Can actuaries stay relevant?

Real life investment case studies

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Agenda

- Economic, regulatory, technological headwinds
- Standard Life's business model to provide context
- Can actuaries stay relevant?
  - Real life investment case studies
- Conclusions

Economic, regulatory and technological headwinds

Economic, regulatory and technological headwinds
Facing actuaries and insurers globally

- **Low interest rates and risk based solvency**
  - Actuaries and insurers can no longer hide behind fat investment margins
  - Actuaries and insurers can no longer take excessive risks with no capital consequences
- **Greater consumer protection and transparency**
  - Charges and distribution costs increasingly transparent and/or paid for directly by clients
  - Actuaries and insurers can no longer hide behind opaque and complex products
- **Technology**
  - Customers want to engage in real time using smartphones – insurer legacy systems?
  - Actuaries and insurers need to utilise technology to serve their clients instead of using it as an excuse for not doing so
  - Easier self selection is de-stabilising traditional insurance models – health insurance

Standard Life Investments

Source: Standard Life Investments

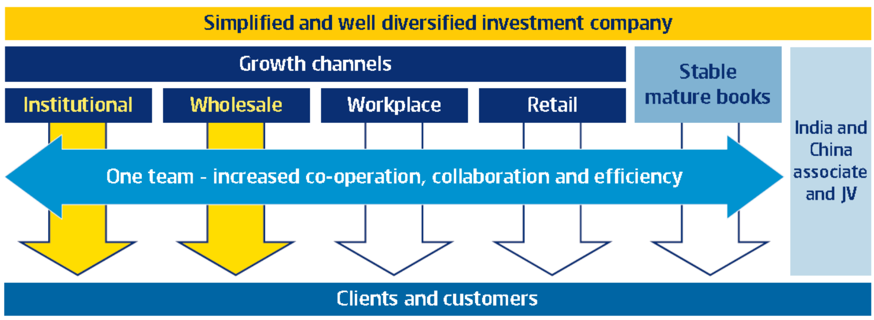
Economic, regulatory and technological headwinds
Facing actuaries and insurers globally

- **Conclusions**
  - Clients are being better served and treated more fairly – really good news!
  - Big challenges for actuaries and insurers

- **Standard Life specific conclusions**
  - New insurance business => simplified products and capital-lite business models
    - Investment solution componentry increasing provides the added value
  - Legacy/new traditional insurance business => strategic asset allocation the differentiator
    - Including asset and liability management and hedging of unrewarded risks
  - Business model transformation
    - From UK mutual life insurer to global investment company

Standard Life's business model as context

One company, one culture, one vision
Building a simplified and well-diversified investment company



Source: Standard Life

Can actuaries stay relevant?

Investment case studies where actuaries are adding value

Case study 1

Enhancing insurer client support

Enhancing insurer client support
Actuaries adding value by understanding insurers' requirements

- Different language and vocabulary
  - Need to understand and speak the language to engage and be credible
  - "Volatility adjustment" etc!?
- Highly professional and educated client base
  - CIOs, CROs, actuaries
  - Conservative, very demanding - having sat on their side of the table helps…
- Regulatory aspects
  - Highly technical
  - Some regional homogeneity, many differences and constantly moving target
- Operational aspects are demanding
  - Asset data reporting, internal credit ratings, capital efficiency …
  - Out of the game if you can't do – never mind investment performance!

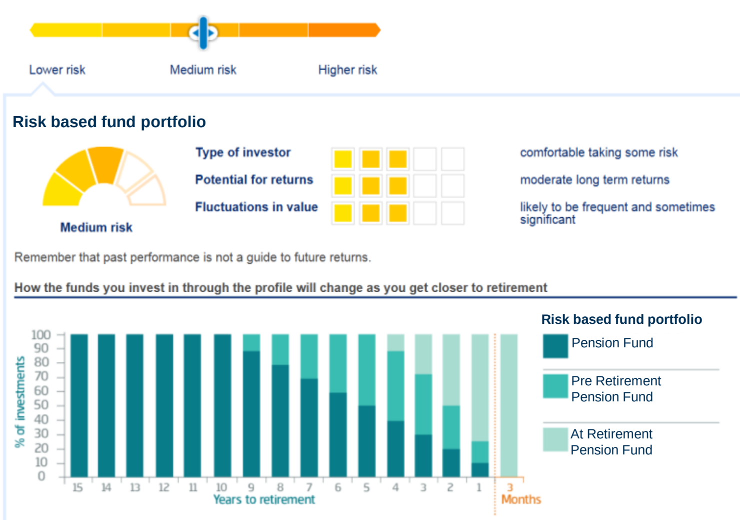
Standard Life Investments

Source: Standard Life Investments

Case study 2

Risk based funds

Investment linked personal pension product case study
Actuaries adding value through product design and investment componentry



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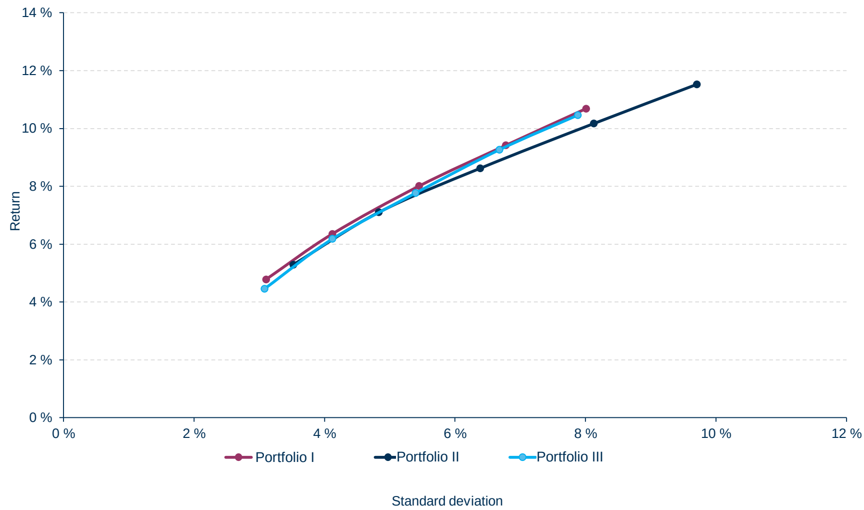
Source: Standard Life Investments

Risk based fund strategy range:
5 years risk and return



Source: LipperIM, annualised risk and return figures, monthly data points, institutional accumulation share class, 5 years to 28 February 2017

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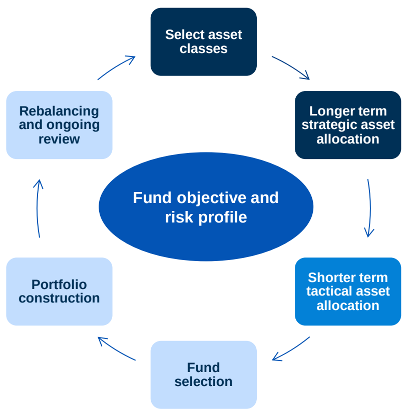
Risk based funds investment framework
Actuaries adding value at the Strategic Asset Allocation stage

- A quantitative and qualitative decision framework
- Consistent process across all 25 funds
- Bespoke execution depending on individual fund style and objective
- Process and inputs consistently reviewed



Source: Standard Life Investments

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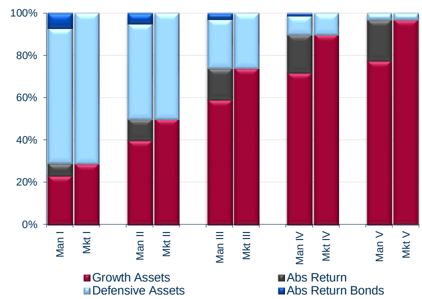
Strategic Asset Allocation (SAA)
Actuaries adding value

- The Strategic Asset Allocation of the Risk based funds is decided by Standard Life Investments actuaries using actuarial techniques
- The portfolio optimisation process takes a 10 year forward looking view, updated on a quarterly basis
- It aims to deliver five risk based funds at equidistant points on the efficient frontier
- The SAA Committee ensure the portfolios remain optimised for each level of risk
- The SAA was last updated in October 2016

	Forecast volatility range
Risk based fund I	3% to 6%
Risk based fund II	6% to 9%
Risk based fund III	9% to 12%
Risk based fund IV	12% to 15%
Risk based fund V	15% to 18%



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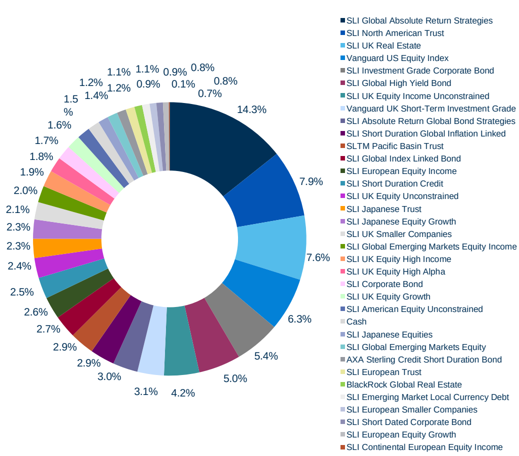
Modelled using Moody's Analytics Baseline Calibration. Baseline Calibration is used as it does not assume period specific initial conditions and so gives a stable asset allocation model. Expected Volatility is given as one standard deviation of annualised returns

Risk based fund portfolio

Underlying Fund Exposure



Risk profile I – V 15 February 2017	I (%)	II (%)	III (%)	IV (%)	V (%)
Cash & Money Markets	8.20%	3.00%	1.00%	1.00%	1.00%
UK Gilts	0.00%	0.00%	0.00%	0.00%	0.00%
Short Dated UK Gilts	0.00%	0.00%	0.00%	0.00%	0.00%
Global Index Linked Bonds	6.40%	5.20%	3.00%	0.90%	0.00%
Short Dated Global Index Linked Bonds	6.40%	5.20%	3.00%	0.90%	0.00%
Sterling Corporate Bonds	20.50%	14.80%	7.20%	2.10%	0.00%
Short Dated Sterling Corporate Bonds	20.50%	14.80%	7.20%	2.10%	0.00%
Absolute Returns Bonds	7.10%	5.00%	2.60%	1.00%	0.00%
Defensive Assets	**69.10%**	**48.00%**	**24.00%**	**8.00%**	**1.00%**
UK Equities	3.25%	8.65%	13.45%	19.55%	23.05%
US Equities	6.50%	11.20%	15.40%	19.70%	24.20%
European Equities	1.90%	3.90%	5.70%	7.50%	9.40%
Japan Equities	2.65%	4.15%	5.45%	6.65%	8.05%
Asia Pacific Equities	1.10%	2.00%	2.90%	3.90%	5.00%
Emerging Market Equities	1.10%	2.30%	3.40%	4.40%	5.50%
Sterling Hedged Global High Yield	2.30%	3.20%	5.80%	3.60%	0.00%
Emerging Market Debt	2.80%	0.50%	0.50%	0.50%	0.50%
UK Property	2.50%	5.10%	7.60%	7.20%	2.90%
Global REITs	1.00%	1.00%	1.00%	1.00%	1.00%
Absolute Returns	5.80%	10.00%	14.80%	18.00%	19.40%
Growth Assets	**30.90%**	**52.00%**	**76.00%**	**92.00%**	**99.00%**

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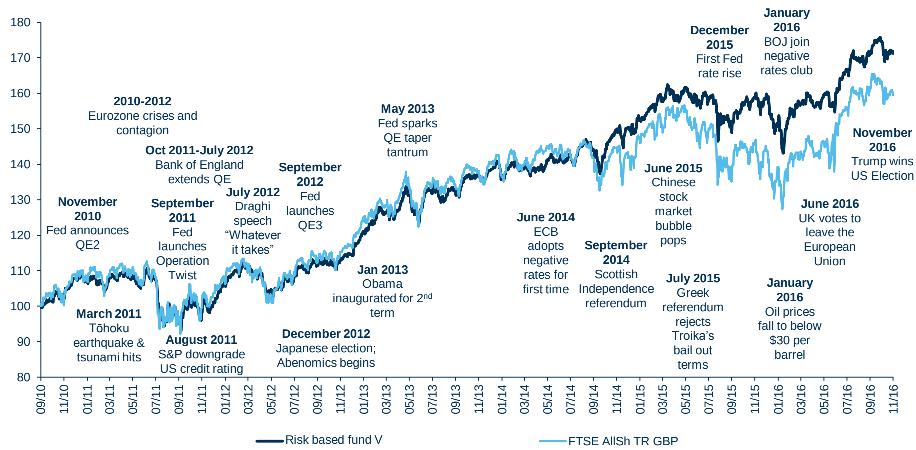
The information is based on the portfolios' current tactical asset allocation benchmark as at 15 February 2017. The funds' actual exposure to these asset classes will vary around the strategic position. This is due to a number of factors including tactical asset allocation and the precise make-up of the underlying funds. Source: Standard Life Investments, 28 February 2017

Strategic Asset Allocation:
Managing client assets for the long term



Diversified long term approach smoothens the journey through choppy waters

Source: Morningstar, 30 November 2016

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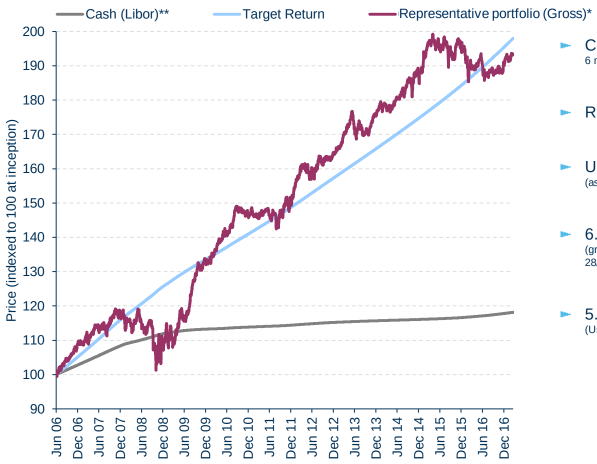
Case study 3

Absolute return investing

Absolute Return performance



- Cash + 5% p.a. target return
  6 month US$ Libor +5% p.a. gross of fees
- Rolling 3 year time horizon
- US$13.7bn SICAV portfolio size
  (as at 31/12/2016)
- 6.3% annualised return
  (gross performance from inception 12/06/2006 to 28/02/2017)
- 5.4% annualised volatility
  (Using monthly returns from 01/07/2006 to 28/02/2017)

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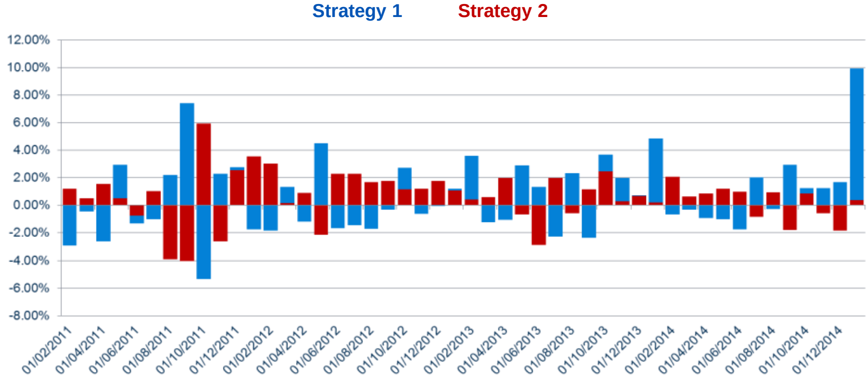
* Source: Standard Life Investments converted $ performance of £, institutional pooled pension portfolio to the 07/06/2011. US$ GARS representative portfolio performance from the 08/06/2011 to 28/02/2017. Volatility calculations based on monthly performance data ** Source: FactSet, 6 month US$ LIBOR. A conversion rate of €1:US$1.05475 as at 31/12/2016 has been used to calculate the fund size. Source: Standard Life Investments, gross performance from 12/06/2006 to 28/02/2017

Portfolio construction
Actuaries identify diversifying strategies



- Standard Life Investments actuaries
  - Assess and monitor the diversification properties and efficiency of the strategies
  - In the context of the whole portfolio – usually around 25 different strategies being run at any time
  - Using a range of actuarial/statistical metrics

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Source: Standard Life Investments

But not paying for it systematically
Diversification can provide “free” downside protection

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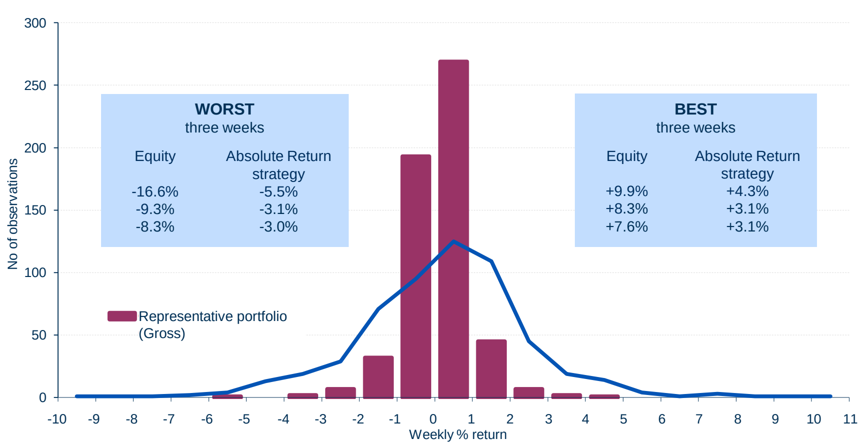
Source: Standard Life Investments

Can avoid the extreme returns of equity investing
Actuaries adding value by managing portfolio diversification



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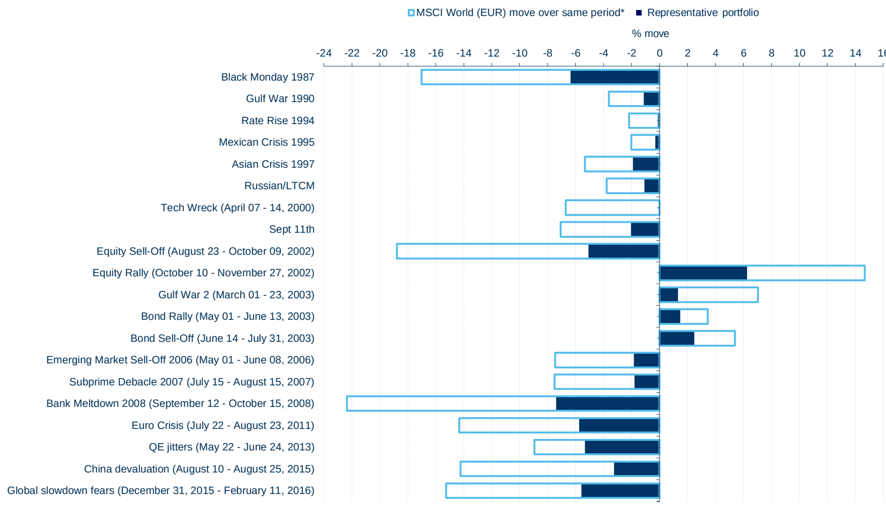
* Source: FactSet, MSCI World (£) net of tracker fund fee. Portfolio performance is based on the £, institutional pooled pension portfolio
Source: Standard Life Investments, net performance (offer-to-offer) from 12/06/2006 to 28/02/2017

Historical scenario analysis
Actuaries adding value with actuarial stress testing techniques



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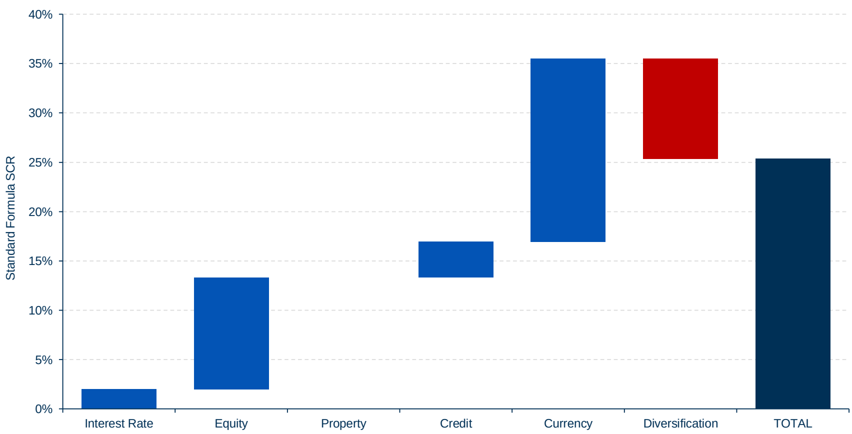
* MSCI World Returns prior to 2000 denoted in European currency units, except for 1987 which is denoted in German Marks. Source: GARS representative portfolio, RiskMetrics, 31 December 2016

SLI analysis of Representative Portfolio Standard Formula SCR End-December 2016



Interest Rate	Equity	Property	Credit	Currency	Diversification	TOTAL
2.0%	**11.3%**		**3.6%**	**18.6%**	**10.1%**	**25.4%**

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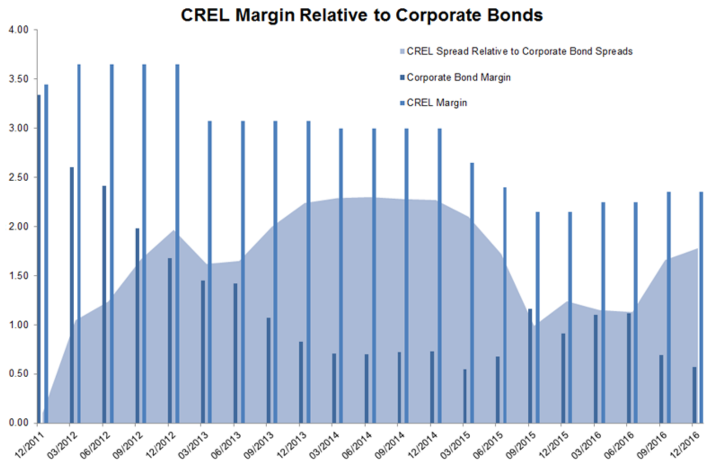
Source: Standard Life Investments

Case study 4

Private market assets

Relative value of commercial real estate debt

Illiquidity premium in excess of 200 bps



Commercial Real Estate Debt offers an attractive illiquidity premium

* Merrill Lynch A rated 3-5 year Corporate Bond Index Option Adjusted Spread over LIBOR **Spread over 3 month LIBOR. Source: Standard Life Investments, January 2017

Private market assets
Some characteristics

- Lending activity and so traditionally banking
  - Actuaries and insurers tend to have no real experience of lending
  - Insurance asset managers are building investment teams using ex-banking personnel

- Bank regulatory, valuation and risk aspects often book based (not model based)
  - Actuaries and insurers tend to use market values for valuation and risk (model based)
  - Also subject to intense regulatory scrutiny – new asset class for insurers

Standard Life Investments

Source: Standard Life Investments

Private market assets
Actuaries adding value by bridging the gap

- Mind the gap
  - Investment teams understand the asset class – not how to model it from an insurance aspect
  - Actuaries and insurers can model the asset class – once they understand it!
  - Regulators rightly cautious

- Bridging the gap
  - Crucially important role for insurance actuaries working in asset managers
  - Genuinely adding value based on what they know
  - Also for “lending actuaries” working in insurers

Standard Life Investments

Source: Standard Life Investments

Conclusions

Conclusions
Actuaries can add value – more outwardly looking business focus

- Global profession is under pressure
- If actuaries can't add value for their clients, the profession will deservedly fade away
- Good opportunities in the investment and other arenas
- Requires more client, investment and less narrow technical focus

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Source: Standard Life Investments

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