2025 Capital Market Assumptions

April 2025

SELLWOOD
INVESTMENT PARTNERS

TABLE OF CONTENTS

INTRODUCTION

Sellwood Investment Partners updates its capital markets assumptions annually. Our 2025 assumptions reflect information as of December 31, 2024, unless otherwise noted. The following report documents our process in detail.

Philosophy

We strive to construct a set of assumptions that is straightforward, explainable, fully documented, and replicable by other researchers. Our assumptions are as complex as necessary but no more complex than necessary. They have no hidden constraints. We could make them more complicated, but we do not believe that doing so would make them better.

Principles

This report documents our process for creating these capital markets assumptions, and we provide detailed methodology for each. Several over-arching principles, however, inform all of our analysis:

1. We believe that forward-looking capital market assumptions are an important, but far from the only important, input for properly constructing portfolios. Great care should be taken not to rely only on mean-variance analysis when constructing portfolios. An analysis that relies only on mean-variance analysis will over-allocate to assets with infinitesimally superior risk/return estimates, and assets that are less liquid or less frequently priced, resulting in inferior diversification and the assumption of unintended risks.

2. Our assumptions are forward-looking in nature and reflect a ten-year horizon. They are most appropriate for analysis of portfolios with long-term (10 years or longer) horizons. For portfolios with shorter horizons, different methods of analysis should be employed.

3. We deliberately use different methods to separately estimate return and risk. The first part of this paper explains the different methods we employ to estimate the future return of each individual asset class. Later in the paper, we explain a more standardized approach to estimating future risk of the same asset classes.

4. Our return assumptions utilize a build-up approach based on the current values of the individual drivers of expected return that are unique to each asset class.

5. For asset classes where the market provides a current view of forward-looking returns, our assumptions reflect the market view. We don't believe that additional complexity would be add to the analysis.

6. Where possible, all of our return assumptions incorporate current valuations.

7. Our assumed returns are average one-year returns, and the standard deviation of returns is the standard deviation of one-year returns.

8. Our assumptions are presented in nominal terms. Where appropriate, we transform inputs into to real, after-inflation components in order to strip out the influence of historical inflation. At the end of the build-up process, where appropriate, we add the market's current measure of forward-looking inflation back to the assumptions to create forward-looking nominal return assumptions.

9. We calculate compound average annual returns. After calculating a compound return and a risk assumption, we combine the two mathematically to calculate an arithmetic average expected return, which is a necessary input for mean-variance analysis.

10. Our assumptions are passive in nature and assume no active management.

11. Our approach to modeling the expected risk of each asset category is multi-faceted and reflects the fact that risky assets exhibit "fat tails" that are not present in normal distributions. First, we examine the historical standard deviation of the returns for a proxy index for the asset category (both the full history and most recent 10 years). Next, we examine the historical worst-case annual return experience (or in the case of asset categories that are not priced to market, the worst two years) for the asset class. If necessary, we adjust our risk estimates upward to ensure that the actual worst-case experience had at least a 1% probability of occurring (once every 100 years) under our assumed return and risk distribution parameters. Finally, for asset classes where our confidence in the data available for examination is limited, we qualitatively adjust our risk assumption to reflect this uncertainty (i.e., for asset classes with a shorter history, we adjust the risk assumption so that the actual historical worst-case scenario had a 2% probability of occurring).

12. Our correlation coefficient assumptions are derived from history. We seek a proxy for each asset category we have modeled with as long a history as possible, and then calculate our correlation assumptions accordingly.

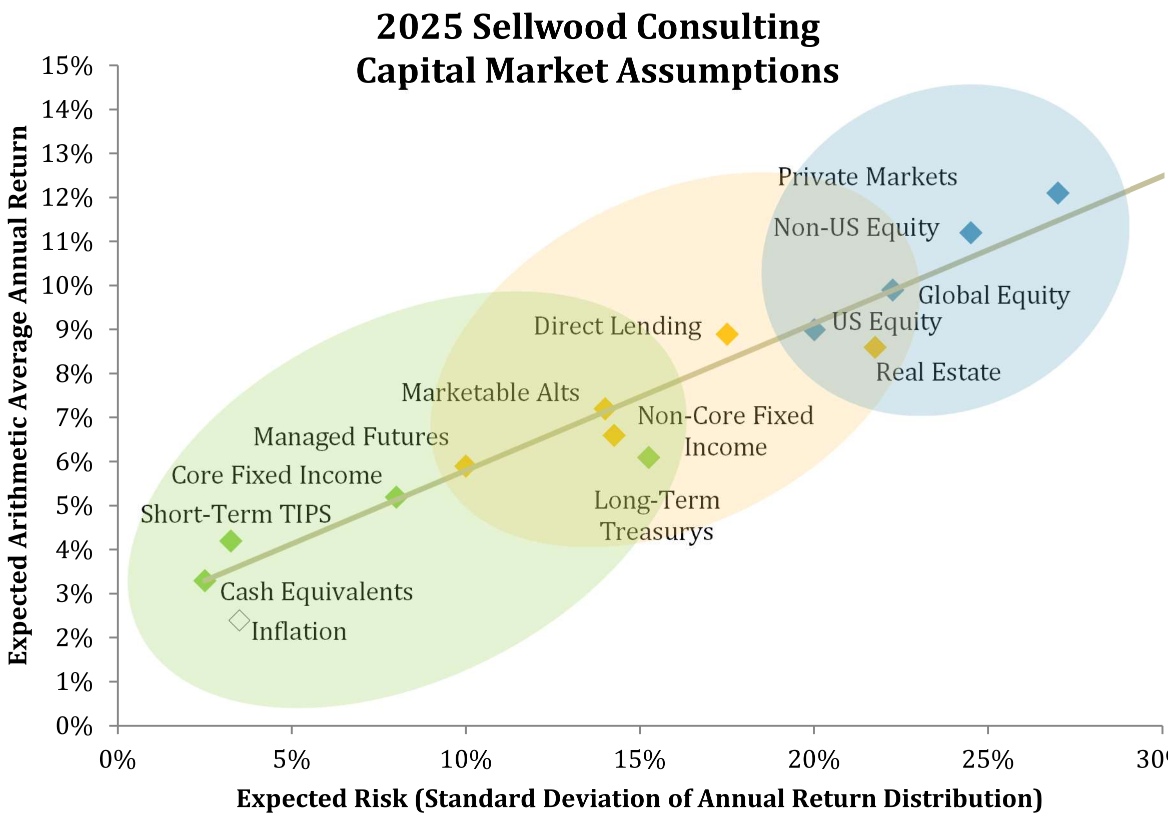
13. We round our return assumptions to the nearest 10 basis points, and our risk assumptions to the nearest 25 basis points.

14. Our assumptions are applicable to US-based, non-taxable investors. For taxable clients located in the United States, we maintain a separate methodology that considers the effects of the client's specific taxes on expected risk and returns.

15. We deliberately design a limited set of mostly non-overlapping assumptions for major asset categories. By focusing on major asset classes, with the most data available for examination, we can develop the most robust assumptions. Asset allocation analysis is a blunt tool, and we believe that input assumptions should not be more granular than the methodology can support. Using a more limited set of assumptions reduces the risk of false precision when implementing them.

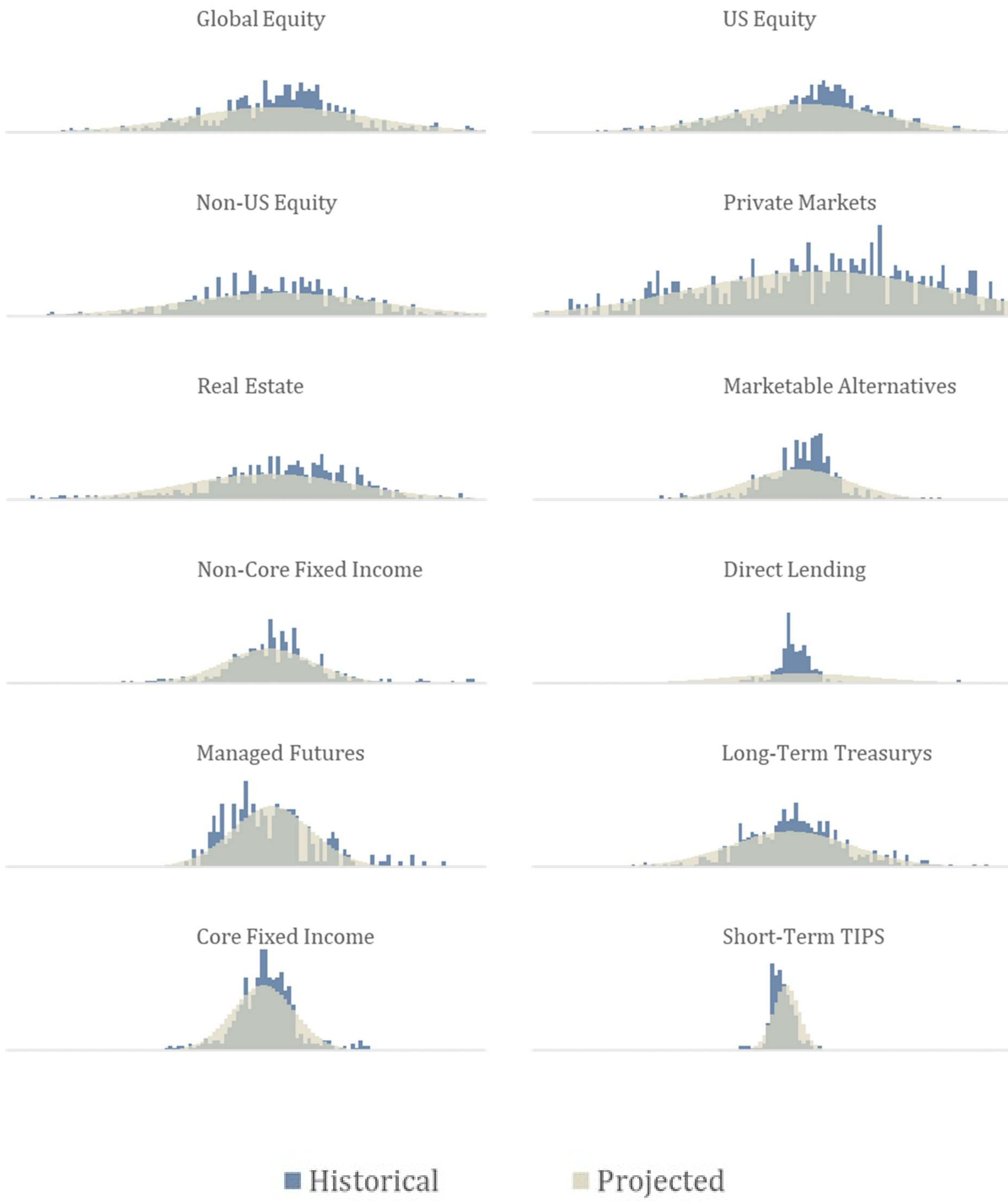
Our 2025 capital market assumptions are summarized on the following page.

2025 ASSUMPTIONS SUMMARY



	Nominal Compound Return	Risk	Nominal Arithmetic Return	Sharpe Ratio
Inflation	2.34%	3.50%	2.40%	---
Global Equity	7.74%	22.25%	9.90%	0.20
US Equity	7.25%	20.00%	9.00%	0.20
Non-US Equity	8.64%	24.50%	11.20%	0.22
Private Markets	9.04%	27.00%	12.10%	0.21
Real Estate	6.47%	21.75%	8.60%	0.15
Marketable Alternatives	6.26%	14.00%	7.20%	0.21
Non-Core Fixed Income	5.60%	14.25%	6.60%	0.16
Direct Lending	7.50%	17.50%	8.90%	0.24
Managed Futures	5.48%	10.00%	5.90%	0.22
Long-Term Treasurys	4.97%	15.25%	6.10%	0.11
Core Fixed Income	4.95%	8.00%	5.20%	0.20
Short-Term TIPS	4.12%	3.25%	4.20%	0.25
Cash Equivalents	3.31%	2.50%	3.30%	---

The historical one-year return distributions (historical real returns, plus assumed future inflation) for each major asset class we model are shown below in blue, alongside our forward-looking assumed return distributions in beige. Our methodology assumes wide enough normal distributions to capture markets' historical fat tails. Philosophically, we have chosen to model future return distributions to capture the "tails" of each asset class rather than their historic shapes and tendency toward their means.



INFLATION

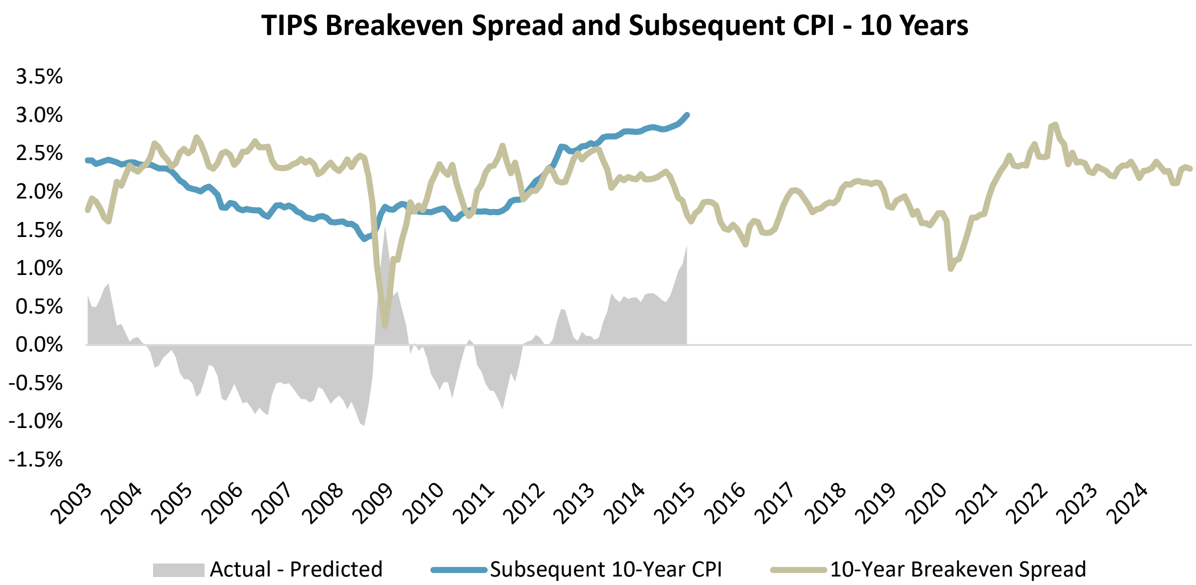
Modeled: US CPI-U Inflation
Compound Return: 2.34%
Arithmetic Average Return: 2.40%
Risk: 3.50%

Our assumption reflects forward-looking consensus expectations of ten-year inflation implied by the market. This estimate is given by the difference between long-term treasury and TIPS yields, referred to as the "TIPS breakeven spread."

On December 31, 2024, the market's yield for a 10-Year US Treasury Bond was 4.58%, and the real yield for a 10-Year TIPS security was 2.24%. The difference between the two approximates the market's inflation expectation over the next ten years: 2.34%.

The Federal Reserve has published this inflation approximation since 2003. The following chart depicts the full history of this measure (in tan), laid against the actual subsequent inflation (as measured by the Consumer Price Index, "CPI,") that occurred over the following ten years (in blue). With the exception of especially illiquid market periods, which distort the measure because of liquidity differences between TIPS and nominal Treasury Bonds, the measure has done a fair job of predicting subsequent inflation and does not appear to be biased positively or negatively.

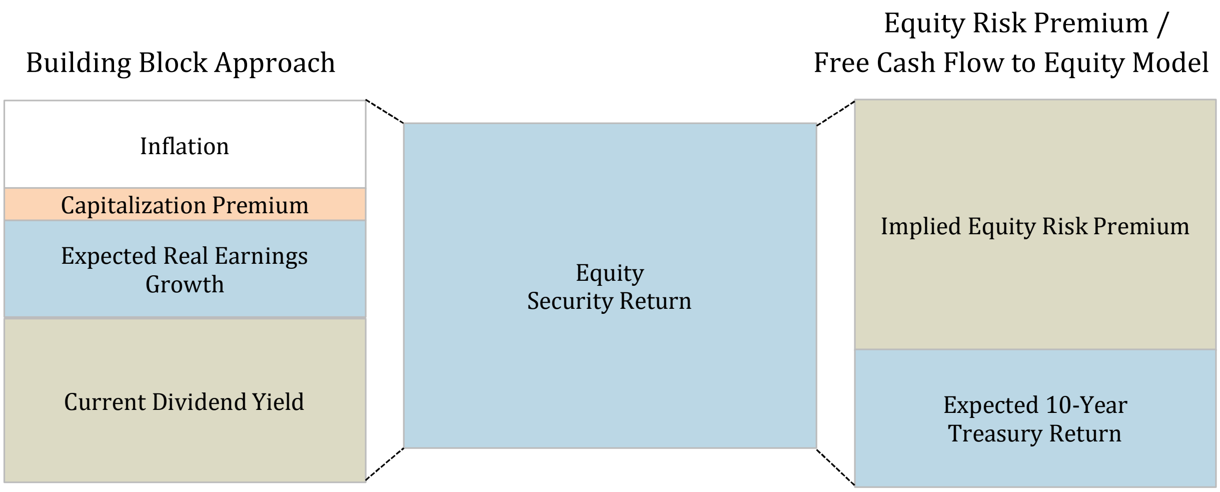
At the same time, it is clear that the market doesn't always get it right, which is why we assume a range of possible outcomes for inflation, defined by the risk assumption.



GROWTH INVESTMENTS

Growth investments primarily consist of equity investments in private and public companies. We use two methodologies to derive our equity return assumptions:

(i) a building-block approach and
(ii) the current implied equity risk premium based on a free cash flow to equity model.



Building Block Approach

Our building block approach is consistent across equity categories:

  Assumed (Expected) US Inflation
+ Current Dividend Yield
+ Expected Real Earnings Growth

Our building block approach employs "Shiller earnings," which represent a ten-year average of them, adjusted for inflation. We prefer this method because it incorporates a fuller market cycle, aligns with our ten-year forecast period, and has shown a better empirical track record of predicting future returns than other approaches. Research shows that of all the varied ways to calculate a P/E ratio, Shiller's Cyclically Adjusted Price to Earnings ("CAPE") has historically shown the highest predictive power over future 10-year returns.[1]

The dividend yield is how current valuations enter our methodology. To better forecast a full market cycle, we choose to use a more stable input than the market's current dividend yield, which oscillates frequently, adding undesirable "noise" to the model. Instead, we estimate dividend yield using Shiller (past 10-year real) earnings. We take the inverse of the current CAPE ratio (price / average past 10-year real earnings) to determine the current Shiller earnings yield. This number represents the earnings of the S&P 500 from 5 years ago, on average. Then, we transform earnings

[1] Vanguard. Forecasting stock returns: What signals matter, and what do they say now?

to present-value terms by growing them at the real earnings growth rate since 1950 for 5 years. Last, we multiply the adjusted earnings yield by the long-term dividend payout ratio of 0.5 to arrive at the current dividend yield.

Equity Risk Premium / Discounted Free Cash Flow Model

For the implied equity risk premium, we expand upon a discounted free cash flow model created by Professor Aswath Damodaran of the Stern School of Business that uses a free cash flow to equity approach to account for dividends as well as stock buybacks.[2]

Our modified free-cash-flow-to-equity model is a multi-stage model based on several input variables. In stage one (years one and two), we assume that earnings grow at the rate given by top-down analyst earnings projections. In stage two, defined as years three to five, we assume linear reversion of the earnings growth rate to the long-term risk-free rate, given by our 10-year US Treasury bond return assumption.

[2] http://pages.stern.nyu.edu/~adamodar/

US Equity

Modeled: US Equities, All Capitalizations
Compound Return: 7.25%
Arithmetic Average Return: 9.00%
Risk: 20.00%

We formulate our return assumption for the entire US market by estimating returns for large- and small-cap equity and applying the current market capitalization weights to them. The current weights, 92% large, and 8% small[3], yield a US Equity assumption of 7.25% in compound terms:

(92% x 7.18%) + (8% x 8.11%) = **7.25%.**

Our calculation methodologies of the US large- and small-cap assumptions are explained below.

US Large-Cap Equity

Our return assumption for the US large-cap equity portion of the US Equity assumption is the average of two separate approaches:

(i) a valuation-sensitive building-block approach, and
(ii) a free cash flow to equity model.

Building Block Approach

For the valuation-based building block component of the US large-cap return, we create our building blocks from the S&P 500 Index:

2.34%	Inflation
1.46%	Dividend Yield
2.06%	Long-Term Compound Average Real Earnings Growth (Since 1950)

Equity Risk Premium / Discounted Free Cash Flow Model

Beginning (current) S&P 500 price level =	$5,881.63
Base year free cash flow to equity, S&P 500 =	$182.79[4]
Expected S&P 500 earnings growth over next 5 years[5] =	10.9% in year 1
	11.5% in year 2
	9.6% in year 3
	7.7% in year 4
	5.8% in year 5
Expected S&P 500 earnings growth past year 5=	4.51%[6]

[3] FTSE/Russell.
[4] 2024 S&P 500 Dividends = $73.40 + buybacks = $109.40
[5] Historically, the I/B/E/S consensus analyst forecast has overstated subsequent actual earnings growth by 15.6%. We reduce our assumption for earnings growth by 13.5% (1-(1/1.156)) accordingly.
[6] Our 10-year forecasted return for the Treasury Bonds, as a proxy for the ten-year risk-free rate.

We apply a standard discounted cash flow methodology to these variables and solve for the implied growth rate (r) of the S&P 500.

$$5{,}881.63 = \frac{202.65}{(1+r)^1} + \frac{225.95}{(1+r)^2} + \frac{247.63}{(1+r)^3} + \frac{266.70}{(1+r)^4} + \frac{282.17}{(1+r)^5} + \frac{282.17(1.0451)}{(r-0.414)(1+r)^5}$$

Given by the above equation, our nominal average annual return expectation for the S&P 500 over the next 10 years is 8.49%.

By subtracting our assumed US Treasury bond return of 4.51% from 8.49%, we also calculate an expected equity risk premium of 3.98%.

Combining the Two Approaches

Our expected compound return of 7.18% for US large-cap equity is based on the average of the above results from the building-blocks approach and the discounted free cash flow model.

US Small-Cap Equity

Our return assumption for the US small-cap equity portion of the US Equity assumption uses a similar approach to our approach for US large-cap. Because data is much more limited for small-cap equities than for large-cap equities, we evaluate small-cap equities relative to large-cap equities rather than relative to their own history. For US small-cap equity, we compare the Shiller earnings yield for the Russell 2000 Index and S&P 500 Index over the longest common time period for the two indexes (1979-present). The Shiller-based method is only half of our US large-cap equity assumed return, so we divide the premium in half and add or subtract it from our final US large-cap equity return.

While our assumption models the full universe of small-cap stocks, the data we use excludes companies with negative earnings. As compared to using the data from the full universe of small-cap stocks, the dataset that excludes negative earners has historically yielded better predictive power over future returns of the full index, which includes the negative earners.

We compare the small cap ex negative earners Shiller earnings yield relative to US large-cap equity over the longest common time period (1988-present) for which we have reliable data:

	Long-Term Average	Current
US Large-Cap Earnings Yield	3.77%	2.65%
US Small-Cap Earnings Yield	4.40%	4.65%
Small-Cap Premium	**0.63%**	**2.00%**

We can now measure the model's current predicted premium (2.00%) against the long-term average predicted premium (0.63%), which serves as our benchmark. Our current valuation is 1.37% above the long-term average. We divide this number in half to make it applicable to the US large-cap equity assumption, for which the building block approach contributes only half of the final figure:

US Large-Cap Assumed Return:	7.18%
Assumed Small Cap Premium:	0.25%
½ Calculated Small-Cap Premium:	+0.69%
Return Assumption:	8.11%

Non-US Equity

Modeled: Non-US Equities, All Regions & Capitalizations
Compound Return: 8.64%
Arithmetic Average Return: 11.20%
Risk: 24.50%

Our return assumption for Non-US Equity is intended to model the entire non-US equity market. It assumes the current weighting of large-cap and small-cap equities in the international equity market – 87% large-cap and 13% small-cap[7]. These weights are applied to underlying Non-US large-cap equity and Non-US small-cap equity assumptions. This weighting yields a compound return assumption of 8.64%:

(87% x 8.52%) + (13% x 9.45%) = **8.64%**

The calculation methodologies of Non-US Large- and Small-Capitalization equities are explained below.

Non-US Large Cap Equity

We build separate assumptions for developed and emerging non-US markets, and then weigh them according to current market weights to construct our Non-US Large-Cap Equity assumption, which is intended to model equities of both developed and emerging markets. As in our approach for US equity, we combine a Shiller-based building block approach with an equity risk premium estimate.

Building Block Approach

Over the longest common period for which we have both US (S&P 500 Index) and non-US developed markets (MSCI EAFE Index – "EAFE") earnings data (since 1977), non-US developed market earnings have grown at only 1.83% versus the rate of 2.15% for US large-capitalization stocks, a difference of 0.32%, in real terms. Given the short time frame for EAFE earnings data, we cut that difference in half for conservatism and subtract that number from the US large-capitalization equity real earnings growth rate (2.06%), to yield an assumed non-US developed markets real earnings growth rate of 1.90%.

Over the longest common period for which we have both US (S&P 500 Index) and emerging (MSCI EM Index – "EM") markets earnings (1995), real emerging market earnings have grown at 4.24% versus the rate of 2.74% for US large-capitalization stocks, a difference 1.50%. Given the short time frame for EM earnings data, we limit the excess earnings growth rate to 0.50% above the US large-capitalization stock growth rate (2.04%) to yield an assumed emerging markets real earnings growth rate of 2.56%.

For developed and emerging markets, our assumed building blocks are as follows:

[7] MSCI, Morningstar Direct

	EAFE	EM
Inflation	2.34%	2.34%
Current Dividend Yield	3.39%	4.46%
Assumed Compound Average Real Earnings Growth	1.90%	2.56%

Using the build-up methodology yields an expected compound return of 7.63% for Developed-Markets Non-US Large-Capitalization Equities and 9.36% for Emerging Market Equities.

Equity Risk Premium / Discounted Free Cash Flow Model

Our modified free-cash-flow-to-equity model employs several input variables:

		EAFE	EM
Beginning (current) price level =		$2,261.81	$1,075.48
Base year free cash flow to equity=		$92.58	$31.55
Expected earnings growth over the next 5 years[8] =			
	Year 1	6.4%	11.9%
	Year 2	8.8%	10.6%
	Year 3	7.6%	9.0%
	Year 4	6.4%	7.3%
	Year 5	5.1%	5.6%
Expected earnings growth past year 5=		4.5%	4.5%

Just as before, we solve for the average annual rate of growth to find the implied equity risk premium: 4.74% for Developed Markets and 3.73% for Emerging Markets.

Combining the Two Approaches

	EAFE	EM
Building Block Approach	*7.63%*	*9.36%*
Equity Risk Premium Approach	*9.26%*	*8.24%*
Average	8.04%	9.08%

Developed markets currently comprise 80%, and emerging markets 20% of the non-US total equity market. Applying those weights to our developed and emerging markets assumptions yields a Non-US Large-Capitalization compound return assumption of 8.64%.

[8] Historically, the I/B/E/S consensus analyst forecast has overstated subsequent actual earnings growth by 15.6%. We reduce our assumption for earnings growth by 13.5% (1-(1/1.156)) accordingly.

Non-US Small-Cap Equity

Due to lack of data availability in the non-us small-cap equity space, we assume the same small-cap premium for non-US small cap-equity as our assumption for US small-cap equity.

We calculated a US small-cap equity premium of 0.94%, which yields a compound assumption of 9.45%, using the same methodology.

Global Equity

Modeled: World Equities, All Capitalizations
Compound Return: 7.74%
Arithmetic Average Return: 9.90%
Risk: 22.25%

We create a return assumption for the global equity market by applying the total world market capitalization weights to our US and Non-US Equity return estimates. The current weights, 65% US and 35% Non-US, yield a Global Equity assumption of 7.74% in compound terms:

(65% x 7.18%) + (35% x 8.64%) = **7.74%**

Private Markets

Modeled: Buyouts, Venture Capital, & Distressed Investments, in Lockup Vehicles
Compound Return: 9.04%
Arithmetic Average Return: 12.10%
Risk: 27.00%

We assume a diversified private markets portfolio will tend to approximate the market exposure of US Small-Cap Equity over time, with a multiplication factor to account for the additional leverage, illiquidity, and risk premium:

(US-Small Cap Equity Arithmetic Average) x (1.2 Illiquidity/Leverage/Risk Premium)

The above calculation results in a compound return assumption of 9.04%.

Because our assumptions are intended to be passive in nature, we assume an industry-average active manager or collection of active managers to approximate the overall market opportunity.

DIVERSIFYING INVESTMENTS

Diversifying investments are harder to model with public-market index proxies than traditional equity and fixed income investments. When we can identify the underlying return drivers of an asset class, we use a building block approach to model future projected returns. When we can't use this method, we instead base our forecast on historical returns.

Real Estate

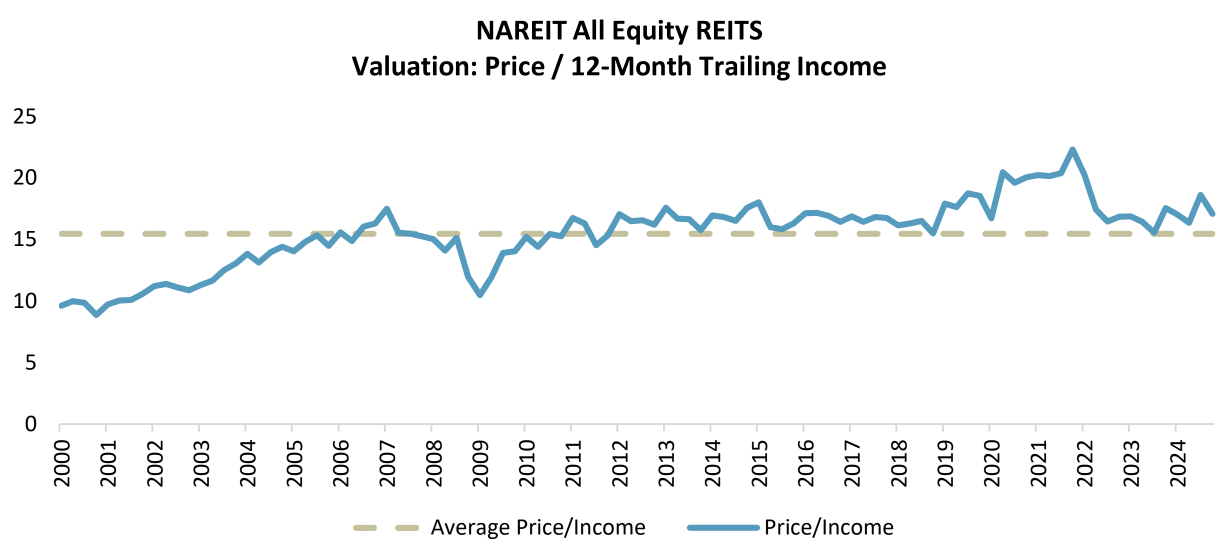
Modeled: Public (US Equity REITs)
Compound Return: 6.47%
Arithmetic Average Return: 8.60%
Risk: 21.75%

Our expected real estate return mirrors our equity process with a few key adjustments:

1. For the build-up portion of the assumption, current cap rates replace the earnings and dividend calculations, and
2. For the discounted free cash flow model, future earnings are based on breakeven inflation because we assume property values will appreciate at the rate of inflation.

For public equity REITs[9], we calculate the current cap rate, defined as the 12-months net operating income divided by price, currently equal to 5.85%.

The following chart depicts the inverse of the cap rate for the equity REIT benchmark: its historical price-to-income ratio.



[9] The FTSE NAREIT All Equity REITS Index

Our modified free-cash-flow-to-equity model employs several input variables:

		REITs
Beginning (current) price level =		$218.71
Base year free cash flow to equity=		$10.17
Expected earnings growth over the next 5 years =		
	Year 1	2.3%
	Year 2	2.3%
	Year 3	2.3%
	Year 4	2.3%
	Year 5	2.3%
Expected earnings growth past year 5=		2.3%

We assume that income from real estate will grow with the rate of expected inflation (2.3%). Just as before, we solve for the average annual rate of growth to find the equity risk premium. That rate of return is 2.59%.

Combining the Two Approaches

	REITs
Building Block Approach	*5.85%*
Equity Risk Premium Approach	*7.10%*
Average	6.47%

Marketable Alternatives

Modeled: Hedge Funds of Funds, Global GTAA, & Multi-Asset Alternative Strategies
Compound Return: 6.26%
Arithmetic Average Return: 7.20%
Risk: 14.00%

We assume a diversified portfolio that will tend to approximate the following market exposures over time:

40% Global Equity
30% Intermediate Fixed Income
30% Non-Core Fixed Income

Weighing those assumptions accordingly results in a compound return assumption of 6.34%.

Non-Core Fixed Income

Modeled: US and Non-US Below-Investment-Grade Fixed Income
Compound Return: 6.26%
Arithmetic Average Return: 7.20%
Risk: 14.25%

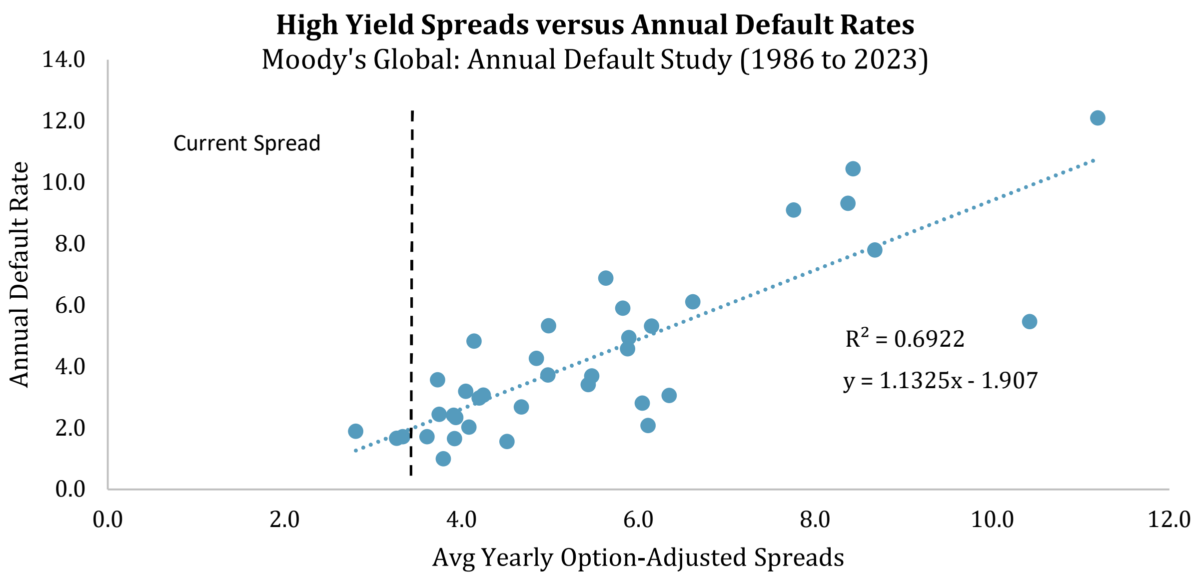
Direct Lending

Modeled: US Middle Market Direct Lending
Compound Return: 7.50%
Arithmetic Average Return: 8.90%
Risk: 17.50%

We utilize the same methodology for Non-Core Fixed Income and Direct Lending. Our Non-Core Fixed Income assumption models global high-yield public debt market while our Direct Lending Assumption models US middle-market direct lending.

Our assumption methodology starts with the duration-matched treasury yield, adds the current yield spread, and subtracts an estimate for unrecovered defaults. Higher yielding debt offers a yield spread relative to investment-grade bonds to offer compensation for the risk of default. Our process considers that current spread and adjusts it downward to account for default probability.

The following chart shows that historically, elevated yield spreads have been associated with above-average default rates.



Current option-adjusted spread:	3.2%
Projected Default Rate:	*1.4%*
Historical Default Rate:	*4.2%*
Assumed Default Rate:	2.8%

Given current spreads, the predicted default rate for high-yield default is 2.8%. We average that predicted number with the long-term average high-yield default rate since 1983, which is 4.2%, to come up with the combined default assumption of 2.8%.

Finally, we make a few adjustments owing to asset class-specific limitations. First, we note that the availability of data for Direct Lending is relatively limited given its short history. Additionally, loans offered in the space are private, so we cannot glean the same insight from pricing as we could with assets that were publicly traded in a liquid, daily-valued market. Instead, we estimate default rates using publicly available proxies. In contrast, private markets do yield useful insights related to recovery rates, so in that case we use the historical market data available (since 2008).

	High Yield	Direct Lending
Starting Treasury Yield:	4.15%	3.31%
Starting Yield Spread:	3.20%	5.72%
Expected Default Rate:	*2.8%*	*3.1%*
Expected Default Recovery Rate:	*38%*	*50%*
Default Effect:	(1.75%)	(1.53%)
Return Assumption:	**5.60%**	**7.50%**

Managed Futures

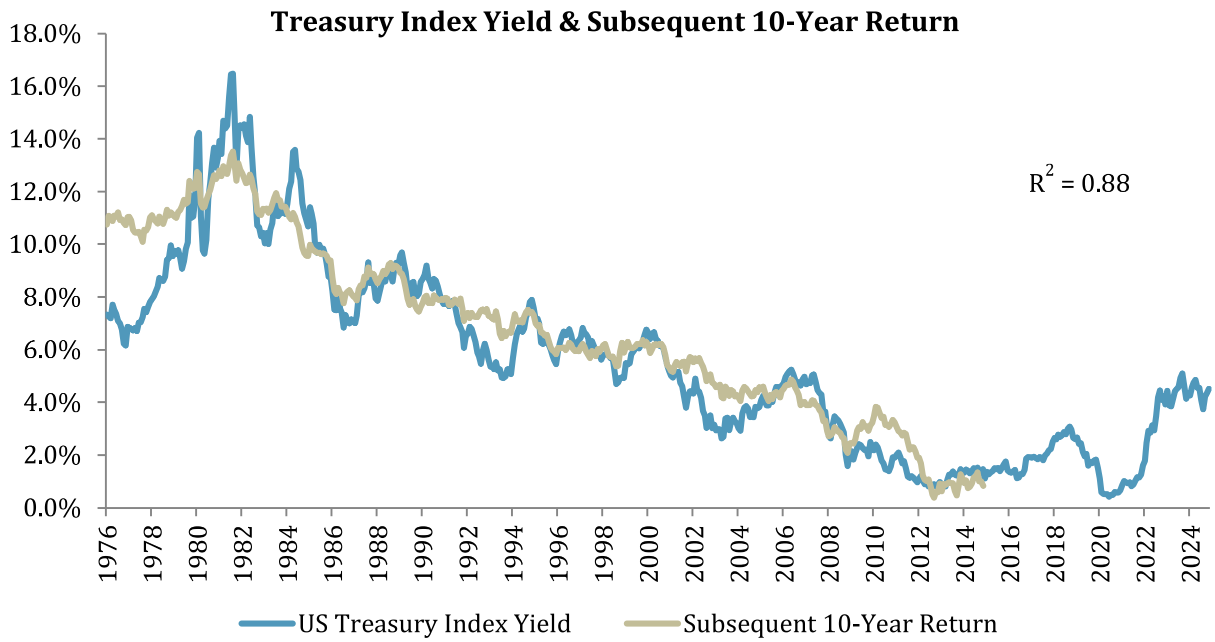
Modeled: Managed Futures Strategies Targeting 10% Volatility
Compound Return: 5.48%
Arithmetic Average Return: 5.90%
Risk: 10.00%

Using the SG Trend Index, an index of actual, “live,” in-sample managed futures strategies, we calculate the excess return to cash that managed futures strategies have returned since January 1, 2000 (the index’s inception date). We scale that premium based on a targeted 10% volatility level and arrive at a historical annualized arithmetic annual average premium over cash of 2.17%. We add back our Cash Equivalent return assumption of 3.31% to come up with a 5.48% return assumption for Managed Futures.

RISK MITIGATION / FIXED INCOME INVESTMENTS

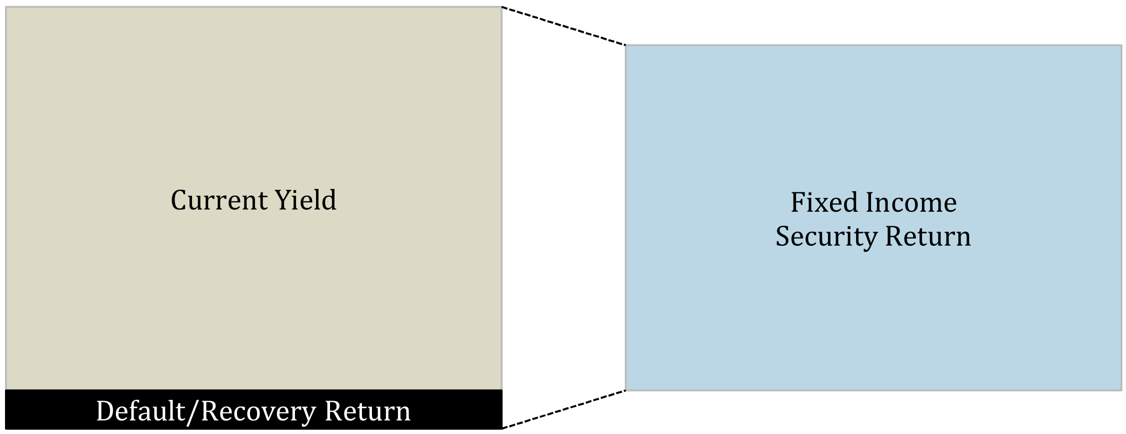
Risk mitigation assets primarily consist of high-quality fixed income of various durations.

Fixed income returns are highly dependent on entry yields. For investment grade fixed income, since 1976, simple yields have explained 88% of the variation of subsequent 10-year returns:



Core Fixed Income

Modeled: US Investment-Grade Aggregate and Hedged Non-US Aggregate Fixed Income
Compound Return: 4.95%
Arithmetic Average Return: 5.20%
Risk: 8.00%



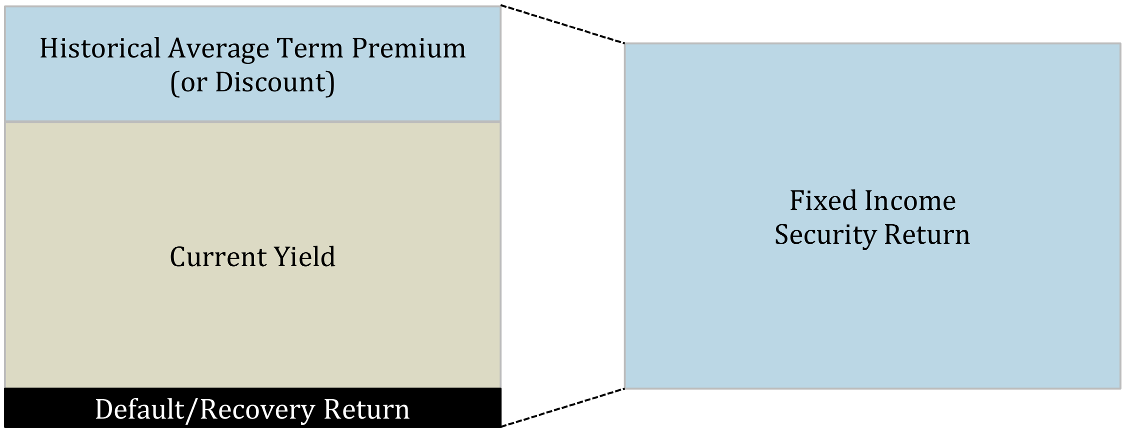
For our Core Fixed Income assumption, we model the full maturity curve of US investment grade fixed income, which currently has an aggregate duration of 6.0 years and is comprised of 51% US Government Bonds, 26% corporate bonds, and 23% securitized bonds. We adjust the current yield with expected default rate and recovery rates for non-Treasury securities using historical averages.

Starting Yield:	4.96%
Expected Default Rate:	*0.08%*
Expected Default Recovery Rate:	*43%*
Default Effect (50% Corp & Securitized):	-0.01%
Return Assumption:	**4.95%**

We believe that this approach works equally well for US aggregate fixed income and for Non-US aggregate fixed income, where the currency exposure is hedged back to the US dollar. By stripping out currency exposure, the non-US fixed income investor is left with a portfolio of fixed income securities with presumably similar underlying characteristics to those of the US fixed income portfolio.

For fixed income securities with different durations from Core or aggregate fixed income, we start with the expected return for the core fixed income portfolio (for portfolios including government and non-government bonds) or the expected return for the average Treasury bond (for US Treasury bond portfolios), and then add or subtract a historically observed term premium to that expected return. Historically, investors have experienced lower returns by investing in shorter-duration bonds, and higher returns from longer-duration bonds, as compared to a “Core” or aggregate bond portfolio.

For the fixed income categories beyond Core Fixed Income, we introduce a new building block, the historical average term spread:



Long-Term Treasury Bonds

Modeled: US Long-Term Treasury Bonds
Compound Return: 4.97%
Arithmetic Average Return: 6.10%
Risk: 15.25%

For the Long-Term Treasury assumption, we model US Treasurys with a duration of greater than 10 years. We utilize the current yield from the intermediate US Treasury curve and add the historical average term premium for holding longer-term Treasurys. The current duration for Long-Term Treasurys is 14.7 years.

Starting Treasury Yield (Full Curve):	4.29%
Average Historical Term Premium:	+0.69%
Return Assumption:	**4.97%**

Short-Term US Treasury Inflation Protected Securities (TIPS)

Modeled: Short-Term US TIPS
Compound Return: 4.12%
Arithmetic Average Return: 4.20%
Risk: 3.25%

For the Short-Term TIPS assumption, we model US Treasurys with a duration up to 5 years.

Starting Treasury Yield (Full Curve):	4.51%
Average Historical Term Premium:	-0.39%
Return Assumption:	**4.12%**

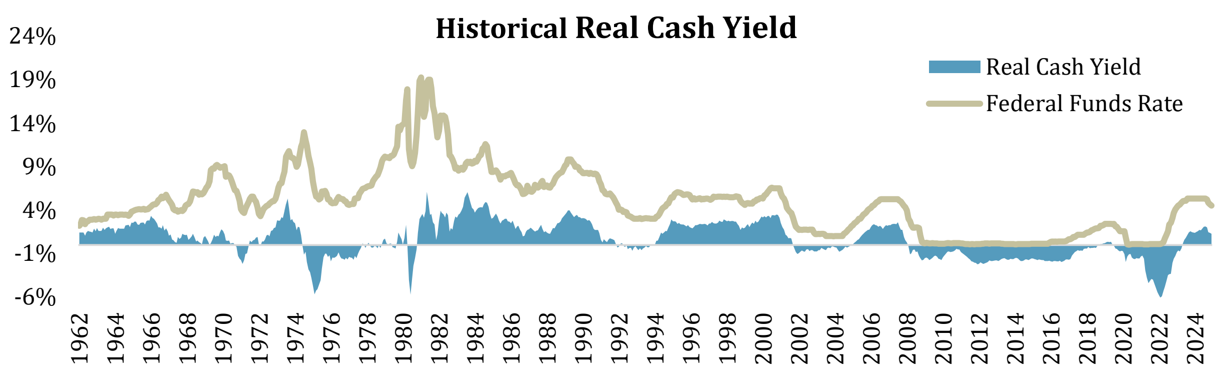
Cash Equivalents

Modeled: 91-Day T-Bills
Compound Return: 3.31%
Arithmetic Average Return: 3.30%
Risk: 2.50%

We use 91-Day T-Bills for the basis of our Cash Equivalents assumption.

Starting Treasury Yield (Full Curve):	4.51%
Average Historical Term Premium:	-1.21%
Return Assumption:	**3.31%**

We caution that there is an inherent problem with forecasting a 10-year return for an asset that matures every 91 days. Nominal cash returns are highly sensitive to nominal short-term interest rates, which we expect to be as variable over the next decade as they have been historically. As illustrated in the chart below, while investors typically demand a positive real yield from cash, periods of negative real return to cash have existed for considerable periods of time – including most of the time from 2008 to 2022. Our risk assumption reflects an appropriate range of uncertainty around our return projection for cash equivalents.



RISK

Our risk assumptions are mostly derived from history, but we have enhanced historical metrics with qualitative overlays in several asset categories.

For each asset category, we begin with historical annual returns, using the longest history available in each of our calculations:

Inflation	US CPI-U
Global Equity	MSCI ACWI IMI back to 1994; MSCI ACWI before 1994
US Equity	Russell 3000 back to 1979; S&P 500 before 1979
Non-US Equity	MSCI ACWI ex US IMI back to 1994; MSCI EAFE before 1994
Private Markets	1.2x Russell 2000 back to 1970
Real Estate	FTSE NAREIT
Marketable Alternatives	40% our Global Equity series, 30% our Intermediate Fixed Income series, and 30% our Non-Core Fixed Income series
Non-Core Fixed Income	ICE BofA High Yield Master
Direct Lending	1.1x Morningstar LSTA US Leveraged Loan 100 Index
Managed Futures	SG Trend Index
Cash Equivalents	91-Day T-Bills
Short-Term TIPS	ICE BofA US 1-5 Year TIPS
Intermediate Fixed Income	ICE BofA Broad Market
Long-Duration Treasurys	ICE BofA 10+ Year US Treasurys

In each case, we calculated the longest-term standard deviation of returns possible for the category. Then, we calculated the standard deviation of annual returns over the last ten years. The average of these two figures represents our base-case risk assumption. The relative overweight of the recent past compared to the entire historical period allows our forecasts to adjust somewhat to regime changes.

Next, we examined the worst annual return for each proxy index, going back as far as possible into history. We assumed this return as the worst-case scenario. In some cases, the normal return distribution implied by our return and risk assumptions suggested that the actual worst-case scenario had less than a 1% probability (1 in 100 years) of occurring. Because we are uncomfortable assuming that what has actually happened in the real world is extremely unlikely to happen again in the future, we adjusted the historical standard deviation upward until the actual, real-world worst-case scenario had at least a 1% probability of occurring under our assumed normal return distribution defined by our standard deviation assumption.

Finally, based on this analysis and our own assessment of the quality and longevity of our return data, we made several qualitative adjustments, where noted. The results of this risk analysis follow.

The following table depicts actual standard deviations of annual return, measured in the long term (as far back as history will allow), for the last ten years, and the average of those two figures.

Adding or subtracting our qualitative adjustment results in the Risk Assumption at the far right.

Standard Deviation of Returns

	10 Years	Longest-Term	Average	Qualitative Adjustment	Risk Assumption (Rounded)
Global Equity	15.36%	17.66%	16.51%	5.75%	22.25%
US Equity	16.39%	17.20%	16.79%	3.25%	20.00%
Non-US Equity	14.54%	21.80%	18.17%	6.25%	24.50%
Private Markets	18.44%	24.94%	21.69%	5.25%	27.00%
Real Estate	17.96%	20.24%	19.10%	2.75%	21.75%
Marketable Alternatives	10.16%	11.02%	10.59%	3.35%	14.00%
Non-Core Fixed Income	9.11%	15.07%	12.09%	2.25%	14.25%
Direct Lending	5.41%	12.10%	8.76%	8.75%	17.50%
Managed Futures	10.22%	10.04%	10.13%	-0.13%	10.00%
Long-Term Treasurys	13.08%	12.97%	13.03%	2.25%	15.25%
Core Fixed Income	6.08%	7.17%	6.63%	1.25%	8.00%
Short-Term TIPS	2.78%	3.49%	3.13%		3.25%
Cash Equivalents	1.92%	3.14%	2.53%		2.50%

Our qualitative adjustments to Risk were as follows:

Global Equity (+5.75%), US Equity (+3.25%), Non-US Equity (+6.25%), Real Estate (+2.75%), Non-Core Fixed Income (+2.25%), Direct Lending (+8.75%), Long-Term Treasurys (+2.25%), Core Fixed Income (+1.25%):

> These categories were adjusted upward to make their actual worst-case experience greater than a 1% probability of occurring under the assumed return distribution.

Private Markets (+5.25%):

> Private markets have a shorter history than other asset classes and was adjusted upward to make the worst-case experience greater than a 2.5% probability of occurring under the assumed return distribution.

Marketable Alternatives (+3.35%):

> We apply the same adjustments from above at the target underlying asset class weights.

Managed Futures (-0.13%):

We adjust the assumption up or down to achieve a 10.00% volatility target.

The following table examines the probability of the actual experienced worst case occurring under our assumed normal distribution of returns, as implied by our expected return and standard deviation of returns, after accounting for qualitative adjustments to risk.

We measure the actual worst-case scenario in "sigmas," or standard deviations from our assumed mean return. Measuring this way, we ask, "How likely was the actual experienced worst case, according to the distribution parameters we have assumed?" We have qualitatively adjusted several asset classes to ensure that the probability of the actually experienced worst case is always greater than 1%, meaning we assume that the experienced worst case has at least a one-in-a-hundred-year chance of happening. For asset classes that rely on a build-up of underlying assumptions, we apply the same qualitative adjustment from the underlying asset class to the top-level asset class.

	Worst Year		Actual Worst Case, in Sigmas from Assumption	Implied Probability of Actual Worst Case Occurring
Global Equity	-42.0%	2008	2.33	1.0%
US Equity	-37.3%	2008	2.31	1.0%
Non-US Equity	-46.0%	2008	2.34	1.0%
Private Markets	-40.5%	2008	1.95	2.5%
Real Estate	-42.2%	1974	2.33	1.0%
Marketable Alternatives	-23.3%	2008	2.19	1.4%
Non-Core Fixed Income	-26.9%	2008	2.33	1.0%
Direct Lending	-32.1%	2008	2.34	1.0%
Managed Futures	-8.1%	2018	1.40	8.1%
Long-Term Treasurys	-29.3%	2022	2.31	1.0%
Core Fixed Income	-13.0%	2022	2.31	1.0%
Short-Term TIPS	-2.7%	2022	2.22	1.3%
Cash Equivalents	0.0%	1938	1.31	9.5%

CORRELATION COEFFICIENTS

Our forward-looking correlation assumptions are mostly derived from long-term history. The indexes used for each asset class match what has been used above for our risk analysis.

Our assumed return correlation matrix is shown below:

Sellwood Investment Partners 2025 Correlation Coefficient Assumptions

	Inflation	Global Equity	US Equity	Non-US Equity	Private Markets	Real Estate	Marketable Alternatives	Non-Core Fixed Income	Direct Lending	Managed Futures	Long-Term Treasurys	Core Fixed Income	Short-Term TIPS	Cash Equivalents
Inflation	**1.00**	-0.08	-0.08	-0.05	-0.07	-0.06	-0.05	-0.01	0.21	-0.04	-0.19	-0.13	0.19	0.40
Global Equity	-0.08	**1.00**	0.90	0.92	0.78	0.62	0.93	0.70	0.52	-0.09	0.06	0.23	0.33	-0.03
US Equity	-0.08	0.90	**1.00**	0.67	0.86	0.65	0.85	0.67	0.48	-0.11	0.09	0.24	0.27	-0.02
Non-US Equity	-0.05	0.92	0.67	**1.00**	0.59	0.51	0.87	0.66	0.50	-0.05	0.03	0.20	0.36	-0.02
Private Markets	-0.07	0.78	0.86	0.59	**1.00**	0.69	0.77	0.65	0.48	-0.08	0.01	0.16	0.21	-0.02
Real Estate	-0.06	0.62	0.65	0.51	0.69	**1.00**	0.66	0.63	0.49	-0.02	0.19	0.32	0.35	-0.05
Marketable Alternatives	-0.05	0.93	0.85	0.87	0.77	0.66	**1.00**	0.85	0.59	-0.12	0.13	0.35	0.46	0.01
Non-Core Fixed Income	-0.01	0.70	0.67	0.66	0.65	0.63	0.85	**1.00**	0.69	-0.14	0.06	0.32	0.53	-0.02
Direct Lending	0.21	0.52	0.48	0.50	0.48	0.49	0.59	0.69	**1.00**	-0.12	-0.21	0.04	0.41	-0.01
Managed Futures	-0.04	-0.09	-0.11	-0.05	-0.08	-0.02	-0.12	-0.14	-0.12	**1.00**	0.09	0.02	0.05	0.01
Long-Term Treasurys	-0.19	0.06	0.09	0.03	0.01	0.19	0.13	0.06	-0.21	0.09	**1.00**	0.87	0.30	0.04
Core Fixed Income	-0.13	0.23	0.24	0.20	0.16	0.32	0.35	0.32	0.04	0.02	0.87	**1.00**	0.55	0.13
Short-Term TIPS	0.19	0.33	0.27	0.36	0.21	0.35	0.46	0.53	0.41	0.05	0.30	0.55	**1.00**	0.07
Cash Equivalents	0.40	-0.03	-0.02	-0.02	-0.02	-0.05	0.01	-0.02	-0.01	0.01	0.04	0.13	0.07	**1.00**

APPENDIX: SOURCES

We are grateful to several data sources for our analysis. They were:

FRED, The St. Louis Fed Federal Reserve Economic Data

https://fred.stlouisfed.org/

FTSE NAREIT

https://www.reit.com/data-research/reit-indexes/ftse-nareit-us-real-estate-index-historical-values-returns
http://www.ftse.com/products/indices/russell-us

Professor Aswath Damodaran, Stern School of Business

http://pages.stern.nyu.edu/~adamodar/New_Home_Page/datafile/implpr.html
http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2581517

Research Affiliates

http://www.researchaffiliates.com

Blackrock

http://www.blackrock.com

Standard & Poors

http://www.standardandpoors.com

Morgan Stanley Capital International

http://www.msci.com/

Moodys

https://www.moodys.com/researchdocumentcontentpage.aspx?docid=PBC_151031
https://www.moodys.com/researchdocumentcontentpage.aspx?docid=PBC_154805

Professor Robert Shiller

http://www.econ.yale.edu/~shiller/data.htm