

2021 Long-Term Capital Market Assumptions

Q2 Update

Invesco Investment Solutions | Japanese yen (JPY)

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Executive Summary

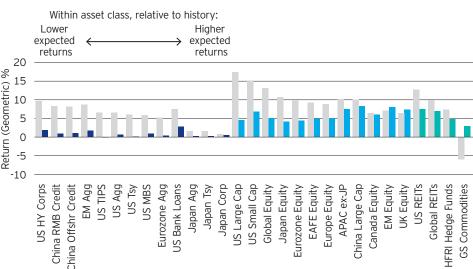


Duy Nguyen CIO, Invesco Investment Solutions

- + Strategic Perspective: It was just a year ago that the pandemic drove the global economy into a recession, ending the longest bull market on record. As we have expressed in prior editions of this publication, the stimulus over the past year and current reopening of economies should be treated as unparalleled events in terms of magnitude when estimating the future behavior of any asset class. Presently, we believe the risks are skewed to the upside for most assets, given the trend in global growth, inflation, and earnings, and have adjusted our CMA methodology last year to account for rapid shifts in market expectations. While rising growth rates and yields have improved our CMAs, they are still broadly lower than history (Figure 1) with elevated levels of risk.
- + **Tactical View:** The global cycle continues to expand with growth above its long-term trend and expected to improve across both developed and emerging markets. Further, our global risk appetite framework suggests market sentiment continues to improve, signaling growth expectations continue to be revised to the upside. The macro environment of the past year has, by and large, evolved in line with historical cyclical patterns. As growth moves above trend and the economy enters an expansion phase, inflation begins to rise, which we view as a normal part of this cycle, and at this stage, does not imply a structurally higher inflation regime.
- + **Global Market Outlook:** Many parts of the globe are experiencing a resurgence in economic activity, benefiting from the distribution of effective vaccines, as well as significant fiscal and monetary stimulus. To address the breadth of possibilities that lie ahead in this environment, we have provided asset allocation and market rational for three scenarios; a base case (effective vaccine rollout and steady growth), and two other possible paths that explore what we believe to be the biggest risks facing the global economy and markets (high inflation and pandemic resurgence).



■ Fixed Income 10-year CMA ■ Equities 10-year CMA ■ Alternatives 10-year CMA ■ Historical 10-year return



Source: Invesco, estimates as of March 31, 2021. Proxies listed in **Figure 13**. These estimates are forward-looking, are not guarantees, and they involve risks, uncertainties, and assumptions. Please see page 14 for information about our CMA methodology. These estimates reflect the views of Invesco Investment Solutions, the views of other investment teams at Invesco may differ from those presented here.

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Jacob Borbidge Senior Portfolio Manager, Head of Investment Research, Invesco Investment Solutions

For further details on our process for defining scenarios and adjustments, please refer to our CMA Methodology paper.

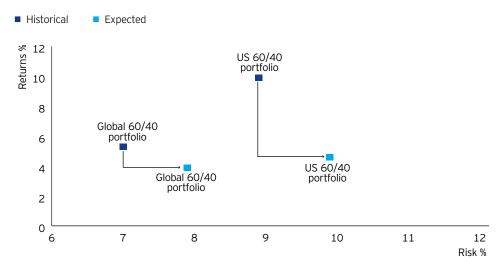
Strategic perspective

The first quarter of 2021 has brought us confirmation of something many have been doubting for some time: The recovery from COVID-19 is here. For most major economies, earnings, interest rates, and inflation expectations are growing at rates similar to the first year of prior cycles after a large market drawdown. Also, in a similar fashion to prior cycles, present market commentary believes that the current environment is too good to be true, with the most recent examples being the double-dip concerns of 2010 or the "taper tantrum" of 2013; the narrative being that interest rates or inflation from fiscal and monetary stimulus will cause the Federal Reserve (Fed) to act sooner than their current guidance is portraying and thus economic growth will sputter. While cycles tend to rhyme more than they repeat, our **strategic perspective** within Solutions is to look through this noise and anchor portfolios with diversified, long-term, and data-driven methods, an example being our Capital Market Assumptions (CMAs). We provide commentaries on our tactical views and market-based scenarios in the following sections for those looking to make allocation decisions within the cycle.

It was just a year ago that the pandemic drove the global economy into a recession, ending the longest bull market on record. As we have expressed in prior editions of this publication, the stimulus over the past year and current reopening of economies should be treated as unparalleled events in terms of magnitude when estimating the future behavior of any asset class. Presently, we believe the risks are skewed to the upside for most assets, given the trend in global growth, inflation, and earnings, and we adjusted our CMA methodology last year to account for rapid shifts in market expectations. That said, we'd like to reiterate that markets never fail to surprise even the most diligent investors, and our risk-aware approach towards portfolio management accounts for uncertainty by diversifying across asset classes, regions, and factors.

The purpose of this report is to illustrate our approach to estimating long-term returns given a challenging environment for asset allocators. With equities expected to underperform relative to history, the low and rising trend in yields and inflation, and elevated risks and correlations, investors may need to diversify out of traditional assets to reach their investment goals (**Figure 2**). While these increases in yields and inflation have slightly improved our CMAs for a 60/40 portfolio, they're still roughly half that of history with elevated levels of risk. Few assets are expected to deliver higher returns than history outside of non-US equities and alternatives.





Source: Invesco Investment Solutions proprietary research, March 31, 2021. US 60/40 represented by 60% S&P 500 Index and 40% BBG BARC US Aggregate Bond Index. Global 60/40 represented by 60% MSCI ACWI Index and 40% BBG BARC Global Aggregate Bond Index. These estimates are forward-looking, are not guarantees, and they involve risks, uncertainties, and assumptions. Please see Page 15 for information about our CMA methodology. Please see the CMA methodology paper for additional CMA information. These estimates reflect the views of Invesco Investment Solutions; the views of other investment teams at Invesco may differ from those presented here. **Performance**, whether actual or simulated, does not guarantee future results.

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2Q21 CMA Observations

- + **Equities:** Earnings estimates continue to climb as the global recovery continues. Broad stimulus and reopenings after vaccine rollouts in the developed world should deliver ample push for the cyclical portions of the economy to continue to outperform growth/ lockdown assets. Regionally, our equity CMAs are up within the US and emerging markets (EM) and lower in developed markets outside of the US (DM ex-US). Positive changes from last guarter came from higher earnings and inflation and a weakening dollar, while some detractors were higher valuations and lower total yields. Earnings growth is expected to be up broadly, up the highest in EM and the lowest in DM ex-US. Due to recent price increases, valuations are higher for most regions, lowering expected returns but broadly offset by our other return building blocks. We still anticipate a long-term weakening of the US dollar, which should improve dollar-based returns of assets outside of the US. The size premium in the US has shrunk given the recent outperformance of small-cap assets. Within EM, growth has been the primary driver of the return increase this quarter, mainly attributed to China and other regions that have escaped the pandemic largely unscathed, like Taiwan. UK expectations have increased in line with global equities yet have retained their spot as the equity asset with the highest anticipated risk-adjusted returns.
- + **Fixed Income:** Recent weakness within fixed income from rising current and expected yields has led income assets to increase broadly. Other building blocks, like roll, credit loss, and currency adjustments, are all expected to be positive contributors. The only negative component this quarter has been from valuation change, which we define as the expected duration-adjusted shift in the yield curve. Rate assets are up significantly, while longer duration assets are anticipated to receive most of the benefit from a steepening yield curve. Within credit, the riskier the asset, the less we anticipate their returns will increase as spreads have compressed over the past quarter. For example, investment grade (IG) is expected to rise more than high yield (HY). Bank loans are up slightly driven by higher expected yields but offset by lower valuations and current yields.
- + **Alternatives:** In our view, there are few better places than alternatives when looking for high expected risk-adjusted returns. Hedge funds and global REITs are two standouts relative to traditional assets within equities and fixed income. Real assets have moved in separate directions, given their homogenous outlooks. Global infrastructure is expected to be higher after increases in growth have offset higher valuations. US REITs are lower mostly due to lower earnings growth and dividend yields.



Alessio de Longis Senior Portfolio Manager, Head of Tactical Asset Allocation, Invesco Investment Solutions

For further details on our macro regime framework, please refer to our CMA Methodology paper.

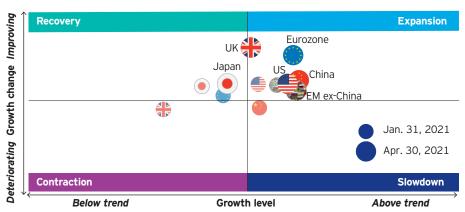
Tactical view

The global cycle continues to expand with growth above its long-term trend and expected to improve across both developed and emerging markets. Our indicators suggest positive economic momentum is widespread across all major countries. At a regional level, we continue to see the strongest momentum in the Eurozone and the UK, where business surveys continue to signal a strong rebound in demand and production expectations, couple with low inventories and a steady improvement in consumer sentiment. These dynamics increase the probability of positive growth surprises in the region in the second half of 2021 as economies reopen and vaccinations continue (**Figure 3**). Our global risk appetite framework suggests market sentiment continues to improve, signaling growth expectations continue to be revised to the upside.

As discussed in our last update, the macro environment of the past year has, by and large, evolved in line with historical cyclical patterns. As growth moves above trend and the economy enters and expansion phase, inflation begins to rise. This reflationary environment has been reflected quite broadly in asset prices across assets classes, regions, sectors, and styles. In some cases, strength of this reflation trade has led to the rise of inflationary fears, with concerns that rising inflation may turn from a desirable cyclical development to a more enduring and pernicious long-term problem. What is our take on medium term inflation risks?

 $\underline{\textbf{Figure 3:}} \ \textbf{The expansion continues across regions, with strong momentum in the Eurozone} \\ \ \textbf{and the UK} \\ \ \\$

Current Leading Economic Indicators (LEIs) - Apr. 30, 2021



	LEIs		Global Risk Appetite		Expected
Region	Current level of growth		Change in global growth expectations		macro regimes
Global	Above Trend				Expansion
United States	Above Trend				Expansion
Developed Markets ex-USA	Above Trend				Expansion
Europe	Above Trend		Growth		Expansion
United Kingdom	Above Trend	&	Expectation	=	Expansion
Japan	Below Trend		Improving		Recovery
Emerging Markets	Above Trend				Expansion
China	Above Trend				Expansion
Emerging Markets ex-China	Above Trend				Expansion

Sources: Bloomberg L.P., Macrobond. Invesco Investment Solutions research and calculations. Proprietary leading economic indicators of Invesco Investment Solutions. Macro regime data as of April 30, 2021. The Leading Economic Indicators (LEIs) are proprietary, forward-looking measures of the level of economic growth. The Global Risk Appetite Cycle Indicator (GRACI) is a proprietary measure of the markets' risk sentiment.



The large price declines caused by lockdowns in 1H 2O2O will drop off the year-over-year statistics in the coming months, likely causing headline inflation to breach the cyclical highs of the past few cycles.



In an orderly scenario we can expect market volatility to decline and our current expansion/reflationary portfolio to perform well. In a disorderly inflationary scenario, market volatility and dispersion between asset class returns are likely to increase meaningfully.



While inflation is rising across all sectors of the economy, above average contributions have come from import prices (energy prices and dollar depreciation) and the manufacturing goods sector, while wages, consumer prices, and inflation expectations have been more muted.

Inflation

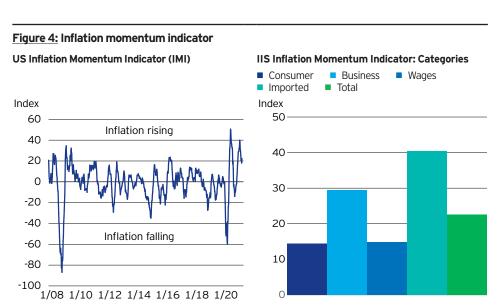
We expect headline and core inflation to rise through 2021 in most of the world, driven by several transitory factors including "base effects" in year-over-year calculations. The large price declines caused by lockdowns in 1H 2020 will drop off the year-over-year statistics in the coming months, likely causing headline inflation to breach the cyclical highs of the past few cycles. These effects tend to occur during every recession and recovery but, given the severity of the 2020 recession, they are likely to be quite large in 2021. Additionally, positive momentum in commodity prices is likely to provide upward pressure on headline inflation for a few months. These developments are consistent with typical cyclical patterns of an expansionary regime and, at this stage, do not imply a new, structurally higher inflation regime.

The Federal Reserve and the European Central Bank have gone out of their way to communicate their intentions to see through these transitory effects and, additionally, their willingness to let inflation run "above average" also on a medium-term, cyclical basis. Therefore, assuming we can rule-out a premature tightening in monetary policy, **the question is whether this cyclical build-up in inflation will lead to an orderly or disorderly bear steepening in the yield curve,** and what the impact of these two scenarios would look like for our asset allocation.

In an orderly scenario we can expect market volatility to decline and our current expansion/ reflationary portfolio to perform well. In a disorderly inflationary scenario, market volatility and dispersion between asset class returns are likely to increase meaningfully. We would expect equities, value and cyclicals to still outperform fixed income, quality and defensives, respectively, given their relative exposures to interest rate risk. However, given the potential rise in USD funding risk, our emerging markets tilts are likely to underperform relative to developed markets across equities, fixed income, and currencies. We believe the underperformance of emerging markets in the past two months partially reflects some pricing of this disorderly scenario.

The probability of a disorderly market reaction is likely to increase with upside surprises in wage inflation, inflation expectations and end-consumer prices, as these categories tend to be less volatile. We expect these categories to remain stable. In this regard, to support our assessment of inflationary pressures, we gather information on price trends from different parts of the economy and summarize them into a composite **Inflation Momentum Indicator** (IMI) (Figure 4). The indicator measures the acceleration/deceleration in inflation on a trailing 3-month basis, covering consumer and producer prices, inflation expectation surveys, import prices, wages, and commodity prices. A positive (negative) reading implies inflation has been rising (falling) on average over the past three months. While inflation is rising across all sectors of the economy, above average contributions have come from import prices (energy prices and dollar depreciation) and the manufacturing goods sector, while wages, consumer prices, and inflation expectations have been more muted.

By design, the indicator is mean reverting, and captures only short-term fluctuations in inflation. However, the persistency of a positive reading over multiple months, or quarters, coupled with its composition across categories could provide early signs of a more persistent inflation problem.



Source: Bloomberg data. Invesco Investment Solutions calculations. The US Inflation Momentum Indicator (IMI) measures the change in inflation statistics on a trailing three-month basis, covering indicators across consumer and producer prices, inflation expectation surveys, import prices, wages and energy prices. A positive (negative) reading indicates inflation has been rising (falling) on average over the past three months.



The momentum factor is gradually moving away from quality and mega cap stocks towards smaller capitalization and value segments of the market.

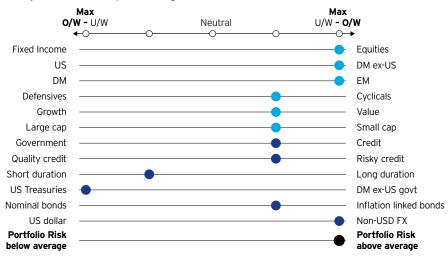
Investment Positioning

We have not implemented any changes to our positioning. We maintain a higher risk posture than our benchmark in the Global Tactical Asset Allocation model¹, with an overweight to equities and risky credit at the expense of government bonds and higher quality credit assets (Figure 5). In particular,

- Within equities we favor emerging markets and developed markets outside the US, driven by improving global growth, rising risk appetite and a rebound in growth momentum relative to the US. We remain tilted in favor of (small) size and value. In addition, we are tilted in favor of momentum which, in line with the growth vs. value rotation, is gradually moving away from quality and mega cap stocks towards smaller capitalization and value seaments of the market.
- In **fixed income**, we are overweight credit risk² and underweight duration versus the benchmark. We favor risky credit despite tight spreads, seeking income in a low volatility environment. We are overweight high yield, bank loans and emerging markets debt at the expense of investment grade credit and government bonds. We favor US Treasuries over other developed government bond markets given the yield advantage.
- In currency markets we maintain an overweight exposure to foreign currencies, positioning for long-term US dollar depreciation. We remain constructive on EM FX given attractive valuations, an improving cycle, and a favorable backdrop for capital inflows, favoring the Indian rupee, Indonesian rupiah, Russian ruble, and Brazilian real. Within developed markets we favor the Euro, the Yen, the Canadian dollar, Singapore dollar and the Norwegian kroner, while we underweight the British pound, Swiss franc and Australian dollar.

Figure 5: Relative Tactical Asset Allocation Positioning

Global cycle remains in Expansion Regime



Source: Invesco Investment Solutions, May 2021. For illustrative purposes only.

¹ Global 60/40 benchmark (60% MSCI ACWI / 40% Bloomberg Barclays Global Agg USD hedged)

² Credit risk defined as DTS (duration times spread).

Global Market Outlook



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Mid-Year Outlook 2021

Introduction

In just over a year, the world has gone through incredible change - thrown into a pandemic and plunged into a global recession. Now many parts of the globe are experiencing a resurgence in economic activity, benefiting from the development and distribution of effective vaccines, as well as significant fiscal and monetary stimulus. However, the outlook is not simple.

We at Invesco have again brought together some of our most experienced investment professionals and thought leaders to provide a mid-year update to our outlook. To continue to address the breadth of possibilities that lie ahead in this environment, we have provided a base case scenario which we believe is highly probable, and two other possible scenarios that explore what we believe to be the biggest risks currently facing the global economy and markets. In contrast to most past cycles, we see the tail risks as being higher and better defined than is usual in a recovery environment (**Figure 6**).

Our Base Case

Our base case anticipates that economies will accelerate as they reopen but that any accompanying rise in inflation would be transitory. The United States has had a very effective vaccine rollout and is likely to take the lead in the global economic recovery as growth in China moderates. The UK and eurozone are likely to follow the US recovery, with emerging markets countries generally lagging behind because of the obstacles they face vaccinating their respective populations, which is likely to result in episodic resurgences of COVID-19. As economies reopen and spending increases, inflation should rise significantly, especially in the US as the Fed expects, but we expect it will moderate to a rate faster than pre-crisis trends but not sufficient to induce action from central banks. Over the longer term, we expect demographics and innovation to place downward pressure on inflation.

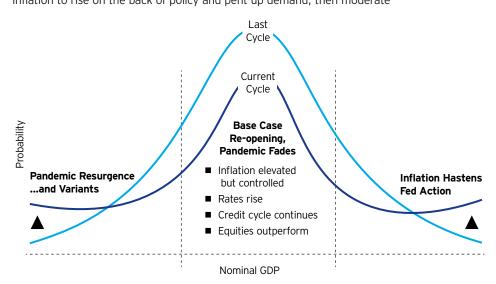
High Inflation Scenario

In this scenario, we contemplate a strong economic reacceleration accompanied by a rise in inflation that is more persistent. We expect nominal GDP growth to average 7-8% in the developed world, with real growth to remain well above trend but slowing. We expect the Fed to initially delay responding, deliberately staying "behind the curve." We anticipate inflation will overshoot central bank targets globally, led by the US reaching 4% in 2022. The Federal Reserve and other central banks would then be forced to tighten more aggressively than markets anticipated, which would temper economic growth and have a significant impact on capital markets.

Pandemic Resurgence Scenario

In this scenario, we contemplate a resurgence of the pandemic as a result of the spread of more powerful virus mutations against which existing vaccines are substantially less effective. This would have a negative impact on economic growth globally, but the impact would not be nearly as dramatic as the initial wave of COVID-19 because economies have learned to adapt to lockdowns and other tools utilized to control the spread of the pandemic. Emerging markets economies would likely be hit hardest due to relatively limited health care infrastructure as well as lower vaccination levels.

<u>Figure 6:</u> We Believe the Pandemic Continues to Fade, and Re-opening Continues Inflation to rise on the back of policy and pent-up demand, then moderate



Source: Invesco. For illustrative purposes only.

9 Global Market Outlook

For more information on Invesco's market and economic positioning, please refer to our forthcoming 2021 Mid-Year Outlook.

Asset Allocation Implications

In our base-case scenario, we would take a 'risk on' approach, expecting equities to outperform fixed income as economies continue to accelerate through the end of the first quarter of 2022 and then decelerate but still remain well above trend. We also expect fiscal stimulus and monetary policy accommodation to continue to support risk assets. We expect market volatility to decline across asset classes. We expect more cyclical regions, sectors, and styles to outperform. We expect developed markets outside the US to assume leadership in cyclical growth in 2022, further supporting the rotation into value-oriented equity markets. We expect emerging markets equities to outperform driven by global growth, easy monetary conditions, and a weakening dollar. In fixed income, we expect stable credit spreads, with credit and high yield outperforming government bonds through higher yields. We favor a moderate underweight stance to global duration, with yield curves expected to steepen but not far in excess of the current pricing of inflation expectations and forward curves.

In terms of sectors, we expect the global cyclical rebound through the first quarter of 2022 to further support value sectors with higher operating leverage compared to more quality-oriented sectors. We favor industrials, materials, financials, and consumer discretionary over health care, staples, technology, and communication services. Momentum, which has recently included more value and smaller-capitalization characteristics, typically outperforms in this expansionary phase of the cycle, providing further support to this rotation.

In our high inflation scenario, we expect overall market returns across asset classes to underperform relative to our base-case scenario, given a sharp rise in long-term yields, with increased volatility and dispersion in returns. As in recent 'bear steepening' episodes (January-April 2006 or April-December 2013), we expect equities to outperform fixed income. We favor commodities as well, as we expect them to benefit from higher inflation. We also expect risky credit to outperform government bonds. We are positive on inflation-protected bonds in this scenario. We expect fixed income and emerging markets to suffer, while equities are likely to still deliver positive returns. In this scenario, we expect value and cyclicals to outperform higher duration assets such as growth, quality, low volatility, and large-cap equities.

In terms of sectors, we expect dispersion in sector performance to increase relative to the base-case scenario, exacerbated by differences in interest rate sensitivity. We expect long-duration sectors such as utilities, consumer staples, health care, and technology to underperform, while sectors with real asset characteristics such as industrials, materials, and energy are likely to outperform.

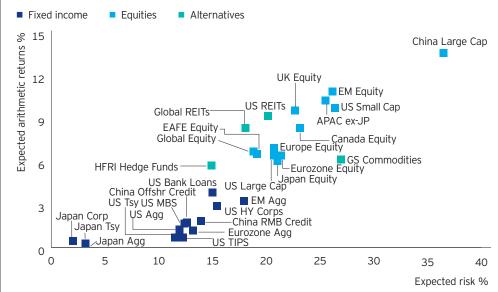
In our pandemic resurgence scenario, we would take a more neutral approach to risk. We expect equity and fixed income markets performance to converge to the mid- to high-single-digit returns range, with a rally in bond yields and stable credit spreads to provide relatively solid returns for quality fixed income, while riskier credit segments would be expected to moderately lag given their lower duration profile. In this scenario, we also favor gold.

We expect equities to provide modest additional risk compensation given a downshift in growth expectations. We expect lower growth coupled with falling bond yields to provide a shift in favor of defensive sectors and higher duration assets such as growth equities, quality, and low volatility factors. We expect cyclical divergence to favor equities in developed markets outside the US.

In terms of sectors, we expect lower growth expectations and falling bond yields to provide a catalyst in favor of defensive sectors with stable cash flows and wider margins, leading to outperformance in information technology, communication services, and health care, which would additionally benefit from a prolonged "work from home" environment. Conversely, we would expect cyclical sectors to underperform as the recent value rotation comes to a halt in this scenario, with financials hit by a flattening of the yield curve.

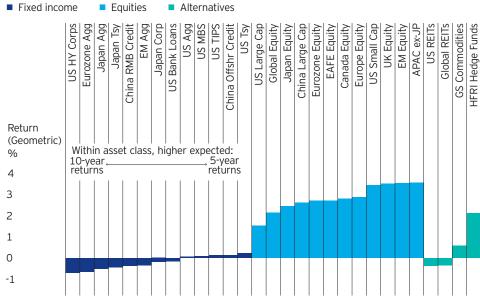
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Figure 7: 10-year asset class expectations (JPY)



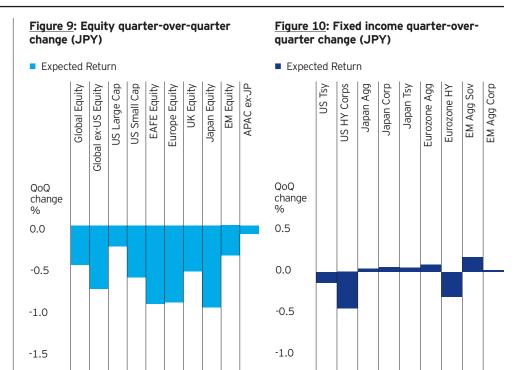
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Figure 8: CMA difference: 5-year minus 10-year assumptions (JPY)



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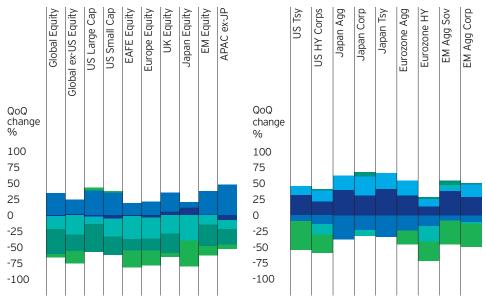
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<u>Figure 11</u>: Equity quarter-over-quarter change attribution (JPY)

- Dividend Yield
- Buyback Yield
- LT Earnings Growth
- Valuation Change
- Currency Adj. (IRP)
- Expected Inflation

<u>Figure 12</u>: Fixed income quarter-overquarter change attribution (JPY)

- Average Yield
- Roll Return
- Valuation Change (Yield Curve)
- Valuation Change (OAS)
- Credit loss
- Currency Adj. (IRP)



Source: Invesco, estimates as of March 31, 2021. Proxies listed in Figure 13. These estimates are forward-looking, are not guarantees, and they involve risks, uncertainties, and assumptions. Please see page 14 for information about our CMA methodology. These estimates reflect the views of Invesco Investment Solutions, the views of other investment teams at Invesco may differ from those presented here. Performance, whether actual or simulated, does not guarantee future results.

Figure 13: 10-year asset class expected returns, risk, and return-to-risk (JPY)

UIS Tay M		Asset class	Index	Expected geometric return %	Expected arithmetic return %	Expected risk %	Arithmetic return to risk ratio
US Tay I M							
US Tay Long							
US TIPS			•				
US Bank Loans							
U.S. Agg							
BIG Corp							
SEP		,,					
September Sept		· ·					
US HY Corps							
No No No No No No							
Mic Gilbs		'					
Global Tsy	ae						
Global Tsy	ဥ						
Global Tsy	ė i=						
Global Tsy	<u>×</u>						
Global Sov BBG BARC Global Sov 0.1 0.9 12.8 0.07	"						
Global Corp		· · · · · · · · · · · · · · · · · · ·	•				
Global IG							
Eurozone Corp BBG BARC Euro Agg Credit Corp 0.6 1.8 15.2 0.12		'	•				
Eurozone Tsy			•				
Asian Dollar IG BOA ML AC IG 1.1 2.1 14.5 0.14 EM Agg BBG BARC EM Agg 1.7 3.2 17.9 0.18 EM Agg Sov BBG BARC EM Sov 1.8 3.1 16.7 0.19 China Policy Bk & Tsy BBG BARC China PB Tsy TR 0.5 1.4 13.3 0.10 China Policy Bk & Tsy BBG BARC China Corporate 0.9 1.8 13.9 0.13 Global Equity MSCI ACWI 5.1 6.7 18.8 0.36 Global Equity MSCI ACWI 5.1 6.7 18.8 0.36 Global Ex-US Equity MSCI ACWI 8-US Equity MSCI ACWI 8-US Equity US Broad Market Russell 3000 4.7 6.8 21.4 0.32 US Large Cap S&P 500 4.5 6.4 20.7 0.31 US Large Cap S&P 500 4.5 6.4 20.7 0.31 US Small Cap Russell Midcap 5.2 7.7 23.3 0.33 0.33 US Small Cap Russell 2000 6.7 9.7 26.4 0.37 EAFE Equity MSCI EAFE 4.8 6.5 19.1 0.34 Europe Equity MSCI Europe Equity SPT SE Small Cap FTSE Small Cap UK Small Cap TSE Small Cap UK Small Cap Canada Equity SSE TSX 5.9 8.3 23.1 0.36 Canada Equity SSE TSX 5.9 8.3 23.1 0.36 Canada Equity MSCI EM TSE Small Cap UK Small Cap CSI 500 8.5 14.5 38.9 0.37 Pacific ex-UP SSE PSENANEIT Equity TSE PRA/NAREIT Developed 6.9 8.3 18.1 0.46 HFRI HF 4.7 5.7 14.9 0.38 CSC Commodities SSE PGSCI Energy SSE PGSCI Industrial Metals SSE PGSCI Industrial Metals SSE PGSCI Industrial Metals 5.2 7 5.7 5.5 0.22 Industrial Metals SSE PGSCI Industrial Metals 5.7 5.7 5.5 5.7 0.22 Industrial Metals SSE PGSCI Industrial Metals 5.7 5.7 5.7 5.25.7 0.22 Industrial Metals SSE PGSCI Industrial Metals 5.7 5.7 5.25.7 0.22 Industrial Metals 5.7 5.7 5.25.7 0.22 Industrial Metals 5.7 5.7 5.25.7 0.22							
EM Agg Sov BBG BARC EM Agg 1.7 3.2 17.9 0.18 EM Agg Sov BBG BARC EM Sov 1.8 3.1 16.7 0.19 China Policy Bk & Tsy BBG BARC China PB Tsy TR 0.5 1.4 13.3 0.10 China Policy Bk & Tsy BBG BARC China Corporate 0.9 1.8 13.9 0.13 China RMB Credit BBG BARC China Corporate 0.9 1.8 13.9 0.13 China RMB Credit MSCI ACWI EXUS 5.1 6.7 18.8 0.36 Chibal Equity MSCI ACWI EXUS 5.9 7.6 19.5 0.39 US Broad Market Russell 3000 4.7 6.8 21.4 0.32 US Large Cap S&P 500 4.5 6.4 20.7 0.31 US Mid Cap Russell Midcap 5.2 7.7 23.3 0.33 US Small Cap Russell 2000 6.7 9.7 26.4 0.37 EATE Equity MSCI EATE 4.8 6.5 19.1 0.34 Europe Equity MSCI Europe 5.0 6.9 20.7 0.34 Europe Equity MSCI Europe 5.0 6.9 20.7 0.34 Europe Equity MSCI Europe 5.0 6.9 20.7 0.34 UK Large Cap FTSE 100 7.4 9.6 22.5 0.43 UK Large Cap FTSE Small Cap UK Small Cap FTSE Small Cap UK Raft Cap FTSE Small Cap UK Raft Cap FTSE Small Cap UK Raft Cap Gap FTSE Small Cap UK Raft Cap Gap FTSE Small Cap UK Raft Cap Gap Gap FTSE 100 8.5 14.5 38.9 0.37 Pacific ex-JP Equity MSCI EM MSCI EM FTSE EPRA/NAREIT Developed 6.9 8.3 18.1 0.46 HFRI HF Gibal Raft FTSE EPRA/NAREIT Developed 6.9 8.3 18.1 0.46 HFRI HF HFRI Hedge Funds HFRI HF 4.7 5.7 14.9 0.38 GS Commodities S&P GSCI Industrial Metals S&P GSCI Industrial Metals 5.2 7 5.7 0.22 Industrial Metals S&P GSCI Industrial Metals 5.7 5.7 0.22 Industrial		Asian Dollar IG					
EM Agg Sov BBG BARC EM Sov China PD Tsy TR 0.5 1.4 13.3 0.10 China Policy B& Tsy BBG BARC China PB Tsy TR 0.5 1.4 13.3 0.10 China Policy B& Tsy BBG BARC China PB Tsy TR 0.5 1.4 13.3 0.10 China PD Tsy TR 0.9 1.8 13.9 0.13 Global Equity MSCI ACWI 5.1 6.7 18.8 0.36 Global Equity MSCI ACWI ex-US 5.9 7.6 19.5 0.39 US Broad Market Russell 3000 4.7 6.8 21.4 0.32 US Large Cap S&P 500 4.5 6.4 20.7 0.31 US Mid Cap Russell Midcap 5.2 7.7 23.3 0.33 US Small Cap Russell 2000 6.7 9.7 26.4 0.37 EAFE Equity MSCI EAFE 4.8 6.5 19.1 0.34 Europe Equity MSCI Europe 5.0 6.9 20.7 0.34 Europe Equity MSCI Europe 5.0 6.9 20.7 0.34 Europe Equity MSCI Euro ex-UK 4.3 6.4 21.3 0.30 UK Large Cap FTSE 100 7.4 9.6 22.5 0.43 UK Small Cap FTSE Small Cap UK SAP TSX 5.9 8.3 23.1 0.36 Canada Equity SAP TSX 5.9 8.3 23.1 0.36 Canada Equity SAP TSX 5.9 8.3 23.1 0.36 Canada Equity MSCI EM SCI EM Type 5.9 8.3 23.1 0.36 Canada Equity MSCI EM SCI EM Type 5.9 8.3 23.1 0.36 Canada Equity SAP TSX 5.9 SAP TSX 5.		EM Agg					
China Policy Bk & Tsy BBG BARC China PB Tsy TR 0.5 1.4 13.3 0.10		EM Agg Sov	BBG BARC EM Sov	1.8		16.7	
China RMB Credit BBG BARC China Corporate 0.9 1.8 13.9 0.13		**					
Global Equity MSCI ACWI 5.1 6.7 18.8 0.36 Clobal ex-US 5.9 7.6 19.5 0.39 US Broad Market Russell 3000 4.7 6.8 21.4 0.32 US Large Cap S&P 500 4.5 6.4 20.7 0.31 US Mid Cap Russell Midcap 5.2 7.7 23.3 0.33 US Small Cap Russell Midcap 5.2 7.7 23.3 0.33 US Small Cap Russell Z000 6.7 9.7 26.4 0.37 EAFE Equity MSCI EAFE 4.8 6.5 19.1 0.34 Europe Equity MSCI Europe 5.0 6.9 20.7 0.34 Europe Equity MSCI Europe 5.0 6.9 20.7 0.34 Europe Equity UK Large Cap FTSE 100 7.4 9.6 22.5 0.43 UK Small Cap FTSE Small Cap UK 8.7 12.0 27.7 0.43 Canada Equity S&P TSX 5.9 8.3 23.1 0.36 0.42 Canada Equity MSCI EM 7.9 10.9 26.1 0.42 China Small Cap CSI 500 8.5 14.5 38.9 0.37 Pacific ex-UP Equity MSCI Eart FTSE APREIT Equity 5.8 8.9 26.7 0.33 US REITS FTSE APREIT Equity 5.8 AFISH 7.3 9.2 20.1 0.45 Global REITS FTSE APREIT Equity 5.8 GSC Commodities S&P GSCI 6.9 0.23 Agriculture S&P GSCI S&P GSCI 6.9 0.23 Agriculture S&P GSCI Chords S&P GSCI Candus Can			BBG BARC China Corporate		1.8	13.9	
Global ex-US Equity MSCI ACWl ex-US 5.9 7.6 19.5 0.39		Global Equity	MSCI ACWI				
US Large Cap S&P 500			MSCI ACWI ex-US	5.9	7.6	19.5	0.39
US Large Cap S&P 500		US Broad Market	Russell 3000	4.7	6.8	21.4	0.32
US Mid Cap Russell Midcap 5.2 7.7 23.3 0.33 US Small Cap Russell 2000 6.7 9.7 26.4 0.37 EAFE Equity MSCI EAFE 4.8 6.5 19.1 0.34 Europe Equity MSCI Europe 5.0 6.9 20.7 0.34 Eurozone Equity MSCI Euro ex-UK 4.3 6.4 21.3 0.30 UK Large Cap FTSE 100 7.4 9.6 22.5 0.43 UK Small Cap FTSE Small Cap UK 8.7 12.0 27.7 0.43 Canada Equity MSCI JP 4.0 6.0 21.0 0.29 EM Equity MSCI JP 4.0 6.0 21.0 0.29 EM Equity MSCI EM 7.9 10.9 26.1 0.42 China Small Cap CSI 500 8.5 14.5 38.9 0.37 Pacific ex-JP Equity MSCI Pacific ex-JP 5.8 8.9 26.7 0.33 US REITS FTSE NAREIT Equity 7.3 9.2 20.1 0.45 Global REITS FTSE EPRA/NAREIT Developed 6.9 8.3 18.1 0.46 HFRI Hedge Funds HFRI HF 4.7 5.7 14.9 0.38 GS Commodities S&P GSCI Agriculture 5.8 6.5 11.6 39.5 0.29 Industrial Metals S&P GSCI Industrial Metals 2.7 5.7 25.7 0.22 OS Tables Total Metals 5.8 6.5 11.6 39.5 0.29 Industrial Metals S&P GSCI Industrial Metals 2.7 5.7 25.7 0.22 OS Tables Total Metals 5.8 6.7 5.7 5.7 0.22 OS Tables Total Metals 5.8 6.7 6.2 6.1 6.7 6.2 OS Tables Total Metals 5.8 6.7 6.2 6.7 6.7 6.2 OS Tables Total Metals 5.8 6.7 6.2 6.7 6.2 OS Tables Total Metals 5.8 6.7 6.7 6.2 OS Tables Total Metals 5.8 6.7 6.2 OS Tables Total Metals 5.8 6.7 6.7 6.2 OS Tables Total Metals 5.8 6.7 6.7 6.7 OS Tables Total Metals 5.8 6.7 6.7 OS Tables Total Metals 6.7 6.7 OS Tables Total Metals 5.8 6.7 OS Tables Total Meta		US Large Cap	S&P 500	4.5	6.4	20.7	0.31
EAFE Equity MSCI EAFE 4.8 6.5 19.1 0.34			Russell Midcap	5.2	7.7	23.3	0.33
Europe Equity MSCI Europe 5.0 6.9 20.7 0.34		US Small Cap	Russell 2000	6.7	9.7	26.4	0.37
UK Large Cap FTSE 100 7.4 9.6 22.5 0.43 UK Small Cap FTSE Small Cap UK 8.7 12.0 27.7 0.43 Canada Equity S&P TSX 5.9 8.3 23.1 0.36 Japan Equity MSCI JP 4.0 6.0 21.0 0.29 EM Equity MSCI EM 7.9 10.9 26.1 0.42 China Small Cap CSI 500 8.5 14.5 38.9 0.37 Pacific ex-JP Equity MSCI Pacific ex-JP 5.8 8.9 26.7 0.33 US REITS FTSE NAREIT Equity 7.3 9.2 20.1 0.45 Global REITS FTSE EPRA/NAREIT Developed 6.9 8.3 18.1 0.46 HFRI Hedge Funds HFRI HF 4.7 5.7 14.9 0.38 GS Commodities S&P GSCI Agriculture 5.8 GSC Industrial Metals 5.9 GSC Industrial Met	10	EAFE Equity	MSCI EAFE	4.8	6.5	19.1	0.34
UK Large Cap FTSE 100 7.4 9.6 22.5 0.43 UK Small Cap FTSE Small Cap UK 8.7 12.0 27.7 0.43 Canada Equity S&P TSX 5.9 8.3 23.1 0.36 Japan Equity MSCI JP 4.0 6.0 21.0 0.29 EM Equity MSCI EM 7.9 10.9 26.1 0.42 China Small Cap CSI 500 8.5 14.5 38.9 0.37 Pacific ex-JP Equity MSCI Pacific ex-JP 5.8 8.9 26.7 0.33 US REITS FTSE NAREIT Equity 7.3 9.2 20.1 0.45 Global REITS FTSE EPRA/NAREIT Developed 6.9 8.3 18.1 0.46 HFRI Hedge Funds HFRI HF 4.7 5.7 14.9 0.38 GS Commodities S&P GSCI Agriculture 5.8 GSC Industrial Metals 5.9 GSC Industrial Met	ţį	Europe Equity	MSCI Europe	5.0	6.9	20.7	0.34
UK Large Cap FTSE 100 7.4 9.6 22.5 0.43 UK Small Cap FTSE Small Cap UK 8.7 12.0 27.7 0.43 Canada Equity S&P TSX 5.9 8.3 23.1 0.36 Japan Equity MSCI JP 4.0 6.0 21.0 0.29 EM Equity MSCI EM 7.9 10.9 26.1 0.42 China Small Cap CSI 500 8.5 14.5 38.9 0.37 Pacific ex-JP Equity MSCI Pacific ex-JP 5.8 8.9 26.7 0.33 US REITS FTSE NAREIT Equity 7.3 9.2 20.1 0.45 Global REITS FTSE EPRA/NAREIT Developed 6.9 8.3 18.1 0.46 HFRI Hedge Funds HFRI HF 4.7 5.7 14.9 0.38 GS Commodities S&P GSCI Agriculture 5.8 GSC Industrial Metals 5.9 GSC Industrial Met	a in	Eurozone Equity	MSCI Euro ex-UK	4.3	6.4	21.3	0.30
Canada Equity S&P TSX 5.9 8.3 23.1 0.36 Japan Equity MSCI JP 4.0 6.0 21.0 0.29 EM Equity MSCI EM 7.9 10.9 26.1 0.42 China Small Cap CSI 500 8.5 14.5 38.9 0.37 Pacific ex-JP Equity MSCI Pacific ex-JP 5.8 8.9 26.7 0.33 US REITS FTSE NAREIT Equity 7.3 9.2 20.1 0.45 Global REITS FTSE EPRA/NAREIT Developed 6.9 8.3 18.1 0.46 HFRI Hedge Funds HFRI HF 4.7 5.7 14.9 0.38 GS Commodities S&P GSCI Agriculture S&P GSCI Agriculture -1.6 1.2 24.2 0.05 Energy S&P GSCI Industrial Metals S&P GSCI Industrial Metals 2.7 5.7 0.22		UK Large Cap	FTSE 100	7.4	9.6	22.5	0.43
Canada Equity S&P TSX 5.9 8.3 23.1 0.36 Japan Equity MSCI JP 4.0 6.0 21.0 0.29 EM Equity MSCI EM 7.9 10.9 26.1 0.42 China Small Cap CSI 500 8.5 14.5 38.9 0.37 Pacific ex-JP Equity MSCI Pacific ex-JP 5.8 8.9 26.7 0.33 US REITS FTSE NAREIT Equity 7.3 9.2 20.1 0.45 Global REITS FTSE EPRA/NAREIT Developed 6.9 8.3 18.1 0.46 HFRI Hedge Funds HFRI HF 4.7 5.7 14.9 0.38 GS Commodities S&P GSCI Agriculture S&P GSCI Agriculture -1.6 1.2 24.2 0.05 Energy S&P GSCI Industrial Metals S&P GSCI Industrial Metals 2.7 5.7 0.22		UK Small Cap	FTSE Small Cap UK	8.7	12.0	27.7	0.43
EM Equity MSCI EM 7.9 10.9 26.1 0.42 China Small Cap CSI 500 8.5 14.5 38.9 0.37 Pacific ex-JP Equity MSCI Pacific ex-JP 5.8 8.9 26.7 0.33 US REITS FTSE NAREIT Equity 7.3 9.2 20.1 0.45 Global REITS FTSE EPRA/NAREIT Developed 6.9 8.3 18.1 0.46 HFRI Hedge Funds HFRI HF 4.7 5.7 14.9 0.38 GS Commodities S&P GSCI Agriculture 5.8 P GSCI Agriculture 7.16 1.2 24.2 0.05 Energy S&P GSCI Energy 5.2 11.6 39.5 0.29 Industrial Metals S&P GSCI Industrial Metals 2.7 5.7 25.7 0.22		Canada Equity	S&P TSX	5.9	8.3	23.1	0.36
China Small Cap CSI 500 8.5 14.5 38.9 0.37 Pacific ex-JP Equity MSCI Pacific ex-JP 5.8 8.9 26.7 0.33 US REITS FTSE NAREIT Equity 7.3 9.2 20.1 0.45 Global REITS FTSE EPRA/NAREIT Developed 6.9 8.3 18.1 0.46 HFRI Hedge Funds HFRI HF 4.7 5.7 14.9 0.38 GS Commodities S&P GSCI Agriculture 2.9 6.1 26.9 0.23 Agriculture S&P GSCI Agriculture -1.6 1.2 24.2 0.05 Energy S&P GSCI Industrial Metals S&P GSCI Industrial Metals 2.7 5.7 25.7 0.22 Industrial Metals S&P GSCI Industrial Metals 38.9 0.37 14.5 38.9 0.37 0.33 0.45 0.46 4.7 5.7 14.9 0.38 0.39 0.49 0.40 0.		Japan Equity	MSCI JP	4.0	6.0	21.0	0.29
Pacific ex-JP Equity MSCI Pacific ex-JP 5.8 8.9 26.7 0.33		EM Equity	MSCI EM	7.9	10.9	26.1	0.42
US REITS FTSE NAREIT Equity 7.3 9.2 20.1 0.45 Global REITS FTSE EPRA/NAREIT Developed 6.9 8.3 18.1 0.46 HFRI Hedge Funds HFRI HF 4.7 5.7 14.9 0.38 GS Commodities S&P GSCI Agriculture 7.6 1.2 24.2 0.05 Energy S&P GSCI Energy 5.2 11.6 39.5 0.29 Industrial Metals S&P GSCI Industrial Metals 2.7 5.7 25.7 0.22		China Small Cap	CSI 500	8.5	14.5	38.9	0.37
Global REITS FTSE EPRA/NAREIT Developed 6.9 8.3 18.1 0.46 HFRI Hedge Funds HFRI HF 4.7 5.7 14.9 0.38 GS Commodities S&P GSCI Seprence 5.2 6.1 26.9 0.23 Agriculture S&P GSCI Agriculture 5.2 11.6 39.5 0.29 Industrial Metals S&P GSCI Industrial Metals 2.7 5.7 25.7 0.22		Pacific ex-JP Equity	MSCI Pacific ex-JP	5.8	8.9	26.7	0.33
HFRI Hedge Funds HFRI HF 4.7 5.7 14.9 0.38 GS Commodities S&P GSCI 2.9 6.1 26.9 0.23 Agriculture S&P GSCI Agriculture -1.6 1.2 24.2 0.05 Energy S&P GSCI Energy 5.2 11.6 39.5 0.29 Industrial Metals S&P GSCI Industrial Metals 2.7 5.7 25.7 0.22		US REITs	FTSE NAREIT Equity	7.3	9.2	20.1	0.45
Industrial Metals S&P GSCI Industrial Metals 2.7 5.7 25.7 0.22		Global REITs	FTSE EPRA/NAREIT Developed	6.9	8.3	18.1	0.46
Industrial Metals S&P GSCI Industrial Metals 2.7 5.7 25.7 0.22	Ves	HFRI Hedge Funds	HFRI HF	4.7	5.7	14.9	0.38
Industrial Metals S&P GSCI Industrial Metals 2.7 5.7 25.7 0.22	ati	GS Commodities	S&P GSCI	2.9	6.1	26.9	0.23
Industrial Metals S&P GSCI Industrial Metals 2.7 5.7 25.7 0.22	ern		S&P GSCI Agriculture		1.2	24.2	
		Energy	S&P GSCI Energy			39.5	0.29
Precious Metals S&P GSCI Precious Metals 0.6 2.3 18.9 0.12							
Trectous wictais Sai Osci Trectous wictais 0.0 2.5 10.7 0.12		Precious Metals	S&P GSCI Precious Metals	0.6	2.3	18.9	0.12

Source: Invesco, estimates as of March 31, 2021. These estimates are forward-looking, are not guarantees, and they involve risks, uncertainties, and assumptions. Please see page 14 for information about our CMA methodology. These estimates reflect the views of Invesco Investment Solutions, the views of other investment teams at Invesco may differ from those presented here. Agg = Aggregate, Infra = Infrastructure, Corp = Corporate, DJ = Dow Jones, HY = High Yield, Muni = Municipals, Tsy = Treasury, IM = Intermediate, ML = Merrill Lynch, Sov = Sovereign, EM = Emerging Markets, IG = Investment Grade, APAC = Asia Pacific, Gov = Government, MBS = Mortgage Backed Securities, TIPS = Treasury Inflation Protected Securities.

Figure 14: 10-year correlations (JPY)

												Fi	xed i	ncom	ne											
Greater than 0.700.30 to 0.70Less than 0.30	US Tsy Short	US Tsy IM	US Tsy Long	US TIPS	US Bank Loans	US Agg	US IG Corp	US MBS	US Preferred Stocks	US HY Corps	UK Linker	UK Gilts	UK Corp	Global Agg	Global Agg ex-US	Global Tsy	Global Sov	Global Corp	Global IG	Eurozone Corp	Eurozone Tsy	Asian Dollar IG	EM Agg	EM Agg Sov	China Policy Bk & Tsy	China RMB Credit
Asset class	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	¥	¥	Ϋ́	9	Glo	9	9	Glo	9	Eur	Eur	Asi	EM	EM	Chi	Chi
US Tsy Short US Tsy IM US Tsy Long US TIPS US Bank Loans US Agg US IG Corp US MBS	0.83 0.93 0.79 0.97 0.53 0.71 0.56 0.62 0.56 0.80 0.72 0.74 0.74 0.74 0.53 0.54 0.66 0.69 0.65	0.59 0.87 0.73 0.97 0.81 0.98 0.50 0.62 0.57 0.64 0.52 0.77 0.76 0.74 0.74 0.51 0.56 0.89 0.67 0.64	0.58 0.16 0.63 0.55 0.53 0.21 0.14 0.36 0.42 0.20 0.49 0.30 0.52 0.45 0.39 0.41 0.15 0.30 0.52	1.00 0.78 0.92 0.88 0.87 0.57 0.74 0.72 0.66 0.88 0.70 0.86 0.85 0.85 0.64 0.63 0.93 0.93 0.77 0.76	0.78 0.62 0.92 0.68 0.63 0.73 0.78 0.64 0.66 0.79 0.84 0.65 0.54 0.84 0.84 0.80 0.75 0.78	1.00 0.92 0.98 0.58 0.73 0.66 0.70 0.62 0.83 0.85 0.84 0.85 0.95 0.77 0.75 0.84	0.84 0.69 0.85 0.73 0.71 0.75 0.89 0.73 0.81 0.90 0.94 0.95 0.69 0.69 0.88 0.88 0.88 0.88 0.73	1.00 0.52 0.69 0.59 0.66 0.57 0.77 0.79 0.77 0.78 0.54 0.57 0.91 0.72 0.69 0.88	0.70 0.54 0.48 0.58 0.62 0.55 0.56 0.62 0.70 0.70 0.56 0.48 0.61 0.62 0.62	0.61 0.75 0.78 0.70 0.68 0.83 0.87 0.86 0.71 0.60 0.83	0.79 0.77 0.78 0.77 0.80 0.80 0.71 0.68 0.72 0.70 0.69	0.91 0.82 0.80 0.75 0.80 0.71 0.71 0.72 0.63 0.62	0.82 0.76 0.78 0.87 0.86 0.80 0.71 0.72 0.73 0.71 0.59	0.96 0.96 0.88 0.89 0.91 0.84 0.82	0.95 0.89 0.90 0.89 0.97 0.97 0.74 0.75	0.91 0.88 0.93 0.84 0.76 0.75	0.95 0.95 0.85 0.84 0.92 0.91 0.91	1.00 0.88 0.83 0.91 0.89	0.91 0.89 0.87 0.71	1.00 0.95 0.69 0.74 0.72 0.57 0.59	0.67 0.67 0.67 0.57	0.86 0.79	1.00 0.99 0.67 0.69	0.64	1.00	
Global Equity Global ex-US Equity US Broad Market US Large Cap US Mid Cap US Small Cap EAFE Equity Europe Equity Eurozone Equity UK Large Cap UK Small Cap Canada Equity Japan Equity EM Equity China Small Cap Pacific ex-JP Equity US REITS	0.50 0.60 0.51 0.54 0.52 0.51 0.49 0.53 0.46 0.44 0.51 0.40 0.37	0.40 0.49 0.50 0.45 0.42 0.41 0.39 0.34 0.34 0.34 0.30 0.34	0.02 0.00 -0.06 -0.02 -0.03 -0.05 -0.11 -0.07 0.01 -0.06 0.06 -0.03	0.54 0.59 0.59 0.58 0.52 0.53 0.51 0.54 0.48 0.52 0.51 0.48 0.48	0.72 0.78 0.77 0.78 0.74 0.72 0.70 0.67 0.73 0.71 0.65 0.63 0.42 0.67	0.57 0.58 0.54 0.50 0.51 0.50 0.48 0.51 0.44 0.44 0.49 0.49 0.39	0.65 0.68 0.68 0.61 0.65 0.63 0.61 0.64 0.61 0.58 0.57 0.44	0.47 0.55 0.57 0.52 0.48 0.49 0.47 0.50 0.42 0.41 0.48 0.37	0.64 0.62 0.61 0.58 0.59 0.58 0.56 0.31	0.82 0.84 0.84 0.86 0.81 0.82 0.80 0.79 0.80 0.79 0.71 0.76 0.47	0.61 0.58 0.58 0.58 0.52 0.61 0.62 0.63 0.61 0.57 0.51 0.54 0.38	0.57 0.55 0.56 0.50 0.58 0.59 0.56 0.63 0.60 0.51 0.47 0.50 0.39	0.75 0.70 0.70 0.70 0.65 0.75 0.75 0.79 0.69 0.69 0.62 0.67 0.44	0.70 0.68 0.69 0.60 0.70 0.70 0.69 0.69 0.62 0.62 0.58 0.61 0.46	0.75 0.66 0.67 0.59 0.75 0.75 0.73 0.67 0.66 0.57 0.68 0.45	0.60 0.61 0.58 0.52 0.65 0.65 0.65 0.55 0.55 0.51 0.56 0.43	0.73 0.71 0.72 0.71 0.63 0.74 0.73 0.71 0.64 0.66 0.61 0.66 0.47	0.76 0.76 0.69 0.77 0.76 0.77 0.76 0.77 0.73 0.72 0.65 0.70 0.49	0.777 0.755 0.755 0.688 0.777 0.766 0.755 0.766 0.722 0.711 0.644 0.699 0.488 0.73	0.78 0.79 0.78 0.75 0.71 0.69 0.59	0.66 0.57 0.56 0.49 0.68 0.68 0.69 0.63 0.57 0.55 0.50 0.59 0.39	0.58 0.62 0.58 0.62 0.57 0.57 0.57 0.54 0.46 0.58	0.76 0.76 0.77 0.70 0.77 0.75 0.74 0.75 0.71 0.73 0.65 0.73	0.76 0.74 0.74 0.68 0.75 0.74 0.73 0.73 0.69 0.71 0.63 0.72 0.47	0.56 0.53 0.51 0.57 0.51 0.47 0.47 0.47 0.42 0.48	0.57 0.55 0.53 0.58 0.53 0.49 0.59 0.49 0.43
Global REITS HFRI Hedge Funds GS Commodities Agriculture Energy Industrial Metals	0.41 0.82 0.38 0.26 0.31 0.40 0.10	0.35 0.72 0.27 0.21 0.21 0.30 0.13	0.09 0.16 -0.18 -0.11 -0.20 -0.13 0.11	0.54 0.76 0.42 0.28 0.35 0.41 0.29	0.68 0.92 0.61 0.32 0.55 0.55	0.48 0.78 0.32 0.22 0.26 0.34 0.17	0.65 0.83 0.42 0.26 0.36 0.41 0.23	0.42 0.77 0.32 0.23 0.25 0.34 0.14	0.67 0.66 0.38 0.29 0.32 0.39 0.06	0.79 0.90 0.61 0.37 0.55 0.58	0.61 0.67 0.48 0.26 0.42 0.41 0.31	0.55 0.66 0.40 0.25 0.33 0.38 0.31	0.71 0.76 0.54 0.31 0.48 0.50 0.30	0.65 0.82 0.48 0.34 0.40 0.50 0.31	0.68 0.72 0.53 0.39 0.45 0.55 0.36	0.60 0.72 0.42 0.32 0.35 0.46	0.70 0.81 0.52 0.34 0.46 0.50 0.33	0.74 0.87 0.55 0.35 0.48 0.54 0.31	0.73 0.86 0.54 0.35 0.46 0.53 0.30	0.68 0.73 0.58 0.40 0.50 0.58 0.34	0.58 0.63 0.47 0.35 0.40 0.48 0.33	0.60 0.83 0.45 0.30 0.38 0.45 0.26	0.74 0.84 0.55 0.34 0.49 0.54 0.33	0.74 0.81 0.53 0.32 0.49 0.50 0.32	0.45 0.79 0.37 0.27 0.29 0.42 0.08	0.45 0.81 0.43 0.28 0.35 0.45

Source: Invesco, estimates as of March 31, 2021. Proxies listed in Figure 13. These estimates are forward-looking, are not guarantees, and they involve risks, uncertainties, and assumptions. Please see page 14 for information about our CMA methodology. These estimates reflect the views of Invesco Investment Solutions, the views of other investment teams at Invesco may differ from those presented here.

Figure 14: 10-year correlations (JPY)

		Equities													Alternatives										
Greater than 0.700.30 to 0.70Less than 0.30		Global Equity	Global ex-US Equity	US Broad Market	US Large Cap	US Mid Cap	US Small Cap	EAFE Equity	Europe Equity	Eurozone Equity	UK Large Cap	UK Small Cap	Canada Equity	Japan Equity	EM Equity	China Small Cap	Pacific ex-JP Equity	US REITS	Global REITs	HFRI Hedge Funds	GS Commodities	Agriculture	Energy	Industrial Metals	Precious Metals
Fixed income	US Tsy Short US Tsy IM US Tsy Long US TIPS US Bank Loans US Agg US IG Corp US MBS US Preferred Stocks US HY Corps UK Linker UK Gilts UK Corp Global Agg Global Agg Global Tsy Global Sov Global IG Eurozone Corp Eurozone Tsy Asian Dollar IG EM Agg EM Agg Sov China Policy Bk & Tsy China RMB Credit																								
Equities	Global Equity Global ex-US Equity US Broad Market US Large Cap US Mid Cap US Small Cap EAFE Equity Europe Equity Eurozone Equity UK Large Cap UK Small Cap Canada Equity Japan Equity EM Equity EM Equity China Small Cap Pacific ex-JP Equity US REITS	0.96 0.91 0.98 0.96 0.95 0.94 0.90 0.83 0.89 0.50 0.92	0.91 0.91 0.91 0.86 0.99 0.98 0.97 0.95 0.91 0.90 0.84 0.93 0.51 0.94 0.72	1.00 0.98 0.94 0.92 0.90 0.89 0.85 0.87 0.79 0.81 0.47	0.90 0.89 0.84 0.86 0.78 0.80 0.47 0.84	0.97 0.91 0.89 0.88 0.87 0.89 0.78 0.82 0.46 0.86 0.80	0.85 0.84 0.83 0.83 0.84 0.74 0.77 0.42 0.82 0.76	0.99 0.98 0.96 0.91 0.87 0.86 0.88 0.47 0.91	0.99 0.97 0.90 0.86 0.79 0.86 0.46 0.89	0.94 0.88 0.84 0.78 0.85 0.45 0.87	0.91 0.87 0.78 0.83 0.46 0.88 0.68 0.68	0.83 0.45 0.85 0.68	0.72 0.86 0.47 0.88 0.69	0.72 : 0.43 (0.74 (0.60 (0.53 0.92 0.64	0.49 0.28	0.71								
Alternatives	Global REITs HFRI Hedge Funds GS Commodities Agriculture Energy Industrial Metals Precious Metals	0.88 0.63 0.40 0.56 0.66	0.42 0.58 0.67	0.88 0.58 0.36 0.52 0.61	0.51 0.61	0.88 0.61 0.36 0.55 0.63	0.85	0.41 0.57 0.64	0.82 0.63 0.40 0.57 0.63	0.80 0.59 0.39 0.54	0.84 (0.68 (0.41 (0.62 (0.66 (0.81 0.62 0.39 0.56 0.63	0.81 (0.71 (0.41 (0.65 (0.70 (0.76 (0.53 (0.31 (0.48 (0.51 (0.76 0.60 0.42 0.52 0.67	0.52 0.31 0.15 0.27 0.45	0.79 0.61 0.44 0.53 0.68	0.28 0.34 0.46	0.73 0.52 0.36 0.47 0.58	0.65 0.39 0.58 0.64	0.44 1 0.98 (0.62 (0.30 0.38 ().53		1.00

Source: Invesco, estimates as of March 31, 2021. Proxies listed in <u>Figure 13</u>. These estimates are forward-looking, are not guarantees, and they involve risks, uncertainties, and assumptions. Please see page 14 for information about our CMA methodology. Please reference the CMA methodology paper for additional CMA information. These estimates reflect the views of Invesco Investment Solutions, the views of other investment teams at Invesco may differ from those presented here.

About our capital market assumptions methodology

We employ a fundamentally based "building block" approach to estimating asset class returns. Estimates for income and capital gain components of returns for each asset class are informed by fundamental and historical data. Components are then combined to establish estimated returns (Figure 14). Here we provide a summary of key elements of the methodology used to produce our long-term (10-year) estimates. Five-year assumptions are also available upon request. Please see Invesco's capital market assumption methodology whitepaper for more detail.

Figure 15: Our building block approach to estimating returns



For illustrative purposes only.

Fixed income returns are composed of:

- + Average yield: The average of the starting (initial) yield and the expected yield for bonds.
- + Valuation change (yield curve): Estimated changes in valuation given changes in the Treasury yield curve.
- + **Roll return:** Reflects the impact on the price of bonds that are held over time. Given a positively sloped yield curve, a bond's price will be positively impacted as interest payments remain fixed but time to maturity decreases.
- + **Credit adjustment:** Estimated potential impact on returns from credit rating downgrades and defaults.

Equity returns are composed of:

- + **Dividend yield:** Dividend per share divided by price per share.
- + **Buyback yield:** Percentage change in shares outstanding resulting from companies buying back or issuing shares.
- + **Valuation change:** The expected change in value given the current Price/Earnings (P/E) ratio and the assumption of reversion to the long-term average P/E ratio.
- + Long-term (LT) earnings growth: The estimated rate in the growth of earning based on the long-term average real GDP per capita and inflation.

Currency adjustments are based on the theory of Interest Rate Parity (IRP) which suggests a strong relationship between interest rates and the spot and forward exchange rates between two given currencies. Interest rate parity theory assumes that no arbitrage opportunities exist in foreign exchange markets. It is based on the notion that, over the long term, investors will be indifferent between varying rate of returns on deposits in different currencies because any excess return on deposits will be offset by changes in the relative value of currencies.

Volatility estimates for the different asset classes, we use rolling historical quarterly returns of various market benchmarks. Given that benchmarks have differing histories within and across asset classes, we normalise the volatility estimates of shorter-lived benchmarks to ensure that all series are measured over similar time periods.

Correlation estimates are calculated using trailing 20 years of monthly returns. Given that recent asset class correlations could have a more meaningful effect on future observations, we place greater weight on more recent observations by applying a 10-year half-life to the time series in our calculation.

Arithmetic versus geometric returns. Our building block methodology produces estimates of geometric (compound) asset class returns. However, standard mean-variance portfolio optimisation requires return inputs to be provided in arithmetic rather than in geometric terms. This is because the arithmetic mean of a weighted sum (e.g., a portfolio) is the weighted sum of the arithmetic means (of portfolio constituents). This does not hold for geometric returns. Accordingly, we translate geometric estimates into arithmetic terms. We provide both arithmetic returns and geometric returns given that the former informs the optimisation process regarding expected outcomes, while the latter informs the investor about the rate at which asset classes might be expected to grow wealth over the long run.

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Invesco Investment Solutions

Invesco Investment Solutions is an experienced multi-asset team that seeks to deliver desired client outcomes using Invesco's global capabilities, scale and infrastructure. We partner with you to fully understand your goals and harness strategies across Invesco's global spectrum of active, passive, factor and alternative investments that address your unique needs. From robust research and analysis to bespoke investment solutions, our team brings insight and innovation to your portfolio construction process. Our approach starts with a complete understanding of your needs:

- We help support better investment outcomes by delivering insightful and thorough analytics.
- + By putting analytics into practice, we develop investment approaches specific to your
- + We work as an extension of your team to engage across functions and implement solutions.

The foundation of the team's process is the development of capital market assumptions long-term forecasts for the behavior of different asset classes. Their expectations for returns, volatility, and correlation serve as guidelines for long-term, strategic asset allocation decisions.

Assisting clients in North America, Europe and Asia, Invesco's Investment Solutions team consists of over 75 professionals, with 20+ years of experience across the leadership team. The team benefits from Invesco's on-the-ground presence in 25 countries worldwide, with over 150 professionals to support investment selection and ongoing monitoring.

About the Invesco Global Market Strategist office

The GMS office is comprised of investment professionals based in different regions, with different areas of expertise. It provides data and commentary on global markets, offering insights into key trends and themes and their investment implications.

マルチアセット運用戦略に関する投資リスク

- 当運用戦略は、国内外の株式、債券、ETF、REIT、債券、短期公社債、派生商品取引、および不動産、インフラ等の実物資産、プライベート・エクイティ等に投資する現ファンドなどを主要投資対象としますので、組み入れた国内外の株式、ETF、REIT、債券、短期公社債、派生商品取引、不動産、インフラなどの実物資産、プライベート・エクイティ等の価格変動などの影響により、損失を被ることがあります。
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マルチアセット運用戦略に関する費用と税金

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