

PIMCO's Capital Market Assumptions, June 2020

Executive Summary

PIMCO traditionally updates our Capital Market Assumptions at the end of June and December, but we've advanced this release given the pandemic and the extreme volatility that resulted. We now expect the U.S. cash rate to average just slightly higher than zero over the secular horizon, a dramatic downshift from the fourth quarter of last year, while we've increased our long-term outlook for most credit sectors amid a general widening in credit spreads. Other forecasts include:

- Somewhat low U.S. Treasury yields and returns by historical standards
- A favorable long-term outlook for various credit sectors on both an absolute return and Sharpe ratio basis
- A modestly higher expected return for Treasury Inflation-Protected Securities (TIPS) relative to Treasuries
- A generally favorable long-term outlook for non-U.S. developed market and emerging market currencies given our view of a relatively expensive U.S. dollar today
- A favorable outlook for emerging markets due to relatively attractive valuations in terms of credit spreads and equity yields, despite the potential for greater volatility.

When we last updated our capital market assumptions (CMAs) in Q4 2019, we were generally cautious on risk assets, given the long-running risk appetite that investors had exhibited over the past decade. Last year was no exception to this secular trend, with the S&P 500 returning over 31% as the Federal Reserve's more accommodative stance in the second half of the year provided further support for equity and credit markets. As a result of such frothiness, we made the case that dislocations in markets were necessary in order for our CMAs to become more constructive on risk assets. Indeed, this disruption occurred much faster than we could have possibly realized at the time.

Following increasingly dire news around both the infection and mortality rates associated with COVID-19, equity and credit markets began selling off dramatically starting in mid-February.

Markets continued to decline in early March as the U.S. government began to mandate unprecedented shutdowns of businesses and impose shelter-in-place requirements in an attempt to contain the spread of the novel coronavirus. From the market's peak on 19 February through the recent trough on 23 March, the S&P 500 index declined by over 30% and investment grade (IG) and high yield (HY) credit spreads widened by 280 basis points (bps) and 760 bps,¹ respectively, to levels last seen only during the 2008 global financial crisis. As investors flocked to traditional "safe havens" such as the U.S. dollar, the U.S. 10-year government bond yield fell from 1.6% to 0.8%, while the Federal Reserve cut the federal funds rate by 1.5% to near zero over the span of only two weeks. Futures markets indicate that the policy rate is expected to remain near the zero bound for years to come.

¹ Investment grade credit proxied by the Bloomberg Barclays US Aggregate Corporate Index; high yield credit proxied by the Bloomberg Barclays US Corporate High Yield Index

Typical market volatility rarely requires us to update our CMAs at horizons other than our typical semiannual updates. However, the massive shifts in markets during the first quarter of 2020 necessitated that we reevaluate our long-term views and the implications of those views for forward-looking asset class returns. And so in early April, after markets had stabilized somewhat from the late-March lows – the S&P 500 rallied by nearly 25% from 23 March through 9 April – we began rigorous internal debates regarding the long-term path of credit spreads, bond yields and equity returns. This write-up describes our new five-year views under this unprecedented virus-driven regime.

To summarize our updated views, we expect the cash rate in the U.S. to stay near zero for the next five years. This represents a dramatic downward shift in our cash rate assumption compared to Q4 of 2019, when we estimated the five-year cash rate at 1.9%. Cash rates are, of course, the foundation of all asset returns, and a lower cash rate produces lower absolute returns for the major market betas. However, with credit spreads wider across the board, our long-term views on most credit-oriented asset classes have turned up, particularly on a risk-adjusted (Sharpe ratio) basis. As such, we find ourselves with a much more positive long-term view on credit sectors, including IG and HY corporate credit, hard-duration emerging market bonds, municipals and asset-backed securities (ABS). This does not mean, of course, that exposure to these sectors cannot generate losses for investors, particularly in the short term. As economic conditions have rapidly deteriorated, investors need to be vigilant of the risks embedded in their portfolios, particularly at the lower end of the credit spectrum. But if the economy begins to recover and spreads evolve gradually toward lower levels over the next five years, this could result in relatively strong returns to credit-oriented investments over an intermediate to long-term horizon.

FIVE-YEAR CAPITAL MARKET ASSUMPTIONS

Our yield projections for the G-7 economies have fallen since our Q4 2019 update. This stems primarily from the policies of global central banks, which have taken highly accommodative stances through policy rate cuts, bond purchase programs or other measures to facilitate liquidity in markets, such as the Fed's resurrection of the TALF (Term Asset-Backed Securities Loan Facility) or the European Central Bank's (ECB) Longer-Term Refinancing Operations (LTRO). Figure 1 shows our estimates for the U.S. yield curve, along with IG credit spreads over the next five years. Additionally, we show the resultant expected Sharpe ratios for a hypothetical 10-year Treasury bond and duration-hedged IG credit exposure.²

² Duration-hedged IG credit return assumes 7.6 years of spread duration.

Figure 1: Estimates for the U.S. Treasury yield curve and investment grade credit spread

Risk factors	Current level	Level at 5 yr horizon*	Sharpe ratio**
U.S. Treasury 3M yield	0.22%	1.07%	
U.S. Treasury 2Y yield	0.23%	1.08%	
U.S. Treasury 10Y yield	0.72%	1.41%	-0.1
U.S. Treasury 30Y yield	1.35%	1.62%	
Barclays inv. grade index: spread level (OAS)	2.06%	1.53%	0.5

Source: PIMCO and Bloomberg as of 30 April 2020. **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.

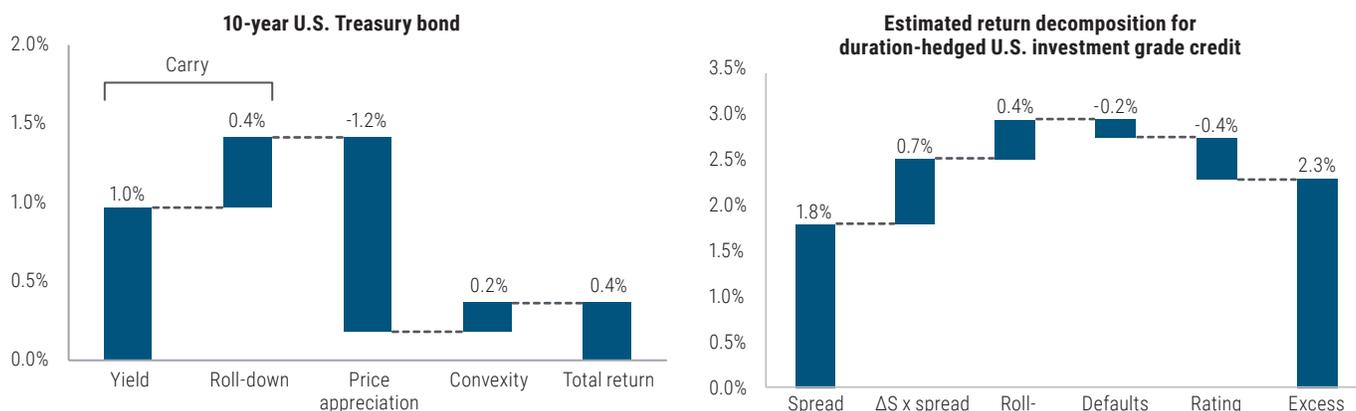
** The Sharpe ratio calculation is as follows: (estimated asset return - estimated cash return)/estimated asset volatility. Estimated cash return = 0.5%.

Rate expectations reflect our views of the Fed maintaining a policy rate near zero for the next few years and a gradual lift thereafter. Longer-term rates are expected to remain somewhat contained over the five-year horizon as the central bank exerts greater control over the yield curve. Our expected cash rate at the end of the horizon is 1.1%, which implies an average five-year cash rate of 0.5%. Our five-year expectation for the 10-year U.S. government bond yield is 1.4%, which means a gradual increase in bond yields over the secular horizon. This would result in an expected Sharpe ratio of -0.1 for an annually rebalanced 10-year U.S. government bond. On the other hand, duration-hedged IG credit could benefit from general spread tightening over the same horizon, and is expected to exhibit an estimated Sharpe ratio of 0.5. Figure 2 shows the decomposition of our five-year return estimates for the 10-year U.S. government bond and duration-hedged IG credit described in Figure 1.

FIXED INCOME

We combine our views on rates and spreads to calculate returns across fixed income. Figure 3 shows our five-year CMAs and Sharpe ratio estimations for key fixed income benchmarks. Given today's historically low government yield levels and our expectation that nominal bond yields will modestly rise over the secular horizon, our view is that U.S. Treasury returns will be low going forward, at least by historical standards. We expect the Bloomberg Barclays US Government Bond Index to return an annualized 0.4% over the next five years. However, because of our favorable long-term view on credit, venturing out the credit spectrum even gradually can materially increase both expected returns and Sharpe ratios over the secular horizon. As an illustration of this, we expect the Bloomberg Barclays US Aggregate Bond Index, which is approximately 25% IG credit, to return 1.2% and the Bloomberg Barclays US Credit Index to return 2.6%, with corresponding Sharpe ratios of 0.25 and 0.42.

Figure 2: Estimated return decomposition for 10-year Treasury bond and duration-hedged IG credit (five-year horizon)



Source: PIMCO as of 30 April 2020. **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.

Source: PIMCO as of 30 April 2020. **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.

Figure 3: Estimated annualized total returns and Sharpe ratios for select fixed income benchmarks

Index	Unhedged			USD-hedged (for global indices)		
	5-year nominal return*	Volatility**	Sharpe ratio***	5-year nominal return*	Volatility**	Sharpe ratio***
Bloomberg Barclays Global Aggregate Bond Index	2.0%	4.6%	0.33	1.5%	2.2%	0.47
Bloomberg Barclays US Aggregate Bond Index	1.2%	2.7%	0.25			
Bloomberg Barclays US Government Bond Index	0.4%	3.5%	-0.03			
Bloomberg Barclays US Credit Index	2.6%	5.0%	0.42			
Bloomberg Barclays US Treasury Long Index	1.0%	12.3%	0.04			
Bloomberg Barclays US Long Credit Index	3.5%	10.0%	0.30			
Bloomberg Barclays US Long Government/Credit Index	2.3%	9.5%	0.19			
Bloomberg Barclays US High Yield Index	3.8%	6.7%	0.49			
Bloomberg Barclays US TIPS Index	1.2%	5.1%	0.14			
Bloomberg Barclays Fixed-Rate MBS Index	0.7%	1.1%	0.19			
Bloomberg Barclays Municipal Bond Index	3.1%	3.2%	0.82			
JP Morgan EMBI Global Index	4.6%	5.7%	0.72			
JP Morgan GBI-EM Global Div Index	6.0%	11.4%	0.48	3.3%	4.1%	0.68

Source: PIMCO calculations as of 30 April 2020. **Hypothetical example 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 senior PIMCO investment professionals.

** PIMCO's estimate of volatility over the secular horizon

*** The Sharpe ratio calculation is as follows: (estimated asset return - estimated cash return)/estimated asset volatility. Estimated cash return = 0.5%.

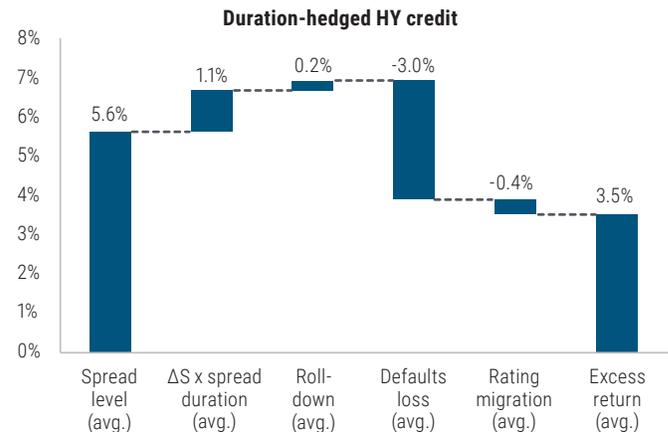
We anticipate higher returns for stepping further down in credit quality toward high yield and emerging markets, albeit with caution, given higher volatility levels and stressed economic conditions. Our expected returns for the Bloomberg Barclays US High Yield Index and JP Morgan EMBI Global Index are 3.8% and 4.6%, respectively, with historically high corresponding Sharpe ratios of 0.5 and 0.7. These favorable returns primarily reflect elevated spread levels today in these sectors. Furthermore, given significant, largely liquidity-induced spread widening in municipal bond markets, we find exposure to the municipal sector to be favorable as well. Our expected tax-equivalent return for the Bloomberg Barclays Municipal Bond Index is 3.1%.³

Our view for rates in both Europe and Japan is that long-term levels will be only marginally higher than they are today. But while yields are expected to rise more gradually in these economies than in the U.S., the current levels of yields in these economies are very low compared with domestic rates, meaning that differences in carry will be a relative drag on performance. On net, we anticipate slightly higher expected returns for non-U.S. core bonds, with the U.S. dollar (USD)-hedged Bloomberg Barclays Global Aggregate Bond Index expected to return an annualized 1.5% over the next five years, 30 bps higher than U.S. core bonds.

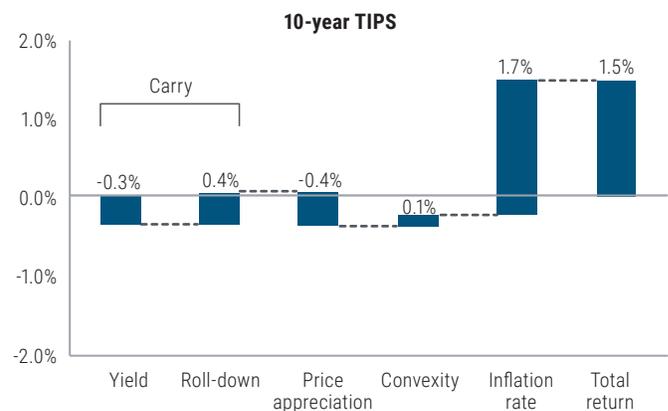
In the current flight to quality over coronavirus concerns, investors have sought the “safe haven” of U.S. Treasuries. This has compressed the breakeven inflation rate – the difference between nominal and real bond yields – to levels that we believe are unlikely to be sustained over the long term. As such, we expect breakevens to increase over the next five years. While we expect real yields to rise along with their nominal counterparts, this means that we believe the rise in real yields will be somewhat attenuated, producing relatively favorable expected returns for Treasury Inflation-Protected Securities (TIPS). Given our five-year inflation forecast of 1.7%/year, we expect the Bloomberg Barclays US TIPS Index to return an annualized 1.2%, or about 80 bps higher than the equivalent nominal bond index.

Figure 4 shows our estimated return decomposition for duration-hedged HY credit and an annually rebalanced investment in a 10-year TIPS bond. High spreads today imply relatively high returns to duration-hedged HY credit despite an expectation of elevated default levels. Additionally, our inflation forecast above current breakevens implies a slightly favorable expected return for TIPS.⁴

Figure 4: Estimated return decomposition for duration-hedged HY credit and 10-year TIPS (five-year horizon)



Source: PIMCO as of 30 April 2020. **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.



Source: PIMCO as of 30 April 2020. **Hypothetical forecast for illustrative purposes only.** Total return estimate represents 10-year TIPS return decomposed into carry (average yield plus roll-down), price appreciation/losses due to yield changes and inflation accrual.

It is important to keep in mind that while our expectation of return compensation for bearing additional duration risk is somewhat low today relative to cash, duration has historically provided strong equity diversification properties, particularly in risk-off and recessionary environments. Thus, we would expect duration exposure to outperform cash in a significant equity market sell-off, and we believe this is still the case despite historically low U.S. government bond yields. This is an important consideration in the asset allocation exercise, irrespective of return expectations.

³ Municipal bond returns are generated on a tax-equivalent basis assuming a marginal tax rate of 40.8%, which comes from the highest Federal marginal tax rate of 37% and 3.8% ACA tax.

⁴ The returns in each decomposition will differ slightly from the returns in Figure 3. IG and HY decompositions are duration-hedged whereas the indices in Figure 4 are not. The nominal and TIP decomposition is for a single hypothetical 10-year government bond whereas the indices in Figure 3 are for a wide cross section of bonds.

Figure 5: Estimated annualized total returns and Sharpe ratios for select equity benchmarks

Index	Unhedged			USD-hedged (for global indices)		
	5-year nominal return*	Volatility**	Sharpe ratio***	5-year nominal return*	Volatility**	Sharpe ratio***
S&P 500 Index	3.7%	14.1%	0.23			
Russell 2000 Index	3.7%	18.5%	0.17			
MSCI World Index	4.1%	14.0%	0.26	3.8%	13.5%	0.24
MSCI EAFE Index	5.0%	15.2%	0.30	4.1%	13.3%	0.27
MSCI Emerging Markets Index	6.4%	19.2%	0.31	5.0%	16.5%	0.27
MSCI All Country World Index	4.4%	14.0%	0.28	3.9%	13.2%	0.26

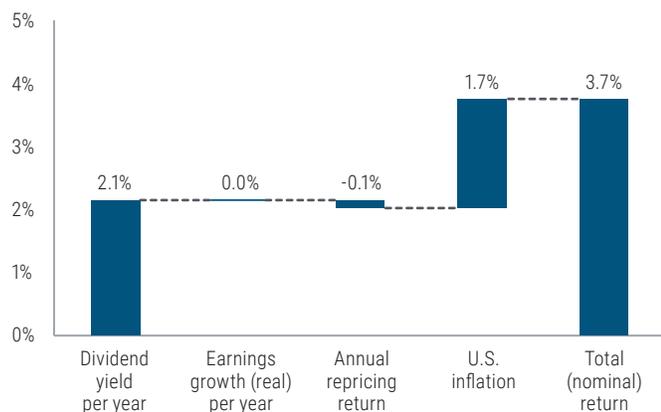
Source: PIMCO calculations as of 30 April 2020. **Hypothetical example for illustrative purposes only.**

*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 senior PIMCO investment professionals.

**PIMCO's estimate of volatility over the secular horizon

*** The Sharpe ratio calculation is as follows: (estimated asset return - estimated cash return)/estimated asset volatility. Estimated cash return = 0.50%

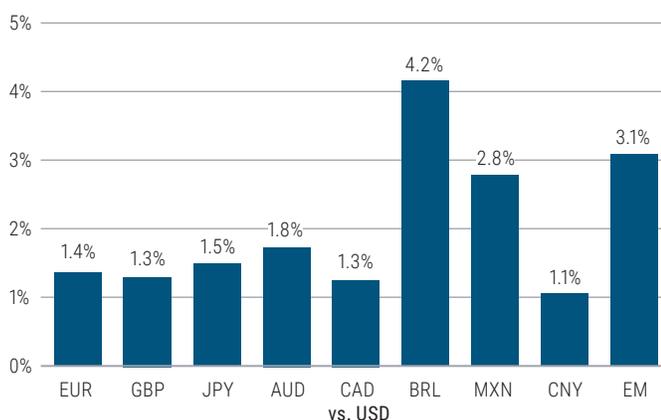
Figure 6: Return decomposition for U.S. large cap equity (five-year horizon)*



Source: PIMCO as of 30 April 2020. **Hypothetical forecast for illustrative purposes only.**

* Decomposition based on the S&P 500

Figure 7: Estimated annualized foreign exchange (FX) risk premium over U.S. cash (five-year horizon)



Source: PIMCO as of 30 April 2020. **Hypothetical forecast for illustrative purposes only.**

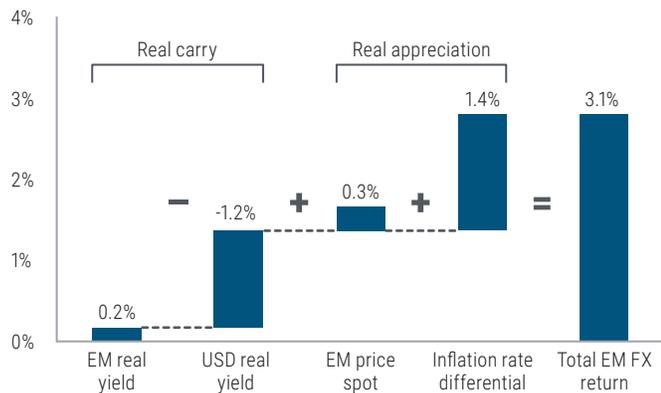
EQUITIES

Figure 5 shows our estimated expected returns for the main equity benchmarks. We expect U.S. equities to return an annualized 3.7% over the next five years. This represents a 3.2% risk premium over our cash expectation, which is 10 bps higher than our estimate of the equity risk premium in Q4 2019. As shown in Figure 6, given rich equity valuations in the U.S., the bulk of our U.S. equity return is made up of the dividend yield and inflation. Our return forecast for equities implies a modest reduction in the repricing component of return (effectively the P/E ratio), given that we expect real interest rates to be largely contained over the secular horizon. This may support today's historically high P/E multiple going forward. Finally, given our view of low real GDP growth of 1% in the U.S. over the next five years, we believe this will represent a headwind to profit growth, producing a low level of real earnings growth over the secular horizon.

FOREIGN EXCHANGE

We are generally optimistic on developed market (DM) and emerging market (EM) currencies over the next five years, given our view of a relatively expensive U.S. dollar today. Although the current and expected future U.S. cash rate is low by historical standards, we expect the U.S. cash yield to remain higher than that of other developed countries, such as Germany and Japan. However, despite the headwind of higher U.S. cash rates, we expect the appreciation in many currencies vis-à-vis the U.S. dollar to be generally enough to offset the interest rate differential. Figure 7 shows our expected foreign currency returns over U.S. cash from the perspective of a U.S. investor.

Figure 8: Estimated FX risk premium; EM versus USD*



Source: PIMCO as of 30 April 2020. **Hypothetical forecast for illustrative purposes only.**

* Decomposition uses the country weights of the JPMorgan GBI-EM Index.

EMERGING MARKETS

Favorable valuations in terms of credit spreads and equity yields relative to developed markets mean that we expect emerging markets to outperform. However, currency volatility and substantial equity market volatility mean that investments in emerging markets can experience substantial swings in performance. As shown in Figure 5, over the five-year horizon we estimate the MSCI Emerging Markets Index to produce an annualized return of 5.0% on a U.S. dollar-hedged basis and 6.4% on an unhedged basis, as the latter reflects our long-term positive view on EM FX exposure. More specifically, and as shown in Figure 8, we estimate a basket of EM currencies to return 3.1% over U.S. cash, albeit with volatility far higher than DM currencies. Importantly, emerging market investments must be properly risk-budgeted such that they do not have an inordinate impact on portfolio performance.

PIMCO'S CMA PROCESS

PIMCO's capital market assumptions provide investors with our views on the long-term (five-year) estimated returns for the major asset classes. Our CMAs are updated on a semiannual basis in December and June of each year and are driven by our future expectations for the key risk factors that drive asset prices and returns. For example, our expected returns for U.S. Treasuries are driven by our views on the evolution of the U.S. cash rate and yield curve over the next five years. Similarly, expected returns for U.S. credit are a function of both our views on how the U.S. nominal yield curve will migrate from its current level and our expectation for the path of credit spreads.

Through our Cyclical and Secular Forum process, as well as constant internal debate and discussion, PIMCO forms views on the long-term levels of key risk factors. And while our views are informed and influenced by a set of quantitative guide value models, we differ from some in the industry who focus on long-term valuation from a purely quantitative perspective. We believe that our approach combines the rigor and repeatability of quantitative modeling with investment expertise and experience. In short, past performance is no guarantee of future results, and estimated returns that are based solely on quantitatively oriented models can be overly reliant on the historical experience of markets.

Ultimately, PIMCO combines these qualitative and quantitative inputs to form our top-down views on the path for key risk factors. These risk factor views are then converted into forward-looking estimates of risk premia (normalized returns in excess of cash) for the major risk factors, such as duration, credit and equities. Finally, the risk premia are converted into estimated returns for the various asset classes based on their risk factor exposure profile and yield characteristics. A schematic of the CMA process is shown in Figure 9.

Figure 9: Outline of PIMCO's approach to capital market assumptions



Source: PIMCO. **For illustrative purposes only.**

A "safe haven" is an investment that is perceived to be able to retain or increase in value during times of market volatility. Investors seek safe havens to limit their exposure to losses in the event of market turbulence. All investments contain risk and may lose value.

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.

Return assumptions are for illustrative purposes only and are not a prediction or a projection of return. Return assumption is an estimate of what investments may earn on average over a 10 year period. Actual returns may be higher or lower than those shown and may vary substantially over shorter time periods. Return assumptions are subject to change without notice.

Figures are provided for illustrative purposes and are not indicative of the past or future performance of any PIMCO product. It is not possible to invest directly into an unmanaged index.

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.

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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