



**PERSPECTIVES
THAT DRIVE
ENTERPRISE
SUCCESS**

**JANUARY 2016
Capital Market Assumptions**

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Summary

Methodology

APPROPRIATE FRAME OF REFERENCE

- Over the short-term, capital markets may reflect irrational investor behavior as prices diverge from fair value.
- Mean reversion may occur over the long-run as prices converge to underlying fundamentals due to long-term investor rationality.
- In our opinion, a 10-year outlook is a reasonable time frame to expect fundamental valuation measures to mean-revert.

Asset	Return Methodology	Volatility Methodology
Inflation	25% weight to the University of Michigan Survey 5-10 year ahead inflation expectation and the Survey of Professional Forecasters (Fed Survey), and the remaining 50% to the market's expectation for inflation as observed through the TIPS breakeven rate	-
Cash	Real yield estimate + inflation forecast	Last 10 years of realized volatility
Bonds	Nominal bonds: current annualized yield Real bonds: real yield + inflation forecast	Last 10 years of realized volatility
International Bonds*	Current yield + implied currency effect	Last 10 years of realized volatility
Credit	Current option-adjusted-spread + U.S. 10-year Treasury – default rate	Last 10 years of realized volatility
International Credit*	Current option-adjusted-spread + foreign 10-year Treasury – default rate + implied currency effect	Last 10 years of realized volatility
Private Credit	High yield forecast + 2% illiquidity premium	Last 10 years of realized volatility
Equity	Dividends (current yield) + real earnings growth (historical average) + inflation on earnings (inflation forecast) + expected P/E change	Last 10 years of realized volatility
International Developed Equity*	Dividends (current yield) + real earnings growth (historical average) + inflation on earnings (international inflation forecast) + expected P/E change + implied currency effect	Last 10 years of realized volatility
Private Equity	Small-cap domestic equity forecast + 3% illiquidity premium	1.2 * last 10 years of realized U.S. small-cap volatility
Commodities	Cash + inflation forecast	Last 10 years of realized volatility
Hedge Funds	Return coming from traditional betas + 3% (alternative beta and alpha)	1.65 * last 10 years of realized volatility
Hedge Funds (FoF)	Return coming from traditional betas + 3% (alternative beta and alpha) – 1% expected fund of funds management fee	1.65 * last 10 years of realized volatility
Core Real Estate	Cap rate – capex + Inflation forecast	50% of REIT volatility
REITs	Core real estate	Last 10 years of realized volatility
Value-Add Real Estate	Core real estate + 2%	Volatility to produce Sharpe Ratio (g) equal to core real estate
Opportunistic Real Estate	Core real estate + 4%	Volatility to produce Sharpe Ratio (g) equal to core real estate
Risk Parity	Expected Sharpe Ratio * target volatility + cash rate	Target volatility

*We use local inflation for international developed equity and fixed income markets. When using local inflation rates, expected returns are adjusted for the implied currency effect based on currency forward contract rates (See Appendix)

10 year return & risk assumptions

Asset Class	Index Proxy	Ten Year Return Forecast		Standard Deviation Forecast	Sharpe Ratio (g) Forecast	Sharpe Ratio (a) Forecast	Ten Year Historical Sharpe Ratio (g)	Ten Year Historical Sharpe Ratio (a)
		Geometric	Arithmetic					
Equities								
US Large	S&P 500	5.9%	7.0%	15.1%	0.26	0.33	0.40	0.46
US Small	Russell 2000	5.2%	7.0%	19.8%	0.16	0.25	0.28	0.37
International Developed	MSCI EAFE	9.2%	10.8%	18.5%	0.39	0.47	0.10	0.19
International Small	MSCI EAFE Small Cap	8.6%	10.4%	19.7%	0.33	0.43	0.17	0.26
Emerging Markets	MSCI EM	11.3%	13.6%	23.6%	0.39	0.49	0.10	0.22
Global Equity	MSCI ACWI	7.7%	9.1%	16.9%	0.34	0.42	0.21	0.29
Private Equity	Cambridge Private Equity	8.2%	11.0%	23.7%	0.26	0.37	1.01	1.08
Fixed Income								
Cash	30 Day T-Bills	2.0%	2.0%	0.6%	-	-	-	-
US TIPS	Barclays US TIPS 5 - 10	2.7%	2.9%	6.3%	0.11	0.14	0.43	0.45
US Treasury	Barclays Treasury 7 - 10 year	2.3%	2.5%	6.5%	0.04	0.07	0.67	0.68
Global Sovereign ex US	Barclays Global Treasury ex US	2.6%	2.9%	7.8%	0.07	0.11	0.24	0.28
Core Fixed Income	Barclays US Aggregate Bond	3.2%	3.3%	3.2%	0.37	0.40	1.02	1.00
Core Plus Fixed Income	Barclays US Corporate IG	4.2%	4.4%	6.0%	0.33	0.40	0.68	0.68
Short-Term Gov't/Credit	Barclays US Gov't/Credit 1 - 3 year	2.5%	2.5%	1.3%	0.37	0.37	1.20	1.30
Short-Term Credit	Barclays Credit 1 - 3 year	2.9%	3.0%	2.2%	0.40	0.45	1.01	0.98
Long-Term Credit	Barclays Long US Corporate	4.2%	4.7%	10.5%	0.20	0.26	0.47	0.50
High Yield Corp. Credit	Barclays High Yield	7.1%	7.6%	10.6%	0.48	0.53	0.54	0.57
Bank Loans	S&P/LSTA	4.1%	4.5%	8.1%	0.24	0.31	0.38	0.40
Global Credit	Barclays Global Credit	2.4%	2.7%	6.9%	0.06	0.10	0.50	0.52
Emerging Markets Debt (Hard)	JPM EMBI Global Diversified	6.4%	6.8%	8.8%	0.50	0.54	0.64	0.65
Emerging Markets Debt (Local)	JPM GBI EM Global Diversified	6.8%	7.6%	12.9%	0.37	0.43	0.24	0.30
Private Credit	High Yield + 200 bps	9.1%	9.7%	10.9%	0.65	0.71	-	-
Other								
Commodities	Bloomberg Commodity	4.0%	5.6%	18.2%	0.11	0.20	-0.42	-0.34
Hedge Funds	HFRI Fund of Funds	6.0%	6.4%	9.0%	0.44	0.49	0.19	0.21
Hedge Funds (Fund of Funds)	HFRI Fund of Funds	5.0%	5.4%	9.0%	0.33	0.38	-	-
Core Real Estate	NCREIF Property	4.7%	5.8%	13.2%	0.20	0.27	0.92	0.98
Value-Add Real Estate	NCREIF Property + 200bps	6.7%	9.1%	23.3%	0.20	0.30	-	-
Opportunistic Real Estate	NCREIF Property + 400bps	8.7%	13.3%	33.2%	0.20	0.34	-	-
REITs	Wilshire REIT	4.7%	7.8%	26.4%	0.10	0.22	0.23	0.36
Risk Parity		7.0%	7.5%	10.0%	0.50	0.54	-	-
Inflation		2.0%	-	1.5%*	-	-	-	-

Investors wishing to produce expected geometric return forecasts for their portfolios should use the arithmetic return forecasts provided here as inputs into that calculation, rather than the single-asset-class geometric return forecasts. This is the industry standard approach, but requires a complex explanation only a heavy quant could love, so we have chosen not to provide further details in this document – we will happily provide those details to any readers of this who are interested.

*Historical volatility of inflation. This is not a forecast.

Range of likely 10 year outcomes

10 YEAR RETURN 90% CONFIDENCE INTERVAL



Relevant market movements

- U.S. equity investors experienced mediocre returns during 2015 with the S&P 500 returning 1.4% and Russell 2000 producing a loss of 4.4%. A stronger U.S. dollar proved a headwind for domestic equities, commodities, and unhedged exposure to foreign currency. Uncertainty surrounding the Fed's rate hike triggered risk-off sentiment. Higher valuations suggest that multiple expansion may be a headwind for some asset classes in the near future.
- International developed (EAFE) equity investors saw moderate gains on an unhedged basis with an annual loss of -0.8%. Investors with currency hedging programs were rewarded as the hedged index provided a return of 5%. European companies saw improved earnings growth over the year as balance sheets were less susceptible to heavy financial engineering. However, weak external demand may continue to dampen profit expectations. Additionally, further QE was launched this year by the ECB, providing a tailwind for equities.
- Emerging market equity markets experienced significant losses in 2015, with unhedged exposure to the index (MSCI EM) producing a return of -14.9%. Again, investors were rewarded for currency hedging which reduced losses on the year to -8.2%. Emerging market equities appear to be the most undervalued of the equity asset classes, though low valuations in many of these markets may be justified. Mean reversion would lead to healthy gains all else being equal and we forecast an additional 2% annual return to this asset class due to relatively cheap valuations.
- 2015 was characterized by several central bank rate cuts and implementation of easy monetary policy. These combined effects put significant downward pressure on yields globally. Global central bank policy continued to diverge, with the Bank of Japan and the European Central Bank implementing bond purchasing programs while the Fed implemented its first rate hike since 2006.
- U.S. breakeven inflation fell further over the year to 1.5% which reflects continued lower inflation expectations. With weak global growth and a stronger dollar, lack of inflation has become a global concern.
- Further divergence in monetary policy led to a strengthening of the U.S. dollar relative to developed market currencies and a decrease in U.S. long-term interest rates.
- The last year was tough for risk parity strategies. Nearly all funds lost money due to flat or poor performance across most types of risk exposures.
- After a dramatic price drop off in 2014, investors experienced further declines with WTI oil closing 2015 at \$37/barrel. Due to lower inflation expectations, expected future nominal returns remain moderate.

Inflation

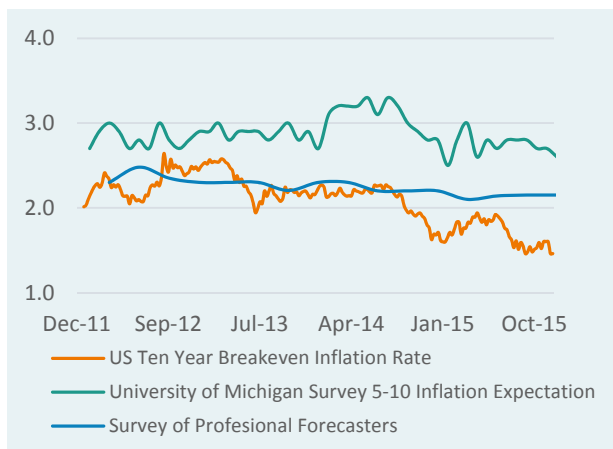
Inflation

The market's expectations for 10-year inflation can be inferred by taking the difference between the U.S. 10-year Treasury yield and the U.S. 10-year Treasury Inflation-Protected (TIPS) yield (referred to as the breakeven inflation rate). While the breakeven rose in 2012, it fell throughout 2013 and then fell further in 2014 H2. The first half of 2015 saw moderate upward pressure in breakeven rates while the second half of 2015 was characterized by downwards movement with the latest breakeven pricing in a 1.5% rate of inflation over the next decade.

The latest University of Michigan Survey 5-10 year forward inflation expectation, a survey of about 500 households around the nation, is 2.7%, slightly weaker than a year ago. Historically, this survey of inflation tends to be higher than actual future inflation.

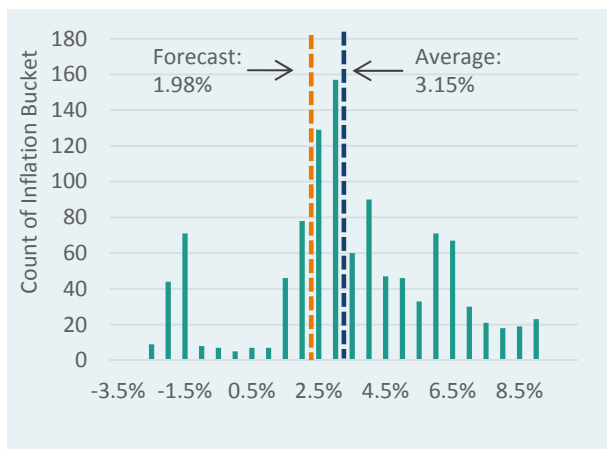
A more stable indicator over time has been the Survey of Professional Forecasters (conducted quarterly). The most recent expectation for long-term inflation is 2.15%.

INFLATION EXPECTATIONS



Source: U. of Michigan, Philly Fed, as of 12/31/15

US 10YR ROLLING AVERAGE INFLATION SINCE 1923



Source: Bloomberg, as of 12/31/15

FORECAST

	10-Year Forecast
University of Michigan Survey (25% weight)	2.70%
Survey of Professional Forecasters (25% weight)	2.15%
US 10-Year TIPS Breakeven Rate (50% weight)	1.54%
Inflation Forecast	1.98%

Source: Verus

Fixed income

Cash

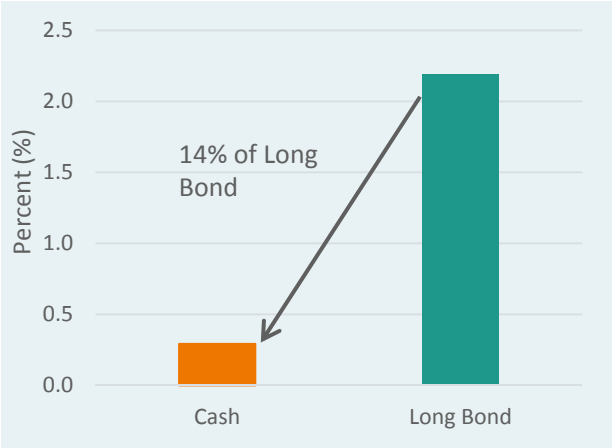
The yield curve shifted upward in 2015. While cash rates remained suppressed, the 3 month yield rose in December following the Fed rate hike.

By applying this historical real return relationship, we arrive at a 4 bps expected real return to cash (14% of our 29 bps long bond real return forecast).

Over rolling ten year time periods, the average historical real return to cash has been 14% of the real return to long bonds.

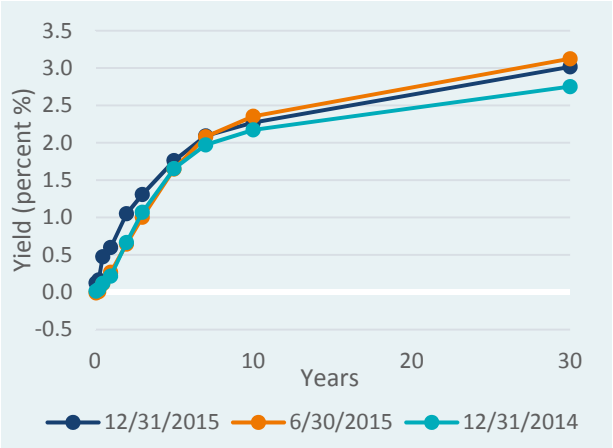
Adding our inflation forecast of 1.98% results in a nominal return to cash of 2.02%.

AVERAGE REAL RETURN



Source: Bloomberg

US TREASURY ACTIVES CURVE



Source: Bloomberg, as of 12/31/15

FORECAST

	10-Year Forecast
Cash	2.02%
Inflation Forecast	-1.98%
Real Return	0.04%

Source: Verus

Rates

While U.S. interest rates remain higher than many other developed markets, rates remained relatively suppressed in 2015, balanced by flight to quality and selling activity of global sovereign funds (primarily China).

With many developed nations pursuing easier monetary policy, a further divergence in monetary policy decisions occurred after the December 2015 Fed rate hike.

Rates remained relatively range-bound in the second half of 2015 after falling sharply to a two year low of 1.64%.

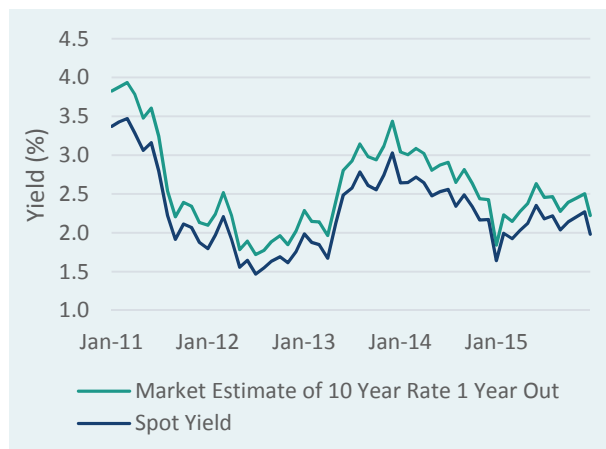
Our forecast of rates is based upon the current yield, with all cash flows reinvested at the current yield.

US 10 YR TREASURY RATE



Source: Bloomberg, as of 12/31/15

MARKET ESTIMATE OF 10 YEAR RATE 1 YEAR OUT



Source: Bloomberg, as of 12/31/15

FORECAST

	10-Year Forecast
US 10-Year Treasury	2.27%
Inflation Forecast	-1.98%
Real Return	0.29%

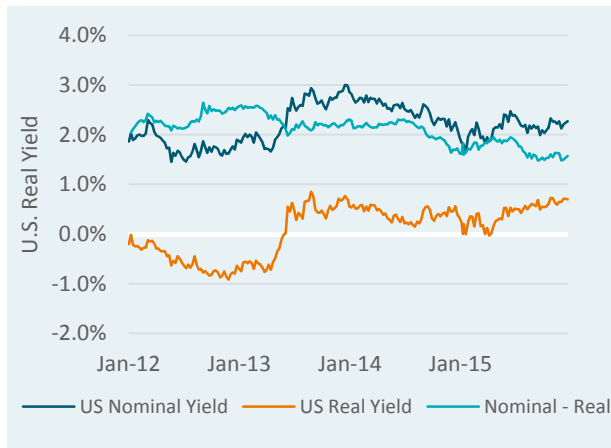
Source: Verus

Real rates

While performance of TIPS can be volatile in the short-term given sensitivity to interest rates, changes to inflation expectations, and demand for inflation protection, long-term performance has tied closely to the Consumer Price Index.

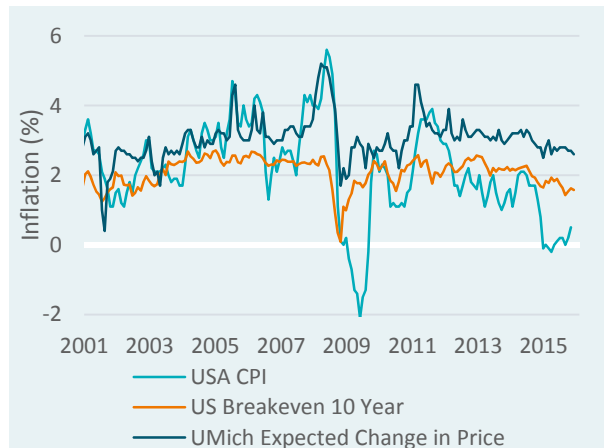
To arrive at a nominal 10-year forecast, we add the current real TIPS yield to our 10-year inflation forecast.

NOMINAL YIELD VS REAL



Source: Bloomberg, as of 12/31/15

INFLATION EXPECTATIONS



Source: Bloomberg, as of 12/31/15

FORECAST

	10-Year Forecast
US 10-Year TIPS Yield	0.70%
Inflation Forecast	+1.98%
Nominal Return	2.68%

Source: Verus

Core fixed

Credit fixed income return is composed of a bond term premium (duration) and credit spread.

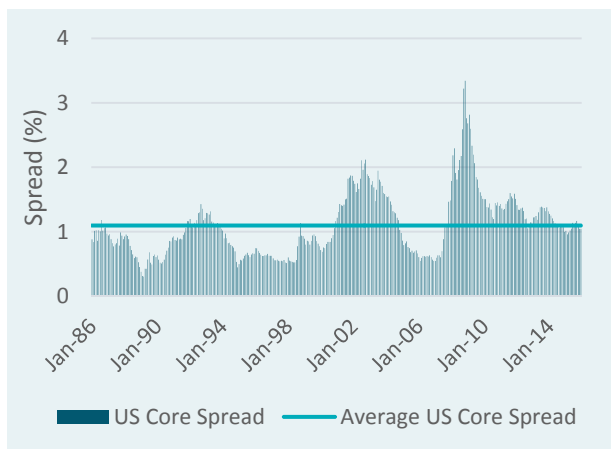
We use appropriate default rates and credit spreads for each fixed income category to provide our 10 year return forecast.

Heavy anticipation of a Fed rate hike pushed yields higher for the first half of 2015. With heightened market volatility throughout the summer months, bonds rallied more as risk assets underperformed.

Within the core universe, investment grade credit spreads widened as companies took advantage of historically low interest rates to issue debt, making 2015 the largest year of issuance on record.

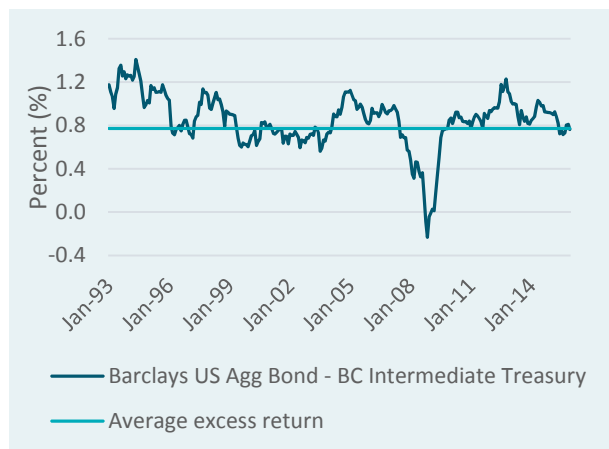
High M&A activity, increasing leverage, and less restrictive covenants may indicate we are later in the credit cycle. Effects of low energy prices increased the riskiness of both high grade and high yield debt instruments.

US CORE CREDIT SPREAD



Source: Barclays, as of 12/31/15

ROLLING EXCESS RETURN (10YR)



Source: Barclays, as of 12/31/15

FORECAST

	10-Year Forecast
Barclays US Option-Adjusted Spread	+1.05%
Effective Default	0.10%
US 10-Year Treasury	+2.27%
Nominal Return	3.21%
Inflation Forecast	-1.98%
Real Return	1.24%

Source: Verus

Credit summary

	Core	Long-Term Credit	Global Credit	High Yield	Bank Loans	EM Debt (USD)	EM Debt (Local)	Private Credit
Index	BC US Aggregate	BC Long US Corporate	BC Global Credit	BC US High Yield	S&P LSTA	JPM EMBI	JPM GBI	BC US High Yield + 2%
Method	OAS + US 10-Year	OAS + US 10-Year	OAS + Global 10-Year Treasuries	OAS + US 10-Year	LIBOR + Spread	OAS + US 10-Year	Current Yield	High Yield + 2% illiquidity premium
Spread to	Intermediate US Treasury	Long-Term US Treasury	Global Long-Term Treasuries	Intermediate US Treasury	LIBOR	Intermediate US Treasury	-	-
Default Assumption	-0.5%	-4.5%	-3.0%	-3.8%	-3.5%	-0.5%	-0.5%	-
Recovery Assumption	80%	95%	40%	40%	90%	60%	40%	-
Spread	1.1%	2.1%	1.9%	7.1%	3.9%	4.4%	-	-
Yield	-	-	-	-	-	-	7.1%	-
Risk Free Yield	2.3%	2.3%	1.9%	2.3%	0.6%	2.3%	-	-
Effective Default	-0.1%	-0.2%	-1.8%	-2.3%	-0.4%	-0.2%	-0.3%	-
Expected Currency Effect	-	-	0.4%	-	-	-	-	-
Nominal Return	3.2%	4.2%	2.4%	7.1%	4.1%	6.4%	6.8%	9.1%
Inflation Forecast	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%	2.0%
Real Return	1.2%	2.2%	0.4%	5.1%	2.1%	4.4%	4.8%	7.1%

*We use local inflation for international developed equity and fixed income markets. When using local inflation rates, expected returns are adjusted for the implied currency effect based on currency forward contract rates (See Appendix)

Equities

Equities

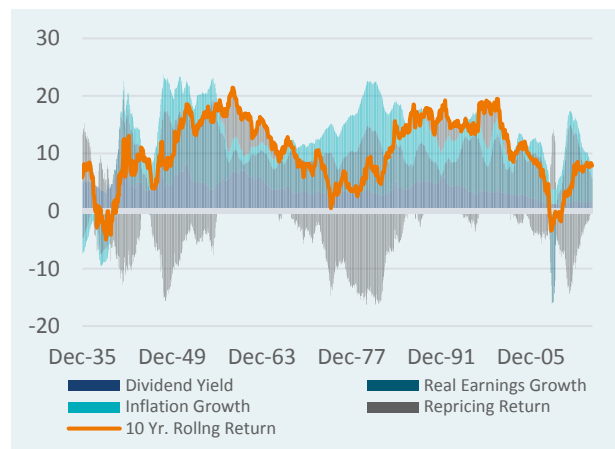
Historical equity returns can be broken down into earnings growth, dividend yield, inflation, and repricing. Over the very long-term, repricing represents a small portion of return to equity investors, but over shorter time frames, the effect on return can vary considerably.

If investors are willing to pay more for earnings, it could signal that investors are more confident in positive earnings growth going forward, while the opposite is true if investors pay less for earnings. It is somewhat surprising that investor confidence varies so much given that the long-term earnings growth is relatively stable.

Investor confidence in earnings growth can be measured using the Shiller P/E Ratio. In short, if the P/E ratio is too high/low relative to history, we expect future returns to be lower/higher than the long-term average. Implicit in this analysis is the assumption that P/E's will mean revert over 10 years.

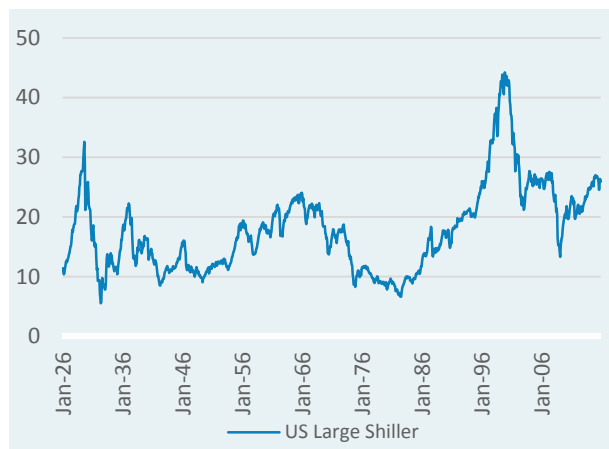
We make a conservative repricing estimate given how widely repricing can vary over time. We then skew the repricing adjustment because the percentage change in index price is larger with each incremental rise in P/E when P/E's are low, compared to when they are high.

TRAILING 10YR S&P 500 RETURN COMPOSITION



Source: Shiller, Standard & Poor's, as of 9/30/15

SHILLER P/E



Source: Shiller, as of 9/30/15

SHILLER P/E ASSUMPTION

Shiller P/E Percentile Bucket	Lower P/E	Upper P/E	Repricing Assumption
Lower 10%	-	10	2.00%
10% - 20%	10	11	1.50%
20% - 30%	11	12	0.75%
30% - 45%	12	15	0.50%
45% - 55%	16	17	0.0%
55% - 70%	17	20	-0.25%
70% - 80%	20	22	-0.50%
80% - 90%	22	26	-1.25%
Top 10%	26	-	-1.50%

Source: Verus

Global equity

Global Equity is a combination of U.S. large, international developed, Canada, and emerging market equities. We can therefore combine our existing return forecasts for each of these asset classes, along with a Canada equity forecast, to arrive at our global equity return forecast.

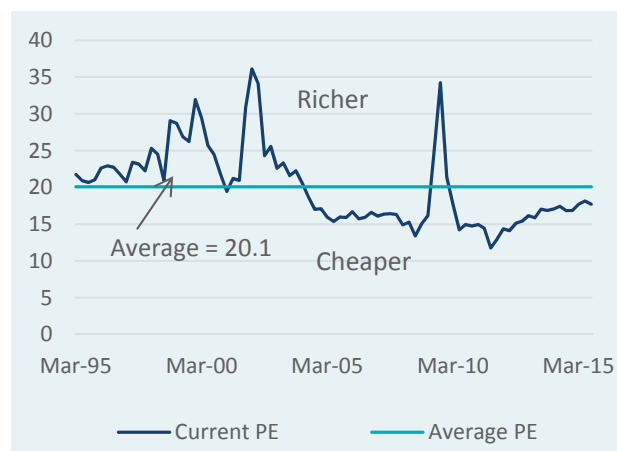
We use the MSCI ACWI Index as our benchmark for global equity and apply the country weights of this index to determine the weightings for our global equity return calculation. As with other equity asset classes, we use the

historical standard deviation of the benchmark (MSCI ACWI Index) for our volatility forecast.

The valuation of global equities are driven by the richness/cheapness of the underlying markets, as indicated by the current price/earnings ratio.

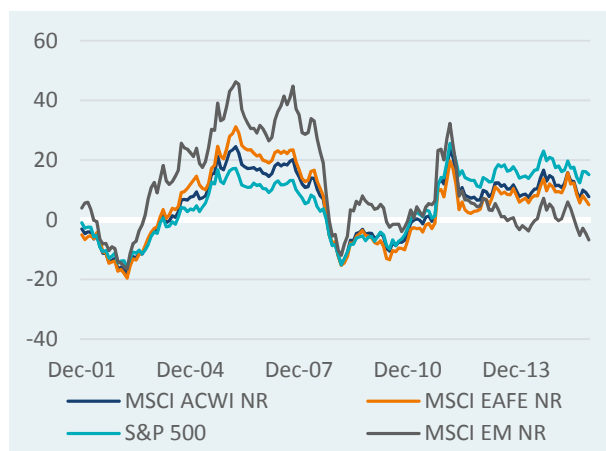
The underperformance of emerging markets in recent years has detracted from global equity returns, while U.S. equities have buoyed returns.

GLOBAL EQUITY P/E RATIO HISTORY



Source: MSCI, as of 9/30/15

MARKET PERFORMANCE (3YR ROLLING)



Source: MSCI, Standard & Poor's, as of 12/31/15

FORECAST

Market	Weight	CMA return	Weighted return
US Large	52.8%	5.89%	3.11%
Developed Large	34.5%	9.21%	3.18%
Emerging Markets	9.7%	11.25%	1.09%
Canada	3.0%	9.07%	0.27%
Global equity forecast			7.65%

Source: Verus

Equity summary

	US Large	US Small	EAFE	EAFE Small	EM
Index	S&P 500	Russell 2000	MSCI EAFE Large	MSCI EAFE Small	MSCI EM
Method	Building Block Approach: current dividend yield + historical average real earnings growth + inflation on earnings + repricing + expected currency effect				
Current Shiller P/E Ratio	24.4	36.8	14.2	-	8.1
Regular P/E Ratio	18.3	33.5	19.0	23.5**	12.2
2015 Shiller P/E Expansion	-7.2%	-7.1%	-2.7%	-	-24.4%
2015 Regular P/E Expansion	0.5%	1.5%	15.9%	31.1%	-3.9%
Current Shiller P/E Percentile Rank	84%	88%	13%	-	1%
Current Regular P/E Percentile Rank	69%	91%	56%	42%**	26%
Average of P/E Methods' Percentile Rank	77%	90%	35%	42%**	8%
2015 Total Return	1.4%	-4.4%	-0.8%	9.6%	-14.9%
Shiller PE History	1926	1988	1982	Not Enough History	2005
Long-Term Average Shiller P/E	19.6	29.1	23.3	-	16.9
Current Dividend Yield	2.2%	1.5%	3.3%	2.3%	2.9%
Long-Term Average Real Earnings Growth	2.3%	3.0%	2.5%	2.9%	4.5%
Inflation on Earnings	2.0%	2.0%	1.4%*	1.4%*	2.0%
Repricing Effect (Estimate)	-0.5%	-1.3%	0.5%	0.5%	2.0%
Implied Currency Effect*	-	-	1.5%*	1.5%*	-
Nominal Return	5.9%	5.2%	9.2%	8.6%	11.3%
Inflation Forecast	2.0%	2.0%	2.0%	2.0%	2.0%
Real Return	3.9%	3.2%	7.2%	6.6%	9.3%

*We use local inflation for international developed equity and fixed income markets. When using local inflation rates, expected returns are adjusted for the implied currency effect based on currency forward contract rates (See Appendix)

**Average trailing P/E from previous 12 months is used

Alternatives

Private equity

Private equity and public equity returns are historically correlated because the underlying economic forces driving these asset class returns are quite similar.

The return relationship between the two can vary in the short-term, but over the long-term investors have traditionally believed the return from private equity should carry a premium, based on the illiquidity investors experience.

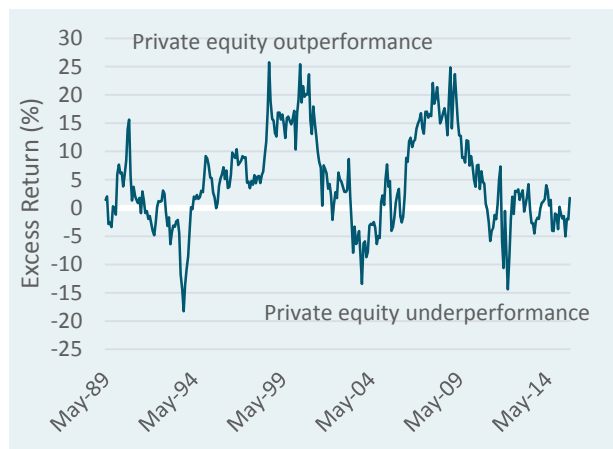
The traditional approach, which we use this year again, is to estimate

an illiquidity premium of 3.0% on top of our U.S. small cap forecast of 5.2%.

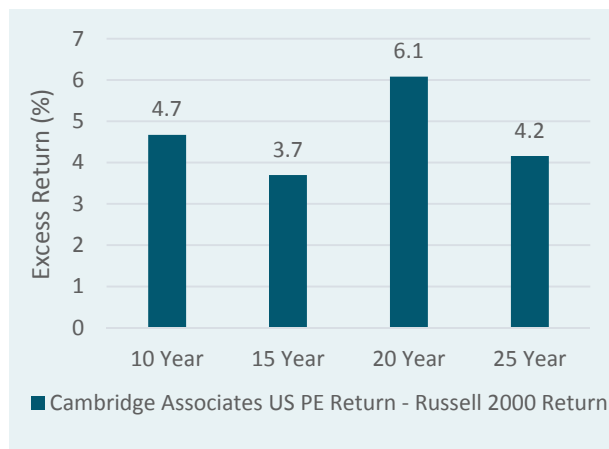
Recent literature has begun to suggest that it may be better to model private equity as being similar to a simple developed equity beta. This work suggests that some or all of the illiquidity premium is retained by the managers in the form of higher fees.

Over the course of 2016 we will be investigating this literature further and may choose to adjust our methodology for next year.

ROLLING 3YR PRIVATE EQUITY EXCESS RETURN (PE – U.S. SMALL CAP)



PRIVATE EQUITY EXCESS RETURN



FORECAST

	10-Year Forecast
Small Cap Forecast	+5.17%
Illiquidity Premium Estimate	+3.00%
Nominal Return	8.17%
Inflation	-2.00%
Real Return	6.19%

Source: Cambridge, Russell, as of 8/31/15

Source: Cambridge, Russell, as of 8/31/15

Source: Verus

Hedge funds

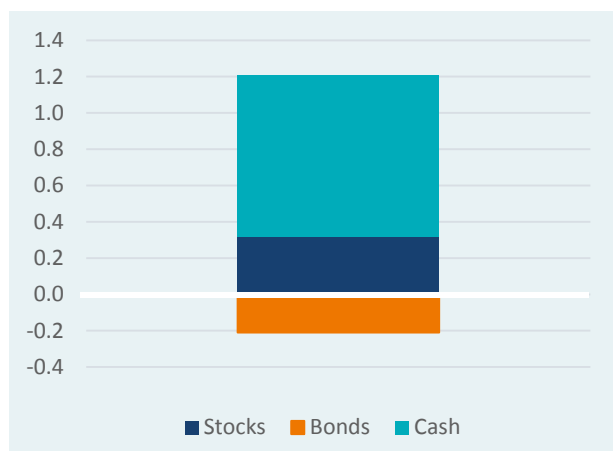
Traditional betas explain approximately half of the variation in hedge fund net of fee returns, while the remaining unexplained portion can be attributed to alternative betas, skill, luck, or biases in the index.

We develop the systematic component of return by applying the historical weights of each traditional beta to our capital market assumptions.

As estimated by Ibbotson-Chen-Zhu 2010, the annualized unexplained portion of net of fee return is approximately 3.0%, which is statistically significant.

We add this estimate to our estimate of return coming from traditional betas to get a total net of fee return.

HISTORICAL BREAKDOWN OF BETAS



Source: Ibbotson-Chen-Zhu 2010

Returns Explained by Systematic Factors

Equity market betas

Other traditional betas (bond, credit)

Alternative betas (value, carry, momentum, volatility)

Returns NOT Explained by Systematic Factors

Skill

Luck

Biases

Source: Ilmanen, Antti. Expected Returns

Traditional Betas	Weight	2016 CMA (asset class average)	10-Year Forecast (weight*2016 CMA)
Equity	32%	6.62%	2.12%
Bonds	-21%	4.59%	-0.96%
Cash	89%	2.02%	1.8%
Traditional Beta Nominal Return			2.95%
Alternative Beta, Skill			3.00%
Nominal Return			5.95%
Inflation			-1.98%
Real Return			3.97%

Source: Verus

Private core real estate/REITS

Performance of the NCREIF property index can be decomposed into an income return (cap rate) and capital return. The return coming from income has historically been more stable than the return derived from capital changes.

The cap rate is the ratio earnings less expenses to price, and does not include extraordinary expenses.

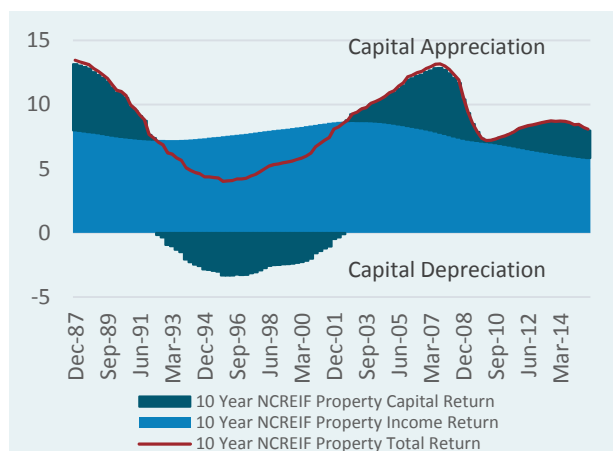
A more accurate measure of the yield investors receive should include non-recurring capital expenditures; we assume a 2.0% capex expenditure.

We also assume income growth will track inflation as inflation is passed through to rents.

Over the last ten years performance between private real estate and REITs is similar, although REITs have experienced a lower Sharpe Ratio due to higher volatility. Compared to private real estate, REITs should provide a higher return due to leverage and a lower return because of liquidity.

We assume the effects of leverage and liquidity offset each other, therefore our forecast for private real estate becomes our forecast for REITs.

TRAILING 10YR NCREIF RETURN COMPOSITION



Source: NCREIF, as of 9/30/15

PRIVATE REAL ESTATE

	Private Real Estate 10-Year Forecast
Current Cap Rate	+4.67%
Capex assumption	-2.00%
Income Growth (Inflation)	+1.98%
Nominal Return	4.65%
Inflation	-1.98%
Real Return	2.67%

Source: Verus

REITS

	REITs 10-Year Forecast
Nominal Return Forecast	4.65%
Inflation	-1.98%
Real Return	2.67%

Source: Verus

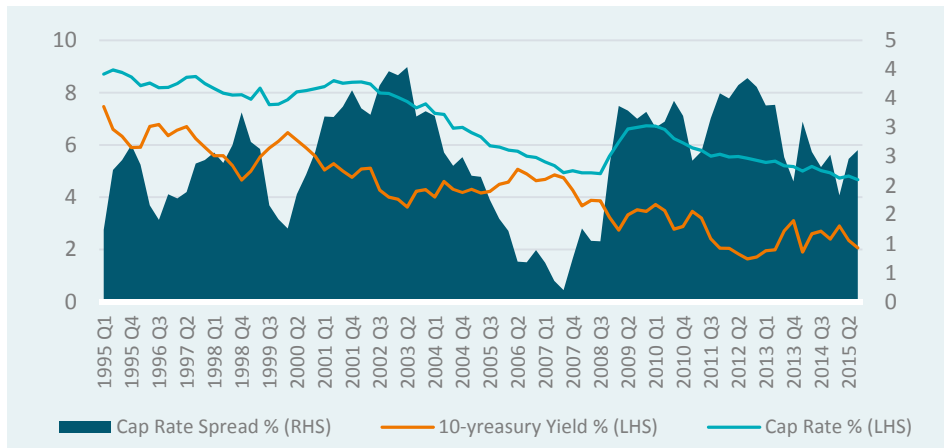
Value-add & opportunistic real estate

Value-add real estate includes properties which are in need of renovation, repositioning, and/or lease-up. Properties may also be classified as value-add due to their lower quality and/or location. Opportunistic real estate can also include development and distressed or very complex transactions. Greater amounts of leverage are usually employed within these strategies. Leverage increases beta (risk) by expanding the purchasing power of property managers via a greater debt load, which magnifies gains or losses. Increased debt also results in greater interest rate sensitivity. An increase/decrease in interest rates may result in a write-up/write-down of fixed rate debt, since debt holdings are typically marked-to-market.

Performance of value-add real estate is composed of the underlying private real estate market returns, plus a premium for additional associated risk, which is modeled here as 200 bps above our core real estate return forecast. Performance of opportunistic real estate strategies rest further out on the risk spectrum, and are modeled as 400 bps above the core real estate return forecast.

Additional expected returns above core real estate are justified by the higher inherent risk of properties which need improvement (operational or physical), price discounts built into properties located in non-core markets, illiquidity, and the ability of real estate managers to potentially source attractive deals in this less-than-efficient marketplace.

CAP RATE SPREADS



Source: NCREIF, as of 9/30/15

	Value-Add 10-Year Forecast	Opportunistic 10-Year Forecast
Premium above core	+2.00%	+4.00%
Current Cap Rate	+4.67%	+4.67%
Capex assumption	-2.00%	-2.00%
Income Growth (inflation)	+1.98%	+1.98%
Nominal Return	6.65%	8.65%
Inflation	-1.98%	-1.98%
Real Return	4.67%	6.67%

Source: Verus

Commodities

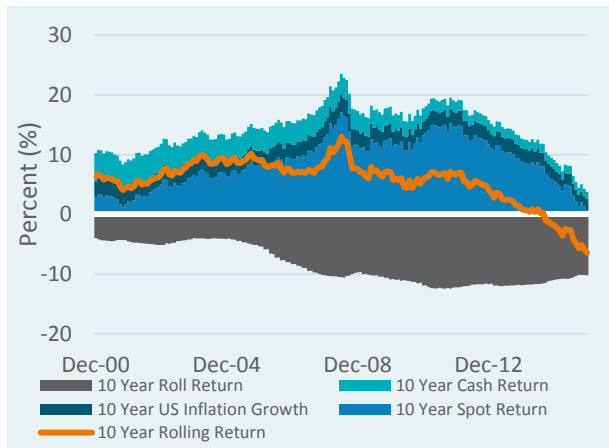
Commodity returns can be decomposed into four sources: collateral return (cash), inflation, spot changes, and roll yield.

Roll return represents either the backwardation or contango present in futures markets. Backwardation occurs when the futures price is below the spot price, which results in an additional profit. Contango occurs when the futures price is above the spot price, and this results in a loss to commodity investors. Historically, futures markets fluctuate between

backwardation and contango. Although roll return can be a large contribution to commodity returns, they are not considered in our forecast as there is no consistent methodology to forecast roll return. Over the most recent 10-year period, roll return has been negative, contributing -10% to the Bloomberg Commodity total return.

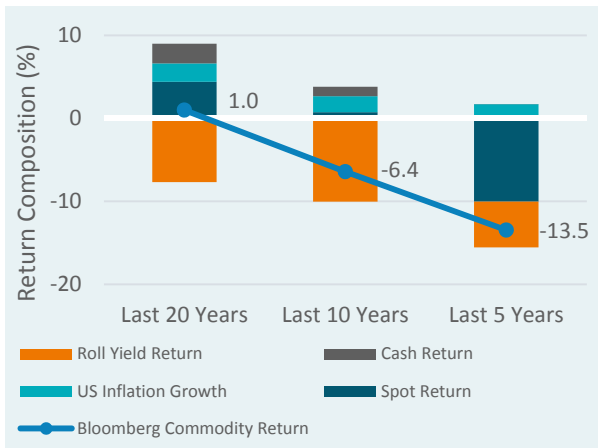
Our 10-year commodity forecast combines collateral (cash) return with inflation to arrive at the nominal return, and subtracts out inflation to arrive at the real return.

TRAILING 10YR BLOOMBERG COMMODITY RETURN COMPOSITION (%)



Source: MPI, Bloomberg, as of 12/31/15

BLOOMBERG COMMODITY RETURN COMPOSITION (%)



Source: MPI, Bloomberg, as of 12/31/15

FORECAST

	10-Year Forecast
Collateral Return (Cash)	+2.02%
Roll Return	+0.00%
Inflation	+1.98%
Nominal Return	4.01%
Inflation	-1.98%
Real Return	2.02%

Source: Verus

Risk parity

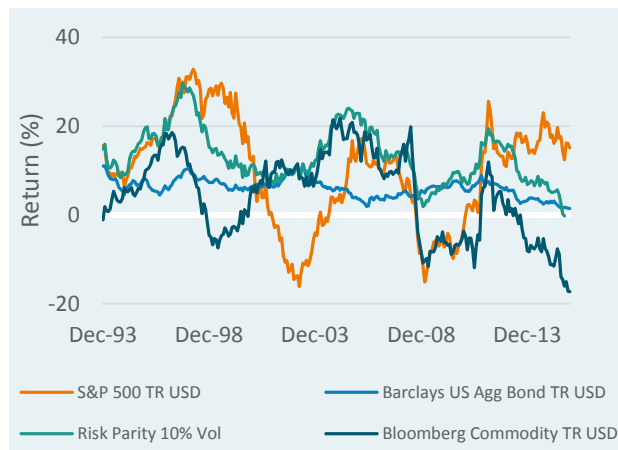
Risk parity is built upon the philosophy of allocating to risk premia rather than to asset classes. Because risk parity by definition aims to diversify risk, the actual asset allocation can appear very different from traditional asset class allocation.

We model risk parity using an assumed Sharpe Ratio of 0.5, which takes into consideration the historical performance of risk parity. The expected return of Risk Parity is determined by this Sharpe Ratio forecast, along with a 10% volatility assumption.

We used a 10-year historical return stream from a market-leading product to represent risk parity correlations relative to the behaviors of each asset class. Through greater diversification exposures, risk parity funds are suggested to be better able to withstand various difficult economic environments - reducing volatility without sacrificing return, over longer periods.

It is difficult to model risk parity, since strategies can differ significantly across firms/strategies. Risk parity almost always requires explicit leverage. The amount of leverage will depend on the specific strategy implementation style, as well as expected correlations and volatility.

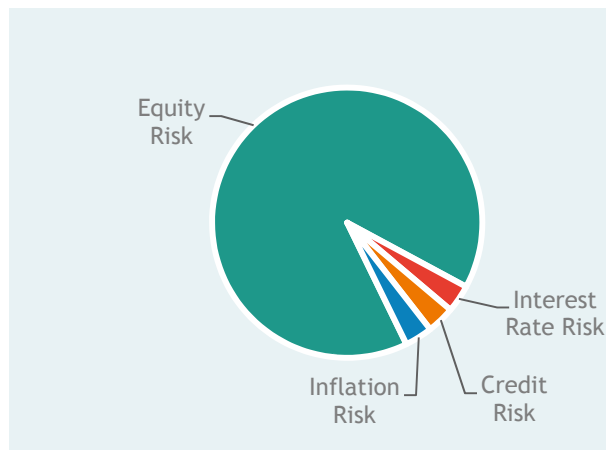
VS TRADITIONAL ASSET CLASSES



Source: MPI, as of 12/31/15

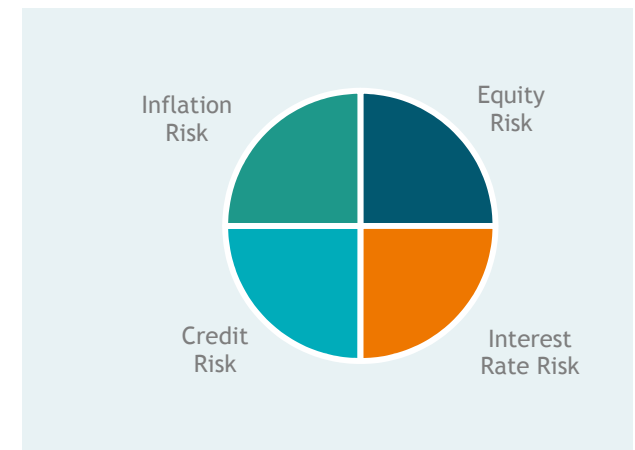
Note: Risk parity is modeled here using the AQR GRP-EL 10% Volatility fund. Performance is back tested prior to February 2015

TRADITIONAL ASSET ALLOCATION



Source: Verus

RISK PARITY

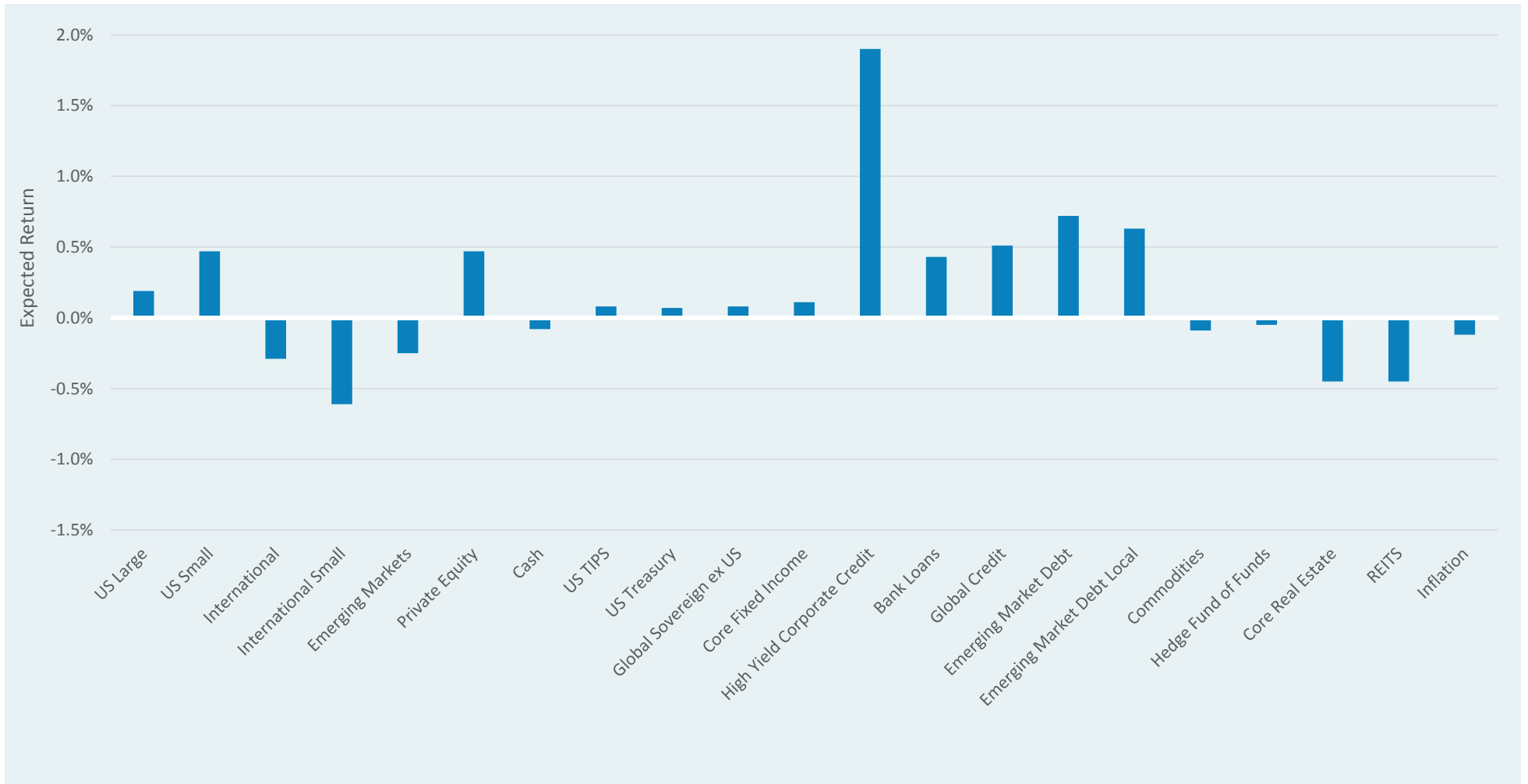


Source: Verus

Appendix

2016 vs 2015 return forecast

2016 VS 2015 RETURN FORECAST



The currency effect

- This last year has re-emphasized the important effect that currency returns can have on unhedged international portfolios. Verus has traditionally taken the view that we do not attempt to forecast currency market movement.
- When forecasting currencies, the “no opinion” position is reflected in the currency forward markets. This market prices currencies at a range of forward dates based on interest rate differentials - they represent the **SPOT** currency price for **FORWARD** delivery. Divergence from these rates is described as currency surprise.
- Investors with no active opinion regarding which direction exchange rates are headed would expect to earn the local currency return of foreign assets after correcting for the forward exchange rate (as priced by the currency forward market). We describe these returns as “hedged”.
- An investor with no active view regarding which direction exchange rates are headed would expect the unhedged and hedged returns from a foreign asset exposure to be identical.
- We therefore forecast foreign assets in local currency terms, then correct for expected currency movement based on currency forward market prices. We do this using 10-year forward rates. Because Verus has not historically expressed a view on currency, this is directly comparable to our previous forecasts.

Currency adjustment

THE EXPECTED CURRENCY EFFECT CAN BE CALCULATED BY IDENTIFYING THE FOLLOWING:

1. Today's currency spot rate
2. The price of a forward currency contract with a maturity equal to our forecasting horizon (10 years)
3. The annualized currency effect implied by this currency contract

EQUATION:

$$[(10 \text{ year contract rate})/(\text{spot rate})]^{(1/\text{years})}-1$$

FOR EXAMPLE:

If a US investor wishes to determine the likely currency affect of investing in Euro-denominated investments, and the EURUSD is currently trading at 1.13 (the spot rate), and a 10-year EURUSD currency forward contract is trading at 1.30, then the investor can use the equation below to calculate the implied currency effect:

$$(1.30/1.13)^{(1/10)} - 1 = 1.41\%$$

This tells us that the expected annualized currency effect for a US investor investing in Euro-denominated assets is a +1.41% currency return.

Correlation assumptions

	Cash	US Large	US Small	Developed Large	Developed Small	EM	Global Equity	PE	US TIPS	US Treasury	Global Sovereign exUS	US Core	US Core Plus	Short-Term Govt/Credit	Short-Term Credit	Long-Term Credit	US HY	Bank Loans	Global Credit	EMD USD	EMD Local	Commodities	Hedge Funds	Real Estate	REITs	Risk Parity	Inflation	
Cash	1																											
US Large	-0.1	1																										
US Small	-0.1	0.9	1																									
Developed Large	-0.1	0.9	0.8	1																								
Developed Small	-0.1	0.8	0.8	1.0	1																							
EM	0.0	0.8	0.7	0.9	0.9	1																						
Global Equity	-0.1	0.9	0.8	0.9	0.9	0.9	1																					
PE	-0.2	0.7	0.7	0.8	0.8	0.7	0.7	1																				
US TIPS	0.0	0.2	0.1	0.3	0.3	0.3	0.3	0.1	1																			
US Treasury	0.1	-0.3	-0.3	-0.2	-0.2	-0.2	-0.2	-0.2	0.6	1																		
Global Sovereign exUS	0.1	0.2	0.2	0.4	0.4	0.4	0.3	0.1	0.6	0.5	1																	
US Core	0.1	0.0	0.0	0.1	0.1	0.2	0.1	0.0	0.8	0.9	0.6	1																
US Core Plus	-0.2	0.3	0.3	0.5	0.5	0.5	0.4	0.4	0.7	0.5	0.5	0.7	1															
Short-Term Govt/Credit	0.4	-0.1	-0.1	0.1	0.1	0.1	0.0	-0.2	0.6	0.6	0.6	0.7	0.4	1														
Short-Term Credit	0.1	0.3	0.2	0.4	0.4	0.4	0.3	-0.1	0.4	0.1	0.4	0.5	0.4	0.7	1													
Long-Term Credit	-0.1	0.3	0.2	0.4	0.4	0.4	0.3	0.1	0.6	0.5	0.5	0.8	0.8	0.5	0.6	1												
US HY	-0.1	0.7	0.7	0.8	0.8	0.8	0.8	0.6	0.4	-0.2	0.3	0.2	0.6	0.1	0.5	0.5	1											
Bank Loans	-0.1	0.6	0.5	0.5	0.6	0.5	0.5	0.2	0.2	-0.4	0.0	0.0	0.2	-0.1	0.6	0.3	0.8	1										
Global Credit	0.0	0.6	0.5	0.8	0.8	0.7	0.7	0.5	0.6	0.2	0.7	0.6	0.8	0.5	0.6	0.7	0.8	0.5	1									
EMD USD	-0.1	0.6	0.5	0.7	0.7	0.7	0.7	0.6	0.7	0.2	0.5	0.6	0.8	0.3	0.5	0.7	0.8	0.5	0.9	1								
EMD Local	0.1	0.7	0.6	0.8	0.8	0.8	0.8	0.6	0.5	0.1	0.6	0.4	0.5	0.3	0.4	0.5	0.7	0.4	0.8	0.8	1							
Commodities	0.1	0.5	0.4	0.6	0.6	0.6	0.6	0.2	0.3	-0.2	0.4	0.1	0.2	0.2	0.4	0.2	0.5	0.4	0.6	0.5	0.6	1						
Hedge Funds	-0.1	0.7	0.6	0.8	0.8	0.8	0.8	0.6	0.2	-0.3	0.1	0.0	0.4	-0.1	0.3	0.2	0.6	0.5	0.6	0.5	0.5	0.6	1					
Real Estate	-0.1	0.3	0.3	0.3	0.3	0.3	0.6	0.3	0.0	-0.1	0.1	0.0	0.1	-0.1	0.0	0.1	0.2	0.0	0.2	0.2	0.2	0.0	0.2	1				
REITs	-0.1	0.7	0.8	0.7	0.6	0.6	0.7	0.6	0.3	-0.1	0.3	0.3	0.4	0.0	0.2	0.4	0.7	0.5	0.6	0.6	0.6	0.3	0.4	0.4	1			
Risk Parity	0.1	0.5	0.4	0.5	0.5	0.5	0.5	0.0	0.6	0.3	0.6	0.6	0.4	0.5	0.7	0.6	0.5	0.4	0.7	0.6	0.6	0.6	0.4	-0.1	0.4	1		
Inflation	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.1	0.1	-0.3	0.0	-0.3	0.0	-0.2	-0.1	-0.3	0.2	0.3	0.1	0.1	0.1	0.3	0.3	0.0	0.1	0.0	0.0	1

Note: Correlation assumptions are based on the last ten years. Private Equity and Real Estate correlations are especially difficult to model – we have therefore used BarraOne correlation data to strengthen these correlation estimates.

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