund revenue above budget estimates, a notable improvement from last year, when 35 states fell below budget on this measure. Similarly, personal income taxes—which account for nearly half of forecast general fund revenues—were up more than 16% in fiscal 2021. All told, total general fund reserve balances grew to an all-time high of \$112.7 billion, with the median balance as a share of annual spending also reaching an all-time high of 9.4%.⁴⁵

Against this positive backdrop, it is not surprising that credit ratings are improving. Upgrades represented 70% of all ratings actions last year, well above the historical average of 59%. Similarly, upgrades of municipal debt balances outpaced downgrades by a factor of more than two, much better than the historical experience (see Exhibit 138). Overall, Moody's maintains a "stable" outlook on state and local governments, reflecting the strength of their revenues and a high level of fiscal

Exhibit 138: Ratio of Public Finance Upgrades to Downgrades

Upgrades accounted for 70% of all rating actions in 2021.



Data through Q3 2021.

Source: Investment Strategy Group, Moody's.

Exhibit 140: Incremental Yield of Municipal Bonds Over Treasuries

The incremental after-tax yields of municipal bonds over Treasuries stand near record lows.



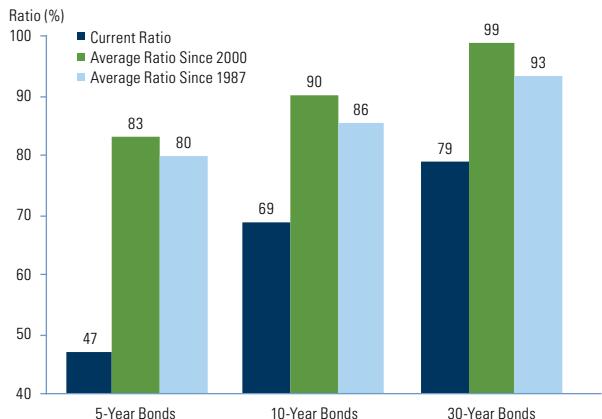
Data through December 31, 2021.

Note: Spread of AAA municipal bond yields over after-tax Treasury yields.

Source: Investment Strategy Group, Bloomberg, MMD.

Exhibit 139: Ratio of Municipal Bond Yields to Treasury Yields

Municipal bonds' expensive valuations provide a smaller buffer to absorb rising interest rates.



Data as of December 31, 2021.

Source: Investment Strategy Group, Bloomberg, MMD.

Note: Past performance is not indicative of future results.

support, including \$195 billion in direct aid through the American Rescue Plan Act of 2021.

Of course, credit agencies are not alone in recognizing healthier municipal finances. We begin the year with investors having already pushed municipal spreads to below-average levels (see Exhibit 139). As a result, an investor buying a 10-

year municipal bond instead of a Treasury picks up a mere 14 basis points of incremental after-tax yield, a result that stands near the bottom of the historical distribution (see Exhibit 140).

Given today's elevated valuations, we think changes in Treasury yields will be the primary driver of municipal bond returns this year. With already tight spreads unable to fully absorb the backup in interest rates we expect, our forecast calls for municipal bonds to suffer a modest -0.5% loss, in line with our expectation for 5-year Treasuries (see Exhibit 137).

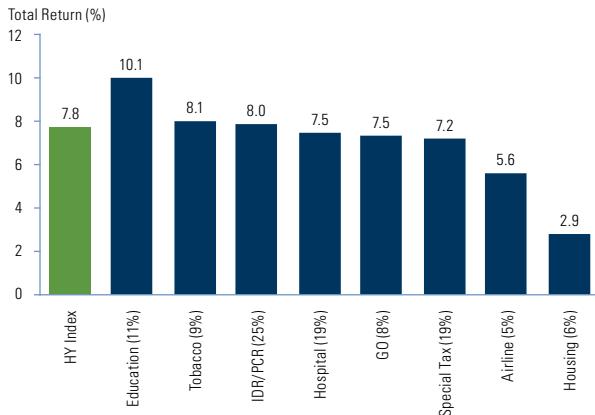
US High Yield Municipal Bonds

High yield municipal bonds were the top-performing segment within fixed income last year and the only one whose return exceeded inflation (see Exhibit 131). Their nearly 8% gain was all the more surprising considering the sector has a relatively long 6.5-year duration and interest rates increased by 69 basis points in 2021. The gains were also broad-based, with every subsector up for the year (see Exhibit 141).

These impressive returns were driven largely by tightening spreads in response to improving fundamentals. The value of municipal bond defaults fell 14% in 2021 and the share of distressed bonds in the index stood at 0.9% at the end of November, well below the long-run average of 7.2% (Exhibit 142). This combination of supportive fundamentals

Exhibit 141: 2021 High Yield Municipal Bond Subsector Returns

All high yield municipal bond sectors generated positive returns in 2021.

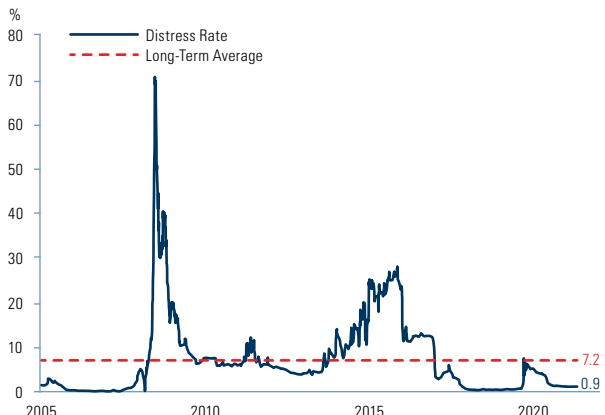


Data as of December 31, 2021.

Note: Percentages after descriptions denote subsector weights in the index.
Source: Investment Strategy Group, Bloomberg, Barclays.

Exhibit 142: High Yield Municipal Bond Distress Rate

The share of distressed bonds is historically low.



Data through November 30, 2021.

Source: Investment Strategy Group, Barclays.

and low distress rates implies another year of low defaults, with our forecast calling for a scant 1%.

But with spreads in the space already 95 basis points below their long-term median in response to low expected defaults, there is limited room for further spread tightening to offset the backup in Treasury yields we expect (see Exhibit 143). In turn, we expect higher interest rates to drive slimmer returns of around 0.9% for high yield municipal bonds in 2022.

US Corporate High Yield Credit

Last year's robust economic and corporate profit growth precipitated a historic decline in high yield defaults. Just 0.4% of high yield bonds defaulted on a par-weighted basis in 2021, among the smallest numbers since 1998 and a nearly six percentage points decline from the previous year (see Exhibit 144). Leveraged loan defaults were no exception, falling more than three percentage points in 2021 to just 0.7%—well below the long-term average of 3.0%. This benign credit backdrop was welcome news for high yield investors, as both bank loans and high yield bonds generated 5–6% gains that bested investment grade bonds last year (see Exhibit 131).

There are several reasons we expect defaults will remain well below their historical average of 3.2% in the year ahead. Chief among these is our expectation of continued above-trend US GDP and corporate profit growth, as high

Exhibit 143: High Yield Municipal Bond Spread

The incremental yield above that of investment grade bonds is low relative to its long-term average.



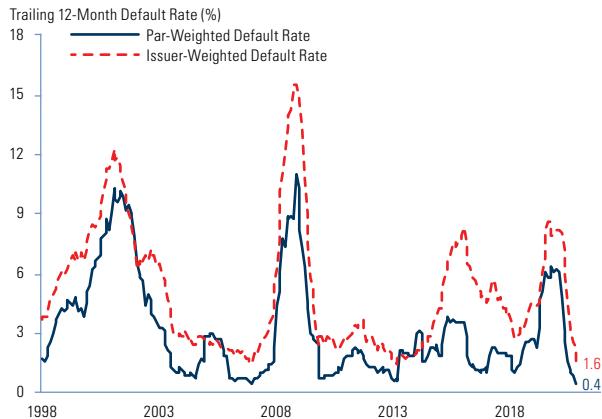
Data through December 31, 2021.

Source: Investment Strategy Group, Bloomberg.

yield firms generate almost three-fourths of their sales domestically. Leading indicators of credit risk are also benign. Moody's Liquidity-Stress Indicator (LSI) and covenant stress indices—all of which have typically risen ahead of past default cycles—stand near all-time lows, implying that few speculative-grade companies are experiencing liquidity problems or are at risk of breaching financial covenants (see Exhibit 145). Meanwhile,

Exhibit 144: High Yield Trailing 12-Month Default Rates

Default rates declined substantially during 2021 and stand near all-time lows.

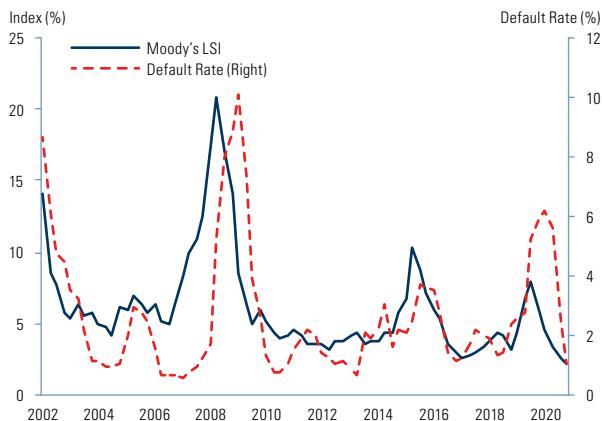


Data through November 2021.

Source: Investment Strategy Group, JP Morgan, Moody's.

Exhibit 145: Moody's Liquidity-Stress Indicator (LSI) and Default Rates

The LSI—a leading indicator of defaults—stands near all-time lows.



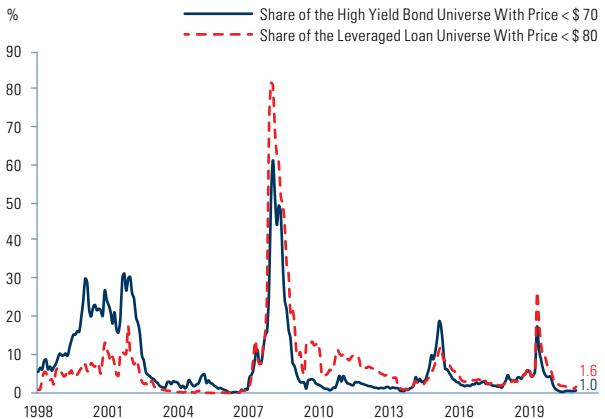
Data through Q3 2021.

Source: Investment Strategy Group, Moody's.

the distress rate—another leading default indicator that measures the share of high yield bonds trading below \$70—remains at innocuous levels. The same is true in bank loans, where just 1.6% of the universe is considered distressed, the lowest level since November 2014 (see Exhibit 146). Lastly, our default model—which forecasts the forward 12-month default rate based on the macroeconomic environment and corporate

Exhibit 146: Distress Ratios for High Yield Bonds and Leveraged Loans

The shares of loans and bonds trading at distressed prices are close to all-time lows.

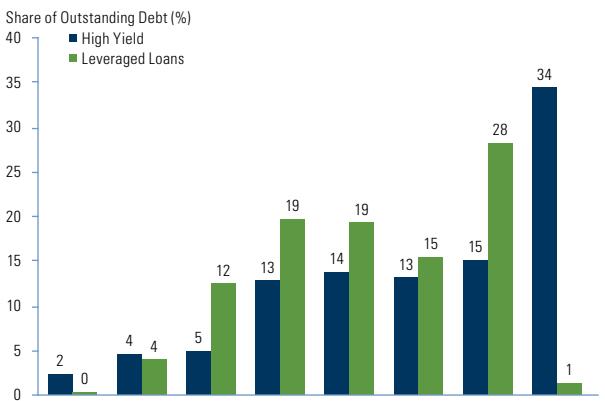


Data through November 2021.

Source: Investment Strategy Group, JPMorgan.

Exhibit 147: Cumulative US High Yield Debt Maturity by Year

Only a limited amount of high yield and leveraged loan debt matures in the next two years.



Data as of December 2021.

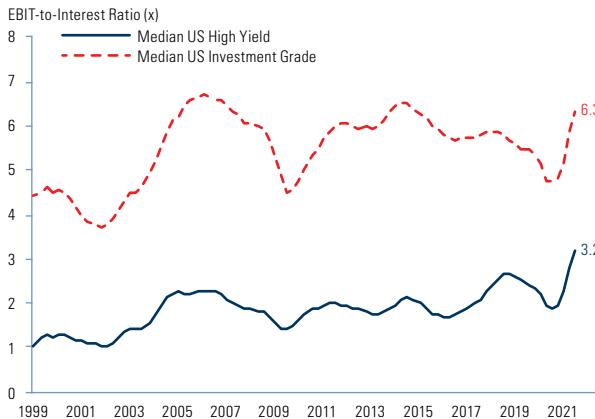
Source: Investment Strategy Group, Bank of America.

fundamentals—is projecting just under 2% par-weighted defaults in the year ahead.

Other factors corroborate this favorable backdrop for corporate credit. As seen in Exhibit 147, there is very little refinancing risk given that just 6.5% and 4.2% of existing high yield and leveraged loan debt, respectively, mature in the next two years. At the same time, interest coverage has risen close to a two-decade high for both high yield

Exhibit 148: High Yield and Investment Grade Interest Coverage Ratio

Interest coverage improved markedly during 2021 and stands at the best levels in decades.

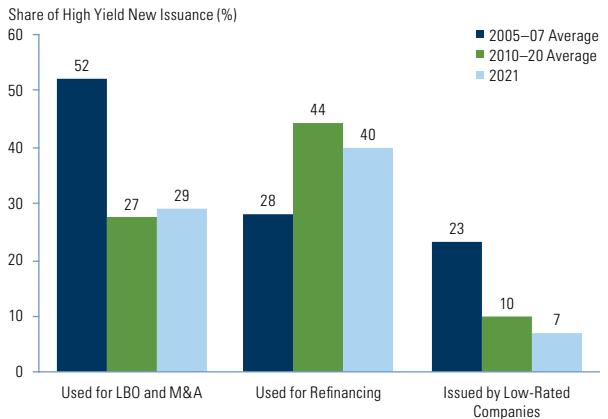


Data through Q3 2021.

Source: Investment Strategy Group, Goldman Sachs Global Investment Research.

Exhibit 150: Characteristics of High Yield New Issuance

Recent high yield issuance has been much healthier than that seen prior to the global financial crisis.

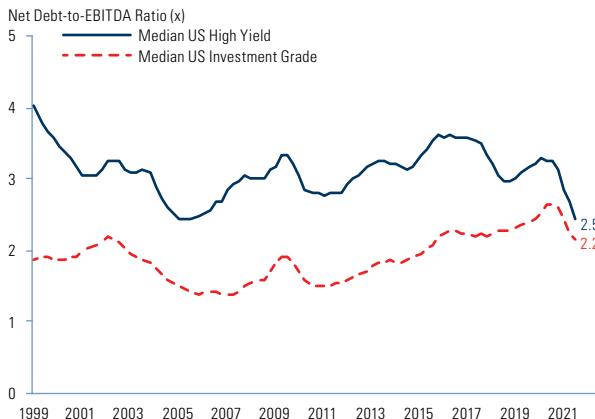


Data through December 2021.

Source: Investment Strategy Group, JP Morgan, Bank of America.

Exhibit 149: High Yield and Investment Grade Leverage

Financial leverage declined during 2021 as a result of strong earnings growth.

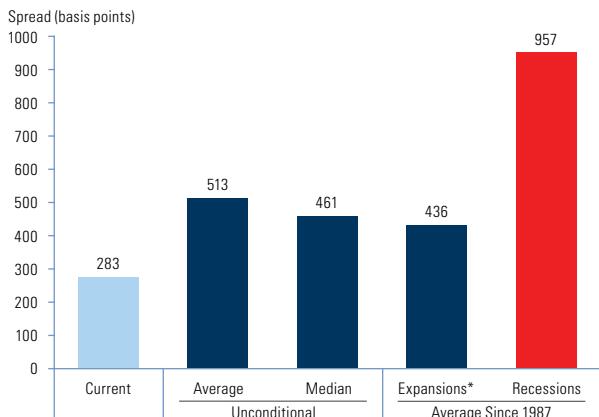


Data through Q3 2021.

Source: Investment Strategy Group, Goldman Sachs Global Investment Research.

Exhibit 151: High Yield Bond Spreads

High yield bond spreads look tight relative to history.



Data as of December 31, 2021.

Source: Investment Strategy Group, Bloomberg, Barclays.

* Excluding 6 months before recessions.

and investment grade firms, while high yield debt leverage has fallen to historically low levels (see Exhibits 148 and 149). Put simply, today's high yield universe is much healthier than the pre-GFC cohort, regardless of measure (see Exhibit 150).

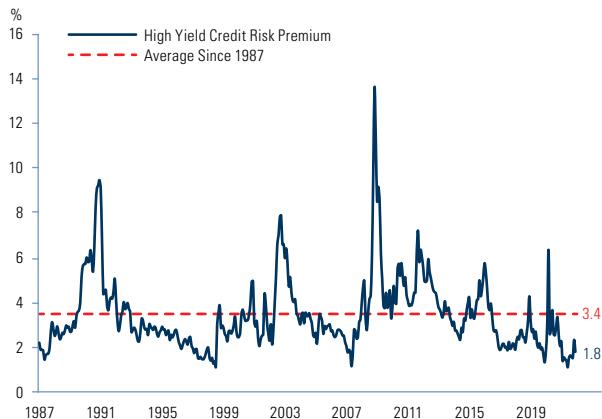
Of course, investors are not oblivious to these supportive fundamentals. High yield spreads—which compensate investors for the risk

of default losses—now stand near their lowest levels in the past 30 years (see Exhibit 151). This narrower margin of safety is also visible in our models, which imply the credit risk premium—or incremental return in excess of risk-free Treasuries after accounting for default losses—is significantly below its average and at a level that has been lower only 8% of the time historically (see Exhibit 152).

Exhibit 152: ISG High Yield Credit Risk Premium Estimate

Premium Estimate

Today's below-average risk premium implies less compensation for bearing default risk.

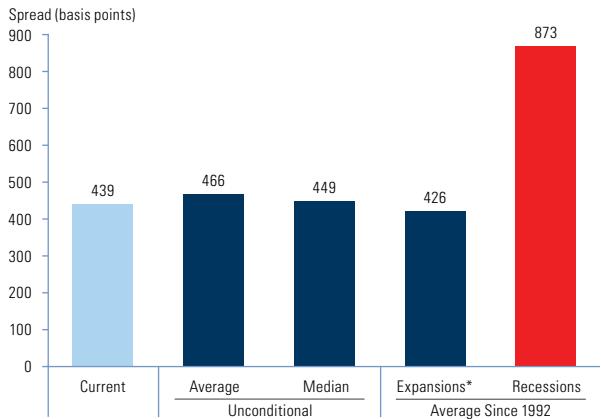


Data through December 2021.

Source: Investment Strategy Group.

Exhibit 153: Leveraged Loan Spreads

Leveraged loan spreads are consistent with their historical levels.



Data as of December 31, 2021.

Source: Investment Strategy Group, Credit Suisse.

* Excluding 6 months before recessions.

Today's below-average spreads suggest investors have already priced in our subdued default expectations. They also imply a smaller buffer to absorb potentially larger credit losses and higher interest rates. In turn, our forecast for rising Treasury yields is likely to weigh on high yield total returns, which we expect to be positive but low, at about 2%. Bank loans should outperform bonds with a 4% return, reflecting their more attractive spreads (see Exhibit 153), their short 0.25-year duration and continued investor demand for floating rates—a feature that is back in vogue given expectations for interest rate hikes by the Federal Reserve. We continue to recommend a small overweight to bank loans as a result (see Section I, Our Tactical Tilts).

European Bonds

For European fixed income investors, the bark of last year's upside inflation surprises ultimately proved worse than their bite. That's largely because the ECB—worried about financing conditions in the more vulnerable periphery countries—employed a variety of accommodative measures that softened the backup in sovereign yields and credit spreads alike. In the absence of these measures, last year's 40-basis-point increase in 10-year bund yields and 2.9% loss in intermediate-maturity Eurozone bonds could have been larger.

We expect the ECB to be more tolerant of tighter financial conditions this year, partly out of

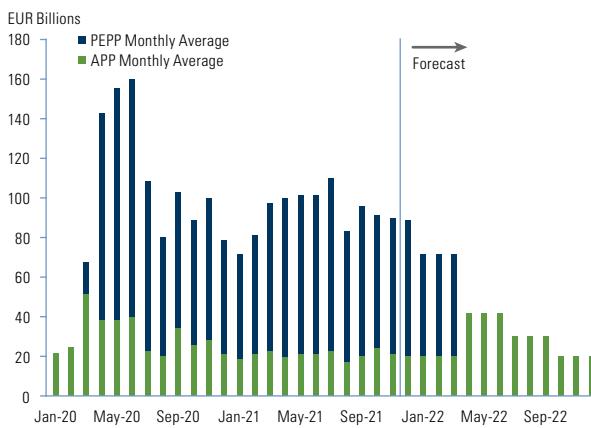
necessity. Another year of above-trend economic growth is set to further reduce economic slack in the Eurozone, putting upward pressure on prices. Already, headline inflation is running close to three percentage points above the ECB's target—the highest level since the euro was introduced in 1999—increasing the odds that inflation exceeds the ECB's projections, which see inflation below target at the end of the forecast horizon. This presents the ECB with a difficult balancing act, as it tries to slowly withdraw emergency support and lay the groundwork for potential interest rate hikes in 2023, while also minimizing the risk of disorderly moves (see Exhibit 154).

The BOE has been more proactive in the face of above-target inflation, delivering a 15-basis-point hike in December of last year despite lingering concerns around the pandemic and the UK's new trading relationship with Europe. We expect the BOE to continue this gradual normalization of policy with two additional 25-basis-point hikes this year. In addition, the BOE will pause reinvestments of maturing gilt redemptions once policy rates reach 0.5%, further tightening financial conditions.

Against this backdrop, we expect higher rates across Europe this year, implying negative returns for intermediate bonds. Our year-end forecast for the 10-year German bund yield is -0.15% to 0.35%, indicating higher borrowing costs that—

Exhibit 154: ECB Asset Purchases

The ECB is phasing out its pandemic emergency purchases.



Data through November 2021, forecasts through December 2022.

Note: PEPP=Pandemic Emergency Purchase Programme; APP=Asset Purchase Programme.

Source: Investment Strategy Group, Haver Analytics.

together with incrementally less accommodative monetary policy—increase the risk of wider peripheral bond spreads in 2022. In the UK, we anticipate that 10-year gilt yields will increase moderately from their end-2021 level of 1.0% to reach the midpoint of our 0.9–1.5% range.

Based on the foregoing and the low margin of safety offered by the scant yields of these debt instruments, we remain underweight European and UK bonds in global portfolios. Even so, we recommend European clients retain some exposure to high-quality European bonds to hedge portfolios against unforeseen shocks.

Emerging Market Local Debt

Emerging market local debt (EMLD) was a sore spot in investors' portfolios in 2021, losing about 9%. Both duration and currency depreciation contributed to the decline, more than offsetting the coupon income as surging inflation forced many EM central banks to hike rates sharply higher.

The loss came despite record flows into the asset class that totaled more than \$20 billion,⁴⁶ the second highest annual inflow since the “taper tantrum” in 2013.

While some investors are perplexed by EMLD’s nearly double-digit loss in the face of such strong inflows, we think the explanation is clear. As seen in Exhibit 155, nearly all of last year’s inflows were absorbed by Chinese

Exhibit 155: Monthly Flows Into EM Local Debt

China accounted for the lion's share of EM local debt flows in 2021.



Data through December 2021.

Source: Investment Strategy Group, JP Morgan, EPFR, Bloomberg.

domestic fixed income markets, contributing to a 7.8% total return in Chinese local debt. In contrast, flows into EMLD excluding China were negligible, offering little support to offset this subcategory’s nearly 10% loss in 2021.

Looking ahead, there are a number of crosscurrents that leave us tactically neutral on EMLD for the time being. We begin the year with EM currencies trading below their fair value estimates, nominal and real rate differentials to developed markets at the widest levels since the taper tantrum and EM central banks having already front-loaded interest rate hikes last year. Yet these positives are offset by our expectation for rising US interest rates and a stronger US dollar, which will likely drag on EMLD’s duration and local currency performance.

Against this backdrop, our forecast calls for a flat total return for EMLD in 2022. More specifically, we expect EMLD’s 5.7% yield to be

Based on the low margin of safety offered by the scant yields of these debt instruments, we remain underweight European and UK bonds in global portfolios.

eroded by 2.5% currency depreciation and 3.0% loss from duration as interest rates rise, resulting in a total return expectation of just 0.2%.

Emerging Market Dollar Debt

Emerging market dollar debt (EMD) was not immune to the headwinds facing fixed income assets in 2021. Its eight-year duration was particularly costly in last year's rising interest rate environment, more than offsetting the benefit of coupon income and marginally tighter credit spreads. As a result, EMD declined about 2% in 2021.

With spreads already below their long-run average, we think there is more room for wider spreads than narrower ones. Our view partly reflects the fact that the underlying credits have very bifurcated spreads. While spreads in the investment grade cohort are near all-time lows, those in the high yield universe remain above average. As we discussed in last year's *Outlook*, this implies that further spread compression in EMD would ultimately need to come from the high yield universe.

We are skeptical, considering that some of the high yield countries, such as Lebanon and Argentina, are not even current on their dollar-debt payments. Moreover, we believe that investor focus will increasingly shift from catching a cyclical recovery in emerging markets toward critically evaluating whether the structural growth models of these countries are well equipped for the post-pandemic era. The high yield universe within EMD screens particularly poorly on this measure, raising the risk of wider spreads amid idiosyncratic setbacks.

We expect spread widening and higher Treasury yields to detract from the asset class's positive carry this year, leaving EMD returns slightly above zero

at 0.4%. We therefore do not recommend a tactical position in EMD at this time.

2022 Global Commodity Outlook

Even for seasoned commodity investors, the volatility of the last two years has been out of the ordinary. Oil prices, for instance, rose nearly 60% last year following their unprecedented descent into negative territory in 2020. Such powerful reversals were not limited to energy, as most commodity prices staged a strong rebound in 2021 (see Exhibit 156). In fact, the 40% advance in the Goldman Sachs Commodity Index (GSCI) last year was the second-largest annual gain since its inception in 1970.

Within commodities, the energy and industrial metals sectors were the top performers given their correlation with an improving global economy. Agricultural commodities also rallied strongly, as adverse weather conditions exacerbated already depleted inventories. But gold and other precious metals failed to keep up with the broader commodity index, even as inflation surprised investors to the upside.

While it would be natural to expect commodity price gains to moderate from here, there is historical precedent for consecutive years of strong performance. Such a pattern is particularly likely today, as the above-trend economic growth that supported commodity demand last year remains in place. It could also take higher prices to entice marginal producers into the increasingly supply-constrained energy and industrial metals sectors. In contrast, gold continues to look vulnerable in the rising real interest rate environment we expect this year. We explore these topics in the following sections.

Exhibit 156: Commodity Returns in 2021

Most commodity prices staged a strong rebound in 2021.

	S&P GSCI	Energy	Agriculture	Industrial Metals	Precious Metals	Livestock
Spot Price Average, 2021 vs. 2020	50%	67%	42%	43%	3%	26%
Spot Price Return	37%	54%	21%	31%	-4%	20%
Investor ("Excess") Return*	40%	61%	25%	30%	-5%	8%

Data as of December 31, 2021.

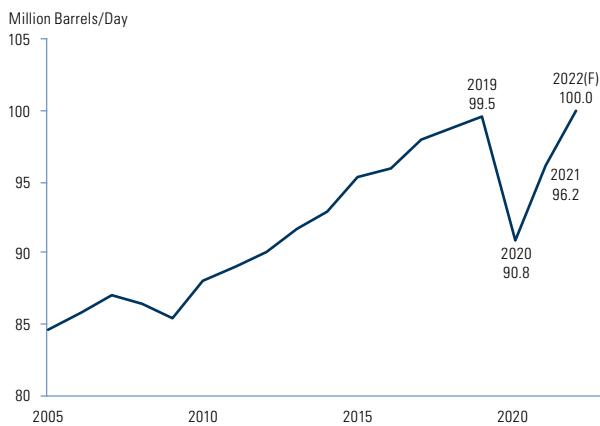
Source: Investment Strategy Group, Bloomberg.

* Investor (or "excess") return corresponds to the actual return from being invested in the front-month contract and differs from spot price return, depending on the shape of the forward curve. An upward-sloping curve (contango) is negative for returns, while a downward-sloping curve (backwardation) is positive.

Past performance is not indicative of future results. Investing in commodities involves substantial risk and is not suitable for all investors.

Exhibit 157: Global Petroleum Demand

Oil demand is expected to reach new highs in 2022.

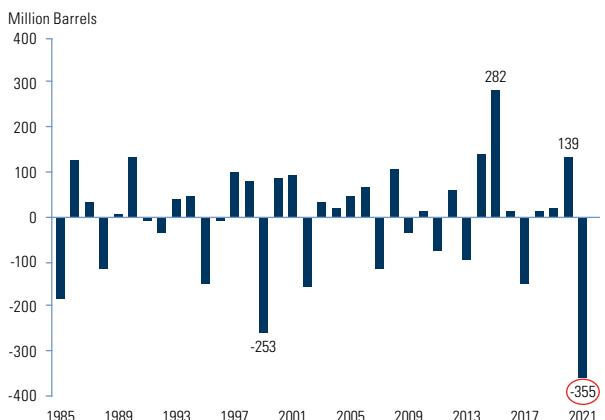


Data through 2021, average of forecasts through 2022.

Source: Investment Strategy Group, IEA, DOE, OPEC, S&P Global Platts, Energy Aspects, Goldman Sachs Global Investment Research, JP Morgan, Morgan Stanley, Citigroup.

Exhibit 158: Change in OECD Petroleum Inventories

OECD inventories fell by a record amount in 2021.



Data through December 2021.

Source: Investment Strategy Group, International Energy Agency.

Oil: Look Out Above

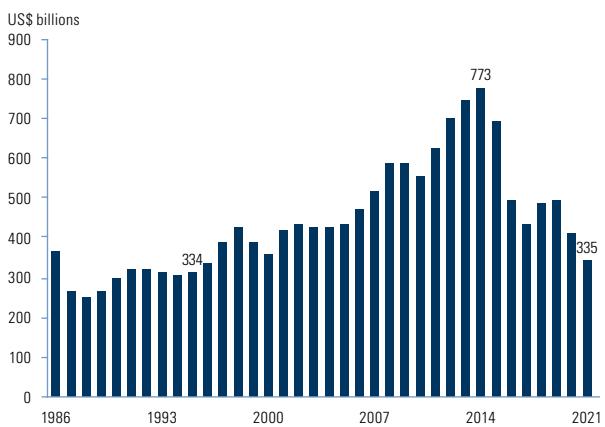
Following an abysmal 2020, the oil market staged an impressive recovery last year. WTI oil rebounded 55%, while Brent oil rose above \$85 per barrel at its high point. The prices for both benchmarks were among the highest seen since 2014. Despite this impressive recovery, we believe that there is further scope for upside.

Our view reflects the growing mismatch between oil demand and supply. As seen in Exhibit 157, oil demand has already recovered about two-thirds of its 2020 decline, putting it on track to surpass pre-pandemic levels this year. Given our forecast for continued above-trend global GDP growth, energy demand is likely to remain well supported. At the same time, production discipline across the Organization of the Petroleum Exporting Countries (OPEC), its allies and US shale producers has constrained oil supply. The result has been a sharp decline in global petroleum inventories—particularly those in the OECD—which now stand near multiyear lows (see Exhibit 158).

Rising consumption and higher oil prices would typically entice producers to increase supply, but a sharp decline in their capital expenditures may hinder the industry's ability to respond. As seen in Exhibit 159, the capital outlays for exploration and production activities in the past two years have been the lowest since the mid-1990s, despite a 40% increase in oil volumes since then. In fact, the

Exhibit 159: 2-Year Rolling Average of Global E&P Expenditures

Energy company investment reached the lowest levels since the mid-1990s in real terms.



Data through December 2021.

Note: Global E&P expenditures are CPI-adjusted in 2021 dollars.

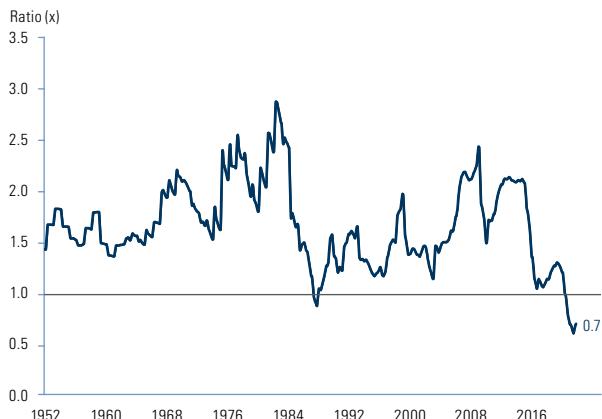
Source: Investment Strategy Group, International Energy Forum, Barclays, Bloomberg.

ratio of oil producers' capital expenditures to their depreciation has fallen to the lowest level in the post-WWII period (see Exhibit 160).

While lower capital spending is partly cyclical, there are structural aspects too. Energy investors have demanded that companies focus less on growing production and more on generating cash flow. In response, the compensation plans

Exhibit 160: Energy Sector Capex-to-Depreciation Ratio

The energy sector's capex-to-depreciation ratio points to insufficient investment to grow production capacity.



Data through November 2021.

Note: Ratio is calculated using corporate reports based on a 1,500 stock universe, smoothed on a trailing three-month basis.

Source: Investment Strategy Group, Empirical Research Partners.

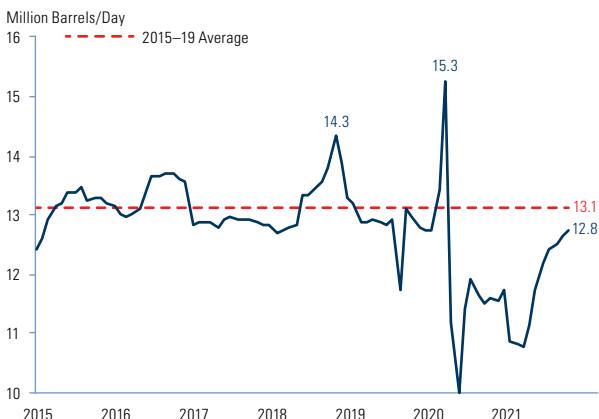
of US public energy companies have been shifted accordingly. Shale producers have been reining in spending as well. These capital discipline efforts are also being amplified by initiatives to prevent climate change, which are diverting investment away from fossil fuels and calling into question the long-term need for oil as electric vehicles gain market share.

The impact of these investment shortfalls is already evident in various pockets of the oil market. In the US, oil production is growing again but remains about 10% below pre-pandemic levels. Meanwhile, the number of active drilling rigs is still 30% below where it was two years ago, and US producers have drawn down their inventory of previously drilled but uncompleted wells to multiyear lows. Within OPEC, countries such as Nigeria and Angola are struggling to meet their quotas, raising questions about potential deterioration in their production capacity.

Despite these worsening supply constraints, OPEC's and Russia's plan to increase production by 0.4 million b/d per month through September, if realized, would likely satisfy most of the expected oil demand growth in 2022. But there are two important caveats. First, OPEC could struggle to meet these targets, especially because output from core OPEC producers—such as Saudi Arabia and the UAE—is already near its pre-pandemic average (see Exhibit 161). Moreover, meaningful

Exhibit 161: Saudi Arabia and UAE Oil Production

Production from core OPEC producers Saudi Arabia and UAE is already close to pre-pandemic averages.



Data through November 2021.

Source: Investment Strategy Group, Bloomberg.

progress between Iran and Western countries regarding Iranian nuclear activity and the easing of associated oil export sanctions remains elusive so far. Second, OPEC's plan to gradually return production to the market also mechanically reduces its spare production capacity, potentially leaving the market vulnerable to any future supply disruptions. As a result, we think oil prices need to remain high enough to incentivize production growth elsewhere, particularly from short-cycle US shale producers.

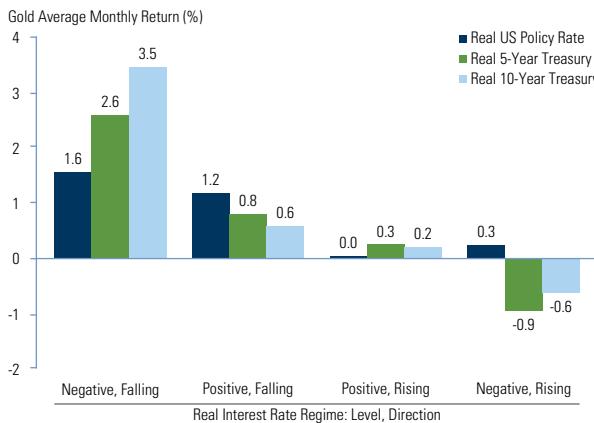
Taken together, these fundamentals should support WTI oil prices within a \$70–90 range. While another pandemic-related demand collapse or OPEC market share war could push prices below this range, we do not attach a high probability to either scenario. Instead, we think an upside surprise to oil prices is more likely, especially given today's backdrop of low inventories and low spare capacity. Just a few examples of these potential upside drivers are disruptions to Libyan oil supply amid difficult upcoming presidential elections, the ongoing armed conflict between Saudi Arabia and Yemen, and risks of terrorist attacks in oil-producing countries.

Given this outlook, we recommend clients maintain an overweight to US energy equities, which offer attractive valuations and a hefty dividend yield. We also recommend a long position in WTI crude oil, where option prices currently

Exhibit 162: Average Gold Returns by Interest Rate Regime

Rate Regime

Gold prices have typically suffered in the rising real interest rate environment we expect this year.

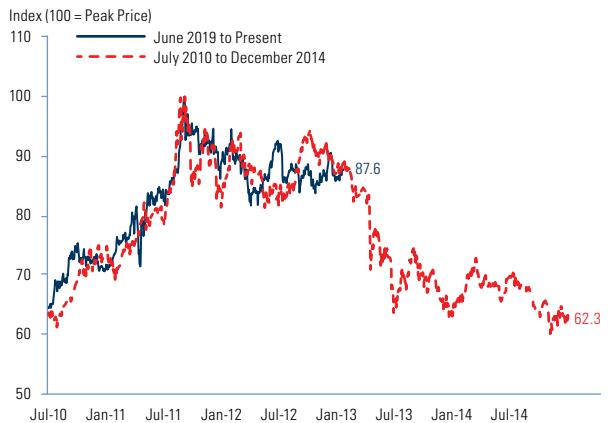


Data as of December 31, 2021.

Source: Investment Strategy Group, Bloomberg.

Exhibit 163: Gold Historical Analog

The path of gold prices during tapering by the Federal Reserve in 2013–14 implies further downside risk.



Data through December 31, 2021.

Source: Investment Strategy Group, Bloomberg.

make it attractive to gain upside exposure with buffered downside risk (see Section I, Our Tactical Tilts).

Gold: Less Than Meets the Eye

Gold was a sore spot in investors' portfolios last year, as it failed to keep up with other commodities. Although gold's 4% loss reversed only a portion of its large gains from 2020, it was nonetheless surprising in light of last year's widespread inflationary worries.

We believe that gold is likely to face even larger downside risks this year, given our forecast for less accommodative monetary policy, higher real interest rates and a stronger US dollar. Gold has been negatively correlated to the US dollar historically because investors often purchase gold as a hedge against the debasement of fiat currencies. Last year was a case in point, as the US dollar's 6% gain closely tracked gold's 4% decline.

Past Federal Reserve tightening cycles have also been a headwind to gold prices. Higher interest rates raise the opportunity cost of holding gold, since the metal generates no cash flow and must be physically stored, often at a cost. Note that gold has underperformed US equities in five of the past six rate hiking cycles, with gold prices falling in four of them. Moreover, we expect real interest rates to rise this year as Federal Reserve rate hikes begin to temper inflationary pressures, creating conditions that have historically weighed on gold prices (see

Exhibit 162). Finally, the previous Federal Reserve tapering cycle beginning in 2013 saw gold prices fall by more than 35% (see Exhibit 163).

Based on the foregoing, we are not surprised to see investor appetite for gold waning. Gold ETF holdings declined 9% last year, retracing almost half of the accumulation seen in 2020. We think there could be further declines in these ETF holdings since they remain high by historical standards, amounting to almost one year of mining output.

Despite this challenging outlook, the risks to gold prices are not completely to the downside. Gold could still benefit from its perceived safe-haven status, particularly given lingering uncertainty around the evolution of the coronavirus and various sources of geopolitical tension. Moreover, consumer jewelry demand is rebounding, while EM central bank purchases could also help absorb any divestment from investors.

In light of these crosscurrents, we remain neutral on gold until a clearer market setup presents itself.

Abbreviations Glossary

APP: Asset Purchase Programme [ECB]

b/d: barrels per day

BOE: Bank of England

BOJ: Bank of Japan

capex: capital expenditure

CCP: Chinese Communist Party

CDC: Centers for Disease Control and Prevention

CFTC: Commodity Futures Trading Commission

CPI: Consumer Price Index

DOE: Department of Energy

DXY: Dollar Index

EAFE: Europe, Australasia and the Far East

ECB: European Central Bank

EM: emerging market

EMD: emerging market dollar debt

EMEA: Europe, The Middle East and Africa

EMLD: emerging market local debt

EPS: earnings per share

ERP: equity risk premium

ETF: exchange-traded fund

EU: European Union

EUR: euro

FANGMANT: Facebook/Meta, Apple, Netflix, Google/Alphabet,

Microsoft, Amazon, Nvidia and Tesla

FDA: Food and Drug Administration

FDI: foreign direct investment

FOMC: Federal Open Market Committee

GDP: gross domestic product

GFC: global financial crisis

GIR: (Goldman Sachs) Global Investment Research

HICP: Harmonised Index of Consumer Prices [Eurozone]

IAEA: International Atomic Energy Agency

IMF: International Monetary Fund

ISM: Institute for Supply Management

JCPOA: Joint Comprehensive Plan of Action

JPY: Japanese yen

LIBOR: London Interbank Offered Rate

LSI: [Moody's] Liquidity-Stress Indicator

M&A: mergers and acquisitions

MLP: master limited partnership

NBER: National Bureau of Economic Research

OECD: Organisation for Economic Co-operation and Development

ONS: [United Kingdom] Office for National Statistics

OPEC: Organization of the Petroleum Exporting Countries

PBOC: People's Bank of China

PCE: Personal Consumption Expenditures

P/E: price-to-earnings ratio

PEG [ratio]: price/earnings-to-growth ratio

PEPP: Pandemic Emergency Purchase Programme [ECB]

QoQ: quarter over quarter

RBI: Reserve Bank of India

RMB: renminbi

S&P 500: Standard & Poor's 500 Index

SNB: Swiss National Bank

TIPS: Treasury Inflation-Protected Securities

TSA: Transportation Security Agency

Dollar Trade-Weighted Index

UAE: United Arab Emirates

UK: United Kingdom

US: United States

US\$: United States dollar

WTI: West Texas Intermediate [oil price]

YoY: year over year

Notes

1. Jason Furman, client conference call with the Investment Strategy Group, December 2, 2021.
2. Rich Bernstein.
3. Julian Emanuel.
4. Barry Sternlicht.
5. Robert J. Shiller, Laurence Black and Farouk Jivraj, "Making Sense of Sky High Stock Prices," Project Syndicate, November 30, 2020.
6. David Kostin, "US Macroscope: Reports of Narrow Market Breadth Have Been Greatly Exaggerated," Goldman Sachs Global Investment Research, April 27, 2017.
7. Howard Marks, *Mastering the Market Cycle: Getting the Odds on Your Side*, Nicholas Brealey Publishing, 2018.
8. Elroy Dimson, Paul Marsh and Mike Staunton, *Triumph of the Optimists: 101 Years of Global Investment Returns*, Princeton University Press, 2002. © 2013 Elroy Dimson, Paul Marsh and Mike Staunton. As published in "Credit Suisse Global Investment Returns Yearbook 2013," February 2013.
9. These forecasts have been generated by ISG for informational purposes as of the date of this publication. Total return targets are based on ISG's framework, which incorporates historical valuation, fundamental and technical analysis. They are based on proprietary models and there can be no assurance that the forecasts will be achieved. The following indices were used for each asset class: Barclays Municipal 1-10Y Blend (Muni 1-10); BAML US T-Bills 0-3M Index (Cash); JPM Government Bond Index; Emerging Markets Global Diversified (Emerging Market Local Debt); Barclays High Yield Municipal Bond Index (Muni High Yield); HFRI Fund of Funds Composite (Hedge Funds); Barclays US Corporate High Yield (US High Yield); MSCI EM US\$ Index (Emerging Market Equity); FTSE 100 (UK Equities); MSCI EAFE Local Index (EAFE Equity); Euro Stoxx 50 (Eurozone Equity); TOPIX Index (Japan Equity); S&P 500 (US Equity). A moderate risk portfolio is allocated among equities, fixed income and additional asset classes and designed to track 8% volatility.
10. Tweet by Trevor Bedford, September 7, 2021, <https://twitter.com/trvrb/status/1435249800425791490?lang=en>.
11. Department of Health and Human Services, "Coronavirus News Conference," January 28, 2020.
12. Dr. Scott Gottlieb, Talks@GS, Goldman Sachs, December 6, 2021.
13. Philip R. Krause, Marion F. Gruber and Paul A. Offit, "We Don't Need Universal Booster Shots. We Need to Reach the Unvaccinated," *Washington Post*, November 29, 2021.
14. William A. Haseltine, "What Is the Meaning of Omicron?" *Forbes*, December 9, 2021.
15. UK Scientific Advisory Group for Emergencies, "Can We Predict the Limits of SARS-CoV-2 Variants and Their Phenotypic Consequences?", July 30, 2021.
16. Chris Mok Ka-pun et al., "HKUMed-CU Medicine Joint Study Finds That Third Dose of Comirnaty Has Better Protection from COVID-19 Variant Omicron," University of Hong Kong, December 23, 2021; Xiaoqi Yu et al., "Pseudotyped SARS-CoV-2 Omicron Variant Exhibits Significant Escape from Neutralization Induced by a Third Booster Dose of Vaccination," Shanghai Jiao Tong University School of Medicine, December 18, 2021; Eddy Perez-Then et al., "Immunogenicity of Heterologous BNT162b2 Booster in Fully Vaccinated Individuals with CoronaVac Against SARS-CoV-2 Variants Delta and Omicron: The Dominican Republic Experience," Yale University School of Medicine, December 29, 2021.
17. Mimi Lau, "China Risks 'Colossal COVID-19 Outbreak' by Opening Up, Study Finds," *South China Morning Post*, November 27, 2021.
18. Michael Goldstein et al., "Addicted? Gauging the Rate Sensitivity of the Economy," *Empirical Research*, July 27, 2021.
19. Ronnie Walker, "A Higher Peak for Shelter Inflation," Goldman Sachs Global Investment Research, December 14, 2021.
20. Spencer Hill and David Mericle, "2022 Inflation Outlook: Getting Worse Before It Gets Better," Goldman Sachs Global Investment Research, November 7, 2021.
21. Paul Krugman, "The Year of Inflation Infamy," *New York Times*, December 19, 2021.
22. Ashton Carter, conference call with the Investment Strategy Group, December 17, 2021.
23. Sébastien Roblin, "Biden and Putin Hold Call Over Russia-Ukraine Tensions. What the U.S. Has at Stake," NBC News, December 30, 2021.
24. Ministry of Foreign Affairs of the Russian Federation, "Foreign Ministry Statement on Dialogue with the United States and Other Western Countries Regarding Security Guarantees," December 10, 2021.
25. Robin Wright, "The Looming Threat of a Nuclear Crisis with Iran," *New Yorker*, December 27, 2021.
26. David Albright et al., "Analysis of IAEA Iran Verification and Monitoring Report: November 2021," Institute for Science and International Security, November 19, 2021.
27. Ibid.
28. Rafael Mariano Grossi, "IAEA Director General's Introductory Statement to the Board of Governors," International Atomic Energy Agency, November 24, 2021.
29. Robin Wright, "The Looming Threat of a Nuclear Crisis with Iran," *New Yorker*, December 27, 2021.
30. Ibid.
31. Ian Bremmer, conference call with the Investment Strategy Group, December 20, 2021.
32. Ibid.
33. Office of the Director of National Intelligence, "Annual Threat Assessment of the US Intelligence Community," April 9, 2021.
34. Min Joo Kim, "North Korea's Kim Jong Un Vows to Solve Economic Crisis and Bolster Military," *Washington Post*, January 1, 2022.
35. Office of the Director of National Intelligence, "Annual Threat Assessment of the US Intelligence Community," April 9, 2021.
36. David Uberti, James Rundle and Catherine Stupp, "The Log4J Vulnerability: Millions of Attempts Made Per Hour to Exploit Software Flaw," *Wall Street Journal*, December 21, 2021.
37. The White House, "National Strategy for Counteracting Domestic Terrorism," June 2021.
38. JP Morgan Global Manufacturing PMI MPMLMA Index.
39. Based on primary equity indices in WEIS function in Bloomberg. Returns are measured in local currency.
40. Based on Bloomberg World Exchange Market Capitalization Index.
41. Guillaume Jaïsson, Francesco Graziani, Peter Oppenheimer, Sharon Bell and Lilia Peytavin, "Europe Portfolio Passport," Goldman Sachs Global Investment Research, December 14, 2021.
42. Sharon Bell, Peter Oppenheimer, Lilia Peytavin, Guillaume Jaïsson and Francesco Graziani, "UK—Forever Cheaper?," Goldman Sachs Global Investment Research, November 12, 2021.
43. Jay Barry, Phoebe White, Afonso Borges and Mike Fu, "That's That, We're A Long Way From The Past (Cycle)," JP Morgan, December 17, 2021.
44. Phoebe White, Jay Barry and Alfonso Borges, "TIPS 2022 Outlook," JP Morgan, November 23, 2021.
45. National Association of State Budget Officers, *The Fiscal Survey of States: Fall 2021*, NASBO, 2021.
46. JP Morgan flow data as of early December 2021.

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Period	Gross Return	Net Return	Differential
1 year	6.17%	4.61%	1.56%
2 years	12.72%	9.43%	3.29%
10 years	81.94%	56.89%	25.05%

A description of fees is available in Part 2A of the GS&Co. Form ADV. Past performance does not guarantee future results.

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