

# **Your Future, Your Super Performance Test Portfolio Impacts and Opportunity Cost to Consumers**

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# Introduction

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- This work represents collaborative research between The Conexus Institute and five leading consulting firms
- The Conexus Institute is the lead author of this work and other parties have provided input and review
- The Conexus Institute is responsible for any errors or omissions



# Outline

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This presentation focuses on two research questions:

1. To what degree (if any) will the YFYS performance test constrain the investment strategies of super funds?
  2. Can we estimate the cost (if any) to consumers of any constraints identified in Question 1?
- While concerns have been raised about the impact of the YFYS performance test on investment strategies, we believe this is the first piece of research which quantifies the potential impact
  - This allows us to then consider the opportunity cost to consumers which we calculate to be significant
  - All research, including models, is open source ([here](#))

# Background Knowledge

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## Tracking Error

- Tracking error is simply the volatility of relative performance over time
- Tracking error can be measured ex-post:
  - Take the time series of relative performance and calculate its standard deviation
- Tracking error can be estimated ex-ante:
  - Take each portfolio position's relative size (relative to benchmark) and estimate the volatility of the "portfolio" of relative positions

## YFYS performance test tracking error

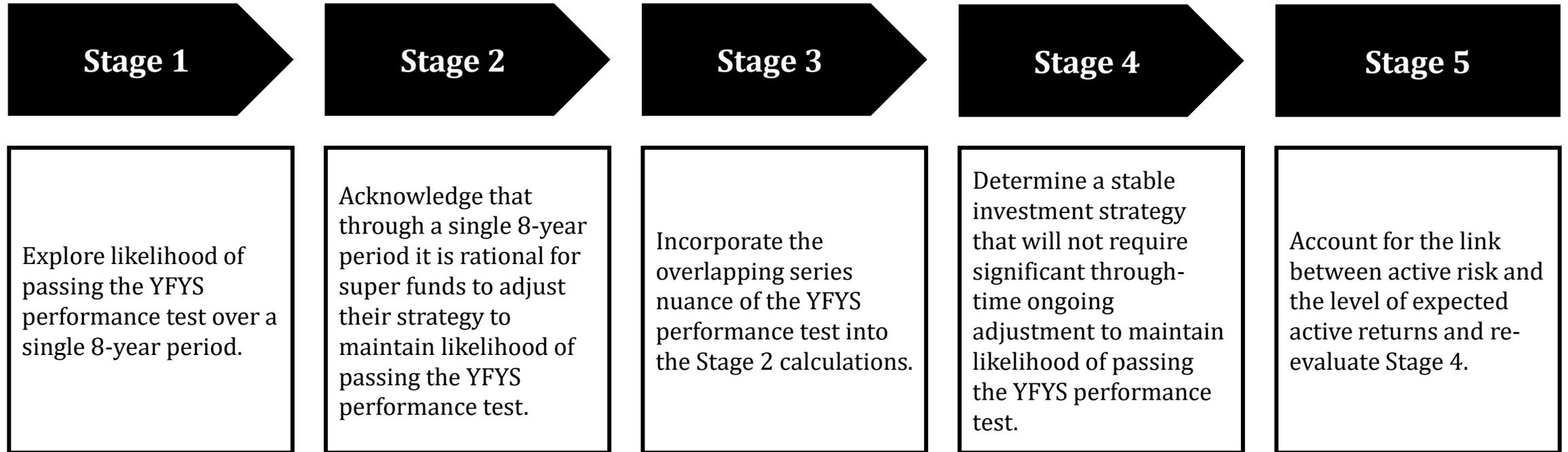
- When we refer to "tracking error" in this presentation, we refer to a measure calculated using the limited number of public market benchmarks used in the YFYS performance test
- This will likely result in higher levels of tracking error because some exposures will be benchmarked using indices which don't reflect their underlying performance
- This includes unlisted property and infrastructure, all areas of credit, all areas of alternatives and many fixed income sectors

**Q1: To what degree (if any) will the YFYS performance test constrain the investment strategies of super funds?** \_\_\_\_\_

# Q1: Degree of constraint

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## Overview of the analysis



# Q1: Degree of constraint

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## Stage 1:

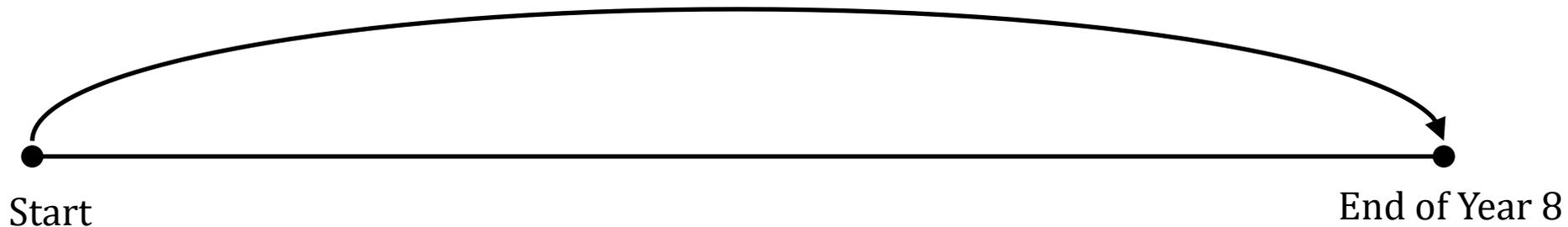
- We consider the case of a super fund which wants a high likelihood of passing the YFYS performance test
- For illustration purposes, we assume:
  - A fund has an expected annual outperformance of 50bp
  - The trustee of a fund wants to always have 90% likelihood of passing the YFYS performance test
- Our modelling assumptions are pretty basic:
  - Return expectations are constant through time (i.e. independent across time periods)
  - Returns are normally distributed

# Q1: Degree of constraint

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Stage 1:

- An initial consideration might be: “What level of tracking error, if maintained throughout, would give me high likelihood of passing the performance test over an 8-year period?”
- This problem is represented below:



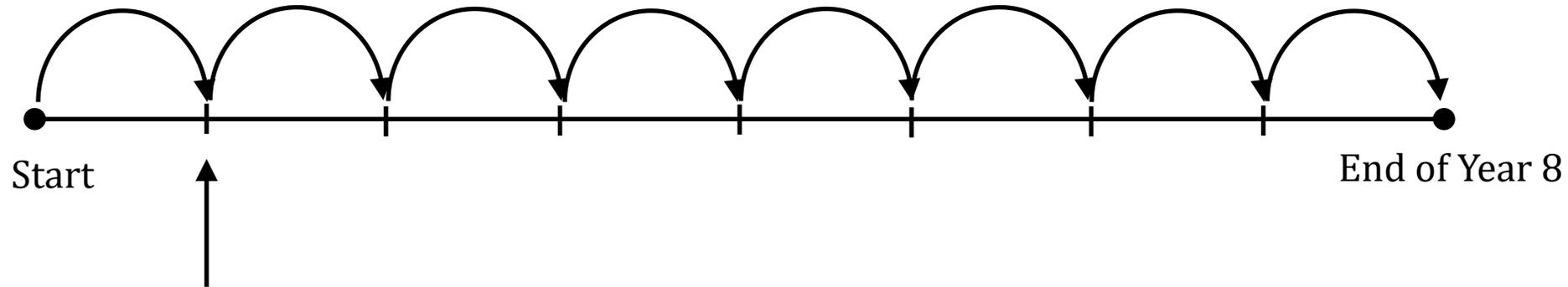
- The answer to this question, based on our assumptions, is 2.2% annualized tracking error

# Q1: Degree of constraint

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Stage 2:

- In Stage 1 we ignored the through-time experience: as funds experience good or poor performance they may adjust their strategy to maintain likelihood of passing the performance test
- This problem is represented below:



End of Year 1 (and each subsequent year):

- Account for performance
- Reassess likelihood of passing test over remaining period
- Adjust tracking error to restore desired likelihood of passing performance test

# Q1: Degree of constraint

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Stage 2:

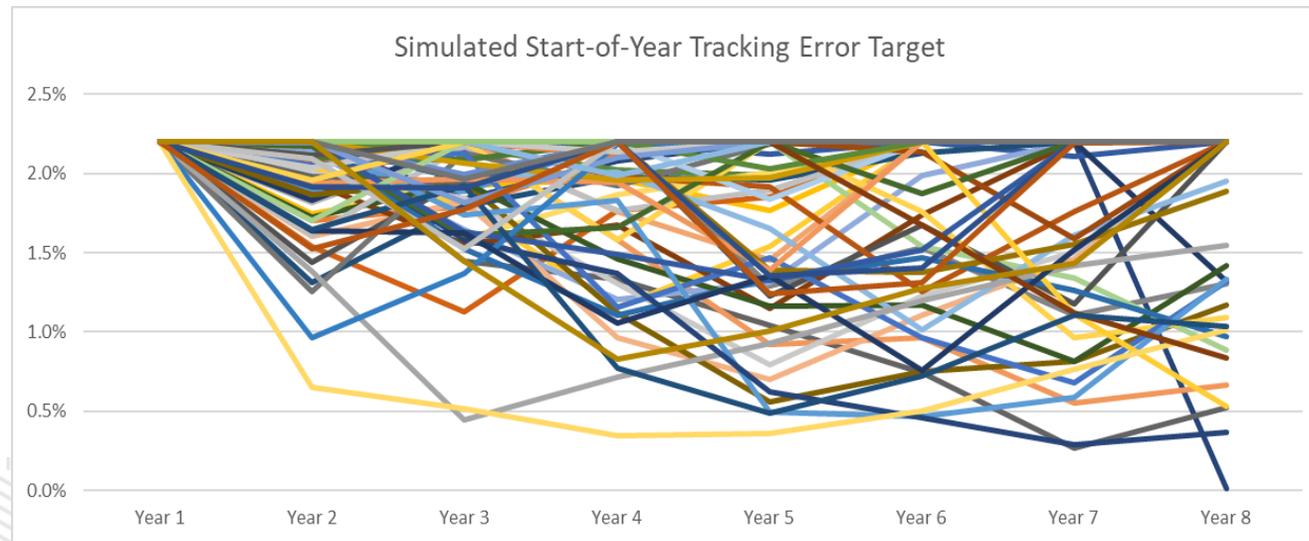
- E.g. Consider a fund which underperforms its tailored benchmark by 1% in the first year
- It is now 13% likely to fail the performance test over the full 8-year period
- To restore a 90% likelihood of passing the performance test over the full 8-year period the trustee would have to reduce their annualized tracking error target from 2.2% to 1.9%

# Q1: Degree of constraint

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## Stage 2:

- We explore the degree and frequency of portfolio rebalancing associated with maintaining likelihood of passing the performance test
- The below chart is based on 100 simulations and applies previous assumptions
- For this example, there is a 61% likelihood that a trustee will have to modify their investment strategy at least once during an 8-year cycle



# Q1: Degree of constraint

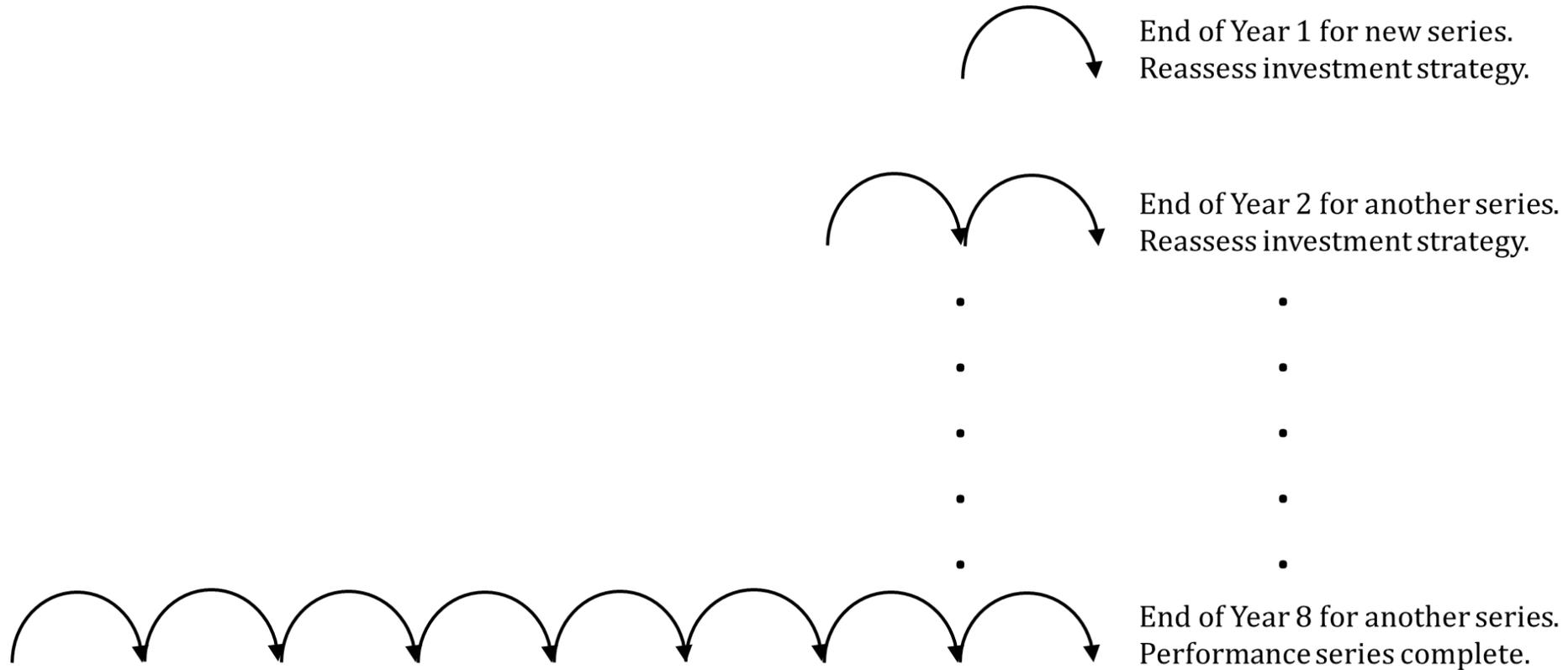
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Stage 3:

- We make two additional observations which are important but further complicate the modelling:
  1. Each new year represents the beginning of a new 8-year performance series
  2. Each year of performance influences eight different performance series
- This is known as an overlapping series problem and is represented on the next slide

# Q1: Degree of constraint

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# Q1: Degree of constraint

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## Stage 3:

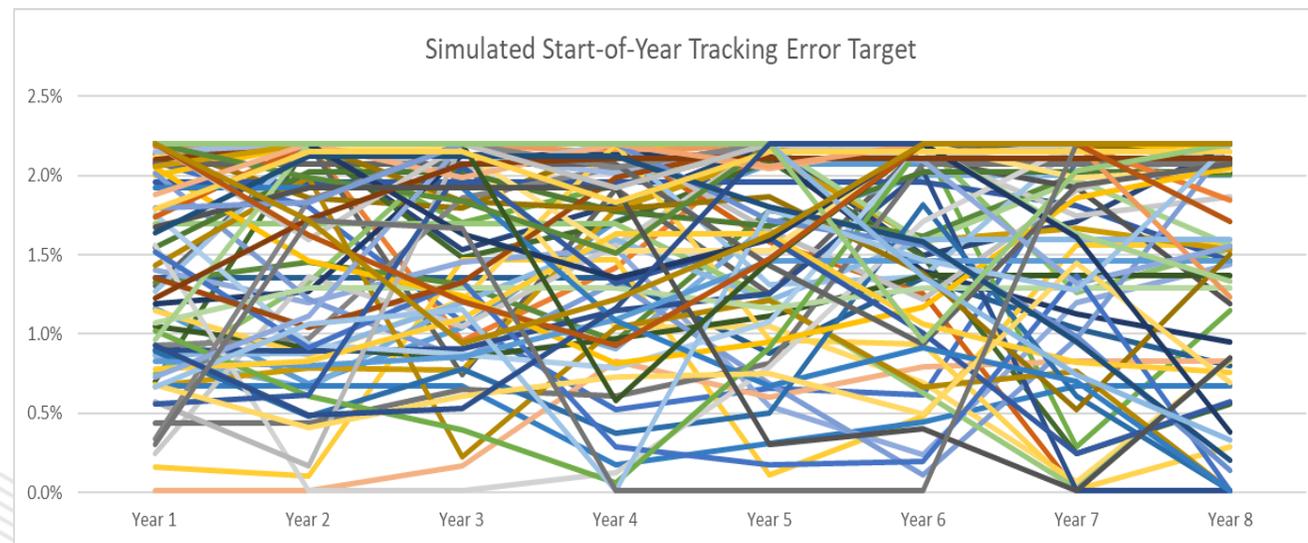
- E.g. Relative (to tailored benchmark) performance for the current year was -1%
- For the 'new' series (where this represents the first year of performance):
  - It is now 13% likely to fail the performance test over the full 8-year period
  - To maintain a 90% likelihood of passing the performance test over the period which ends in seven years the trustee would have to reduce their tracking error from 2.2% to 1.9% annualised
  - (These results are as per the previous section)
- Consider a second series (where the current year is its second year of performance), which had relative performance of -0.5% in the previous (its first) year
  - There is a 15% likelihood of failing over the full 8-year period for the series which began 2-years ago
  - To maintain a 90% likelihood of passing the performance test over the period which ends in six years the trustee would have to reduce their tracking error from 2.2% to 1.8% annualised
  - The trustee would need to select the lower tracking error target (1.8% ann.) to maintain at least 90% probability across all rolling series

# Q1: Degree of constraint

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## Stage 3:

- We explore the degree and frequency of portfolio rebalancing associated with maintaining likelihood of passing the performance test in a 'seasoned' environment (i.e. performance test has been running for a while)
- The below chart is based on 100 simulations and applies previous assumptions
- For this example, there is a 89% likelihood that a trustee will have to modify their investment strategy at least once during an 8-year cycle



# Q1: Degree of constraint

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Stage 4:

- Consider what it means to modify an investment strategy:
  - Transaction costs
  - Transact illiquid assets (difficult and costly)
  - Difficult to manage risks to member outcomes to the degree which the trustee would like as some risk management strategies increase performance test tracking error. Notable examples include ESG risk, portfolio overlays and diversification strategies
  - Funds may potentially be 'squeezed' out of positions at a time when they are perceived to be undervalued

# Q1: Degree of constraint

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## Stage 4:

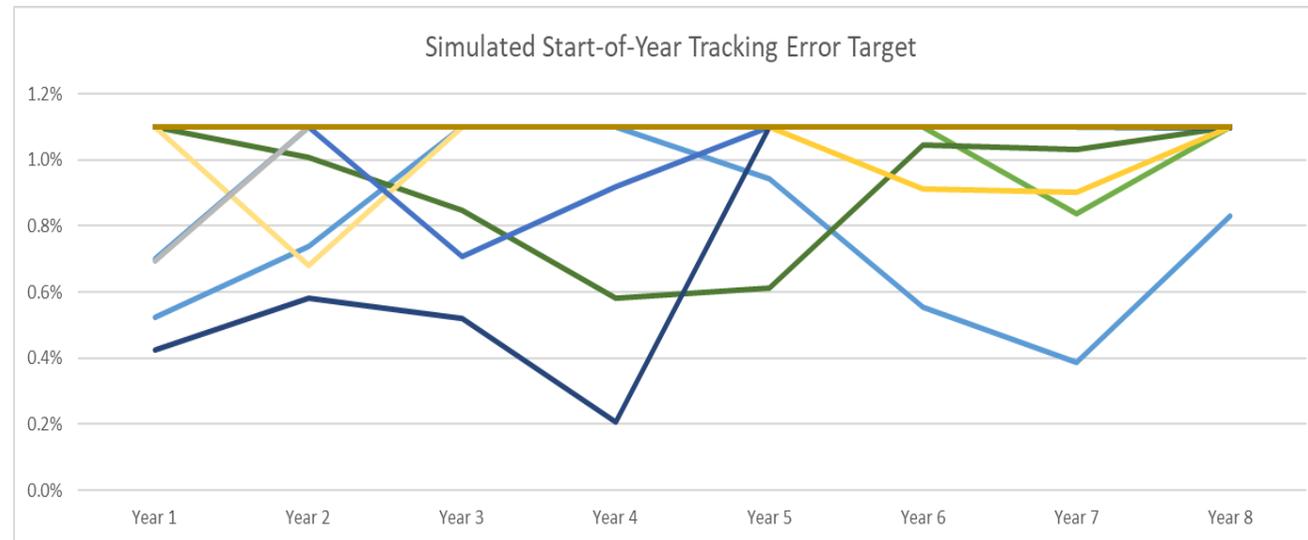
- We expect that trustees will be motivated to search for a stable investment strategy, one that will, with high likelihood, not require adjustment through time
- We continue our previous example (50bp pa expected outperformance, 90% maintained likelihood of passing the performance test) but explore the level of tracking error which makes it 90% likely that the strategy will not have to be modified through an 8-year cycle
- We account for multiple series in this analysis

# Q1: Degree of constraint

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Stage 4:

- We find this level of sustainable tracking error to be 1.1% annualised (half the level we calculated in Stage 1)
- The below chart is based on 100 simulations and applies previous assumptions



- Appendix 1 provides results for different levels of expected returns and levels of likelihood / stability

# Q1: Degree of constraint

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## Stage 5:

- Return expectations are generally linked to the amount of risk and, specifically, active return expectations are generally linked to the amount of tracking error
- Expected (active returns) = expected (information ratio) x targeted (tracking error)
- We consider an information ratio of 0.2 to be conservative
- Continuing our example: we seek to determine the stable level of tracking error, assuming a 0.2 information ratio, while maintaining through time at least a 90% likelihood of not failing the performance test, while also being 90% likely to not have to change the level of tracking error over any 8-year period
- We find:
  - Full period fixed tracking error: 2% annualized (i.e. equivalent of Step 1)
  - Sustainable tracking error: 0.7% annualised

# Q1: Degree of constraint

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Stage 5:

- Appendix 1 provides results for different levels of expected returns and levels of likelihood / stability
- We find that for many examples the stable level of tracking error is less than 1% annualized

How constraining is 1% tracking error?

- We calculate a portfolio with 10% exposure to each of high yield credit, unlisted property and unlisted infrastructure to have an historic tracking error of 3.6% annualised
- To meet a 1% annualised tracking error budget using the same calculations, the fund would be constrained to less than 10% aggregate exposure to these sectors (assuming other exposures are passive exposures matching to YFYS benchmark indices)
- Funds may not be able to fully manage ESG risks within this tracking error budget
- Funds may find it difficult to manage other portfolio risks
- Portfolios may be less effectively diversified

# Q1: Degree of constraint

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Summary of impact on portfolio management

## “Current” Super Fund

3.6% ann. Tracking Error

Example of a current super fund:

- 10% invested in each of unlisted property, unlisted infrastructure and high yield
- Active management across most asset classes
- ESG risk actively integrated into portfolio management
- These activities equate to around 3.6% annualised tracking error

## “High Likelihood” Super Fund

2.2% ann. Tracking Error

Example of a super fund designed to have high likelihood of passing the YFYS performance test:

- 6% invested in each of unlisted property, unlisted infrastructure and high yield
- Active management across most asset classes
- ESG risk actively integrated into portfolio management

These activities equate to around 2.2% annualised tracking error

- It is likely the fund will have to frequently alter its investment strategy through time to maintain the likelihood of passing the YFYS performance test

## “Stable” Super Fund

1% ann. Tracking Error

Example of a super fund designed to have a stable investment strategy with a high likelihood of passing the YFYS performance test and a high likelihood of not having to alter the investment strategy through time:

- 3% invested in each of unlisted property, unlisted infrastructure and high yield
- All other sectors managed passively
- Inability to incorporate ESG risk into portfolio management
- These activities equate to around 1% annualised tracking error

# Q1: Degree of constraint

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Reflection on conflict with focus on members' best outcomes

- Under the YFYS performance test a range of activities generate outsized tracking error relative to the risk they bring to a portfolio
  - These activities include allocations (to any sector which isn't a YFYS performance benchmark) and risk management activities
- If the Trustee of the fund was strongly focused on passing the YFYS performance test, it may find itself in conflict with its focus on member's best outcomes
- If the Trustee persists with its current strategy then it may be exposed to a high likelihood of failing the performance test or having to re-set the investment strategy

## "Current" Super Fund

3.6% ann. Tracking Error

- 22% likely to fail the performance test
- >80% likely to have to re-set the investment strategy over an 8-year window (we use 60% likelihood of passing as the rebalancing criteria)

## "Stable" Super Fund

1% ann. Tracking Error

- <1% likely to fail the performance test
- 10% likely to have to re-set the investment strategy over an 8-year window

**Q2: Can we estimate the cost (if any) to consumers of any constraints identified in Question 1? \_\_\_\_\_**

# Q2: Cost of constraints

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- We expect the YFYS performance test will adversely impact consumers because it constrains super funds from best constructing portfolios in members' best interests
- If funds were to focus strongly on the performance test, then a stable investment strategy would entail 1% tracking error
- This creates two sources of opportunity cost:
  1. Less effective risk management
  2. Less investment in opportunities expected to generate outperformance over time

# Q2: Cost of constraints

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- Active return expectations are generally linked to the amount of tracking error through the information ratio
- The information ratio is a measure of the degree to which active risk has been converted into active returns
  - It can be measured on an ex-post basis
  - On an ex-ante basis we can only make assumptions (which can be informed by the past)
- The relationship between active risk and expected active returns can be represented by:  
Expected (active returns) = Expected (information ratio) x targeted (tracking error)
- Hence the opportunity costs to consumers of portfolio constraints can be approximated by:  
Expected (opportunity costs) = Expected (information ratio) x reduction in targeted (tracking error)

# Q2: Cost of constraints

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- We consider 0.2 is an appropriately conservative information ratio assumption

Too Conservative	Too Aggressive
<ul style="list-style-type: none"><li>• There are some situations where outperformance results directly from the YFYS benchmarking process. For example, under the YFYS performance test, a reasonable expected information ratio for high yield credit would be 0.33.</li><li>• Some ability to package market performance as alpha, means it is not just an alpha debate.</li><li>• Some potential for traditional active returns for institutional investors who pay lower fees (topic of strong debate).</li><li>• Multiple active return activities generate diversification and improve the information ratio.</li><li>• Some evidence of super funds outperforming the test by larger amounts.</li></ul>	<ul style="list-style-type: none"><li>• Not all tracking error is used to generate active returns (e.g. it could be used for the purpose of portfolio diversification), so the information ratio assumption should be diluted.</li><li>• Strong academic debate that alpha is a zero-sum game.</li><li>• Some evidence of funds underperforming by large amounts.</li></ul>

- There is an argument that if the policy outcome is that only 'good performing' funds remain, then the IR assumption can only be positive and could be higher. This is the policy intention.

# Q2: Cost of constraints

- Aggregating these assumptions, we can estimate a total cost to consumers

	Assets (\$b)	Assets in DC (assumed)	DC Assets (\$b)	Assumed Current Tracking Error	Constrained Tracking Error	Opportunity Cost (\$b, per annum)
Retail	600	90%	540	1.5%	1.0%	0.54
Corporate	60	50%	30	2.0%	1.0%	0.06
Industry	760	90%	684	3.0%	1.0%	2.74
					Total	3.34

- Sensitivities:
  - IR = 0: opportunity cost to consumers equals zero (but larger issues then come into play)
  - IR = 0.4: opportunity cost = \$6.7b pa

# Conclusions

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- The YFYS performance test design creates an environment in which, if trustees focus strongly on the YFYS performance test, they will find themselves heavily constrained
- Many have raised this concern. This, to our best knowledge, is the first piece of research which models the degree of constraint
- Accordingly, we have concerns that the YFYS performance test will impair portfolio construction, resulting in portfolios with reduced return expectations and risk profiles which are less effectively managed
- A conservative estimate is that the reduced return expectations will cost consumers approx. \$3.3b pa

# Appendix 1

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90% likelihood / stability

<b>Expected Active Returns</b>	<b>Full Period Fixed Tracking Error</b>	<b>Sustainable Tracking Error</b>
0%	1.1%	0.55%
0.5%	2.2%	1.1%
1.0%	3.3%	1.65%

95% likelihood / stability

<b>Expected Active Returns</b>	<b>Full Period Fixed Tracking Error</b>	<b>Sustainable Tracking Error</b>
0%	0.85%	0.45%
0.5%	1.7%	0.95%
1.0%	2.55%	1.4%

99% likelihood / stability

<b>Expected Active Returns</b>	<b>Full Period Fixed Tracking Error</b>	<b>Sustainable Tracking Error</b>
0%	0.6%	0.35%
0.5%	1.2%	0.7%
1.0%	1.8%	1.1%

# Appendix 2

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90% likelihood / stability

<b>Information Ratio</b>	<b>Full Period Fixed Tracking Error</b>	<b>Sustainable Tracking Error</b>
0	1.1%	0.55%
0.2	2%	0.7%
0.4	9.5%	0.95%

95% likelihood / stability

<b>Information Ratio</b>	<b>Full Period Fixed Tracking Error</b>	<b>Sustainable Tracking Error</b>
0	0.85%	0.5%
0.2	1.3%	0.65%
0.4	2.7%	0.75%

99% likelihood / stability

<b>Information Ratio</b>	<b>Full Period Fixed Tracking Error</b>	<b>Sustainable Tracking Error</b>
0	0.6%	0.35%
0.2	0.8%	0.4%
0.4	1.2%	0.5%

# Welcome your questions and feedback

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