IMAP RISK MANAGEMENT ROUNDTABLE

In association with

BT

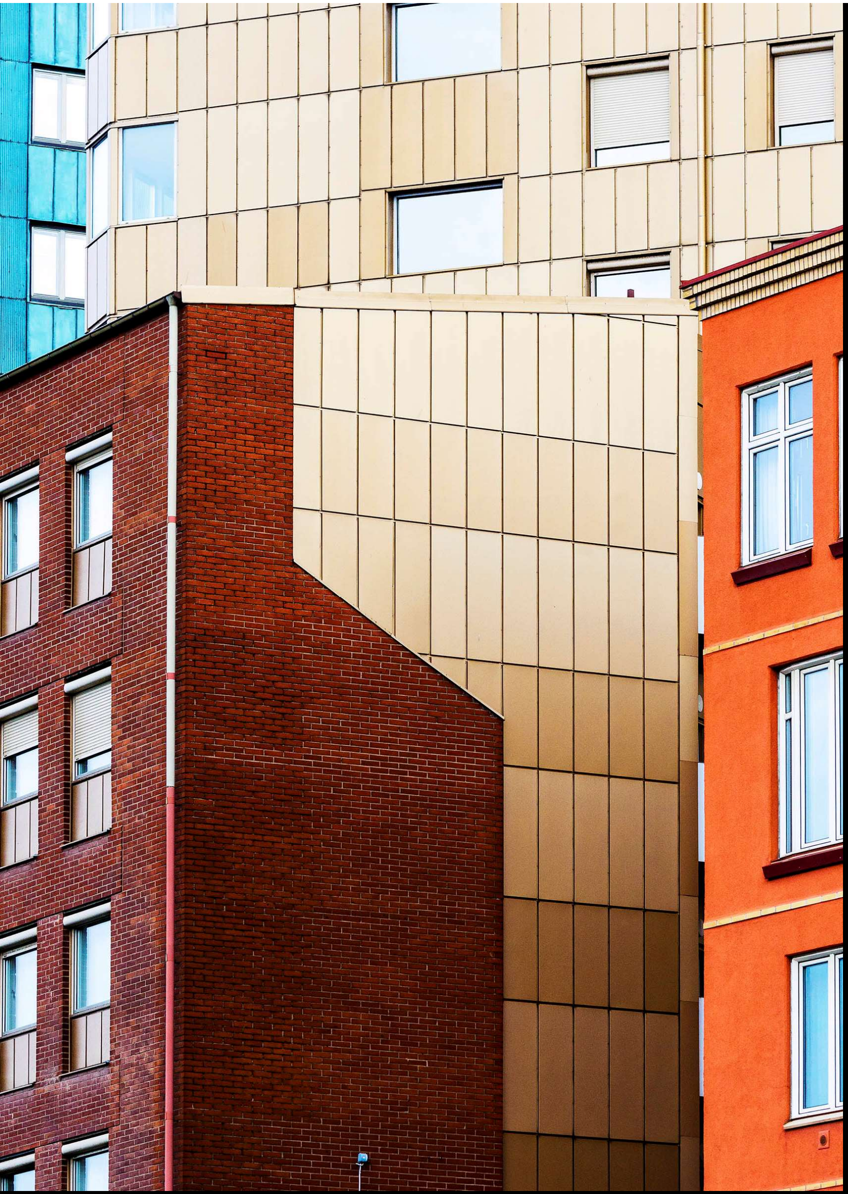

Beatrice Yeo
BlackRock

BlackRock

Risk Management & Portfolio Construction

Beatrice Yeo, CFA

BlackRock Multi-Asset Strategies & Solutions



Successful investing is about **MANAGING** risk, **NOT AVOIDING** it.

- Benjamin Graham

How asset managers typically define risk…..

Volatility

Standard deviation of total returns

Tracking Error

Standard deviation of active returns

Tail Risk

Skewness of returns

Source: BlackRock, May 2024. For illustrative purposes only. Subject to change.

How clients typically define risk…..

Probability of Loss

Risk of negative returns

Max Drawdown

Peak to trough decline

Longevity Risk

Risk of outliving assets

Source: BlackRock, May 2024. For illustrative purposes only. Subject to change.

Aladdin® provides a comprehensive view of portfolio risk

Ensuring that risks are understood, diversified and appropriately scaled

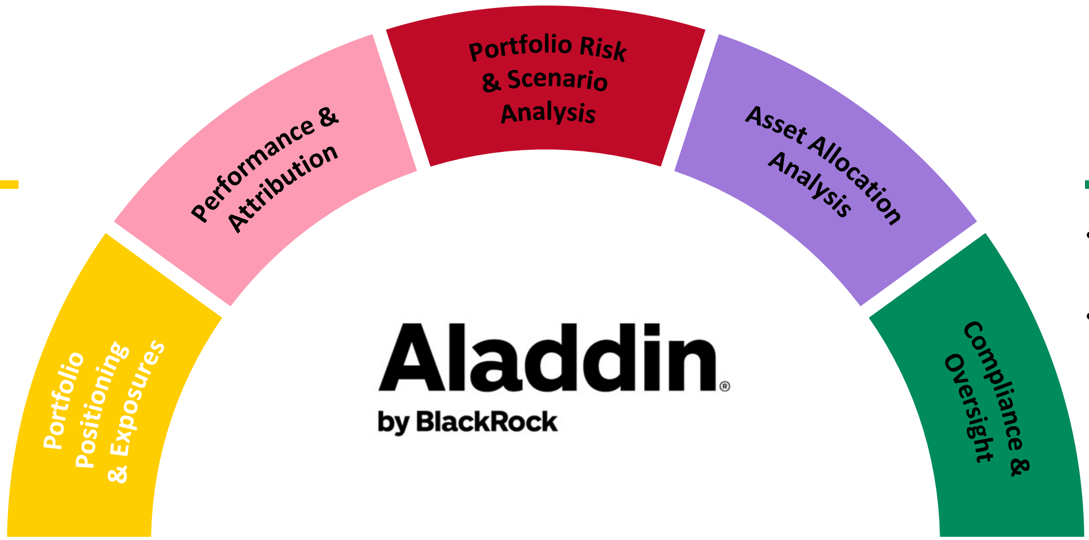
- What factors are driving risk?
- How would my portfolio perform under various scenarios?

- How is the portfolio performing on an absolute basis and relative to the benchmark?

- How should I allocate assets to optimise returns at the desired risk levels?
- What impact would certain allocation changes have on risk and returns?

- What are my sector and issuer exposures?
- Duration?
- How have exposures changed?

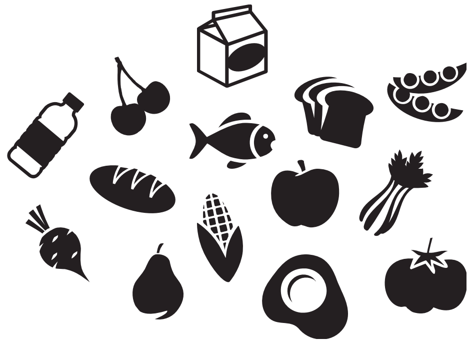
- How is the portfolio positioned relative to risk budget and other compliance guidelines?
- Are managers keeping in line with compliance limits?



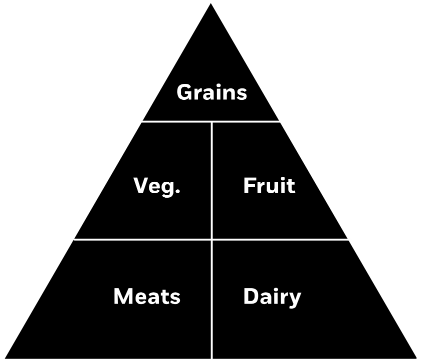
Source: BlackRock, May 2024. For illustrative purposes only. Subject to change.

Risk Factors: The Building Blocks of Risk and Return

Broad Universe



Traditional Categories



Granular Elements

Nutrition Facts

Amount Per Serving	
Calories 20	Calories from Fat 10
	% Daily Value*
Total Fat 1g	**2%**
Sodium 190mg	**8%**
Total Carbohydrate 2g	**1%**
Protein 1g	
Vitamin A 2%	• Vitamin C 15%
Iron 10%	• Vitamin B6 20%

Domestic Equity
Real Estate
Diversified Credit
Large Cap
Commodities
Farmland
REITs
Small Cap
Direct Lending
Event Driven
Risk Parity
Timber
Synthetic Overlay
TIPS
Smart Beta
Private Equity
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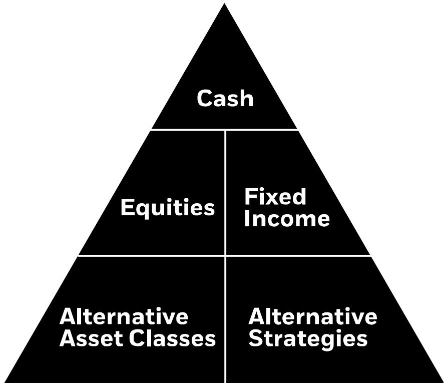
Real Return
Leveraged Loans
Core Fixed Income
Energy
Hedge Funds



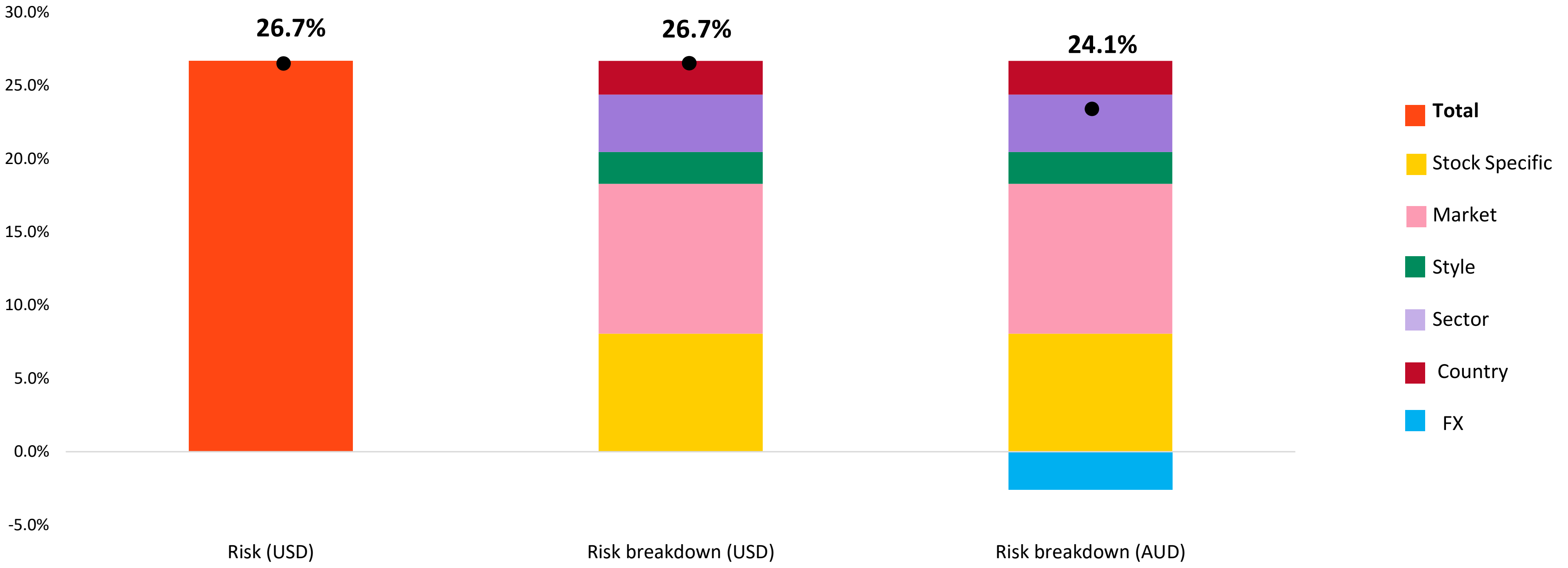
Risk Factors

Interest Rates	120 bps
Credit Spreads	75 bps
Inflation	53 bps
Equity Style	620 bps
Currency / FX	12 bps

*Percent Daily Values are based on a 2,000 calorie diet.
Source: BlackRock, as of May 2024. For illustrative purposes only.

Case Study: APPLE

APPL – Ex-Ante Risk Factor Decomposition



Source: BlackRock Aladdin, as of 3 April 2024. For illustrative purposes only and subject to change. The estimate uses the risk factor exposures and volatilities of the underlying securities, based on BlackRock's risk model and takes into account the correlations of the factors across the portfolio. It is not meant to be a prediction of fund or model volatility and actual volatility of any portfolio based in whole or in part on the models shown will vary and may be higher. Risk model used is BFRE World Equity, 120 months with 36 month half life.

Case Study: Enhanced Strategic Multi-Asset Balanced Model

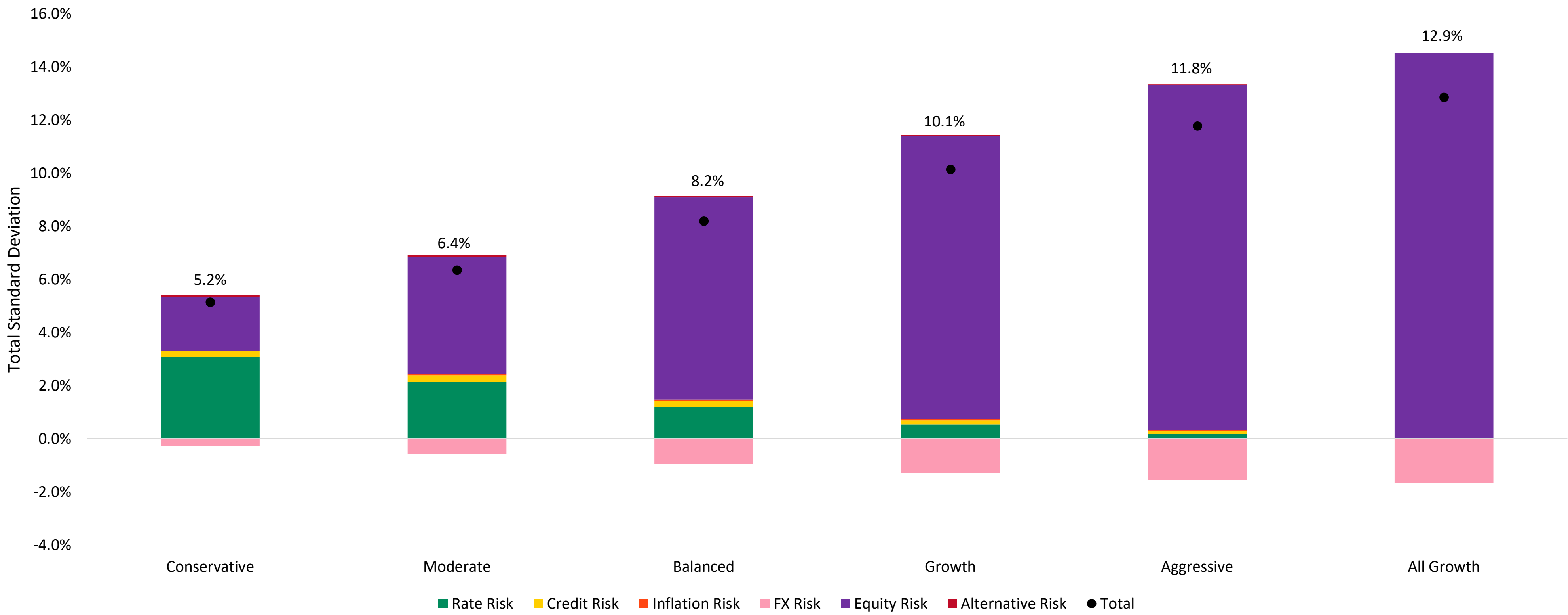
Ex-ante risk analytics of the broad risk factors underlying a multi-asset portfolio

Risk Factor	iShares Enhanced Strategic Balanced Model
Equity	7.60%
Equity Style	6.95%
Equity Country	0.71%
Equity Sector	-0.12%
Equity Specific	0.06%
Fixed Income	1.42%
Rates	1.20%
Spreads	0.22%
Inflation	0.06%
Alternatives	0.05%
FX	-0.94%
Total Risk (ex-ante)	**8.19%**

Source: BlackRock Aladdin, as of 3 April 2024. The estimate uses the risk factor exposures and volatilities of the underlying funds, based on BlackRock's risk model and takes into account the correlations of the factors across the portfolio. It is not meant to be a prediction of fund or model volatility and actual volatility of any portfolio based in whole or in part on the models shown will vary and may be higher. Risk model used is BFRE World Equity, 120 months with 36 month half life.

Measuring and scaling risks across different risk profiles

Ex-ante risk analytics of the broad risk factors underlying the portfolio



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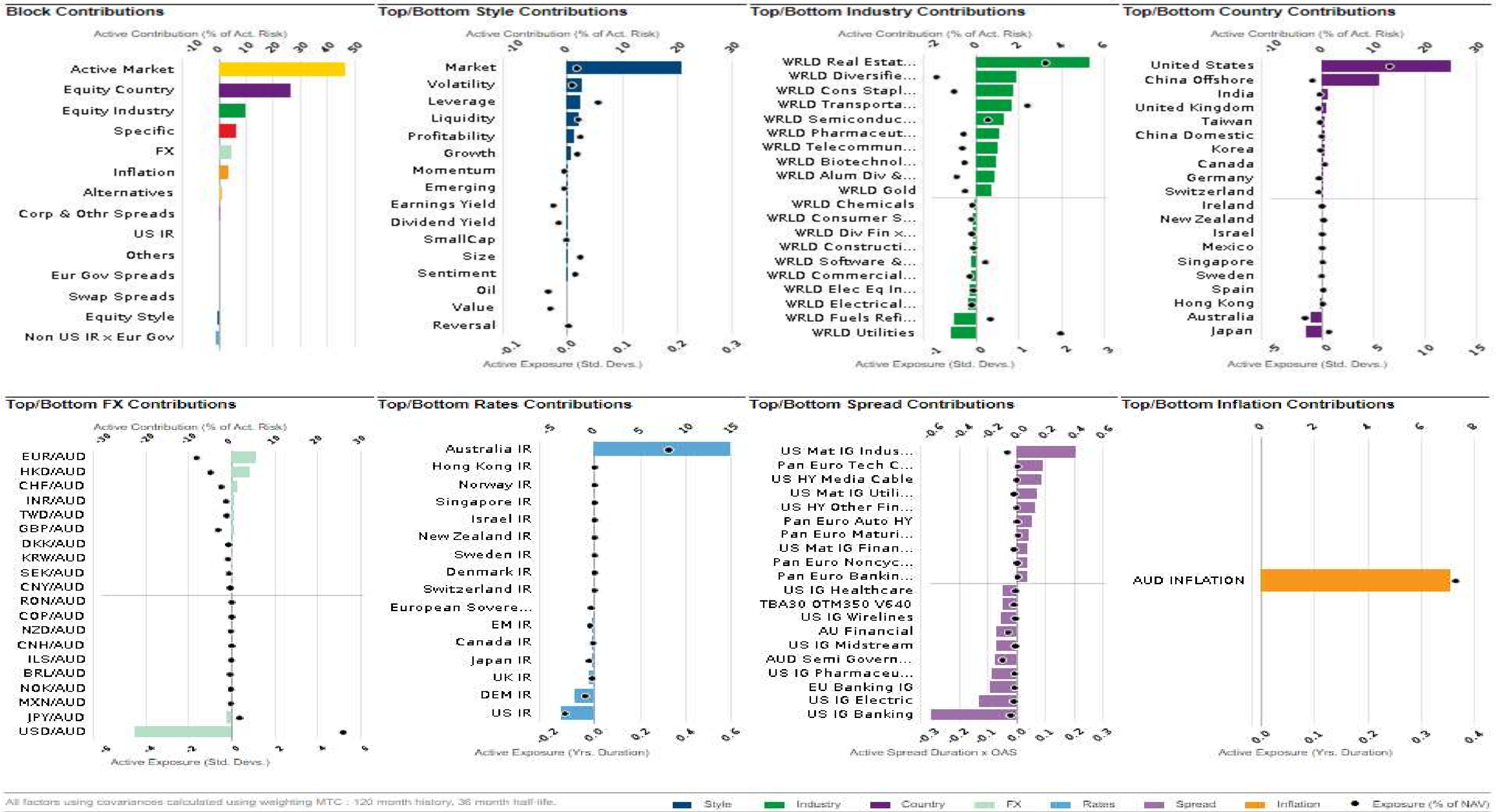
Breaking down active risk in a granular fashion



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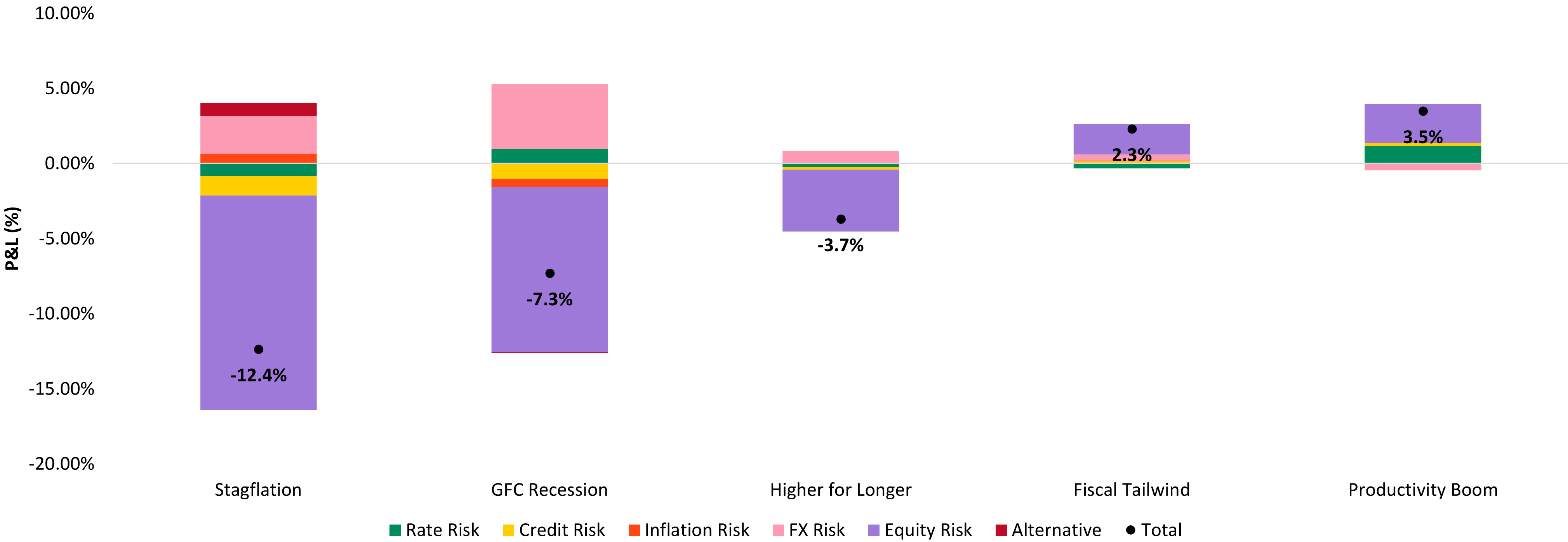
Scenario analysis on a look-through basis

Stress testing (Potential P/L)

- **Stagflation:** 1974 historical stagflation scenario. Policy variable shocks are based on actual factor returns in the year 1974.
- **GFC (Sep-Nov 2008):** Credit & liquidity crisis and equity market crash set off by Lehman Brothers bankruptcy.
- **Higher for Longer:** Muted returns, higher yields especially front-end, US dollar strengthens, EM underperforms
- **Fiscal Tailwind:** Credible fiscal expansion drive a rally in risky assets along with rising long-term yields and tightening credit spreads.
- **Productivity Boom:** Equities higher as productivity uplift supports profit margins.



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Define, diagnose and deploy risk to enhance portfolio outcomes

Define risk

Understand risk composition

Optimise risk factors

Model "What If" scenarios

Monitor & review

Source: BlackRock, May 2024. For illustrative purposes only. Subject to change.

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Simon Ho
Milliman

IMAP Risk Management Round Table – Measuring and Managing Risks

Simon Ho

JUNE 2024

Milliman

Agenda

1

Risks faced by pre-retirees/ retirees

2

How these risks can be managed

3

The Milliman approach

4

Monitoring our strategy

1. Risks faced by pre-retirees/ retirees

Risks faced by retirees

Longevity Risk, Loss Aversion, Sequencing Risk

Retirees need exposure to growth assets

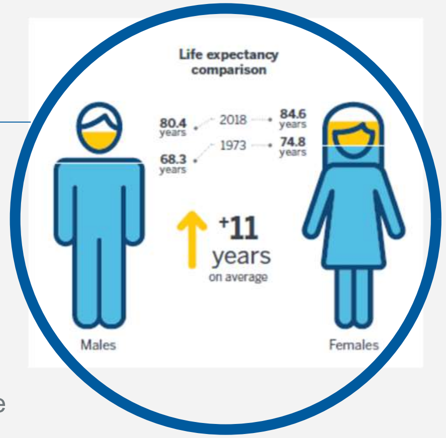
We are living longer, which means we need our money to last longer too.

It's no longer sustainable to simply de-risk to defensive assets. In fact, given the time horizon, growth assets can tend to improve outcomes for retirees.

Exposure to sequencing risk

The retiree's fear of loss is well justified. Those who are close to retirement or are early into their retirement are most impacted by market drawdowns.

For example, a 30% market shock at age 65, can take **13 years** of income away from a retiree's portfolio, if the same shock happened to a 30 year old, only 5 years of income is lost.

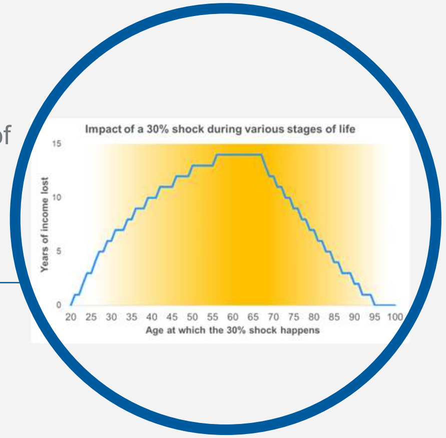


The fear of loss is far greater for retirees

A study^ has shown that retirees fear a loss **5x more** than they value a gain.

This fear has also demonstrated that it can drive retirees to exit the market just after a downturn, in the hope of managing risk by accessing defensive assets.

De-risking, combined with drawing down their portfolio in retirement, can intensify the impact of sequencing risk.



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^Source: AARP and the American Council of Life Insurers

Importance of managing behavioural risk

Both investors start with 100k in 2008, invested in a typical 70/30 Growth fund.

Investor A:

- Switches to cash for 3 months after every 15% market fall

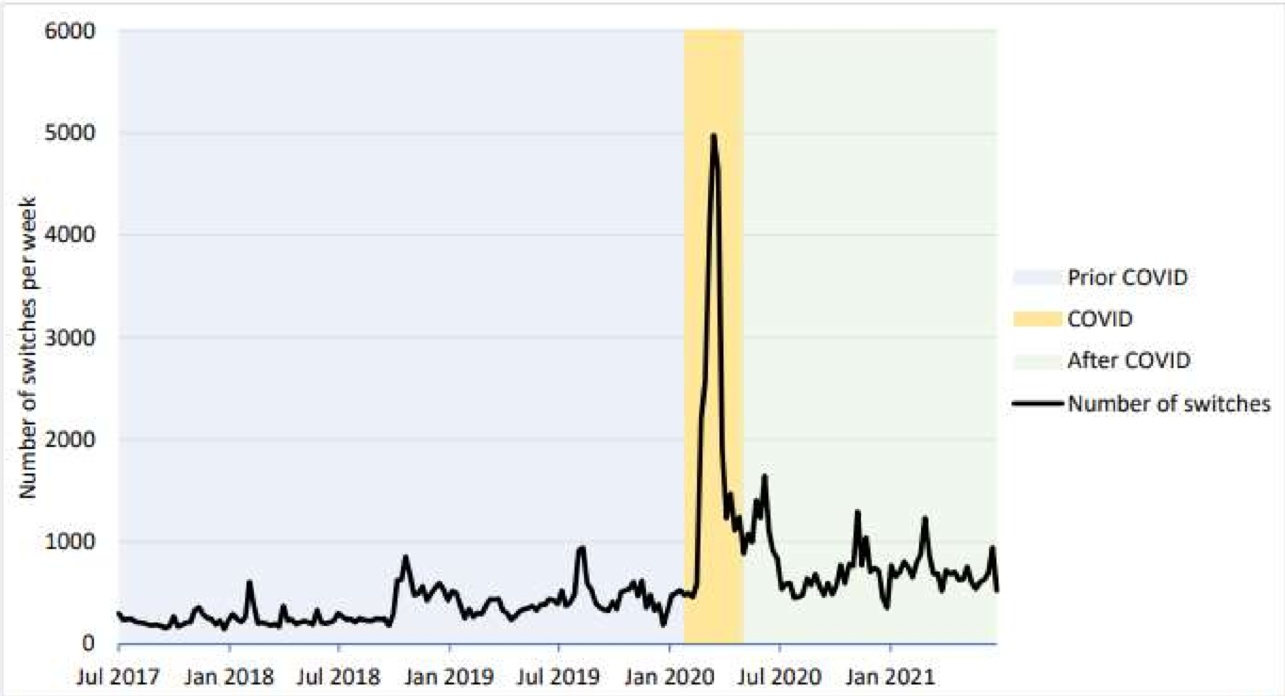
Investor B:

- Stays invested

Investor A is 17% or 44k worse off after 15 years.

https://advice.milliman.com/en/insight/the-importance-of-staying-invested

Investor switching behaviour spikes during COVID[1]



Note: *Prior COVID* is from 1 July 2017 to 31 January 2020, *COVID* is from 1 February to 30 April 2020, and *after COVID* is from 1 May 2020 to 30 June 2021.

Members switched investment options far more often during the COVID sell-off then in other periods.

- 81% were switching to more defensive investment options

- Those who switched during COVID, lost on average 5.6% compared to staying invested.

- Men, 55-70yrs old, with higher account balances were more likely to switch

ADVICE HELPS!

- Members with advice were less likely to switch

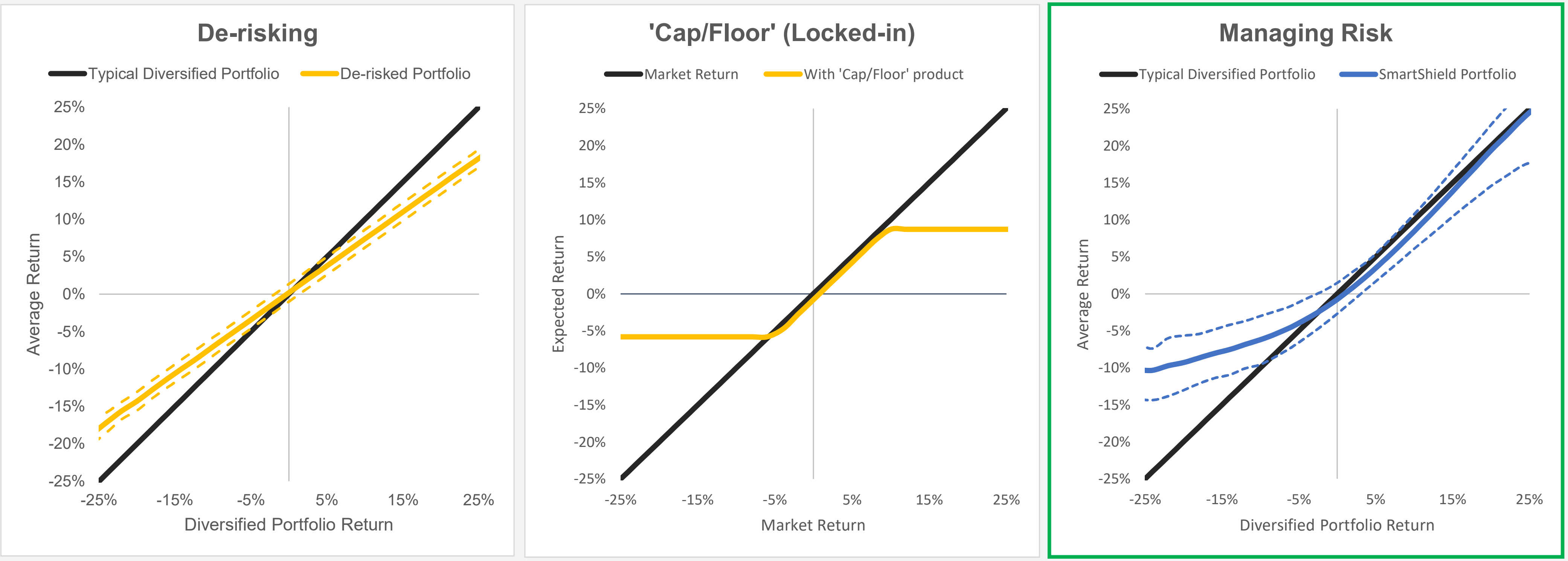
[1]Investment Option Switching Behaviour and Impact for Pension Fund Members Around the COVID Pandemic, 24th August 2023, by Butt, Khembka, Lim, Warren, Wu,

https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4537938

2. How these risks can be managed

Risk management approaches compared

Based on 5,000 stochastic scenarios, calibrated using Milliman's Standard Calibration*



*Based on 5,000, random, 40 year scenarios, calibrated using Milliman's Standard Calibration as of 31st March 2022. The dotted bands represent the 10th and 90th percentile of the selected strategy. The Cap/Floor chart is illustrative of the current market levels (as of 30th June 2022), locked in for 7 years. All results are net of typical fees.

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3. The Milliman approach

Our Approach within SmartShield

Average Return

- Measures point to point investment returns
- Objective is for the risk managed portfolios to yield a similar expected average return to its benchmark

Volatility

- Frequency and magnitude of price movements
- Objective is to deliver a marginally lower, but significantly more stable volatility than its benchmark

Sharpe Ratio

- Measures risk adjusted returns.
- Objective is to deliver better Sharpe ratios than its benchmark

CTE90: Average in worst 1 in 10 years

- Measures the average outcome in 'bad' scenarios (commonly used by regulators/banks for capital)
- Objective is to halve negative returns in the worst 1 in 10 scenarios

Return Distribution (middle)

- Performance in "normal" markets
- Objective here is track the benchmark closely, but allow some underperformance

Return Distribution (right tail)

- Performance in strong markets (90^{th} percentile)
- Objective is to track or exceed the benchmarks to help offset any underperformance in the middle.

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Milliman's SmartShield™ portfolio structure

The risk management strategy

Objective of the risk management strategy:

- Stabilise volatility
- Reduce the likelihood and severity of material market downturns.

What is Even Keel?

- Houses a selection of *index futures* which are used for the risk management strategy
- The futures are wrapped up into TWO-unit trusts, domestic and international
- Daily priced trusts
- Even Keel is complemented by the 'equity tilt' to help offset the cost of risk management strategy

4. Monitoring our strategy

Review live outcomes against expectations

As at 30th April 2024, based on 5,000 stochastic scenarios, calibrated using Milliman's Standard Calibration*

Performing *as expected*

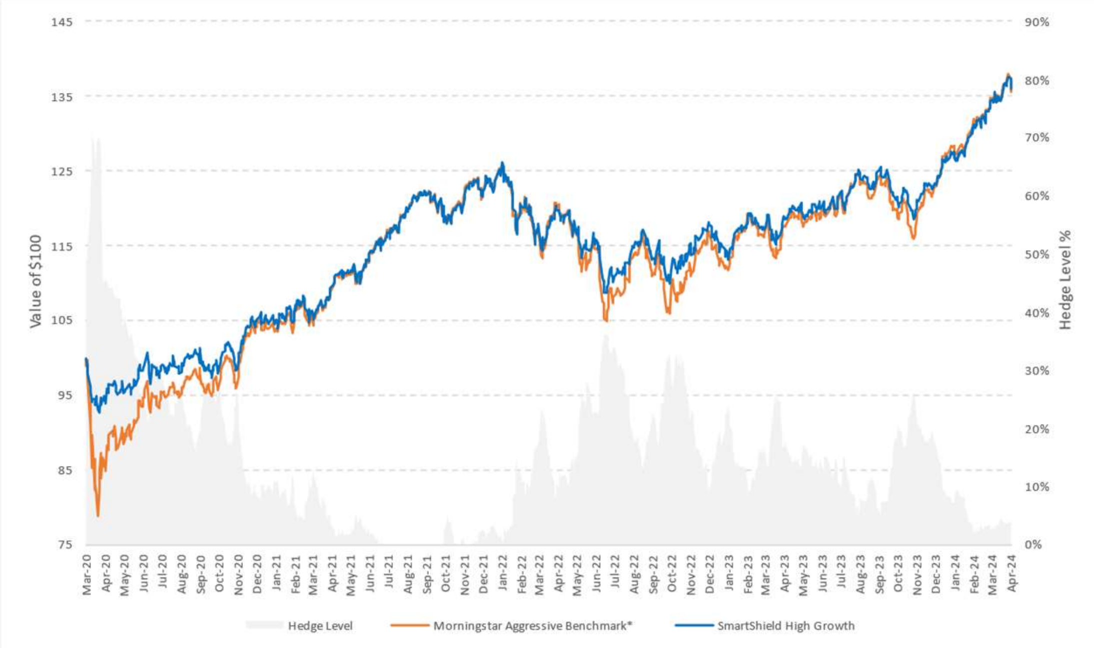
- Robust, systematic strategy ensures predictable outcomes.
- Since inception, live performance has landed within (or better than) expectations.
- True to label, cushioning the downside in 2020 & 2022, but also participate in the upside in 2021 & 2024 (ending Apr), as well as 2023 with whipsaws along the way.

*Based on 5,000, random, 40-year scenarios, calibrated using Milliman's Standard Calibration as of 31st March 2022. The dotted bands represent the 10th and 90th percentile of the selected strategy. The Cap/Floor chart is illustrative of the current market levels (as of 30th June 2022), locked in for 7 years. All results are net of typical fees.

Altering the risk profile of a managed account portfolio

Using our High Growth portfolio as example

Actual Performance			
	SmartShield High Growth	Morningstar Aggressive*	
Net Return p.a.[1]	**7.3%**	7.2%	
Physical Equity Allocation	**90%**	90%	



Performance ending 30 April 2024

[1]Performances are calculated net of underlying investment cost and management fee. Fees applied on the benchmark = 90bps, it represents the average management fee charged by investible multi-asset diversified portfolios as published by Morningstar research.

*Morningstar Australia Aggressive Benchmark (Blend) consist of the Morningstar Aus Multi-sector Aggressive Total Return Index from inception to 28th Feb 2022, before it was retired by Morningstar and replaced by the Morningstar Aus Aggressive Target Allocation Index, which is used as the benchmark from 1st March 2022 onwards.

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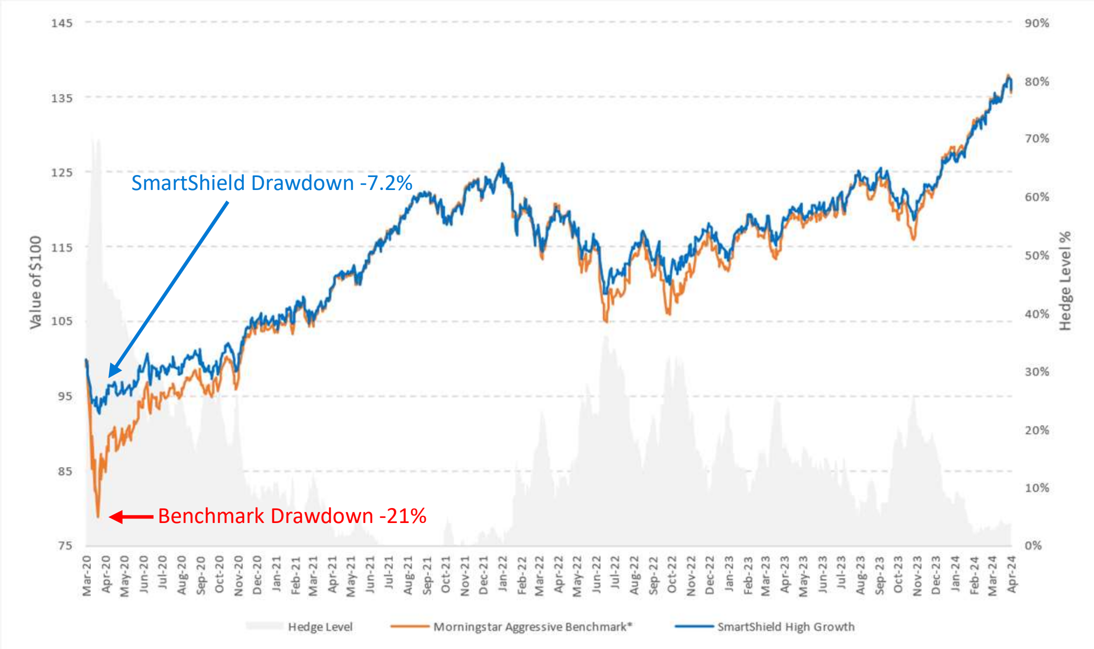
Net Return p.a.[1]	**7.3%**	7.2%	
Maximum Drawdown	**-13.9%**	-21.1%	
Actual Volatility p.a.	**8.9%**	13.6%	
Physical Equity Allocation	**90%**	90%	



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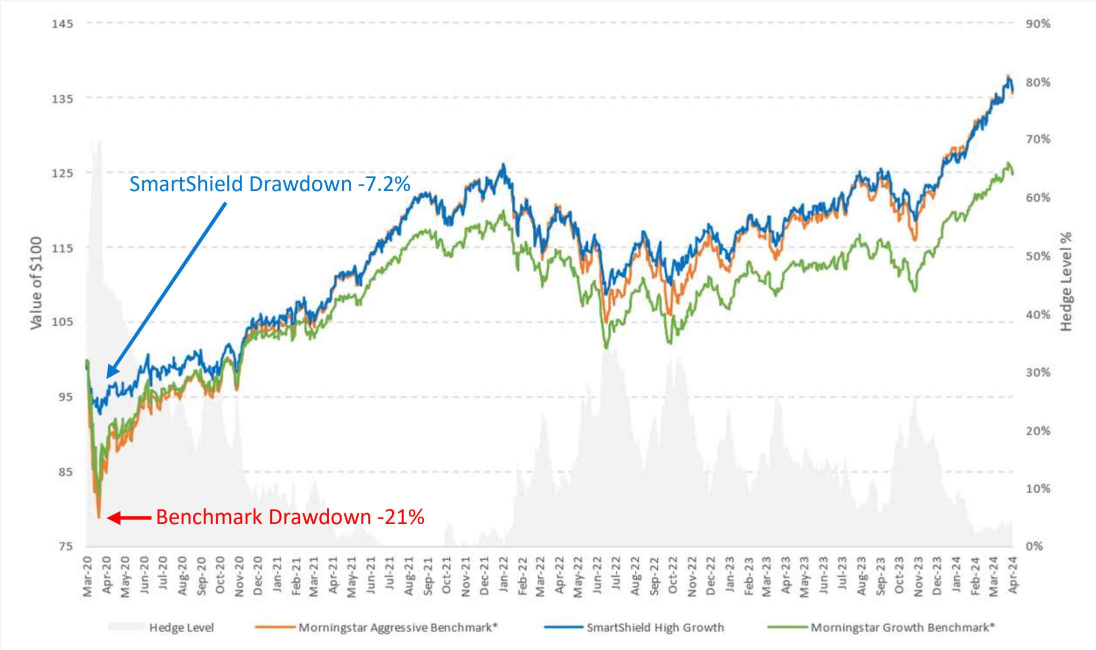
Altering the risk profile of a managed account portfolio

Using our High Growth portfolio as example

Actual Performance			
	SmartShield High Growth	Morningstar Aggressive*	Morningstar Growth*
Net Return p.a.[1]	**7.3%**	7.2%	5.1%
Maximum Drawdown	**-13.9%**	-21.1%	-18.1%
Actual Volatility p.a.	**8.9%**	13.6%	11.4%
Physical Equity Allocation	**90%**	90%	70%



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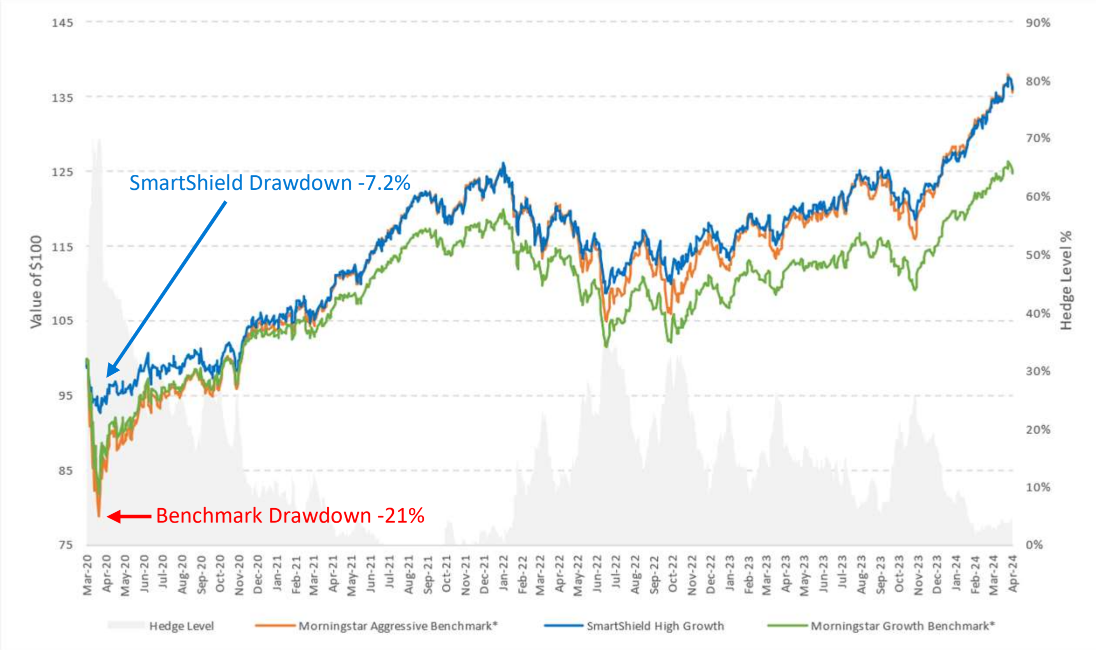
Altering the risk profile of a managed account portfolio

Using our High Growth portfolio as example

Actual Performance			
	SmartShield High Growth	Morningstar Aggressive*	Morningstar Growth*
Net Return p.a.[1]	**7.3%**	7.2%	5.1%
Risk Adjusted Return	**0.82**	0.53	0.45
Maximum Drawdown	**-13.9%**	-21.1%	-18.1%
Actual Volatility p.a.	**8.9%**	13.6%	11.4%
Physical Equity Allocation	**90%**	90%	70%



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Thank you

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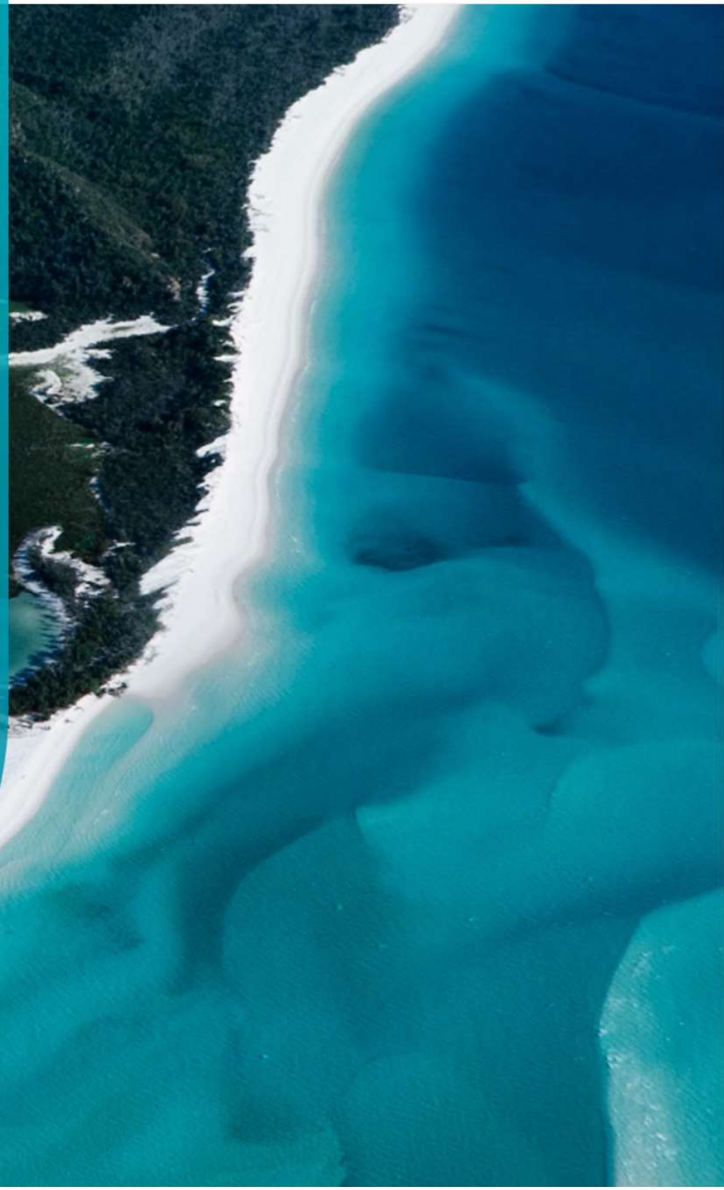
Glen Foster
Atrium Investment Management

ATRIUM Risk Targeted Investing

IMAP Risk Management Roundtable

June 2024



Glen Foster

Senior Portfolio Manager
Atrium Investment Manager

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You can only invest in MAPS through HUB24 Invest, an investor directed portfolio service (IDPS) operated and administered by HUB24 Custodial Services Limited ABN 94 073 633 664, AFSL 239 122 ('HUB24 Custodial Services'), or through HUB24 Super, a super investment service offered through the HUB24 Super Fund (ABN 60 910 190 523, RSE R1074659 USI 60 910 190 523 001) ('Nominated Platform' means either HUB24 Invest or HUB24 Super). HUB24 Custodial Services is the promoter of the HUB24 Super Fund and provides a range of services to the HUB24 Super Fund. Investors should consider the MAPS Product Disclosure Statement (PDS) and Target Market Determination (TMD) (available from the Nominated Platform's website) before making any investment decision. Please refer to the disclosure documents for your Nominated Platform (available from your adviser or your Nominated Platform) together with the PDS for important information concerning an investment in MAPS.

The estimated performance data in this document is non-actual information (Non Actual Information). Non Actual Information is predictive in character, may be affected by inaccurate assumptions or by known or unknown risks and uncertainties, and may differ materially from results ultimately achieved. Estimated performance is quoted based on the most recently available data obtainable from independent sources for the period end date. In preparing estimates, Atrium may use estimated performance information and other data provided (on a regular basis) by external investment managers involved in managing the investments of certain portfolios to quote performance for their funds and portfolios when this data cannot be sourced independently. Non Actual Information is provided for illustrative purposes only and is not intended to serve as, and must not be relied upon as, a guarantee, an assurance, a prediction or a definitive statement of fact or probability. Actual events and circumstances are difficult or impossible to predict and will differ from assumptions. Some important factors that could cause actual results to differ materially from those in any Non Actual Information include changes in domestic and foreign business, market, financial, political and legal conditions, and incorrect data provision by external sources. There can be no assurance that any particular Non Actual Information will be realised.

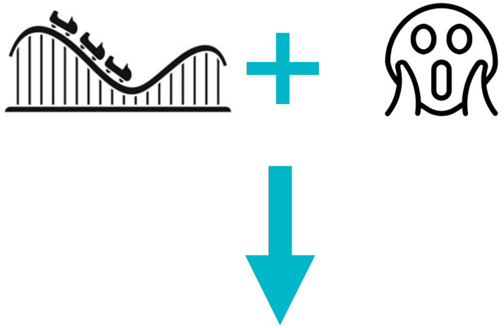
Risk 101 - Improving the consistency of returns

Predictable returns and avoiding the left tail risk of equities

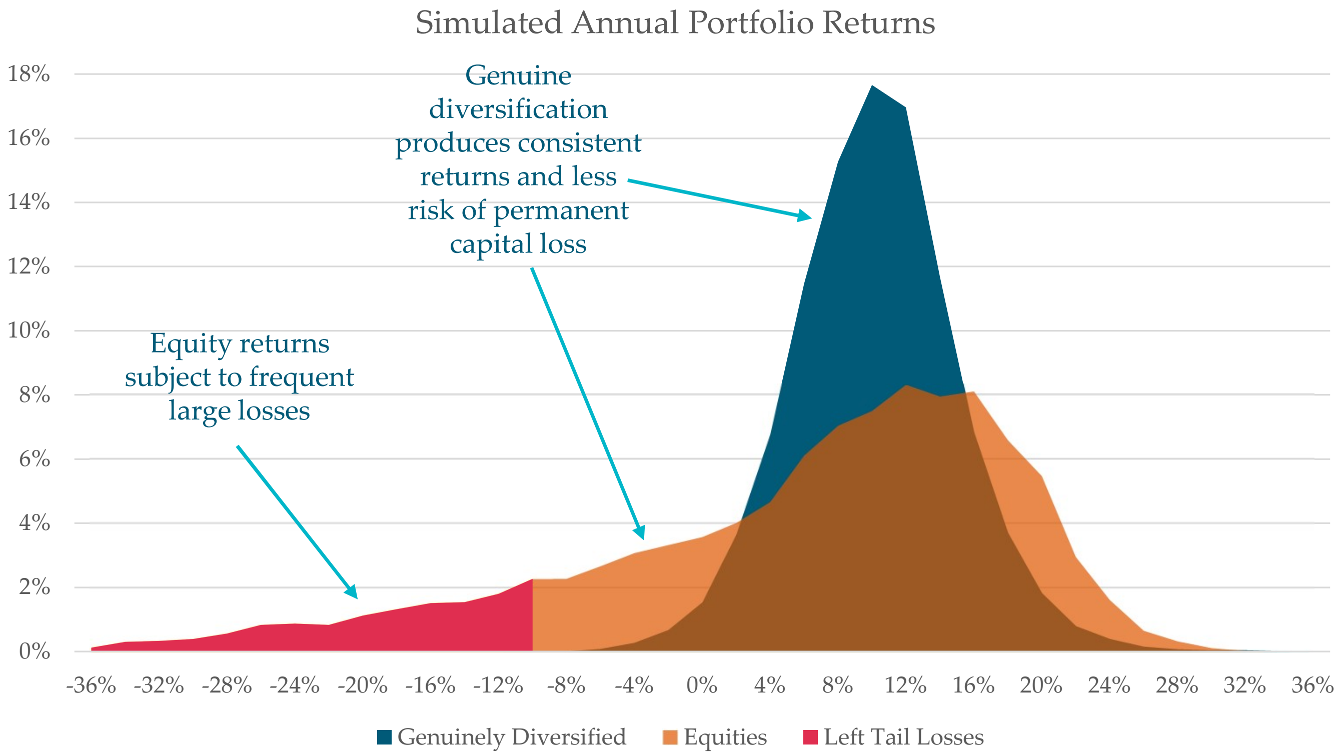
Portfolio risk is a function of asset risk and correlation

RISING VOLATILITY

RISING CORRELATIONS



INCREASING RISK OF CAPITAL LOSS

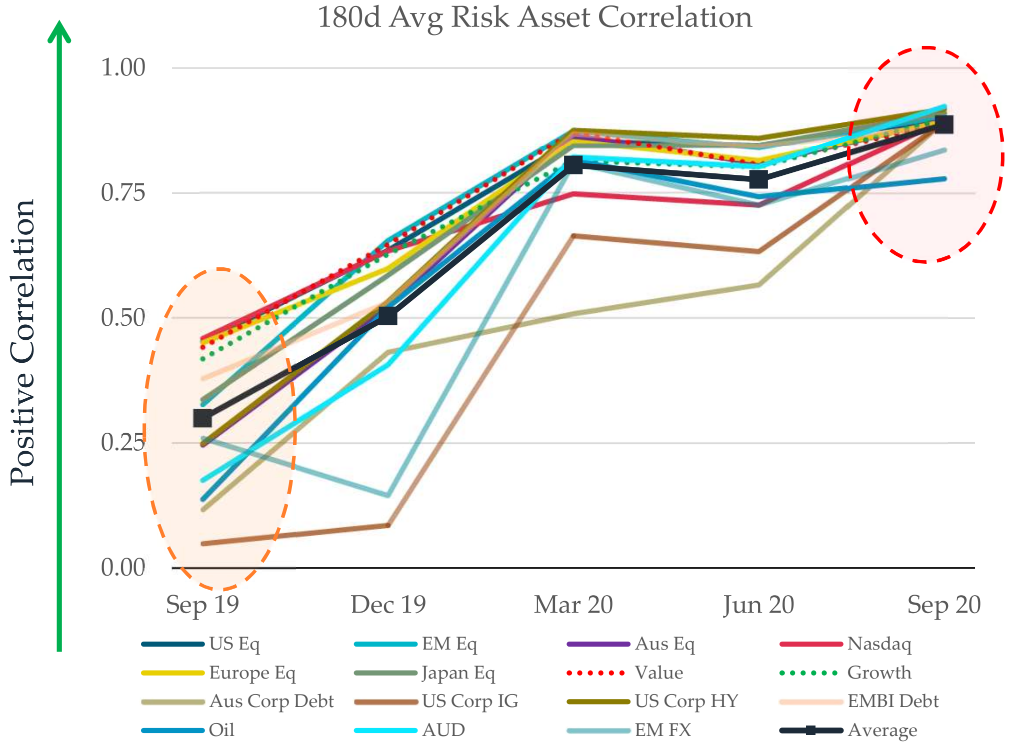


Source: Atrium Investment Management, Bloomberg. Source: Atrium. Simulated returns using Jacobi and Atrium's asset class and alpha risk & return assumptions. Expected Return of Cash + 4.5% is used as an example and applied to all portfolios for consistency. Illustrative purposes only based on non-actual forecasts

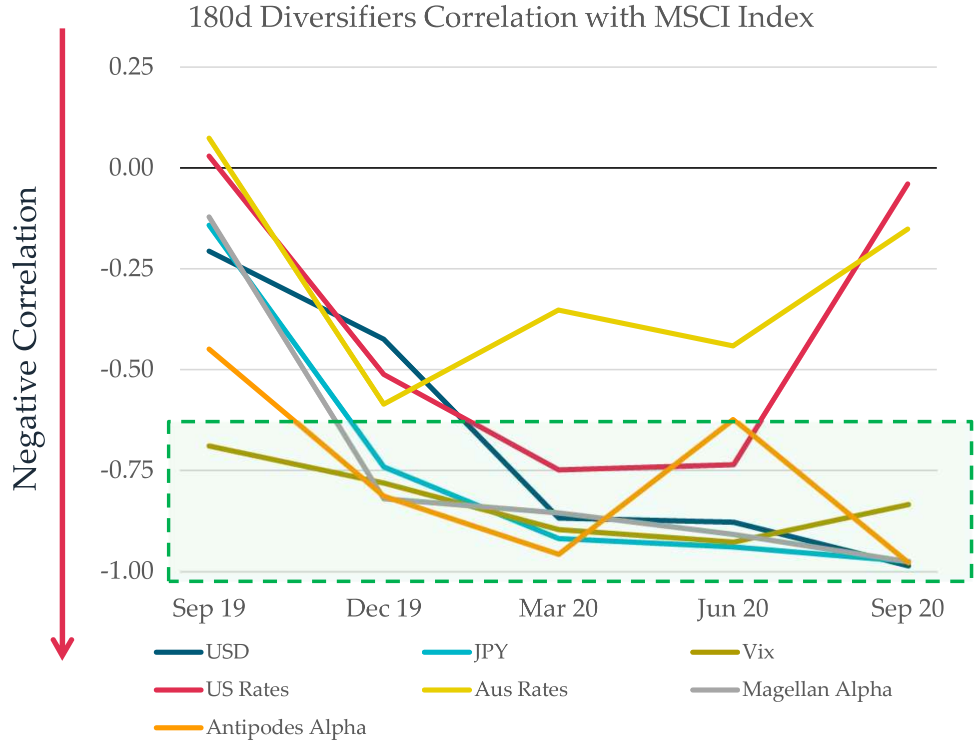
Rising correlations cause tail risk events and losses

Downside protection requires low/negative correlations to persist in drawdowns, not convergence to 1

Risk assets look diversifying in "normal" times, but correlations converge in a "risk-off" event.



Assets and strategies that don't suffer from this convergence smooth returns when you need it.



Source: Atrium Investment Management, Bloomberg. Data at 30 September 2020. Manager alphas represented by Magellan Global Fund and Antipodes Global Long Only Fund.

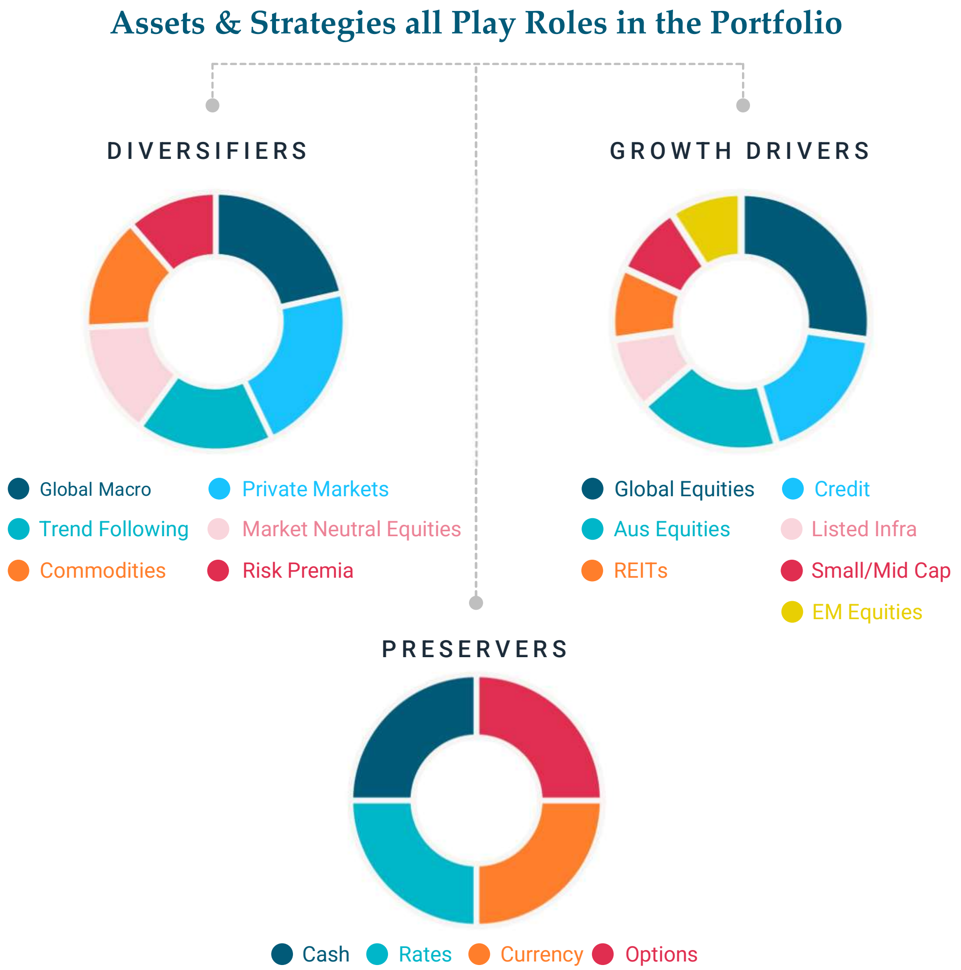
Preservers are diversifiers that work when you need them

Genuine diversification

Delivering genuine, not naive diversification, requires flexibility and breadth

Diversification across a broad universe of strategies and assets, including alternatives, private markets, hedging, and overlays

Global partnership provides superior knowledge of liquid alternative strategies not readily available to Australian investors



Source: Atrium Investment Management. Asset allocations are illustrative and may change at any time.

Returns are driven by risk exposures not asset class labels

Investing capital delivers a portfolio of risk factors that drive the outcome

Developing a sophisticated understanding of all risk factors affecting an asset

Ensuring risk exposures are deliberate, appropriately sized, uncorrelated and likely to be rewarded

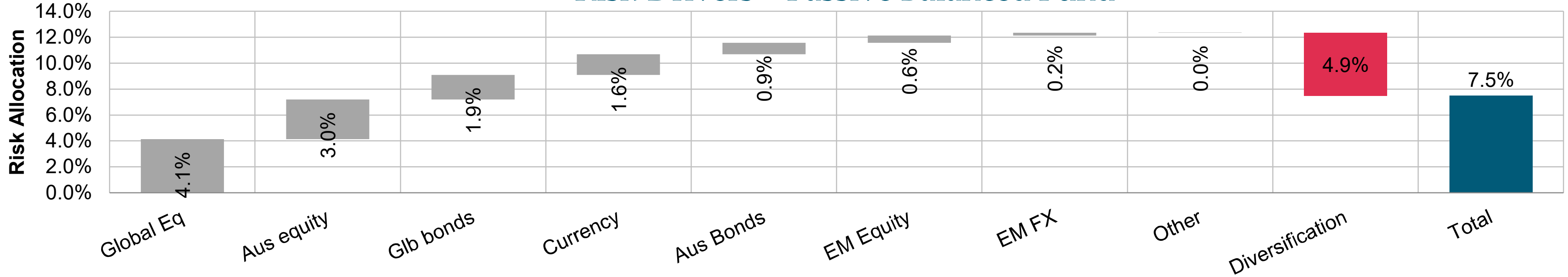
Breadth and balance of return drivers and no unwanted risks

Source: Atrium Investment Management. May 2024.

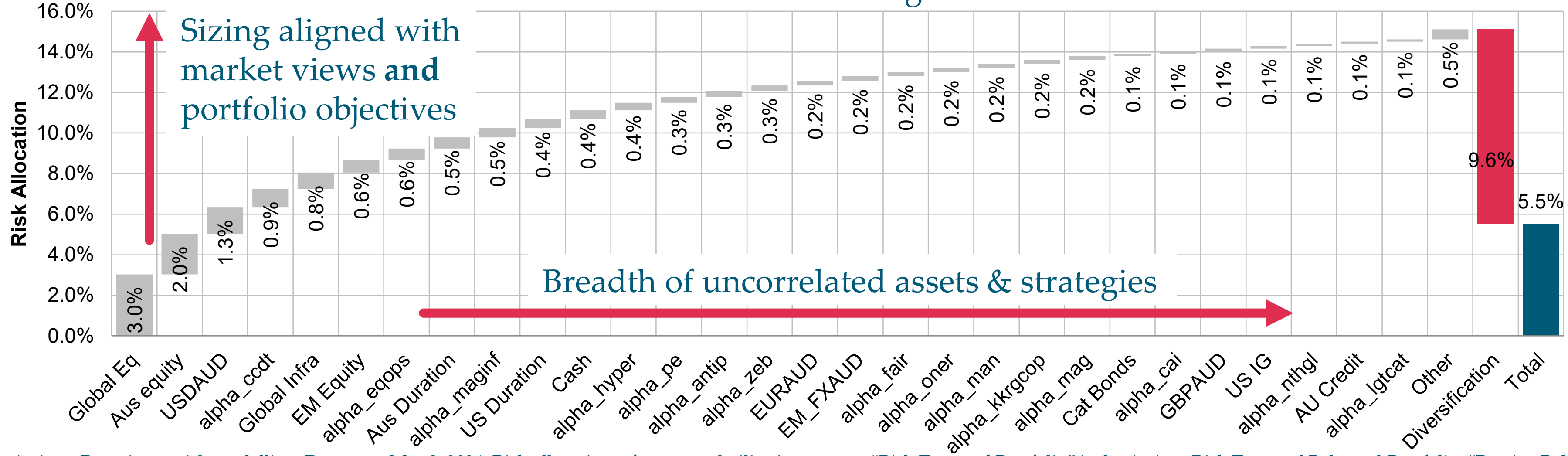
Breadth and precision of return & risk drivers

Better balance is achieved with targeted risks that are not just an outcome of other decisions

Risk Drivers – Passive Balanced Fund



Risk Drivers – Risk Targeted Portfolio



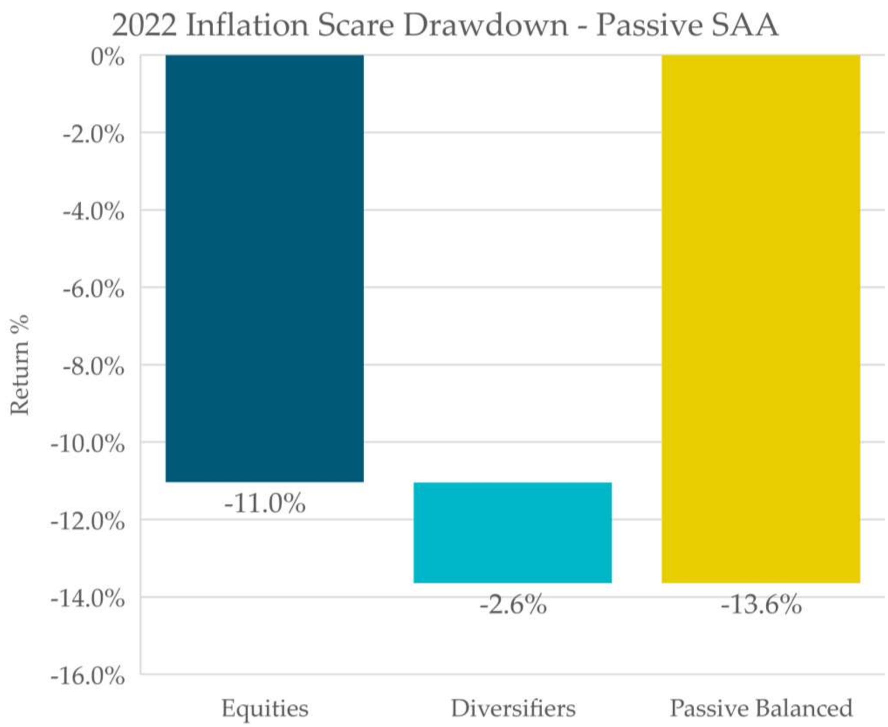
Not just less volatility, but less tail risk

Source: Atrium. Proprietary risk modelling. Data as at March 2024. Risk allocation = forecast volatility * exposure. “Risk Targeted Portfolio” is the Atrium Risk Targeted Balanced Portfolio. “Passive Balanced Fund” is the Vanguard Balanced Index Fund. Past performance is not a reliable indicator of future performance. Asset allocation may change at any time subject to the investment manager’s discretion.

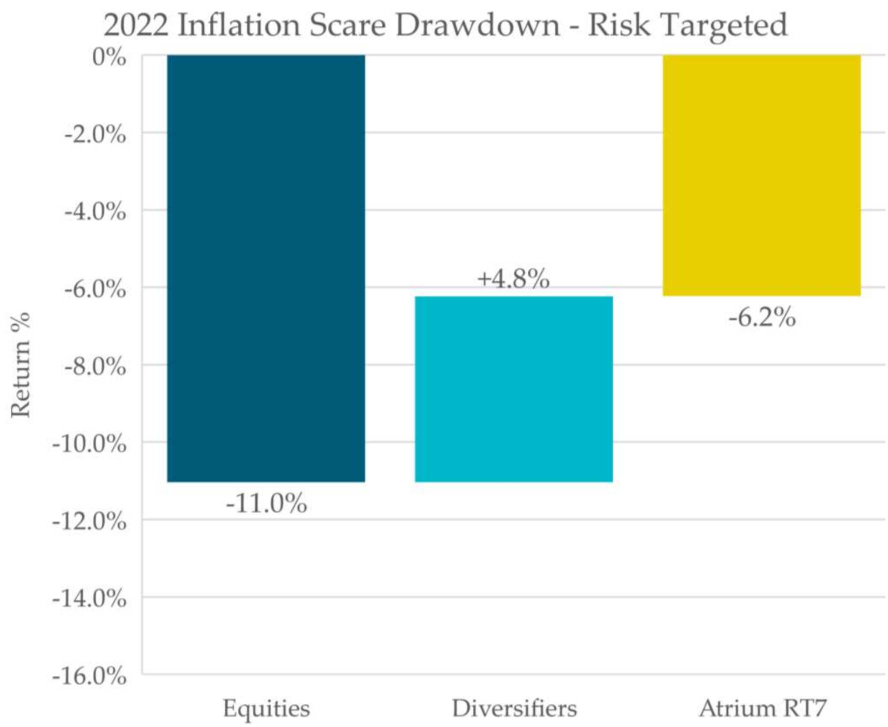
The outcome – how it works in drawdowns

The important risk isn't monthly volatility, it's the risk of large capital losses.

Naive diversification can be diversification that isn't there when you need it



Genuine diversification works when you need it



Source: Atrium, Bloomberg. Returns from August 2021 to September 2022. "Atrium RT7" is the Atrium Risk Targeted Balanced Portfolio. Passive Balanced is the Vanguard Balanced Index Fund. "Equities" is 50/50 S&P/ASX 200 Index / MSCI World Index AUD. "Other diversifiers" includes bonds, active management, alternatives, and cash. Past performance is not a reliable indicator of future performance.

Thank you

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Andrew Stadelmann
BT

IMAP Risk Management Roundtable

Andrew Stadelmann

Platforms Investment Research

June 2024

BT's Investment Governance Lenses

BT

1

RESPONSIBLE ENTITY of BTMP

1. Product issuer of BT Managed Portfolios
2. Appoints and potentially terminates investment managers to the BTMP MIS
3. Responsible for disclosure materials

2

PLATFORM OPERATOR

1. Makes Managed Portfolios available on the Panorama platform
2. Responsible for implementation of the investment managers' models

3

SUPER TRUSTEE

1. Ensures that MPs available to Superannuation members satisfy the obligations imposed under SPS/SPG530
2. Consideration of Members Best Financial Interests in all investment governance activities

Panorama Menu

Lens 1: Responsible Entity

WFSL as RE and product issuer of BT Managed Portfolios has a number of risk considerations:

Product risk - appointment of investment managers to the BT Managed Portfolio MIS and issuance of disclosure materials

Investment risk – investment manager capability to manage the disclosed investment strategy, and confidence in the manager to meet the disclosed investment objective

Implementation risk - risk of the MP being “not true to label”

Lens 2: Platform Operator

Risk of making options available on the menu:

Menu selection - the investment option needs to satisfy the investment governance processes. These focus on the risk that the investment capability is appropriate to meet the investment objectives and strategy

Ongoing availability - ongoing monitoring programme looks at risk measures such as volatility, drawdown and risk/return ratios

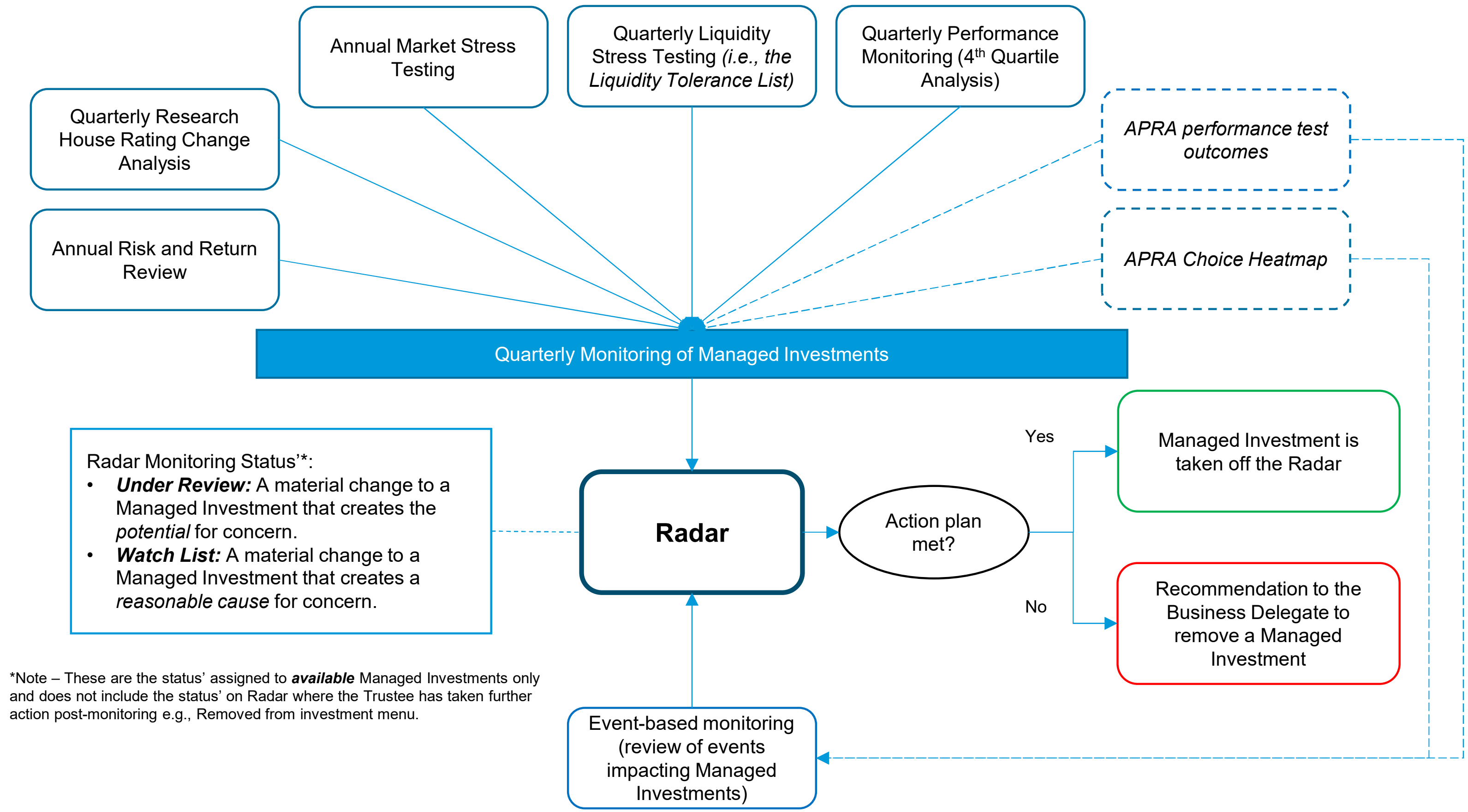
Lens 3: Super Trustee

MPs available to Superannuation members are monitored with the same obligations imposed under SPS/SPG530 as any other investment option.

Risk is considered across:

- **Investment option risk**
- **Liquidity risk** – limited use of less-liquids within MPs as operational complexities
- **Valuation risk** – less of a concern for MPs given limited use of less-liquid assets

Investment Risk Monitoring



*Note – These are the status' assigned to ***available*** Managed Investments only and does not include the status' on Radar where the Trustee has taken further action post-monitoring e.g., Removed from investment menu.

Investment Risk Monitoring is not one thing, it is a "Mosaic"

Challenges

Data challenges - “MPs are different”

- don’t have ready access to information in our databases (e.g. Morningstar)
- particularly bespoke have no/little information
- Full look-through isn’t always available to enable look-through asset allocation

Lack of ratings – again, MPs are different

- there is a lack of ratings availability for large parts of the MP market

Emerging Developments

Greenwashing - focus of ASIC as highlighted by recent litigation

ASIC Report 779 – persistent underperformance and expectation on Super Trustees to communicate and take action

APRA Annual Performance Test – current Treasury Consultation Paper, potential for scope to broaden to include investments beyond MySuper, Trustee Directed Products (including Platform TDPs)

Liquidity risk – possibly already being felt with funds with less liquid exposures, such as unlisted property allocations, that have been used in MPs where mismatches exist

Disclaimer

Panel Discussion

Moderator: Toby Potter, IMAP
Beatrice Yeo, BlackRock
Simon Ho, Milliman
Glen Foster, Atrium
Andrew Stadelmann, BT

Upcoming IMAP Events

Advice in Action Conference 2024
23rd July – Melbourne
25th July – Sydney

Managed Account Awards
Awards night 22nd August