

2024 Long-Term Capital Market Assumptions

Invesco Solutions I United States Dollar (USD) I Q1 Update

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Executive Summary



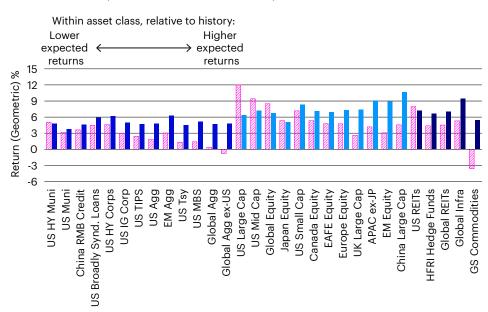
Alessio de Longis, CFA® Senior Portfolio Manager, Head of Investments, Invesco Solutions

Invesco Solutions provides forecasts for 170+ assets in over 20 currencies, including 10 private assets. For additional CMA data, views, or analysis, please reach out to your Invesco representative.

- The 21.5% rally of US large-cap equities over the past four months, driven by the recent AI boom, has been nothing short of spectacular. Typically, such velocity occurs after markets have experienced a recession and have begun pricing in the early stages of a recovery, with the only other instance in the post-WW2 era (1945) coinciding with the dot-com bubble.
- Concentration risk is one that occurs in many individual regional equity markets
 and rarely causes systemic issues for markets globally. However, it has led to
 significant sell-offs, like during the early 2000s in the US. Given the size of the US
 market currently, concentration in a handful of equities like the "Magnificent 7"
 poses risks for global multi-asset investors as drawdowns can occur even without
 a specific catalyst.
- While we are not claiming that this instance of concentration risk will be a
 harbinger of the next recession, it is a risk we are intently focusing on and
 diversifying away from through non-market capitalization weighted equity
 strategies, like factors and global equities outside of the US.

Figure 1: Expectations relative to historical average (USD)

Fixed income 10-year CMA
 Alternatives 10-year CMA
 Historical 10-year return



Source: Invesco, estimates as of December 31, 2023. Proxies listed in **Figure 8**. These estimates are forward-looking, are not guarantees, and they involve risks, uncertainties, and assumptions. Please see page 11 for information about our CMA methodology. These estimates reflect the views of Invesco Solutions; the views of other investment teams at Invesco may differ from those presented here.

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Asset Allocation Insights

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Asset Allocation Insights



Scott Hixon, CFA® Senior Portfolio Manager, Head of Research, Invesco Global Asset Allocation



Marc Shmerling, CFA® Director, Investment Research Invesco Solutions

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

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Asset Allocation Insights

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Strategic perspective

The 21.5% rally of US large-cap equities over the past four months¹, driven by the recent AI boom, has been nothing short of spectacular. Typically, such velocity occurs after markets have experienced a recession and have begun pricing in the early stages of a recovery, with the only other instance in the post-WW2 era (1945) coinciding with the Dot-com bubble² after the Fed had fanned the flames of equity markets by cutting rates in an expansion. That was also the last time the upper bound of the federal funds target rate was at 5.5% and it was not soon after cutting that the Fed had to resume hiking once again. While there was no recession in 2023, the year prior came close enough to triggering a technical recession³ that equity markets had a period of weakness to recover from once recession risk began to fade. In fact, it was only in the second half of 2023 that economists began reducing their forecast of a near-term recession, reducing it from 65% to 40% today⁴. So, are US equities merely recovering from a painful "almost-recession" or are they in a bubble? It is certainly difficult to tell. What is clear is that there are risks forming beyond the US equity market for multi-asset investors globally.

Concentration risk is one that occurs in many individual regional equity markets and rarely causes systemic issues for markets globally, however it has led to significant selloffs like during the early 2000's in the US. For example, the top 10 largest stocks within Germany are 60% of the total market cap, while concentration in Taiwan is even more pronounced with the single largest security weighing over 40% of its market cap. US equities are much less concentrated than these markets, with the top 10 stocks weighing a collective 33%, however the US is by far the largest equity market at around \$47 trillion in market cap, while Germany and Taiwan, despite being ranked 9th and 11th globally in terms of market size, are only \$1.5 trillion and \$1.2 trillion, respectively. To put it into perspective for a global, moderate investor, US large-cap equities are 60% of global equity market capitalization, and thus 36% of a global 60/40 portfolio. Indeed, the stocks known as the "Magnificent 7"5 are now 28% of the US equity market with a combined price-to-earnings (P/E) ratio of 38x, compared to the US market with a P/E of 22x, and a world ex-US P/E of 14.5x. Continuing this math, a global moderate investor now has seven securities with very high valuations that take up roughly 10% of their total multi-asset portfolio, are found in one industry⁶, and are based in one country. While we are not claiming that this instance of concentration risk will be a harbinger of the next recession, it is a risk we are intently focusing on and diversifying away from through non-market capitalization weighted equity strategies, like factors, such as smaller capitalization size and value, and global equities outside of the US. Whether we are witnessing a post-recession rally or the blowing of a large bubble, equity investors can both position themselves for a recovery and reduce concentration risk at the same time.

¹ Source: Bloomberg L.P., four months ending Feb. 29th, 2024.

² We thank Jim Reid and Henry Allen of Deutsche Bank for highlighting this analysis.

³ A technical recession is when there are two consecutive quarters of negative growth, however many other indicators, like strong labor markets, industrial production, and consumption, prevented the NBER from calling a recession in 2022.

⁴ As measured by consensus forecasts from Bloomberg Economics as of Feb. 29th, 2024.

⁵ Composed of Microsoft, Apple, Amazon, Alphabet, Meta, Nvidia, and Tesla.

⁶ All of the Magnificent 7 can be considered technology companies despite being labeled within the communications or consumer discretionary sectors.

Return(%) Risk(%) 20 ■ Historical 60/40 8.1 10.2 ▲ Expected 60/40 10.1 5.7 15 **US Large Cap** Return (%) 10 Global Equity EM Equity Moderate Portfolio Global Equity EAFE Equity **Moderate Portfolio** US Large Cap **EAFE Equity** 5 US Agg 🔺 Global Agg

Figure 2: Comparing historical and expected risk and return for a moderate 60/40 portfolio (USD)

Source: Invesco Solutions, as of December 31, 2023. Proxies listed in Figure 8. These estimates are forwardlooking, are not guarantees, and they involve risks, uncertainties, and assumptions. Please see page 11 for information about our CMA methodology. These estimates reflect the views of Invesco Solutions; the views of other investment teams at Invesco may differ from those presented here. The 60/40 Portfolio is a blend of 60% S&P 500 Index and 40% Bloomberg US Aggregate Index.

15 Risk (%)

Global Agg

10

■ EM Equity

20

25

30

1Q24 CMA Observations (10Y, USD)

US Agg

5

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Equities: Our approach to capital market assumptions (CMAs) aims to highlight deviations from reasonable long-term estimates of expected returns, which the US large-cap equity market has defied for quite some time. Due to high valuations, our estimate for the US over the next ten years is expected to be around half of the returns exhibited over the past decade, 6.4% versus 12%. Over the past quarter, our CMAs for global equities are lower by roughly 0.5% due to higher valuations within the US. Two possible options for diversifying a portfolio's equity exposure include investing in global equities outside of the US, which are expected to return 7.5%, and US small-cap equities which have a CMA of 8.3%. Our CMAs for emerging markets (EM) and China are even higher, 9% and 10.7%, due to faster growth rates than in developed markets and improved valuations over the past quarter.

Fixed income: This quarter, our fixed income CMAs are lower by around 0.9% due to lower current yields, a negative valuation change from an expected shift up in the yield curve, and slightly higher expected spreads. However, the longer-term story surrounding fixed income remains the same: Our CMAs for fixed income are higher than they have been in quite a while. With expected returns of around 4%, fixed income is significantly more attractive relative to equities as well, especially when compared to higher yielding credit assets. Of note is that we have recently instituted a new methodology for our cash CMA, which is now based on an estimate of the long-term real rate derived from the forward market curve after adjusting for the term premium.

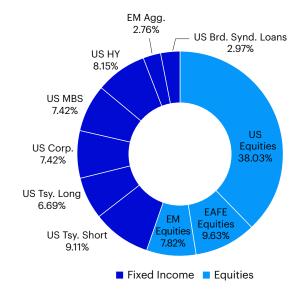
Our new cash CMA has the US dollar expected to yield 3.5%, which is around 1.5% lower than previous estimates. This has resulted in a reduction in the CMA for floating rate assets, like broadly syndicated loans, which rely on our cash estimate within their building blocks.

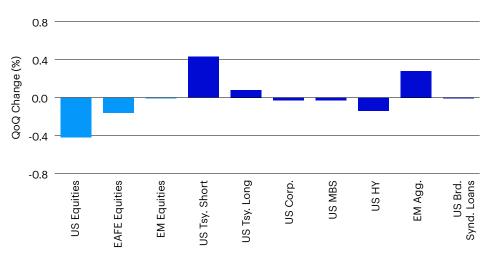
The strategic asset allocation (SAA) displayed here is denominated in USD and is representative of our CMA's applied in a hypothetical portfolio context for global investors.

There are many considerations for investors beyond CMA's when it comes to asset allocation decisions. To learn more about our investment process or discuss your own portfolio needs, please reach out to your Invesco Solutions representative.

Strategic asset allocation trends:

Figure 3: 1Q24 SAA rebalance (USD)





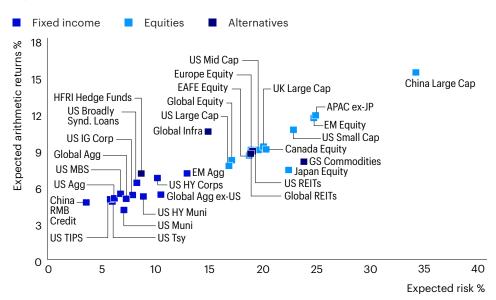
Source: Invesco Solutions, as of December 31, 2023. Proxies listed in **Figure 8**. These estimates reflect the views of Invesco Solutions; the views of other investment teams at Invesco may differ from those presented here. References to overweights and underweights are relative to a 60% global equity and 40% global aggregate fixed income benchmark.

- **Portfolio level:** Compared to a global 60/40 benchmark, our strategic portfolio (5-10Y) is slightly overweight fixed income relative to equities. Overall, our portfolio has not shifted significantly into or out of any asset classes this quarter.
- Within equities: We are overweight EM and US large-cap equities while underweight DM ex-US equities due to a lower expected risk/return ratio. Slight reduction in US equity exposure this quarter.
- Within fixed income: Presently overweight both Treasuries and risky credit. Neutral duration compared to our benchmark. Slight increase in short-term Treasuries and EM aggregate bonds.

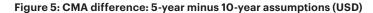
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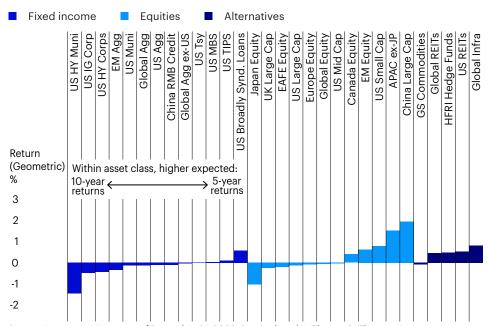
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Figure 4: 10-year asset class expectations (USD)



Source: Invesco, estimates as of December 31, 2023. Proxies listed in **Figure 8**. These estimates are forward-looking, are not guarantees, and they involve risks, uncertainties, and assumptions. Please see page 11 for information about our CMA methodology. These estimates reflect the views of Invesco Solutions; the views of other investment teams at Invesco may differ from those presented here. **Past performance is not a guarantee of future results.**





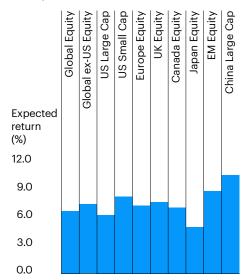
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Executive Summary

Asset Allocation Insights

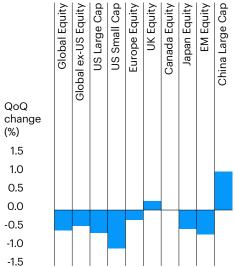
Figure 6a: Equity CMA and building block contribution (USD) (%)

Expected return



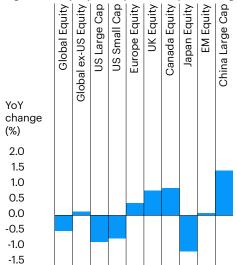
| | Dividend yield | Buyback yield | LT earnings growth | Expected inflation | Valuation change | Currency Adj. (IRP) |
|---------------------|-------------------|------------------|--------------------|--------------------|------------------|------------------------|
| Global Equity | 2.00 | 0.74 | 1.95 | 2.04 | -0.42 | 0.44 |
| Global ex-US Equity | 3.00 | 0.00 | 2.00 | 1.66 | -0.35 | 1.17 |
| US Large Cap | 1.41 | 1.17 | 1.93 | 2.27 | -0.46 | 0.00 |
| US Small Cap | 1.47 | 0.78 | 3.38 | 2.27 | 0.35 | 0.00 |
| Europe Equity | 3.23 | 0.00 | 1.52 | 1.89 | -0.83 | 1.53 |
| UK Equity | 3.86 | 0.00 | 1.71 | 2.14 | -0.33 | 0.35 |
| Canada Equity | 3.13 | 0.00 | 1.75 | 1.96 | -0.48 | 0.78 |
| Japan Equity | 2.24 | 0.00 | 0.78 | -0.79 | -0.43 | 3.27 |
| EM Equity | 2.72 | 0.00 | 3.38 | 2.32 | 0.50 | -0.05 |
| China Large Cap | 2.84 | 0.00 | 3.57 | 1.01 | 1.91 | 1.31 |

Figure 6b: Equity CMA quarter-over-quarter change and building block contribution (USD) (%)



| | Dividend yield | Buyback yield | LT earnings growth | Expected inflation | Valuation change | Currency Adj. (IRP) |
|---------------------|-------------------|------------------|-----------------------|--------------------|------------------|------------------------|
| Global Equity | -0.15 | -0.08 | 0.02 | 0.09 | -0.38 | -0.04 |
| Global ex-US Equity | -0.18 | 0.00 | -0.01 | 0.13 | -0.26 | -0.10 |
| US Large Cap | -0.12 | -0.14 | 0.03 | 0.06 | -0.45 | 0.00 |
| US Small Cap | -0.20 | -0.09 | 0.04 | 0.06 | -0.85 | 0.00 |
| Europe Equity | -0.18 | 0.00 | 0.01 | 0.04 | -0.28 | 0.15 |
| UK Equity | -0.06 | 0.00 | 0.03 | 0.07 | 0.03 | 0.18 |
| Canada Equity | -0.05 | 0.00 | 0.04 | 0.05 | -0.28 | 0.24 |
| Japan Equity | -0.01 | 0.00 | 0.03 | -0.08 | 0.11 | -0.55 |
| EM Equity | -0.28 | 0.00 | -0.06 | 0.37 | -0.37 | -0.32 |
| China Large Cap | 0.19 | 0.00 | -0.06 | 0.62 | 0.84 | -0.59 |

Figure 6c: Equity CMA year-over-year change and building block contribution (USD) (%)

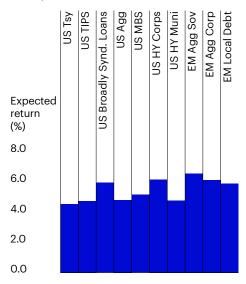


| | Dividend yield | Buyback yield | LT earnings growth | Expected inflation | Valuation change | Currency Adj. (IRP) |
|---------------------|-------------------|------------------|-----------------------|--------------------|------------------|------------------------|
| Global Equity | -0.24 | -0.02 | 0.13 | -0.03 | -0.42 | 0.07 |
| Global ex-US Equity | -0.13 | 0.00 | 0.23 | -0.09 | -0.13 | 0.24 |
| US Large Cap | -0.25 | -0.07 | 0.07 | 0.00 | -0.60 | 0.00 |
| US Small Cap | -0.06 | -0.01 | 0.20 | 0.00 | -0.88 | 0.00 |
| Europe Equity | 0.08 | 0.00 | 0.29 | -0.02 | -0.42 | 0.45 |
| UK Equity | 0.04 | 0.00 | 0.21 | -0.06 | 0.48 | 0.13 |
| Canada Equity | 0.21 | 0.00 | 0.28 | -0.03 | 0.21 | 0.20 |
| Japan Equity | -0.36 | 0.00 | -0.44 | -0.26 | 0.09 | -0.19 |
| EM Equity | -0.46 | 0.00 | 0.46 | -0.09 | 0.06 | 0.09 |
| China Large Cap | 0.41 | 0.00 | -0.48 | -0.35 | 1.59 | 0.28 |

Source: Invesco, estimates as of December 31, 2023. Proxies listed in **Figure 8**. These estimates are forward-looking, are not guarantees, and they involve risks, uncertainties, and assumptions. Please see page 11 for information about our CMA methodology. These estimates reflect the views of Invesco Solutions; the views of other investment teams at Invesco may differ from those presented here. **Past performance is not a guarantee of future results.**

Figure 7a: Fixed income CMA and building block contribution (USD) (%)

Expected return



| | Average yield | Roll return | Valuation change (yield curve) | Valuation change (OAS) | Credit loss | Currency Adj. (IRP) |
|------------------------|---------------|----------------|--------------------------------------|------------------------|----------------|------------------------|
| US Tsy | 3.98 | 0.45 | 0.12 | 0.00 | 0.00 | 0.00 |
| US TIPS | 4.18 | 0.33 | 0.24 | 0.00 | 0.00 | 0.00 |
| US Broadly Synd. Loans | 6.93 | 0.00 | 0.00 | -0.06 | -0.93 | 0.00 |
| US Agg | 4.51 | 0.45 | 0.12 | -0.10 | -0.17 | 0.00 |
| US MBS | 4.55 | 0.45 | 0.12 | 0.03 | 0.00 | 0.00 |
| US HY Corps | 8.25 | -0.03 | 0.18 | -0.54 | -1.69 | 0.00 |
| US HY Muni | 6.55 | 0.40 | -0.09 | -1.41 | -0.68 | 0.00 |
| EM Agg Sov | 7.34 | 0.42 | 0.04 | -0.07 | -1.16 | 0.00 |
| EM Agg Corp | 7.40 | 0.28 | 0.15 | -0.56 | -1.14 | 0.00 |
| EM Local Debt | 6.37 | 0.56 | -0.18 | 0.00 | 0.00 | -0.85 |

Figure 7b: Fixed income CMA quarter-over-quarter change and building block contribution (USD) (%)

| QoQ change (%) | US Tsy | US TIPS | US Broadly Synd. Loans | US Agg | US MBS | US HY Corps | US HY Muni | EM Agg Sov | EM Agg Corp | EM Local Debt |
|----------------------|--------|---------|------------------------|--------|--------|-------------|------------|------------|-------------|---------------|
| 0.0 | | | | | | | | | | |
| -0.2 | | | | | | | | | | |
| -0.4 | | | | | | | | | | |
| -0.6 | | | | | | | | | | |
| -0.8 | | | | | | | | | | |
| -1.0 | | | | | | | | | | |
| -1.2 | | | | | | | | | | |
| -1.4 | | | | | | | | | | |

| | | | Valuation | | | |
|------------------------|---------------|----------------|-------------------------|------------------------|----------------|------------------------|
| | Average yield | Roll return | change (yield curve) | Valuation change (OAS) | Credit loss | Currency Adj. (IRP) |
| US Tsy | -0.33 | 0.03 | -0.52 | 0.00 | 0.00 | 0.00 |
| US TIPS | -0.21 | 0.10 | -0.45 | 0.00 | 0.00 | 0.00 |
| US Broadly Synd. Loans | -0.64 | 0.00 | 0.00 | -0.06 | 0.00 | 0.00 |
| US Agg | -0.37 | 0.03 | -0.52 | -0.06 | 0.04 | 0.00 |
| US MBS | -0.35 | 0.03 | -0.52 | -0.11 | 0.00 | 0.00 |
| US HY Corps | -0.48 | 0.03 | -0.36 | -0.12 | 0.00 | 0.00 |
| US HY Muni | -0.29 | -0.23 | -0.89 | 0.14 | -0.02 | 0.00 |
| EM Agg Sov | -0.45 | 0.06 | -0.59 | -0.18 | 0.00 | 0.00 |
| EM Agg Corp | -0.47 | 0.03 | -0.44 | -0.12 | 0.09 | 0.00 |
| EM Local Debt | 0.00 | -0.09 | -0.57 | 0.00 | 0.00 | -0.40 |

Figure 7c: Fixed income CMA year-over-year change and building block contribution (USD) (%)

| YoY change (%) | US Tsy | US TIPS | US Broadly Synd. Loans | US Agg | US MBS | US HY Corps | US HY Muni | EM Agg Sov | EM Agg Corp | EM Local Debt | |
|----------------------|--------|---------|------------------------|--------|--------|-------------|------------|------------|-------------|---------------|--|
| 0.3 | | | | | | | | | | | |
| 0.0 | | | | | | | | | | | |
| -0.3 | | | | | | | | | | | |
| -0.6 | | | | | | | | | | | |
| -0.9 | | | | | | | | | | | |
| -1.2 | | | | | | | | | | | |
| -1.5 | | | | | | | | | | | |
| -1.8 | | | | | | | | | | | |

| | Average yield | Roll return | Valuation change (yield curve) | Valuation change (OAS) | Credit loss | Currency Adj. (IRP) |
|------------------------|------------------|----------------|--------------------------------------|------------------------|----------------|------------------------|
| US Tsy | 0.30 | 0.17 | -0.46 | 0.00 | 0.00 | 0.00 |
| US TIPS | 0.30 | 0.03 | -0.35 | 0.00 | 0.00 | 0.00 |
| US Broadly Synd. Loans | -0.93 | 0.00 | 0.00 | -0.37 | 0.05 | 0.00 |
| US Agg | 0.29 | 0.17 | -0.46 | -0.05 | 0.04 | 0.00 |
| US MBS | 0.39 | 0.17 | -0.46 | -0.03 | 0.00 | 0.00 |
| US HY Corps | -0.19 | -0.05 | -0.38 | -0.39 | 0.10 | 0.00 |
| US HY Muni | 0.10 | 0.14 | -0.59 | -0.02 | 0.12 | 0.00 |
| EM Agg Sov | 0.09 | 0.03 | -0.46 | -0.27 | 0.01 | 0.00 |
| EM Agg Corp | -0.10 | 0.18 | -0.42 | -0.44 | 0.50 | 0.00 |
| EM Local Debt | -0.19 | -0.18 | -0.47 | 0.00 | 0.00 | -0.69 |

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Figure 8: 10-year asset class expected returns, risk, and return risk (USD)

| US Tsy Short US Tsy IM US Tsy IM US Tsy Long US Tsy IM BBG US Tsy IM A.O. 4.1. 4.1. 4.6. 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 | rithmetic eturn o risk atio |
|--|--------------------------------------|
| US Tsy IM BBG US Tsy IM 4.0 4.1 4.1 4.6 COUNTY STAYLONG BBG US TipS BBG US TipS 4.7 4.9 4.4 5.7 COUNTY STAYLONG BBG US TipS 4.7 4.9 4.4 5.7 COUNTY STAYLONG BBG US TipS 4.7 4.9 4.4 5.7 COUNTY STAYLONG BBG US TipS 4.7 4.9 4.4 5.7 COUNTY STAYLONG BBG US TipS 4.7 4.9 4.4 5.7 COUNTY STAYLONG BBG US TipS 4.7 4.9 4.5 6.1 COUNTY STAYLONG BBG US TipS 4.8 5.0 4.5 6.1 COUNTY STAYLONG BBG US TipS 4.8 5.0 4.5 6.1 COUNTY STAYLONG BBG US TipS 5.0 5.3 5.1 7.8 COUNTY STAYLONG BBG US TipS 5.0 5.3 5.1 7.8 COUNTY STAYLONG BBG US TipS 5.0 5.3 5.1 7.8 COUNTY STAYLONG BBG US TipS 5.2 5.4 4.7 6.7 COUNTY STAYLONG BBG US TipS 5.2 5.9 6.7 T2.2 COUNTY STAYLONG BBG US TipS 5.2 5.9 6.7 T2.2 COUNTY STAYLONG BBG US TipS 5.2 5.9 6.7 T2.2 COUNTY STAYLONG BBG US TipS 5.2 5.9 6.7 T2.2 COUNTY STAYLONG BBG US TipS 5.2 5.9 6.7 T2.2 COUNTY STAYLONG BBG US TipS 5.2 5.1 5.6 8.8 COUNTY STAYLONG BBG Global Agg BBG Global Agg 4.7 4.9 4.5 7.2 COUNTY STAYLONG BBG Global Agg BBG Global Agg 8.4 COUNTY STAYLONG BBG Global Agg 8.4 COUNTY STAYLONG BBG Global Agg 8.4 COUNTY STAYLONG BBG Global Sov 4.6 4.9 4.7 5.1 4.3 8.6 COUNTY STAYLONG BBG Global Sov 4.6 4.9 4.7 5.1 4.3 8.6 COUNTY STAYLONG BBG Global Sov 4.6 4.9 4.7 8.1 COUNTY STAYLONG BBG Global Corp 5.2 5.5 5.2 8.0 COUNTY STAYLONG BBG Global Corp 5.2 5.5 5.2 8.0 COUNTY STAYLONG BBG Global Corp 6.2 5.5 5.3 8.2 COUNTY STAYLONG BBG Global Corp 6.5 5.2 5.5 5.3 8.2 COUNTY STAYLONG BBG Global Corp 6.5 5.2 5.5 5.4 8.1 COUNTY STAYLONG BBG GLOBAL CORP 5.2 5.5 5.4 8.1 COUNTY STAYLONG BBG GLOBAL CORP 5.2 5.5 5.4 8.1 COUNTY STAYLONG BBG GLOBAL CORP 5.2 5.5 5.4 8.1 COUNTY STAYLONG BBG GLOBAL CORP 5.2 5.5 5.4 8.1 COUNTY STAYLONG BBG GLOBAL CORP 5.2 5.5 5.4 8.1 COUNTY STAYLONG BBG GLOBAL CORP 5.2 5.5 5.4 8.1 COUNTY STAYLONG BBG GLOBAL CORP 5.2 5.5 5.4 8.1 COUNTY STAYLONG BBG GLOBAL CORP 5.2 5.5 5.4 8.1 COUNTY STAYLONG BBG GLOBAL CORP 5.2 5.5 5.4 8.1 COUNTY STAYLONG BBG GLOBAL CORP 5.2 5.5 5.4 8.1 COUNTY STAYLONG BBG GLOBAL CORP 5.2 5.5 5.4 8.1 COUNTY STAYLONG BBG GLOBAL CORP 5.2 5.5 5.4 8.1 COUNTY STAYLONG BBG GLOBAL CORP 5. | .33 |
| US Tay Long US Tay Long US Tip'S US Broadly Synd. Loans US Agg US Tip'S US Broadly Synd. Loans US Agg US IG Corp US BBG US IG US IG Corp US BBG US IG US IG Corp US MBS US Preferred Stocks US Preferred Stocks US HY Corps US BBG US MBS US Preferred Stocks US HY Corps US Muni US M | .88 |
| US TIPS BBG US TIPS | .37 |
| US Broadly Synd. Loans US Agg BBG US Agg BBG US Agg US IG Corp US MBS US Preferred Stocks BOA ML Fixed Rate Pref Securities US HY Corps BBG US HY US Muni BOA ML US Muni BOA ML US Muni US Muni (Taxable) US HY Muni BBG Muni Bond HY US Muni BBG Global Agg BBG Global Tsy BBG Global Tsy BBG Global Tsy BBG Global Corp BBG Global Corp BBG Global Corp BBG Global Corp BBG BBG BBG Global Corp BBG | .85 |
| US Agg BBG US Agg 4.8 5.0 4.5 6.1 CO US IG Corp BBG US IG 5.0 5.3 5.1 7.8 CO US IG Corp BBG US IG 5.0 5.3 5.1 7.8 CO US Preferred Stocks BOA ML Fixed Rate Pref Securities 5.2 5.4 4.7 6.7 CO US HY Corps BBG US HY 6.2 6.6 7.6 10.1 CO US HY Corps BBG US HY 6.2 6.6 7.6 10.1 US HY Muni BOA ML US Muni 3.8 4.0 3.4 7.0 CO US Muni (Taxable) ICE BOA US Taxable Muni Securities Plus 4.9 5.3 4.9 8.1 CO US HY Muni BBG Muni Bond HY 4.8 5.1 5.6 8.8 CO Global Agg ex-US BBG Global Agg 4.7 4.9 4.5 7.2 CO Global Agg ex-US BBG Global Tay 4.8 5.3 4.5 10.5 CO Global Agg ex-US BBG Global Tay 4.7 5.1 4.3 8.6 CO Global Corp BBG Global Tay 4.7 5.1 4.3 8.6 CO Global Corp BBG Global Corp 5.2 5.5 5.2 8.0 CO Global Corp BBG Global Corp 5.2 5.5 5.2 8.0 CO Global IG BBG Global Corp Global IG BBG Global Corp 5.2 5.5 5.2 8.0 CO Global IG BBG Global Corp BBG Global Corp 5.2 5.5 5.2 8.0 CO Global IG BBG Buro Agg Credit Corp 4.9 5.7 5.4 13.4 CO Global IG BBG Buro Agg Gov Tsy 5.0 5.8 4.6 12.8 CO Global IG BBG Elmo Agg Gov Tsy 5.0 5.8 4.6 12.8 CO Global Corp BBG Elmo Agg Gov Tsy 5.0 5.8 4.6 12.8 CO Global Corp BBG Elmo Agg Gov Tsy 5.0 5.8 4.6 12.8 CO Global Corp BBG Elmo Agg Gov Tsy 5.0 5.8 4.6 12.8 CO Global Corp BBG Elmo Agg Gov Tsy 5.0 5.8 4.6 12.8 CO Global Corp BBG Elmo Agg Gov Tsy 5.0 5.4 5.2 8.8 CO Global Corp BBG Elmo Agg Gov Tsy 5.0 5.4 5.2 8.8 CO Global Equity MSCI ACWI ex-US 7.5 9.1 4.2 18.8 CO Global Equity MSCI ACWI ex-US 7.5 9.1 4.2 18.8 CO Global Equity MSCI ACWI ex-US 7.5 9.1 4.2 18.8 CO Global Equity MSCI ACWI ex-US 7.5 9.1 4.2 18.8 CO Global Equity MSCI ACWI ex-US 7.5 9.1 4.2 18.8 CO Global Ex-US Equity MSCI Europe 7.4 9.0 4.8 18.9 CO Global Equity MSCI Europe 7.4 9.0 4.8 18.9 CO Global Equity MSCI Europe 7.4 9.0 4.8 18.9 Global Equity MSCI Europe 7.4 9.0 4.8 18.9 CO Global Equity MSCI Europe 7.4 9.0 4.8 18.9 CO Global Equity MSCI Europe 7.4 9.0 4.8 18.9 Global Eq | .76 |
| US IG Corp US MBS US Preferred Stocks US Preferred Stocks US Preferred Stocks US Preferred Stocks US HY Corps BBG US HY US Muni BOA ML Fixed Rate Pref Securities 5.2 5.9 6.7 12.2 0.6 10.1 0.6 10.1 0.7 0.7 0.7 0.7 0.7 0.7 0.7 0.7 0.7 0.7 | .81 |
| US MBS | .67 |
| US Preferred Stocks | .80 |
| US HY Corps | .48 |
| US Muni (Taxable) ICE BOA US Taxable Muni Securities Plus 4.9 5.3 4.9 8.1 C. US Hyr Muni BBG Muni Bond HY 4.8 5.1 5.6 8.8 8.0 C. Global Agg BBG Global Agg 4.7 4.9 4.5 7.2 C. Global Agg BBG Global Agg 8.6 Global Agg 8.6 Global Agg 8.6 Global Agg 8.6 Global Agg 8.7 4.7 4.9 4.5 7.2 C. Global Tsy BBG Global Tsy 4.7 5.1 4.3 8.6 C. Global Tsy BBG Global Tsy 4.7 5.1 4.3 8.6 C. Global Tsy BBG Global Corp 4.6 4.9 4.7 8.1 C. Global Corp BBG Global Corp BBG Global Corp 5.2 5.5 5.2 8.0 C. Global IG BBG Global Corp GBG Global Corp 6.5 5.2 5.5 5.3 8.2 C. Global IG BBG Global Corp 8.8 Guro Agg Credit Corp 4.9 5.7 5.4 13.4 C. Global Corp 1.0 Global Ir GBG Global Corp 1.0 Global Ir GBG Global Corp 8.0 Global Ir GBG Global Ir | .66 |
| US Muni (Taxable) US Hy Muni BBG Muni Bond HY 4.8 5.1 5.6 8.8 0 Global Agg BBG Global Agg A.7 4.9 4.5 7.2 0 Global Agg Global Agg ex-US BBG Global Agg ex-US Global Tsy BBG Global Sov Global Corp BBG Global Corp Global Corp BBG Global Corp Global IG BBG Global Corp IG BBG Global Corp BBG Global Corp IG S.2 5.5 5.2 8.0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 | .57 |
| Global Tsy Global Sov Global Sov BBG Global Tsy Global Sov BBG Global Sov A.6 A.9 A.7 BB.6 Clobal Corp Global Corp BBG Global Corp Global IG BBG Global Corp IG Eurozone Corp BBG Euro Agg Credit Corp Asian Dollar IG BMAgg BBG Euro Agg Gov Tsy Asian Dollar IG BMAgg BBG EM USD Agg IG China Policy Bk & Tsy BBG China PB Tsy TR China RMB Credit BBG China PB Tsy TR A.2 A.3 BBG China PB Tsy TR A.2 China RMB Credit BBG China Corporate A.6 Global Equity MSCI ACWI Global ex-US Equity MSCI ACWI ex-US US Broad Market Russell 3000 BBC Russell Midcap Russell MSCI Europe Eurozone Equity MSCI Europe Russell Cap Russell Russell Cap Russell Russell Cap Russell Russell Cap Russell Ru | .65 |
| Global Tsy Global Sov Global Sov BBG Global Tsy Global Sov BBG Global Sov A.6 A.9 A.7 BB.6 Clobal Corp Global Corp BBG Global Corp Global IG BBG Global Corp IG Eurozone Corp BBG Euro Agg Credit Corp Asian Dollar IG BMAgg BBG Euro Agg Gov Tsy Asian Dollar IG BMAgg BBG EM USD Agg IG China Policy Bk & Tsy BBG China PB Tsy TR China RMB Credit BBG China PB Tsy TR A.2 A.3 BBG China PB Tsy TR A.2 China RMB Credit BBG China Corporate A.6 Global Equity MSCI ACWI Global ex-US Equity MSCI ACWI ex-US US Broad Market Russell 3000 BBC Russell Midcap Russell MSCI Europe Eurozone Equity MSCI Europe Russell Cap Russell Russell Cap Russell Russell Cap Russell Russell Cap Russell Ru | .58 |
| Global Tsy Global Sov Global Sov BBG Global Tsy Global Sov BBG Global Sov A.6 A.9 A.7 BB.6 Clobal Corp Global Corp BBG Global Corp Global IG BBG Global Corp IG Eurozone Corp BBG Euro Agg Credit Corp Asian Dollar IG BMAgg BBG Euro Agg Gov Tsy Asian Dollar IG BMAgg BBG EM USD Agg IG China Policy Bk & Tsy BBG China PB Tsy TR China RMB Credit BBG China PB Tsy TR A.2 A.3 BBG China PB Tsy TR A.2 China RMB Credit BBG China Corporate A.6 Global Equity MSCI ACWI Global ex-US Equity MSCI ACWI ex-US US Broad Market Russell 3000 BBC Russell Midcap Russell MSCI Europe Eurozone Equity MSCI Europe Russell Cap Russell Russell Cap Russell Russell Cap Russell Russell Cap Russell Ru | .68 |
| Global Tsy Global Sov Global Sov BBG Global Tsy Global Sov BBG Global Sov A.6 A.9 A.7 BB.6 Clobal Corp Global Corp BBG Global Corp Global IG BBG Global Corp IG Eurozone Corp BBG Euro Agg Credit Corp Asian Dollar IG BMAgg BBG Euro Agg Gov Tsy Asian Dollar IG BMAgg BBG EM USD Agg IG China Policy Bk & Tsy BBG China PB Tsy TR China RMB Credit BBG China PB Tsy TR A.2 A.3 BBG China PB Tsy TR A.2 China RMB Credit BBG China Corporate A.6 Global Equity MSCI ACWI Global ex-US Equity MSCI ACWI ex-US US Broad Market Russell 3000 BBC Russell Midcap Russell MSCI Europe Eurozone Equity MSCI Europe Russell Cap Russell Russell Cap Russell Russell Cap Russell Russell Cap Russell Ru | .51 |
| Global Sov BBG Global Sov 4.6 4.9 4.7 8.1 CO | .59 |
| Global Corp BBG Global Corp 5.2 5.5 5.2 8.0 Cord | .61 |
| Global IG | .68 |
| Eurozone Corp BBG Euro Agg Credit Corp 4.9 5.7 5.4 13.4 00 Eurozone Tsy BBG Euro Agg Gov Tsy 5.0 5.8 4.6 12.8 00 Asian Dollar IG BOA ML AC IG 5.2 5.5 5.4 8.1 00 EM Agg BBG EM Agg BBG EM Agg 6.3 7.0 7.0 12.9 00 EM Agg IG BBG EM USD Agg IG 5.0 5.4 5.2 8.8 00 China Policy Bk & Tsy BBG China PB Tsy TR 4.2 4.3 3.8 4.0 1. China RMB Credit BBG China Corporate 4.6 4.6 4.4 3.5 1. Global Equity MSCI ACWI ex-US 7.5 9.1 4.2 18.8 00 US Broad Market Russell 3000 6.4 7.8 2.7 17.5 00 US Large Cap S&P 500 6.4 7.7 2.6 16.8 00 US Mid Cap Russell Midcap 7.2 9.0 2.9 19.5 00 US Small Cap Russell Midcap 7.2 9.0 2.9 19.5 00 US Small Cap EAFE Equity MSCI Europe 7.4 9.0 4.8 18.9 00 UK Small Cap FTSE 100 7.4 9.2 4.4 20.0 00 UK Small Cap FTSE Small Cap UK Small Cap TSE Small Cap UK Small Cap UK Small Cap TSE Small Cap UK Small Cap TSE Small Cap UK Small Cap TSE Small Cap UK Small Cap UK Small Cap TSE Small Cap UK Small Ca | .67 |
| Eurozone Tsy BBG Euro Agg Gov Tsy 5.0 5.8 4.6 12.8 00 Asian Dollar IG BOA ML AC IG 5.2 5.5 5.4 8.1 00 EM Agg BBG EM Agg 6.3 7.0 7.0 12.9 00 EM Agg IG BBG EM USD Agg IG 5.0 5.4 5.2 8.8 00 China Policy Bk & Tsy BBG China PB Tsy TR 4.2 4.3 3.8 4.0 1. China RMB Credit BBG China Corporate 4.6 4.6 4.6 4.4 3.5 1. Global Equity MSCI ACWI 6.8 8.1 3.2 17.1 0.0 Global ex-US Equity MSCI ACWI ex-US 7.5 9.1 4.2 18.8 0.0 US Broad Market Russell 3000 6.4 7.8 2.7 17.5 0.0 US Large Cap S&P 500 6.4 7.7 2.6 16.8 0.0 US Small Cap Russell Midcap 7.2 9.0 2.9 19.5 0.0 US Small Cap Russell 2000 8.3 10.6 2.3 22.8 0.0 EAFE Equity MSCI Europe 7.4 9.0 4.8 18.9 0.0 UK Large Cap FTSE 100 7.4 9.0 4.9 19.9 0.0 UK Small Cap FTSE Small Cap UK 8.7 11.5 4.3 25.6 0.0 Canada Equity S&P TSX 7.2 9.0 3.9 20.3 0.0 | .43 |
| Asian Dollar IG BOA ML AC IG 5.2 5.5 5.4 8.1 0.0 EM Agg BBG EM Agg 6.3 7.0 7.0 12.9 0.0 EM Agg IG BBG EM USD Agg IG 5.0 5.4 5.2 8.8 0.0 China Policy Bk & Tsy BBG China PB Tsy TR 4.2 4.3 3.8 4.0 17. China RMB Credit BBG China Corporate 4.6 4.6 4.4 3.5 17. China RMB Credit BBG China Corporate 4.6 4.6 4.6 4.4 3.5 17. China RMB Credit MSCI ACWI 6.8 8.1 3.2 17.1 0.0 Global ex-US Equity MSCI ACWI 8.8 8.1 3.2 17.1 0.0 US Broad Market Russell 3000 6.4 7.8 2.7 17.5 0.0 US Large Cap S&P 500 6.4 7.7 2.6 16.8 0.0 US Mid Cap Russell Midcap 7.2 9.0 2.9 19.5 0.0 US Small Cap Russell Midcap 7.2 9.0 2.9 19.5 0.0 US Small Cap Russell 2000 8.3 10.6 2.3 22.8 0.0 EAFE Equity MSCI Europe 7.4 9.0 4.8 18.9 0.0 UK Small Cap FTSE 100 7.4 9.0 4.8 18.9 0.0 UK Small Cap FTSE Small Cap UK 8.7 11.5 4.3 25.6 0.0 Canada Equity S&P TSX 7.2 9.0 3.9 20.3 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 | .45 |
| EM Agg | .68 |
| EM Agg IG BBG EM USD Agg IG 5.0 5.4 5.2 8.8 0 China Policy Bk & Tsy BBG China PB Tsy TR 4.2 4.3 3.8 4.0 1. China RMB Credit BBG China Corporate 4.6 4.6 4.4 3.5 1. Global Equity MSCI ACWI 6.8 8.1 3.2 17.1 0.0 Global ex-US Equity MSCI ACWI ex-US 7.5 9.1 4.2 18.8 0.0 US Broad Market Russell 3000 6.4 7.8 2.7 17.5 0.0 US Large Cap S&P 500 6.4 7.7 2.6 16.8 0.0 US Mid Cap Russell Midcap 7.2 9.0 2.9 19.5 0.0 US Small Cap Russell 2000 8.3 10.6 2.3 22.8 0.0 EAFE Equity MSCI EAFE 6.9 8.5 4.9 18.7 0.0 EAFE Europe Equity MSCI Europe 7.4 9.0 4.8 18.9 0.0 UK Large Cap FTSE 100 7.4 9.2 4.4 20.0 0.0 UK Small Cap FTSE Small Cap UK 8.7 11.5 4.3 25.6 0.0 Canada Equity S&P TSX 7.2 9.0 3.9 20.3 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 | .55 |
| China Policy Bk & Tsy BBG China PB Tsy TR 4.2 4.3 3.8 4.0 1 China RMB Credit BBG China Corporate 4.6 4.6 4.4 3.5 1 Global Equity MSCI ACWI 6.8 8.1 3.2 17.1 0 Global ex-US Equity MSCI ACWI ex-US 7.5 9.1 4.2 18.8 0 US Broad Market Russell 3000 6.4 7.8 2.7 17.5 0 US Large Cap S&P 500 6.4 7.7 2.6 16.8 0 US Mid Cap Russell Midcap 7.2 9.0 2.9 19.5 0 US Small Cap Russell 2000 8.3 10.6 2.3 22.8 0 US Small Cap Russell 2000 8.5 4.9 18.7 0 EAFE Equity MSCI EAFE 6.9 8.5 4.9 18.7 0 UK Large Cap FTSE 100 7.4 9.0 4.8 18.9 0 UK Small Cap FTSE Small Cap UK 8.7 11.5 4.3 25.6 0 Canada Equity S&P TSX 7.2 9.0 3.9 20.3 00 | .61 |
| China RMB Credit BBG China Corporate 4.6 4.6 4.4 3.5 1 Global Equity MSCI ACWI 6.8 8.1 3.2 17.1 0 Global ex-US Equity MSCI ACWI ex-US 7.5 9.1 4.2 18.8 0 US Broad Market Russell 3000 6.4 7.8 2.7 17.5 0 US Large Cap S&P 500 6.4 7.7 2.6 16.8 0 US Mid Cap Russell Midcap 7.2 9.0 2.9 19.5 0 US Small Cap Russell 2000 8.3 10.6 2.3 22.8 0 US Small Cap Russell 2000 8.3 10.6 2.3 22.8 0 EAFE Equity MSCI Europe 7.4 9.0 4.8 18.7 0 UK Large Cap FTSE 100 7.4 9.0 4.9 19.9 0 UK Small Cap FTSE Small Cap UK 8.7 11.5 4.3 25.6 0 | 07 |
| Global Equity MSCI ACWI 6.8 8.1 3.2 17.1 0.0 Global ex-US Equity MSCI ACWI ex-US 7.5 9.1 4.2 18.8 0.0 US Broad Market Russell 3000 6.4 7.8 2.7 17.5 0.0 US Large Cap S&P 500 6.4 7.7 2.6 16.8 0.0 US Mid Cap Russell Midcap 7.2 9.0 2.9 19.5 0.0 US Small Cap Russell 2000 8.3 10.6 2.3 22.8 0.0 EAFE Equity MSCI EAFE 6.9 8.5 4.9 18.7 0.0 EAFE Europe Equity MSCI Europe 7.4 9.0 4.8 18.9 0.0 UK Large Cap FTSE 100 7.4 9.2 4.4 20.0 0.0 UK Small Cap FTSE Small Cap UK 8.7 11.5 4.3 25.6 0.0 Canada Equity S&P TSX 7.2 9.0 3.9 20.3 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 | 32 |
| Global ex-US Equity MSCI ACWI ex-US 7.5 9.1 4.2 18.8 0.0 | .48 |
| US Broad Market Russell 3000 6.4 7.8 2.7 17.5 00 US Large Cap S&P 500 6.4 7.7 2.6 16.8 00 US Mid Cap Russell Midcap 7.2 9.0 2.9 19.5 00 US Small Cap Russell 2000 8.3 10.6 2.3 22.8 00 EAFE Equity MSCI EAFE 6.9 8.5 4.9 18.7 00 Europe Equity MSCI Europe 7.4 9.0 4.8 18.9 00 UK Large Cap FTSE 100 7.4 9.2 4.4 20.0 00 UK Small Cap FTSE Small Cap UK 8.7 11.5 4.3 25.6 00 Canada Equity S&P TSX 7.2 9.0 3.9 20.3 00 00 00 00 00 00 00 00 00 00 00 00 00 | .48 |
| US Large Cap S&P 500 6.4 7.7 2.6 16.8 00 US Mid Cap Russell Midcap 7.2 9.0 2.9 19.5 00 US Small Cap Russell 2000 8.3 10.6 2.3 22.8 00 EAFE Equity MSCI EAFE 6.9 8.5 4.9 18.7 00 Europe Equity MSCI Europe 7.4 9.0 4.8 18.9 00 UK Large Cap FTSE 100 7.4 9.2 4.4 20.0 00 UK Small Cap FTSE Small Cap UK 8.7 11.5 4.3 25.6 00 Canada Equity S&P TSX 7.2 9.0 3.9 20.3 00 | .44 |
| US Mid Cap Russell Midcap 7.2 9.0 2.9 19.5 00 US Small Cap Russell 2000 8.3 10.6 2.3 22.8 00 EAFE Equity MSCI EAFE 6.9 8.5 4.9 18.7 00 Europe Equity MSCI Europe 7.4 9.0 4.8 18.9 00 UK Large Cap FTSE 100 7.4 9.2 4.4 20.0 00 UK Small Cap FTSE Small Cap UK 8.7 11.5 4.3 25.6 00 Canada Equity S&P TSX 7.2 9.0 3.9 20.3 00 00 00 00 00 00 00 00 00 00 00 00 00 | .46 |
| US Small Cap Russell 2000 8.3 10.6 2.3 22.8 00 EAFE Equity MSCI EAFE 6.9 8.5 4.9 18.7 00 Europe Equity MSCI Europe 7.4 9.0 4.8 18.9 00 UK Large Cap FTSE 100 7.4 9.2 4.4 20.0 00 UK Small Cap FTSE Small Cap UK 8.7 11.5 4.3 25.6 00 Canada Equity S&P TSX 7.2 9.0 3.9 20.3 00 00 00 00 00 00 00 00 00 00 00 00 00 | .46 |
| EAFE Equity MSCI EAFE 6.9 8.5 4.9 18.7 0 18. | .47 |
| Europe Equity MSCI Europe 7.4 9.0 4.8 18.9 00 Eurozone Equity MSCI Euro ex-UK 7.2 9.0 4.9 19.9 00 UK Large Cap FTSE 100 7.4 9.2 4.4 20.0 00 UK Small Cap FTSE Small Cap UK 8.7 11.5 4.3 25.6 00 Canada Equity S&P TSX 7.2 9.0 3.9 20.3 00 | .45 |
| UK Large Cap FTSE 100 7.4 9.2 4.4 20.0 0 UK Small Cap FTSE Small Cap UK 8.7 11.5 4.3 25.6 0 Canada Equity S&P TSX 7.2 9.0 3.9 20.3 0 | .47 |
| UK Large Cap FTSE 100 7.4 9.2 4.4 20.0 0 UK Small Cap FTSE Small Cap UK 8.7 11.5 4.3 25.6 0 Canada Equity S&P TSX 7.2 9.0 3.9 20.3 0 | .45 |
| UK Small Cap FTSE Small Cap UK 8.7 11.5 4.3 25.6 0 Canada Equity S&P TSX 7.2 9.0 3.9 20.3 0 | .46 |
| Canada Equity S&P TSX 7.2 9.0 3.9 20.3 C | .45 |
| | .44 |
| | .33 |
| | .47 |
| | .47 |
| | .45 |
| | .70 |
| | .46 |
| HFRI Hedge Funds HFRI HF 6.7 7.0 - 8.6 0 | .81 |
| | .34 |
| Agriculture S&P GSCI Agriculture 4.0 6.1 - 21.2 0 | .29 |
| Energy S&P GSCI Energy 7.1 12.7 - 37.0 0 | .34 |
| | .30 |
| | .02 |

Source: Invesco, estimates as of December 31, 2023. These estimates are forward-looking, are not guarantees, and they involve risks, uncertainties, and assumptions. Please see page 11 for information about our CMA methodology. These estimates reflect the views of Invesco 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 9: 10-year correlations (USD)

| | | | Fixed income | | | | | | | | | Equities | | | | | | | Alternatives | | | | | | | | |
|--------------|------------------------|-----------|--------------|------------------------|--------|------------|-------------|---------|------------|------------|------------------|----------|------------------|---------------|-----------------|--------------|------------|--------------|--------------|--------------|---------------|--------------|--------------|--------------|--------------|----------------|------------------|
| | Greater than 0.70 | | | S | | | | | | | | | | | | | | | | | | | | | | | |
| | 0.30 to 0.70 | | | oan | | | | | | | | | | | | | | | | | | | | | | | |
| | Less than 0.30 | | | d. L | | | | | | | S | | dịt | | d | | | | | | | | | | | S | spu |
| | | | | Syn | | | တ္ | | | | ex-l | | Cre | τζ | Ca | ф | | ф | | ф | ity | > | | m | | ditie | Fur |
| | | Σ | | ф | | orp | orp | | 1 I | ۱gg | ١gg | | MB | idui | arge | e C | Сар | č = | luity | e C | Equ | quit | ţ | ZEIT: | nfra | omi | gb |
| | | sy | 'IPS | 3roa | \gg | O O | > | Лuп | ≥ | al 4 | al A | ۸gg | ia R | al E | ia L | arg. | /Jid | òma | E Eq | arg. | ada | ın E | <u>:</u> dni | oal F | Jall | Corr | He |
| | Asset class | US Tsy IM | US TIPS | US Broadly Synd. Loans | US Agg | US IG Corp | US HY Corps | US Muni | US HY Muni | Global Agg | Global Agg ex-US | EM Agg | China RMB Credit | Global Equity | China Large Cap | US Large Cap | US Mid Cap | US Small Cap | EAFE Equity | UK Large Cap | Canada Equity | Japan Equity | EM Equity | Global REITs | Global Infra | GS Commodities | HFRI Hedge Funds |
| | US Tsy IM | 1.00 | | | | | | | | | | | | | | | | | | | | | | | | | |
| | , US TIPS | 0.69 | 1.00 | | | | | | | | | | | | | | | | | | | | | | | | |
| | US Broadly Synd. Loans | -0.26 | 0.27 | 1.00 | | | | | | | | | | | | | | | | | | | | | | | |
| | US Agg | 0.88 | 0.79 | 0.10 | 1.00 | | | | | | | | | | | | | | | | | | | | | | |
| e e | US IG Corp | 0.62 | 0.76 | 0.43 | 0.89 | 1.00 | | | | | | | | | | | | | | | | | | | | | |
| Fixed income | US HY Corps | 0.06 | 0.52 | 0.81 | 0.42 | 0.69 | 1.00 | | | | | | | | | | | | | | | | | | | | |
| i. | US Muni | 0.61 | 0.64 | 0.29 | 0.80 | 0.78 | 0.51 | 1.00 | | | | | | | | | | | | | | | | | | | |
| Fixe | US HY Muni | 0.37 | 0.56 | 0.54 | 0.62 | 0.68 | 0.59 | 0.85 | 1.00 | | | | | | | | | | | | | | | | | | |
| | Global Agg | 0.72 | 0.76 | 0.19 | 0.86 | 0.83 | 0.52 | 0.69 | 0.55 | 1.00 | | | | | | | | | | | | | | | | | |
| | Global Agg ex-US | 0.60 | 0.68 | 0.20 | 0.73 | 0.73 | 0.52 | 0.59 | 0.48 | 0.98 | 1.00 | | | | | | | | | | | | | | | | |
| | EM Agg | 0.35 | 0.66 | 0.62 | 0.65 | 0.83 | 0.82 | 0.66 | 0.67 | 0.72 | 0.68 | 1.00 | | | | | | | | | | | | | | | |
| | China RMB Credit | 0.32 | 0.32 | 0.09 | 0.40 | 0.36 | 0.22 | 0.33 | 0.28 | 0.49 | 0.50 | 0.32 | 1.00 | | | | | | | | | | | | | | |
| | Global Equity | 0.02 | 0.42 | 0.63 | 0.34 | 0.57 | 0.81 | 0.38 | 0.45 | 0.53 | 0.56 | 0.71 | 0.29 | 1.00 | | | | | | | | | | | | | |
| | China Large Cap | 0.01 | 0.16 | 0.27 | 0.17 | 0.29 | 0.34 | 0.15 | 0.22 | 0.27 | 0.29 | 0.37 | 0.32 | 0.43 | 1.00 | | | | | | | | | | | | |
| | US Large Cap | 0.01 | 0.39 | 0.59 | 0.32 | 0.53 | 0.77 | 0.34 | 0.40 | 0.45 | 0.46 | 0.62 | 0.24 | 0.97 | 0.36 | 1.00 | | | | | | | | | | | |
| | US Mid Cap | -0.03 | 0.39 | 0.67 | 0.31 | 0.55 | 0.82 | 0.37 | 0.44 | 0.44 | 0.45 | 0.66 | 0.24 | 0.95 | 0.36 | 0.96 | 1.00 | | | | | | | | | | |
| Equities | US Small Cap | -0.09 | 0.29 | 0.61 | 0.22 | 0.44 | 0.75 | 0.27 | 0.35 | 0.34 | 0.36 | 0.56 | 0.22 | 0.87 | 0.34 | 0.89 | 0.95 | 1.00 | | | | | | | | | |
| in | EAFE Equity | 0.04 | 0.40 | 0.60 | 0.34 | 0.56 | 0.78 | 0.39 | 0.44 | 0.55 | 0.59 | 0.72 | 0.31 | 0.96 | 0.43 | 0.88 | 0.87 | 0.80 | 1.00 | | | | | | | | |
| ű | UK Large Cap | -0.05 | 0.33 | 0.61 | 0.24 | 0.47 | 0.74 | 0.32 | 0.41 | 0.46 | 0.51 | 0.64 | 0.28 | 0.90 | 0.41 | 0.82 | 0.82 | 0.75 | 0.95 | 1.00 | | | | | | | |
| | Canada Equity | -0.03 | 0.41 | 0.66 | 0.29 | 0.53 | 0.78 | 0.33 | 0.44 | 0.48 | 0.51 | 0.68 | 0.27 | 0.89 | 0.41 | 0.84 | 0.87 | 0.80 | 0.86 | 0.86 | 1.00 | | | | | | |
| | Japan Equity | 0.07 | 0.34 | 0.48 | 0.33 | 0.50 | 0.65 | 0.35 | 0.36 | 0.46 | 0.47 | 0.61 | 0.29 | 0.80 | 0.35 | 0.73 | 0.72 | 0.68 | 0.84 | 0.72 | 0.67 | 1.00 | | | | | |
| | EM Equity | 0.05 | 0.40 | 0.57 | 0.34 | 0.55 | 0.73 | 0.36 | 0.45 | 0.55 | 0.59 | 0.74 | 0.38 | 0.85 | 0.57 | 0.72 | 0.75 | 0.68 | 0.85 | 0.79 | 0.81 | 0.70 | 1.00 | | | | |
| es | Global REITs | 0.13 | 0.52 | 0.63 | 0.45 | 0.65 | 0.80 | 0.47 | 0.54 | 0.58 | 0.58 | 0.74 | 0.29 | 0.86 | 0.32 | 0.82 | 0.86 | 0.78 | 0.84 | 0.79 | 0.80 | 0.68 | 0.74 | 1.00 | | | |
| ativ | Global Infra | 0.15 | 0.52 | 0.57 | 0.44 | 0.62 | 0.75 | 0.49 | 0.53 | 0.58 | 0.59 | 0.71 | 0.27 | 0.84 | 0.33 | 0.80 | 0.80 | 0.69 | 0.83 | 0.81 | 0.82 | 0.64 | 0.73 | 0.84 | 1.00 | | |
| ternatives | GS Commodities | -0.29 | 0.12 | 0.52 | -0.13 | 0.09 | 0.46 | -0.01 | 0.20 | 0.11 | 0.19 | 0.31 | 0.10 | 0.49 | 0.18 | 0.42 | 0.47 | 0.44 | 0.50 | 0.60 | 0.62 | 0.34 | 0.47 | 0.39 | 0.47 | 1.00 | |
| Ā | HFRI Hedge Funds | -0.15 | 0.32 | 0.73 | 0.19 | 0.49 | 0.78 | 0.29 | 0.46 | 0.38 | 0.41 | 0.65 | 0.26 | 0.89 | 0.47 | 0.83 | 0.89 | 0.85 | 0.86 | 0.83 | 0.88 | 0.71 | 0.82 | 0.77 | 0.74 | 0.61 | 1.00 |

Source: Invesco, estimates as of December 31, 2023. Proxies listed in **Figure 8.** These estimates are forward-looking, are not guarantees, and they involve risks, uncertainties, and assumptions. Please see page 11 for information about our CMA methodology. These estimates reflect the views of Invesco 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 10). 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 assumptions: Methodology update whitepaper for more detail.

Figure 10: 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 of the growth of earnings 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 rates of returns on deposits in different currencies because any excess return on deposits will be offset by changes in the relative value of currencies.

For 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 normalize 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 optimization 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 optimization 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 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 be spoke 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 needs.
- 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.

Investment risks

The value of investments and any income will fluctuate (this may partly be the result of exchange rate fluctuations) and investors may not get back the full amount invested.

Invesco Solutions develops CMAs that provide long-term estimates for the behavior of major asset classes globally. The team is dedicated to designing outcome-oriented, multi-asset portfolios that meet the specific goals of investors. The assumptions, which are based on 5- and 10-year investment time horizons, are intended to guide these strategic asset class allocations. For each selected asset class, we develop assumptions for estimated return, estimated standard deviation of return (volatility), and estimated correlation with other asset classes. This information is not intended as a recommendation to invest in a specific asset class or strategy, or as a promise of future performance. Estimated returns are subject to uncertainty and error, and can be conditional on economic scenarios. In the event a particular scenario comes to pass, actual returns could be significantly higher or lower than these estimates.

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Further information is available using the contact details shown on the overleaf.

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