

BII Perspectives

BLACKROCK INVESTMENT INSTITUTE

A New Paradigm for Portfolios

The structural slowdown in global economic growth and dramatic drop in bond yields represent a paradigm shift that is forcing a rethink of portfolio allocations. Ageing societies and weak productivity growth have led to a persistent decline in economic growth. What is now considered a neutral policy rate for a central bank – one that neither stimulates nor restrains growth – has experienced a likely medium-term decline in the United States and other major economies.

This low neutral rate and large central bank ownership of government bonds are why we see long-term bond yields staying low on a five- to 10-year horizon. Investors should not expect bond yields to revert to historical averages, notwithstanding likely short-term swings. This view shapes our muted five-year asset return outlook in BlackRock's updated [Capital Market Assumptions](#). Low risk-free rates – the fundamental basis for gauging asset valuations – represent an underappreciated sea change in assessing future returns, in our view. Asset valuations need to be seen through a different lens, and we believe investors are being fairly compensated to take risk in the low-return landscape.

Our key conclusions:

- Investors need to reassess how to achieve return and diversification goals: perceived “safe” assets are looking less safe due to a variety of near-term risks (valuations, political and central bank uncertainty), while equities can generate more income in a diversified portfolio.
- Structural forces imply the U.S. neutral real short-term rate (known as natural rate or r^*) is now just 0.5%, suggesting nominal short-term rates should be anchored around 3.0%. That limits how high central banks will likely lift rates and thus how high benchmark bond yields are likely to go, in our view.
- Low discount rates suggest that asset valuations should not fall back to historical means and thus relative valuations matter more, we believe. So take risk where you are most rewarded.
- We see U.S. 10-year yields gently rising to average about 2.4% on a five-year horizon. We also see risks of short-lived sell-offs in government bonds that may result in reduced portfolio diversification benefits.
- Our bottom line: Investors are still getting paid for holding certain risk assets, even as we expect subdued overall returns. Investors with fewer liability constraints should consider reducing government bonds and holding a bigger share of alternatives, global equities and emerging market (EM) assets, in our view.

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About BII

The BlackRock Investment Institute (BII) provides connectivity between BlackRock's portfolio managers, originates economic and markets research, and publishes investment insights. Our goals are to help our fund managers become better investors and to produce thought-provoking content for clients and policy makers.

October 21, 2016

A Structural Economic Shift

Economic growth forecasts have been relentlessly downgraded in the years following the 2007-08 financial crisis. Yet a big part of the weaker global growth outlook has to do with forces that were already coming to bear before the crisis and resulting Great Recession hit – and have only become more pronounced since.

A few long-term global factors have contributed to a sustained drop in potential growth in major economies and thus have directly contributed to a sharp drop in neutral policy rates (r^*) for central banks, according to our analysis based on recent work by economists at the [U.S. Federal Reserve](#).

First, demographics and ageing societies are leading to weaker labour force growth across major economies. The math is relatively straightforward: the pool of potential workers is growing more slowly, partly due to the retiring post-World War Two “baby boom” generation. In some countries, the working age population is or will be shrinking in the not-too-distant future, including Japan, parts of Europe and China. That alone reduces potential rates of economic growth absent any offsetting factors, such as a stronger productivity.

Second is much weaker business capital investment, be it new buildings, factory robotics or computers and software. The sluggishness in investment started after the tech bubble burst in 2000-01, took another hit after the crisis and has remained a feature of the tepid but long U.S. expansion. We should see a pick-up in investment ahead, which should help boost productivity growth.

Productivity is the third and key part of the equation. In fact, the productivity boom of the 1990s – thanks to big investment in technology – helped to mask the impact of some of the slow-moving demographic factors that were already weighing on potential growth rates well before the crisis struck. The slowdown in productivity growth has been much debated in the post-crisis period (see [Productivity Slowdown Puzzle](#)), but the trend is clear. We believe productivity growth will improve in the years ahead, supporting potential economic growth, but not enough to offset the impact of demographics.

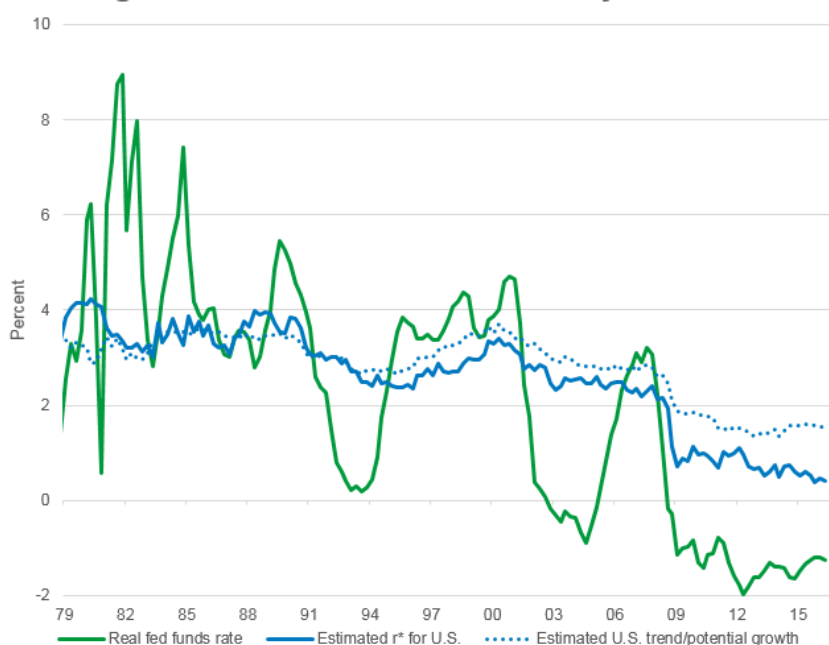
Taken together, we estimate that those three factors cut U.S. potential real economic growth by 1.3 percentage points from the pre-crisis period to just 1.5%, as see in the chart below.

Typically that would be the end of the story given that potential growth and neutral short-term rates are closely tied together. But in the early 2000s another factor emerged around the world that has served to depress neutral rates relative to potential growth. That factor is the global savings glut, driven by a combination of persistently large current account surpluses (Germany, China, Japan), investors preferring government bonds, rising income inequality and demographic shifts.

Similar to the Fed researchers, we estimate r^* at 0.5% for the U.S. economy – a 2 percentage point drop from pre-crisis levels. Keep in mind that there is considerable uncertainty in estimating r^* . The bulk of that drop is due to lower potential growth.

Our work also suggests excess savings – and the related overhang of high debt stocks holding back growth – appear to be driving down the neutral interest rate relative to potential growth. That explains the unusually large 1 percentage point gap between potential growth and the neutral rate.

Lower growth and interest rates here to stay



Source: Holston, Laubach, Williams (2016), Federal Reserve, BEA, BlackRock Investment Institute. Note: The real rate is the effective fed funds rate deflated by a four-quarter moving average of annualised quarterly core PCE inflation. R^* and trend growth are estimated using a model based on the framework developed by Holston, Laubach and Williams (2016) – link in text. R^* is modelled as the sum of the trend growth and a residual factor capturing factors such as a global excess savings.

This means nominal long-term bond yields are likely to stay below nominal GDP. Such an outcome is crucial for investors when it comes to judging asset valuations. That's because it implies a sustained low discount rate relative to the growth in nominal GDP that drives corporate earnings and other cash flows – thus providing ongoing support to risk asset valuations.

What also stands out is that the Fed can likely afford to be patient in “normalising” interest rates because current real policy rates are not that far below the subdued neutral rate.

The neutral rate can edge up but is unlikely to go back to historic levels because of these demographic changes. Assuming r^* inches back up to 1% and accounting for the Fed's 2% inflation target, that implies a neutral U.S. federal funds rate around 3.0%. That's down more than 1 percentage point from pre-crisis levels and consistent with our low nominal bond yield assumption. We believe this trend holds true not just for the U.S. but for the overall global economy because the drop in neutral rates is evident in so many economies with varying outlooks for potential growth.

The economic forces pushing down interest rates stretch across the world and have been playing out for a few decades. Lower neutral rates have meant that central banks need to cut interest rates much lower, even negative, to be able to stimulate economic growth. For example, up until the 2007-08 crisis a 2% real Fed policy rate would have been mildly stimulative. Now it would represent a very tight policy stance.

While we expect this to be the new norm in the future, some uncertainty shrouds the outlook. This is mainly due to how excess global savings evolve, a trend that is less certain than the very long-term demographic trends behind the bigger picture slowdown in potential economic growth. But so far excess savings have become a persistent feature of the economic landscape since the early 2000s. And U.S. 10-year yields have been below nominal GDP (now around 3.5-4.0%) for most of the period since excess savings became a talking point in the early 2000s. More reason to expect yields to stay low for longer.

The debate has heated up as more Fed officials have talked more about r^* and its implications – potentially less room to juice the economy with lower interest rates and a bigger role for unconventional tools such as asset purchases and forward guidance. It's also no surprise why the Fed has constantly trimmed its forecast for the long-run fed funds rate to just under 3% as of its September meeting from above 4% nearly five years ago. Indeed, the Fed has also cut its policy rate projections more than its long-term estimate of potential growth, reflecting a similar outlook as we have discussed here. That said, we believe markets have gone too far in pricing rock-bottom rates ahead.

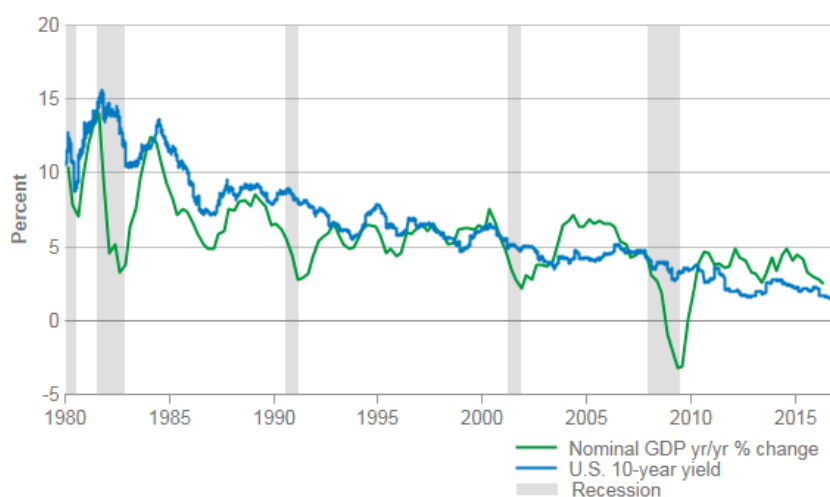
Cash at a Crossroads

A hallmark of the post-crisis environment has been evidence that many portfolio managers and retail investors have kept cash allocations persistently higher relative to history. Some of this is likely due to the combination of lower expected returns and relatively high historical valuations, along with constant macroeconomic and policy uncertainty.

A small list of events in the past five years would highlight: the Greek and eurozone crisis, the 2011 U.S. debt ceiling standoff, the 2013 embargo on Russia, China's surprise mini-yuan devaluation last year, Brazil's deep recession and presidential impeachment, the widespread economic and market fallout from plunging crude oil prices, persistent worries about a U.S. recession – and, of course, the UK referendum favouring Brexit in June.

As of October 2016, the widely followed Bank of America-Merrill Lynch survey showed fund managers keeping cash at 15-year highs of 5.8% (based on views of about 200 portfolio managers overseeing roughly \$600 billion in assets) mainly due to Brexit-related risks – even surpassing levels at the height of the 2007-08 financial crisis.

U.S. long-term yields vs nominal GDP



A related phenomenon has been the popularity of some asset classes that limit exposure to broader market volatility, such as quality/high-dividend equities. That has provided some comfort to investors looking for income and wanting to allocate to stocks without suffering some of the sharp corrections that interrupt sometimes long stretches of historically subdued volatility.

Yet we see building risks in some market corners – detailed below – that could see some of these strategies come under pressure.

Low for Longer

One of the biggest transformations in global financial markets is the drop in government bond yields – not only to historic lows but into negative territory. Negative yields mean that bond buyers would take an effective loss at maturity without price appreciation.

Falling neutral rates have pushed central banks in the eurozone and Japan to cut short-term rates into negative territory to stimulate growth – with the inevitable spillover on bond markets.

Nearly \$8 trillion of global government bonds – about 30% of the developed market bond universe, as the chart shows – now carry a negative yield (\$5 trillion in Japan alone).

The repercussions have been widespread: in some markets,

investors such as pension funds scrambled to buy longer-term bonds – even at negative yields – to make sure they have the duration they need to match liabilities before yields went even more negative. The Bank of Japan's (BoJ) adoption of negative rates in January spilled over across markets and sparked a bond buying spree where positive yields were available, particularly foreign demand for U.S. Treasuries. That demand for Treasuries has helped push U.S. 10-year yields down to lows near 1.30% in July.

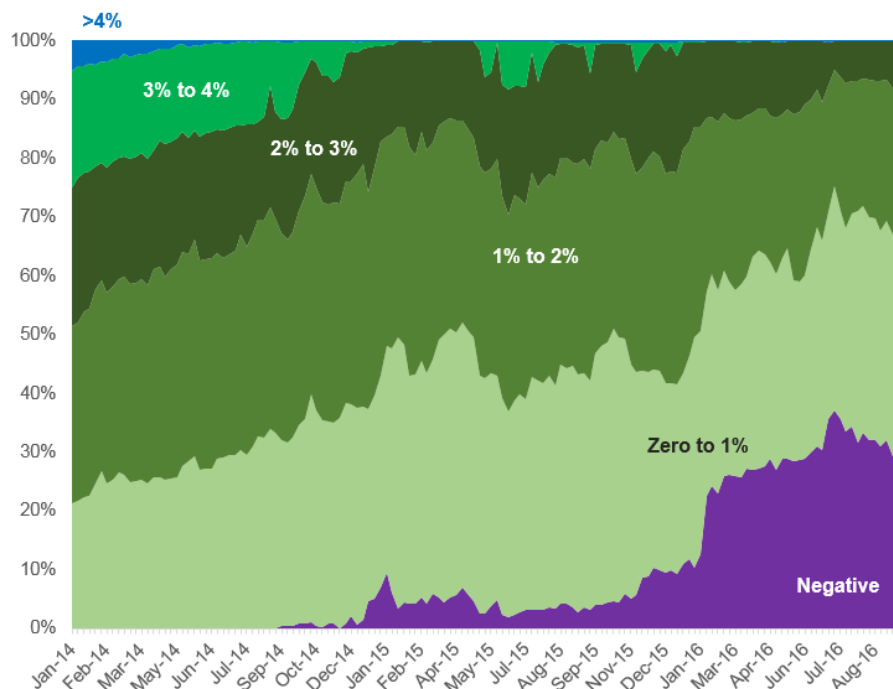
Negative rates have exacerbated a shortage of government bonds driven by three factors: 1) central banks still pursuing asset purchases; 2) commercial banks upping their holdings to strengthen capital positions and comply with stricter rules post-crisis, with the latest round of Basel negotiations discussing yet another capital increase, and; 3) pension funds and other liability-driven investors needing more long-term bonds to match asset duration with liabilities.

Central bank bond buying is reaching some limits. The European Central Bank (ECB) is likely to loosen its self-imposed rules to give it more leeway to pick up more bonds beyond March 2017. The BoJ is vowing to continue its targeted asset purchase amounts even while adopting a target for 10-year yields around zero, a move seen as giving it scope to wind back its mega purchases and save firepower for when yields deviate from its desired zone. Meanwhile, the Fed has not signalled that it is closer to stopping reinvestments of Treasuries and mortgage bonds from previous rounds of quantitative easing (QE), having kept its balance sheet at \$4.4 trillion for more than two years.

With the BoE joining the ECB and BoJ in conducting more QE this year, monthly central bank asset purchases at the end of 2016 were about as big as ever.

Sizable central bank ownership of government bonds and risk assets (corporate bonds for the ECB and BoE, equity ETFs for the BoJ), while launched as an unconventional means of adding stimulus with rates at or near the zero lower bound, looks likely to become a more permanent part of the toolkit and balance sheet.

DM Government Bond Universe: Yield Distribution 2014-16



Sources: BlackRock Investment Institute, J.P. Morgan and Thomson Reuters, September 2016. Notes: The chart is based on the J.P. Morgan Global Developed Government Bond Index covering a universe of \$26.4 trillion in bonds. Areas show the proportion of bonds in the index with yields in each range.

Add it all up: it's hard to see long-term bond yields rising significantly, and we see them likely staying below nominal GDP in large economies. Our Capital Market Assumptions see U.S. 10-year yields averaging 2.4% on a five-year horizon as reflected in the chart – well below its long-term average closer to 5%.

The Illusion of Safety

Low government bond yields provide little cushion against market volatility and come at an important inflection point.

Among U.S. fixed-income markets

Treasuries provide the smallest cushion:

as the chart below illustrates, it would not

take much of a rise in yields to wipe out one year's worth of income – and certainly relative to the day-to-day volatility seen in the Treasury market already this year. Much of this reflects investors not demanding premium for future inflation nor for holding long-duration government bonds whose value can be more volatile than short-term bonds (term premium).

To be sure, government bonds will always be a core part of portfolios for some investors – providing duration for liability-driven funds and offering hedging properties that cash does not. For some pension funds and life insurers, the low-for-longer yield regime can mean maintaining sizable bond holdings.

At the same time, the risks to government bonds appear more two way. Central banks have likely reached limits on negative yields, which means those bond buyers hoping to profit through price appreciation alone may start to think twice. Even with the bond market sell-offs of the past few years, U.S. Treasuries with maturities beyond 10 years have posted total returns of 80% since the start of 2010 (based on the Barclays U.S. Treasury long index) versus a 122% total return for the S&P 500. Those equity-like returns in long-term bonds look less likely ahead.

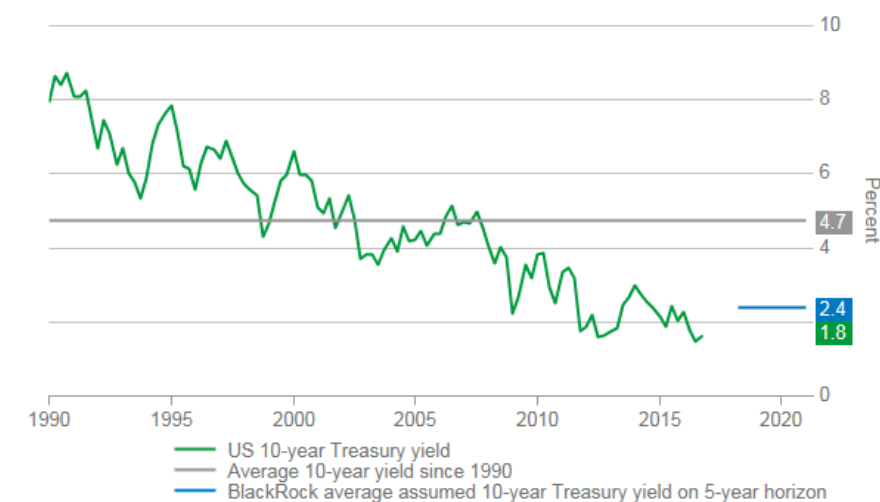
Risks are building for periodic bond yield spikes that push curves steeper, likely led by Treasuries.

The U.S. is showing signs of reflation with some measures of consumer prices heating up. The Fed seems comfortable having the economy run a little hot and letting inflation rise above its 2% target after years of falling short. The BoJ appears to be targeting a steeper yield curve even while promising to target 10-year yields near zero, giving itself more flexibility to achieve a newly stated goal of overshooting its 2% inflation target.

Central banks have taken note of the side effects of negative rates on bank net interest margins and share prices, which can offset their efforts to keep financial conditions loose.

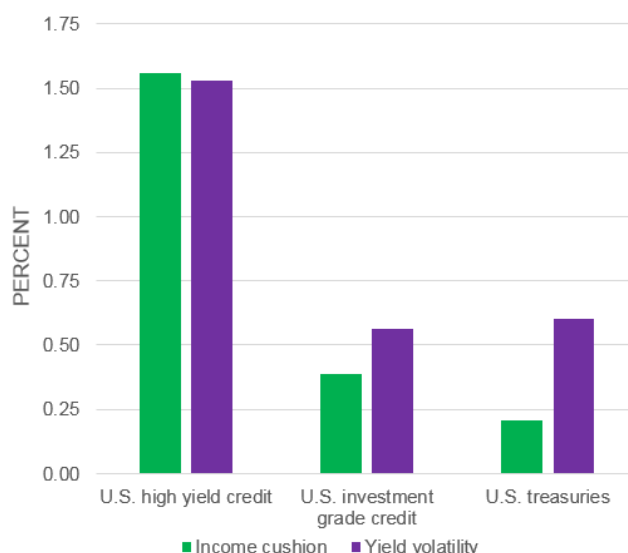
Of course, central bank interventions are not going away. Central banks may push back against any bond volatility to prevent higher yields from tightening financial conditions, perhaps by tweaking bond purchases when yields back up. Overall central bank actions are still

Low yields for longer



Source: Thomson Reuters Datastream, BlackRock Investment Institute. Oct 20, 2016.

Fixed income volatility and income cushion, 2016



Sources: BlackRock Investment Institute and Bloomberg, September 2016.

Notes: The cushion is defined as the percentage point rise in yield that would cause a price decline large enough to wipe out one year's worth of income and is calculated by dividing yield by duration. Yield volatility is based on daily data over the last year shown on an annualised basis. The fixed income segments are based on the Barclays U.S. Corporate High Yield, U.S. Credit and U.S. Treasury indices. The illustrative example above is subject to significant limitations. It cannot account for the impact that economic, market, and other factors may have on the implementation of an actual investment. The return of any portfolio will vary materially from the return shown based on numerous factors, including, but not limited to current market conditions, the specific securities in the portfolio, and the current leverage costs, among others.

about keeping short-term rates near zero and financial conditions supportive for consumption and investment. But the danger of greater bond market volatility ahead is clear – especially relative to such meagre returns.

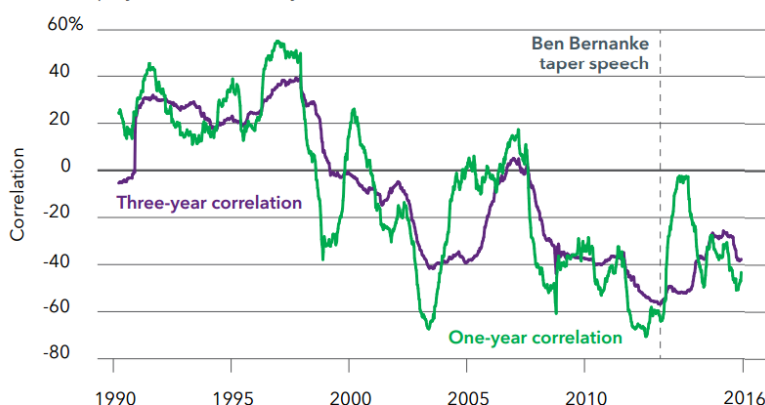
Unstable Correlations

Not only do ultra-low bond yields offer limited to no buffer against a sudden sell-off, but the traditional negative correlation that bonds tend to have with equities – bond returns being positive when stocks drop – has also weakened lately. This is something to keep an eye on from a portfolio diversification point of view.

This September's market swoon, when Treasuries and the S&P 500 both slid at the same time, is the latest episode of a short-term positive correlation. Those moves drove the one-month correlation of daily returns to the most positive in a decade, similar to what was seen in mid-2013 during the taper tantrum turbulence in bond markets when former Fed chair Ben Bernanke first floated winding back asset purchases.

Correlation frustration

Global equity and U.S. Treasury return correlations, 1990-2016



Sources: BlackRock Investment Institute, MSCI and Thomson Reuters, September 2016.

Notes: The lines show the one-year and three-year rolling correlation of daily returns for the MSCI World Equity Index and the Datastream U.S. 10-year Benchmark Government Bond Index.

Of course, short-term correlations are unstable and fickle. As the chart shows, the long-term correlation has remained negative since the late 1990s. We believe that the equity/bond correlation will remain negative on average but that it may not be as steady as it has been. Short-term breakdowns – perhaps in a scenario of rising inflation expectations twinned with economic growth scares – may occur and dampen the potential diversification benefit of bonds.

Bond prices look extremely rich on a historical basis relative to equities and vulnerable to periodic sell-offs, if not as severe as those seen with the taper tantrum in Treasuries and the 2015 bund tantrum. G5 government bond markets also remain highly interconnected: the steepening pressure on yield curves started in Japan this year with the BoJ's change of tack on its monetary policy goals. That quickly caused higher yields and steepening curves elsewhere. The October rise in gilt yields on Brexit concerns sparked yield curve steepening in other bond markets.

Whichever market serves as the source, another bond market drop is likely to cause similar spillovers and drive up long-term yields across the world – even if the move is relatively temporary and buyers will be ready to pounce at any opportunity to lock in higher yields.

The longer term negative correlation is not likely to go away, we believe. This is because the absolute level of bond yields has mattered more for the correlation with equities, with low term premiums helping drive the negative correlation. Still, government bonds are not offering much in the way of returns relative to risk. That means thinking about portfolio diversification differently.

Relative Valuations Matter

Even with all these changes afoot in the past 7-8 years, bondholders may have become complacent because of the large returns racked up over the past few years. In our latest asset return assumptions, global government bonds had the lowest positive return on a five-year horizon and long-term Treasuries were the only asset class with a negative return – *and* at relatively high expected volatility.

A typical diversified public pension fund portfolio, as reflected in the September 2015 Pension & Investments public fund survey, may have about 20-25% of its holdings tied to government bonds. Low yields and the resulting low returns are posing challenges to pension funds and other investors facing yawning funding gaps. Investors are falling short of nominal return targets still based on older models aiming for 7-8% annually. Relying on any minor variation of the classic 60-40 mix of equities and bonds will not achieve either return or diversification targets, we believe.

The steady erosion of expected returns mirrors the decline in economic growth forecasts and long-term rates. In many ways, the world has been slow to wake up to these bigger factors altering the investment environment so profoundly.

That's why sustained low bond yields are so important, we believe.

Yes, prospective returns on equities and bonds have fallen across the board in the post-crisis period. But that masks that equities – and by extension other risk and real assets – still look attractive taking into account that bond yields are likely to stay historically low. It's easy to assume that low returns imply little compensation for risk. We do not think that is the case.

Our expected returns on the equities asset class relative to bonds on a five-year horizon have stabilised around 3.5 to 4.5 percentage points for dollar and euro assets (based on our outlook for slow but steady growth in major economies). As reflected in our Capital Market Assumptions, that risk/return relationship

holds up in similar ways further out the risk spectrum. What matters are *relative* valuations across assets rather than putting too much emphasis on historic valuations that belonged to a very different economic environment. Moreover, when looking at the earnings yield relative to real bond yields – the equity risk premium (ERP) – investors are still being well compensated for risk in many corners, we believe.

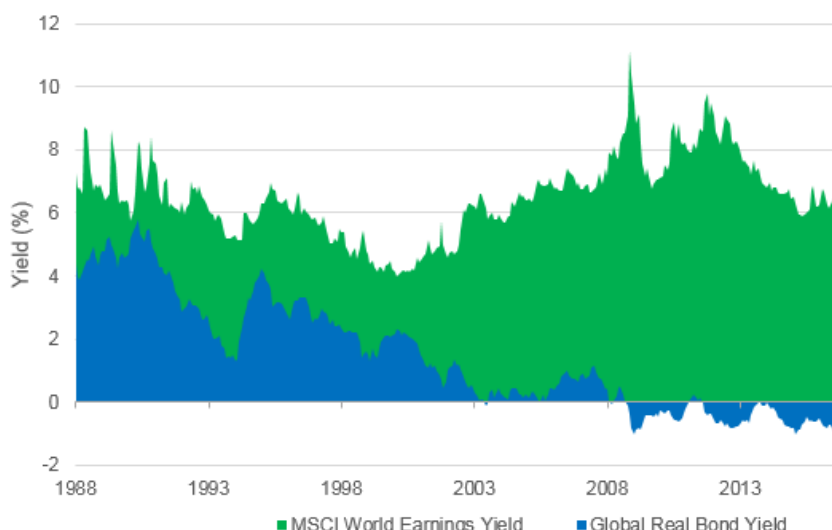
Expected returns of 4-6% for global equities are much lower than those seen in the past but look to be fair compensation relative to other assets – and certainly compared to the outlook for zero or negative returns on government bonds. Again, ERPs do not necessarily imply negative returns ahead for equities, nor the risk of valuations suddenly snapping back to previous means.

Upside Down

Another consideration for what sometimes feels like an upside down investment world: bonds are no longer the primary vehicle for how portfolios earn income. Low yields and compressed spreads have slashed the total returns that can be earned. As a result, the income generated on broad aggregate bond indices is now less than that from equity dividends.

The chart illustrates how two portfolios – a traditional 60/40 equities and fixed-income portfolio and a more global one – have produced income over time. More than half of the income in the traditional portfolio has come from equity dividends rather than bonds in the past five years. In the past few years, that relationship has held steady at closer to 55-60%.

Global earnings yield vs real bond yield



Source: Thomson Reuters Datastream and BlackRock Investment Institute. Earnings yield is based on the inverse of the MSCI World 12-month forward price-to-earnings ratio. The real bond yield based on Barclays Global Treasury Index Yield minus 5-year average of US consumer price inflation.

Portfolio Income: Equity vs Bonds



Source: MSCI, Barclays, JP Morgan, BlackRock Investment Institute, October 2016. Note: The chart depicts the share of income coming from equity dividends relative to bond coupons from a variety of benchmark indices. The model portfolio is based on weights in a hypothetical portfolio referenced in the text and based on the MSCI USA, MSCI World ex USA in USD, the MSCI EM USD index, the JP Morgan EMBI Global Diversified index, the Barclays U.S. government, credit and high yield indices. The U.S. 60/40 depicts the share coming from a portfolio made up of 60% S&P 500 dividend yields and 40% Barclays U.S. all-maturities aggregate. Indices are unmanaged and used for illustrative purposes only. It is not possible to invest directly in an index.

For a portfolio that gives a greater weight to global equities and EM assets, dividend income is now about 70% of that coming from bonds and equities combined. Private markets – infrastructure, real estate, direct lending – can also be income sources.

While this does not take volatility into consideration, investors need to rethink the role of equities in the context of cash flow management and income needs.

Investment Implications

Investors worried about valuations reverting to historic means are assuming that the global economy returns to a pre-crisis state, one that now looks confined to the history books, we believe. Low short-term interest rates and risk-free rates are likely an enduring feature.

What does this mean for asset allocation? We implemented our thinking into a hypothetical institutional portfolio allocation for investors with a long-term horizon and the ability to invest in a broad range of asset classes with varying degrees of liquidity. It also assumes no liability constraints. The exercise is part of the ongoing work BlackRock is doing to publish hypothetical model portfolio asset allocations in 2017 for different institutional client segments around the world, including liability-driven investors.

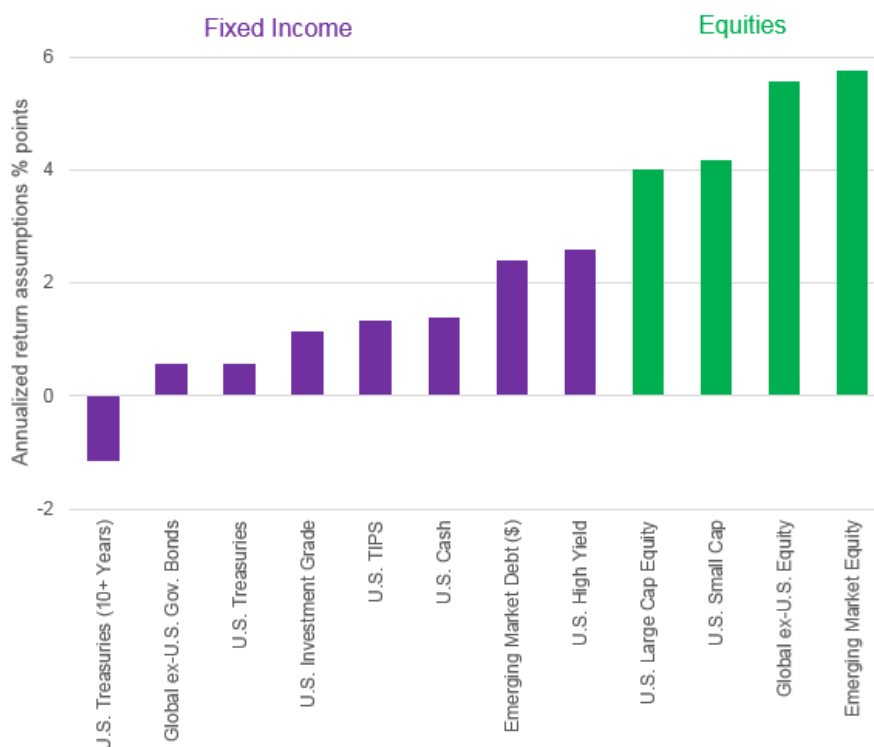
The hypothetical portfolio asset allocation represents an asset allocation mix that we believe leads to the highest return per unit of risk (Sharpe ratio) over the next five years, based on our long term capital market assumptions. Risk is defined as expected volatility measured by the standard deviation of monthly returns since 2000. We compare the hypothetical allocation to a typical U.S. public pension fund's allocation as reported in the annual Pension & Investment public fund survey.

Some key considerations on this proposed hypothetical asset class allocation include:

- Limit government bonds to just 10% versus 20% in the typical allocation
- Raise the share of investment grade credit to 7% from zero.
- Reduce the share of U.S. equities to 22.5% from 40%.
- Raise global ex-U.S. equities for U.S.-dollar investors to 22.5% from 10%.
- Allocate 5% to EM equities and 4% to a blend of EM hard and local currency bonds – all from zero.
- Raise alternatives to 29% from 24%, including a mix of private equity, real estate, infrastructure, private debt and some hedge funds.
- Hold no cash.

Based on the above, the hypothetical portfolio would have an assumed 4.5% annualised return with 11.2% volatility versus an assumed 3.8% annualised return with 10.4% volatility for the typical portfolio. Our bottom line: Investors are being offered better returns for taking risk in the low-return landscape, and a portfolio allocation to a broader, diversified mix of assets can help improve returns.

BlackRock five-year asset class return assumptions



Source: BlackRock Investment Institute and BlackRock Solutions, October 2016. Notes: This information is not intended as a recommendation to invest in any particular asset class or strategy or as a promise of future performance. The bars show annualized nominal return assumptions for the next five years from a U.S. dollar perspective. Representative indexes used are (left to right): Barclays U.S. Long Government Index, Barclays Global Aggregate Treasury Index ex U.S., Barclays Government Index, Barclays U.S. Credit Index, Barclays U.S. Government Inflation-Linked Bond Index, Citigroup 3-Month Treasury Bill Index, JP Morgan EMBI Global Diversified Index, Barclays U.S. High Yield Index, MSCI USA Index, MSCI USA Small Cap Index, MSCI World ex USA Index and MSCI Emerging Markets Index. Indexes are unmanaged and used for illustrative purposes only. They are not intended to be indicative of any fund or strategy's performance. It is not possible to invest directly in an index.

BlackRock's Long-Term Capital Markets Assumption Disclosures

This information is not intended as a recommendation to invest in any particular asset class or strategy or as a promise of future performance. Note that these asset class assumptions are passive, and do not consider the impact of active management. All estimates in this document are in U.S. dollar terms unless noted otherwise. Given the complex risk-reward trade-offs involved, we advise clients to rely on judgment as well as quantitative optimization approaches in setting strategic allocations to all the asset classes and strategies. References to future returns are not promises or even estimates of actual returns a client portfolio may achieve. Assumptions, opinions and estimates are provided for illustrative purposes only. They should not be relied upon as recommendations to buy or sell securities. Forecasts of financial market trends that are based on current market conditions constitute our judgment and are subject to change without notice. We believe the information provided here is reliable, but do not warrant its accuracy or completeness. This material has been prepared for information purposes only and is not intended to provide, and should not be relied on for, accounting, legal, or tax advice.

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