2016 Long-Term Capital Market Assumptions

20th ANNIVERSARY EDITION

Executive summary

IN BRIEF

This Executive Summary is designed to provide a broad view of our 2016 Long-Term Capital Market Assumptions (LTCMAs) and concludes with an assessment of how our assumptions have fared over the last 20 years:

- **Macro overview**: The backdrop for this year's LTCMAs is best described as an environment of steady inflation and subdued long-term growth in the face of very divergent cyclical starting points across economies globally.
- **Major asset class assumptions**: Changes to our assumptions year-over-year are nuanced and include: a deteriorating outlook for U.S. Treasury returns; improving but, in nominal return terms, still uninspiring public and private equity market return expectations; and relatively more attractive assumptions for credit, value-added real estate and infrastructure.
- **Implications**: Based on a synthesis of results across our full data set of over 50 asset classes, we find that the outlook for the 60% equity/40% fixed income investor has improved slightly in terms of risk-adjusted returns. At the same time, the efficient frontier has rotated counterclockwise, in a way that suggests the expected return for relatively safer assets has fallen further, while the expected return for riskier assets has improved relative to last year.

J.P.Morgan
Asset Management

MACRO OVERVIEW—SUBDUED BUT STEADY GROWTH

The 2016 LTCMAs begin with our baseline expectation for moderate growth and generally stable inflation in coming years (**Exhibit 1**). For most developed market (DM) economies, growth forecasts lie below their 25-year historical averages, primarily reflecting slower population and labor force expansion. Still, we expect several DM countries to grow more strongly than during the past 10 years, as they leave behind the Great Recession and the subsequent period of private sector deleveraging. Indeed, although our projections for GDP growth have edged lower this year for four of the seven DM economies covered, these changes owe more to continued population aging and the successful absorption of cyclical slack than to any broader worsening in the environment.

By contrast, we continue to lower our fundamental sights on the emerging economies, which are adjusting to a less friendly global environment while also confronting various homegrown challenges. In particular, following a lengthy domestic credit boom, we expect many emerging market countries to enter deleveraging periods of their own, with this retrenchment likely to weigh on growth for several years to come. Among our sample of EM economies, we see India leading the way in growth terms, partly reflecting its ample room for convergence with DM living standards. Although we do not expect a collapse in Chinese growth, the gradual deceleration evident since 2011 will likely continue.

These contrasting dynamics imply considerable growth desynchronization in the next several years. Policy divergence will likely follow as the U.S. Federal Reserve begins to raise interest rates while other DM central banks consider additional easing measures. Varying local conditions will likely prevent a unified global business cycle from appearing, and overall global growth will likely remain fairly close to our long-term assumption.

Despite enormously easy monetary policy stances across DM economies in recent years, inflation has generally run below central bank targets. As economic slack diminishes, we expect gradual inflation acceleration. Given well-anchored inflation expectations and independent, mandate-focused central banks, we do not envision significant or persistent overshooting. That said, risks exist on either side of this benign view. On the one hand, political or social pressure for higher inflation could mount. On the other hand, although the Japanese descent into deflation remains poorly understood, many DM economies will be following in Japan's footsteps in some ways. For EM economies, we expect inflation to run somewhat above official targets but to remain in single-digit territory. Despite disappointing growth and occasional political stress, very few EM governments have shown any sign of abandoning the commitment to broadly sustainable financial policies adopted in recent decades.

Our 2016 assumptions call for moderate growth overall, with real growth expectations mostly flat to slightly down and inflation generally stable

EXHIBIT 1: MACROECONOMIC ASSUMPTIONS

	2015 assumptions		2016 assumptions		Change (percentage points)	
	Real GDP (%)	Core inflation (%)	Real GDP (%)	Core inflation (%)	Real GDP (%)	Core inflation (%)
Developed markets	**2.00**	**2.00**	**1.75**	**2.00**	**-0.25**	**0.00**
U.S.	2.50	2.25	2.25	2.25	-0.25	0.00
Eurozone	1.50	1.75	1.50	1.50	0.00	-0.25
UK	2.00	2.25	1.50	2.25	-0.50	0.00
Japan	1.00	1.25	0.50	1.50	-0.50	0.25
Australia	2.00	2.50	2.00	2.50	0.00	0.00
Canada	2.25	2.00	1.75	2.00	-0.50	0.00
Switzerland	1.75	0.75	1.75	0.75	0.00	0.00
Emerging markets	**5.00**	**4.00**	**5.00**	**3.75**	**0.00**	**-0.25**
Brazil	3.25	4.75	3.00	5.25	-0.25	0.50
China	6.25	3.00	6.00	3.00	-0.25	0.00
India	7.00	7.00	7.25	5.00	0.25	-2.00
Russia	3.00	5.50	2.75	5.50	-0.25	0.00

Source: J.P. Morgan Asset Management; estimates as of September 30, 2014 and September 30, 2015.

2016 LONG-TERM CAPITAL MARKET ASSUMPTIONS—MAJOR ASSET CLASSES

This year's assumptions, as did last year's, reflect an environment with more-moderate global growth cycles and lower inflation than in the past. Developed economies are enjoying a cyclical uplift in the face of increasingly apparent demographic drag on potential economic growth rates, while emerging economies are only beginning to rebalance their economies, in order to capitalize again on their superior demographic trends over the outer years of our assumptions time frame.

Over the last year, the starting point has moved for a number of asset classes, with commodity prices now fully discounting a lower growth trajectory and foreign exchange markets realigning significantly to reflect the incipient policy divergence. The U.S. equity markets, however, have moved sideways, as lower energy prices fed into lower current earnings and a less sanguine growth outlook dampened expectations for near-term earnings growth. The U.S. bond market has slowly begun to prepare for a life after the end of the zero interest rate policy with somewhat higher rates at the front end, but low inflation expectations have kept long-term interest rates well anchored.

Given this backdrop, nominal return expectations improve for equities and high yield bonds, are little changed for cash and deteriorate for Treasuries and investment grade debt (**Exhibit 2A**). Premiums for credit and equity risk improve significantly, primarily driven by a reduction in the duration premium, while small cap and private equity premiums remain unchanged year-over-year (**Exhibit 2B**).

Fixed income—A staggered liftoff

The asynchronous pattern of global growth will begin to materialize in diverging monetary policy rates across developed markets. Short-term rates will begin to rise in the near term in the U.S. and UK, while easing will not only continue but is likely to expand further in the eurozone and Japan. A lack of inflation and a more benign growth outlook will put downward pressure on short- and long-term equilibrium yields and returns globally, further aggravated by easy monetary conditions in the near term. In this environment, returns on cash will struggle to exceed the rate of inflation, while longer-duration government debt should be able to overcome near-term mark-to-market losses from the limited rise in yields and earn a moderate premium over cash. Corporate credit returns will remain relatively more attractive, supported by ongoing demand for yield and limited credit losses during a long but shallow economic cycle. Emerging market debt (EMD) yields are already reflecting weaker economic fundamentals and rising credit risks, but value will only begin to emerge slowly as the rebalancing process progresses.

Attractive equity and credit risk premiums drive improvements in nominal performance prospects

EXHIBIT 2A: SELECTED LTCMA RETURNS (%)

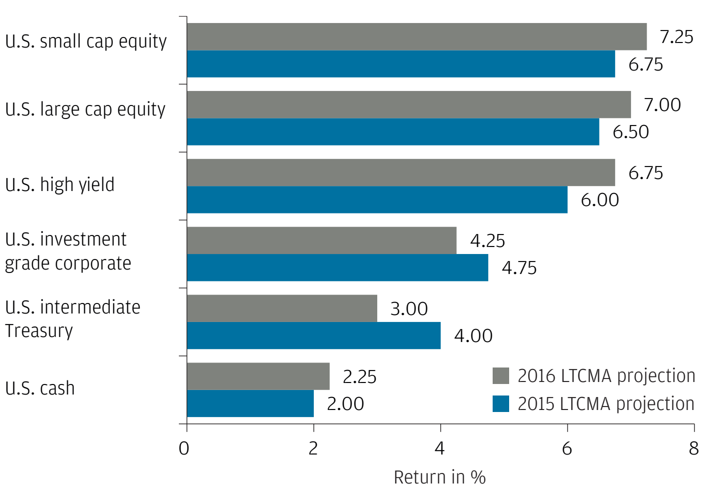
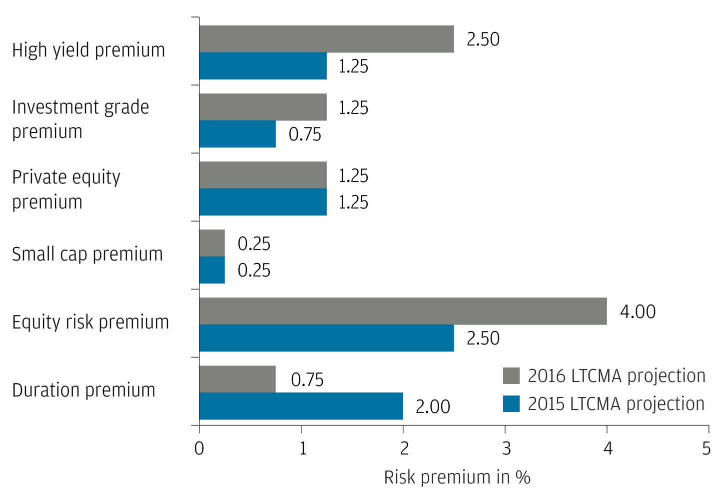


EXHIBIT 2B: SELECTED LTCMA RISK PREMIUMS (%)



Source: J.P. Morgan Asset Management; estimates as of September 30, 2014, and September 30, 2015.

Equity—Still subdued

Similar to fixed income, equity return assumptions again paint a slightly disappointing picture relative to history. Developed market returns in particular remain constrained as earnings growth is dampened by a modest economic growth environment and starting valuations remain elevated. We continue to expect payouts to shareholders rather than earnings growth to be the main component of total returns. Our emerging market equity return assumption ticks up marginally in local currency terms compared with last year due to more attractive valuations. In U.S. dollar terms, our assumptions rise more significantly, reflecting a substantial realignment in currency exchange rates over the last year.

Alternatives—Outlook varies across strategy classes; manager choice is key

Our assumptions for private equity increase marginally, benefiting from a moderate rise in our public market return assumptions for U.S. mid cap and European equities, while the return assumptions for real assets decline, reflecting rising valuations and a slowly aging economic cycle. Sluggish global economic growth, especially in China, will weaken the rate at which the demand for commodities grows and suppress prices in the near term. While still in the early innings of the demand/supply adjustment process, prices will ultimately have to rise to provide sufficient incentive for supply to keep up with long-term demand. Demand for infrastructure investments remains strong among liability-driven investors and those seeking income-generating assets. Midmarket, non-trophy assets should benefit from this trend and provide attractive investment returns.

Our hedge fund composite return assumptions are driven by public market beta exposures, the dominant source of risk taking for most strategies. The environment for alpha generation for traditional hedge funds and liquid alternative strategies remains challenging in the near term. Over the full assumptions period, however, we expect conditions for generating alpha to improve as rates rise, volatility increases and inter-asset-class and intra-sector relationships revert toward their means.

As in prior years, our assumptions for private equity, infrastructure and hedge funds represent composite returns at the industry level, across managers with widely divergent skill sets. Therefore, manager selection remains the critical determinant of success when investing in alternatives.

Foreign exchange—Further away from long-term equilibriums

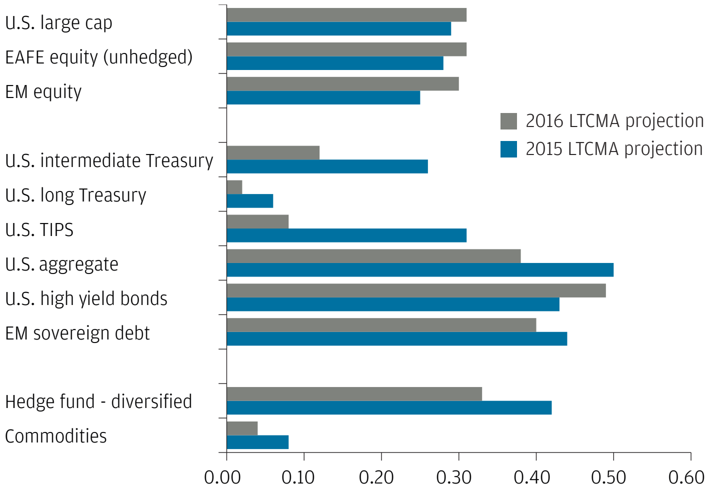
Policy divergences and further economic rebalancing have led to an increase in currency volatility over the last year, driving exchange rates significantly away from their long-term equilibriums. The move away from fair value in developed market currencies has been short and sharp, and at this stage the realignment of foreign exchange rates to a diverging economic and monetary policy environment appears already well advanced. We expect, however, that given the ongoing need for easy monetary policy in much of the developed world, it will take several years for this trend to reverse and the U.S. dollar (USD) to weaken back toward long-term equilibrium levels. In emerging market and commodity-related economies, currencies appear to have rebalanced from overvalued to close to fairly valued levels. Given the ongoing cyclical slowdown in these countries, we expect further currency weakening relative to the USD before these currencies rise more gradually back to fair value in the later years of our assumptions time frame.

A RISK-ADJUSTED RETURN PERSPECTIVE

Low starting yields and a reduced duration premium lead to significant declines in the expected risk-adjusted returns for Treasuries and Treasury Inflation Protected Securities (TIPS). The more diversified U.S. Aggregate Bond Index, emerging market debt and diversified hedge fund strategies, as well as commodities, are expected to experience a smaller decline, driven by a higher risk-free rate. The risk-adjusted returns for the riskiest assets—equities and high yield—improve slightly year-over-year, benefiting from an improvement in their return outlook in excess of the rise in the expected cash return (**Exhibit 3**).

The most significant improvements in return per unit of risk appear to be for U.S. high yield bonds and equities

EXHIBIT 3: RISK-ADJUSTED RETURN ASSUMPTIONS ACROSS ASSET CLASSES–SHARPE RATIOS



Source: J.P. Morgan Asset Management; estimates as of September 30, 2014 and September 30, 2015.

OPPORTUNITIES FOR INVESTORS

While still uninspiring, the outlook has improved a little for the 60/40 portfolio investor, given this year's and last year's LTCMAs. As **Exhibit 4** shows, the 2016 portfolio plots a little up and to the left of the 2015 point in risk/return space, suggesting that both nominal return expectations and the risk profile are improving somewhat.

Another way to look at it is that the entire efficient frontier has rotated counterclockwise, almost exactly around a 35/65 reference point. This counterclockwise rotation implies that the expected return on relatively safer assets has fallen further, while the expected return for riskier assets has improved relative to last year.

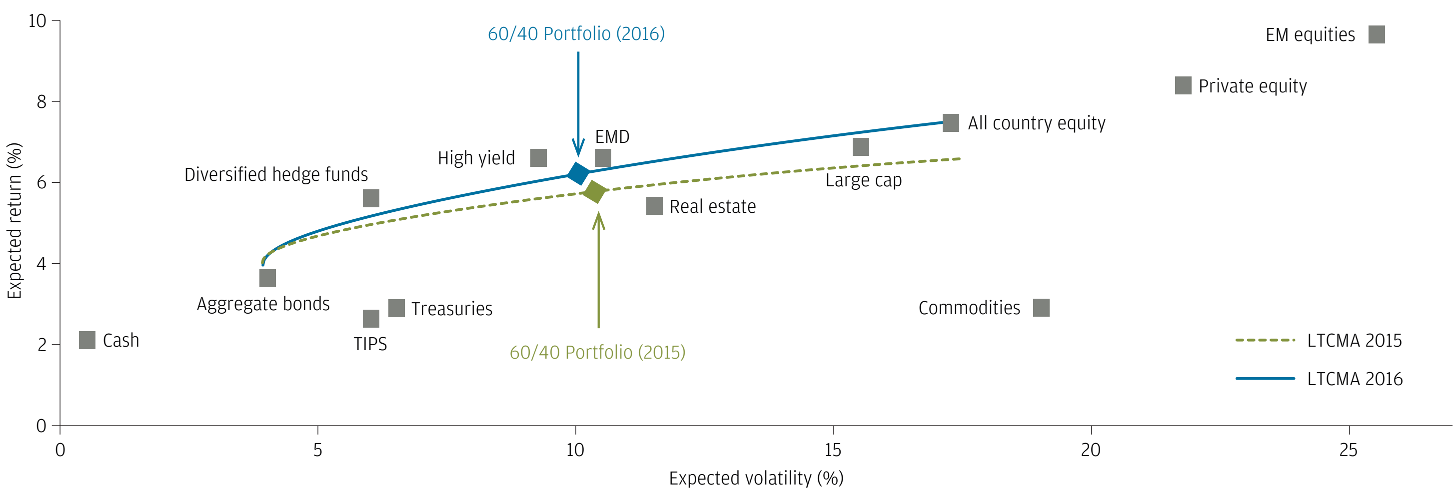
Starting at the lower end of the risk spectrum, Treasuries and TIPS are likely to generate only a small premium over cash. Skill-based strategies—such as diversified hedge funds as well as, but somewhat less significantly, liquid alternatives—should achieve superior returns with a similar level of risk relative to Treasuries and TIPS, albeit at the expense of a reduced level of liquidity.

Investors with the flexibility and wherewithal to tolerate higher levels of volatility can position their portfolios to capture these increased equity and credit risk premiums by stepping further out on the risk curve. High yield and, to a lesser degree, emerging market debt appear attractive, offering close to equity-like returns with superior risk characteristics. For investors who can be flexible and withstand higher volatility, and have low liquidity requirements and the research capabilities to identify above-median managers, private equity markets offer expected returns north of 8%—an elusive barrier in recent years.

Finally, after multiple years of relative underperformance, improving valuations and significant currency realignment relative to the U.S. dollar, international equities—and emerging market equities in particular—are increasingly attractive, with the pickup in expected returns offering a more adequate compensation for the incremental risk taken than it has in the recent past.

Our 2016 vs. 2015 assumptions suggest that long-term investors willing to step out on the risk curve can expect to be better compensated for that incremental risk

EXHIBIT 4: EFFICIENT FRONTIERS AND 60/40 PORTFOLIOS, BASED ON 2016 VS. 2015 LTCMAS FOR RISK AND RETURN



Source: J.P. Morgan Asset Management; estimates as of September 30, 2014, and September 30, 2015

LONG-TERM CAPITAL MARKET ASSUMPTIONS: A TIME-TESTED PROCESS

J.P. Morgan Asset Management has produced its Long-Term Capital Market Assumptions in a broadly unchanged format since 2004. With an assumption horizon of 10-15 years, it seems reasonable to assess how a portfolio would have actually fared compared with our expectations in 2004 and 2005, respectively.

Each bar in the chart in **Exhibit 5** shows the return expectation for a reference portfolio* based on the LTCMAs of that year, shown as a white horizontal line. The surrounding shaded area reflects the range in which actual outcomes may fall within a certain confidence interval. The range shrinks as the time horizon lengthens.

The blue triangles depict the actual return that the reference portfolio would have achieved from the time of the publication of the LTCMAs until the end of 2014. The closer the blue triangle to the horizontal line, the more reliable the assumptions of that year have turned out to be.

For example:

In 2004, using our long-term projections for that year, we estimated the reference portfolio would achieve a compound annual return of 7.1% over our assumptions time frame. The actual compound annual return of the reference portfolio over the subsequent 11 years, from 2004 to 2014, was 6.9%.

While this is certainly too small a sample to draw statistically significant conclusions, we are pleased to see how well the assumptions have stood the test of time in one of the most volatile investment environments in a generation.

* The asset allocation of the reference portfolio reflects JP Morgan Private Bank's default Balanced Portfolio asset allocation mix of the respective year, with a risk profile equivalent to that of a portfolio with a 55/45 equity/bond mix.

EXHIBIT 5: EXPECTED PORTFOLIO RETURN BASED ON LONG-TERM CAPITAL MARKET ASSUMPTIONS RELATIVE TO ACTUAL PERFORMANCE

Source: J.P. Morgan Asset Management; data as of September 30, 2014. **Note:** This is a projection used for illustrative purposes only and does not represent investment in any particular vehicle. References to future asset values are not promises or even estimates of actual returns you may experience. Past performance is no guarantee of future results. It is not possible to invest directly in an index. * "Most probable returns," denoted by the darkly shaded area, indicates the range around the 50th percentile. The "50th percentile" indicates the middle wealth value of the entire range of probable asset values. The "95th percentile" wealth value indicates that 95% of the probable asset values will be equal to or below that number; the "5th percentile" wealth value indicates that 5% of the probable asset values will be equal to or below that number. ** Asset allocation assumes annual rebalancing, no taxes, and no cash flows. All returns are based on index data and include no manager alpha. Indices used: Barclays Capital Global & US Aggregate Bond Indices, S&P 500, Russell 1000 Value, Russell Midcap , Russell 2000, MSCI EAFE, MSCI Japan, MSCI Asia ex-Japan, MSCI Emerging Markets, HFRI Fund of Funds Diversified , HFRI Event Driven , HFRI Equity Hedge, HFRI Relative Macro, HFRI Macro, Venture Economics US Buyouts, NCREIF Property TR, DJUBS Commodity.

AUTHORS

COMMITTEE MEMBERS

Michael Feser
Portfolio Manager
Multi-Asset Solutions

Michael Hood
Global Strategist
Multi-Asset Solutions

Patrik Schöwitz
Global Strategist
Multi-Asset Solutions

Anthony Werley
Chief Portfolio Strategist
Endowment and Foundations Group

J.P. MORGAN ASSET MANAGEMENT LONG-TERM CAPITAL MARKET RETURN ASSUMPTIONS are developed each year by our Assumptions Committee, a multi-asset class team of senior investors from across the firm. The Committee relies on the input and expertise of a range of portfolio managers and product specialists, striving to ensure that the analysis is consistent across asset classes. The final step in the process is a rigorous review of the proposed assumptions and their underlying rationale with the senior management of J.P. Morgan Asset Management.

Our capital market assumptions are used by a wide range of investors to ensure that investment policies and decisions are based on real-world, consistent views and can be tested under a variety of market scenarios.

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