



## **RISK - ADJUSTED RETURN:** Quarterly Update (2015 Q4)

$$S = \frac{R - R_f}{\sigma}$$

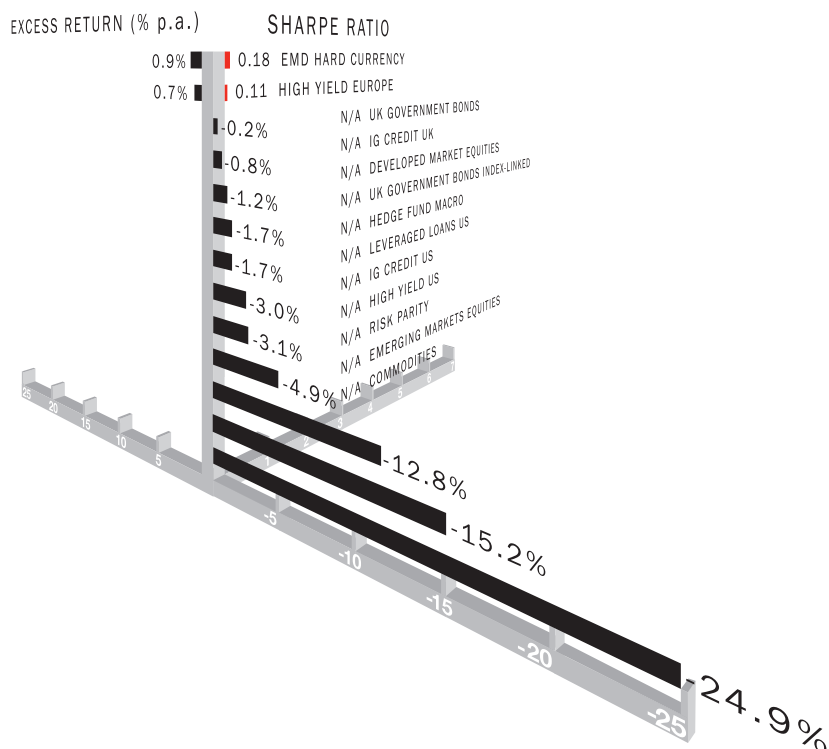
R = return  
R<sub>f</sub> = risk free rate  
σ = volatility of excess returns

## 1 YEAR

**31/12/2014**

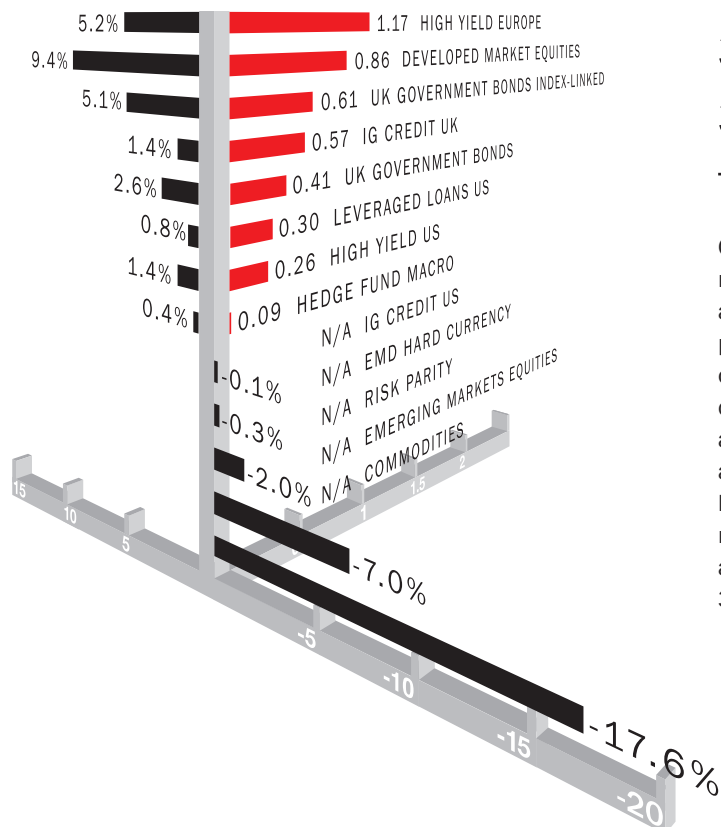
**31/12/2015**

Over a 1-year period the majority of the asset classes performed poorly, with only two of the 15 analysed asset classes posting positive returns. Commodities continued to be the worst performer, exhibiting negative returns of -24.9% p.a. and high volatility. Emerging Market Equities and Risk Parity followed suit, posting returns of -15.2% p.a. and -12.8% p.a. respectively. Emerging Market Debt was the best performer on a risk-adjusted basis with a Sharpe ratio of just 0.18. Although useful for evaluating performance on a short-term basis, please note that one year is a short timeframe over which to assess the risk and return characteristics of different asset classes and strategies.



EXCESS RETURN (% p.a.)

SHARPE RATIO



## 3 YEAR

**31/12/2012**

**31/12/2015**

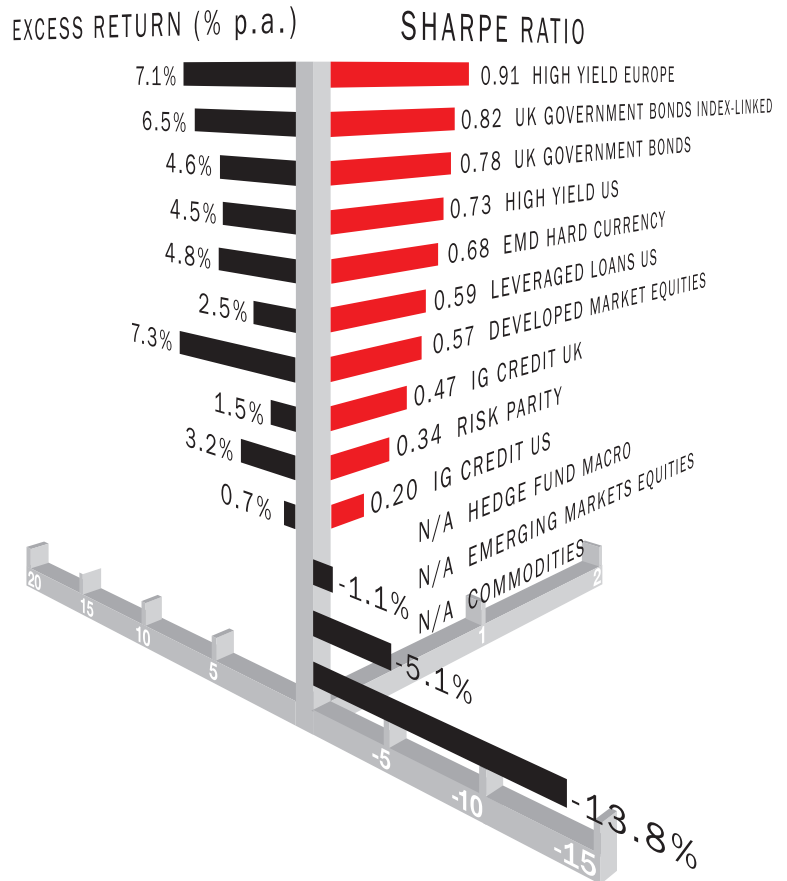
Over a 3-year period, European High Yield maintained the highest risk-adjusted return with a Sharpe ratio of 1.17. Developed Market Equities produced the highest excess returns over the period of 9.4% p.a., 4.2% p.a. above any other asset class. However, it was still one of the most volatile asset classes with volatility of 10.9%. Commodities and Emerging Market Equities exhibited the largest negative returns (-17.6% p.a. and -7.0% p.a. respectively) as well as the highest volatility (12.9% and 14.4% of the analysed asset classes over the 3-year period).

## 5 YEAR

**31/12/2010**

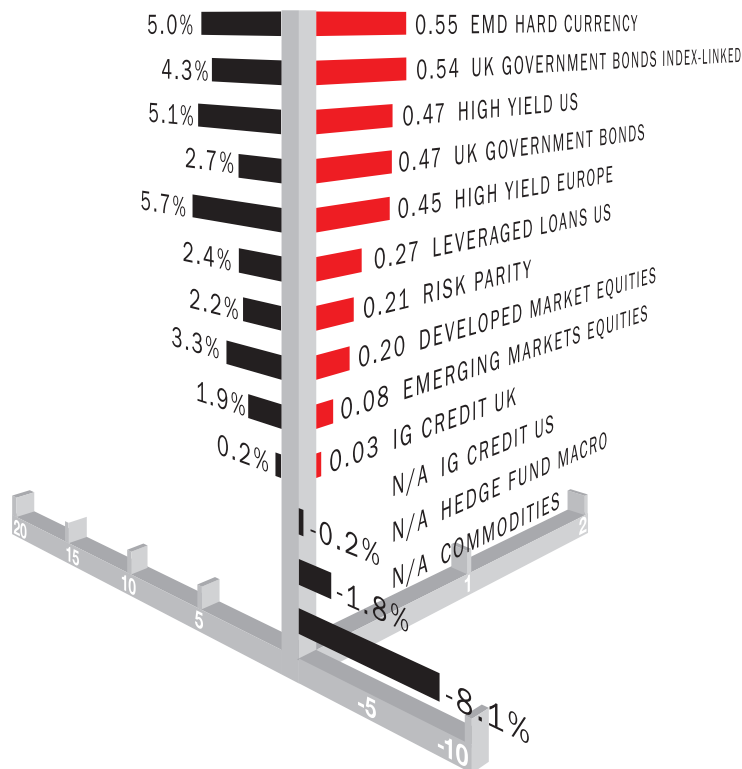
**31/12/2015**

European High Yield was the best performer on a risk-adjusted basis over a 5-year horizon with a Sharpe ratio of 0.91. UK Nominal and Index-Linked government bonds were the next best performing asset classes on a risk-adjusted basis with Sharpe ratios of 0.78 and 0.82 respectively. Developed Markets Equities posted the highest excess returns of 7.3% p.a., however similar to the 3-year horizon it was one of the most volatile asset classes, resulting in a muted Sharpe ratio. As with the shorter time horizons, Commodities and Emerging Market Equities posted the worst excess returns of -13.8% p.a. and -5.1% p.a. respectively.



EXCESS RETURN (% p.a.)

SHARPE RATIO



## 10 YEAR

**31/12/2005**

**31/12/2015**

Over a 10-year period, Emerging Market Debt was the top performer on a risk-adjusted basis with a Sharpe ratio of 0.55. European and US High Yield posted the highest excess returns of 5.7% p.a. and 5.1% p.a. respectively, however the returns attributable to these asset classes were considerably volatile, and therefore had moderate Sharpe ratios. Commodities and Macro Hedge Funds continued to produce negative excess returns with returns of -8.1% p.a. and -1.8% p.a. respectively. The analysis over this period includes the impact of the 2008 financial crisis, as a result the average volatility over the analysed asset classes is 2.9% p.a. higher compared to the 5-year analysis in Q4 2015.



# APPENDIX

Here we look at the risk-adjusted performance across asset classes for the past 1, 3, 5 and 10 years. The calculations that underlie this analysis use monthly data sourced from Bloomberg. Excess return is taken to be the annualised return of the asset class for the relevant period above the risk free rate which is calculated using the UK 3 Month LIBOR total return index. Volatility is the standard deviation of monthly excess returns. For all asset classes apart from Investment Grade Credit and High Yield Bonds, total return indices are used to calculate the absolute returns. For Investment Grade and High Yield, interest rate hedging is assumed and the excess return over swaps is used for the excess return.

## 1 YEAR

Asset Class	Benchmark Index	Excess Return	Volatility	Sharpe Ratio
EMD Hard Currency	JP Morgan EMBI	0.9%	5.1%	0.18
High Yield Europe	ML EUR High Yield TR	0.7%	6.0%	0.11
UK Government Bonds	FTSE actuaries uk gilts TR all	-0.2%	7.9%	N/A
IG Credit UK	ML Sterling Corp&Collateralised Ex Sub - excess swap rtn	-0.8%	2.7%	N/A
Developed Market Equities	MSCI Daily TR Net World USD	-1.2%	13.8%	N/A
UK Government Bonds Index-Linked	FTSE actuaries uk index linked gilts TR all	-1.7%	9.5%	N/A
Hedge Fund Macro	HFRX Macro Index	-1.7%	6.1%	N/A
Leveraged Loans US	S&P US LL index TR	-3.0%	2.8%	N/A
IG Credit US	ML US Corp Master - excess swap rtn	-3.1%	2.1%	N/A
High Yield US	ML US High Yield TR	-4.9%	6.4%	N/A
Risk Parity	Salient Risk Parity Index	-12.8%	8.5%	N/A
Emerging Markets Equities	MSCI EM TR Index	-15.2%	17.7%	N/A
Commodities	DJ-UBS Commodity Index TR	-24.9%	15.7%	N/A

## 3 YEAR

Asset Class	Benchmark Index	Excess Return	Volatility	Sharpe Ratio
High Yield Europe	ML EUR High Yield TR	5.2%	4.4%	1.17
Developed Market Equities	MSCI Daily TR Net World USD	9.4%	10.9%	0.86
UK Government Bonds Index-Linked	FTSE actuaries uk index linked gilts TR all	5.1%	8.4%	0.61
IG Credit UK	ML Sterling Corp&Collateralised Ex Sub - excess swap rtn	1.4%	2.5%	0.57
UK Government Bonds	FTSE actuaries uk gilts TR all	2.6%	6.2%	0.41
Leveraged Loans US	S&P US LL index TR	0.8%	2.5%	0.30
High Yield US	ML US High Yield TR	1.4%	5.4%	0.26
Hedge Fund Macro	HFRX Macro Index	0.4%	4.0%	0.09
IG Credit US	ML US Corp Master - excess swap rtn	-0.1%	2.0%	N/A
EMD Hard Currency	JP Morgan EMBI	-0.3%	7.1%	N/A
Risk Parity	Salient Risk Parity Index	-2.0%	10.6%	N/A
Emerging Markets Equities	MSCI EM TR Index	-7.0%	14.4%	N/A
Commodities	DJ-UBS Commodity Index TR	-17.6%	12.9%	N/A

## 5 YEAR

Asset Class	Benchmark Index	Excess Return	Volatility	Sharpe Ratio
High Yield Europe	ML EUR High Yield TR	7.1%	7.8%	0.91
UK Government Bonds Index-Linked	FTSE actuaries uk index linked gilts TR all	6.5%	8.0%	0.82
UK Government Bonds	FTSE actuaries uk gilts TR all	4.6%	5.9%	0.78
High Yield US	ML US High Yield TR	4.5%	6.2%	0.73
EMD Hard Currency	JP Morgan EMBI	4.8%	7.1%	0.68
Leveraged Loans US	S&P US LL index TR	2.5%	4.2%	0.59
Developed Market Equities	MSCI Daily TR Net World USD	7.3%	12.8%	0.57
IG Credit UK	ML Sterling Corp&Collateralised Ex Sub - excess swap rtn	1.5%	3.2%	0.47
Risk Parity	Salient Risk Parity Index	3.2%	9.5%	0.34
IG Credit US	ML US Corp Master - excess swap rtn	0.7%	3.4%	0.20
Hedge Fund Macro	HFRX Macro Index	-1.1%	4.0%	N/A
Emerging Markets Equities	MSCI EM TR Index	-5.1%	17.9%	N/A
Commodities	DJ-UBS Commodity Index TR	-13.8%	15.0%	N/A

## 10 YEAR

Asset Class	Benchmark Index	Excess Return	Volatility	Sharpe Ratio
EMD Hard Currency	JP Morgan EMBI	5.0%	9.1%	0.55
UK Government Bonds Index-Linked	FTSE actuaries uk index linked gilts TR all	4.3%	8.0%	0.54
High Yield US	ML US High Yield TR	5.1%	10.8%	0.47
UK Government Bonds	FTSE actuaries uk gilts TR all	2.7%	5.8%	0.47
High Yield Europe	ML EUR High Yield TR	5.7%	12.7%	0.45
Leveraged Loans US	S&P US LL index TR	2.4%	9.0%	0.27
Risk Parity	Salient Risk Parity Index	2.2%	10.5%	0.21
Developed Market Equities	MSCI Daily TR Net World USD	3.3%	16.7%	0.20
Emerging Markets Equities	MSCI EM TR Index	1.9%	24.1%	0.08
IG Credit UK	ML Sterling Corp&Collateralised Ex Sub - excess swap rtn	0.2%	4.4%	0.03
IG Credit US	ML US Corp Master - excess swap rtn	-0.2%	6.1%	N/A
Hedge Fund Macro	HFRX Macro Index	-1.8%	7.1%	N/A
Commodities	DJ-UBS Commodity Index TR	-8.1%	18.6%	N/A



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**Benjamin Dewhurst**

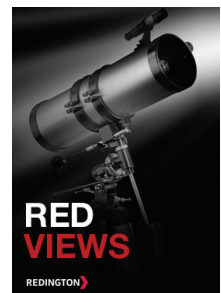
Analyst | Investment Consulting

Tel: 0203 463 8015

Email: [benjamin.dewhurst@redington.co.uk](mailto:benjamin.dewhurst@redington.co.uk)



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**REDINGTON** 

Austin Friars House,  
2 – 6 Austin Friars,  
London, EC2N 2HD  
[www.redington.co.uk](http://www.redington.co.uk)

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