PIMCO

PIMCO's Capital Market Assumptions – March 2023

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Executive Summary

Markets moved dramatically in 2022. Most of these changes happened in the first half of the year and were captured by PIMCO's previous semi-annual capital market assumptions in Q2 2022. The change this time is therefore relatively minor. Longer-term U.S. bond yields are now at their highest in over a decade, and we view fixed income as being attractive over a long (five-year) horizon. While inflation will likely persist for some time, ultimately we believe that central banks will succeed in bringing inflation and inflation expectations much closer to long-run targets, though the average level of inflation over the secular horizon will be somewhat higher than it was pre-pandemic. Our five-year forecasts include:

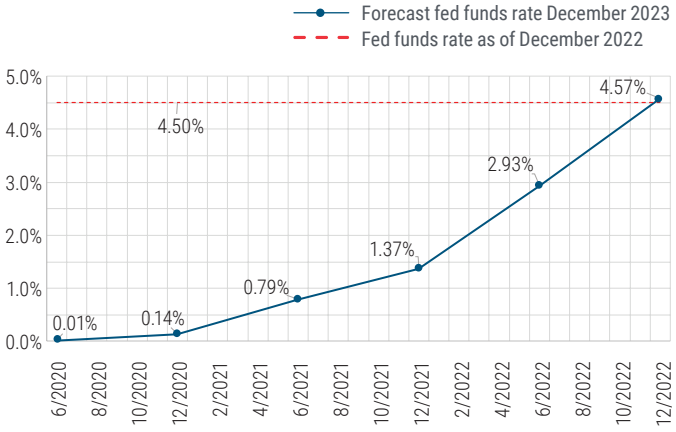
- An average cash rate of 3.3%, which is 0.4% higher than our expectation in Q2 2022, driven primarily by higher starting yields today
- An estimated annualized return of 6.8% for U.S. large-cap equities as measured by the S&P 500, about 3.5% above the average U.S. cash rate
- Estimated fixed income returns ranging between 4.1% and 5.8%, which are higher than our expected inflation rate of 2.7%, implying positive *real* returns
- Expected risk premiums of between 80 bps and 200 bps over cash on a foreign exchange-hedged basis for developed market sovereign and corporate bonds

At this time last year, before the onset of one of the most aggressive Fed hiking cycles in years, bond yields were at historic lows, portending anemic returns for many asset classes, but most notably fixed income. Our five-year expected return for the Bloomberg US Aggregate Bond Index was a mere 1.8% per year at the beginning of 2022, indicating a negative *real return* to core bonds over the secular horizon. As of December 2022, PIMCO's five-year estimated return for that same index is 4.5%, with longer-term U.S. bond yields at their highest since 2007. Barring a brief rise in 2018-2019, global bond yields have been low by historical standards for most of the post-global financial crisis (GFC) era.

The reasons for this global re-pricing of interest rates are fairly well understood: A confluence of events – including energy supply disruptions from the war in Ukraine, large injections of U.S. fiscal stimulus into a largely post-COVID-19 world, and major supply constraints resulting from China's three-year shutdown of its economy – created a perfect cocktail of idiosyncratic factors that produced levels of global inflation not seen since the 1970s. Taking a page from the playbook of former U.S. Federal Reserve Chair Paul Volcker, global central banks aggressively hiked short-term interest rates in order to avoid a repeat of the 1970s, when inflation expectations became unanchored, contributing to inflation that became increasingly difficult to contain. Today's central bankers have elected to take some pain now to avoid large pain later. For example, the Fed hiked interest rates seven times in 2022, four of them by 75 basis points (bps), pushing the fed funds rate from zero at the start of 2022 to 4.5% by December.

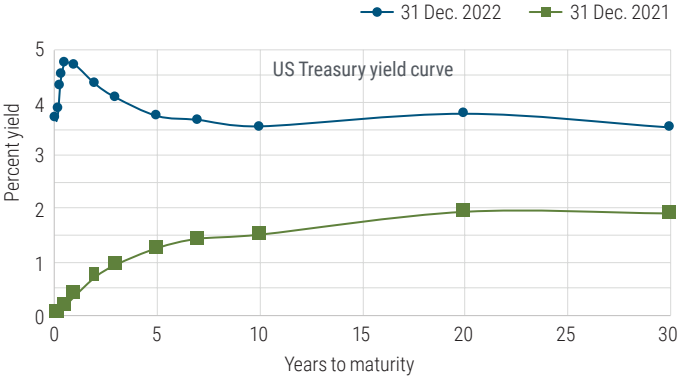
To highlight how far short-term rates have risen relative to expectations, the blue line in Figure 1 shows the forecast for the terminal fed funds rate in December 2023 from June 2020 to December 2022 as implied by fed fund futures. In June 2020, the market was expecting a zero fed funds rate in December 2023 – effectively predicting the Fed to be at the zero lower bound for several years to come. A year later, in June 2021, that prediction had moved up to only 79 bps. Even as recently as June 2022, the market was expecting a December 2023 fed funds rate of only 2.9%. As of December 2022, the expected December 2023 fed funds rate stood at 4.6%. Unsurprisingly, a shock to the front end of the yield curve of this magnitude led to very poor performance for fixed income in 2022. The Bloomberg US Aggregate Bond Index returned a staggering -13% last year as the 10-year yield rose by nearly 240 bps and the front end rose by 430 bps. Figure 2 compares the U.S. Treasury yield curve at the end of 2021 and 2022, showing both the dramatic rise in the level of bond yields as well as today's inverted yield curve.

Figure 1 – Market expectations for the federal funds rate have soared over the past 18 months



Source: Bloomberg as of December 2022.

Figure 2 – The U.S. Treasury yield curve has jumped and become inverted



Source: Bloomberg as of 31 December 2022.

While the recent pain has been acute for most financial assets including equities, the actions of central banks in 2022 should be an important component of a broader geopolitical process that alleviates inflationary pressures over time. This should result in a more stable economic environment down the road. Risks, of course, will persist as they always do. China's dramatic shift to a re-opening of its economy, while likely alleviating much of the supply side-induced inflationary pressures experienced in 2022, could produce further demand-induced inflation in the world economy. The war in Eastern Europe could continue to wreak havoc on global energy markets. And the global recession the world is likely to experience in 2023 may prove to be more severe than the soft landing that everyone is hoping for.

However, despite these risks, PIMCO's capital market assumptions (CMAs) today are indicating one of the most attractive long-term periods for fixed income in recent memory. Fundamental to this view is PIMCO's expectation that inflation will be supported by the brown-to-green transition over the secular horizon, and an increased focus on resilience in global supply chains (for more on this topic, read our *Secular Outlook*, "Reaching for Resilience"). While inflation will likely persist for some time, ultimately we believe that central banks will succeed in bringing inflation and inflation expectations much closer to long-run targets, though the *average* level of inflation over the secular horizon will be somewhat higher than it was pre-pandemic. This will allow the Fed to migrate away from what is effectively a single mandate today – inflation containment – to its more traditional dual mandate of stable inflation and full employment. Indeed, if the Fed and other central banks succeed at significantly reducing today's high levels of inflation, they should be able to cut short-term interest rates down the road, leading to potentially lower bond yields globally and more traditionally shaped upward-sloping yield curves. Such an outcome will likely be favorable for bonds over a five-year horizon.

PIMCO'S CAPITAL MARKET ASSUMPTIONS

Figure 3 shows PIMCO's five-year CMAs as of the end of 2022 for key benchmarks. Much of last year's increase in yields occurred during the first half of the year, which had an unusually large impact on PIMCO's CMAs last summer (our CMAs are updated on a semi-annual basis and generally evolve gradually). As such, while changes versus a year ago are significant, the changes relative to the second quarter of last year are relatively minor, with both periods indicating that fixed income is attractive over a long (five-year) horizon.

Figure 3 – Five-year capital market assumptions for select benchmarks

		Unhedged			USD-hedged (for global indices)		
	Index	5-year nominal return[1]	Volatility[2]	Sharpe ratio[3]	5-year nominal return[1]	Volatility[2]	Sharpe ratio[3]
EQUITIES	S&P 500 Index	6.8%	15.8%	0.22			
	Russell 2000 Index	6.7%	19.9%	0.17			
	MSCI World Index	6.7%	15.4%	0.22	6.7%	14.5%	0.24
	MSCI EAFE Index	6.4%	15.3%	0.20	6.7%	12.5%	0.27
	MSCI Emerging Markets Index	8.2%	19.8%	0.25	7.1%	16.8%	0.23
	MSCI All Country World Index	6.9%	15.5%	0.23	6.8%	14.4%	0.24
	Index	**5-year nominal return[1]**	**Volatility[2]**	**Sharpe ratio[3]**	**5-year nominal return[1]**	**Volatility[2]**	**Sharpe ratio[3]**
FIXED INCOME	Bloomberg Barclays Global Aggregate Bond Index	4.3%	5.5%	0.18	4.3%	3.6%	0.29
	Bloomberg Barclays U.S. Aggregate Bond Index	4.5%	4.4%	0.28			
	Bloomberg Barclays Euro Aggregate Bond Index	2.7%	9.8%	-0.06	4.1%	5.1%	0.16
	Bloomberg Barclays U.S. Government Bond Index	4.1%	4.2%	0.20			
	Bloomberg Barclays U.S. Credit Index	5.0%	5.4%	0.31			
	Bloomberg Barclays U.S. Treasury Long Index	4.8%	11.3%	0.14			
	Bloomberg Barclays U.S. Long Credit Index	5.2%	9.9%	0.19			
	Bloomberg Barclays U.S. Long Government/ Credit Index	5.0%	9.4%	0.19			
	Bloomberg Barclays U.S. High Yield Index	5.3%	7.2%	0.28			
	Bloomberg Barclays U.S. TIPS Index	4.4%	4.9%	0.22			
	Bloomberg Barclays Municipal Bond Index	5.6%	4.2%	0.55			
	Bloomberg Barclays HY Municipal Bond Index	7.3%	6.5%	0.61			
	Bloomberg Barclays Fixed-Rate MBS Index	4.6%	5.1%	0.26			
	JPMorgan EMBI Global Index	5.8%	7.1%	0.36			
	JPMorgan GBI-EM Global Div Index	5.7%	10.0%	0.25	4.2%	3.7%	0.25
	Index	**5-year nominal return[1]**	**Volatility[2]**	**Sharpe ratio[3]**	**5-year nominal return[1]**	**Volatility[2]**	**Sharpe ratio[3]**
FX	US Dollar Index (DXY)	-1.1%	7.1%	-0.61			

Source: PIMCO as of December 2022. **Hypothetical example for illustrative purposes only.**

Returns for the Bloomberg Municipal Bond Index and the Bloomberg HY Municipal Bond Index are reported on a tax-equivalent basis using a 37% federal tax rate plus 3.8% Medicare tax. Income from municipal bonds for U.S. domiciled investors is exempt from federal income tax and may be subject to state and local taxes and at times the alternative minimum tax. Income from municipal bonds for investors domiciled outside of the U.S. may be taxable. PIMCO does not provide legal or tax advice. Please consult your tax and/or legal counsel for specific tax or legal questions and concerns.

1 For indices and asset class models, return estimates are based on the product of risk factor exposures and projected risk factor premia which rely on historical data valuation metrics and qualitative inputs from senior PIMCO investment professionals.

2 PIMCO's estimate of volatility over the secular horizon

3 The Sharpe ratio calculation is as follows: (estimated asset return - estimated cash return)/estimated asset volatility. Estimated cash return = 3.3%.

We expect the **U.S. cash rate** to average 3.3% over the five-year horizon, which reflects a migration from today's cash rate of around 4.28% to 2.75% in five years. A cash rate of 2.75% is consistent with our base case long-term view of inflation containment and normalization, and indicates a modest real return for investors who hold short-term U.S. government bonds. This would be a welcome outcome given that for the better part of a decade, investors have incurred negative real returns at the front end of the curve.

Our five-year CMA for **large-cap U.S. equities** as measured by the S&P 500 is 6.8%, or an equity risk premium (over cash) of about 3.5%. While we have a slight preference for U.S. equities over other developed market equities today on a foreign exchange (FX)-hedged basis, we generally find equity valuations to be fair with little expectation for changes in the earnings multiple usually demanded by investors across most equity markets. As such, we expect future equity returns will most likely be driven by dividends, buybacks, and inflation rather than multiple expansion or growth in real earnings. Our expected five-year Sharpe ratio is around 0.25 on an FX-hedged basis for most equity markets.

DM sovereign and corporate bonds are expected to earn a risk premium of between 80 bps and 200 bps over cash on an FX-hedged basis, depending on the index. This produces fixed income Sharpe ratios similar to those of equities on a FX-hedged basis. Importantly, expected fixed income returns exceed our five-year expected inflation rate of 2.7%, implying a base case scenario of positive *real* returns to fixed income, a welcome change from much of the past decade. U.S. high quality credit, in particular, is expected to earn a risk premium of between 170 bps and 190 bps over cash, with an expected Sharpe ratio of 0.3.

EM sovereign bonds are expected to earn a risk premium of between 240 bps and 250 bps over cash on an unhedged basis. **Municipal bond** returns continue to look highly attractive on a long-term basis for those in the highest marginal federal tax brackets, with tax-equivalent total estimated returns of 5.6% and 7.3% for the Bloomberg Municipal Bond and Bloomberg High Yield Municipal Bond indices, respectively. Finally, our CMA for the **US Dollar Index (DXY)** is -1.1%, reflecting our general view of a somewhat overvalued U.S. currency today.

FOCUS ON FIXED INCOME

As discussed in the introduction, our base case view is that inflation is likely to be reasonably contained at a five-year horizon. This means that we expect terminal cash rates below today's levels as the nominal cash rate adjusts to a more normalized inflationary regime. As longer-term yields are likely to follow the path of the front-end of the curve, this should provide a tailwind to bond markets over the next five years. Figure 4 shows levels at the end of 2022 and expected terminal levels in five years for U.S. nominal and real yields for various tenors. The path of modestly declining yields should produce favorable returns for U.S. government bonds. As shown in Figure 4, our base case rate path results in an expected Sharpe ratio for a hypothetical 10-year (quarterly rebalanced) U.S. government bond of 0.14. For comparison, our expected Sharpe ratio for this same bond was a mere 0.03 at the end of 2021, indicating our expectation for meager returns to U.S. sovereign debt at that time. Given a relatively sanguine view on inflation as measured by breakeven inflation (implied by the difference between nominal and real bond yields), we are modestly more constructive on Treasury Inflation-Protected Securities (TIPS) relative to nominal bonds. In particular, there are right tail risks to the inflation rate today that would likely produce an outsized return to TIPS should such risks materialize.

Figure 4 also shows that U.S. investment grade (IG) and high yield (HY) credit spreads at the end of last year were somewhat below their long-term expected terminal levels. For example, the U.S. IG spread is expected to migrate from 1.19% at the end of December to 1.50% in five years. However, this still produces a positive risk premium for duration-hedged credit, although nowhere near as high as it was in, say, the depths of the COVID-19 crisis. Therefore, we believe that investors in both IG and HY fixed income will be rewarded over the secular horizon, with expected Sharpe ratios for duration-hedged credit of 0.19 and 0.18 for IG and HY, respectively.

Figure 4 – Five-year rate forecasts for U.S. nominal and real rates

	Q4 2022		
Risk factors	**Current level**	**Level at 5-year horizon**	**Sharpe ratio[1]**
U.S. Treasury 3M yield	4.28%	2.75%	
U.S. Treasury 2Y yield	4.35%	2.90%	
U.S. Treasury 10Y yield	3.58%	3.22%	0.14
U.S. Treasury 30Y yield	3.56%	3.37%	
Bloomberg US Credit Index: Spread Level (OAS)	1.19%	1.50%	0.19
Bloomberg US High Yield: Spread Level (OAS)	4.05%	5.25%	0.18

	Q4 2022		
Risk factors	**Current level**	**Level at 5-year horizon**	**Sharpe ratio[1]**
U.S. TIPS 2Y real yield	1.36%	0.33%	
U.S. TIPS 10Y real yield	1.31%	0.73%	0.25
U.S. TIPS 30Y real yield	1.27%	0.94%	

Source: PIMCO as of December 2022. **Hypothetical forecast for illustrative purposes only**.

For indexes and asset class models, return estimates are based on the product of risk factor exposures and projected risk factor premia which rely on historical data, valuation metrics and qualitative inputs from PIMCO.

1 The Sharpe ratio calculation is as follows: (estimated asset return – estimated cash return)/estimated asset volatility. Estimated cash return = 3.3%.

CONCLUSION

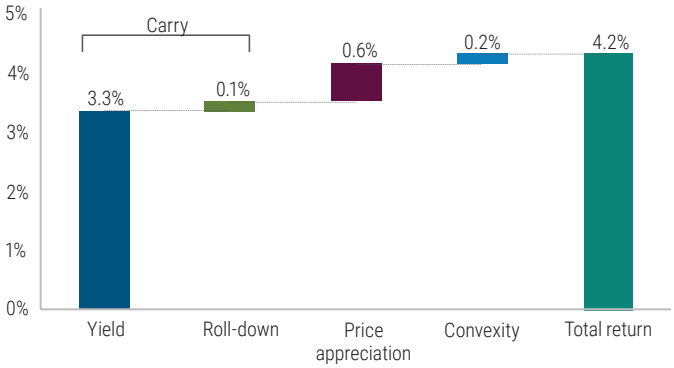
After the global financial crisis in 2008, bond investors faced low real and nominal bond yields as the era that PIMCO termed the *New Normal* came to fruition. In the New Normal world, global central banks kept short-term interest rates anchored near zero (and in some cases below zero) for years, producing returns to fixed income that were low by historical standards. That began to finally come to an end in 2018 and 2019 as the Fed started to raise the federal funds rate. However, the unfolding COVID-19 crisis in early 2020 abruptly reversed the hiking cycle as the Fed went back to zero virtually overnight.

Today, things are looking up. An unexpectedly strong hawkish central bank response in 2022, ushered in by positive shocks to consumer and producer prices globally, created a major sell-off in interest rates. As such, 2022 was a difficult year for both bond and equity investors. However, despite risks on the horizon, including the possibility that markets continue to correct in the short and even intermediate term, the repricing of risk in 2022 has led to the most compelling expected returns to the major asset classes (but most notably fixed income) in years.

The authors would like to thank Steve Sapra for his contributions to this paper.

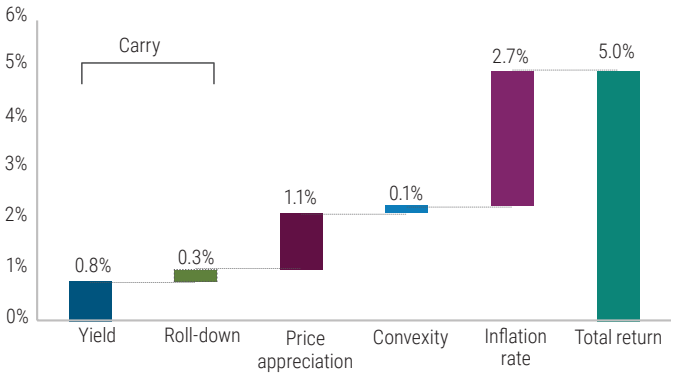
APPENDIX: ESTIMATED RETURN DECOMPOSITIONS FOR KEY ASSET CLASSES (FIVE-YEAR HORIZON)

10-year U.S. Treasury bond



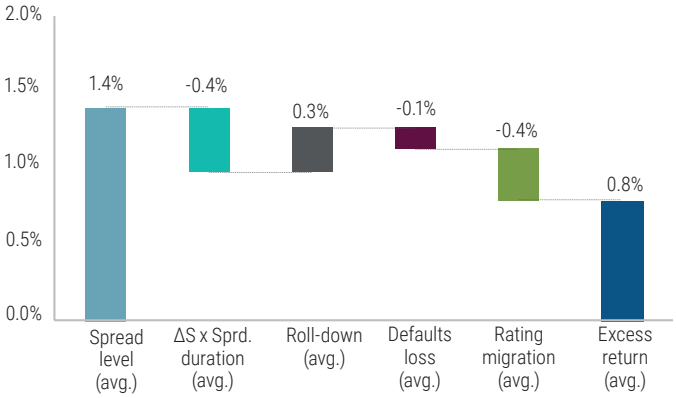
Source: PIMCO as of December 2022. **Hypothetical forecast for illustrative purposes only.** Total return estimate represents 10-year U.S. government bond return decomposed into carry (average yield plus roll-down) and price appreciation/losses due to yield changes.

10-year U.S. TIPS bond



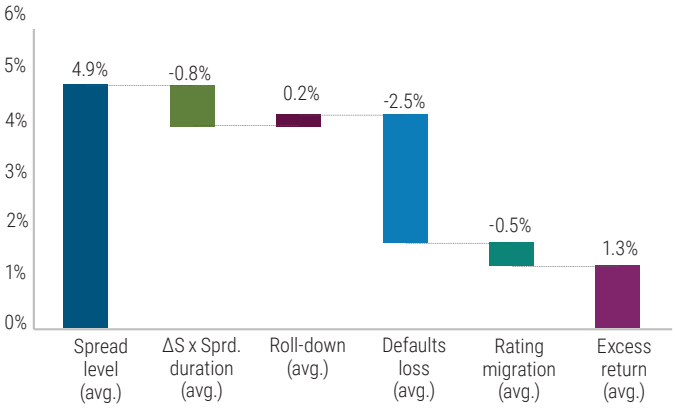
Source: PIMCO as of December 2022. **Hypothetical forecast for illustrative purposes only.** Total return estimate represents 10-year U.S. real government bond return decomposed into carry (average yield plus roll-down) and price appreciation/losses due to yield changes.

Duration-hedged U.S. investment grade credit



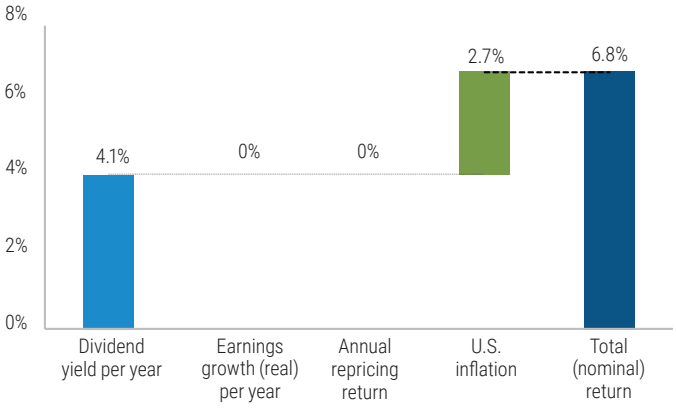
Source: PIMCO as of December 2022. **Hypothetical forecast for illustrative purposes only.** Estimate of U.S. IG credit spread excess return (over duration-matched governments) decomposed into carry (average spread level adjusted for losses due to defaults), roll-down and price appreciation/losses due to spread changes adjusted for losses due to downgrades.

Duration-hedged U.S. high yield bonds



Source: PIMCO as of December 2022. **Hypothetical forecast for illustrative purposes only**. Estimate of U.S. HY spread excess return (over duration-matched governments) decomposed into carry (average spread level adjusted for losses due to defaults) and price appreciation/losses due to spread changes.

U.S. large-cap equity*



Source: PIMCO as of December 2022. **Hypothetical forecast for illustrative purposes only.**

* Decomposition based on the S&P 500. Dividend yield includes buybacks.

Past performance is not a guarantee or a reliable indicator of future results.

The analysis contained in this paper is based on hypothetical modeling. HYPOTHETICAL PERFORMANCE RESULTS HAVE MANY INHERENT LIMITATIONS, SOME OF WHICH ARE DESCRIBED BELOW. NO REPRESENTATION IS BEING MADE THAT ANY ACCOUNT WILL OR IS LIKELY TO ACHIEVE PROFITS OR LOSSES SIMILAR TO THOSE SHOWN. IN FACT, THERE ARE FREQUENTLY SHARP DIFFERENCES BETWEEN HYPOTHETICAL PERFORMANCE RESULTS AND THE ACTUAL RESULTS SUBSEQUENTLY ACHIEVED BY ANY PARTICULAR TRADING PROGRAM.

ONE OF THE LIMITATIONS OF HYPOTHETICAL PERFORMANCE RESULTS IS THAT THEY ARE GENERALLY PREPARED WITH THE BENEFIT OF HINDSIGHT. IN ADDITION, HYPOTHETICAL TRADING DOES NOT INVOLVE FINANCIAL RISK, AND NO HYPOTHETICAL TRADING RECORD CAN COMPLETELY ACCOUNT FOR THE IMPACT OF FINANCIAL RISK IN ACTUAL TRADING. FOR EXAMPLE, THE ABILITY TO WITHSTAND LOSSES OR TO ADHERE TO A PARTICULAR TRADING PROGRAM IN SPITE OF TRADING LOSSES ARE MATERIAL POINTS WHICH CAN ALSO ADVERSELY AFFECT ACTUAL TRADING RESULTS. THERE ARE NUMEROUS OTHER FACTORS RELATED TO THE MARKETS IN GENERAL OR TO THE IMPLEMENTATION OF ANY SPECIFIC TRADING PROGRAM WHICH CANNOT BE FULLY ACCOUNTED FOR IN THE PREPARATION OF HYPOTHETICAL PERFORMANCE RESULTS AND ALL OF WHICH CAN ADVERSELY AFFECT ACTUAL TRADING RESULTS.

Because of limitations of these modeling techniques, we make no representation that use of these models will actually reflect future results, or that any investment actually will achieve results similar to those shown. Hypothetical or simulated performance modeling techniques have inherent limitations. These techniques do not predict future actual performance and are limited by assumptions that future market events will behave similarly to historical time periods or theoretical models. Future events very often occur to causal relationships not anticipated by such models, and it should be expected that sharp differences will often occur between the results of these models and actual investment results.

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All investments contain risk and may lose value. Investing in the **bond market** is subject to risks, including market, interest rate, issuer, credit, inflation risk, and liquidity risk. The value of most bonds and bond strategies are impacted by changes in interest rates. Bonds and bond strategies with longer durations tend to be more sensitive and volatile than those with shorter durations; bond prices generally fall as interest rates rise, and low interest rate environments increase this risk. Reductions in bond counterparty capacity may contribute to decreased market liquidity and increased price volatility. Bond investments may be worth more or less than the original cost when redeemed. **Inflation-linked bonds (ILBs)** issued by a government are fixed income securities whose principal value is periodically adjusted according to the rate of inflation; ILBs decline in value when real interest rates rise. **Treasury Inflation-Protected Securities (TIPS)** are ILBs issued by the U.S. government. **Sovereign securities** are generally backed by the issuing government. Obligations of U.S. government agencies and authorities are supported by varying degrees, but are generally not backed by the full faith of the U.S. government. Portfolios that invest in such securities are not guaranteed and will fluctuate in value. Investing in **foreign-denominated and/or -domiciled securities** may involve heightened risk due to currency fluctuations, and economic and political risks, which may be enhanced in **emerging markets**. **Currency rates** may fluctuate significantly over short periods of time and may reduce the returns of a portfolio. **High yield, lower-rated securities** involve greater risk than higher-rated securities; portfolios that invest in them may be subject to greater levels of credit and liquidity risk than portfolios that do not. **Equities** may decline in value due to both real and perceived general market, economic and industry conditions. Investors should **consult their investment professional** prior to making an investment decision.

Roll-down is a form of return that is realized as a bond approaches maturity, assuming an upward sloping yield curve. The **Sharpe Ratio** measures the risk-adjusted performance. The risk-free rate is subtracted from the rate of return for a portfolio and the result is divided by the standard deviation of the portfolio returns.

To calculate **estimated volatility** we employed a block bootstrap methodology to calculate volatilities. We start by computing historical factor returns that underlie each asset class proxy from January 1997 through the present date. We then draw a set of 12 monthly returns within the dataset to come up with an annual return number. This process is repeated 25,000 times to have a return series with 25,000 annualized returns. The standard deviation of these annual returns is used to model the volatility for each factor. We then use the same return series for each factor to compute covariance between factors. Finally, volatility of each asset class proxy is calculated as the sum of variances and covariance of factors that underlie that particular proxy. For each asset class, index, or strategy proxy, we will look at either a point in time estimate or historical average of factor exposures in order to determine the total volatility. Please contact your PIMCO representative for more details on how specific proxy factor exposures are estimated.

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