

Thinking like a CIO

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Surviving in a risk dominated world



Differentiated investment perspectives

Fixed Income in a post QE world

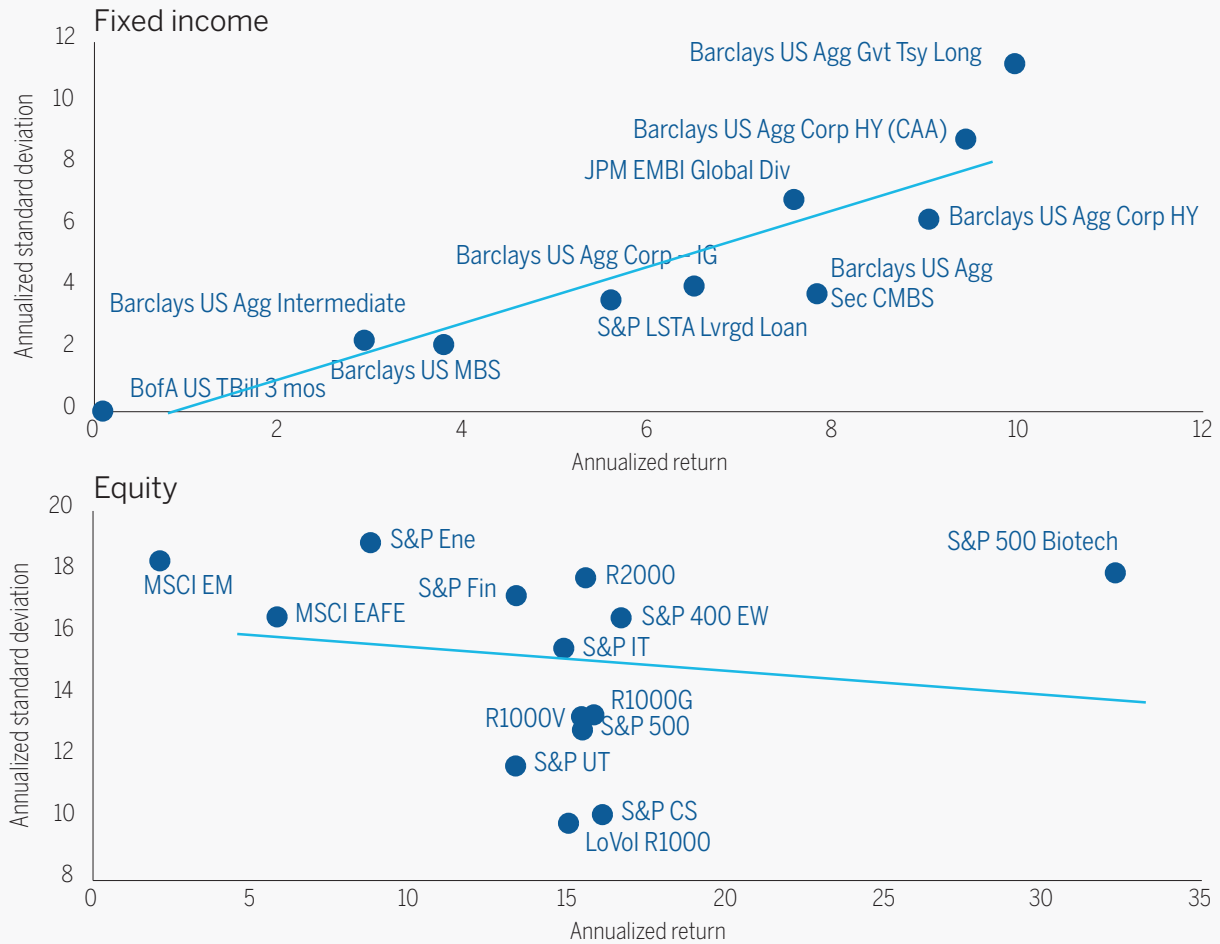
Risk outliers

Using risk factors to improve results

Fixed income in a post QE world

Correlation between risk and returns

Five years ended 31 December 2014



Fixed Income in a post QE world

Implications for clients

“Smart beta” makes even more sense in fixed income – sharpe vs information ratio

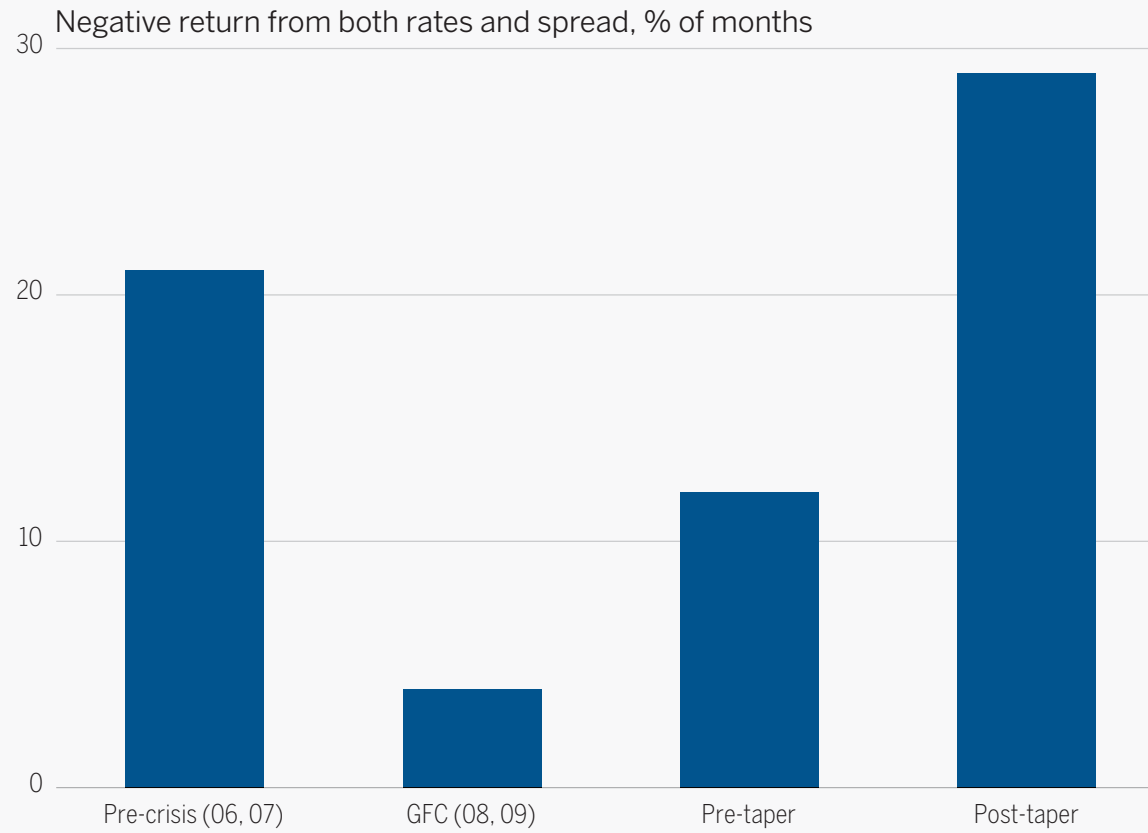
Most are poorly positioned, benchmark relative dominates

Consider total return approaches – balance beta and alpha

Be opportunistic – risk markets will provide many opportunities to buy and sell

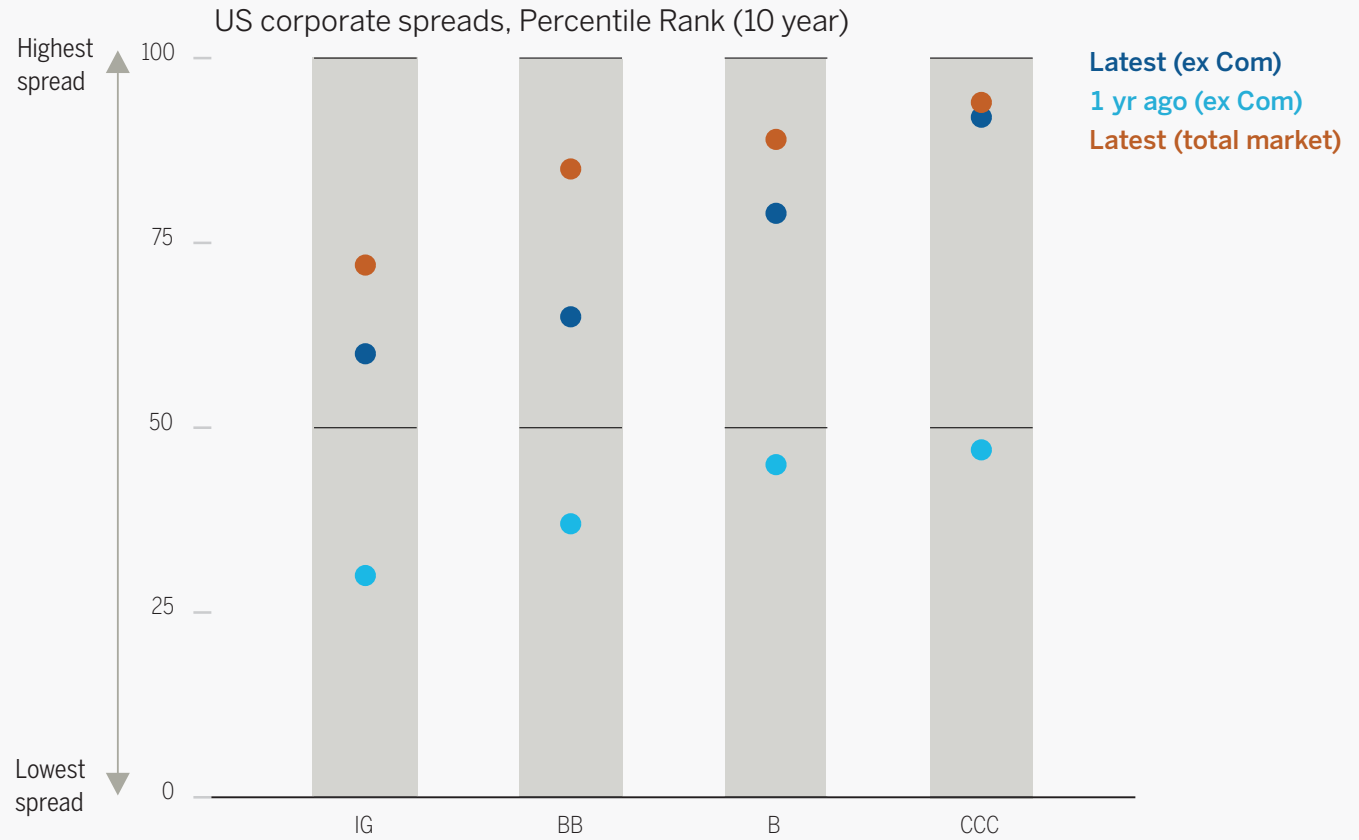
Duration may not be a good risk hedge

Shifting Fixed Income risk factor regime?



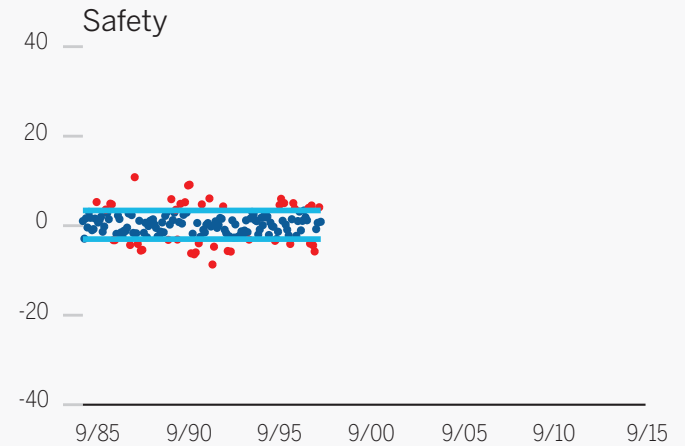
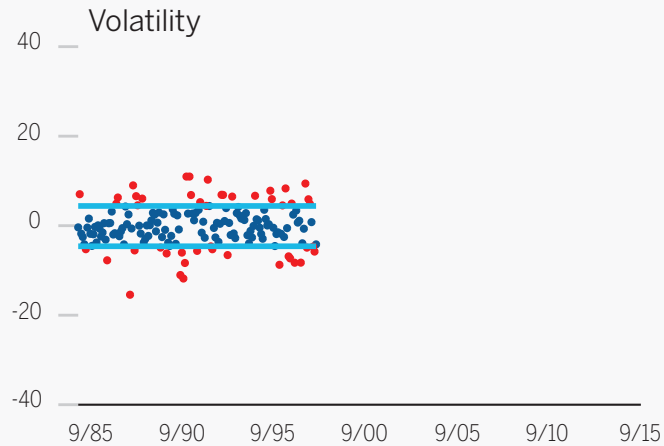
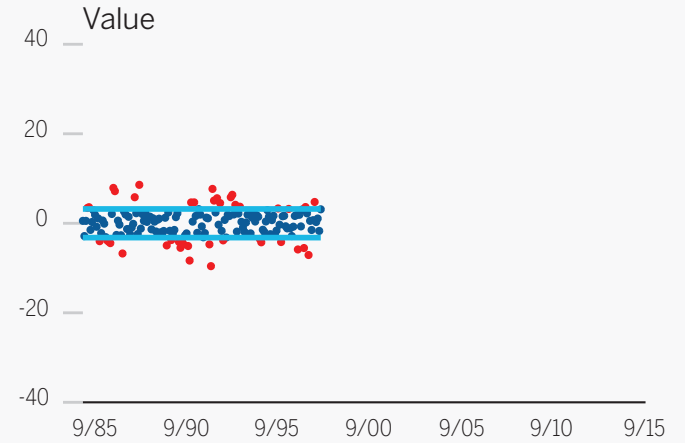
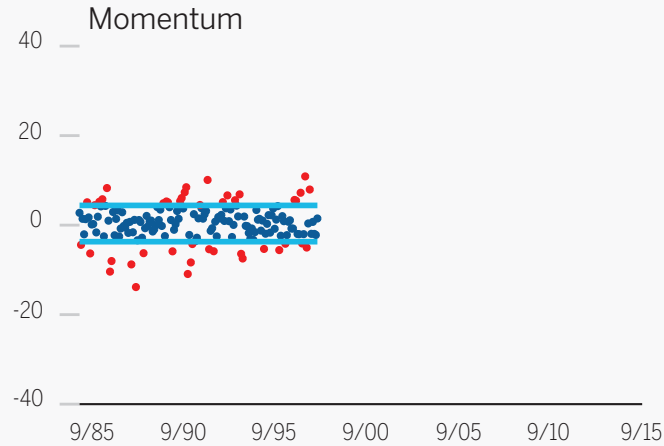
Sources: Merrill Lynch, Barclays Live, FactSet.

Valuations increasingly attractive



Sources: FactSet, Barclays Live

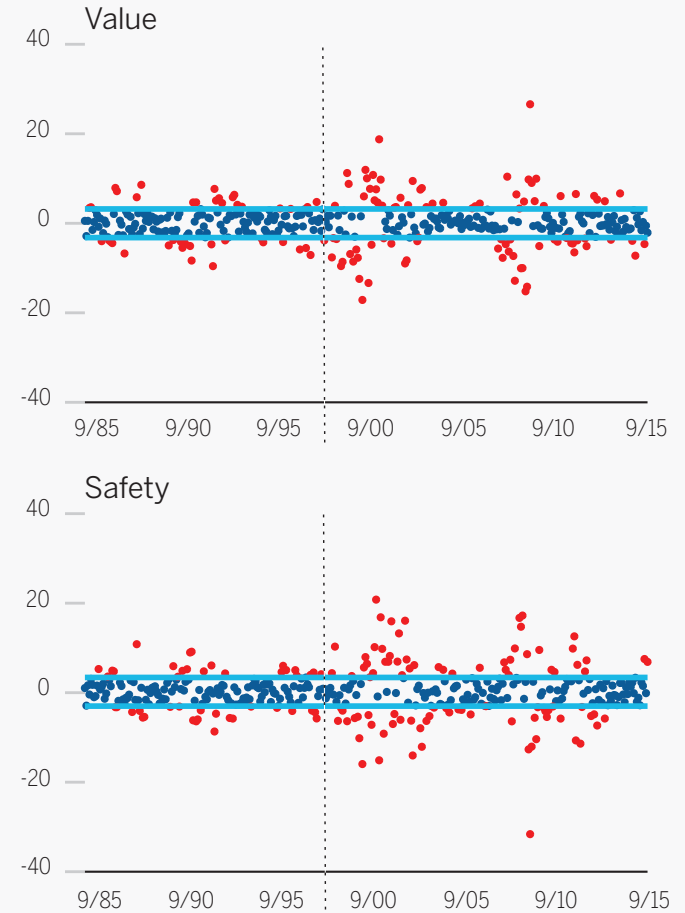
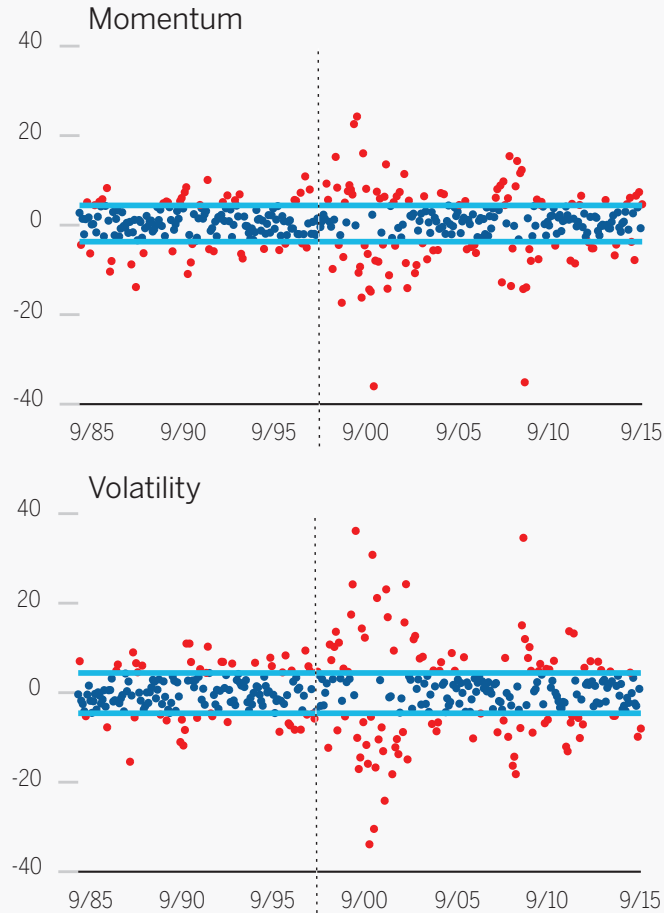
Risk factor returns – Pre 1998



Source: Barra US Long-Term Risk Model (USE3L). | Y-axis represents style factor returns for the Russell 1000 Index based on USE3L factors. | Quintile 1 minus Quintile 5 monthly return spread, market cap weighted. | Safety is a proprietary Wellington Management factor and is not sourced directly from Barra. Safety is the average of EPS volatility, leverage, and price volatility factors. | The red dots highlight outliers outside of the blue bands, which vary based on the most extreme range for each factor. The solid blue bands are ± 1 standard deviation from the in-sample mean based on the time period of 31 December 1984 – 31 December 1997. | December 1997 was selected by the Investment Strategy and Risk team to break up the time periods prior to Long Term Capital Management, to highlight their observation that there have been more extreme style factor returns in recent periods. Returns are gross of fees. | **PAST RESULTS ARE NOT NECESSARILY INDICATIVE OF FUTURE RESULTS AND AN INVESTMENT CAN LOSE VALUE.**

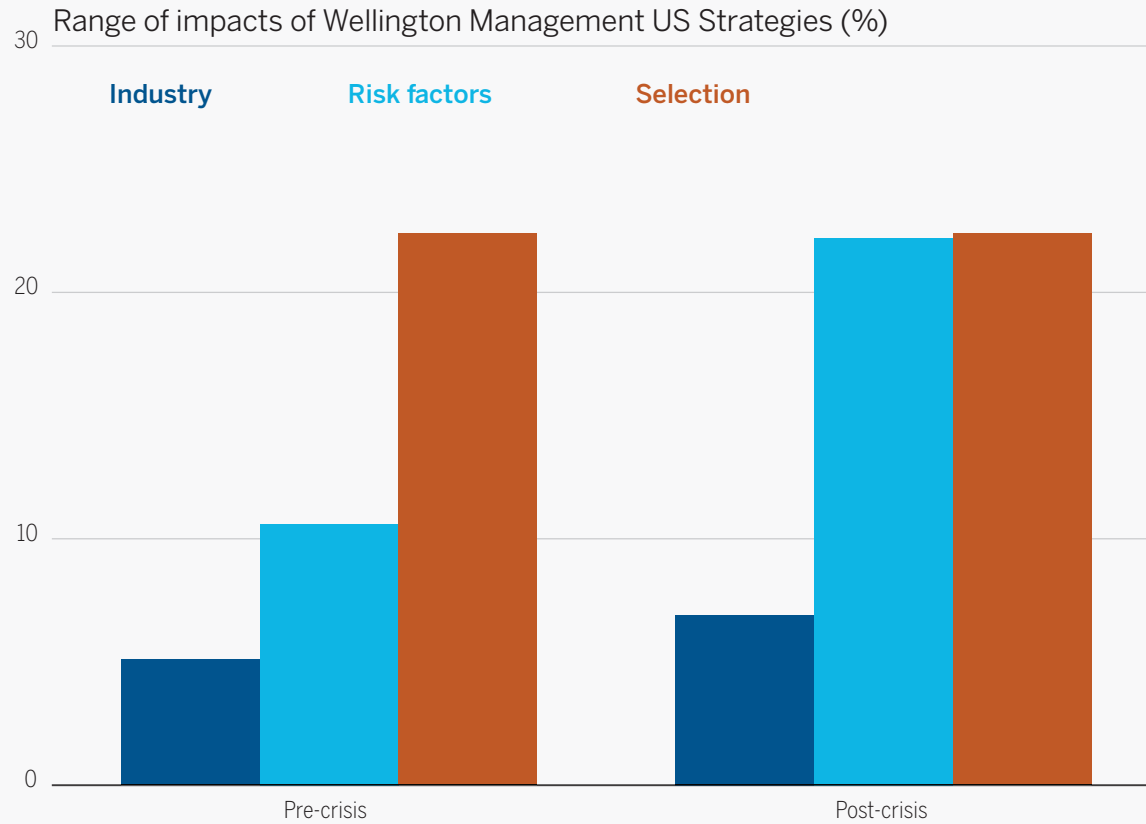
Risk factor returns – Now

Source: Barra US Long-Term Risk Model (USE3L). | Y-axis represents style factor returns for the Russell 1000 Index based on USE3L factors. | Quintile 1 minus Quintile 5 monthly return spread, market cap weighted. | Safety is a proprietary Wellington Management factor and is not sourced directly from Barra. Safety is the average of EPS volatility, leverage, and price volatility factors. | The red dots highlight outliers outside of the blue bands, which vary based on the most extreme range for each factor. The solid blue bands are ± 1 standard deviation from the in-sample mean based on the time period of 31 December 1984 – 31 December 1997. Those lines are continued into the out-of-sample period 1 January 1998 – 30 September 2015. | December 1997 was selected by the Investment Strategy and Risk team to break up the time periods prior to Long Term Capital Management, to highlight their observation that there have been more extreme style factor returns in recent periods. Returns are gross of fees. | **PAST RESULTS ARE NOT NECESSARILY INDICATIVE OF FUTURE RESULTS AND AN INVESTMENT CAN LOSE VALUE.**



What's been happening

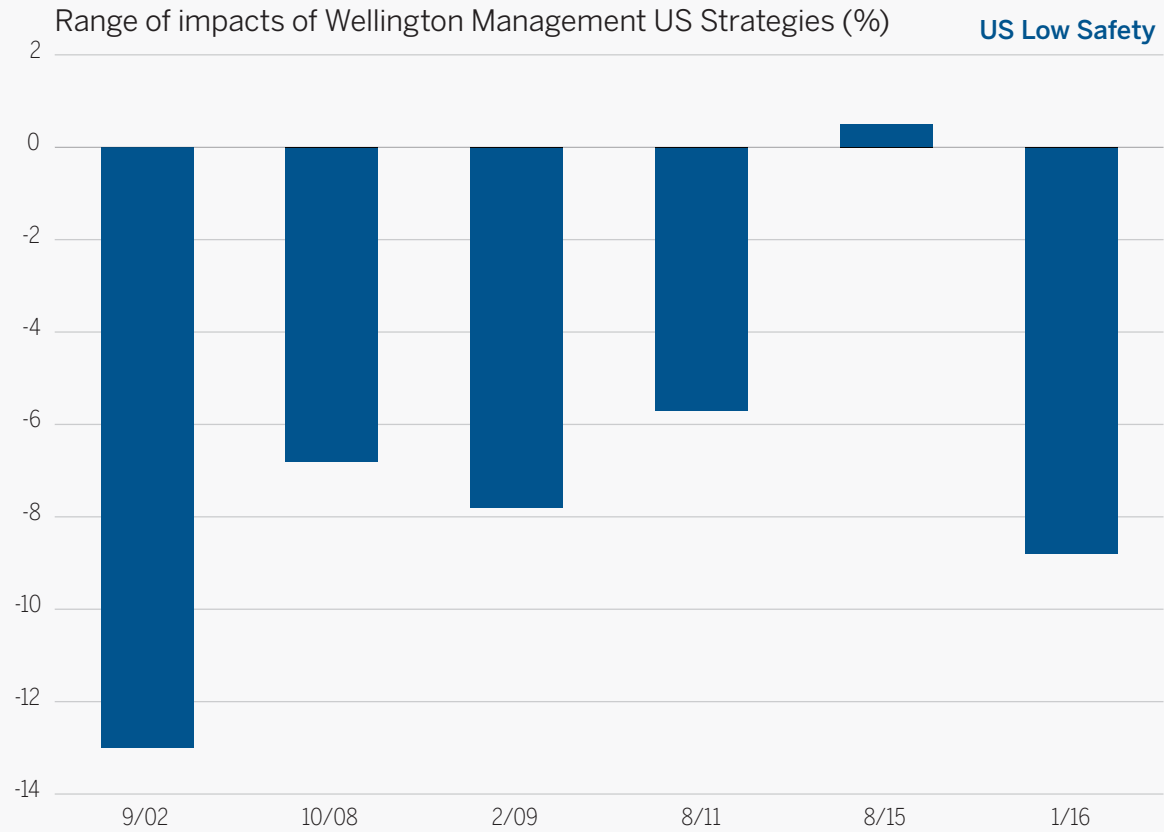
Risk factors increasing impact on performance



Sources: FactSet and Wellington Management Bottom Up Attribution | Pre-Crisis: average annual impact 2005 – 2007, Post-Crisis: average annual impact 2009 – 2012

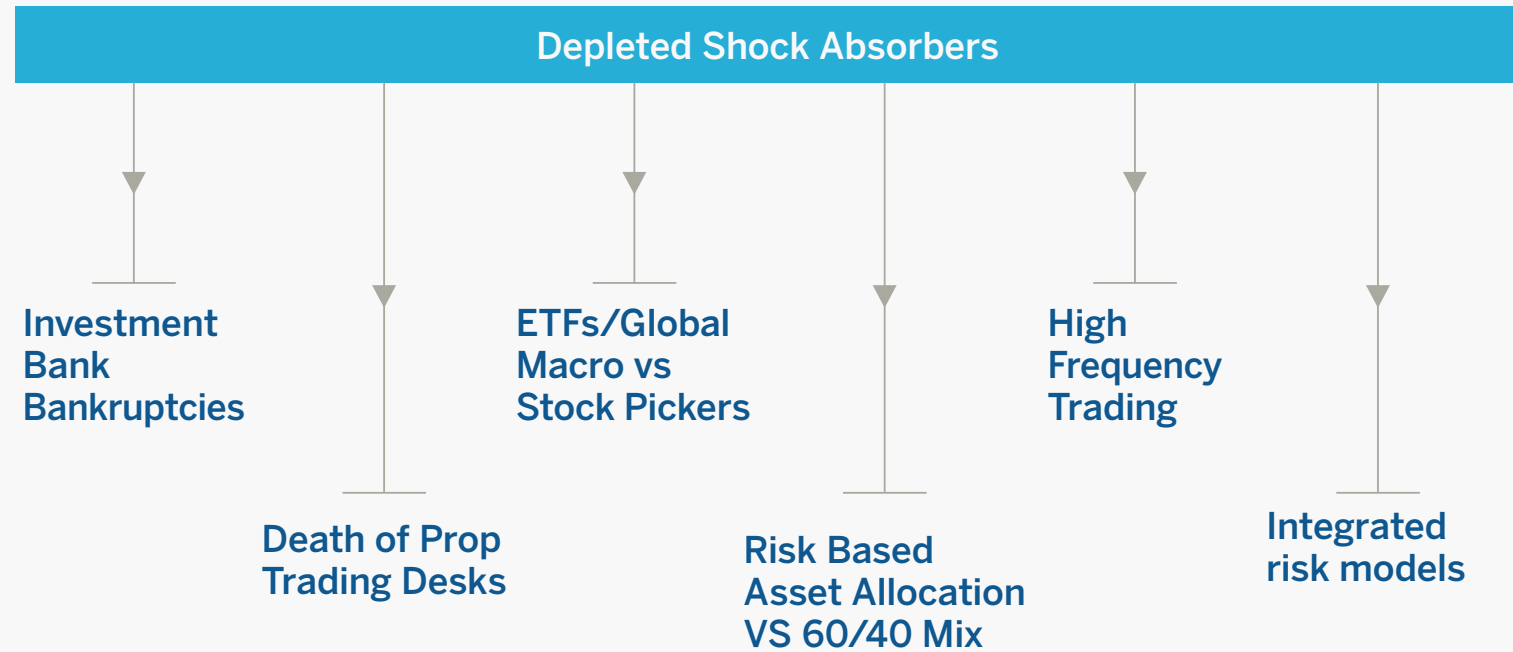
US Low Safety relative to market

Risk aversion on par with 2002, 2008, and 2011



Source: FactSet | US Safety is the average of EPS variability, leverage, and price volatility factors. Low Safety implies a high risk factor.

Drivers of increased risk outliers



Investing in a risk outlier world

Increase knowledge and awareness

Allocate capital on a contrarian basis

Be opportunistic – risk cycles seem to be accelerating

Use a risk framework to achieve better outcomes

Wellington Management ideas for the “Smart Beta” market

Equity

- Active/Passive Opportunities (Risk)
- Risk Factor Opportunities (Risk)
- Emerging Markets Systematic Equity (Quant)
- GEAR (Quant)
- Global Low Volatility Core (Quant)
- Hedged Alpha Opportunities (Risk)

Fixed Income

- ELD Advanced Beta (FI)
- Credit ESG Advanced Beta (FI)
- GSS (FI)
- IG Buy and Maintain (FI)

Multi-Asset

- Alt Beta (AA)
- ALTA (AA)
- Global Managed Risk (AA)
- MAAR (AA)

Hedge Fund Aggregate performance

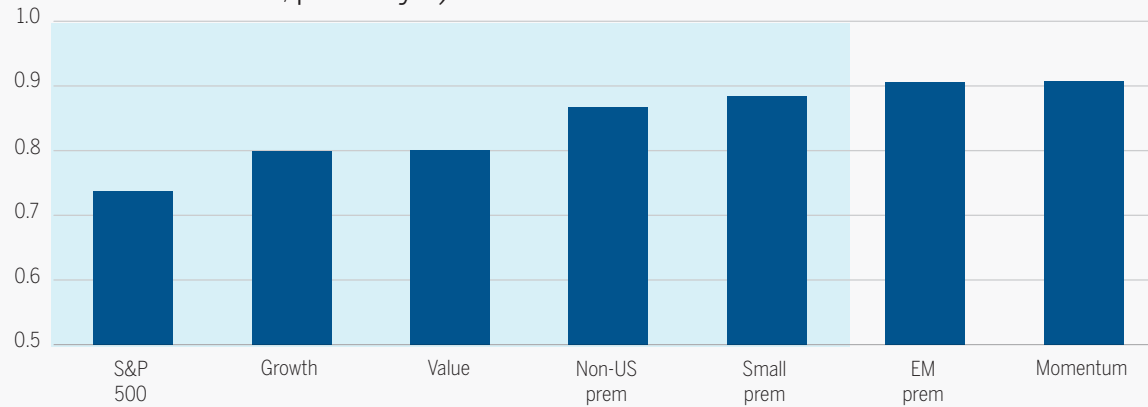
On average, hedge funds¹ maintained a net market exposure of 0.42 (S&P 500 Model² Coefficient, rolling 3 yrs, 1998 – September 2015)



¹"Hedge Funds" are generalized by the HFRI Equity Hedge (Total) Index | ²Model is a linear regression of market (S&P 500, Non-US Premium, Small-Cap Premium, EM vs DM Premium) and Barra (Growth, Value, Momentum) factor returns to the HFRI Equity Hedge (Total) Index | ³Net market exposure of HFRI Equity Hedge (Total) Index to S&P 500 Index using the S&P 500 Model. | As of September 2015 | This analysis reflects index performance only. Past performance is not necessarily indicative of future results

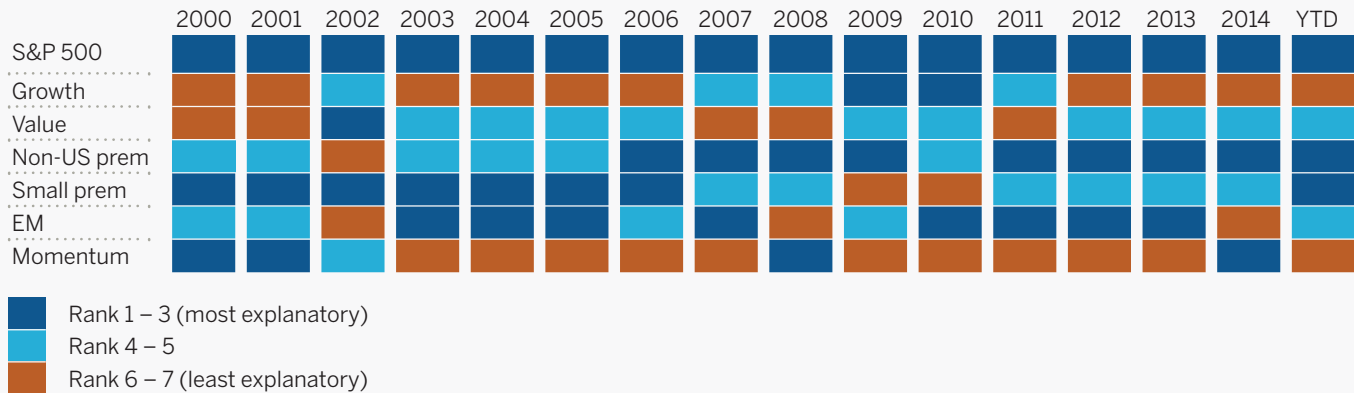
Hedge Fund Aggregate performance

Nearly 90% of hedge fund returns are explained by 5 factors (R² when adding factors to model¹, past 10 yrs)



¹Model is a linear regression of market (S&P 500, Non-US Premium, Small-Cap Premium, EM vs DM Premium) and Barra (Growth, Value, Momentum) factor returns to the HFRI Equity Hedge (Total) Index | ²Calculated using regression of past three years for each time period noted. S&P 500 = S&P 500 Index; Growth, Value, and Momentum = Barra GEM3L factors; non-US premium, small premium = Wellington Management proprietary factors; EM = MSCI Emerging Markets Index. | The bars shaded in blue represent the four factors referenced in the title of the chart. | As of September 2015 | This analysis reflects index performance only. Past performance is not necessarily indicative of future results

Factor importance shifts over time (rank of most explanatory factors of model¹ by year, past 3 yrs)²



Hedged Alpha Opportunities

Objective and approach

Objective

Seeks to outperform the HFRI Equity Hedge (Total) Index with a similar risk profile

1. Equity portfolio

Fundamentally oriented active equity strategy
High active share, risk factor allocation
Risk characteristics similar to hedge funds

+

2. Tail risk mitigation

Index option based hedging strategy
Only exchange traded options
Long dated, structural allocation
Designed to mitigate downside risk in extremes

+

3. Beta management strategy

Manage to target beta over time
Opportunistically adjust exposure in extremes
No individual stock shorts
Exchange traded futures

=

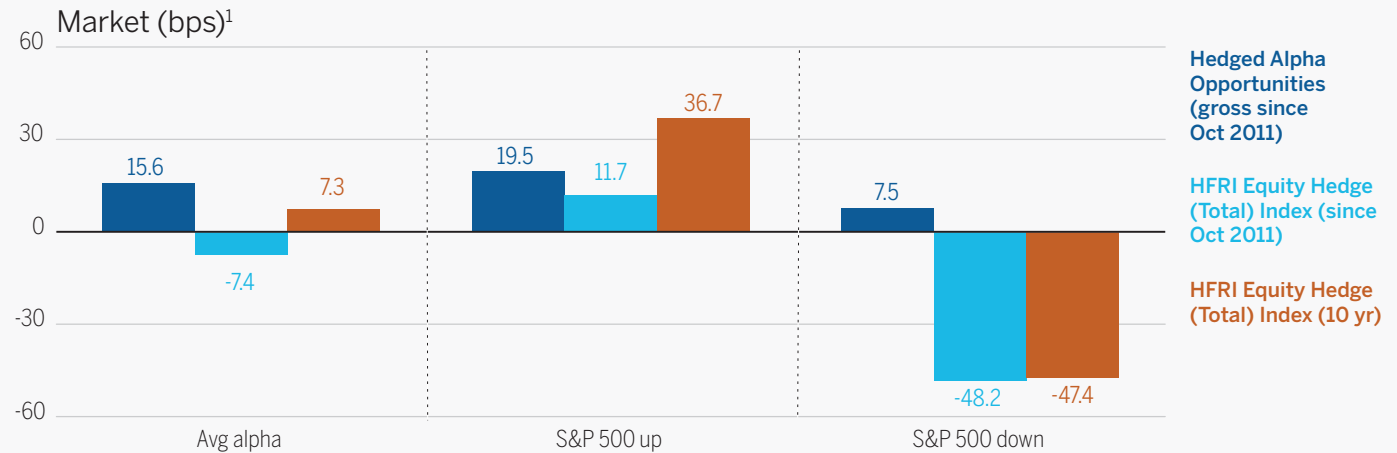


Highly liquid and transparent
No prime brokerage
Minimal counterparty risk

Hedged Alpha Opportunities Composite

Benefits of tail risk mitigation

Average gross monthly alpha vs 40% S&P 500



¹Average gross monthly alpha vs 40% S&P 500 as of 30 September 2015. 40% S&P 500 was chosen because the team's research has shown that on average hedge funds (represented by the HFRI Equity Hedge (Total) Index) maintain a net market exposure of 0.40 over the rolling 3-yr period, 1998 – September 2015. Please refer to slide "Hedge Fund Aggregate Performance" for additional information regarding the calculation. | Evaluated from the inception date of the Hedged Alpha Opportunities Composite 31 October 2011 – 30 September 2015 | **PAST RESULTS ARE NOT NECESSARILY INDICATIVE OF FUTURE RESULTS AND AN INVESTMENT CAN LOSE VALUE.** Gross performance results are net of commissions and other direct expenses, but before (gross of) advisory fees, custody charges, withholding taxes, and other indirect expenses, and include reinvestment of dividends and other earnings. If all expenses were reflected, the performance shown would be lower. Actual fees will vary depending on, among other things, the applicable fee schedule and account size. For example, if US\$100,000 was invested and experienced a 10% annual return compounded monthly for ten years, its ending value, without giving effect to the deduction of advisory fees, would be US\$270,704 with an annualized compounded return of 10.47%. If an advisory fee of 0.95% of average net assets per year were deducted monthly for the ten-year period, the annualized compounded return would be 9.43% and the ending dollar value would be US\$246,355. Information regarding the firm's advisory fees is available upon request. Composite returns have the potential to be adjusted until reviewed and finalized 30 days following each calendar quarter end period. For use in one-on-one presentations only. This supplemental information complements the GIPS® compliant presentation provided in the attachment.

Long duration high quality plus short duration lower quality May be attractive to European insurers and Dutch pension plans

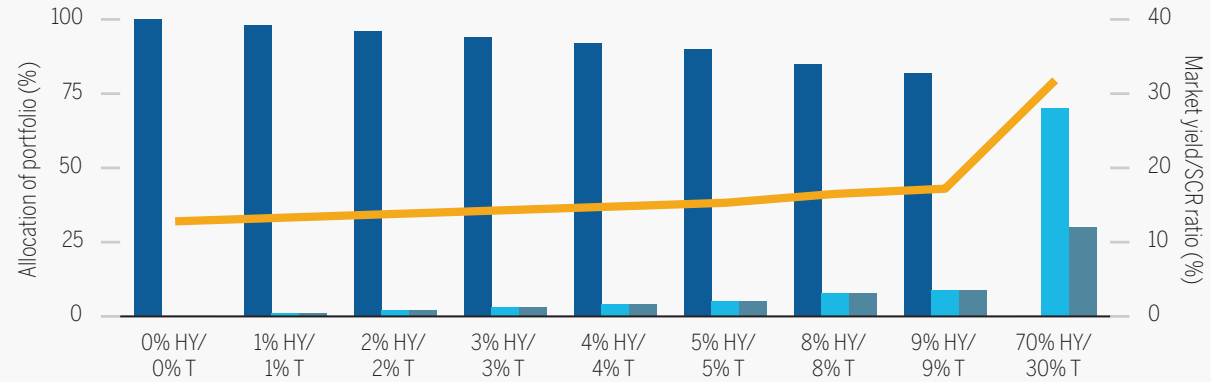
Solvency II SCR risk charges are calculated using an internally derived standard formula model based on the asset risk charges and process found in the "Commission Delegated Regulation (EU) 2015/35 of 10 October 2014 supplementing Directive 2009/138/EC of the European Parliament and of the Council on the taking-up and pursuit of the business of Insurance and Reinsurance (Solvency II)". For this analysis SCR risk charges are comprised solely of the interest rate, and spread risk sub-modules. | Interest rate risk portion of the SCR includes a liability cashflow example of a typical Dutch pension. | Currency is assumed to be hedged. | Index statistics as of 30 November 2015 | Barclays Global Agg excluding securitized: 6.8 duration, 1.6% market yield | Short duration representative account: 2.7 duration, 6.1% market yield | Barclays long treasury: 16.6 duration, 2.9% market yield.

Global Agg
ex securitized

Short duration HY

Long Treasury

Market yield/
SCR market risk



Portfolio composition (%)

Global Agg ex securitized	100	98	96	94	92	90	85	82	0
Short duration HY	0	1	2	3	4	5	8	9	70
Long treasury	0	1	2	3	4	5	8	9	30
Total	100	100	100	100	100	100	100	100	100
SCR market risk ratio (%)	12.3	12.3	12.3	12.3	12.3	12.3	12.3	12.3	16.3
Modified duration	6.8	6.8	6.9	7.0	7.0	7.1	7.2	7.3	6.9
Market yield (%)	1.6	1.6	1.7	1.8	1.8	1.9	2.0	2.1	5.2
Market yield/SCR market risk (%)	12.8	13.3	13.8	14.3	14.8	15.3	16.5	17.2	31.8

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