

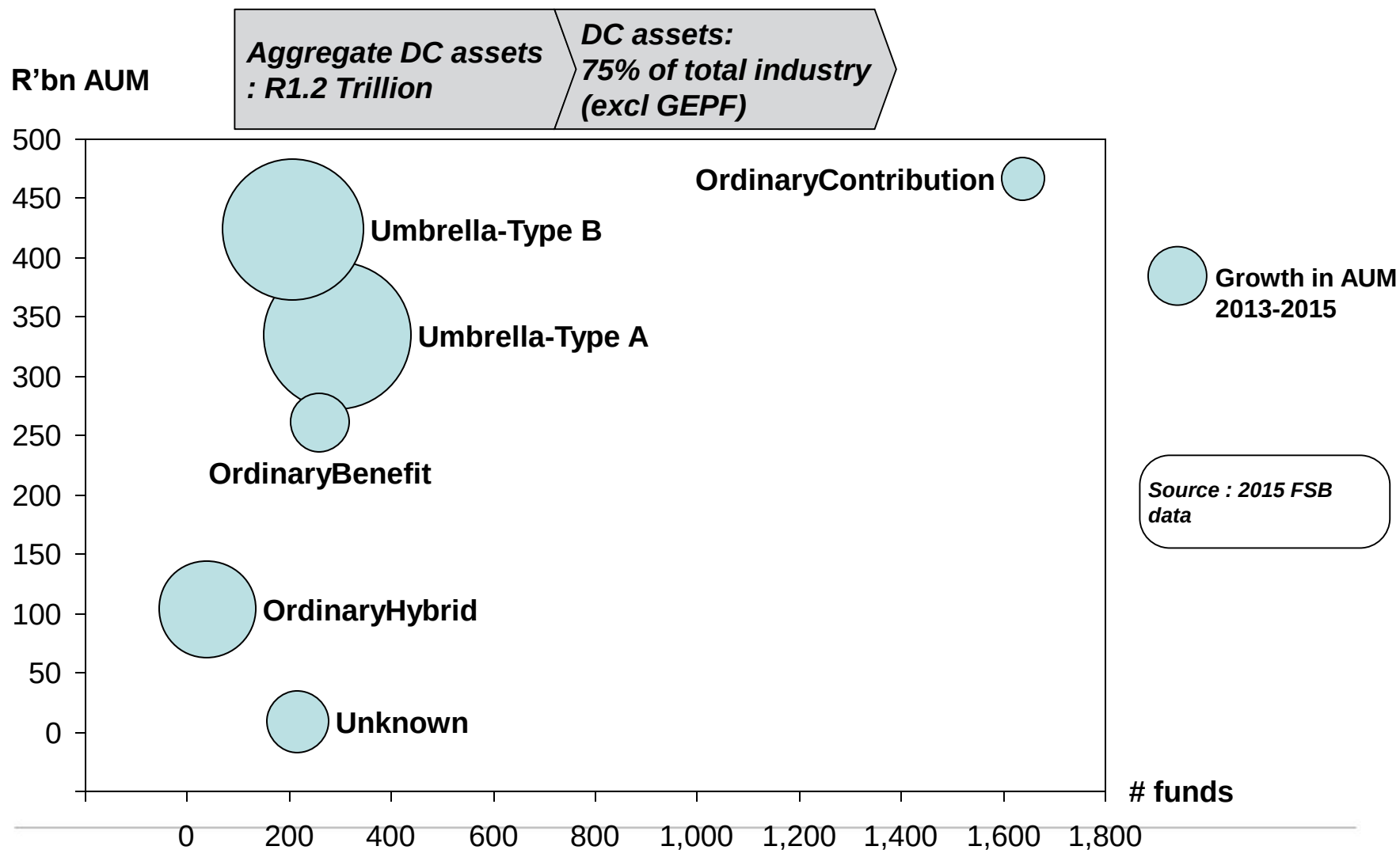


QUANTIFYING RISK, ENABLING OPPORTUNITY

John Anderson / Dwayne Kloppers

*The evolution of DC investment strategies :
moving towards a goals based approach*

DC investment strategies significant to the wellbeing of South Africans



Latest NT proposed regulations : default investment strategies

Default investment portfolios may vary between members in respect of any / all:

- Age
- Retirement date
- Accumulated savings
- Pensionable salary
- Other conditions that may be prescribed

Other factors that need to be taken into account:

“ ...

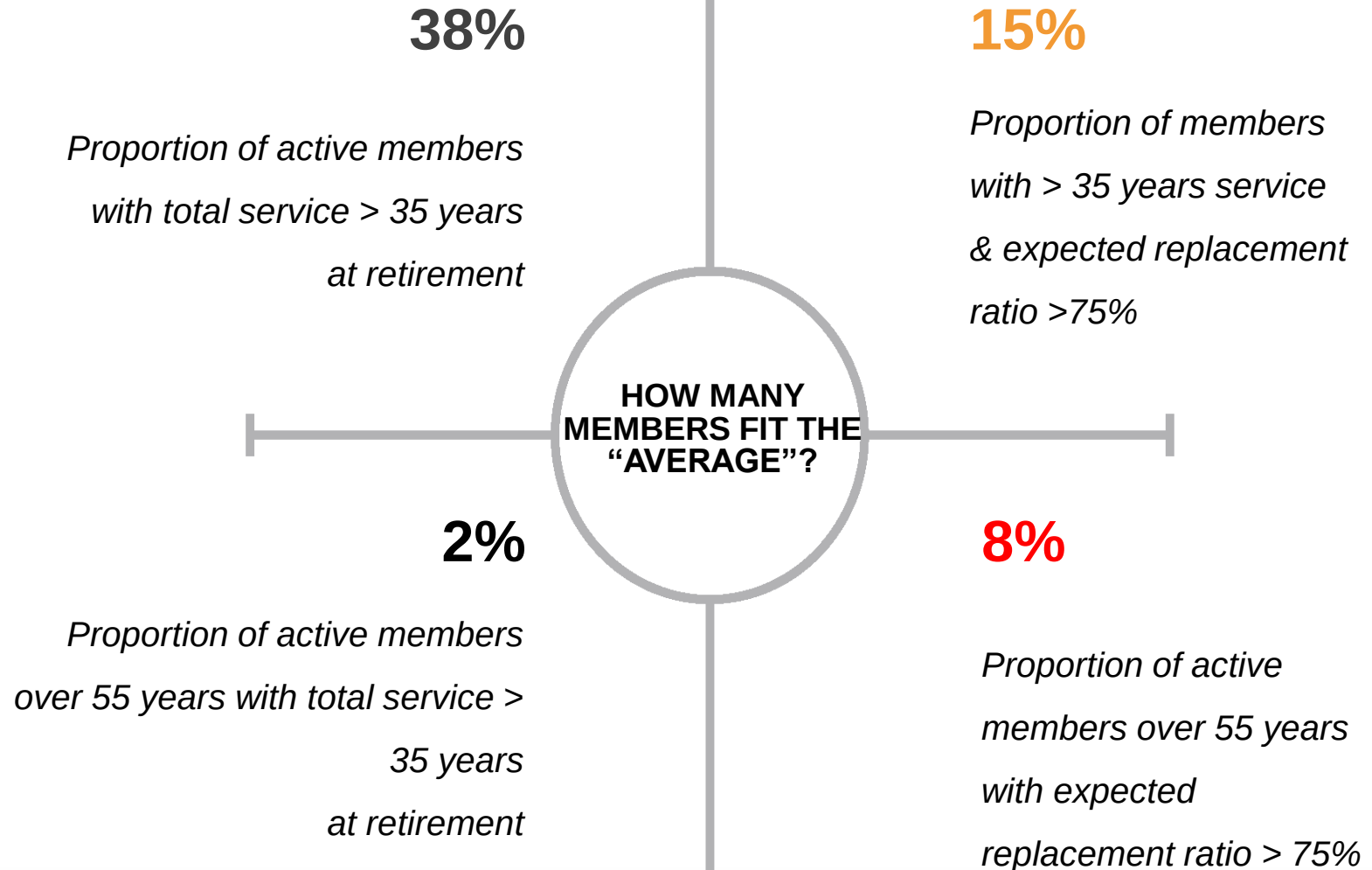
(aa) their appropriate preferences for balancing risk and return;

(bb) their likely future term of membership in the retirement system;

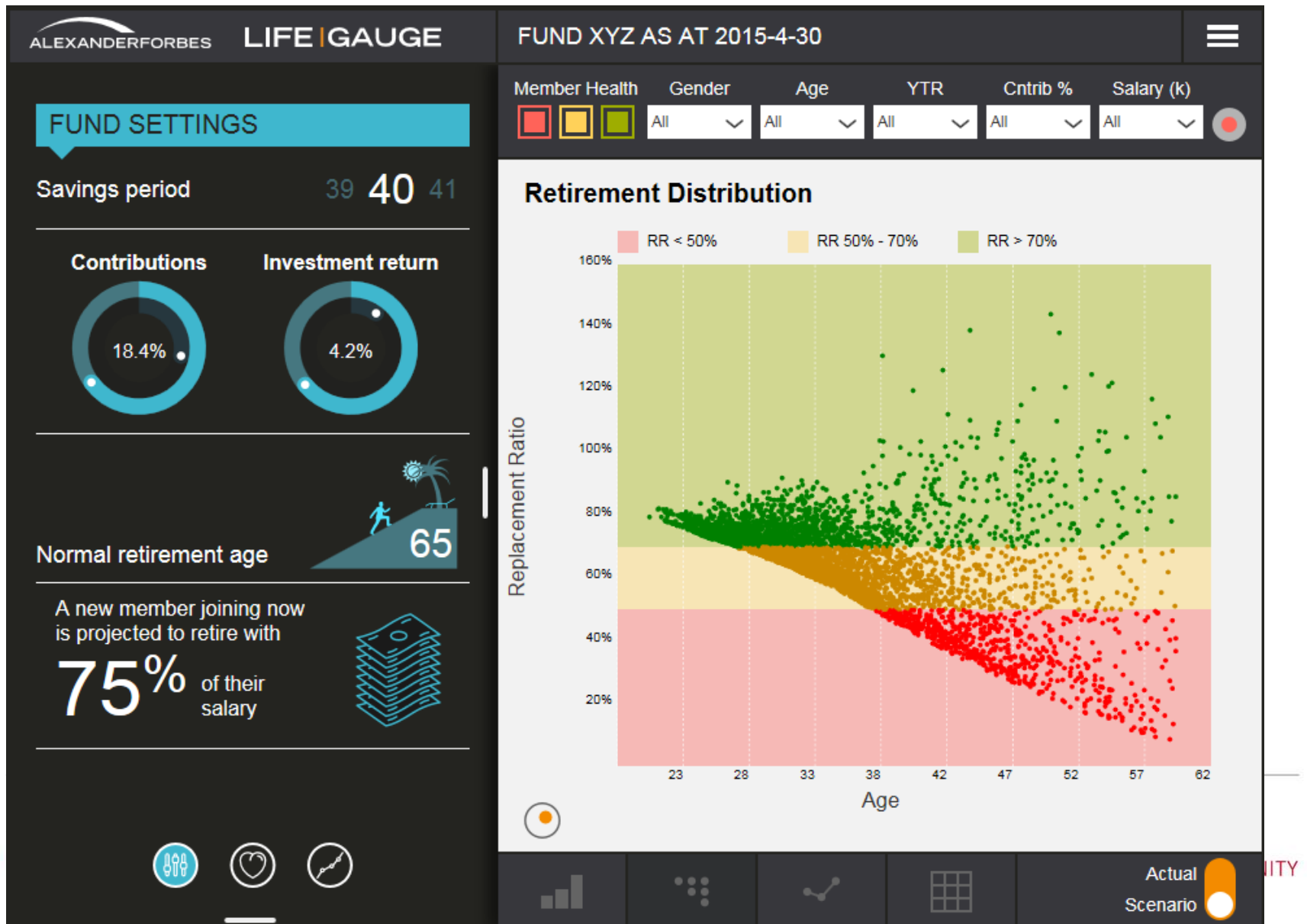
(cc) their financial sophistication; and

(dd) their ability to access individual financial advice”

Traditional DC strategies assume an “average” member...



But everyone is unique...



And our required incomes are different...

Hierarchy of Retirement Needs

Self-actualisation

Esteem



Belonging



Safety



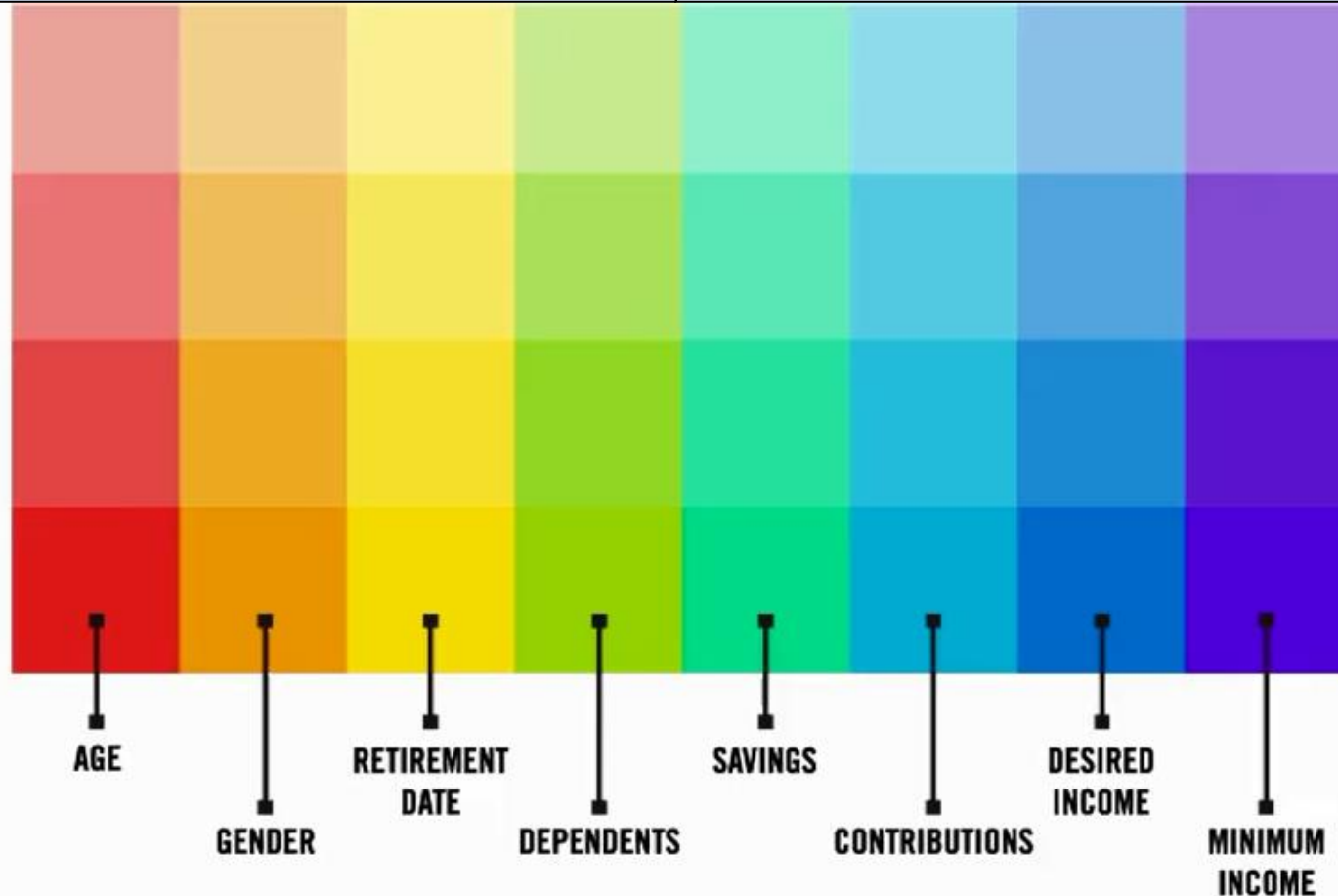
Basic Needs



Factors impacting investment strategy to provide income in retirement

*Typical lifestage only looks at **age***

Assumptions made about gender, actual retirement date, dependents, savings, contributions, income requirements



The environment has changed so we can improve strategies

Technology



Until now, limited technology – unfeasible to provide customised solutions

Performance



Historically performance comparisons – easy to explain & sell

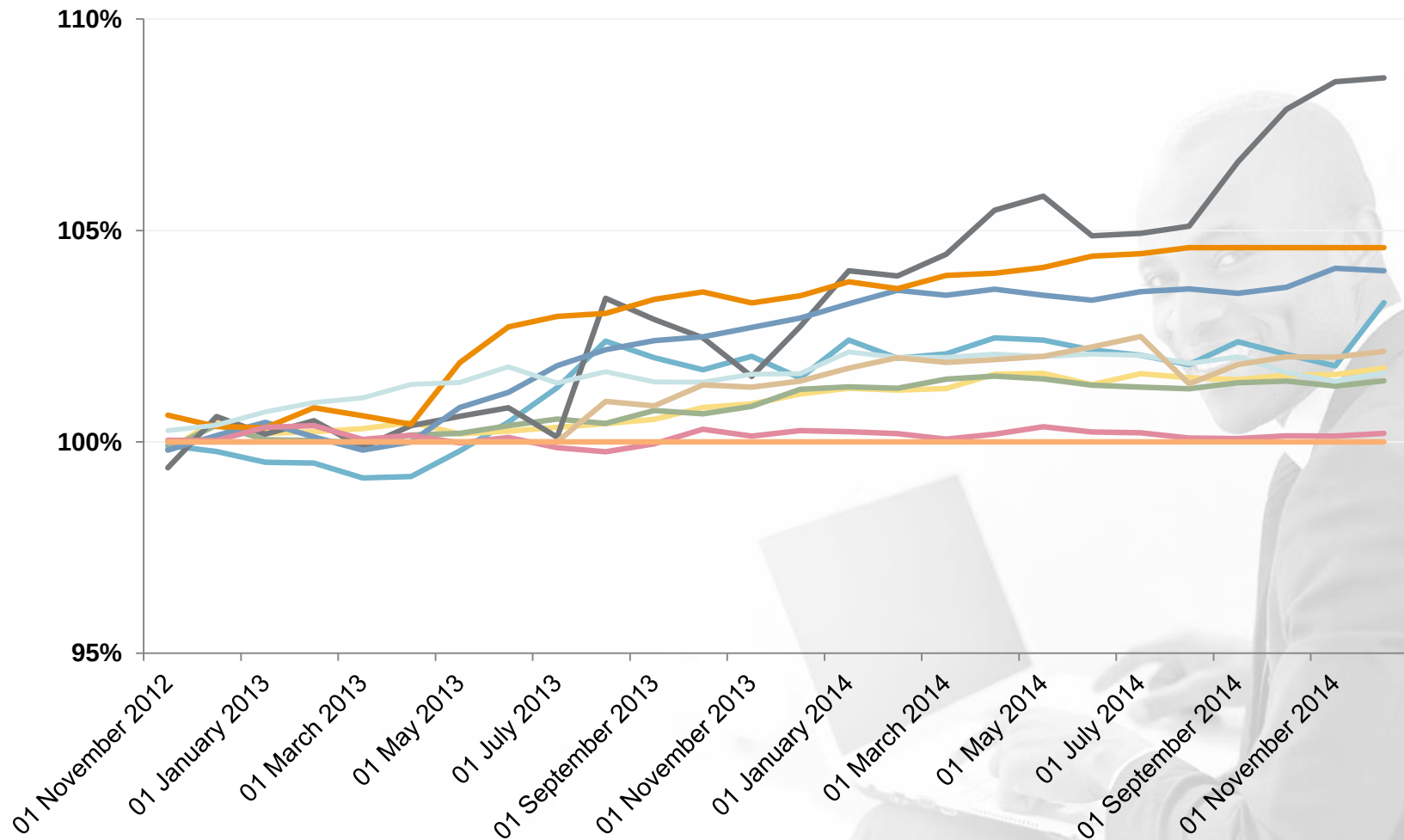
Asset classes



Historically limited asset classes – ILB only viable investment option in late 2000's

LDI industry developing in SA

LDI managers reduce unrewarded inflation & interest rate risk



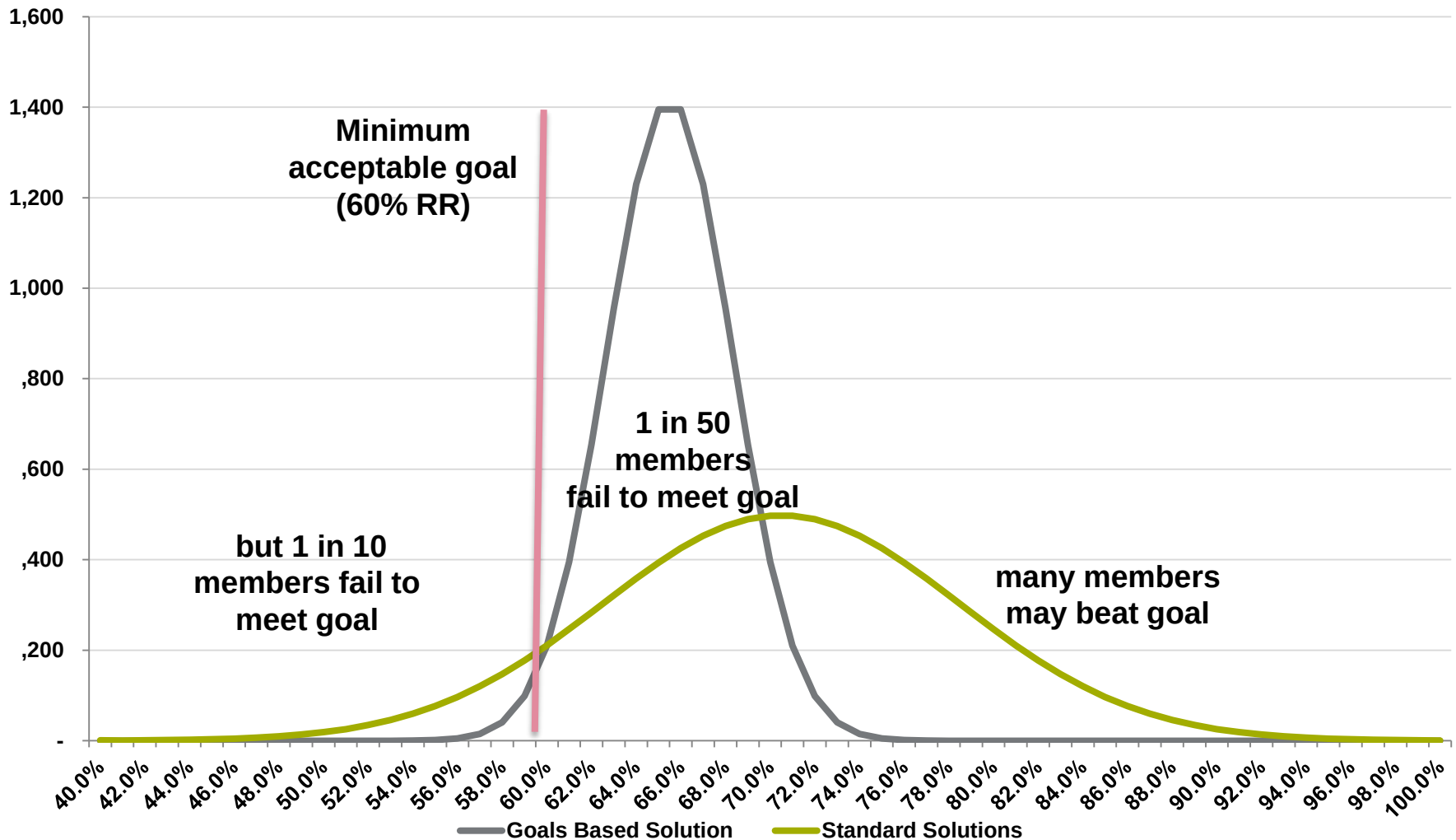
Source: Alexander Forbes Manager Watch LDI Survey, AF calculation

What makes goals-based different?

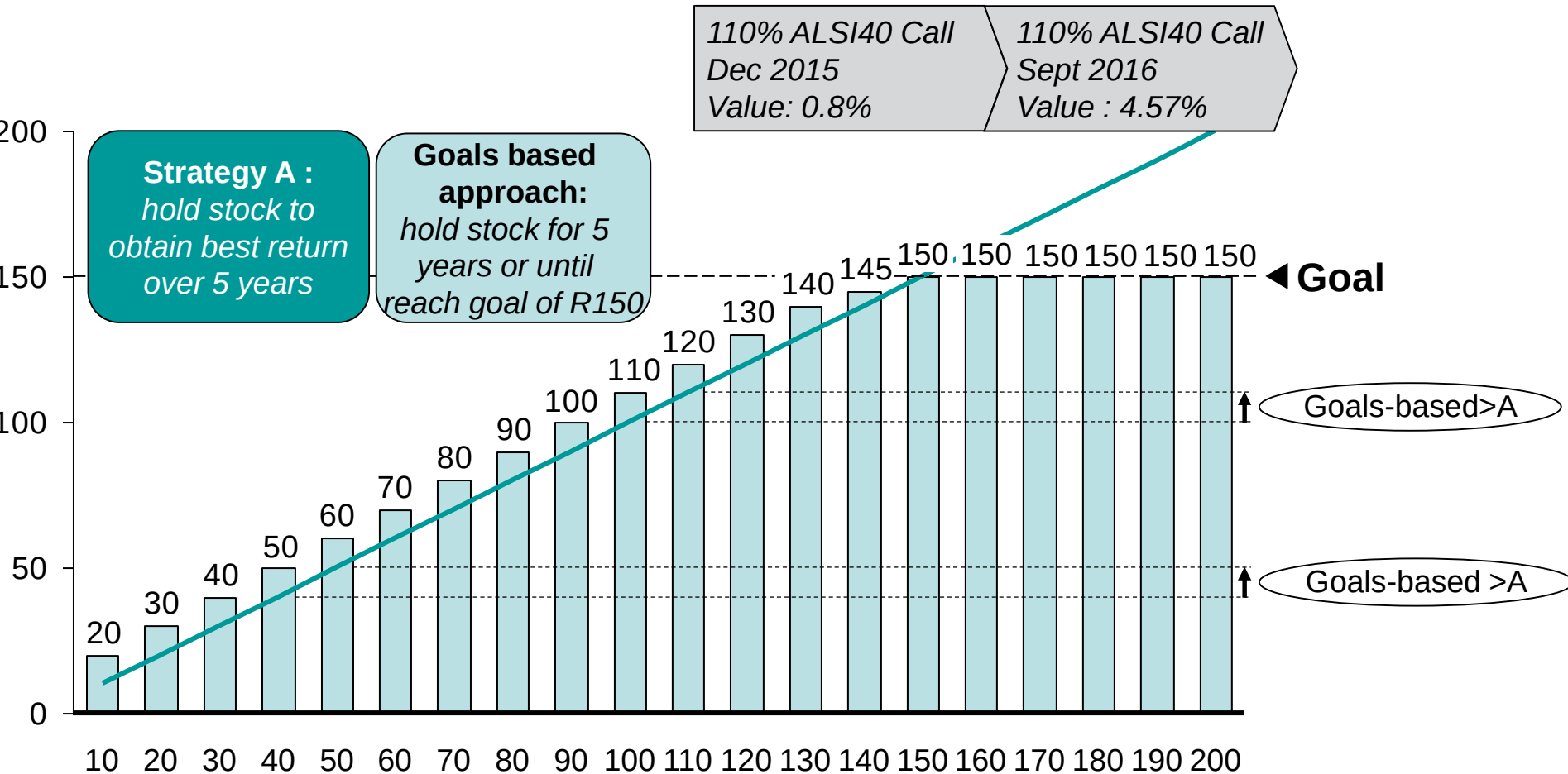
	Traditional	Goals-based
Investment target	High risk-adjusted return	Highest probability of meeting specific funding requirements
Risk definition	Volatility or variability of returns	Risk of falling short of target
Investment strategies	Asset mix – provides highest risk-adjusted returns against peers	Asset class & strategy mix – important for increasing probability of meeting target
Performance measurement & monitoring	Measurement of success against benchmark or peers over 1, 3, 5 years. Post-ante measures	Success measured as function of meeting goal over targeted time frame. Ex- and post-ante measures.
Sustainable investment	ESG policy adopted, with no specific measures	Measurement and incorporation of sustainability into investment strategy selection to increase probability of meeting target

Illustration: Goals based approach

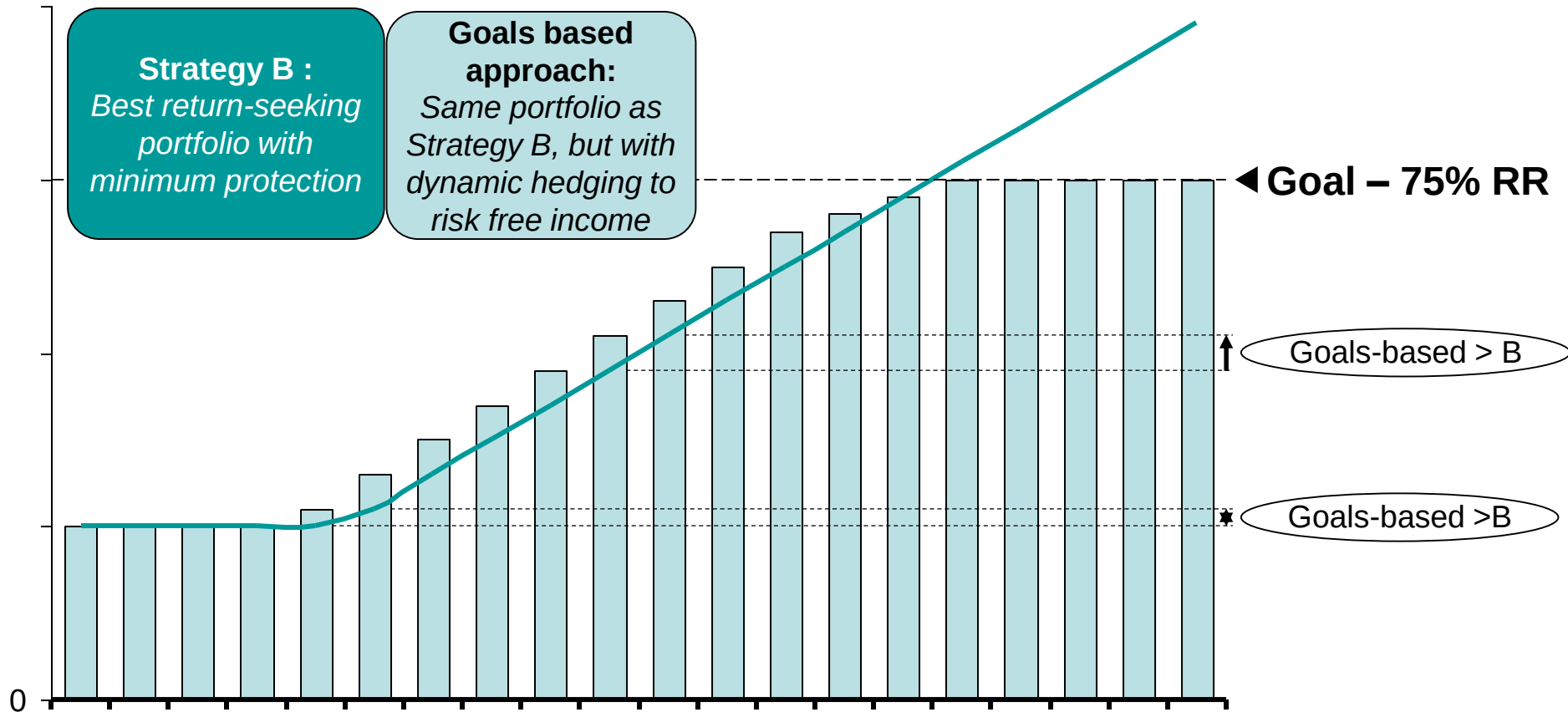
Illustration: RR outcomes for 10 000 retirees



The value of a goals-based approach using option theory



The value of a goals-based approach using option theory





QUANTIFYING RISK, ENABLING OPPORTUNITY

Dwayne Kloppers

Measuring the benefits of goal based investment

AGENDA

1. New measures of benefit for DC investment strategies
2. Benefits of goals based investing (G.B.I) – putting a number to it

NEW MEASURES

For evaluating investment strategies

EXISTING MEASURES

- Today only considering *prospective* measures: i.e. *strategy/strategic asset allocation* selection tools
- Variety of measures already exist: Means, VaR's, distributions, Legacy Index etc.
- Looking at variety of variables: Replacement ratios, cash flows, investment returns etc.

EXISTING MEASURES

- Each has its limitations
- Typically using multiple measures paints a fuller picture
- A number of new, potentially useful measures appearing in the literature aiming to be:
 - Simple: single numbers
 - Intuitive: easy to interpret/use in explaining certain principles
 - Engage with full breadth/distribution of income
 - Consider three examples here
 - **All based on expected utility** (More comments on this later)
 - **I.e. All measuring benefits in terms of improvements in utility or “wellness”**

GROUNDWORK - CERTAINTY EQUIVALENTS

CERTAINTY EQUIVALENTS

- Propose a risk bet, e.g. 50/50 chance of once off R15 000/R25 000
- Offered a guaranteed value, test where indifference occurs
- E.g. Bob is indifferent between guaranteed R22 000 and the bet

CERTAINTY EQUIVALENT RETIREMENT INCOME

- Propose a risky retirement income, e.g. 50/50 chance of R15 000/R25 000 PER MONTH
- Bob indicates he is indifferent to a R22 000 inflation linked annuity
- Can make the risky income more complex – e.g. Living annuity , WPA

COMPARING RISKY STRATEGIES

- One can compare multiple risky strategies
- Each is mapped back to a certainty equivalent income
- E.g. Two different drawdown rules post retirement
- E.g. Two different asset allocations

Initial gap

- Lump sum needs to be invested in A
- To match the wellness of B
- Simple, intuitive
- Not suited to academic work/comparisons
- Dempster et Al. (2015)

Gamma

How much better is strategy A than B?

Gamma

- Increase in certainty equivalent income
- Utility based, but has scale
- Tangible, but tricky to explain to clients
- Useful for research work
- Blanchett & Kaplan (2013)

Gamma equivalent alpha

- How much alpha required in A
- To match 'wellness' of B
- *Some (not all)* types of alpha cannot easily be accommodated in a GBI
- Is alpha sacrifice likely less than gamma equivalent alpha?
- Blanchett & Kaplan (2013)

Potential use: Draft default - must consider passive.

VALUE OF GBI

Dempster et Al. (2015), Life Cycle Goal Achievement or Portfolio Volatility Reduction?

EXAMPLE OF USE – GOAL BASED v RETURN BASED

Investor	Gamma	Gamma Equivalent Alpha	Initial Gap
Profile A: 30 yrs old, £0 saved £60 000 p.a. salary	+10%	+0.22% p.a.	+£115 000
Profile B: 65 yrs old, Just retired £600 000 saved	+8%	+0.37% p.a.	+£135 000

Useful:

1. Regulation 28 – assets should be appropriate to member liabilities
2. Treating Customers Fairly – advice should consider the circumstances of the individual

WHAT IF WE LOOK AT CONVENTIONAL MEASURES?

		Profile A (Pre-Ret)	Profile A (Post-Ret)	Profile B
30 th percentile	Optimal GBI	39k	46k	39k
	Optimal returns based	37k	35k	36k

GBI strategies STILL outperform. I.e. Gamma benefit was not just spurious by-product of using same benefit measure and objective function

WHAT IF WE LOOK AT CONVENTIONAL MEASURES?

		Profile A (Pre-Ret)	Profile A (Post-Ret)	Profile B
Prob > £40k	Optimal GBI	45%	80%	70%
	Optimal returns based	15%	50%	50%

USEFULNESS OF UTILITY FRAMEWORKS

- There are limitations to these frameworks that must be recognised:
 - Are highly parametric
 - Assumptions about member utility
 - Assumptions about asset return distributions – full stochastic model required
 - Complex to calculate
 - Probably impossible to fully explain to clients

USEFULNESS OF UTILITY FRAMEWORKS

- Irrespective of view on:
 - “Representativeness” of “utility theory”
 - Ability to measure risk aversion
 - Proxy parameterisations used for all or groups of members
- “Discounted expected utility” can be divorced from its classical interpretation
 - Way to assign penalties and interpret poor outcomes
 - E.g. we scale back alpha by tracking error in a Sharpe ratio – arguably more arbitrary
 - Sensible representation of the financial pop culture concept of “financial wellness/wellbeing”?

CONCLUSIONS

- Variety of interesting new 'goodness' measures available for judging investment strategies
- Returns and goals based investment are *not* equivalent when solving for optimal investments
- Significant value can be unlocked using appropriate objectives, significant differences in asset allocation observed

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