February 2021

Callan's 2021-2030 Capital Markets Assumptions

KEY ELEMENTS

- **Callan develops capital markets assumptions to help clients with their long-term strategic planning. For the period 2021-2030, we made almost revolutionary changes to our projections. We also added several new asset classes, including private credit.**
- **Over the next 10 years, we forecast annual GDP growth of 2% to 2.5% for the U.S., 1.5% to 2% for developed ex-U.S. markets, and 4% to 5% for emerging markets.**
- **For broad U.S. equity, we project an annualized return of 6.60% with a standard deviation (or risk) of 17.95%; for global ex-U.S. equity a return of 6.80% (risk: 20.70%).**
- **We reduced our projection for core U.S. fixed income from 2.75% to 1.75% (risk: 3.75%). This is the second straight year the projection has been cut by 100 bps.**

Callan's Capital Markets Assumptions are the result of a rigorous process led by our Capital Markets Research group: Gary Chang, Jason Ellement, Jay Kloepfer, Adam Lozinski, Kevin Machiz, Julia Moriarty, John Pirone, Sweta Vaidya, and James Van Heuit.

Overview

Callan develops long-term capital markets assumptions at the start of each year, detailing our expectations for return, volatility, and correlation for broad asset classes. These projections represent our best thinking about the outlook for equities, fixed income, real assets, and alternatives, and they are a critical component of the strategic planning process for our institutional investor clients as they set investment expectations over five-year, ten-year, and longer time horizons.

Our assumptions are informed by current market conditions but are not directly built from them since the forecasts are long term in nature. Equilibrium relationships between markets and trends in global growth over the long term are the key drivers, resulting in a set of assumptions that typically changes slowly (or not at all) from year to year. Our process is designed to ensure that the forecasts behave reasonably and predictably when used as a set in an optimization or simulation environment.

Our process begins with estimates of major global macroeconomic variables, which are integrated into our equity, fixed income, and alternative investment models to generate initial forecasts. We then make qualitative adjustments to create a reasonable and consistent set of projections. In years past, we have made evolutionary, rather than revolutionary, changes to our assumptions. As part of the process, we ask the question: What do we know now that is substantially different from what we knew a year ago that would cause us to change either our expectations or our resulting asset allocation advice?

Of course, 2020 turned out to be a truly historic year, one that saw the S&P 500 Index dive 34% in just 23 trading days in March, only to rocket back up 70% through the course of the year, to finish with a gain of 18%. Even more dramatic, central banks around the world shifted quickly back to a zero interest rate policy and implemented massive monetary accommodation, while governments stepped in with unprecedented fiscal stimulus and support for businesses and workers.

For the period 2021-2030, we made almost revolutionary changes to our capital markets assumptions. We reset fixed income to reflect the much lower yield environment going forward, and we revisited the relationship between asset classes in this new world order. We examined the equity risk premium in light of the new fixed income expectations as well as the high valuation levels that have resulted from the incredible market recovery since April 2020. Fed policy pivoted dramatically following the onset of the pandemic and the imposition of shelter-in-place orders around the globe. Interest rates are now reset to a much lower level after the Fed pivot, and we expect rates to rise more modestly over the next five years.

As a result of our rigorous process, we have lowered our fixed income assumptions to reflect lower starting yields compared to one year ago, including a lower return for cash. We lowered our equity return assumption to reflect concerns about valuation, but we have widened our equity return premium over cash and the equity risk premium over bonds. We also added projections for several new asset classes:

- Private credit
- Private infrastructure
- Global listed infrastructure
- Natural resource equities
- U.S. REITs

Our 10-year projections include a likely recession (or two) and at least one downturn in the capital markets, as such events are a normal part of the path to long-term returns. We always argue that we only adjust our forecasts when we believe asset class prospects have materially changed; we believe 2021 is one of those times.

Before detailing our assumptions by asset class, which starts on Page 6, we wanted to describe the broader macroeconomic environment and how it informed our 2021 projections.

Economic Outlook

After all the mayhem inflicted on the global economy due to shelter-in-place orders and the human impact of the pandemic, U.S. GDP declined 3.5% for 2020, capping off a year few could have anticipated for economic growth or the capital markets. A 3.5% drop is large by recent recession standards, but small considering the 33% decline in the second quarter.

GDP

U.S.: 2%-2.5%
Dev. ex-U.S.: 1.5%-2%
Emerging Markets: 4%-5%

Inflation

U.S.: 1.75%-2.25%
Dev. ex-U.S.: 1.5%-2.0%
Emerging Markets: 2.25%-2.75%

After a surprisingly strong 2019, with 2.2% GDP growth when everyone had expected a recession, the U.S. economy entered 2020 with a decent head of steam. Monthly tracking showed GDP maintaining this low-2% growth through February. The bottom fell out in March as we entered a global lockdown in response to the rapid spread of COVID-19. China led the plunge with a first quarter GDP decline of 34% annualized, and the rest of the world fell off the cliff in the second quarter. GDP fell 30% in Japan, 31% in the U.S., 39% in the euro zone, and almost 60% in the U.K., a COVID-Brexit double-whammy. Unemployment shot up from a generational low below 4% to 14.7% in just one month (April). Interest rate cuts, monetary accommodation, and fiscal stimulus came immediately, with the latter including direct cash grants to individuals, business loans, extended unemployment benefits, and industry rescue packages (e.g., airlines). Economies around the globe responded quickly to the stimulus, generating equally eye-popping GDP gains in the third quarter to match the plunge in the second quarter.

The experience of 2020 has highlighted the limitations of many modern economic indicators in a situation of stress. Annualized GDP growth rates of 30% or 60% in either direction are almost meaningless. More telling are *levels* of activity, not growth rates, when it comes to a catastrophic event like this pandemic, which is much more akin to a global natural disaster than any traditional recession. We believe it will be most important to monitor when employment and GDP reach the levels set before the pandemic. At the start of 2021, consensus expectations are for the U.S. economy to regain its pre-pandemic level of GDP later in the year, while it may take until 2022 to recover the jobs lost. The unemployment rate fell back to 6.7% in December. However, the level of new unemployment claims remains elevated, far above the number typically seen at the bottom of a recession. Of the 22 million jobs lost from February to April, only 12 million have been added back. Lower-income, less-skilled, transportation, and hospitality-related jobs have been the hardest hit, increasing concerns about the widest income inequality gap in history.

Income inequality is exacerbated by surging stock prices, whose benefit is concentrated in the wealthiest cohorts. Indeed, the stock market appears to have gotten far ahead of the economy, and the gains have been concentrated in sectors that employ relatively few, typically higher-paid workers. The sectors of the stock market that employ a huge proportion of the workforce have been some of the hardest hit: hospitality, finance, transportation, retail trade, and surprisingly health care.

The pandemic caused many businesses to halt capital spending and work down inventory to unsustainable levels. The COVID recession happened faster and has been deeper in terms of job and output loss than any in recent memory, but the recovery has been equally unprecedented in the speed and scale of the rebound. Many workers who lost their jobs during the pandemic expect to regain that lost job, and the support of extended and enhanced unemployment benefits helped stop the downward economic spiral during 2020. The recession in 2020 was the worst in decades, but could have been much more devastating without the substantial support provided by the Congress and by states. As the vaccine is implemented and COVID is expected to be contained in the coming year, expectations are strong for pent-up demand to fuel spending across the board, by both businesses and consumers, leading to a need to replenish low inventories and creating a positive outlook for capital spending. Unlike the recessions attributed to the Global Financial Crisis (GFC) or the Dot-Com Bust, this recession was not spurred by a systematic financial or industry failure, but by an outside shock. Back on solid ground, U.S. GDP is expected to generate annual growth near 4% in 2022 and 2023, before easing back toward the longer-term expectation of 2.25%.

"World GDP contracted an estimated 5.7% in 2020 but is expected to rebound 4.3% in 2021."

The Federal Reserve Board left its Fed funds target rate unchanged (0.00% to 0.25%) at the December meeting and reiterated its belief that the course of the economy depends on the pandemic. Current projections remain for no Fed rate hikes until 2023. A stronger-than-expected recovery and the prospect of new policy from a new administration may push market rates up sooner than the Fed anticipates. Built into our forecast is a projection of gradually rising interest rates over the first five years of the 10-year horizon, with the 10-year Treasury yield moving back to 2.5%. Clearly the downside risk for the bond market is that the recovery falters and rates stay where they are now for longer. The recent surge in virus infections has undercut some confidence in the recovery, but fiscal support will bridge the gap through the first quarter of 2021, and a successful inoculation campaign should unleash pent-up demand, especially for services, in the second half of the year.

World GDP contracted an estimated 5.7% in 2020 but is expected to rebound 4.3% in 2021, led by a recovery in emerging markets as the pandemic recedes. China suffered GDP loss first, but resumed rapid growth starting in the second quarter, and is likely the only country to show positive growth for the year. We expect developed market GDP to grow more slowly than in the U.S. and emerging markets. Developed market economies began 2020 from a weaker starting point, and are suffering under the effect of pervasive negative interest rates. While developed markets outside the U.S. include substantially different economies facing substantially different growth profiles, we can speak generally about developed market GDP growth of between 1.5% and 2% over the next 10 years. Japan is facing lower potential growth, while the U.K. faces greater uncertainty in the post-Brexit era. We expect developed markets to take longer than the U.S. to pull back on monetary policy as a result. Developed ex-U.S. economies were enduring substantially weaker growth than the U.S. when the pandemic hit, and this enduring weakness remains one of the main threats to a sustained global expansion.

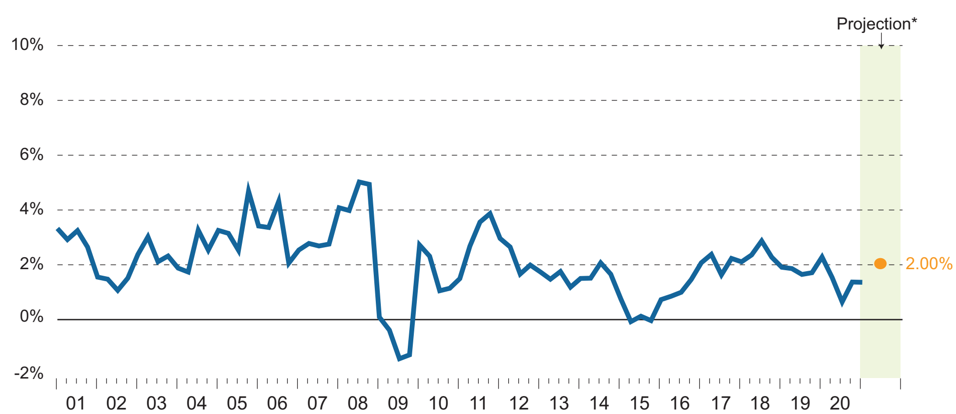
The emerging markets had already embarked on a cyclical upturn before the onset of the pandemic, and we expect them to enjoy the strongest rates of growth post-pandemic. We understand that emerging market countries are even more heterogeneous than developed ex-U.S. nations, but we can still speak generally about emerging market GDP growth of between 4% and 5%. While more robust than developed markets, this growth is below the long-term average. Although recent years have been marked by trade conflicts and de-globalization, we expect a recovery in trade as the global economy rebounds, which should help lead the way. Low inflation and interest rates also set the stage for sustaining the recovery in global growth.

Leading into the pandemic, emerging market economies suffered a tough year in 2019, particularly Russia, Brazil, and India. India had surpassed China as the fastest-growing economy among emerging markets in 2018, but saw growth drop sharply in 2019. China was hit first by the pandemic and the effects of a severe lockdown, suffering a deep 34% first quarter decline, but rebounded in the second quarter and will be the only country to show growth for the year in 2020. China's position as the world's second-largest economy precludes it from continuing to expand at its historic rates, although India and China are expected to lead growth in the emerging markets over the coming decade.

Back in the U.S., the reset to zero rates and the massive stimulus in response to the pandemic shut-down have spurred concerns about the return of inflation, even though short-term inflation remains quiet (**Exhibit 1**). Around the globe, the landscape for inflation was altered once again following the plunge in the equity markets at the start of 2020. Any inflationary push from energy prices evaporated, and the halt to global growth in the first and second quarters has fed continued deflationary pressure in the U.S. and the rest of the developed markets. One of the enduring mysteries of the past decade has been the absence of inflation. After the then-unprecedented policy steps taken in response to the GFC—interest rates cut to zero, several rounds of quantitative easing, massive fiscal stimulus—economic observers were convinced we had sowed the seeds of a sustained rise in inflation, but that did not happen.

Exhibit 1

A Long-Term Look at U.S. Inflation



Sources: Bureau of Labor Statistics, Callan
* Callan's projected U.S. inflation rate for 2021-2030

The question to answer is why the application of the same policies (and more) in response to the pandemic will end up creating inflation this time. The difference would have to be the nature of the pandemic-induced recession, spurred by a global natural disaster rather than a slowly building systematic imbalance in the financial system that had to be worked out. Our projection is that inflation will remain quiet for the next one to two years and then begin to rise in the later years of the 10-year forecast horizon, averaging 2% in the U.S., 1.75% in developed markets outside the U.S., and 2.5% in emerging markets.

We believe the risk to inflation on the upside will come from one of two scenarios. First, prices and wages could face a sudden spike if the containment of the pandemic proceeds faster than expected, and the release of pent-up demand surges sooner and more robustly than projected. Second, policy mistakes could keep interest rates too low for too long, and excess stimulus could combine with low rates to spur a sustained rise in prices. We view these potential scenarios as risks, but neither path is our expected case. On the downside, if interest rates are held lower for longer, the reason will likely be that growth has not resumed sufficiently, so inflation pressures will remain suppressed.

Inflation varies much more widely across emerging market countries than is the case for developed markets. South Africa and India are expected to have the highest rates, with Brazil not far behind, all above 4%. Conversely, South Korea and Taiwan are projected to have inflation more in line with developed rather than emerging markets. Overall, we expect emerging market inflation to remain higher than in developed markets.

Equity Forecasts

All equity forecasts are developed by building off of this fundamental relationship:

Equity Return = Income Return + Capital Appreciation

While the short-term relationship is weak, earnings tend to follow economic growth over a long-term strategic horizon. In the absence of this linkage, profits would become an extraordinarily large or small part of the economy. The connection is more robust in developed economies than in emerging markets, where earnings per share growth can substantially lag economic growth.

Broad U.S. Equity
Russell 3000 Index

Return
6.60%

Risk
17.95%

U.S. Equity

Projected earnings growth is the key to forecasting equity price appreciation, with investors willing to pay more for stocks if they have a higher profit potential. Earnings growth had been strong prior to the pandemic, but S&P 500 earnings fell by double-digit percentages in 2020. We anticipate a strong rebound in earnings in 2021 followed by sustained growth that is expected to be modestly above GDP growth given the low level of initial earnings.

Fiscal stimulus, the Fed's zero interest rate policy and the prospect that vaccines will end the pandemic in 2021 have driven the S&P 500 to record levels in anticipation of a strong rebound in earnings that has yet to materialize. The combination of substantial price appreciation and poor recent earnings has driven the price-forward earnings ratio into the low 20s from a nadir of 13 in March. The road back to valuations more consistent with historical averages likely involves not only our anticipated rebound in earnings but also more limited future price appreciation. Our projected return for the S&P 500 reflects a 25 bps drag due to high valuations.

Dividend yields fell during the pandemic. As with valuations, rapid price appreciation was one factor. Another was conservative corporate cash management in light of current uncertainties. This combination drove yields measurably below 2%. As price appreciation slows and pandemic fears ebb, we anticipate the dividend yield for the S&P 500 to rebound to 2%. Dividend yields have been remarkably stable for the last two decades even in the face of substantial changes in earnings and interest rates, so dividend yields are expected to remain at this level throughout the rest of the projection time horizon.

Inflation plays a role in equity forecasts since the variables described above are forecast in real terms with inflation added to generate nominal returns. Our forecast for inflation has fallen 25 bps, which translates directly to a 25 bps decline in our nominal equity return forecast.

Global ex-U.S. Equity
MSCI ACWI ex USA Index

Return
6.80%

Risk
20.70%

Global ex-U.S. Equity

Many of the same factors limiting our U.S. equity forecasts have also reduced our projections for global ex-U.S. equity. COVID-19 weighed heavily on 2020 developed market earnings. Recent earnings have started to turn up but may be further impacted by new COVID-related restrictions and are not likely to reach their pre-pandemic levels for another year or more. Once earnings have recovered, growth is likely to track only marginally ahead of GDP gains, which we expect to be 1.75% on average over the next 10 years. Extraordinary central bank monetary policy is likely to remain very accommodative for the foreseeable future, which should provide a tail wind to stock prices. However, a significant upside to returns appears to be already priced in given price-earnings ratios that are high relative to history. We expect dividend yields, which have been suppressed by the pandemic, to rebound to 3% on average over the next 10 years. A 25 bps decline in anticipated inflation further reduces the nominal return forecast.

Emerging market earnings fell early as the pandemic began in China, but earnings in that country have also recovered more quickly. Other emerging markets have struggled to control the impact of COVID-19, causing earnings to struggle. Altogether earnings are still expected to be about double those of developed markets. We expect that net issuance of stock—in an effort to raise capital for expanding businesses—will dilute earnings per share growth. Expected inflation is higher than in developed markets but is expected to fall below historical levels, resulting in lower nominal returns.

Fixed Income Forecasts

Our fixed income projections are created by decomposing fixed income returns into subcomponents and incorporating a forecast for the evolution of the term structure over time:

Fixed Income Return = Yield + Capital Gains + Roll Return

Core U.S. Fixed Income *Bloomberg Barclays US Aggregate Bond Index*	**Return** **1.75%**	**Risk** **3.75%**

Core U.S. Fixed Income

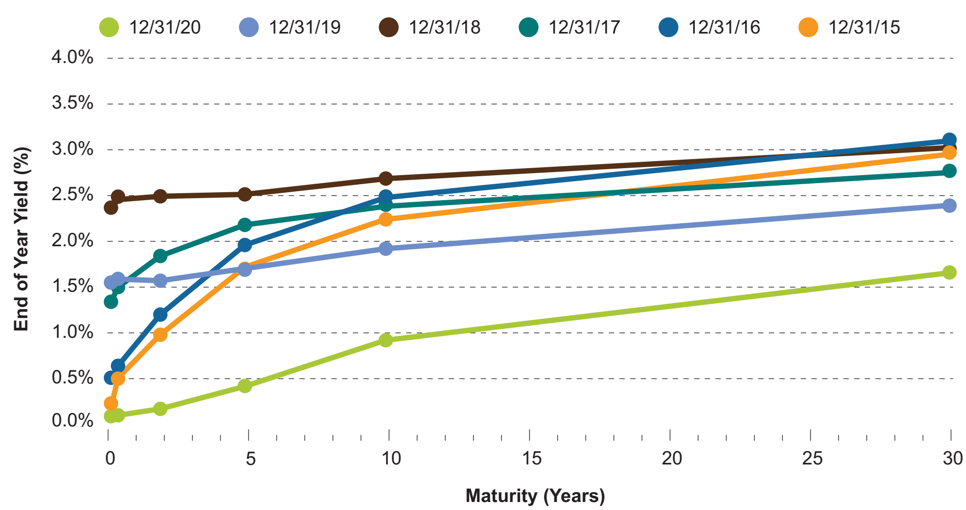
The primary driver of our lower expected return forecasts for 2021-2030 is lower starting yields. The yield of the Bloomberg Barclays US Aggregate Bond Index decreased significantly for the second consecutive year, reaching an all-time low of 1.02% on August 4. After three precautionary 25 basis point rate cuts in 2019, the Fed was forced to cut rates more dramatically in response to the global pandemic in 2020. A 50 bps cut on March 3 and another 100 bps cut on March 16—the first pair of emergency cuts ever made outside of the normal meeting schedule—brought the Fed funds rate to a range of 0%-0.25%, and the Fed has signaled it intends to keep rates at this level until at least 2023. As a result of the pandemic, the Treasury yield curve is low on an absolute basis, but the slope is steeper than it has been in recent years (**Exhibit 2**). We expect rates to rise incrementally and steepen further over the next 10 years, with the long end of the curve rising more than the short end given the Fed's influence on the short end.

Historically low starting yields provide minimal carry and narrowly offset capital losses in the early years of our forecast; capital losses are incurred as rates slowly rise to a higher equilibrium. Higher yields in later years will enable higher fixed income returns since yields are the most important driver of bond performance.

Projected upward-sloping yield curves in the forecast provide a return tailwind, resulting in positive roll returns as bond issues gradually move toward maturity. Roll returns are expected to more than offset any anticipated losses from downgrades and defaults.

Exhibit 2

Yield Curve Steepens but Hits Lows



Source: Callan

Alternatives Forecasts

Alternative investments differ substantially from each other, so we use different models for each. Hedge funds can be evaluated in a multi-factor context using the following relationship:

Expected Return = Cash + Equity Beta x (Equity-Cash) + Exotic Beta + Net Alpha

Hedge Funds
Callan Hedge Fund-of-Funds Database

Return
4.00%

Risk
8.00%

Hedge Funds

Callan's 10-year cash forecast is 1.00%, which is the starting point for our hedge fund returns. Diversified hedge fund portfolios have historically exhibited equity beta relative to the S&P 500 on the order of 0.4. Combined with our equity risk premium forecast, this results in an excess return from equity beta of just over 2%.

Return from hedge fund exotic beta and illiquidity premia is forecast to be 0.5% to 1.0%, to arrive at an overall expected return of 4.0%.

This forecast assumes that hedge fund alpha in aggregate after subtracting out fees is zero. In practice, hedge funds display significant divergence in returns, and the ability to select skillful managers could result in returns greater than we project.

Real Estate
NCREIF ODCE Index

Return
5.75%

Risk
14.10%

Real Estate

Real estate returns held up surprisingly well in 2020. The low interest rate environment for the foreseeable future should help to ensure that real estate continues to garner interest from investors seeking income, supporting returns. However, the momentum in the Industrial sector is more than offset by the headwinds faced by Retail and Office, which should prove to be a drag on performance. The combination results in a 50 bps reduction in our outlook for real estate returns compared to last year.

After adjusting for the embedded leverage in core real estate, we forecast the expected real estate return to be about 85% of the excess return (versus cash) of the U.S. equity market. When combined with the forecast cash return, this calculation results in a projection of 5.75%.

The real estate risk forecast reflects economic realities rather than observed volatility. Observed volatility is often less than 5%; however forecasting, for example, a 3% standard deviation implies that the real estate loss experienced during the GFC was a 10+ standard deviation event. Our forecast for risk better represents the probability of a loss of this magnitude.

Private Equity
Cambridge Private Equity Index

Return
8.00%

Risk
27.80%

Private Equity

The private equity market in aggregate is driven by many of the same economic factors as public equity markets. Consequently, the private equity performance expectations declined 50 basis points relative to where they were last year.

Return and risk reflect the leverage being employed in funds that target the asset class. We see tremendous disparity between the best- and worst-performing private equity managers. The ability to select skillful managers could result in realized returns significantly greater than projected here.

As is the case with real estate, the projection for standard deviation for private equity is consistent with risk of loss rather than a measure of observed volatility. Day-to-day variations in value cannot be observed since private equity is by definition not publicly traded. Our forecast for private equity risk approximates the ratio of return to risk for the other equity asset classes we forecast.

Private Credit

Return
6.25%

Risk
14.60%

Private Credit

Private credit was added to Callan's capital markets assumptions this year. While many clients could implement with strategies that engage in direct lending to middle-market companies, a wide variety of approaches to implementation are available. Return and risk reflect the leverage being employed in funds that target the asset class.

Yields on loans to middle-market companies have a persistent premium to yields on loans to large corporations, which helps to support an assumed return premium.

As is the case with other alternatives, the projection for standard deviation for private credit is consistent with risk of loss rather than a measure of observed volatility. Day-to-day variations in asset value cannot be observed since private credit is not liquid and valuations are typically not marked down until credit problems are visible at an issuer. While smaller middle-market companies tend to have less diversified business models than large corporations, direct lending strategies may pursue better terms, such as covenants to protect investors.

Exhibit 3

Callan's Capital Markets Assumptions 2021-2030

	Asset Class	Index	Projected Return*	Projected Risk
EQUITIES	Broad U.S. Equity	Russell 3000	6.60%	17.95%
	Large Cap U.S. Equity	S&P 500	6.50%	17.70%
	Small/Mid Cap U.S. Equity	Russell 2500	6.70%	21.30%
	Global ex-U.S. Equity	MSCI ACWI ex USA	6.80%	20.70%
	Dev. ex-U.S. Equity	MSCI World ex USA	6.50%	19.90%
	Emerging Market Equity	MSCI Emerging Markets	6.90%	25.15%
FIXED INCOME	Short Duration Gov't/Credit	Bloomberg Barclays 1-3 Yr G/C	1.50%	2.00%
	Core U.S. Fixed	Bloomberg Barclays Aggregate	1.75%	3.75%
	Long Gov't/Credit	Bloomberg Barclays Long G/C	1.80%	10.35%
	TIPS	Bloomberg Barclays TIPS	1.70%	5.05%
	High Yield	Bloomberg Barclays High Yield	4.35%	10.75%
	Global ex-U.S. Fixed	Bloomberg Barclays Global Agg. ex-US	0.75%	9.20%
	Emerging Market Debt	JPM EMBI Global Diversified	3.50%	9.50%
OTHER	Core Real Estate	NCREIF ODCE	5.75%	14.10%
	Private Infrastructure	MSCI Gbl Infra/FTSE Dev Core 50/50	6.00%	15.45%
	Private Equity	Cambridge Private Equity	8.00%	27.80%
	Private Credit	N/A	6.25%	14.60%
	Hedge Funds	Callan Hedge FOF Database	4.00%	8.00%
	Commodities	Bloomberg Commodity	2.25%	18.00%
	Cash Equivalents	90-day T-bill	1.00%	0.90%
	Inflation	**CPI-U**	**2.00%**	**1.50%**

Source: Callan
* Returns are geometric (annualized over the 10-year forecast horizon)

Callan's Capital Markets Research Group

Callan provides capital markets research on all asset classes and all strategies. We develop proprietary capital markets expectations and conduct asset allocation and scenario analysis. The Capital Markets Research group reviews investment manager structure and provides custom client research and education. Our team includes experienced professionals with economics, actuarial, mathematics, finance, and engineering backgrounds.

If you have any questions or comments, please email institute@callan.com.

About Callan

Callan was founded as an employee-owned investment consulting firm in 1973. Ever since, we have empowered institutional clients with creative, customized investment solutions backed by proprietary research, exclusive data, and ongoing education. Today, Callan advises on more than $2 trillion in total fund sponsor assets, which makes it among the largest independently owned investment consulting firms in the U.S. We use a client-focused consulting model to serve pension and defined contribution plan sponsors, endowments, foundations, independent investment advisers, investment managers, and other asset owners. Callan has six offices throughout the U.S. Learn more at www.callan.com.

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