

Global Investment Committee | March 31, 2021

Annual Update of GIC Capital Market Assumptions

In these pages, we present the annual update of our capital market assumptions. These forecasts estimate the returns and volatility of global asset classes over the strategic, or seven-year, horizon and the secular, or 20-year, horizon. The strategic estimates serve as the key inputs into the Global Investment Committee's (GIC) strategic asset allocations. Compared with 2020, elevated equity valuations have translated into lower expected returns. For certain fixed income segments, expected returns are historically low driven by lower yields and tighter credit spreads. The potential for rising inflation and lower expected returns for traditional asset classes highlight the importance of portfolio diversifiers and inflation hedges in asset allocation over the seven-year investment horizon.

Alongside the annual update of our strategic assumptions, we provide a rebalancing of our GIC strategic asset allocation models. These models are optimized annually using our goals-based framework and targeted risk parameters. It's important to keep in mind that these strategic models, which are developed for a seven-year investment horizon, do not immediately impact our tactical models. The tactical models, updates to which are published separately, target an investment horizon of 12 to 18 months and are adjusted based on the collective deliberations of the GIC.

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Executive Summary

Every year between December and March, the Global Investment Committee (GIC) convenes to update our strategic, or seven-year, and secular, or 20-year, capital markets return assumptions. That process involves marking every asset class to current market conditions while weighing current valuations against our historical frameworks and forecasting tools. We seek to balance a consistent process with dynamic and adaptive enhancements. These efforts seek to incorporate structural policy changes, such as those at the Federal Reserve, the federal government or those in global trade and geopolitics.

This year, we have the uncommon fortune of updating our long-term strategic capital market assumptions with relatively greater clarity about the next two to three years of the economic cycle. The GIC asserts that the February 2020 peak marked the end of the previous cycle, which prevailed since the March 2009 trough following the financial crisis. Further, the second quarter of 2020 marked not only the beginning of a new economic cycle and bull market but also an inflection point in longstanding trends in fiscal policy and consumer behavior, the combination of which may finally break the shackles of secular stagnation.

As we go to print, the world reflects on the first anniversary of COVID-19 pandemic lockdowns. Compared with the grave uncertainty of last March, the distribution of effective vaccines and sizable stimulus have increased the probability and shortened the timeline for full economic recovery and reopening in the US. Importantly for investors, however, equity markets have already anticipated a vigorous economic recovery with the S&P 500 nearly 18% higher than its pre-pandemic record. Although the swift recovery of both markets and the economy (as well as public health) are unequivocally good news, they may pose a special risk this time as the typical “cleansing work” of recessions may not have played out in full, which could have implications for the coming period.

As business and market cycles reset, starting points typically determine the possible shape of future outcomes. We note that equity valuations begin this cycle near historical extremes, with the Shiller CAPE at a reading of 35, which has historically presaged a decade of subpar, low single-digit average stock returns. For US Treasuries, valuations appear similarly high, with the federal funds rate potentially pinned at the zero lower bound until 2024 and the benchmark

reference 10-year Treasury yield having risen more than 1% from its all-time low last summer, but still implying a deeply negative real yield. With the Fed at the zero lower bound and already at “maximum” Quantitative Easing, risks for policy readjustment are plainly asymmetric, likely constraining market gains to those driven by nominal growth and corporate earnings. At the same time, inflation looks poised to reassert itself, which may weigh on equity and fixed income valuations, while diminishing the forward-looking efficacy of portfolio diversification.

Exhibits 20 and 21 (see pages 15 and 16) summarize the implications of our new forecasts for strategic asset allocations in our model portfolios. Most significantly, the portfolios include increased weights to Alternatives, by 4% in our moderate risk allocations for investors with less than \$25 million. Further, while the style composition of our US equity allocation maintains its tilt toward value exposures, the growth-value differential has narrowed meaningfully.

Exhibit 1: Lower Estimates for Equities and Fixed Income and Higher Estimates for Real Assets

	2021		2020	
	Annualized Return	Annualized Volatility	Annualized Return	Annualized Volatility
Global Equities	4.9%	13.2%	6.0%	14.2%
US Equities	4.0	14.2	4.8	14.8
International Equities	4.7	14.8	6.9	15.8
Emerging & Frontier Mkt. Equities	7.8	17.5	7.7	21.1
Ultrashort Fixed Income	1.0	0.7	1.1	1.0
US Taxable Fixed Income	1.1	4.9	1.5	5.3
High Yield Fixed Income	1.2	8.3	2.8	9.0
Real Assets	5.6	10.1	5.3	12.7
Absolute Return Assets	2.1	4.6	2.8	5.3
Equity Hedge Assets	4.6	7.2	4.7	8.4
Equity Return Assets	3.7	8.4	4.4	9.4

Note: We represent ultrashort fixed income by 90-day T-bills; US taxable fixed income by the Bloomberg Barclays US Aggregate Index; and high yield fixed income by the Bloomberg Barclays Global High Yield Corporate Index. Source: Bloomberg, FactSet, Moody's, Haver Analytics, Morgan Stanley & Co., Morgan Stanley Wealth Management GIC as of Feb. 26, 2021

The Big Picture

Most years, when we embark on our annual exercise of updating our long-term strategic capital market assumptions, we do so against a somewhat murky midcycle backdrop. We don't know exactly how close we are to peaks or troughs, the punctuation marks of distinct business and market cycles. However, about once a decade—in the last 40 years it was 1991-92, 2000-01, 2009-10 and 2020-21—the lines of demarcation are more clear. We have a framework that allows us to contextualize the broader trends that have characterized the era just completed within history and to recalibrate the forecasting foundation.

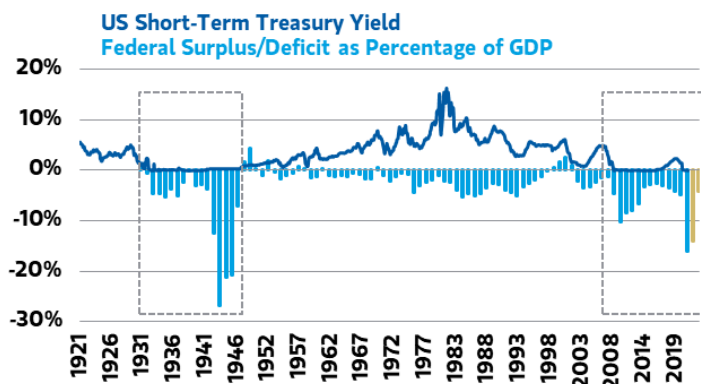
With this lens, the Global Investment Committee (GIC) believes that the cycle has just completed. From the trough of the financial crisis in March 2009 to the pre-pandemic peak in February 2020, it was one characterized by global secular stagnation. (See GIC special reports, "[Beyond Secular Stagnation](#)," September 2016; and "[The Capex Conundrum and Productivity Paradox](#)," November 2017). While the economic cycle was among the longest in US history, it was among the slowest for annual average growth. Inflation was significantly below average, and interest rates never fully recovered, peaking at roughly half the level from where they were at the previous cycle's top. Even without a recession and with the largest corporate tax cut in history, the Federal Reserve had to reverse policy and resume rate cuts late in the cycle due to anemic underlying growth. Aided by a decade of aggressive accommodation from the Fed, these underwhelming economic conditions produced extraordinary capital market returns: The S&P 500 Index enjoyed a compound annual growth rate of more than 15% per year,

twice the long-term average. The US Bloomberg Barclays US Aggregate Index logged nearly 9% per year in total return, some three times the long-term average.

The past cycle's liquidity largesse fueled a golden age for private equity and a historic sixfold expansion of the shadow banking system. Despite record levels of corporate debt to GDP, credit spreads neared all-time tights, and the overall cost of capital reached the lowest level ever. (See GIC special report, "[Are Private Equity's Best Days Gone?](#)" January 2020). Market performance was also extremely skewed and concentrated, with megacap tech companies far outperforming the broad market, growth stocks trouncing value stocks, the US meaningfully outpacing all other regions and passive index investing besting active management. Oddly enough, rather than these dominant trends being disrupted by the recession, they were amplified. The necessary and imposed constraints of the pandemic concentrated even more economic value in the winners of the past cycle.

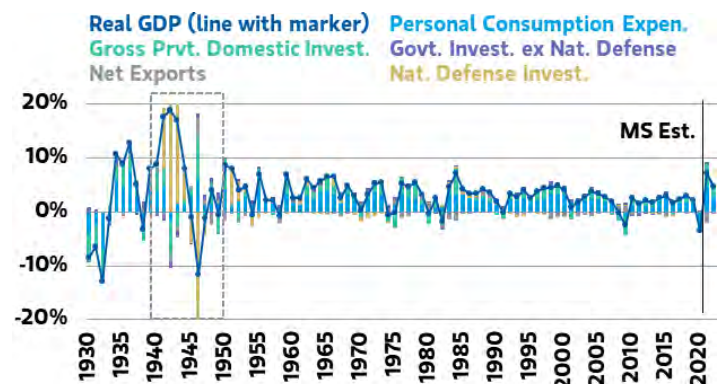
By mid-2020, as the pandemic raged and shutdowns proliferated, it became clear to the GIC that a new economic cycle and a new bull market had started. What's more, the unique combination of the scale, scope and speed of both monetary and fiscal policy—approximating almost 50% of US GDP within 12 months—and behavioral changes in consumption patterns resulting from the pandemic, finally broke the shackles of secular stagnation. As we noted in our November 2020 special report, "[Policymakers and the Pandemic: Defining a New Business Cycle](#)," explosive growth in fiscal spending created debts and deficits last seen at the end of World War II that has severe implications for the US Treasury's borrowing costs.

Exhibit 2: Policymakers Turn to Fiscal Stimulus At Scale Not Seen in Decades



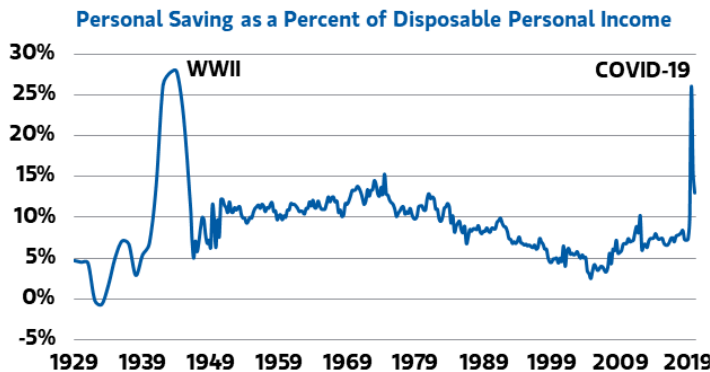
Note: Yellow bars represent Morgan Stanley & Co. estimates through 2022. Source: Haver Analytics, Bloomberg, Morgan Stanley & Co., Morgan Stanley Wealth Management GIC as of March 25, 2021

Exhibit 3: Heavy Spending Triggered a Surge in GDP Growth in the 1940s



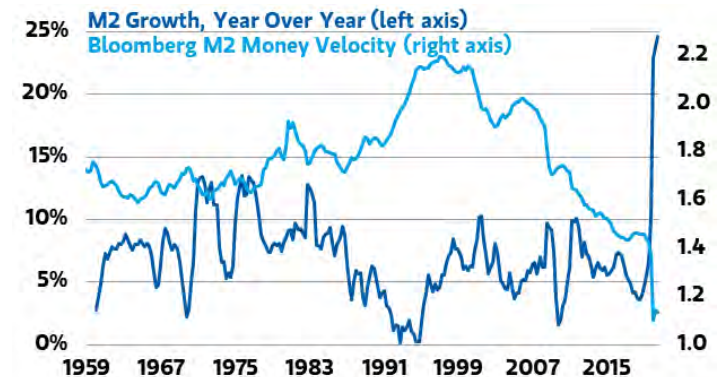
Note: Morgan Stanley & Co. estimates do not break out national defense spending from broader government spending. Source: Haver Analytics, Morgan Stanley & Co., Morgan Stanley Wealth Management GIC as of March 25, 2021

Exhibit 4: Personal Savings Spiked Following COVID-19 as in World War II



Note: Annual before 1947 and quarterly after.
Source: Haver Analytics, Morgan Stanley & Co., Morgan Stanley Wealth Management GIC as of March 25, 2021

Exhibit 5: Surging M2 Growth Sets Stage for Rising Money Velocity



Source: Bloomberg, Morgan Stanley Wealth Management GIC as of March 25, 2021

A surging M2 money supply, alongside accumulated excess savings and healthy balance sheets at both households and US banks, set the stage for a resumption of higher money velocity, better consumer credit growth and potentially higher GDP growth and inflation (see Exhibits 2, 3, 4 and 5).

We further asserted that shifts in consumer and corporate behavior would create new investment themes: permanent remote-working arrangements, de-urbanization, clean energy and digitization of business models. These are all trends that could support a strong capital investment and housing-linked cycle that may be flattered by the improving demographic mix of the US workforce. All told, we saw these developments flipping the switch on capital market opportunities and portfolio construction priorities.

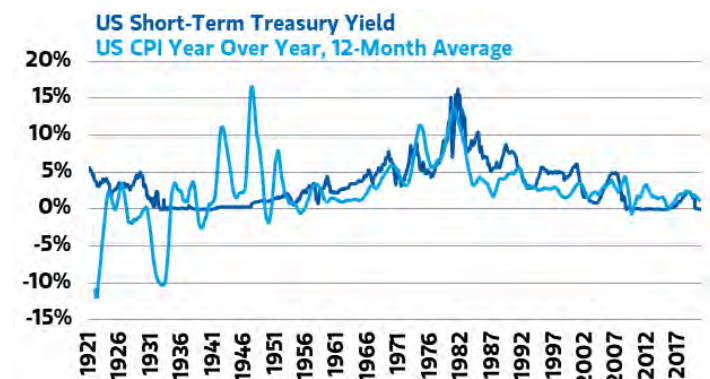
In the broadest terms, we suggested that a reflationary playbook was needed, skewing portfolios toward the value style and cyclical sectors, small- and mid-caps stocks, and global equity exposures. We also sought after stocks with high-quality cash flow, operating leverage and earnings growth potential. In fixed income, we cautioned about the risks of rising interest rates and term premiums related to inflation expectations, suggesting that the 40-year bull market in bonds had finally ended (see Exhibit 6). Beyond painting a high-level picture, what could we expect in terms of the shape of the economic cycle and expected capital market returns over the strategic horizon?

Now, as we begin 2021's second quarter, the world is reflecting on the first anniversary of the COVID-19 pandemic lockdown. On the one hand, prospects for full economic recovery and reopening in the US look close at hand. The vaccination pace is running well ahead of initial forecasts and copious stimulus, alongside swelling pent-up demand, suggesting that US GDP might have already reached the 2019 level in the first quarter and could return to long-run trend

growth in the third quarter. If that scenario comes to pass it would represent the fastest economic recovery from recession since the 1970s. It would set the foundation for the new business cycle, with annual GDP growth in excess of 7%, more than three times faster than the average pace of GDP since the financial crisis.

For investors, this mirrors much of what the market has already anticipated, with the swiftest ever recession-linked equity bear market (Feb. 19-March 23, 2020) well behind us and the S&P 500 close to an all-time high that is nearly 18% higher than before the pandemic. The swift recovery of both markets and the economy (as well as public health) are unequivocally positive for our national social well-being. However, the typical "cleansing work" of recessions—flushing out excesses, pushing the loss-ridden endeavors into bankruptcy and resetting market valuations around normalized earnings—has largely gone undone.

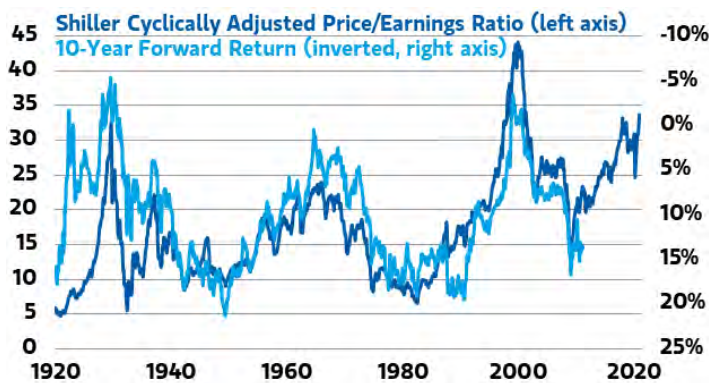
Exhibit 6: Rising Inflation Expectations Could Spell the End of the 40-Year Bull Market in Bonds



Source: Haver Analytics, Bloomberg, Morgan Stanley & Co., Morgan Stanley Wealth Management GIC as of March 25, 2021

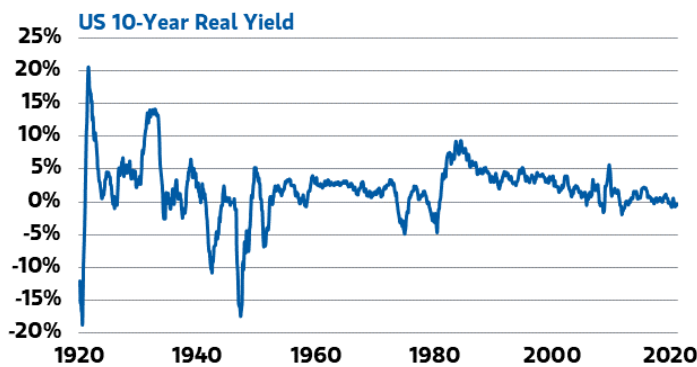
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Exhibit 7: Shiller CAPE Above 30 Suggests Subdued Forward 10-Year Returns



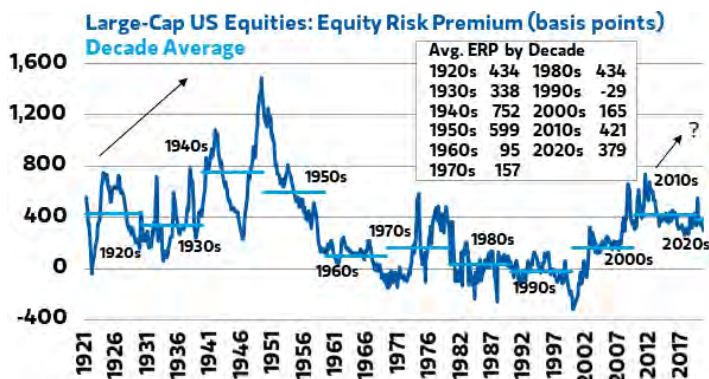
Source: Robert J. Shiller of Yale University, Bloomberg, Morgan Stanley Wealth Management GIC as of March 25, 2021

Exhibit 8: Nominal Yield and Inflation Imply a Negative Real Yield



Source: Robert J. Shiller of Yale University, Bloomberg, Morgan Stanley Wealth Management GIC as of March 25, 2021

Exhibit 9: The Equity Risk Premium May Move Structurally Higher as in the 1930s to 1940s



Source: Robert J. Shiller of Yale University, Bloomberg, FactSet, Morgan Stanley & Co., Morgan Stanley Wealth Management GIC as of March 25, 2021

This is critical, because as business and market cycles reset, starting points are huge determinants of future outcomes. Consider the set-up. Equity valuations began the cycle near historic extremes, with the Shiller CAPE at a reading of 35, a level only topped once before in 1999-2000—and one that has historically presaged a decade of subpar, low single-digit average stock returns (see Exhibit 7). For US Treasuries, valuations are equally fraught, with the federal funds rate pinned at the zero lower bound—a policy choice that the central bank has suggested can hold until 2024. The benchmark 10-year US Treasury yield is up more than threefold from its all-time low nominal yield of 50 basis points last summer, but at 1.6%, the real yield is -66 basis points (see Exhibit 8). With the Fed at the zero lower bound and already at “maximum” Quantitative Easing of \$120 billion monthly pace, risks for policy readjustment are asymmetric. By definition, this constrains stock market gains to those driven by nominal growth and corporate earnings.

At the same time, inflation looks poised to reassert itself. The Fed’s “average inflation targeting” framework aims to overshoot 2% inflation “for some reasonable amount of time.” An improving labor market could put upward pressure on wages. Supply chains strained under the weight of pandemic induced imbalances could lead to higher prices. Morgan Stanley & Co. economists now forecast US headline CPI at a 3.1% annualized rate by June, 2.2% in December and 2.6% by year-end 2022. Thus far, the inverted inflation breakeven curve suggests that the market has put trust in the Fed’s assessment that any pickup in inflation will be transitory.

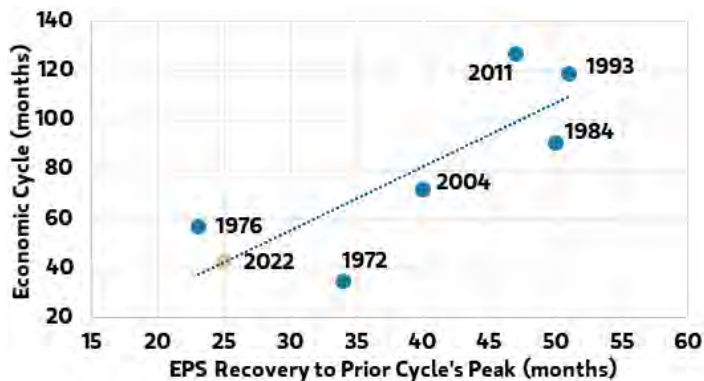
What if this assessment is wrong, and higher realized inflation remains? To start with, market expectations of rates, inflation and Fed policy could become even more disconnected from Fed guidance, a set-up for increased volatility. While the Fed sees itself on hold for at least the next 2.5 years, markets are beginning to discount tapering in 2022 and the first rate hike in 2023’s third quarter. Next, rising rates have material implications not only for bond valuations but for stocks and credit, too, as price/earnings ratios face headwinds, and tight credit spreads leave little room to absorb rising rates. This is significant because if the market challenges the Fed’s credibility on inflation, term premiums might permanently reset upward, potentially marking a new regime for the equity risk premium (see Exhibit 9). Finally, valuation limitations suggest that rising rates could pressure all portfolio diversification efforts, with stocks and bonds both declining as rates rise, while the Fed would be forced to chase policy normalization. All these speak to below-average capital market returns in this new cycle.

Importantly, current dynamics suggest a “hotter but shorter” business cycle, something investors have not seen since the 1970s. (See March 17 Morgan Stanley & Co. report, “[This Cycle Could Run Hotter but Shorter.](#)”)

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A potentially booming growth in 2021 and 2022 should allow corporate profits to return to prior peaks by 2022, a pace of recovery more typical for cycles that lasted only 40 months, not the 127 months for the cycle just ended (see Exhibit 10). Here too, the implication is that investing in the next decade will require not only a meaningfully different portfolio than in the past one. The new cycle will have lower and perhaps below-average return expectations and will demand more vigilance around asset class, sector and geographic rotations.

Exhibit 10: A Swift Earnings Recovery Implies a Short Economic Cycle



Note: The date labels indicate the timing for earnings per share levels achieving the peak levels of the prior cycle.
Source: Bloomberg, FactSet, Morgan Stanley & Co., Morgan Stanley Wealth Management GIC as of March 25, 2021

Rebalancing Our Strategic Models

As we detail below, changes in underlying financial market variables have shifted our strategic (seven-year) capital markets assumptions, summarized in Exhibits 11 and 12 (see page 7). As such, we are updating and rebalancing our strategic models, as shown in Exhibits 20 and 21 on pages 15 and 16. We decrease our allocations to ultrashort fixed income and equities and distribute the proceeds among fixed income and alternatives.

Investors should keep in mind that our strategic models are based on an investment horizon of at least seven years and are designed to maximize risk-adjusted returns and minimize turnover.

Investors seeking to take advantage of short-term market opportunities and who are comfortable with 12-to-18-month holding periods should consider the GIC's tactical model portfolios, which can make opportunistic or defensive short-term adjustments, as the GIC deems appropriate.

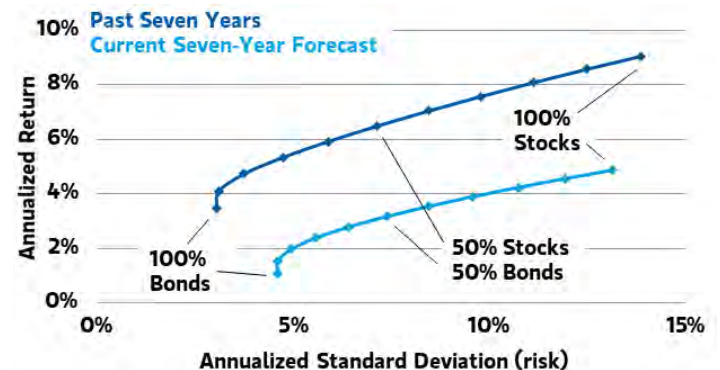
Within fixed income, we reduce the underweights against the benchmark, both in total weights and in duration. To achieve that, we largely decrease the allocations to short-term fixed income and then add to US taxable in model portfolios with lower risk appetite. Furthermore, we slightly reduce the exposure to high yield to mitigate the risks associated with widening credit spreads.

Within equities, we modestly decrease the allocations to US and international equities, due to a less favorable risk-reward picture versus the other asset classes over the strategic horizon. We also slightly decrease our exposure to US value equities for select model portfolios to reduce factor biases against the portfolios' respective benchmark.

Within alternatives, we adjust our exposure to real assets and hedged strategy asset classes where we deem appropriate. These investment strategies attempt to reduce exposure to broad equity movements; hedge the portfolio during major market drawdowns; and generate higher returns than high-quality fixed income, a traditional portfolio diversifier. Within real assets, which may provide some portfolio diversification in the case of rising inflation, we recommend relatively balanced strategic weights to commodities, energy infrastructure/MLPs and REITs.

For clients with more than \$25 million in investable assets, we recommend maintaining similar allocations to private real estate, private equity and private credit in the model portfolios to seize opportunities in private investments.

Exhibit 11: Next Seven-Year Outlook Calls for Lower Returns and Higher Volatility



Note: We represent stocks by the MSCI All Country World Index and bonds by the Bloomberg Barclays US Aggregate Index.
Source: FactSet, Morgan Stanley Wealth Management GIC as of Feb. 26, 2021

Exhibit 12: The GIC's New Strategic Return, Volatility and Correlation Forecasts

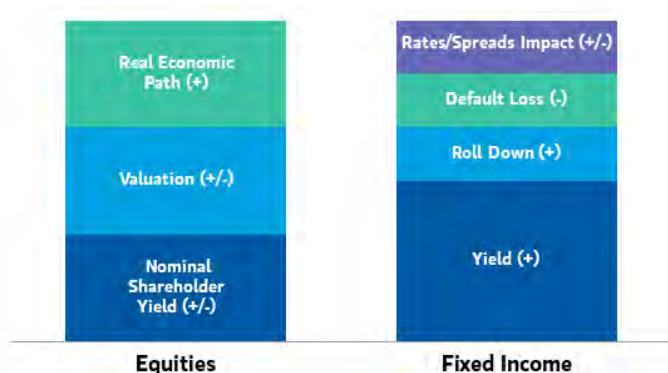
	Annualized Return	Annualized Volatility	Correlation to Equities
Equities	4.9%	13.2%	1.00
REITs	6.0	13.7	0.65
Energy Infrastructure/MLPs	8.8	14.2	0.55
Commodities	1.8	14.9	0.20
Private Real Estate	7.0	4.5	0.23
Equity Hedge Assets	4.6	7.2	-0.02
US Taxable Fixed Income	1.1	4.9	0.20

Note: Seven-year annualized forecast
 Source: Robert J. Shiller of Yale University, Bloomberg, FactSet, Moody's, Haver Analytics, Datastream/IBES, Morgan Stanley & Co., Morgan Stanley Wealth Management GIC as of Feb. 26, 2021

Building Our Forecasts

We forecast strategic equity and fixed income returns by maintaining a largely similar methodology to last year's but have included refinements to certain calculation parameters as we continue to improve the methodology. For equities, we build return estimates by combining the nominal return to shareholders (including share repurchases and dividends), the impact of changes in valuation and the likely inflation-adjusted economic path in the next seven years. For fixed income, we construct estimates starting with current yields, add the return due to expected "roll down"—the price appreciation that comes as bonds near maturity, given a positively sloping yield curve—and make adjustments for potential losses from defaults, changing interest rates and credit spreads (see Exhibit 13). For other asset classes, we estimate returns based on our estimates for equities and fixed income, the likely economic path over the strategic horizon and specific analysis of each individual asset class.

Exhibit 13: Building Blocks of Our Return Estimates



Source: Morgan Stanley Wealth Management GIC, Morgan Stanley & Co. as of March 31, 2021

Equities: Our Strategic Methodology

Our methodology for forecasting strategic equity returns has three main components. First, we examine what nominal earnings companies are likely to pay out to investors either through dividends or share repurchases. Second, we anticipate the effects of potential repricing by considering current valuations and assuming asset prices will, to some extent, converge to historical averages during the seven-year period. Finally, we assess the likely influence of the inflation-adjusted economic path on earnings growth. By breaking our forecasts into these components, we can contextualize our estimates in the current market environment.

What Yields Will Companies Deliver to Investors?

Financial asset prices are fundamentally determined by the present value of cash flows paid to the investor. Accordingly, our analysis begins by assessing the extent to which equity owners receive cash distributions through dividends and share repurchases, which we term "shareholder yield."

We measure shareholder yield by examining what companies in each region have paid out in both forms over the previous 10 years, tracking a market cycle. We compute nominal shareholder yields by analyzing historical index-level shareholder payout ratios and forward-looking earnings yield estimates. This calculation avoids the attempt to differentiate between dividends and share repurchases and instead groups the two sources of returns under a single metric. Consistent with last year, we chose to consider a 10-year period because this longer-term horizon mitigates the observed cyclicity in payout ratios. Compared to 2020, shareholder yields have fallen across different equity segments, driven by decreased forward-looking earnings yield estimates. These estimates of nominal shareholder yield (see Exhibit 14) form the base of our return forecasts, to which we add effects from changes in valuation and real earnings growth.

Are Valuations Likely to Boost or Drag Down Returns?

Return forecasts are not simply a matter of projecting what companies are likely to earn and return to investors, but also whether the pricing, or valuation, of that cash flow is attractive or unattractive in a historical context. We focus on two measures of valuation appropriate over a multiyear horizon: cyclically adjusted price/earnings (CAPE) multiples, which compare market price levels to the average real earnings generated over the course of a business cycle, and the equity risk premium, which compares the yield generated by an equity position to the yield of a comparable fixed income substitute. We believe that, by combining these two measures of valuation rather than relying on either individually, we are able to evaluate equity valuations both in absolute terms relative to their own history and on a relative basis versus bonds, which could improve the accuracy of our forecasts.

Exhibit 14: International Equities to Outperform US Large-Cap

	Nominal Shareholder Yield	Valuation	Real Economic Path	Total
US Large-Cap Equities	3.4%	-1.9%	2.3%	3.8%
US Small/Mid-Cap Equities	1.8	-1.0	4.0	4.8
European Equities	3.0	-0.3	1.9	4.6
Japan Equities	3.1	-0.9	1.3	3.6
Asia Pacific ex Japan Equities	3.2	-0.4	3.6	6.4
Developed International Equities	3.0	-0.4	2.1	4.7
Emerging Markets Equities	2.3	-0.4	5.9	7.8
Global Equities	3.0	-1.1	2.9	4.9

Source: Robert J. Shiller of Yale University, Bloomberg, FactSet, Haver Analytics, Datastream/IBES, Morgan Stanley & Co., Morgan Stanley Wealth Management GIC as of Feb. 26, 2021

First, we estimate valuation-driven returns based on the CAPE ratio. This metric attempts to smooth volatile swings in company earnings that can occur over the course of a business cycle and adjusts for inflation in order to gain a better picture of the true earnings potential of the equity market, in aggregate, and how much investors are paying for it. Popularized by Yale University professor Robert Shiller, a version of the CAPE ratio that employs a 10-year average to smooth earnings has shown a historical correlation to average equity returns over the long term.¹ The theory behind this relationship suggests that more expensive CAPE ratios imply lower average future returns.

We use this observation as a baseline for our methodology. Because the recent rate of earnings growth does not reflect our expectations for the next seven years, we believe it is more appropriate to utilize the CAPE ratio to estimate how much of the return may come from changes in valuation alone. Our work suggests that equity multiples demonstrate some level of mean reversion over the seven-year strategic horizon. Historically, forward-looking expansion and contraction in multiples have been associated with initial valuations: When equities are purchased at unusually cheap or expensive levels, as measured by a CAPE ratio with a trailing seven-year cyclical adjustment, they tend to rise or fall over the next seven years.

Similarly to previous years, we use a trailing 10-year cyclical adjustment for emerging markets and European equities, which we believe appropriately normalizes for their earnings potential by effectively reducing the weights of the idiosyncratic data points that have been a feature of the

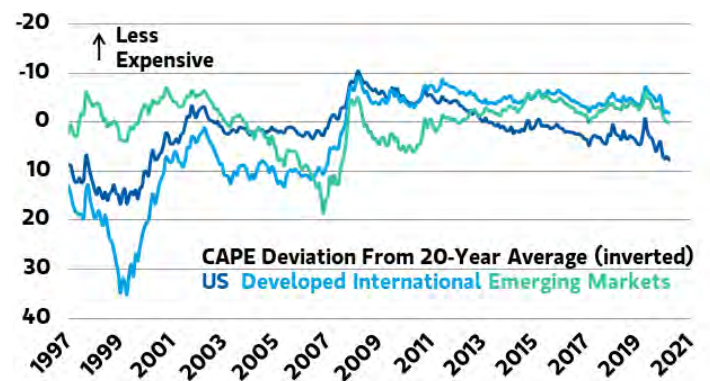
exceptional postcrisis cycle.

We also adjust our methodology for Japanese equities, where speculative activity drove valuations to extremes in the late 1980s, only to be followed by decades of deflationary concerns and economic stagnation. Our analysis suggests that trailing price/earnings (P/E) ratios provide a better estimate of mean reversion in forward multiples, and better correspond to our view that Japan’s changes in corporate governance and shareholder-positive corporate management have ushered in a new reality, distinct from historical context.

As of our forecast date of Feb. 26, 2021, and for the seven-year horizon, CAPE ratios suggest that equity returns are also likely to shrink modestly due to multiple contraction across US, developed international, and emerging markets (EM) (see Exhibit 15).

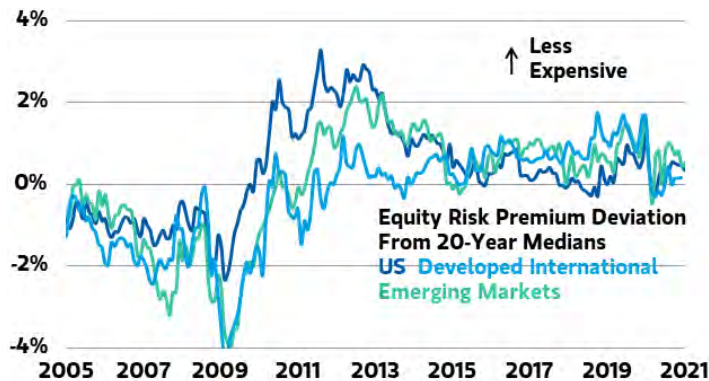
The equity risk premium component of our valuation analysis measures the incremental compensation investors require to hold stocks. We measure this premium by comparing the earnings yield generated by an equity position to the yield of corporate bonds, which are driven by similar fundamentals but offer additional levels of security in the form of fixed payments and a superior standing in the capital structure. A higher equity risk premium suggests that equities are inexpensive relative to bonds, as they offer a relatively high degree of compensation for bearing equity risk. The strong performance in equity markets since March 23, 2020, combined with the rising yields that began in August 2020, has caused equity risk premiums to fall across both the US and international markets (see Exhibit 16, page 9).

Exhibit 15: Based on CAPE, Developed International and Emerging Markets Appear Less Expensive Than US



Note: CAPE uses a trailing seven-year time period, except in the case of EM and Europe. We show the trailing seven-year CAPE for Japan for comparability reasons, although we use trailing P/E for calculating our return estimates. Source: Robert J. Shiller of Yale University, Bloomberg, FactSet, Haver Analytics, Morgan Stanley Wealth Management GIC as of March 25, 2021

Exhibit 16: Equity Risk Premiums Remain Above 20-Year Medians



Source: Bloomberg, FactSet, Haver Analytics, Morgan Stanley Wealth Management GIC as of March 25, 2021

Over the seven-year strategic horizon, we expect interest rates to rise globally as the ultra-accommodative global monetary policy in place today normalizes, and inflation and growth return to more typical levels. During the next seven years, we expect modestly higher rates, at levels consistent with our estimates of growth and inflation. Accordingly, we embed assumptions of finishing the cycle with the 10-year US Treasury bond at 2.4%, the German Bund at 0.8%, the UK Gilt at 2.8%, the Canadian 10-year sovereign bond at 2.0% and the 10-year Japanese government bond at 0.8%. We explain our seven-year rate target methodology in more detail, in the fixed income section beginning on page 10.

Assuming we realize these yield targets, investment grade corporate spreads return to historical medians and equity risk premiums revert to their historical medians from current elevated levels, we then calculate the implied future earnings yields associated with each equity region. This methodology allows us to estimate the impact of changing valuations on the return for each region. Similar to last year, we include an adjustment for our anticipated emerging market spreads, using a weighted average between median emerging market spreads and median international spreads rather than solely the historical median for the emerging markets. This change reflects the significant and continuing structural improvements made in these markets.

For 2021's estimates, we apply a 50% haircut to the impact of changing valuations on returns from both CAPE and equity risk premium for all equity asset classes. We base this assumption on the possibility that the natural rate of interest has declined. We attribute this change to material adjustments to monetary policy after the Global Financial Crisis and now crystallized as part of COVID-19 pandemic relief measures. The natural rate of interest has historically provided a guide to the maximum policy rates in late cycles and coincided with the top-of-cycle level for longer-term

yields. As part of their Summary of Economic Projections from their March 17 meeting, the Federal Reserve reported a median long-term policy rate of 2.5%, with expectations ranging from 2.0 to 3.0%. This level falls well below the implied rate from pre-2008 history of approximately 5.0%. This movement suggests that equity valuations could stay above historical levels for years to come.

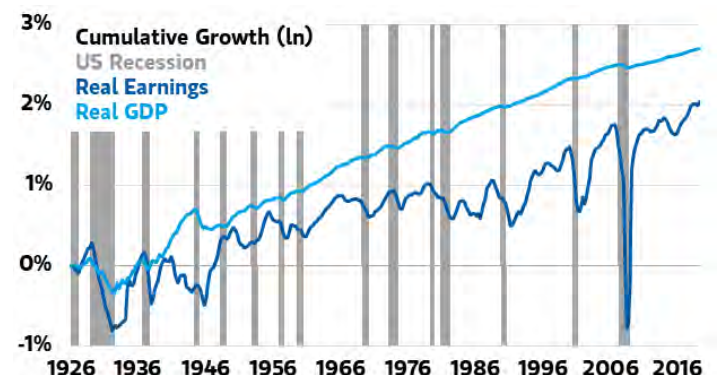
What Is the Likely Economic Path?

The final component to equity returns involves the likely path of the economy, as it has a strong impact on the ability of companies to grow their earnings. We begin with OECD estimates of real GDP growth for the next seven years. We believe real GDP growth provides a good baseline for the rate of index-level real earnings growth, as consumption and production, which constitute the lion's share of GDP growth, are closely related to index-level revenue values.

We include several refinements for smaller companies and for growth and value equities. We adjust our growth estimates for US mid- and small-cap equities relative to their large-cap counterparts according to their realized seven-year earnings growth premium. We also incorporate a similar adjustment to account for the differences in US growth and value equities.

In past years, we added a downward adjustment to these growth rates to account for our expectation of a modest recession within the seven-year horizon. This year, in light of the global economy's ongoing recovery from the COVID-19 lockdown recession, we have removed the downward adjustment. In addition, history suggests that, during economic recoveries, earnings growth has tended to exceed GDP growth, owing to companies' operating leverage. Therefore, we boost real earnings growth estimates using a 1.40x multiplier to real GDP growth to account for operating leverage, reflecting the historical median level in non-recessionary periods since 1953 (See Exhibit 17). Across different regions, the increase to the trend real earnings growth forecast varies between 0.5% and 2.4%.

Exhibit 17: Earnings Growth Tends to Exceed GDP Growth Following Recessions



Source: Bloomberg, FactSet, Morgan Stanley Wealth Management GIC as of March 25, 2021

How May We Account for Inflation Expectations?

The level of inflation serves as an important determinant of nominal equity returns. Inflation expectations are embedded in our shareholder yield component, which we have expressed in nominal terms. When necessary to convert between nominal and real forecasted values, we consider market-based inflation breakeven rates. Inflation breakevens compare yields on nominal government bonds to liquid inflation-linked government securities, which pay investors a fixed rate of interest on a par value that increases in line with headline inflation. By subtracting the real yield of the inflation-linked bond from the nominal bond, we find the implied inflation rate for the time period associated with the maturity of the underlying bonds. To match the seven-year strategic forecast horizon, we focus on inflation breakevens for bonds set to mature in seven years, based on data availability.²

These implied inflation rates suggest that levels of global inflation have recovered somewhat from last year’s subdued levels. We continue to be slightly more optimistic than the market concerning inflation in Japan, where we assume it will reach 1.0% versus the market-implied rate of 0.0%. This increase is driven by our more optimistic view of the country’s economic path and is also intended to offset the potential bias from a constrained supply of Japanese inflation-linked securities.

Fixed Income: Our Strategic Methodology

To compute our forecasts for fixed income returns at the strategic horizon, we first estimate returns based on current yields and the “roll down”—the price appreciation due to the anticipated change in bond yields, given a typically upward-sloping yield curve, as bonds approach maturity. We then adjust these preliminary returns downward to account for the likelihood of rising rates and mean-reverting credit spreads, along with potential credit losses (see Exhibit 18). Our methodology leverages the work of Andrew Sheets, Morgan Stanley & Co.’s chief cross-asset strategist and a member of the Global Investment Committee.³

Initial Yield and Roll Down

Our approach uses the current yield on each index to set a baseline for fixed income returns. Historically, the yield at which investors have purchased fixed income instruments has been a strong predictor, explaining more than 90% of variability in forward returns over a multi-year horizon.³ Given its strong relationship to returns, we use current yield as the first component, to which we add effects from roll down, default loss and impact of changes in yields and spreads to form our estimates of the strategic returns.

Exhibit 18: We Adjust Fixed Income Returns By Considering Their Marginal Drivers

	Starting Yield	Return From Roll Down	Default Loss	Impact of Yields/Spreads Changed	Total
US 10-Year Treasury	1.9%	1.0%	0.0%	-2.4%	0.5%
US Aggregate	1.4	0.9	0.0	-1.2	1.1
Global High Yield	4.1	1.0	-2.0	-1.8	1.2
International Aggregate	0.8	0.7	0.0	-1.1	0.3
Emerging Market Credit*	5.2	1.0	-0.9	-1.1	4.2
Global Aggregate	1.1	0.6	-0.1	-1.1	0.5

Note: The above asset classes are represented by the following indexes in order of appearance: Bloomberg Barclays US Treasury: 10-20 Year Index; Bloomberg Barclays US Aggregate Index; Bloomberg Barclays Global Corporate High Yield Index; Bloomberg Barclays Global Aggregate Non-USD (Hedged) Index, JPMorgan EMBI Global; and Bloomberg Barclays Global Aggregate Index. *Emerging Market Credit is US dollar-denominated. Source: Bloomberg, Moody’s, Morgan Stanley Wealth Management GIC as of Feb. 26, 2021

In addition to the yield, changes in a fixed income security’s market value account for the rest of the return to investors. A bond’s roll down the yield curve is one relatively predictable component of expected changes in market value. Generally, yield curves are upward sloping, a phenomenon associated with additional compensation for the higher uncertainty associated with longer time horizons. As time passes, longer-maturity bonds roll down the curve, growing closer to their maturity date and effectively becoming shorter-maturity bonds. As dictated by the typically upward-sloping yield curve, this roll down entails price appreciation as yields decline. The magnitude of appreciation differs according to different indexes’ specific yield curves. We interpolate the return from roll down for each index using its average maturity and the current shape of its yield curve.

Allowances for Rising Rates and Wider Credit Spreads

Fixed income instruments have benefitted from a nearly 40-year secular bull market, culminating in rates falling to historical lows during the COVID-19 lockdown in March 2020. We believe, however, that during the next seven years, rates are likely to reach higher levels as growth and inflation normalize. To maintain consistency, we must account for the drop in price that these higher rates would imply, offsetting a portion of the returns from the initial yield and the roll down.

ANNUAL UPDATE OF GIC CAPITAL MARKET ASSUMPTIONS

As in recent years, we utilize a broader range of interest rate forecasts to incorporate region-specific factors to our estimates. Given the likelihood of a multi-year upturn in interest rates, we generate seven-year forecasts based on our long-run estimates for fair-value interest rates across various regions. Historically, secular trends in interest rates have occurred over a multicycle horizon. Accordingly, we expect only partial progress toward our long-run target over a seven-year strategic horizon. As of Feb. 26, 2021, we forecast that the 10-year US Treasury yield will rise to 2.4%, the German Bund to 0.8%, the UK Gilt to 2.8%, the Canadian 10-year sovereign bond to 2.0% and Japanese government bonds to 0.8%. These forecasts also feed into our equity risk premium methodology.

Given our seven-year horizon, which encompasses the average length of a business cycle, we make no assumptions about changes in the shape of the yield curve because they tend to average out over the course of a cycle. Instead, we assume a parallel upward shift in the curve for all fixed income instruments and adjust for duration, or interest rate sensitivity, to estimate the impact on returns for each fixed income asset class. As such, our analysis shows that long-duration bonds are most affected.

We also incorporate the impact of potentially changing credit spreads on credit-sensitive fixed income asset classes. In line with our equity risk premium methodology, we assume corporate bond spreads will revert to their 20-year medians in each region relative to their government benchmark (see Exhibit 19). Similar to last year, we incorporate an adjustment for anticipated spreads in emerging markets using a weighted average between median emerging markets spreads and median international spreads in order to account for structural improvements in these markets and the strength of the underlying issuers. Bonds of lower credit quality, especially those with longer duration, are the most affected.

Allowances for Default Loss

Fixed income securities may also be subject to losses associated with default risk. This risk is especially important for bonds with lower credit ratings, such as high yield bonds or debt issued by emerging market countries.

The relationship between default losses and the time to maturity varies depending on the credit rating of the bond. Investment grade bonds generally face higher risk of default loss as the maturity of the bond grows closer, as the issuers are likely to grow larger and take on greater risks as time passes from their bond issuance.

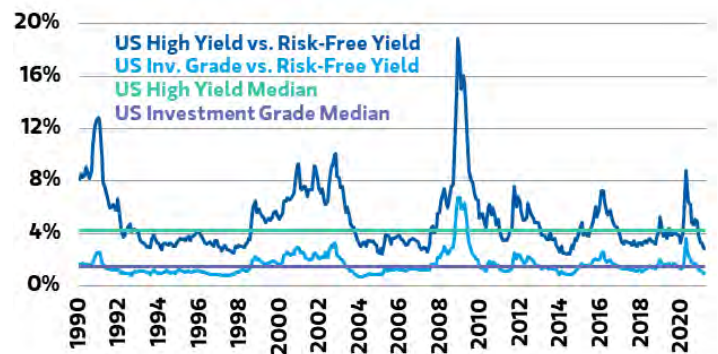
High yield bonds, on the other hand, generally face a lower risk of default losses as time goes on. These riskier, generally newer companies face the highest default risk in the first few years, suggesting that those companies that succeed in making it past the first few years are likely able to sustain or even improve their credit quality.

Accordingly, we adjust our forecasts based on the historical default losses associated with bonds of similar credit ratings and time to maturity.

Ultrashort Fixed Income

We base our strategic ultrashort fixed income return forecast on the market-implied expected return of the three-month US Treasury bill for the next seven years. We derive this figure from the prices of a set of instruments, including the on-the-run three-month T-bill and a selection of longer-term swaps (T-bill vs. three-month Libor), up to a maturity of seven years. Due to an extremely dovish Fed, expected to anchor short-term interest rates around zero until 2023, this year's forecast further declined to 1.0%, from 1.1% for 2020.

Exhibit 19: Credit Spreads Have Neared All-Time Tights



Source: Morgan Stanley Wealth Management GIC, Bloomberg as of March 25, 2021

Inflation-Linked Securities

We forecast strategic returns for inflation-linked securities by adding together the real yield associated with global inflation-linked securities and the same inflation breakeven measures used in our equity forecasts, weighting each country's breakeven according to the country's respective weight in the Bloomberg Barclays Global Inflation-Linked Index.⁴ We expect a return of 0.9% this year, as higher global inflation expectations have been offset by deeper negative real rates in each major developed region.

Alternatives: Our Strategic Methodology

Global REITs

We estimate the return on global real estate investment trusts (REITs) using a similar methodology as for equities. For the earnings payout contribution to return, we examine what these securities have paid out via dividends and share repurchases in the past 10 years. We take into account their current valuations by using the CAPE ratio to project forward multiple expansion and acknowledge the impact of our forecast for higher interest rates and mean-reverting credit spreads via the equity risk premium. We use the same earnings growth forecast as for global equities. By our estimates, we expect global REITs to deliver an annualized 6.0% return over the seven-year horizon.

Energy Infrastructure/MLPs

Our strategic forecast for energy infrastructure/MLPs uses a methodology similar to that used for equities. For the earnings payout contribution to return, we balance the high yield associated with these securities against their historical reliance on equity issuance as a form of funding, computing the implied nominal shareholder yield over a 10-year window. We take into account their currently depressed valuations by using the CAPE ratio to project forward multiple expansion and acknowledge their relatively high equity risk premiums. In the valuation component, we also assume a partial 50% reversion to historical medians. We maintain this adjustment based on our expectation that the asset class will not fully return to the high valuations achieved in previous decades and to reflect fundamental changes in investor perceptions of the underlying opportunities.

Our earnings growth forecast, however, differs from our equity methodology. For energy infrastructure/MLPs, volume growth acts as the fundamental driver of earnings growth; therefore, we base our estimates on the projected seven-year production growth for crude and natural gas from the US Energy Information Administration. Overall, this approach leads to a forecast return of 8.8%.

Commodities

We estimate the return to commodities based on the three sources of returns of commodity futures: changes in the spot price of commodities, the yield from collateral set aside by investors and the appreciation or depreciation from rolling along the futures curve. We assume that the spot price will appreciate with expected inflation and expect that collateral set aside for commodities futures trading to deliver a return in line with our ultrashort fixed income estimate. Finally, we estimate the roll yield from the historical return from the Bloomberg Roll Select Commodities Index.

We believe this framework is appropriate for a seven-year horizon, which leads to an estimated annualized return of 1.8% over this period.

Hedged Strategies and Managed Futures

Hedged strategies do not themselves represent asset classes. Instead, they are investment strategies that have historically shown an ability to deliver returns in a manner that diversifies stock and bond holdings within portfolios by leveraging exposures to traditional asset classes.

To develop return assumptions, we deconstruct historical returns into their fundamental sources. We use betas to stock and bond markets to determine return forecasts consistent with our estimates of these traditional asset classes and then add the alpha component to reflect these strategies' security selection skill, in proportions consistent with recent history.

When we consider the performance of alternative investment strategies broadly, we face difficulties that are not present with traditional asset classes. Private indexes designed to track the performance of funds following these strategies rely on independent investment managers to report their own performance, which can impart selection bias and survivorship bias from selective disclosures of existing and now-extinct funds. Furthermore, managers of hedged strategies often hold less liquid securities, and so reported returns appear excessively "smoothed" due to lagging price discovery. We use statistical methods to mitigate these effects and establish estimated returns as closely aligned with the underlying economics as possible.

Private Equity, Private Debt and Private Real Estate

Private equity, private debt and private real estate have also earned a reputation for delivering strong returns in a manner uncorrelated with traditional asset classes. Due to their illiquidity and the lack of published high-frequency return data, however, their performance can also be difficult to measure at an index level.

To forecast returns for these illiquid asset classes, we add an expected illiquidity premium to our forecasted returns for a corresponding liquid asset class: for private equity, US mid- and small-cap equities; for private debt, US high yield bonds; and for private real estate, REITs. We determined this expected illiquidity from studying the historical spreads between the illiquid asset classes and their corresponding liquid asset classes. Based on the market cycle and this historical data, we forecast these illiquidity premiums as follows: 1.0% for private real estate; 2.8% for private equity; and 3.4% for private debt. These illiquidity premium represent approximate long-term averages versus comparable public market investments.

ANNUAL UPDATE OF GIC CAPITAL MARKET ASSUMPTIONS

We have revised the illiquidity premium for private equity to 75% of the original value, however, judging that today's significant "dry powder" and elevated valuations may dampen returns prospects over the strategic horizon. Overall, we expect an annualized return of 7.0% for private real estate, 7.6% for private equity and 5.5% for private debt.

Secular Returns

In addition to our strategic return estimates, we also project returns over the secular horizon, which we consider to be a 20-year horizon or longer. As a primary guide for potential long-term returns, we use the real geometric average returns over a long history of market data for both global equities and bonds. We then add back a forward-looking forecast of inflation to estimate the long-term sustainable level. We make use of the Federal Reserve Bank of Cleveland's 20-year expected inflation, equal to 1.75% as of February 2021. This forward-looking inflation estimate falls well below long-term historical inflation, which has generally been 3.0% or higher, depending on the extended historical window.

In order to resolve limitations on data history for certain assets, we extend their return time series to the early 1970s with monthly index data by using appropriate proxies. These proxies facilitate calculating secular returns by extending the existing return series, providing a richer history of multiple interest rate and inflation regimes.

For equities, energy infrastructure/MLPs and REITs, we computed each asset class's returns by adding together a long-term average real return for global equities, the asset class's historical return differential versus global equities over a common period and the 20-year expected inflation estimate.

For the US, international and emerging markets equities, we found that relative historical returns may not represent a reasonable picture of forward-looking returns. We therefore dampened the historical spread by 50% and 75% for US and international equities, respectively, to account for each region's significant outperformance or underperformance indicated by the common-period returns history. US equities have produced gains that have outpaced all other developed markets since the 1970s, which represents our common-period sample for size-style combinations. Due to a stretch of deflation from the late 1990s through the 2010s, the Japanese economy and equity markets languished, making the common-period sample potentially unrepresentative of the secular horizon. Finally, emerging markets equities demonstrated sizable outperformance at the outset of their common-period returns, but their returns profile has since converged somewhat toward the developed markets as the underlying economies have matured.

For energy infrastructure/MLPs, the earliest returns history showed remarkably positive spreads versus global equities, boosting the overall relative return value. Given changing dynamics with energy infrastructure/MLPs, particularly the propensity of management to finance growth from retained earnings, we believe that this asset class will perform in line with global equities over the secular horizon.

For fixed income asset classes, we followed a similar pattern as with US equities, substituting US government bonds for global equities.

Among commodities, hedged strategies and private investments, we employ similar methodologies to those used in our strategic estimates over the longest available horizon to provide secular return estimates for alternatives. For private equity, we anticipate the return to the long-term average of illiquidity premium, reasoning that today's environmental factors will exercise less influence over the 20-year versus seven-year horizon.

Volatility

Volatility measures the variability of returns around their average value and serves as one indicator of the risk associated with an investment. We compute average annualized volatility using historical monthly returns in order to estimate volatility for liquid asset classes. In 2020, we enhanced our calculation process by extending the return time series to the early 1970s for all asset classes in our taxonomy. We achieved this through the use of reasonable proxies for certain asset classes with data limitations where appropriate. Using long-term data mitigates the impact of specific regimes and business cycle stages that could skew our results. Moreover, longer return series provide a richer history of multiple interest rate and inflation regimes for the calculation of volatility, as well as for secular returns and correlations.

This year, we further enhanced our process for estimating volatility by implementing a "regime-weighted" approach that incorporates the GIC's forward-looking expectations for various macro regimes. We were motivated by the observation that the prevailing macro regime has exerted significant impact on the volatility and correlations of asset class returns, which may meaningfully impact asset allocation decisions. For instance, during periods of rising economic growth and inflation, fixed income's volatility and correlation to US equities have historically been significantly higher than in low growth, low inflation environments, as in the postcrisis period.

ANNUAL UPDATE OF GIC CAPITAL MARKET ASSUMPTIONS

We first classified historical periods into one of four mutually exclusive regimes, based on long-term trends in GDP and inflation. We then calculated volatility and correlations under each regime separately and computed a weighted average of these estimates based on probabilistic expectations that each regime occurs over the forecast horizon. To ensure sufficient representation of each regime state in our historical returns, we further extended the return time series for each asset class from the early 1970s to January 1946. For asset classes where data is not available to January 1946, we applied a statistical machine learning technique to impute the missing returns, based on relationships with available return series and other relevant macroeconomic data, such as bond yields, commodity prices, corporate earnings and inflation rates.

Correlation

A critical factor in asset allocation is correlation, or the degree to which asset class returns move together. Correlations can vary considerably over different historical periods due to changes in macro regimes, market structure, stages of the business cycle and multiple other factors. Consistent with our approach described above for estimating volatilities, we estimated correlations, using a regime-weighted approach based on the GIC's expectations for future macro regimes and historical returns series from January 1946. Please refer to Exhibit 23, starting on page 18.

ANNUAL UPDATE OF GIC CAPITAL MARKET ASSUMPTIONS

Exhibit 20: New Strategic Weights for GIC Asset Allocation Models, Level 1

	WEALTH CONSERVATION	INCOME	BALANCED GROWTH	MARKET GROWTH	OPPORTUNISTIC GROWTH
ULTRASHORT FIXED INCOME	12%	10%	5%	3%	2%
EQUITIES					
US Equities	9	13	20	24	30
US Large-Cap Growth	3	4	6	7	10
US Large-Cap Value	4	5	9	10	13
US Mid-Cap Growth	0	0	0	1	1
US Mid-Cap Value	0	1	2	2	2
US Small-Cap Growth	1	1	1	2	2
US Small-Cap Value	1	2	2	2	2
International Equities	9	12	14	21	26
European Equities	5	6	7	11	14
Japan Equities	4	5	6	8	9
Asia Pacific ex Japan Equities	0	1	1	2	3
Emerging & Frontier Market Equities	3	5	6	7	8
TOTAL EQUITIES	21	30	40	52	64
Total US Equities	9	13	20	24	30
Total International Equities	9	12	14	21	26
Total Emerging & Frontier Market Equities	3	5	6	7	8
FIXED INCOME & PREFERRED					
Short-Term Fixed Income	15	13	9	5	1
US Taxable Fixed Income	32	24	18	11	3
International Fixed Income	0	0	0	0	0
Inflation-Linked Securities	1	1	1	1	1
High Yield Fixed Income	1	1	2	2	2
Emerging Market Fixed Income	1	1	1	1	1
TOTAL FIXED INCOME	50	40	31	20	8
ALTERNATIVES					
Real Assets ¹	5	6	7	8	8
Absolute Return Assets	4	4	4	4	4
Equity Hedge Assets	6	7	8	8	8
Equity Return Assets	2	3	5	5	6
Private Investments	0	0	0	0	0
Private Real Estate	0	0	0	0	0
Private Equity	0	0	0	0	0
Private Credit	0	0	0	0	0
TOTAL ALTERNATIVE INVESTMENTS	17	20	24	25	26

Source: Morgan Stanley Wealth Management GIC as of Feb. 26, 2021.

Note: Strategic allocations effective Apr. 1, 2021, for investors with less than \$25 million in investable assets. 1. For real assets, we recommend an equal-weighted blend of commodities, energy infrastructure/MLPs and REITs for models 2 and 3. For models 1, 4 and 5, we recommend a higher weight to commodities and REITs over energy infrastructure/MLPs.

ANNUAL UPDATE OF GIC CAPITAL MARKET ASSUMPTIONS

Exhibit 21: New Strategic Weights for GIC Asset Allocation Models, Level 2

	WEALTH CONSERVATION	INCOME	BALANCED GROWTH	MARKET GROWTH	OPPORTUNISTIC GROWTH
ULTRASHORT FIXED INCOME	7%	5%	2%	0%	0%
EQUITIES					
US Equities	9	13	17	23	29
US Large-Cap Growth	3	4	5	7	8
US Large-Cap Value	3	6	7	10	12
US Mid-Cap Growth	0	0	0	1	1
US Mid-Cap Value	1	1	2	2	3
US Small-Cap Growth	1	1	1	1	2
US Small-Cap Value	1	1	2	2	3
International Equities	8	12	14	18	24
European Equities	5	6	7	9	14
Japan Equities	3	5	6	7	8
Asia Pacific ex Japan Equities	0	1	1	2	2
Emerging & Frontier Market Equities	3	4	5	7	8
TOTAL EQUITIES	20	29	36	48	61
Total US Equities	9	13	17	23	29
Total International Equities	8	12	14	18	24
Total Emerging & Frontier Market Equities	3	4	5	7	8
FIXED INCOME & PREFERRED					
Short-Term Fixed Income	15	11	8	5	1
US Taxable Fixed Income	29	21	16	9	2
International Fixed Income	0	0	0	0	0
Inflation-Linked Securities	1	1	1	1	1
High Yield Fixed Income	1	1	2	2	2
Emerging Market Fixed Income	1	1	1	1	1
TOTAL FIXED INCOME	47	35	28	18	7
ALTERNATIVES					
Real Assets ¹	5	6	6	7	7
Absolute Return Assets	4	4	4	2	2
Equity Hedge Assets	5	7	8	7	5
Equity Return Assets	2	2	2	3	3
Private Investments	10	12	14	15	15
Private Real Estate	5	6	7	6	6
Private Equity	3	4	5	7	7
Private Credit	2	2	2	2	2
TOTAL ALTERNATIVE INVESTMENTS	26	31	34	34	32

Source: Morgan Stanley Wealth Management GIC as of Feb. 26, 2021.

Note: Strategic allocations effective Apr. 1, 2020, for investors with more than \$25 million in investable assets. 1. For real assets in model 1, we recommend a lower weight to energy infrastructure/MLPs versus commodities and REITs. In models 2 and 3, we recommend an equal-weighted blend of commodities, energy infrastructure/MLPs and REITs. For models 4 and 5, we recommend a higher weight to commodities over REITs and energy infrastructure/MLPs.

ANNUAL UPDATE OF GIC CAPITAL MARKET ASSUMPTIONS

Exhibit 22: Strategic and Secular Return and Volatility Estimates

	STRATEGIC (SEVEN-YEAR) ESTIMATES FOR 2021		SECULAR (20-YEAR) ESTIMATES FOR 2021	
	Annualized Return	Annualized Volatility	Annualized Return	Annualized Volatility
ULTRASHORT FIXED INCOME	1.0%	0.7%	2.6%	0.7%
EQUITIES	4.9	13.2	7.6	13.2
US Equities	4.0	14.2	7.9	14.2
US Large-Cap Growth	3.5	14.8	7.9	14.8
US Large-Cap Value	5.1	13.8	7.7	13.8
US Mid-Cap Growth	2.2	16.2	8.3	16.2
US Mid-Cap Value	5.5	14.6	8.2	14.6
US Small-Cap Growth	5.0	20.2	7.0	20.2
US Small-Cap Value	7.8	17.7	8.1	17.7
International Equities	4.7	14.8	6.8	14.8
European Equities	4.6	15.5	6.6	15.5
Japan Equities	3.6	25.0	6.6	25.0
Asia Pacific ex Japan Equities	6.4	18.4	6.8	18.4
Emerging & Frontier Market Equities	7.8	17.5	8.4	17.5
FIXED INCOME & PREFERRED	1.1	4.6	3.4	4.6
Short-Term Fixed Income	0.5	1.9	3.0	1.9
US Taxable Fixed Income	1.1	4.9	3.4	4.9
International Fixed Income	0.3	4.1	3.2	4.1
Inflation-Linked Securities	0.9	7.6	4.1	7.6
High Yield Fixed Income	1.2	8.3	5.0	8.3
Emerging Market Fixed Income	4.2	8.0	6.6	8.0
ALTERNATIVES	3.5	7.6	5.9	7.6
Real Assets	5.6	10.1	5.4	10.1
Absolute Return Assets	2.1	4.6	4.8	4.6
Equity Hedge Assets	4.6	7.2	6.2	7.2
Equity Return Assets	3.7	8.4	6.8	8.4
Private Investments	7.3	5.5	7.9	5.5
Private Real Estate	7.0	4.5	7.3	4.5
Private Equity	7.6	8.9	8.5	8.9
Private Credit	5.5	6.0	6.8	6.0

Source: Morgan Stanley Wealth Management GIC as of Feb. 26, 2021.

Note: We represented ultrashort fixed income represented by 90-day T-bills, fixed income & preferreds by Bloomberg Barclays US Aggregate Index, short-term fixed income by Bloomberg Barclays Aggregate 1-3 Year Index, US taxable fixed income by Bloomberg Barclays US Aggregate Index, international fixed income by Barclays Global Aggregate Non-USD (Hedged) Index, inflation-linked securities by Bloomberg Barclays Global Inflation-Linked Index, high yield fixed income by Barclays Global High Yield Corporate Index and emerging market fixed income by JP Morgan EMBI Global Index. All other are based on proprietary models. Strategic annualized return and volatility estimates are based on a seven-year time horizon. Secular annualized return and volatility estimates are based on a 20-year time horizon. Annualized volatility estimates are based on data with longest available history through Feb. 26, 2021. Estimates are for illustrative purposes only, are based on proprietary models and are not indicative of the future performance of any specific investment, index or asset class. Actual performance may be more or less than the estimates shown in this table. Estimates of future performance are based on assumptions that may not be realized. Investor appropriateness: Morgan Stanley Wealth Management recommends that investors independently evaluate each asset class, investment style, issuer, security, instrument or strategy discussed. Legal, accounting and tax restrictions, transaction costs and changes to any assumptions may significantly affect the economics and results of any investment. Investors should consult their own tax, legal or other advisors to determine appropriateness for their specific circumstances. Investments in private funds (including hedge funds, managed futures funds and private equity funds) are speculative and include a high degree of risk.

ANNUAL UPDATE OF GIC CAPITAL MARKET ASSUMPTIONS

Exhibit 23: Correlation Matrix

CORRELATION MATRIX	1	2	3	4	5	6	7	8	9	10	11
1 Ultrashort Fixed Income	1.00	0.00	-0.01	-0.02	-0.01	-0.02	-0.02	-0.02	-0.01	-0.01	0.00
2 Equities	0.00	1.00	0.88	0.86	0.86	0.83	0.84	0.76	0.75	0.87	0.79
3 US Equities	-0.01	0.88	1.00	0.97	0.97	0.93	0.94	0.86	0.84	0.60	0.59
4 US Large-Cap Growth	-0.02	0.86	0.97	1.00	0.90	0.94	0.87	0.85	0.77	0.58	0.58
5 US Large-Cap Value	-0.01	0.86	0.97	0.90	1.00	0.86	0.96	0.79	0.85	0.59	0.59
6 US Mid-Cap Growth	-0.02	0.83	0.93	0.94	0.86	1.00	0.89	0.92	0.83	0.59	0.58
7 US Mid-Cap Value	-0.02	0.84	0.94	0.87	0.96	0.89	1.00	0.85	0.91	0.58	0.58
8 US Small-Cap Growth	-0.02	0.76	0.86	0.85	0.79	0.92	0.85	1.00	0.93	0.55	0.52
9 US Small-Cap Value	-0.01	0.75	0.84	0.77	0.85	0.83	0.91	0.93	1.00	0.54	0.52
10 International Equities	-0.01	0.87	0.60	0.58	0.59	0.59	0.58	0.55	0.54	1.00	0.87
11 European Equities	0.00	0.79	0.59	0.58	0.59	0.58	0.58	0.52	0.52	0.87	1.00
12 Japan Equities	-0.02	0.37	0.18	0.20	0.17	0.19	0.17	0.17	0.15	0.47	0.27
13 Asia Pacific ex Japan Equities	0.01	0.69	0.57	0.55	0.56	0.57	0.57	0.54	0.52	0.68	0.63
14 Emerging & Frontier Market Equities	0.00	0.61	0.49	0.48	0.48	0.52	0.49	0.49	0.47	0.60	0.55
15 Fixed Income & Preferreds	0.06	0.20	0.21	0.20	0.23	0.19	0.23	0.14	0.18	0.13	0.13
16 Short-Term Fixed Income	0.30	0.14	0.14	0.13	0.15	0.11	0.15	0.07	0.11	0.09	0.09
17 US Taxable Fixed Income	0.04	0.18	0.20	0.19	0.21	0.17	0.21	0.13	0.17	0.12	0.11
18 International Fixed Income	0.12	0.10	0.12	0.10	0.14	0.11	0.14	0.12	0.17	0.01	0.01
19 Inflation-Linked Securities	0.01	0.09	0.12	0.12	0.12	0.10	0.13	0.07	0.07	0.05	0.06
20 High Yield Fixed Income	-0.03	0.57	0.57	0.51	0.58	0.56	0.60	0.51	0.55	0.45	0.46
21 Emerging Market Fixed Income	0.06	0.39	0.36	0.35	0.36	0.37	0.37	0.34	0.34	0.30	0.28
22 Alternatives	0.06	0.81	0.88	0.86	0.84	0.88	0.84	0.83	0.78	0.57	0.55
23 Real Assets	0.02	0.65	0.62	0.57	0.65	0.63	0.72	0.63	0.69	0.55	0.52
24 REITs	0.00	0.68	0.67	0.61	0.70	0.66	0.77	0.67	0.76	0.55	0.54
25 Commodities	-0.01	0.19	0.13	0.11	0.14	0.16	0.17	0.15	0.14	0.22	0.20
26 Energy Infrastructure/MLPs	-0.01	0.59	0.62	0.56	0.64	0.61	0.69	0.61	0.67	0.44	0.44
27 Absolute Return Assets	0.06	0.64	0.66	0.61	0.67	0.63	0.69	0.61	0.65	0.48	0.47
28 Equity Hedge Assets	0.13	0.04	0.02	0.02	0.03	0.02	0.03	0.01	0.04	0.02	0.00
29 Equity Return Assets	0.04	0.81	0.88	0.85	0.85	0.87	0.85	0.84	0.80	0.60	0.58
30 Private Investments	-0.01	0.50	0.54	0.52	0.53	0.54	0.58	0.61	0.62	0.36	0.33
31 Private Real Estate	0.02	0.26	0.26	0.24	0.27	0.27	0.31	0.32	0.37	0.20	0.18
32 Private Equity	-0.02	0.58	0.65	0.63	0.63	0.63	0.66	0.69	0.69	0.40	0.36
33 Private Debt	0.01	0.48	0.50	0.46	0.51	0.50	0.56	0.48	0.53	0.37	0.37

Source: Bloomberg, Datastream, Morgan Stanley Wealth Management GIC as of Feb. 26, 2021.

Note: Above is based on returns from the mid-1940s through February 2021. Correlation is a statistical method of measuring the strength of a linear relationship between two variables. The correlation between two variables can assume any value from -1.00 to +1.00, inclusive. Past performance is not indicative of future results. We apply significant statistical adjustments to correct for distortions typically associated with index returns for hedge funds, private equity and private real estate. Correlation assumptions are the same for the strategic and secular horizons.

ANNUAL UPDATE OF GIC CAPITAL MARKET ASSUMPTIONS

Exhibit 23: Correlation Matrix (continued)

CORRELATION MATRIX	12	13	14	15	16	17	18	19	20	21	22
1 Ultrashort Fixed Income	-0.02	0.01	0.00	0.06	0.30	0.04	0.12	0.01	-0.03	0.06	0.06
2 Equities	0.37	0.69	0.61	0.20	0.14	0.18	0.10	0.09	0.57	0.39	0.81
3 US Equities	0.18	0.57	0.49	0.21	0.14	0.20	0.12	0.12	0.57	0.36	0.88
4 US Large-Cap Growth	0.20	0.55	0.48	0.20	0.13	0.19	0.10	0.12	0.51	0.35	0.86
5 US Large-Cap Value	0.17	0.56	0.48	0.23	0.15	0.21	0.14	0.12	0.58	0.36	0.84
6 US Mid-Cap Growth	0.19	0.57	0.52	0.19	0.11	0.17	0.11	0.10	0.56	0.37	0.88
7 US Mid-Cap Value	0.17	0.57	0.49	0.23	0.15	0.21	0.14	0.13	0.60	0.37	0.84
8 US Small-Cap Growth	0.17	0.54	0.49	0.14	0.07	0.13	0.12	0.07	0.51	0.34	0.83
9 US Small-Cap Value	0.15	0.52	0.47	0.18	0.11	0.17	0.17	0.07	0.55	0.34	0.78
10 International Equities	0.47	0.68	0.60	0.13	0.09	0.12	0.01	0.05	0.45	0.30	0.57
11 European Equities	0.27	0.63	0.55	0.13	0.09	0.11	0.01	0.06	0.46	0.28	0.55
12 Japan Equities	1.00	0.27	0.26	0.03	0.01	0.04	-0.03	0.00	0.07	0.10	0.18
13 Asia Pacific ex Japan Equities	0.27	1.00	0.67	0.10	0.05	0.09	0.01	0.01	0.43	0.33	0.57
14 Emerging & Frontier Market Equities	0.26	0.67	1.00	0.02	-0.03	0.02	0.01	-0.04	0.41	0.42	0.53
15 Fixed Income & Preferreds	0.03	0.10	0.02	1.00	0.82	0.98	0.55	0.53	0.40	0.39	0.24
16 Short-Term Fixed Income	0.01	0.05	-0.03	0.82	1.00	0.80	0.33	0.50	0.36	0.22	0.17
17 US Taxable Fixed Income	0.04	0.09	0.02	0.98	0.80	1.00	0.53	0.52	0.40	0.37	0.23
18 International Fixed Income	-0.03	0.01	0.01	0.55	0.33	0.53	1.00	0.12	0.19	0.58	0.21
19 Inflation-Linked Securities	0.00	0.01	-0.04	0.53	0.50	0.52	0.12	1.00	0.26	0.14	0.12
20 High Yield Fixed Income	0.07	0.43	0.41	0.40	0.36	0.40	0.19	0.26	1.00	0.41	0.57
21 Emerging Market Fixed Income	0.10	0.33	0.42	0.39	0.22	0.37	0.58	0.14	0.41	1.00	0.45
22 Alternatives	0.18	0.57	0.53	0.24	0.17	0.23	0.21	0.12	0.57	0.45	1.00
23 Real Assets	0.18	0.56	0.49	0.18	0.16	0.16	0.11	0.08	0.55	0.39	0.64
24 REITs	0.19	0.54	0.47	0.27	0.21	0.26	0.20	0.12	0.58	0.41	0.64
25 Commodities	-0.01	0.23	0.21	-0.08	-0.04	-0.07	-0.11	0.00	0.13	0.10	0.19
26 Energy Infrastructure/MLPs	0.13	0.47	0.41	0.22	0.19	0.21	0.17	0.08	0.54	0.35	0.62
27 Absolute Return Assets	0.14	0.46	0.40	0.40	0.36	0.39	0.21	0.24	0.78	0.40	0.79
28 Equity Hedge Assets	0.00	0.01	0.01	0.32	0.16	0.30	0.49	0.06	0.00	0.24	0.15
29 Equity Return Assets	0.20	0.59	0.56	0.19	0.14	0.17	0.11	0.10	0.58	0.38	0.97
30 Private Investments	0.10	0.35	0.23	0.18	0.12	0.17	0.15	-0.01	0.33	0.15	0.53
31 Private Real Estate	0.04	0.20	0.14	0.12	0.07	0.12	0.15	-0.08	0.16	0.09	0.25
32 Private Equity	0.13	0.38	0.25	0.22	0.15	0.21	0.16	0.06	0.38	0.18	0.63
33 Private Debt	0.08	0.36	0.29	0.42	0.40	0.41	0.20	0.28	0.86	0.27	0.53

Source: Bloomberg, Datastream, Morgan Stanley Wealth Management GIC as of Feb. 26, 2021.

Note: Above is based on returns from the mid-1940s through February 2021. Correlation is a statistical method of measuring the strength of a linear relationship between two variables. The correlation between two variables can assume any value from -1.00 to +1.00, inclusive. Past performance is not indicative of future results. We apply significant statistical adjustments to correct for distortions typically associated with index returns for hedge funds, private equity and private real estate. Correlation assumptions are the same for the strategic and secular horizons.

ANNUAL UPDATE OF GIC CAPITAL MARKET ASSUMPTIONS

Exhibit 23: Correlation Matrix (continued)

CORRELATION MATRIX	23	24	25	26	27	28	29	30	31	32	33
1 Ultrashort Fixed Income	0.02	0.00	-0.01	-0.01	0.06	0.13	0.04	-0.01	0.02	-0.02	0.01
2 Equities	0.65	0.68	0.19	0.59	0.64	0.04	0.81	0.50	0.26	0.58	0.48
3 US Equities	0.62	0.67	0.13	0.62	0.66	0.02	0.88	0.54	0.26	0.65	0.50
4 US Large-Cap Growth	0.57	0.61	0.11	0.56	0.61	0.02	0.85	0.52	0.24	0.63	0.46
5 US Large-Cap Value	0.65	0.70	0.14	0.64	0.67	0.03	0.85	0.53	0.27	0.63	0.51
6 US Mid-Cap Growth	0.63	0.66	0.16	0.61	0.63	0.02	0.87	0.54	0.27	0.63	0.50
7 US Mid-Cap Value	0.72	0.77	0.17	0.69	0.69	0.03	0.85	0.58	0.31	0.66	0.56
8 US Small-Cap Growth	0.63	0.67	0.15	0.61	0.61	0.01	0.84	0.61	0.32	0.69	0.48
9 US Small-Cap Value	0.69	0.76	0.14	0.67	0.65	0.04	0.80	0.62	0.37	0.69	0.53
10 International Equities	0.55	0.55	0.22	0.44	0.48	0.02	0.60	0.36	0.20	0.40	0.37
11 European Equities	0.52	0.54	0.20	0.44	0.47	0.00	0.58	0.33	0.18	0.36	0.37
12 Japan Equities	0.18	0.19	-0.01	0.13	0.14	0.00	0.20	0.10	0.04	0.13	0.08
13 Asia Pacific ex Japan Equities	0.56	0.54	0.23	0.47	0.46	0.01	0.59	0.35	0.20	0.38	0.36
14 Emerging & Frontier Market Equities	0.49	0.47	0.21	0.41	0.40	0.01	0.56	0.23	0.14	0.25	0.29
15 Fixed Income & Preferreds	0.18	0.27	-0.08	0.22	0.40	0.32	0.19	0.18	0.12	0.22	0.42
16 Short-Term Fixed Income	0.16	0.21	-0.04	0.19	0.36	0.16	0.14	0.12	0.07	0.15	0.40
17 US Taxable Fixed Income	0.16	0.26	-0.07	0.21	0.39	0.30	0.17	0.17	0.12	0.21	0.41
18 International Fixed Income	0.11	0.20	-0.11	0.17	0.21	0.49	0.11	0.15	0.15	0.16	0.20
19 Inflation-Linked Securities	0.08	0.12	0.00	0.08	0.24	0.06	0.10	-0.01	-0.08	0.06	0.28
20 High Yield Fixed Income	0.55	0.58	0.13	0.54	0.78	0.00	0.58	0.33	0.16	0.38	0.86
21 Emerging Market Fixed Income	0.39	0.41	0.10	0.35	0.40	0.24	0.38	0.15	0.09	0.18	0.27
22 Alternatives	0.64	0.64	0.19	0.62	0.79	0.15	0.97	0.53	0.25	0.63	0.53
23 Real Assets	1.00	0.84	0.51	0.85	0.62	0.08	0.66	0.52	0.38	0.50	0.49
24 REITs	0.84	1.00	0.17	0.71	0.61	0.09	0.64	0.59	0.47	0.56	0.53
25 Commodities	0.51	0.17	1.00	0.18	0.17	0.05	0.20	0.05	-0.02	0.07	0.07
26 Energy Infrastructure/MLPs	0.85	0.71	0.18	1.00	0.62	0.05	0.64	0.54	0.42	0.52	0.51
27 Absolute Return Assets	0.62	0.61	0.17	0.62	1.00	0.09	0.80	0.46	0.23	0.53	0.81
28 Equity Hedge Assets	0.08	0.09	0.05	0.05	0.09	1.00	0.08	0.04	0.06	0.05	0.00
29 Equity Return Assets	0.66	0.64	0.20	0.64	0.80	0.08	1.00	0.52	0.25	0.63	0.54
30 Private Investments	0.52	0.59	0.05	0.54	0.46	0.04	0.52	1.00	0.80	0.89	0.40
31 Private Real Estate	0.38	0.47	-0.02	0.42	0.23	0.06	0.25	0.80	1.00	0.48	0.21
32 Private Equity	0.50	0.56	0.07	0.52	0.53	0.05	0.63	0.89	0.48	1.00	0.46
33 Private Debt	0.49	0.53	0.07	0.51	0.81	0.00	0.54	0.40	0.21	0.46	1.00

Source: Bloomberg, Datastream, Morgan Stanley Wealth Management GIC as of Feb. 26, 2021.

Note: Above is based on returns from the mid-1940s through February 2021. Correlation is a statistical method of measuring the strength of a linear relationship between two variables. The correlation between two variables can assume any value from -1.00 to +1.00, inclusive. Past performance is not indicative of future results. We apply significant statistical adjustments to correct for distortions typically associated with index returns for hedge funds, private equity and private real estate. Correlation assumptions are the same for the strategic and secular horizons.

Appendix

Hedge Fund Index Performance Biases

It should be noted that the majority of hedge fund indexes are comprised of hedge fund manager returns. This is in contrast to traditional indexes, which are comprised of individual securities in the various market segments they represent and offer complete transparency as to membership and construction methodology. As such, some believe that hedge fund index returns have certain biases that are not present in traditional indexes. Some of these biases inflate index performance, while others may skew performance negatively. However, many studies indicate that overall hedge fund index performance has been biased to the upside. Some studies suggest performance has been inflated by up to 2.6% or more annually, depending on the types of biases included and the time period studied. Although there are numerous potential biases that could affect hedge fund returns, we identify some of the more common ones throughout this paper.

Self-selection bias results when certain manager returns are not included in the index returns and may result in performance being skewed up or down. Because hedge funds are private placements, hedge fund managers are able to decide which fund returns they want to report and are able to opt out of reporting to the various databases. Certain hedge fund managers may choose only to report returns for funds with strong returns and opt out of reporting returns for weak performers. Other hedge funds that close may decide to stop reporting in order to retain secrecy, which may cause a downward bias in returns.

Survivorship bias results when certain constituents are removed from an index. This often results from the closure of funds due to poor performance, “blow-ups” or other such events. As such, this bias typically results in performance being skewed higher. As noted, hedge fund index performance biases can result in positive or negative skew. Nonetheless, it would appear that the skew is more often positive. While it is difficult to quantify the effects precisely, investors should be aware that idiosyncratic factors may be giving hedge fund index returns an artificial “lift” or upwards bias.

Endnotes

¹ Campbell, John and Robert Shiller, "Valuation Ratios and the Long-Run Stock Market Outlook," *The Journal of Portfolio Management*, July 1997.

<http://www.econ.yale.edu/~shiller/online/jpmalt.pdf>.

² In order to account for lack of available data, we employed the following proxies: UK: 60% weight in five-year UK breakeven and 40% weight in 10-year UK breakeven; Europe ex UK: 30% weight in Germany five-year breakeven, 20% weight in Germany 10-year breakeven, plus 50% weight in France seven-year breakeven; EM: seven-year US breakeven; Canada: 10-year Canada breakeven.

³ Tang, Serena W, Andrew Sheets, Phanikiran L. Naraparaju, Wanting Low, and Elizabeth Volynsky, "What Will Markets Return?," *Cross-Asset Dispatch*, Oct. 23, 2016, Morgan Stanley & Co.

⁴ Including the adjustment for Japanese inflation to 1.0% from 0.6%.

For indexes referenced in this report please visit the following:

<https://www.morganstanley.com/wealth-investmentsolutions/wmir-definitions>

Glossary

ALPHA: The excess return of an investment relative to the return of a benchmark index.

BETA: A measure of the volatility, or systematic risk, of a security or a portfolio in comparison to the market as a whole.

DRAWDOWN: Refers to the largest cumulative percentage decline in net asset value or the percentage decline from the highest value or net asset value (peak) to the lowest value net asset value (trough) after the peak.

EFFICIENT FRONTIER: The efficient frontier is the set of optimal portfolios that offers the highest expected return for a defined level of risk or the lowest risk for a given level of expected return.

EQUITY RISK PREMIUM: The excess return that an individual stock or the overall stock market provides over a risk-free rate.

EXCESS RETURN: This term represents the average quarterly total return of the portfolio relative to its benchmark. A portfolio with a positive excess return has on average outperformed its benchmark on a quarterly basis. This statistic is obtained by subtracting the benchmark return from the portfolio's return.

ILLIQUIDITY PREMIUM: The extra yield investors expect to earn for giving up control to liquidate their capital for a certain period of time.

MEAN REVERSION: This theory suggests that prices and returns eventually move back toward the mean or average. This mean or average can be the historical average of the price or return or another relevant average, such as the growth in the economy or the average return of an industry.

SHARPE RATIO: This statistic measures a portfolio's rate of return based on the risk it assumed and is often referred to as its risk-adjusted performance. Using standard deviation and returns in excess of the returns of T-bills, it determines reward per unit of risk. This measurement can help determine if the portfolio is reaching its goal of increasing returns while managing risk.

SHILLER PE RATIO also known as the cyclically adjusted P/E ratio (CAPE), uses a 10-year average of inflation-adjusted earnings to value the stock market.

STANDARD DEVIATION: This statistic quantifies the volatility associated with a portfolio's returns by measuring the variation in returns around the mean return. Unlike beta, which measures volatility relative to the aggregate market, standard deviation measures the absolute volatility of a portfolio's return.

Disclosure Section

The **Global Investment Committee (GIC)** is a group of seasoned investment professionals from Morgan Stanley & Co. and Morgan Stanley Wealth Management who meet regularly to discuss the global economy and markets. The committee determines the investment outlook that guides our advice to clients. They continually monitor developing economic and market conditions, review tactical outlooks and recommend asset allocation model weightings, as well as produce a suite of strategy, analysis, commentary, portfolio positioning suggestions and other reports and broadcasts.

Daniel Hunt, Steve Edwards, Aili Chen, Lisha Ge and Spencer Cavallo are not members of the Global Investment Committee, and any implementation strategies suggested have not been reviewed or approved by the Global Investment Committee.

Risk Considerations

Master Limited Partnerships (MLPs)

Individual MLPs are publicly traded partnerships that have unique risks related to their structure. These include, but are not limited to, their reliance on the capital markets to fund growth, adverse ruling on the current tax treatment of distributions (typically mostly tax deferred), and commodity volume risk.

For tax purposes, MLP ETFs are taxed as C corporations and will be obligated to pay federal and state corporate income taxes on their taxable income, unlike traditional ETFs, which are structured as registered investment companies. These ETFs are likely to exhibit tracking error relative to their index as a result of accounting for deferred tax assets or liabilities (see funds' prospectuses).

The potential tax benefits from investing in MLPs depend on their being treated as partnerships for federal income tax purposes and, if the MLP is deemed to be a corporation, then its income would be subject to federal taxation at the entity level, reducing the amount of cash available for distribution to the fund which could result in a reduction of the fund's value.

MLPs carry interest rate risk and may underperform in a rising interest rate environment. MLP funds accrue deferred income taxes for future tax liabilities associated with the portion of MLP distributions considered to be a tax-deferred return of capital and for any net operating gains as well as capital appreciation of its investments; this deferred tax liability is reflected in the daily NAV; and, as a result, the MLP fund's after-tax performance could differ significantly from the underlying assets even if the pre-tax performance is closely tracked.

Duration

Duration, the most commonly used measure of bond risk, quantifies the effect of changes in interest rates on the price of a bond or bond portfolio. The longer the duration, the more sensitive the bond or portfolio would be to changes in interest rates. Generally, if interest rates rise, bond prices fall and vice versa. Longer-term bonds carry a longer or higher duration than shorter-term bonds; as such, they would be affected by changing interest rates for a greater period of time if interest rates were to increase. Consequently, the price of a long-term bond would drop significantly as compared to the price of a short-term bond.

Cryptocurrencies

Buying, selling and using virtual currency products is highly speculative and may result in substantial losses in a short period of time. Risks include:

Digital currency such as virtual currency products is not legal tender. No law requires companies or individuals to accept the currency as a form of payment. Instead, virtual currency products use is limited to businesses and individuals that are willing to accept them. If no one were to accept digital currencies, virtual currency products would very likely become worthless.

The exchange rate of virtual currency products versus the USD historically has been very volatile and the exchange rate could drastically decline. For example, the exchange rate of some virtual currency products versus the USD has dropped more than 50% in a single day.

Platforms that buy and sell virtual currency products can be hacked, and some have failed. In addition, like the platforms themselves, digital wallets can be hacked. As a result, consumers can—and have—lost some or all of their holdings of digital currency.

Virtual currency product transactions can be subject to fraud and theft. For example, a fraudster could pose as a virtual currency product exchange, virtual currency product intermediary or trader in an effort to lure you to send it digital currency, which is then stolen.

Unlike US banks and credit unions that provide certain guarantees of safety to depositors, there are no such safeguards provided to digital wallets by their providers or regulators.

Payments in virtual currency products are irreversible. Once you complete a transaction, it cannot be reversed. Purchases can be refunded, but that depends solely on the willingness of the vendor-recipient to do so.

In part because of the anonymity virtual currency products offer, it has been used in illegal activity, including drug dealing, money laundering and other forms of illegal commerce. Abuses could impact legitimate consumers and speculators; for instance, law enforcement agencies could shut down or restrict the use of platforms and exchanges, limiting or shutting off entirely the ability to use or trade virtual currency products.

As a recent invention, virtual currencies do not have an established track record of credibility and trust. Virtual currencies are evolving.

Hedged Strategy Definitions

ANNUAL UPDATE OF GIC CAPITAL MARKET ASSUMPTIONS

Absolute return investing describes a category of investment strategies and mutual funds that seek to earn a positive return over time—regardless of whether markets are going up, down, or sideways—and to do so with less volatility than stocks.

Equity Long/Short This strategy consists of a core holding of long equities hedged at all times with varying degrees of short sales of stock and/or index options. Some managers maintain a substantial portion of assets within a hedge structure and commonly employ leverage.

Equity Market Neutral Equity market neutral strategies employ sophisticated quantitative techniques of analyzing price data to ascertain information about future price movement and relationships between securities, select securities for purchase and sale. These can include both factor-based and statistical arbitrage/trading strategies. Factor-based investment strategies include strategies in which the investment thesis is predicated on the systematic analysis of common relationships between securities. In many but not all cases, portfolios are constructed to be neutral to one or multiple variables, such as broader equity markets in dollar or beta terms, and leverage is frequently employed to enhance the return profile of the positions identified. Statistical arbitrage/trading strategies consist of strategies in which the investment thesis is predicated on exploiting pricing anomalies which may occur as a function of expected mean reversion inherent in security prices; high frequency techniques may be employed and trading strategies may also be employed on the basis of technical analysis or opportunistically to exploit new information the investment manager believes has not been fully, completely or accurately discounted into current security prices. Equity market neutral strategies typically maintain characteristic net equity market exposure no greater than 10% long or short.

Alternative investments often are speculative and include a high degree of risk. Investors could lose all or a substantial amount of their investment. Alternative investments are appropriate only for eligible, long-term investors who are willing to forgo liquidity and put capital at risk for an indefinite period of time. They may be highly illiquid and can engage in leverage and other speculative practices that may increase the volatility and risk of loss. Alternative Investments typically have higher fees than traditional investments. Investors should carefully review and consider potential risks before investing. Certain of these risks may include but are not limited to: Loss of all or a substantial portion of the investment due to leveraging, short-selling, or other speculative practices; Lack of liquidity in that there may be no secondary market for a fund; Volatility of returns; Restrictions on transferring interests in a fund; Potential lack of diversification and resulting higher risk due to concentration of trading authority when a single advisor is utilized; Absence of information regarding valuations and pricing; Complex tax structures and delays in tax reporting; Less regulation and higher fees than mutual funds; and Risks associated with the operations, personnel, and processes of the manager. Further, opinions regarding Alternative Investments expressed herein may differ from the opinions expressed by Morgan Stanley Wealth Management and/or other businesses/affiliates of Morgan Stanley Wealth Management.

Certain information contained herein may constitute forward-looking statements. Due to various risks and uncertainties, actual events, results or the performance of a fund may differ materially from those reflected or contemplated in such forward-looking statements. Clients should carefully consider the investment objectives, risks, charges, and expenses of a fund before investing.

Alternative investments involve complex tax structures, tax inefficient investing, and delays in distributing important tax information. Individual funds have specific risks related to their investment programs that will vary from fund to fund. Clients should consult their own tax and legal advisors as Morgan Stanley Wealth Management does not provide tax or legal advice.

Interests in alternative investment products are offered pursuant to the terms of the applicable offering memorandum, are distributed by Morgan Stanley Smith Barney LLC and certain of its affiliates, and (1) are not FDIC-insured, (2) are not deposits or other obligations of Morgan Stanley or any of its affiliates, (3) are not guaranteed by Morgan Stanley and its affiliates, and (4) involve investment risks, including possible loss of principal. Morgan Stanley Smith Barney LLC is a registered broker-dealer, not a bank.

Managed futures investments are speculative, involve a high degree of risk, use significant leverage, have limited liquidity and/or may be generally illiquid, may incur substantial charges, may subject investors to conflicts of interest, and are usually appropriate only for the risk capital portion of an investor's portfolio. Before investing in any partnership and in order to make an informed decision, investors should read the applicable prospectus and/or offering documents carefully for additional information, including charges, expenses, and risks. Managed futures investments are not intended to replace equities or fixed income securities but rather may act as a complement to these asset categories in a diversified portfolio.

Risks of **private real estate** include: illiquidity; a long-term investment horizon with a limited or nonexistent secondary market; lack of transparency; volatility (risk of loss); and leverage.

Investing in commodities entails significant risks. Commodity prices may be affected by a variety of factors at any time, including but not limited to, (i) changes in supply and demand relationships, (ii) governmental programs and policies, (iii) national and international political and economic events, war and terrorist events, (iv) changes in interest and exchange rates, (v) trading activities in commodities and related contracts, (vi) pestilence, technological change and weather, and (vii) the price volatility of a commodity. In addition, the commodities markets are subject to temporary distortions or other disruptions due to various factors, including lack of liquidity, participation of speculators and government intervention.

Physical precious metals are non-regulated products. Precious metals are speculative investments, which may experience short-term and long term price volatility. The value of precious metals investments may fluctuate and may appreciate or decline, depending on market conditions. If sold in a declining market, the price you receive may be less than your original investment. Unlike bonds and stocks, precious metals do not make interest or dividend payments. Therefore, precious metals may not be appropriate for investors who require current income. Precious metals are commodities that should be safely stored, which may impose additional costs on the investor. The Securities Investor Protection Corporation ("SIPC") provides certain protection for customers' cash and securities in the event of a brokerage firm's bankruptcy, other financial difficulties, or if customers' assets are missing. SIPC insurance does not apply to precious metals or other commodities.

REITs investing risks are similar to those associated with direct investments in real estate: property value fluctuations, lack of liquidity, limited diversification and sensitivity to economic factors such as interest rate changes and market recessions.

Bonds are subject to interest rate risk. When interest rates rise, bond prices fall; generally the longer a bond's maturity, the more sensitive it is to this risk. Bonds may also be subject to call risk, which is the risk that the issuer will redeem the debt at its option, fully or partially, before the scheduled maturity date. The market value of debt instruments may fluctuate, and proceeds from sales prior to maturity may be more or

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less than the amount originally invested or the maturity value due to changes in market conditions or changes in the credit quality of the issuer. Bonds are subject to the credit risk of the issuer. This is the risk that the issuer might be unable to make interest and/or principal payments on a timely basis. Bonds are also subject to reinvestment risk, which is the risk that principal and/or interest payments from a given investment may be reinvested at a lower interest rate.

Bonds rated below investment grade may have speculative characteristics and present significant risks beyond those of other securities, including greater credit risk and price volatility in the secondary market. Investors should be careful to consider these risks alongside their individual circumstances, objectives and risk tolerance before investing in high-yield bonds. High yield bonds should comprise only a limited portion of a balanced portfolio.

Interest on municipal bonds is generally exempt from federal income tax; however, some bonds may be subject to the alternative minimum tax (AMT). Typically, state tax-exemption applies if securities are issued within one's state of residence and, if applicable, local tax-exemption applies if securities are issued within one's city of residence.

Treasury Inflation Protection Securities' (TIPS) coupon payments and underlying principal are automatically increased to compensate for inflation by tracking the consumer price index (CPI). While the real rate of return is guaranteed, TIPS tend to offer a low return. Because the return of TIPS is linked to inflation, TIPS may significantly underperform versus conventional U.S. Treasuries in times of low inflation.

Ultrashort-term fixed income asset class is comprised of fixed income securities with high quality, very short maturities. They are therefore subject to the risks associated with debt securities such as credit and interest rate risk.

The majority of \$25 and \$1000 par **preferred securities** are "callable" meaning that the issuer may retire the securities at specific prices and dates prior to maturity. Interest/dividend payments on certain preferred issues may be deferred by the issuer for periods of up to 5 to 10 years, depending on the particular issue. The investor would still have income tax liability even though payments would not have been received. Price quoted is per \$25 or \$1,000 share, unless otherwise specified. Current yield is calculated by multiplying the coupon by par value divided by the market price.

Some \$25 or \$1000 par **preferred securities** are QDI (Qualified Dividend Income) eligible. Information on QDI eligibility is obtained from third party sources. The dividend income on QDI eligible preferreds qualifies for a reduced tax rate. Many traditional 'dividend paying' perpetual preferred securities (traditional preferreds with no maturity date) are QDI eligible. In order to qualify for the preferential tax treatment all qualifying preferred securities must be held by investors for a minimum period – 91 days during a 180 day window period, beginning 90 days before the ex-dividend date.

The market value of **convertible bonds** and the underlying common stock(s) will fluctuate and after purchase may be worth more or less than original cost. If sold prior to maturity, investors may receive more or less than their original purchase price or maturity value, depending on market conditions. Callable bonds may be redeemed by the issuer prior to maturity. Additional call features may exist that could affect yield.

The initial interest rate on a **floating-rate security** may be lower than that of a fixed-rate security of the same maturity because investors expect to receive additional income due to future increases in the floating security's underlying reference rate. The reference rate could be an index or an interest rate. However, there can be no assurance that the reference rate will increase. Some floating-rate securities may be subject to call risk.

Principal is returned on a monthly basis over the life of a **mortgage-backed security**. Principal prepayment can significantly affect the monthly income stream and the maturity of any type of MBS, including standard MBS, CMOs and Lottery Bonds. Yields and average lives are estimated based on prepayment assumptions and are subject to change based on actual prepayment of the mortgages in the underlying pools. The level of predictability of an MBS/CMO's average life, and its market price, depends on the type of MBS/CMO class purchased and interest rate movements. In general, as interest rates fall, prepayment speeds are likely to increase, thus shortening the MBS/CMO's average life and likely causing its market price to rise. Conversely, as interest rates rise, prepayment speeds are likely to decrease, thus lengthening average life and likely causing the MBS/CMO's market price to fall. Some MBS/CMOs may have "original issue discount" (OID). OID occurs if the MBS/CMO's original issue price is below its stated redemption price at maturity, and results in "imputed interest" that must be reported annually for tax purposes, resulting in a tax liability even though interest was not received. Investors are urged to consult their tax advisors for more information.

Equity securities may fluctuate in response to news on companies, industries, market conditions and general economic environment.

Companies paying **dividends** can reduce or cut payouts at any time.

Investing in smaller companies involves greater risks not associated with investing in more established companies, such as business risk, significant stock price fluctuations and illiquidity.

Stocks of medium-sized companies entail special risks, such as limited product lines, markets, and financial resources, and greater market volatility than securities of larger, more-established companies.

Asset allocation and diversification do not assure a profit or protect against loss in declining financial markets.

Because of their narrow focus, **sector investments** tend to be more volatile than investments that diversify across many sectors and companies.

Investing in foreign markets entails greater risks than those normally associated with domestic markets, such as political, currency, economic and market risks. These risks are magnified in **emerging and frontier markets**. **Investing in currency** involves additional special risks such as credit, interest rate fluctuations, derivative investment risk, and domestic and foreign inflation rates, which can be volatile and may be less liquid than other securities and more sensitive to the effect of varied economic conditions. In addition, international investing entails greater risk, as well as greater potential rewards compared to U.S. investing. These risks include political and economic uncertainties of foreign countries as well as the risk of currency fluctuations. These risks are magnified in countries with emerging markets, since these countries may

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have relatively unstable governments and less established markets and economies.

Value investing does not guarantee a profit or eliminate risk. Not all companies whose stocks are considered to be value stocks are able to turn their business around or successfully employ corrective strategies which would result in stock prices that do not rise as initially expected.

Growth investing does not guarantee a profit or eliminate risk. The stocks of these companies can have relatively high valuations. Because of these high valuations, an investment in a growth stock can be more risky than an investment in a company with more modest growth expectations.

Yields are subject to change with economic conditions. Yield is only one factor that should be considered when making an investment decision.

Credit ratings are subject to change.

Rebalancing does not protect against a loss in declining financial markets. There may be a potential tax implication with a rebalancing strategy. Investors should consult with their tax advisor before implementing such a strategy.

The **indices** are unmanaged. An investor cannot invest directly in an index. They are shown for illustrative purposes only and do not represent the performance of any specific investment.

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