Schroder Multi-Asset

Hong Kong Retirement Schemes Association

Building Better Portfolios: Risk-based asset allocation strategies

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Schroders

Rethinking the way we invest our money

Key thoughts on portfolio construction

- Understanding the risk premia that drive asset classes
- Capital versus risk based investing
- Adding diversifying strategies
- Flexible approach
- Downside risk management

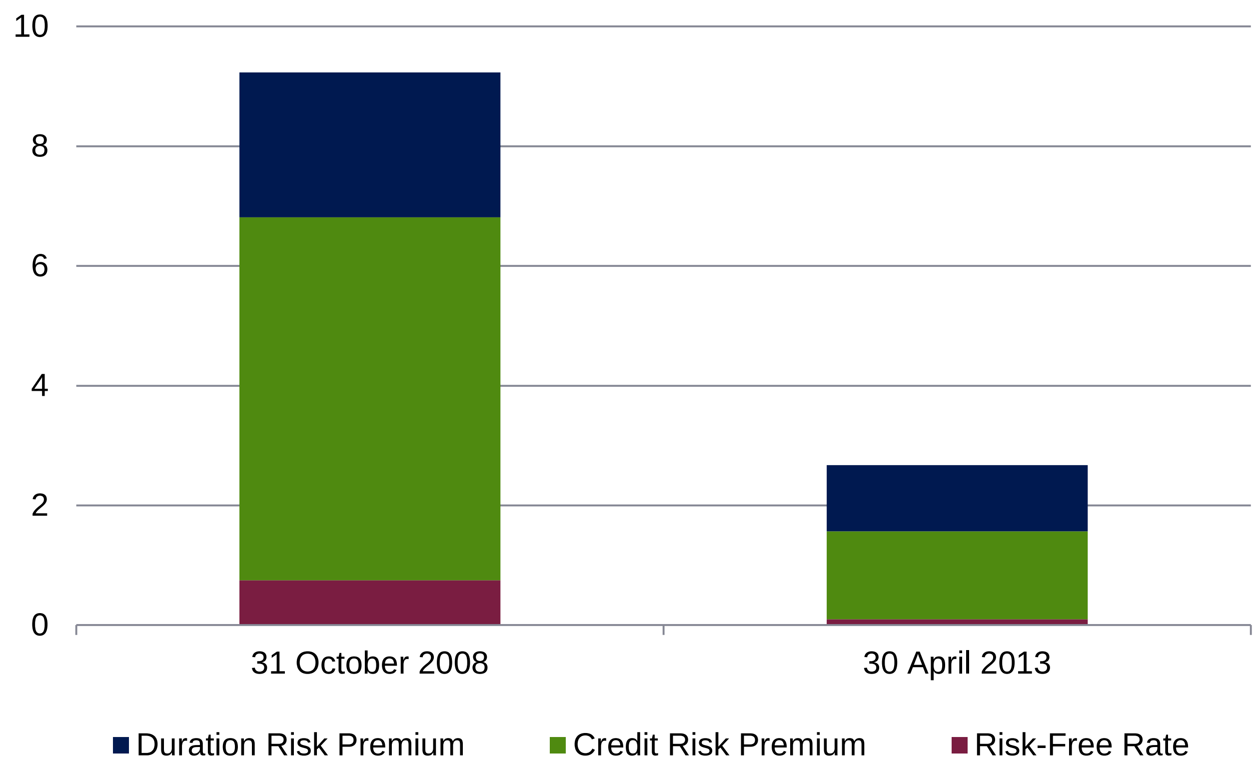
Better protection of assets in a low return environment

From asset classes to risk premia

Understanding risk and return drivers

- **Risk premium:** expected return for assuming a source of risk
- **Risk premia:** building blocks of asset classes
- **Asset classes:** composed of one or more risk premia

Breaking asset class down into risk premia
US investment grade credit example: risk premium decomposition



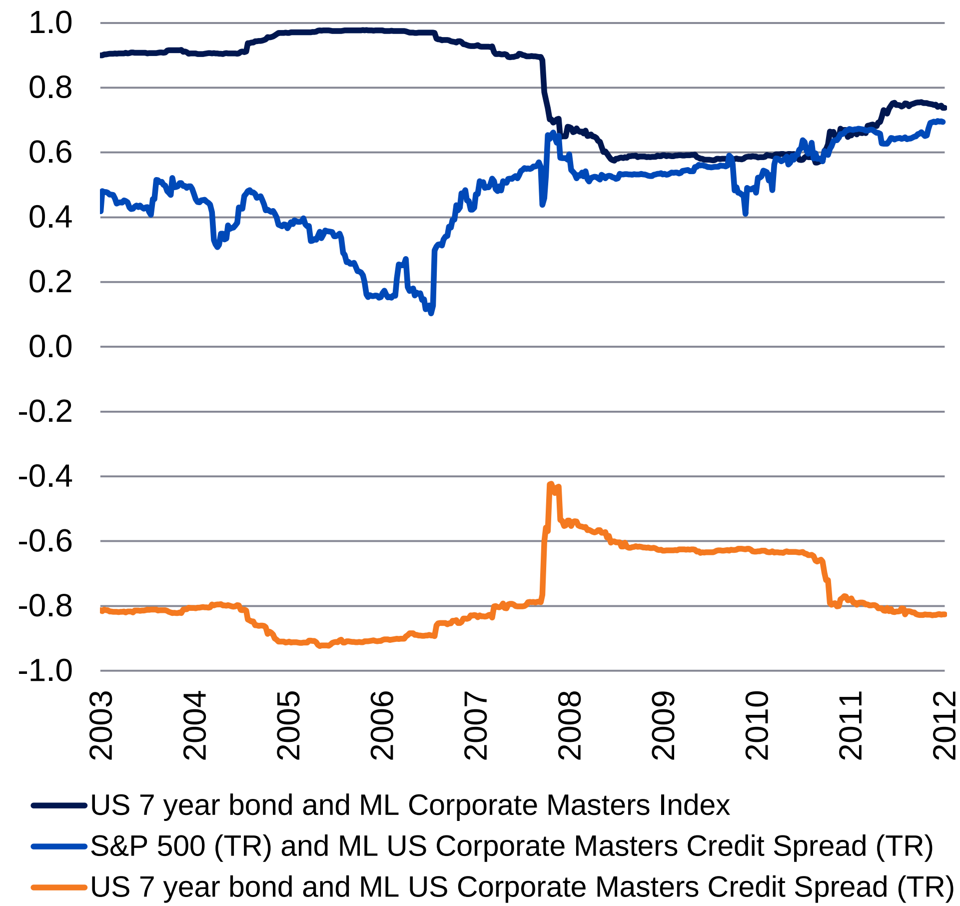
Source: Schroders, Bloomberg. US investment grade credit is represented by the BofA Merrill Lynch US Corporate Index. Shown for illustrative purposes only and should not be viewed as a recommendation to buy/sell.

From asset classes to risk premia

Assets are packages of premia

- Simple analysis classifies US investment grade bonds as a duration asset (black line)
- Two risk components behave very differently and move in different directions
- Negative correlation between government bond and investment grade spread (orange line)
- Positive correlation between investment grade spread and S&P500 (blue line)

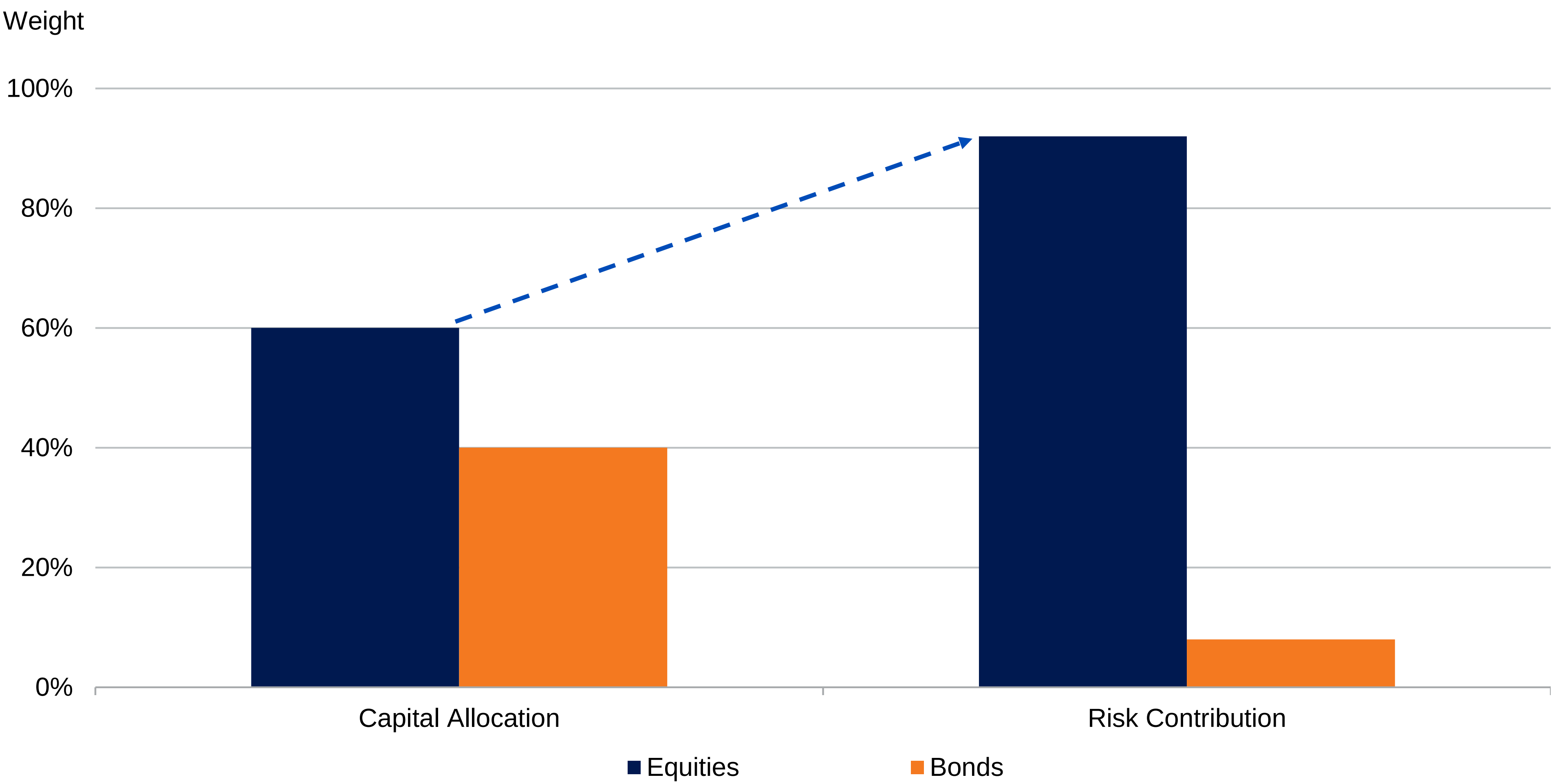
Rolling 3 year correlations



Source: Schroders, Datastream as of December 31, 2012. The views and opinions expressed are those of the Multi-Asset Team and are subject to change.

Are Balanced funds really balanced?

Traditional benchmark outcomes are dominated by equity risk

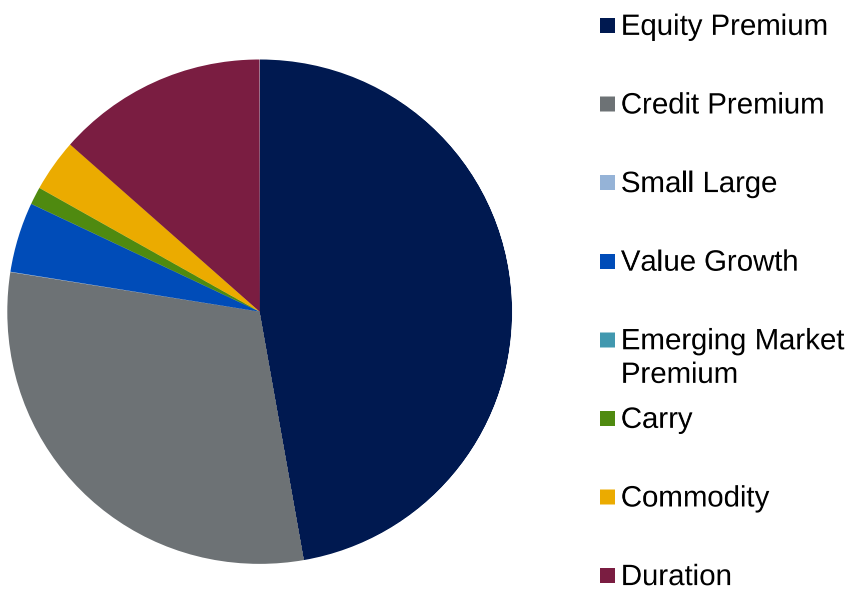


Source: Datastream, Schroders

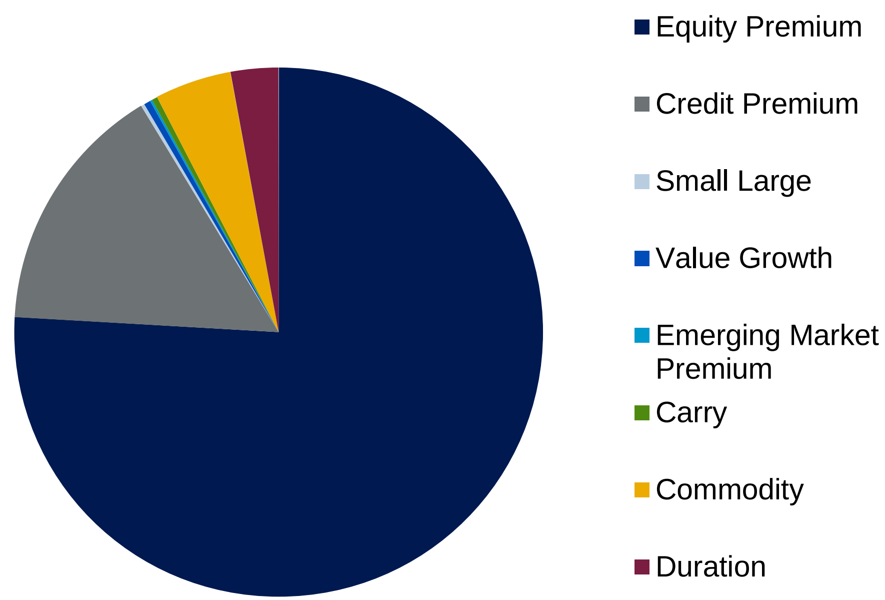
Typical portfolio allocations

Towers Watson Global Pension Asset Study 2013

Capital allocations



Risk allocations



Capital allocations seem somewhat balanced

Risk allocations show a massive growth bias

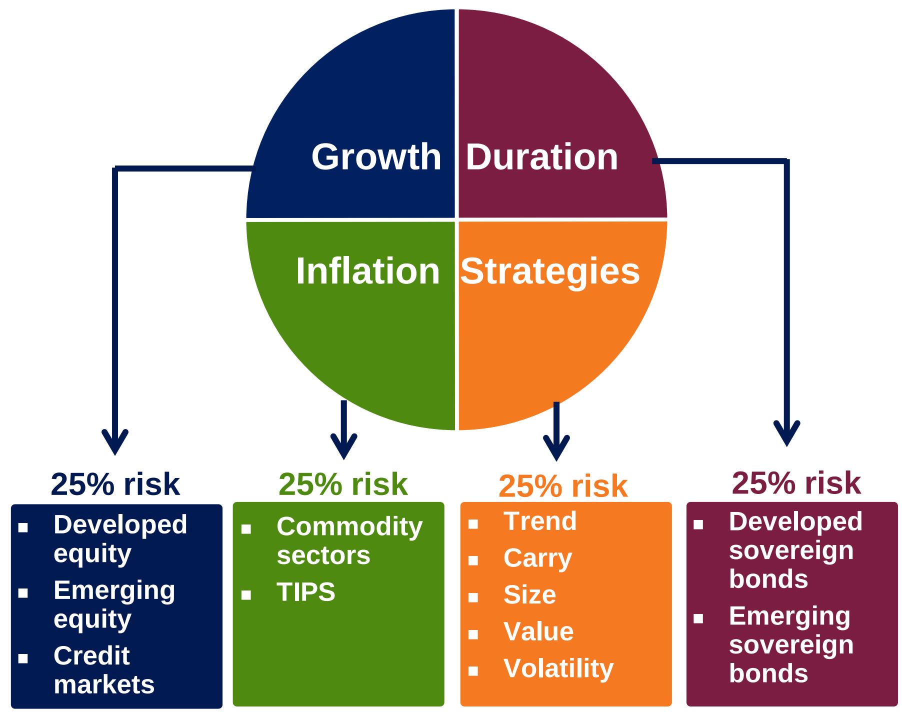
Source: Towers Watson Global Pension Asset Study 2013 and Schroders SMART technology

Grouping risk premia

Better diversification

- Three risk premia groups each driven by different economic risk factor
  - **Growth** (risks to economic growth)
  - **Duration** (risks of rising interest rates)
  - **Inflation** (risks of rising inflation)
- Fourth group covering behavioural and structural risk premia
  - **Strategies**

Potential starting portfolio



Source: Schroders

Interaction of risk premia groups

Better diversification

- 3 market risk premia groups: positive long term expected returns
- Groups perform differently in different economic conditions
- Equally allocating risk across groups can help smooth fund returns

Economic scenario	Growth RP	Inflation RP	Duration RP
Rising Growth / Rising Inflation	↑	↑	↓
Rising Growth / Falling Inflation	↑	↓	↑
Falling Growth / Rising Inflation	↓	↑	↓
Falling Growth / Falling Inflation	↓	↓	↑

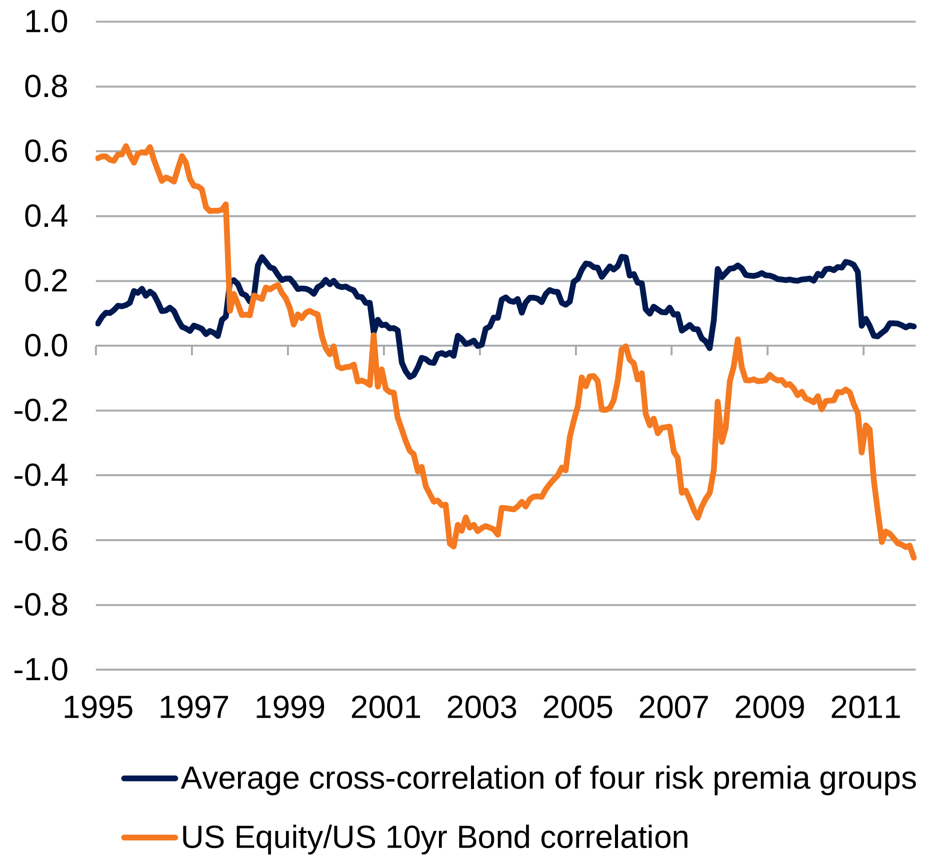
Source: Schroders

Risk balanced portfolio

Diversification across groups

- Four risk premia groups: different characteristics due to different primary drivers of return
- Stable cross correlations
  - Average close to zero, rarely above 20%
- Grouping provides diversification benefits even in times of market stress

Rolling three year average for cross correlation



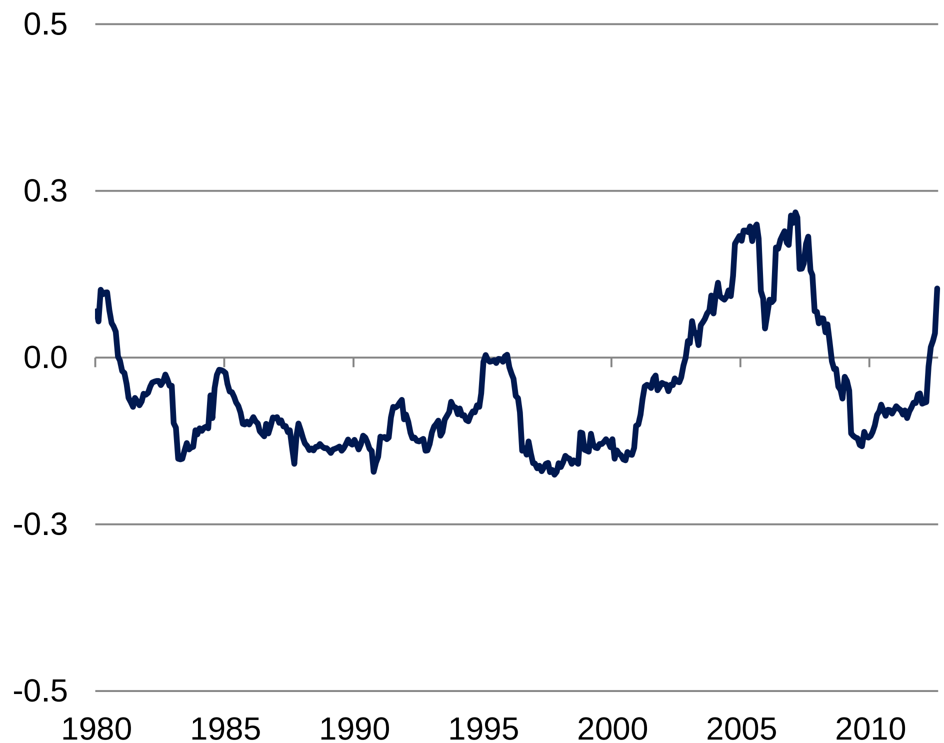
Source: Schroders, Datastream, as of December 2012. Four category risk parity represents returns for the following indices based on fixed weights calculated as of September 30, 2012 by allocating risk equally across the four broad categories: Growth, Duration, Inflation and Strategies. US equities represents S&P500

Strategy risk premia

Adding non-market return drivers

- Risk premia independent of markets
  - Behavioural
  - Structural
- Examples:
  - Trend (behavioural)
  - Small cap (structural, behavioural)
  - Value (structural)
  - FX Carry (structural)
  - Volatility alpha (risk transfer)

Rolling 3 year average cross correlation of strategy premia



Source: Schroders, Bloomberg, December 2012
For illustrative purposes only. The Multi-Asset Team has expressed its own views and opinions and these may change.

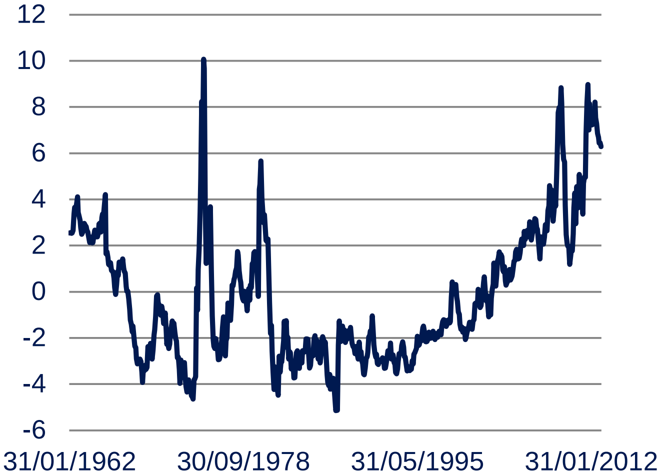
Risk premia research

Common research framework

Valuation measures	Market dynamics	Cyclical measures
e.g. P/B, CAPE, slope of yield curve, credit spreads, carry costs	e.g. momentum, put/call ratios, investor cash levels	e.g. political factors, liquidity conditions, leading indicators

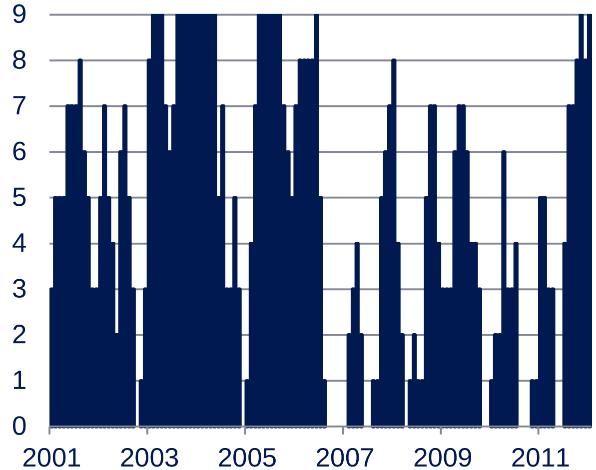
Equity risk premium research example:

Bond equity yield gaps are above historical levels [1]



Equity risk premium research example:

US Value Growth CMI Momentum Score [2]



Duration risk premium research example:

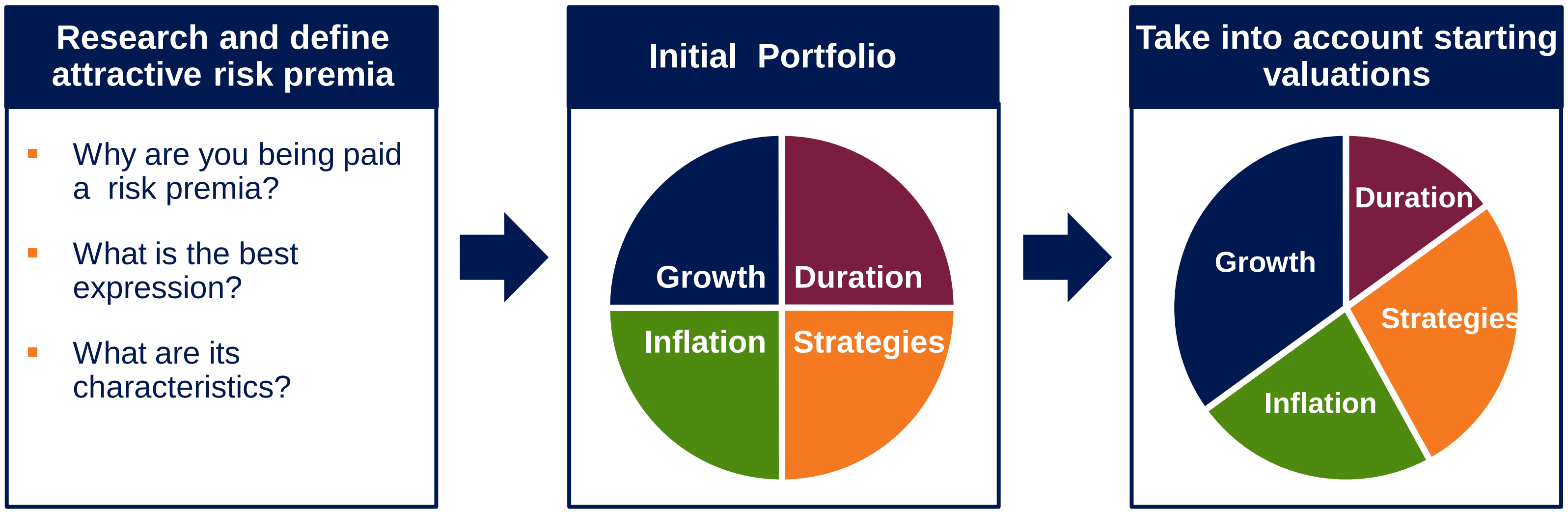
Inflation and Growth Overview [3]

	G-Tracker	I-Tracker
US	↓	↑
UK	↓	↓
Eurozone	↓	↓
Japan	↑	↑
Canada	↑	↑
Australia	↑	↓
Brazil	↑	↑
Russia	↓	↑
Indonesia	↑	↓

1. Source: Bond Equity Gap defined as the difference between the earnings yield on UK FT-Actuaries index (w/GFD extension) and UK 10 year Govt Bond Yield index. Analysis using monthly data back to Jan-62. Source Global Financial Data
2. Sources: Datastream, FactSet, Schroders period ending 31 December 2012
3. Source: Schroders . The I-trackers are inflation leading indicator measures and consist of various leading inflation indicators (such as consensus inflation expectations, oil prices and price trend surveys. The G-trackers are measures of growth and consist of a range of growth indicators (such as PMI surveys and consensus growth expectations).

Building a risk premia portfolio

A solid starting portfolio which is conscious of valuation levels



- Duration looks expensive (interest rates distorted by QE, economic growth looking healthier)
- Equity risk premium relatively high
- Inflation not an imminent threat
- Value and small cap strategies attractive, EM less so

Source: Schroders, for illustrative purposes only.

Downside risk management

Protecting capital in falling markets

Managing Short-term Adverse Outcomes	
Tactical hedging	▪ Short-term indicators: – excessive valuations – money flows – market stress
Risk budgeting	▪ Define a maximum downside risk limit ▪ Reduce risk if the remaining risk budget is falling
Implementation	▪ Futures for short-term adjustments ▪ Options for crash protection ▪ VIX futures, variance swaps for crisis events

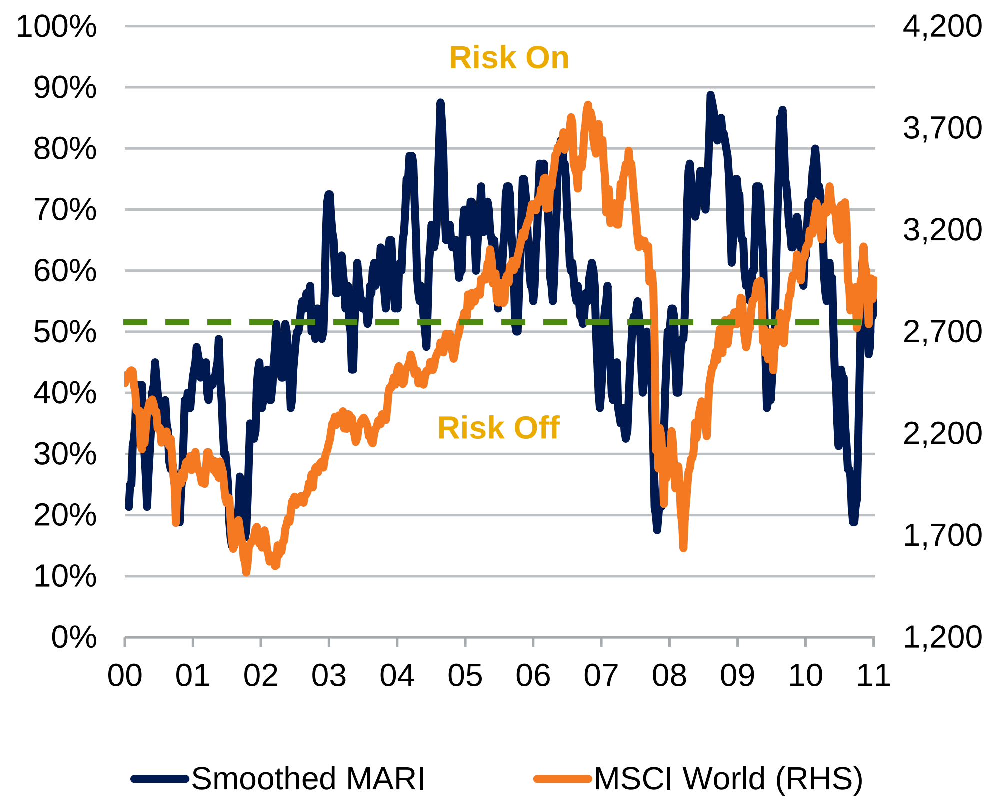
Limiting downside losses allows more consistent returns

Tactical hedging

Taking the temperature of the market

- Extreme market conditions often coincide with indicators of stress
- Combine a number of indicators to measure ‘market stress’
- De-risk the portfolio when the stress indicator declines below a ‘trigger level’
- Typical stress indicators:
  - Implied volatility and volatility skew
  - Economic surprise indices
  - Earnings revisions
  - Liquidity (LIBOR-OIS spread)

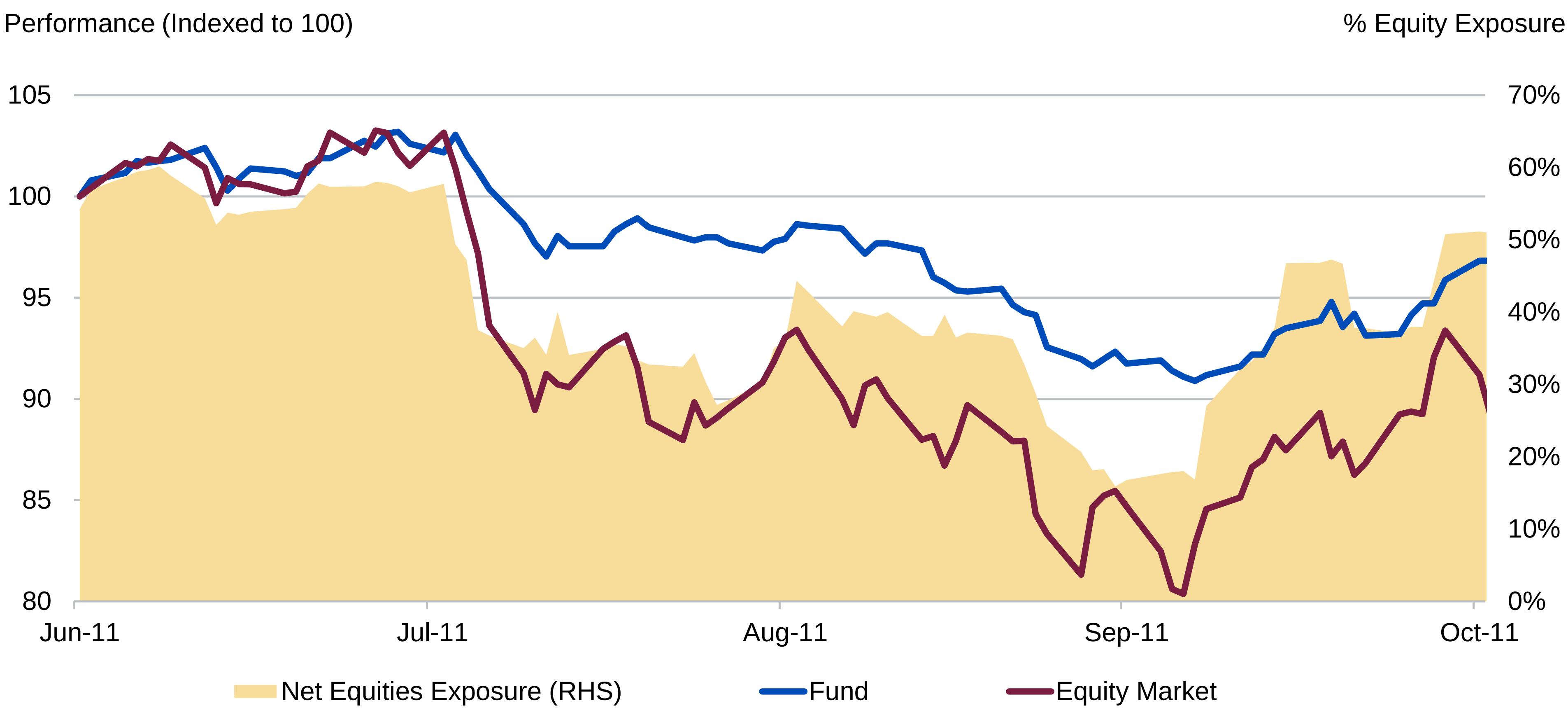
Multi Asset Risk Indicator (MARI)



Source: Schroders

Risk budgeting

Systematic approach to limiting losses

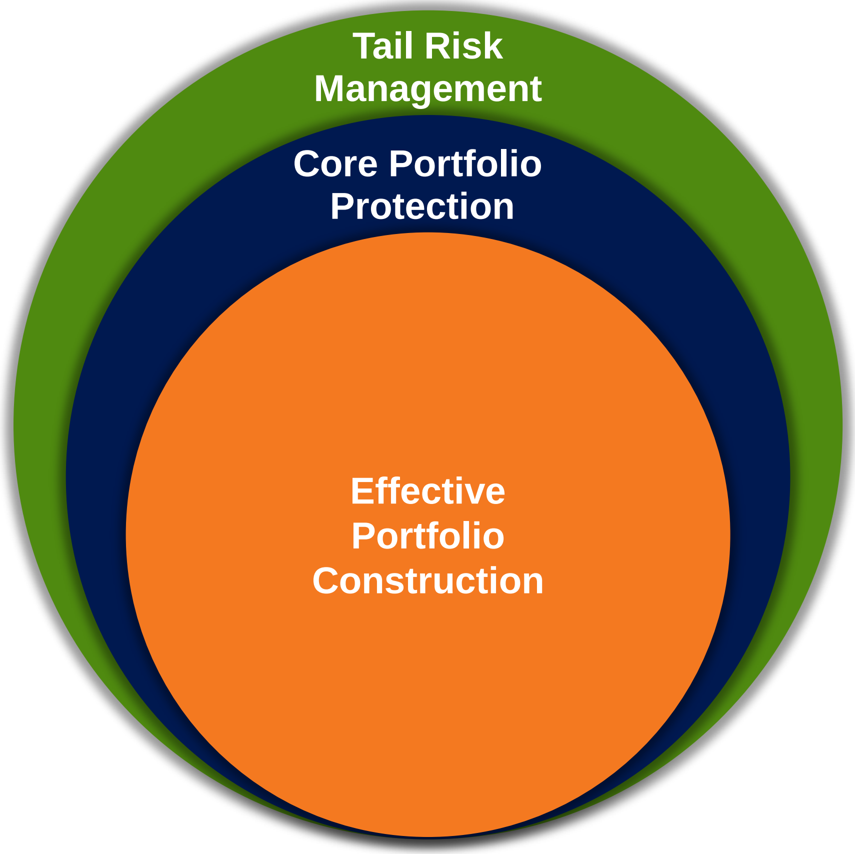


For illustrative purposes only

Protecting portfolios

Bringing it all together

1. Understand the limits of diversification
2. Only take risk where it is rewarded
3. Avoid expensive hedges
4. Ensure you have a strategy for managing tail risk
5. Being dynamic is key



Source: Schroders

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