



When the Plug is Pulled

Solvency and investment
problems for closed, mature
benefit schemes

Daniel Mussett

15 November 2004

Images supplied by Hawkes Bay Tourism

My song and dance

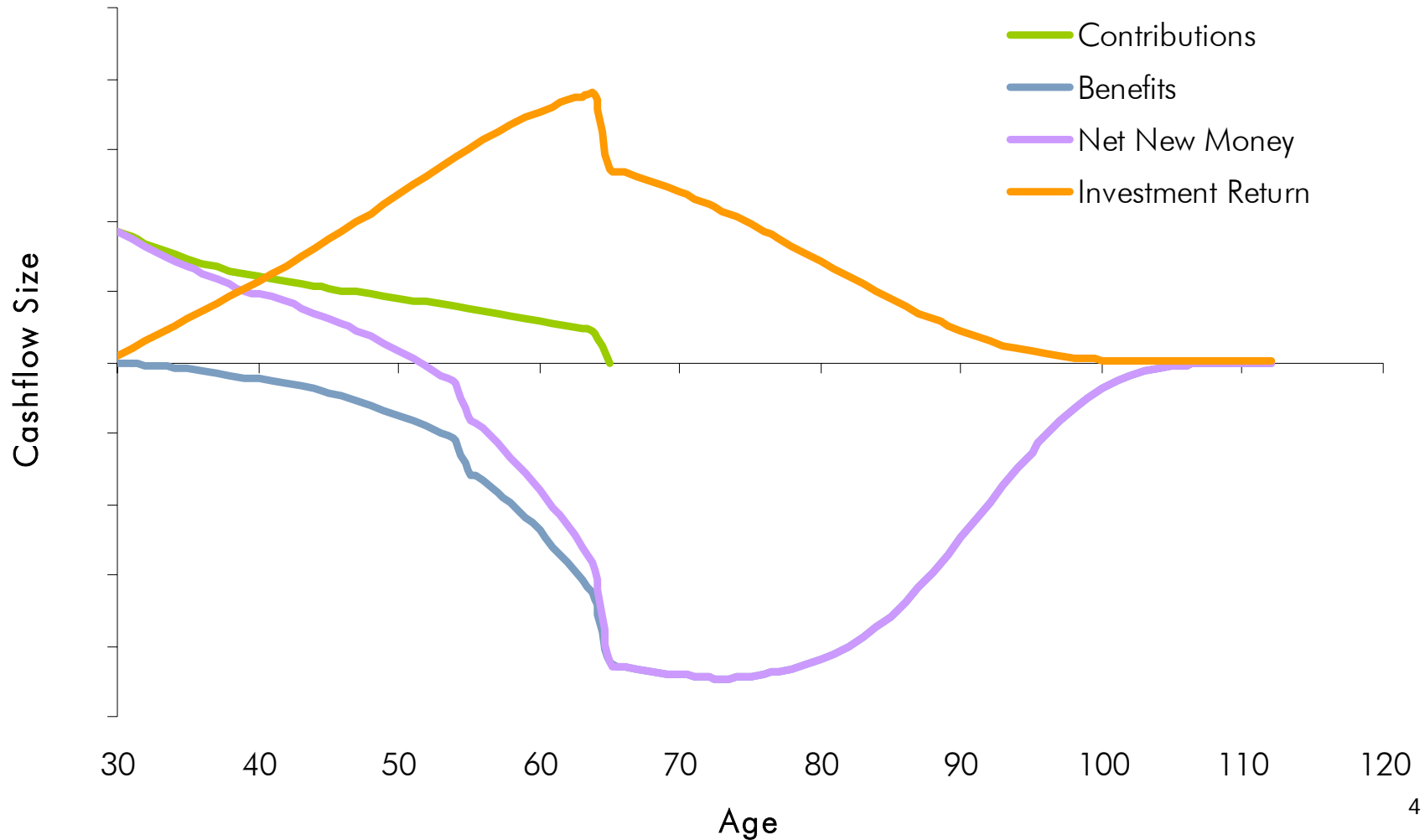
A group of African women in traditional beaded dresses performing a dance with their hands raised. The women are wearing colorful, patterned dresses with large, decorative elements. They are all smiling and have their hands raised in the air, suggesting a joyful and energetic performance. The background is slightly blurred, focusing attention on the dancers.

- ❖ Context
- ❖ What are the problems?
- ❖ What are the solutions?
- ❖ Specifically: surplus/funding implications
- ❖ How can actuaries help?

Context

- ❖ Most remaining DB schemes are closed
- ❖ As such, cashflow profiles are changing
- ❖ Unregulated environment
- ❖ Bizarre actuarial methodology?
- ❖ What does this mean for financial health?

The Problem – cashflow profile



The Problem – maturity

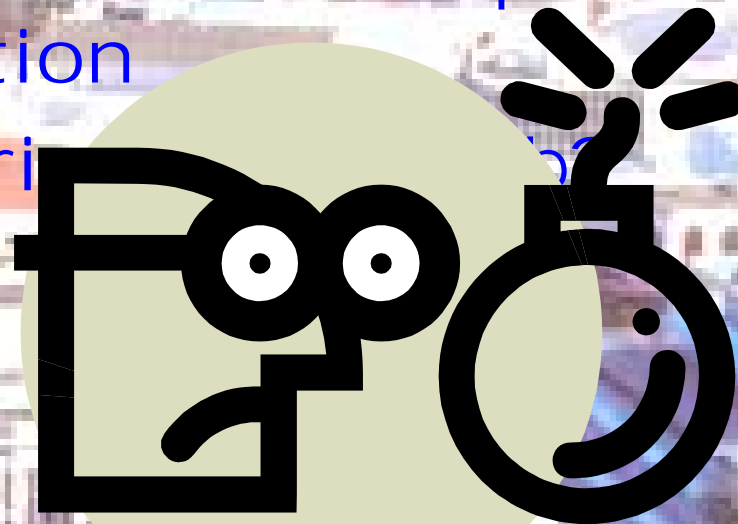
- ❖ Move from cashflow positive to negative
- ❖ For closed scheme PSL → TSL
- ❖ Hence investment policy is only effective control on financial condition

The Problem – discount rate

- ❖ $i_d = E[R]!$?
- ❖ Conventional wisdom: the more mature, the more bonds...
- ❖ ...the lower the discount rate...
- ❖ ...the higher the PSL...
- ❖ ...the lower the funding level

The Problem – funding level

- ❖ Face funding level decrease when rational changes to investment strategy are made
- ❖ More sponsor contributions not expected
- ❖ Little time to ease impact via amortisation
- ❖ An actuari



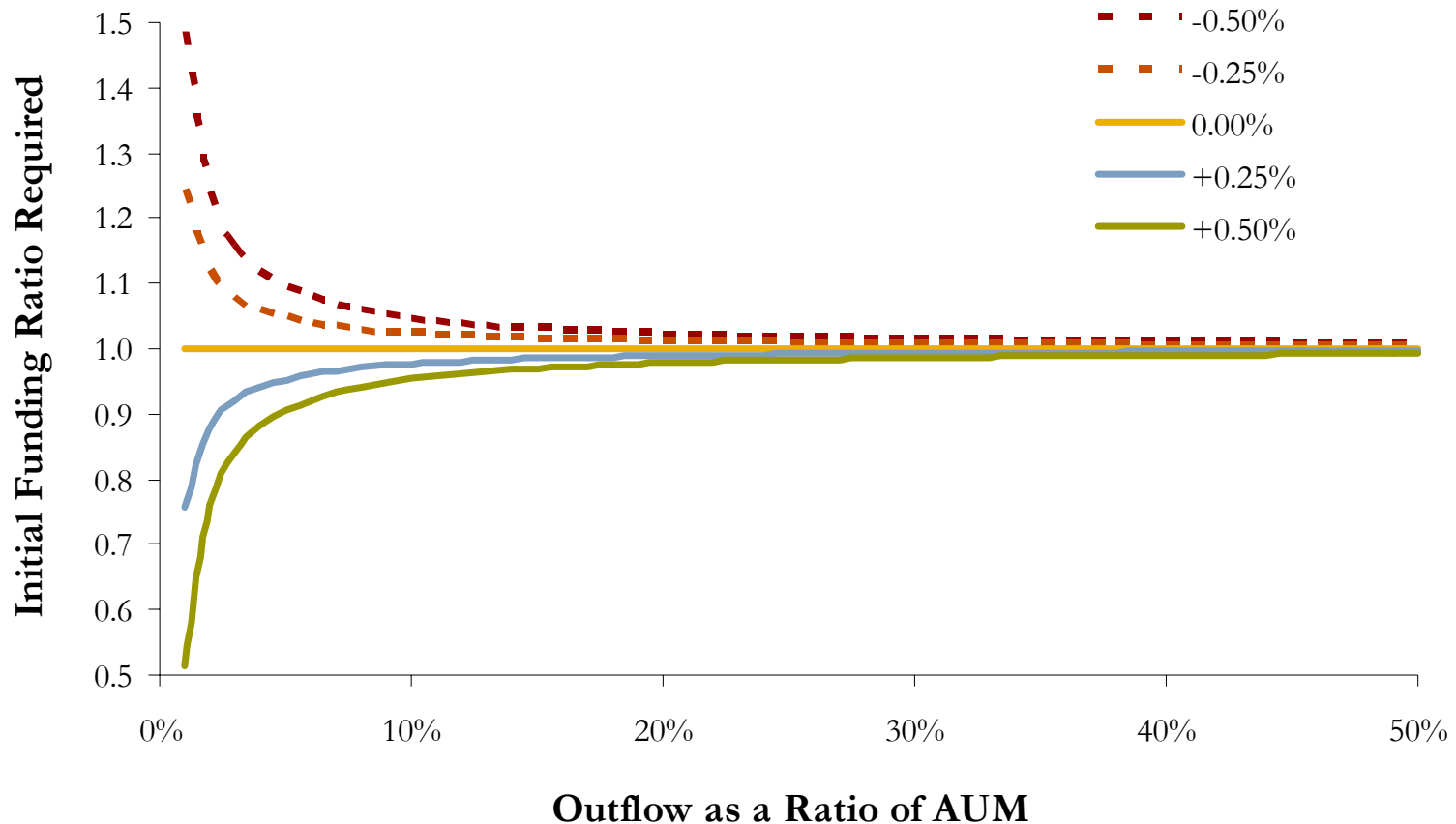
The Solution – understand asset-liability relationship

- ❖ Objective: stabilise Funding Level S_t
- ❖ Simplified deterministic model used to solve a difference equation renders:

$$S_t \geq \frac{p_t (1+i)^{1/2} - (i-d)}{p_t (1+d)^{1/2}}$$

What does this inequation say?

S_0 required given relative outflow size and margin of i over d



In essence...

- ❖ Cashflow negativity, in itself, is a problem
- ❖ For a given choice of d , and a scheme with a certain degree of cashflow negativity...
- ❖ ...there is a minimum funding level required to ensure it won't degrade
- ❖ In particular, where $i = d$, we require $S_0 > 1$

Solution – actuarial activism

- ❖ The dynamics above are mathematical
- ❖ However, the actuary wields great power in deciding discount rate and funding method
- ❖ Be prepared and be proactive



Solution – broad suggestions

- ❖ Do not treat scheme as a going concern
- ❖ Well-matched investment strategy
- ❖ Resilience (mismatching) reserves to guard against market risk
- ❖ Stochastic asset-liability modelling to
 - ❖ quantify mismatching and market risk
 - ❖ analyse future evolution of funding_levels
- ❖ Re-think discount rates
- ❖ Use shadow valuations
- ❖ Use valuations conducted on a break-up basis

Must dos

- ❖ Anticipate increases in the liability value as a result of changes to investment policy
- ❖ Anticipate the adoption of new accounting standards ~ future reported solvency levels.

Conclusion

- ❖ Closed, mature DB schemes become increasingly cashflow negative
- ❖ Investment policy is only control on financial condition
- ❖ Protecting solvency requires a minimum solvency level
- ❖ Actuarial approach to valuation counts
- ❖ Professional duty to be proactive and anticipate these issues