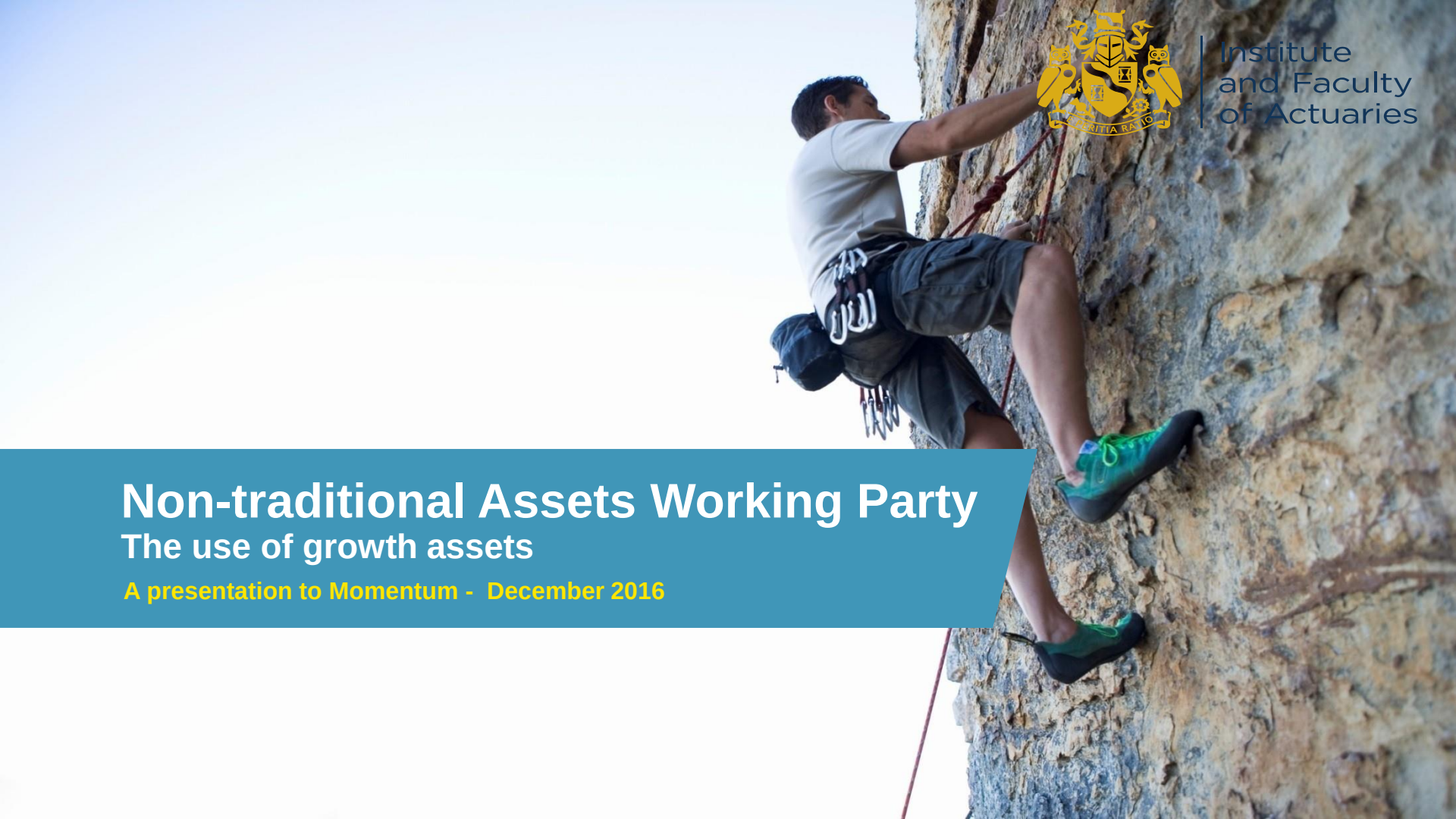


Institute and Faculty of Actuaries

Non-traditional Assets Working Party

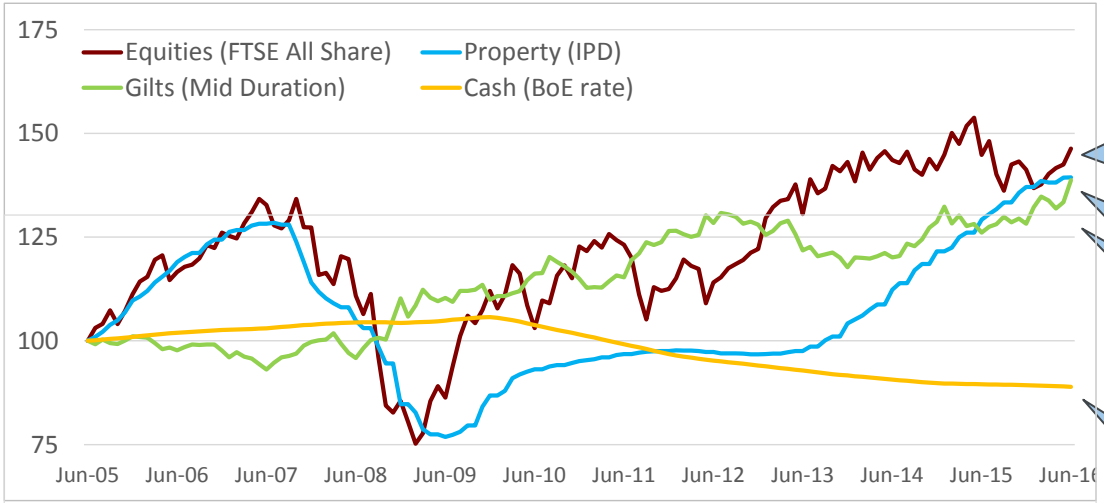
The use of growth assets

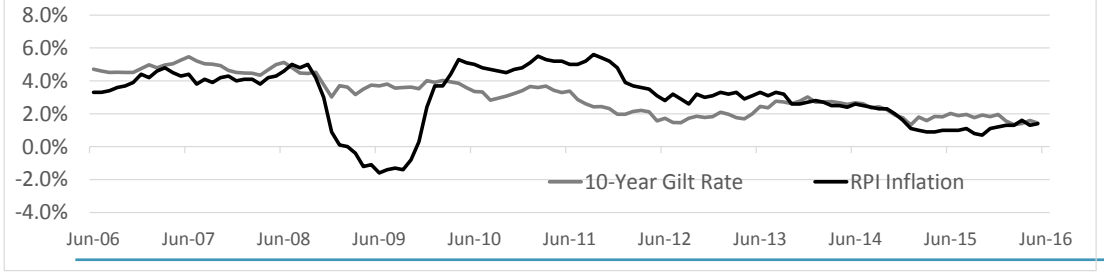
A presentation to Momentum - December 2016

Introduction

Growth assets – case for the defence

10-year UK **real** **total** returns (relative to RPI)





Equities
Yes they are volatile, but ultimately they deliver superior real returns, if you have a long investment horizon….

Bonds
In recent years, they have delivered better returns at times. However, this is during a "golden period" of falling rates. Can this be sustained in future?

Property
Can also deliver positive real-returns as well as diversification. However, how much illiquidity can you manage?

Cash
Clearly any large cash allocations can be erosive on overall portfolio real return.

Source: Bloomberg

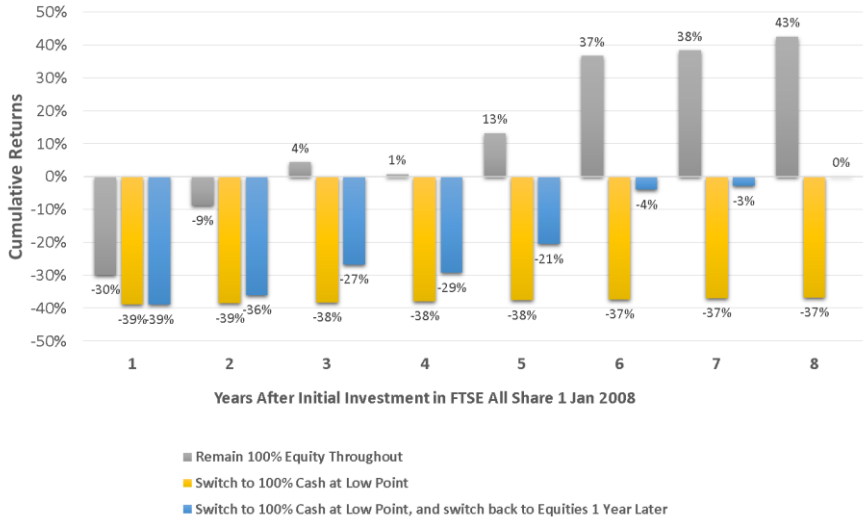
Growth assets – case for the prosecution

- Volatility - can provoke value destroying behaviour
- Sequence of returns
- Cost - charges for equity funds are on average higher than bond funds (in UK)

Asset Class	Investor	Average	Median
Equity Blend	Retail	1.01%	1.00%
	Institutional	0.87%	0.93%
Diversified Bond	Retail	0.58%	0.54%
	Institutional	0.54%	0.42%

Source: MorningStar data (large cap equity; diversified bonds; UK domiciled)

Source: Bloomberg, Milliman analysis



No income taken

Scenario 1		Scenario 2	
	100		100
+20%	120	-20%	80
+20%	144	-20%	64
-20%	115	+20%	77
-20%	92	+20%	92
	92.16		92.16

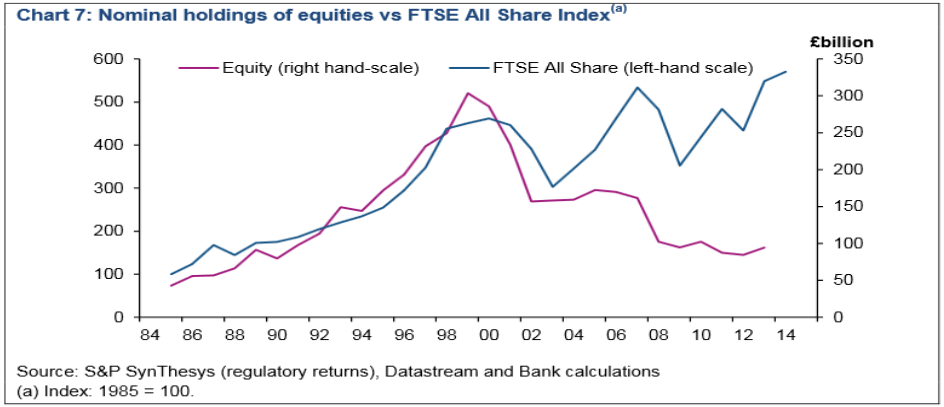
Annual income taken = 10 units

Scenario 1		Scenario 2	
	100		100
+20%	110	-20%	70
+20%	122	-20%	46
-20%	88	+20%	45
-20%	60	+20%	44
	60.08		44.24

Growth assets – where are we now?

2015	UK Institutional	UK In-House Insurance
Total Assets	***£2,846 bn***	***£615 bn***
Equities	38.2%	26.5%
Fixed Income	41.8%	53.6%
Cash/MM	9.4%	11.0%
Property	6.0%	8.0%
Other	4.6%	0.9%

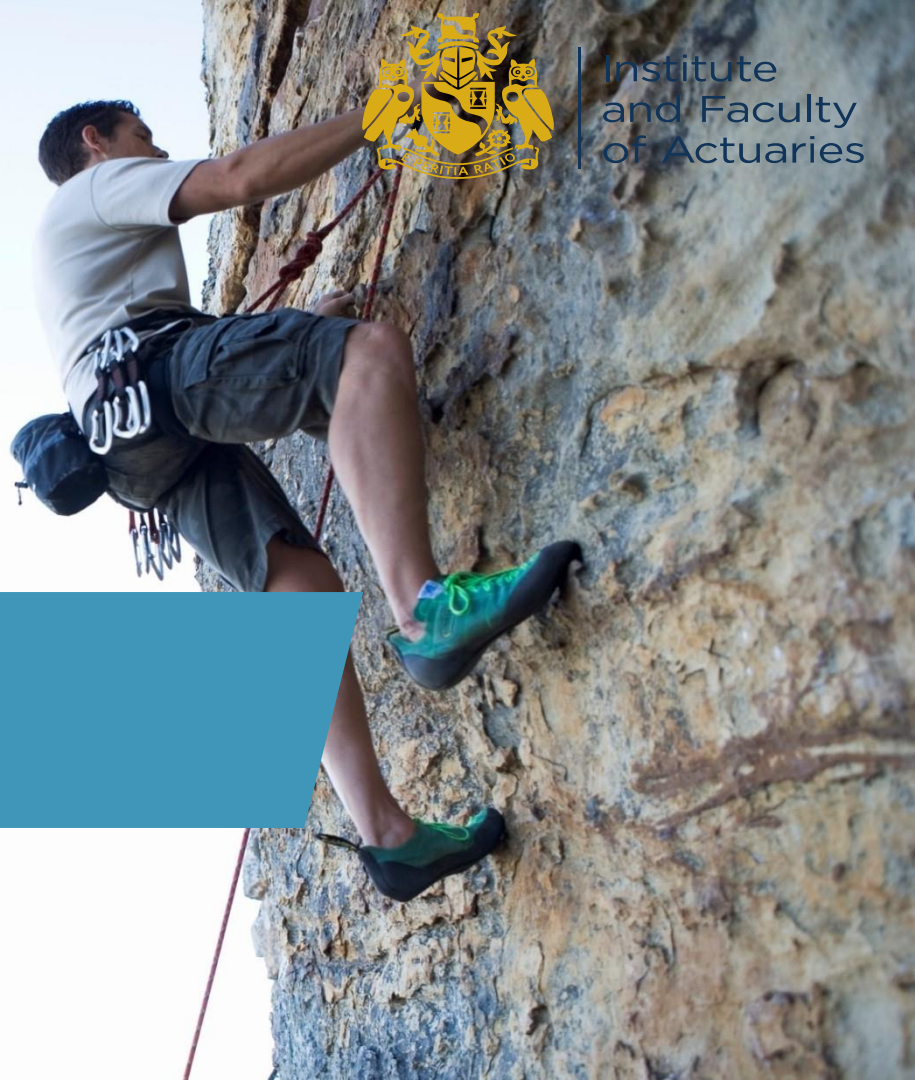
Nominal Holdings of Equities by UK insurers plotted against the FTSE All-Share Index



- Life insurance industry equity allocations are now relatively low.
- The lack of recovery following the sharp decline of the early 2000s indicates a structural shift which may be at least partly the result of the move to a market-consistent regime.
- BoE has raised the issue that insurers (and pension funds) given their long-term investment horizons are suited to investing in equities and that there is a general economic imperative for them to do so.

Source: The IMA Annual Survey (2103-2014), Appendix 2; BoE and Procyclicality Working Group discussion paper

Alternative growth assets



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Volatility Control

Volatility Control - Overview

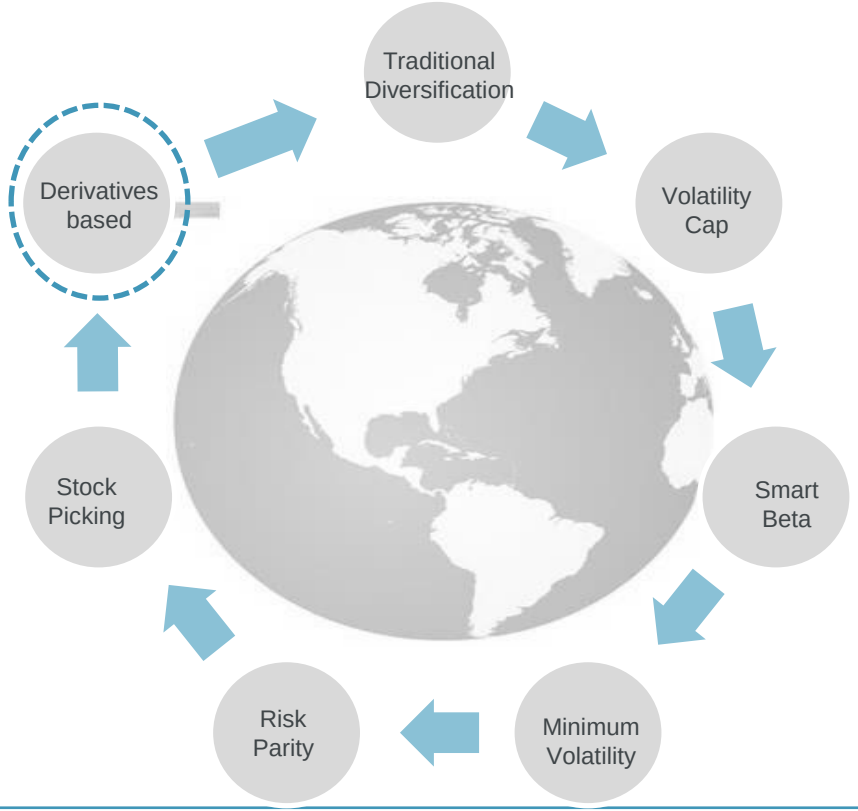
Traditional asset allocation

- Target a specific equity allocation (i.e. 60%) as a proxy for risk
- Maintain constant equity allocation regardless of market conditions

Volatility control asset allocation

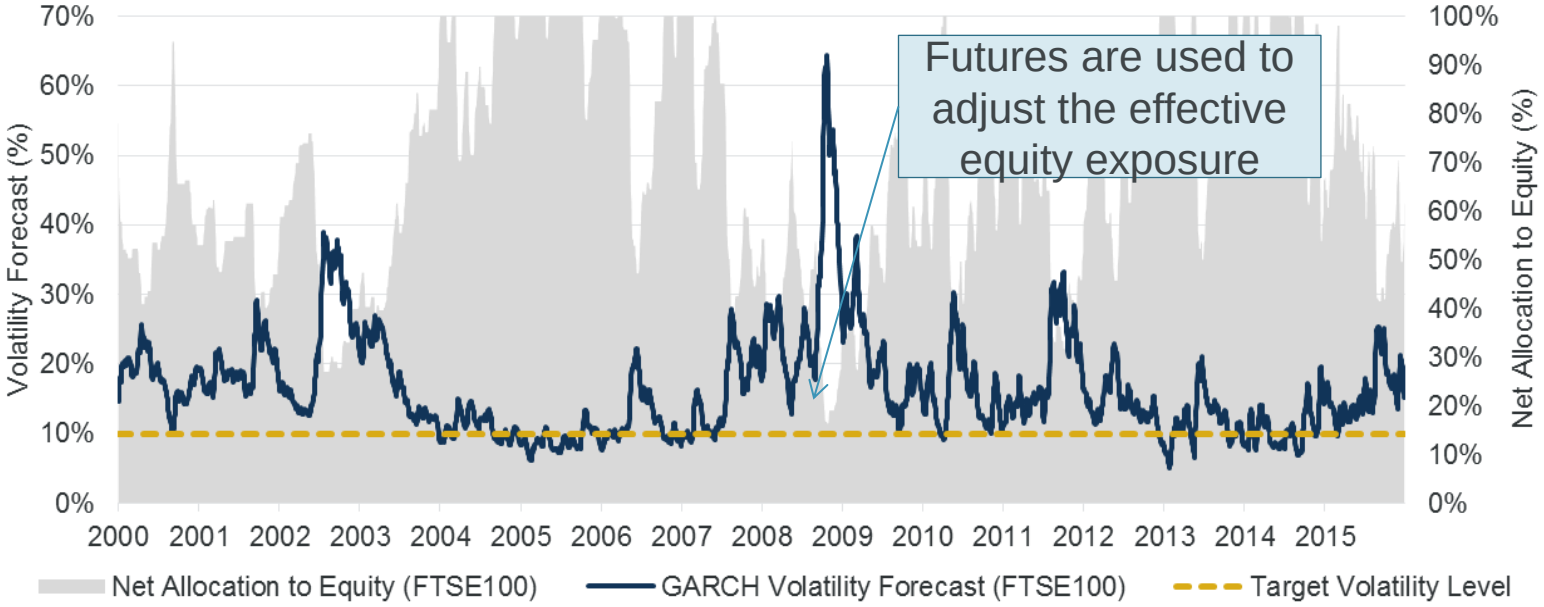
- Targets a specific volatility level:
  - Growth Target = 12%
  - Moderate Growth Target = 10%
  - Balanced Target = 8%
- Prevents portfolio volatility from dramatically increasing during crises
- Implemented by trading the underlying / through hedging

Volatility Control - Strategy universe



Volatility Control - How it works

Typically applied to an equity based underlying fund or the equity component of a mixed fund

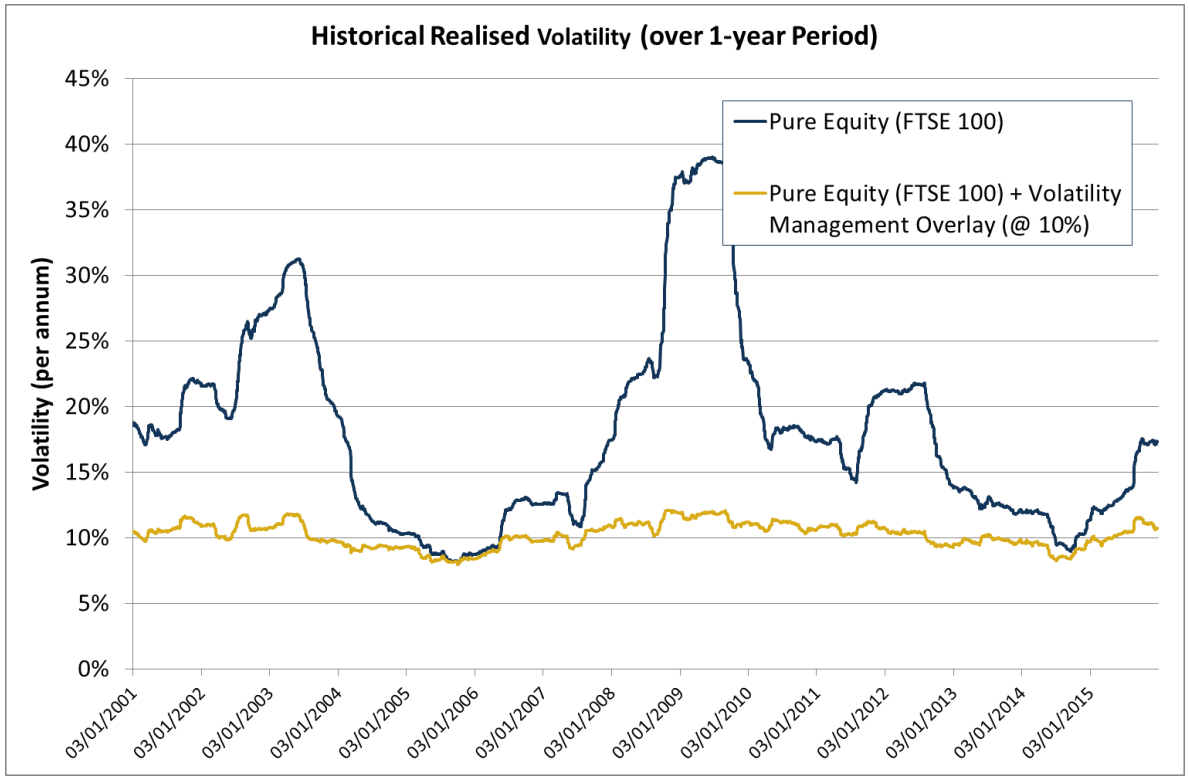


Portfolio **volatility** projected against target level e.g using GARCH model

Source: Milliman Financial Strategies Ltd

These results are based on simulated or hypothetical performance results that have certain inherent limitations. Unlike the results shown in an actual performance record, these results do not represent actual trading. Also, because these trades have not actually been executed, these results may have under-or over-compensated for the impact, if any, of certain market factors, such as lack of liquidity. Simulated or hypothetical trading programs in general are also subject to the fact that they are designed with the benefit of hindsight. No representation is being made that any account will or is likely to achieve profits or losses similar to these being shown. Milliman does not manage the underlying fund.

Volatility Control - Does it work?



Source: Milliman Financial Strategies Ltd

This method:

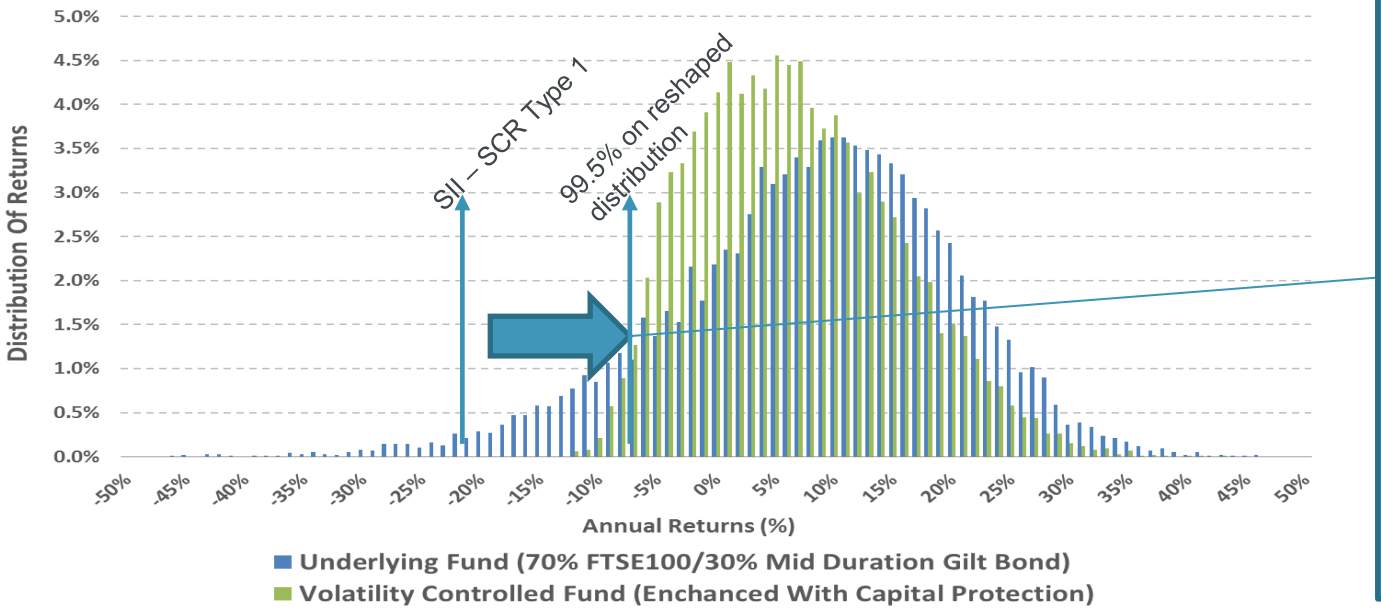
1) Greatly reduces volatility of returns in stressed market environments

2) Stabilises volatility of returns over time (with some degree of residual 'slippage')

3) The significant reduction in risk, comes with a moderate reduction in return:

Volatility Control - Enhancements

Volatility control can be enhanced via the addition of a capital protection strategy e.g. via dynamic replication of a put option



Insurer

- Improved capital efficiency

Consumer

- Reduced behavioural risk
- Reduced sequencing risk

Source: Milliman Financial Strategies Ltd

Volatility Control - Practical considerations

- **Availability -** target volatility funds are widely available and there are many varieties. The challenge is in picking a manager that can execute a successful strategy
- **Liquidity –** often accessed through pooled funds and underlying assets generally liquid
- **Cost –** strategies often use relatively low cost underlying assets with the fees being charged on the management overlay and may require frequent rebalancing.
- **Limitations**
  - Volatility forecasting risk
  - Basis risk – choice of underlying

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CPPI

Constant Proportion Portfolio Insurance Strategies (CPPI) Overview

Traditional asset allocation

- Target a specific equity allocation (i.e. 60%) as a proxy for risk
- Maintain constant equity allocation regardless of market conditions

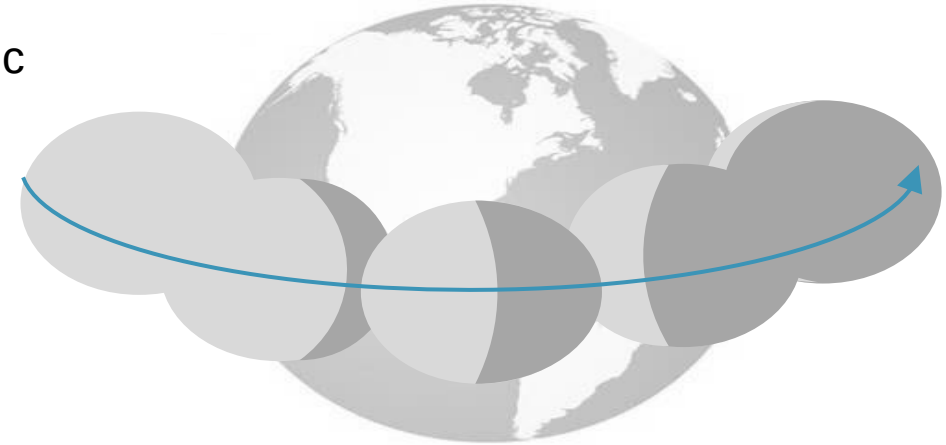
CPPI asset allocation

- Uses a **dynamic** target equity allocation that responds to fluctuations in the value of equity component by periodically rebalancing
- Provides robust downside protection
- By trading in the underlying, or through hedging

CPPI - Strategy universe

Strategies vary in cost & complexity:

From the simplistic which take an automated approach to de-risk into money market instruments



To those using advanced derivative strategies to manage risk exposures

A common feature is the provision of a hard guarantee

CPPI – how it works

1. Set floor

Assets = $100

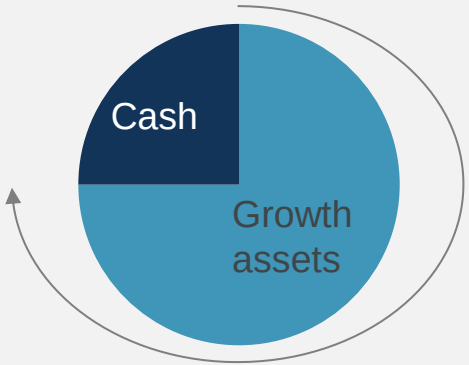
Floor = $85

2. Set multiplier

Multiplier is usually set equal to the inverse of the maximum fall in value from a days trading.

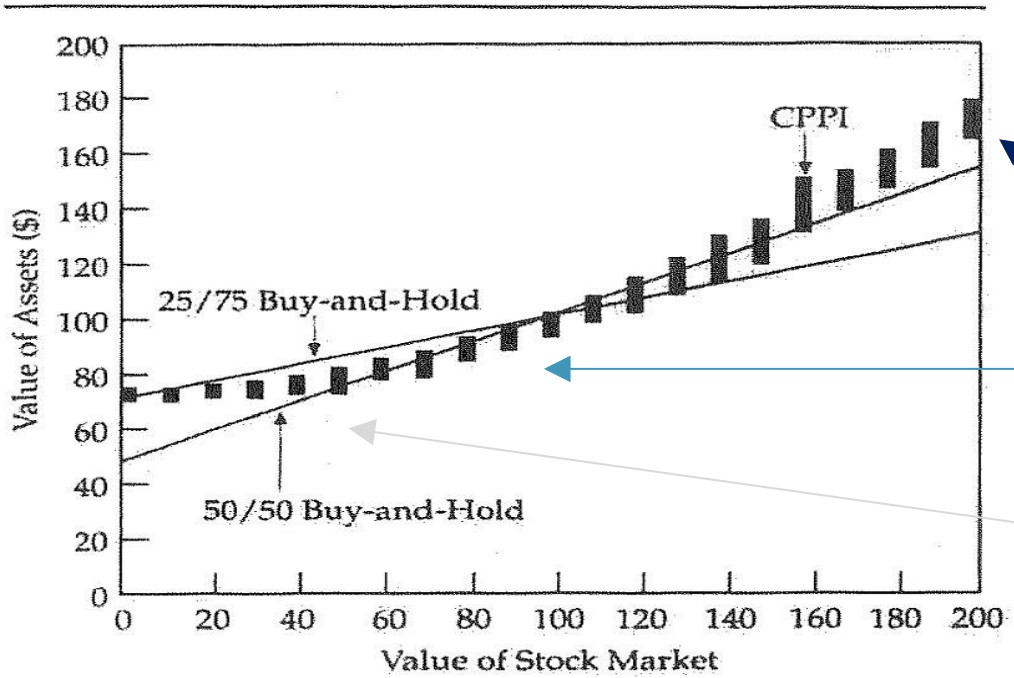
E.g max fall of 20% gives **m = 5**

3. Set strategic allocation



Allocation to growth asset
= m x (Assets – Floor)
= 5 x (100 – 85) **= 75%**

CPPI – does it work



Strategy does well in a **bull** market as buys stocks as they rise

Strategy suffers in a **flat** market due to reversals

Strategy is protected in a **bear** market by the hard floor. Risk of cash lock if portfolio value falls to floor'

Source: Perold & Sharpe

CPPI – enhancements

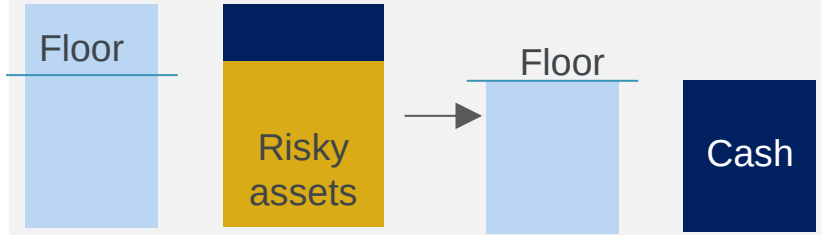
Reducing trade costs

- Synthetic exposure through derivatives
- ETFs

Dynamic multipliers

- Instead of fixing the multiplier ‘m’, link it to:
  - Volatility
  - Forecast risk/return profiles

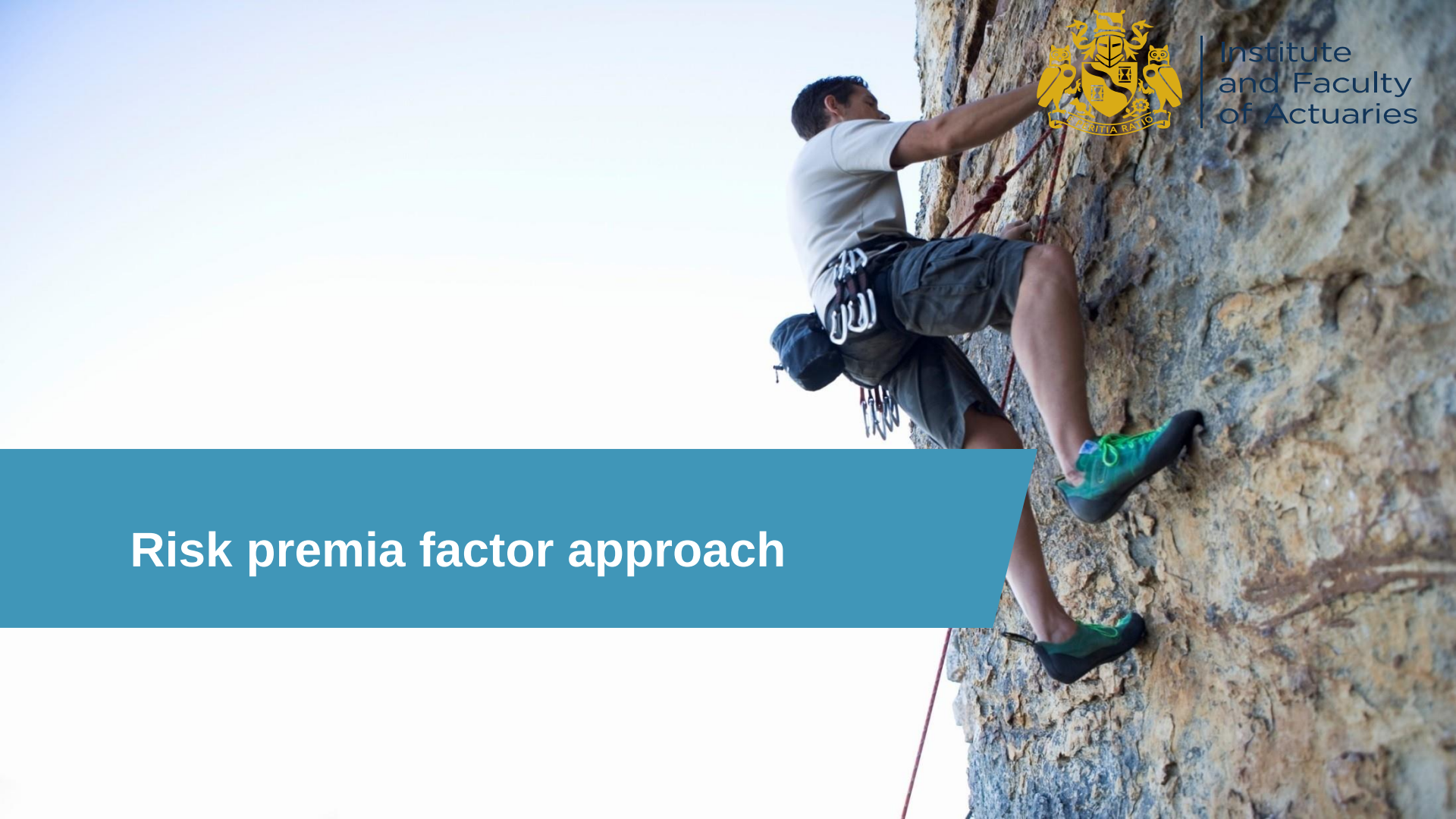
Mitigating cash lock



- Minimum holding in risky assets
- Re-risk triggers
- Fixed interest assets with a spread
- Integrate options into strategy
- Multiple floors

CPPI – practical considerations

- **Availability** - product wrapper or mechanism tends to be offered by banks
- **Liquidity**
  - requires frequent rebalancing => need high liquidity, limits choice of underlying assets
  - liquidity reduced due to existence of bank wrapper
- **Cost**
  - guarantee has an associated cost, but needs to be considered alongside the perceived value to end investor/customer
  - operational costs vary with product complexity and provider
- **Limitations**
  - binary risk of cash lock, and associated reputational risk
  - upside potential reduced by cost of guarantees



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Risk premia factor approach

Risk Premia Factor Approach - Overview

Traditional asset allocation

- Portfolios are constructed by deciding on the type of asset classes to invest in and then on minimum / maximum target allocations to each asset class based on risk mean optimization

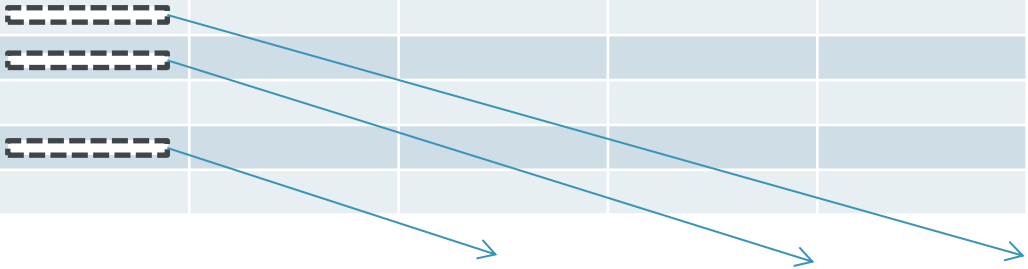
Risk Premia asset allocation

- Focus on use of the systematic sources of risks / returns, called “risk premia factors”, as building blocks of portfolios instead of asset classes
- This makes the investment process more intuitive in terms of risk properties and risk diversification
- Further the allocation does not require explicit return assumptions which is typically one the drawbacks of the traditional asset allocation

Risk Premia Factor Approach - How it works

- Any source of consistent return ("**risk premia**") should be compensation for a specific risk
- Broad asset classes provide a premium over cash, i.e. **traditional beta risk factor**
- Certain risks are disliked by a large portion of the market participants --> **alternative risk factors** arise, e.g. implied versus realised volatility is a value risk factor for volatility

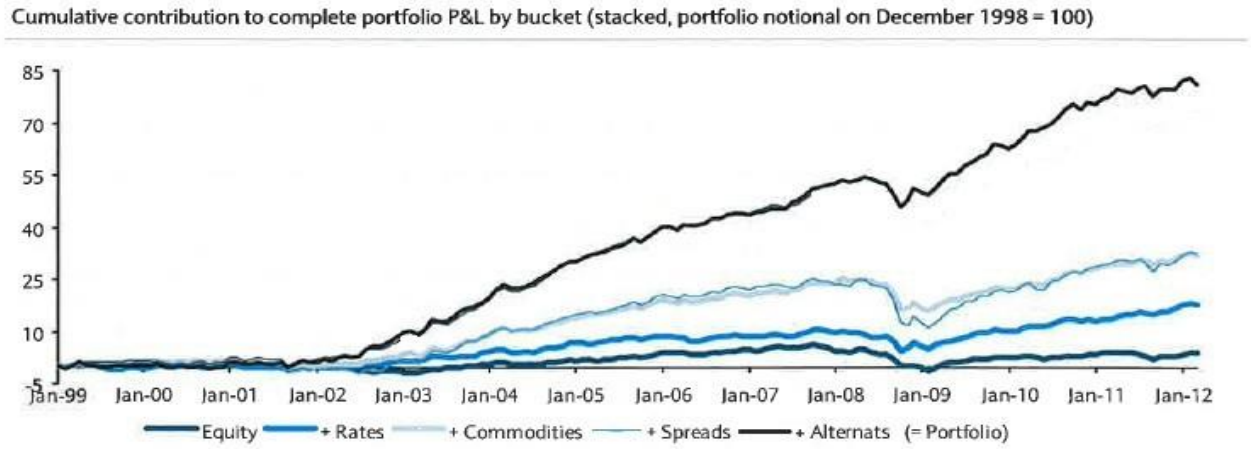
	Traditional Beta	Carry	Curve	Value	Momentum	Liquidity	Event Driven
Equities							
Rates							
Credit							
Commodities							
Currencies							
Volatility							



Total expected return (corp bond) = currency risk + spread risk + rates risk

Risk Premia Factor Approach - Does it work?

Performance of risk premia portfolio overall is significantly better than each individual building block



Source: Bloomberg, Barclays Research, Investing with Risk Premia Factors

Benefits

- more consistent risk allocation,
- good diversification,
- better economic intuition,
- more easily expressed views

Risk Premia Factor Approach - Practical considerations of the strategy

- **Availability**
  - The traditional beta risk factors can be accessed easily through passive funds and ETFs
  - The “harvesting” of alternative risk premia factors can be complex and require use of derivatives, short positions and specialised banking products
- **Liquidity** - Liquidity is adequate to good given that the building blocks typically used have good underlying liquidity. And frequently accessed through funds.
- **Cost -** Depends on the nature of the risk factor. Often implemented by specialist management teams and hence can be expensive.
- **Limitations**
  - Restrictions from use of leverage or short selling
  - Requires skills and systems if strategy implemented internally

Comparison of strategies

Alternative growth assets – a comparison

	VOLATILITY CONTROL	CPPI	RISK PREMIA
Participation in upside	1=	1=	1=
Protecting against downside	2	1	3
Availability	1	3	1
Liquidity for the investor	2	3	1
Asset management fees	1	2	3
Ease of understanding	1	2	3

Applications

Impact for investors

PLACE IN PORTFOLIO

Accumulation

- Variable Annuities
- With Profits – Contribute towards ERP and guaranteed elements
- Unit Linked / DC / DB – auto enrolment default?

Decumulation

- Decumulation products – access to potential growth post-retirement but with managed downside

Hot topics – retail perspective
Freedom & choice = risk & responsibility…

Figure 1: 100% equity investment

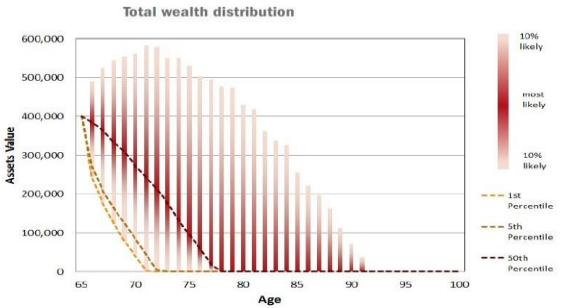
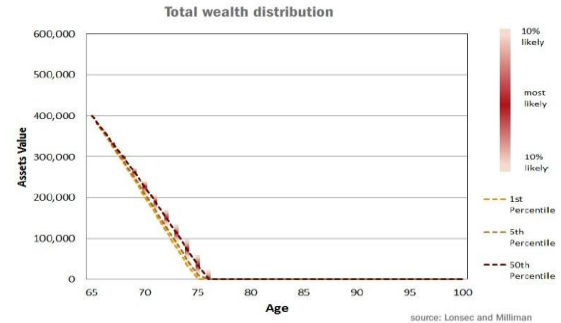


Figure 2: 100% cash investment



Alternative growth assets can help consumers strike a balance between:

Highly aggressive

Highly cautious

Source: Milliman and Lonsec research paper (Boomers, Herding, Denial and Zeitgeist)

Alternative growth assets
Final thoughts

- A good case for continued (increased?) exposure to growth assets
- Use of “alternative growth assets” can help improve the product proposition pre retirement within pension schemes and for insurers managing savings money
- For insurance companies, need to be careful to ensure efficiency under SII; for pension schemes, need to ensure that the strategy is well understood to avoid falling into the traps outlined!

Appendix - Procyclicality

What is Procyclicality?

"In the short term, the tendency of insurance companies and pension funds to invest in a way that exacerbates market movements and asset price volatility, and, in the long term, the tendency to invest in line with asset price and economic cycles so that the willingness to bear risk diminishes in periods of stress and increases in upturns.

Source: IFoA web page http://www.actuaries.org.uk/about-us/pages/what-procyclicality

Will these strategies have an impact?

Possibly:

- **Trade direction** - since these strategies generally involve a sell low buy high trading approach, they are inherently procyclical in the short term
- **Scalability** - If massive volumes of this type of business are in force, they may exacerbate “herding” behavior amongst institutional investors’ and amplify price movements

Possibly not:

- **Liquidity** - many approaches utilise the futures market the capacity and trading liquidity of which has so far proved highly resilient even during times of significant market stress.
- **Diversification** – implementations will vary in terms of underlying investments, trading algorithms, trigger levels, rebalancing frequencies, exercise of discretion

Incremental or substitutional?

Questions

Comments