



# Health 2

## Solvency requirements for Medical Schemes – a critical commentary

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# Agenda

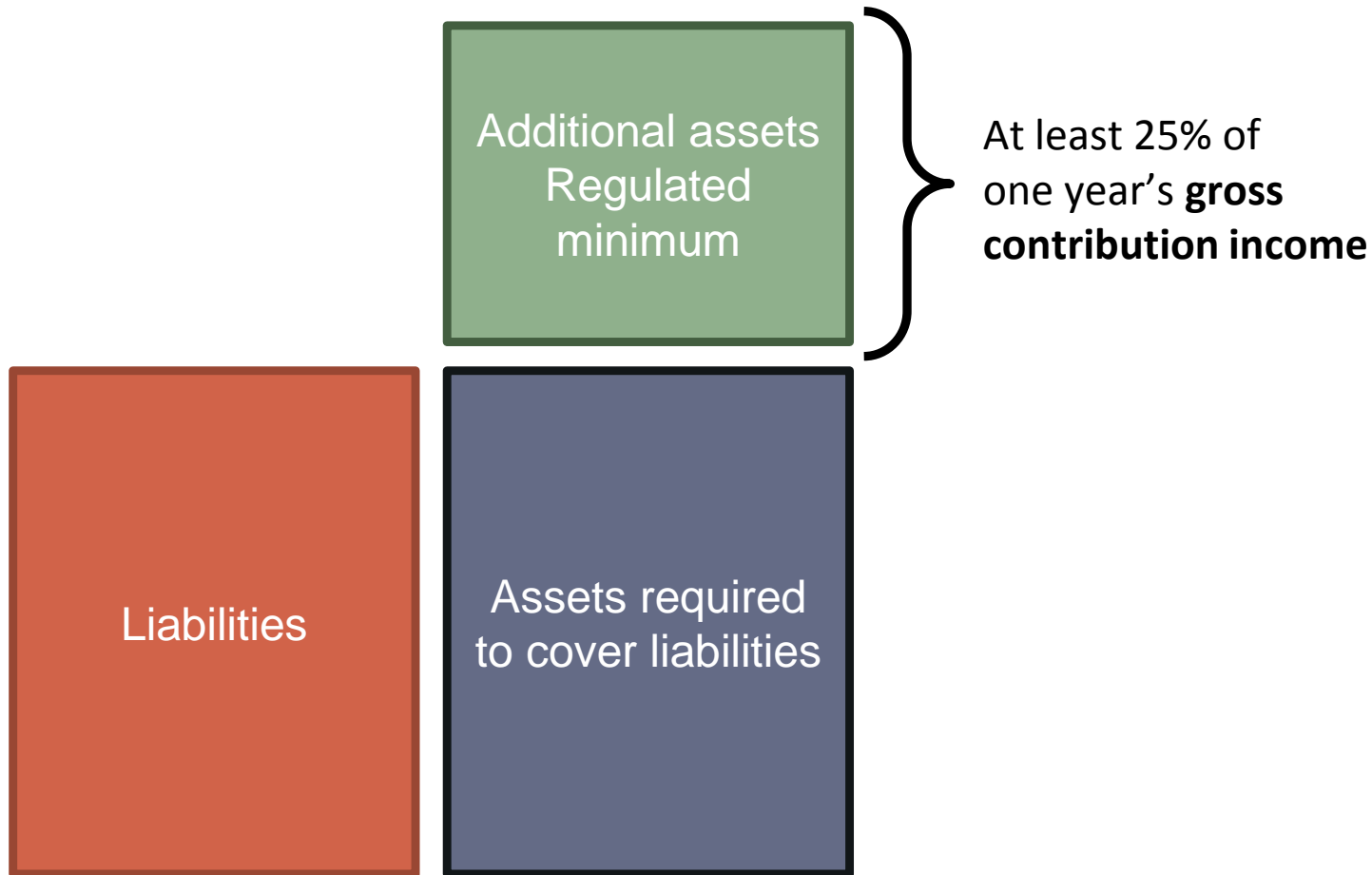
1. Existing solvency model
2. Policy developments
3. South African results over the past 10 years
4. Long-term considerations
5. The future

# Solvency requirements



...**expected variability**  
of future experience

# Current solvency requirements



# Origin of current solvency requirements

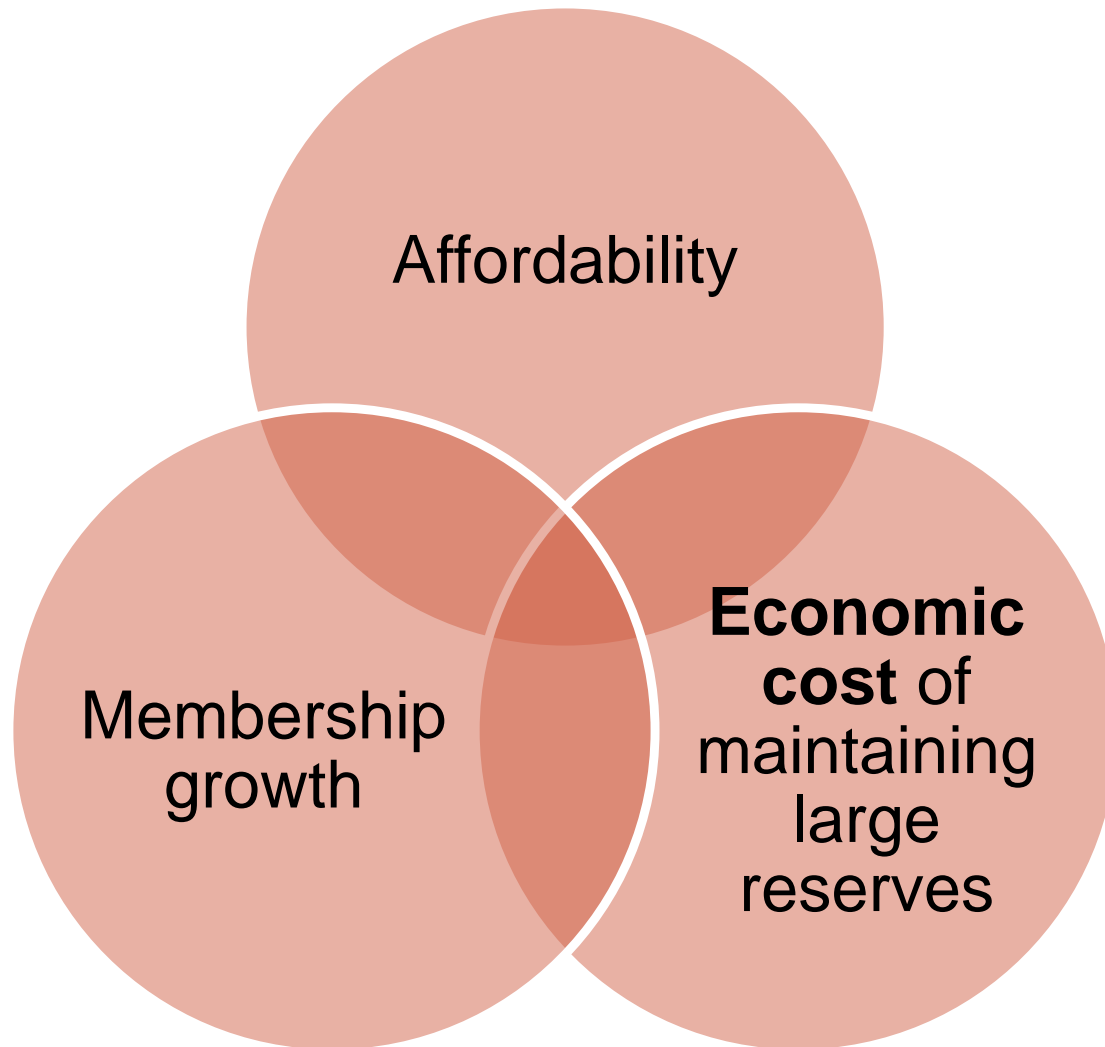
A complete mystery?

- The “**IBNR theory**” – it takes at most three months to pay claims
- The “**corrective action theory**” – if something goes wrong, corrective action could be implemented within 3 months

General consensus that current model has no scientific basis whatsoever!



## Issues with current model



# Affordability

- Cost of **building reserves** for new or growing schemes
- **Circular logic** of having to increase contributions after increasing contributions
- Inclusion of **MSA contributions**?
- Rewarding loss-making schemes
- Penalising surplus-making schemes

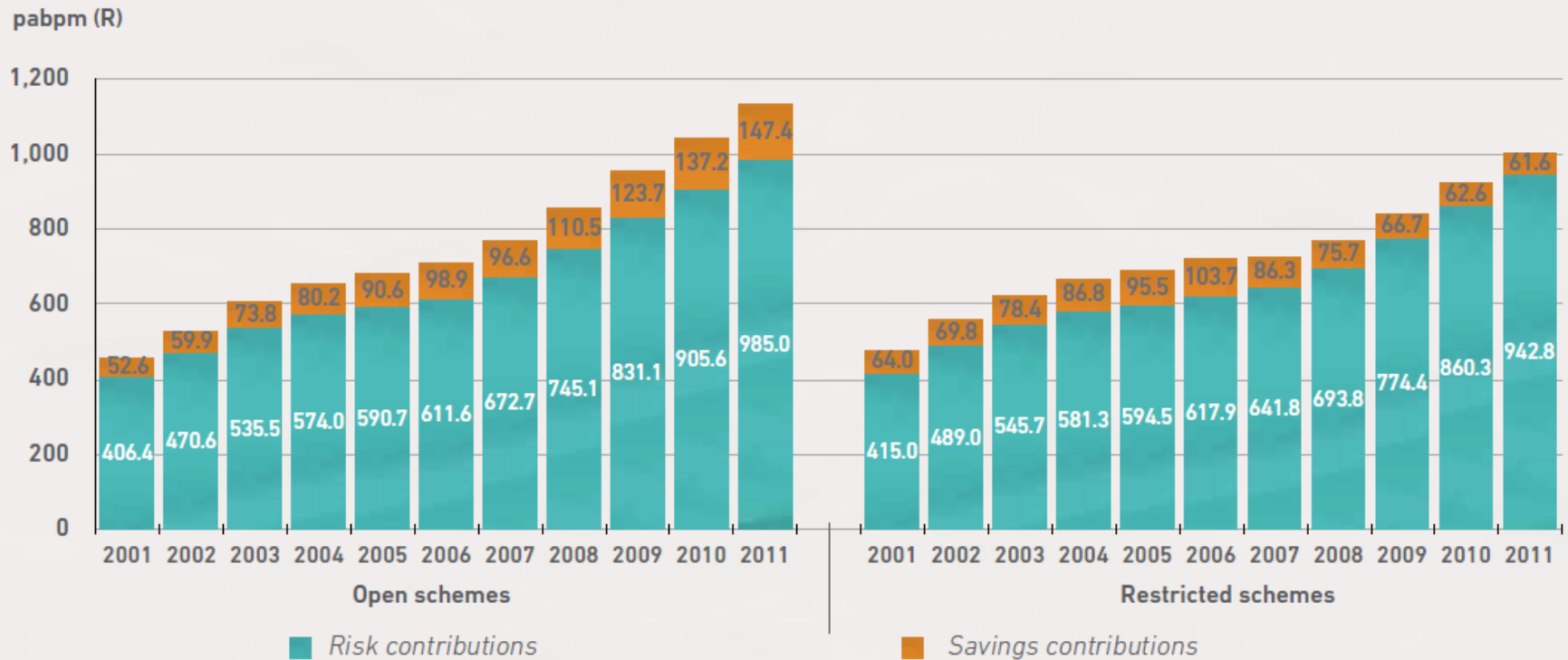


# Gross contributions (PLPM)

Open

Restricted

Figure 27: Risk and savings contributions pabpm 2001-2011



pabpm = per average beneficiary per month



# Solvency trends

Open

Restricted

Figure 45: Industry solvency for open schemes 2000-2011

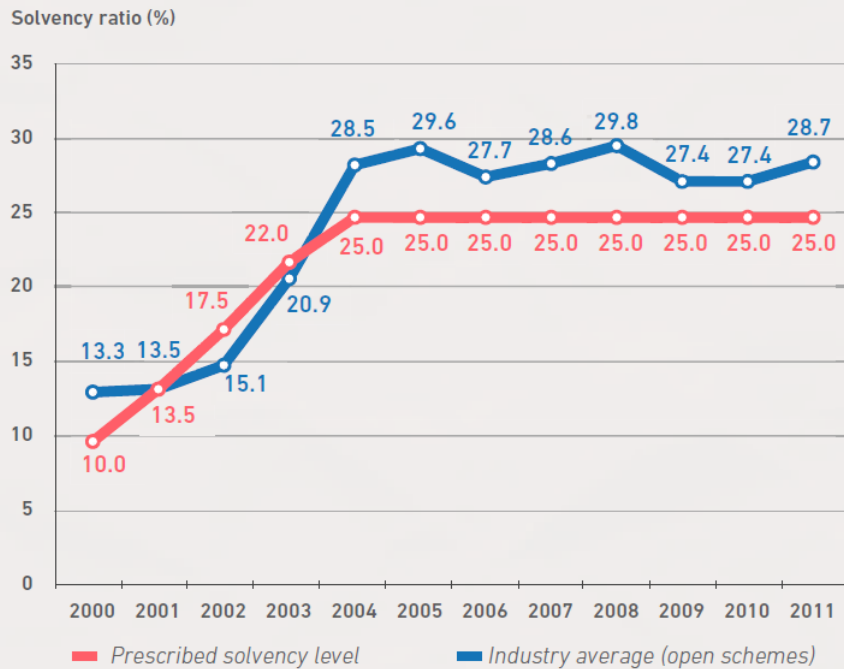
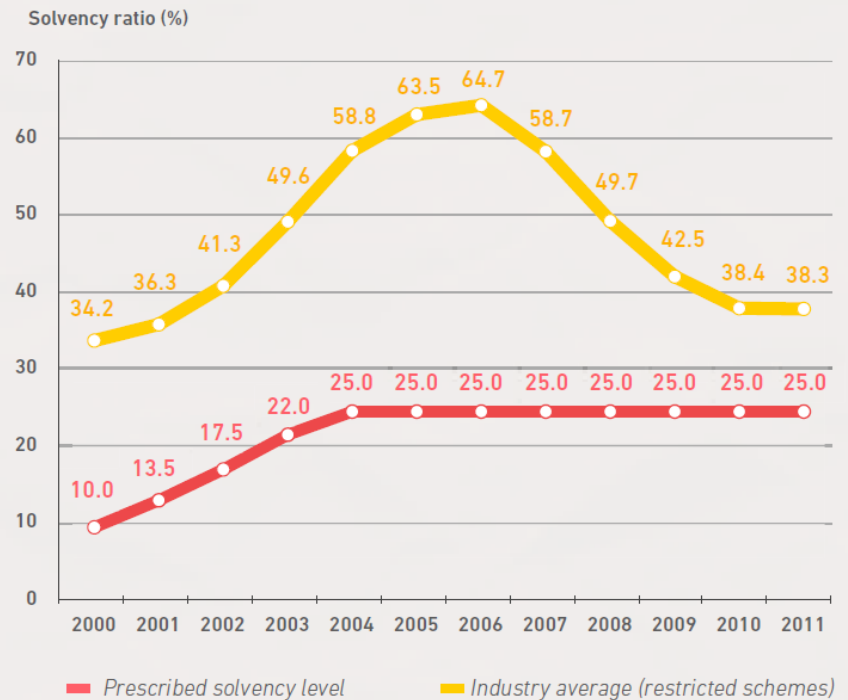


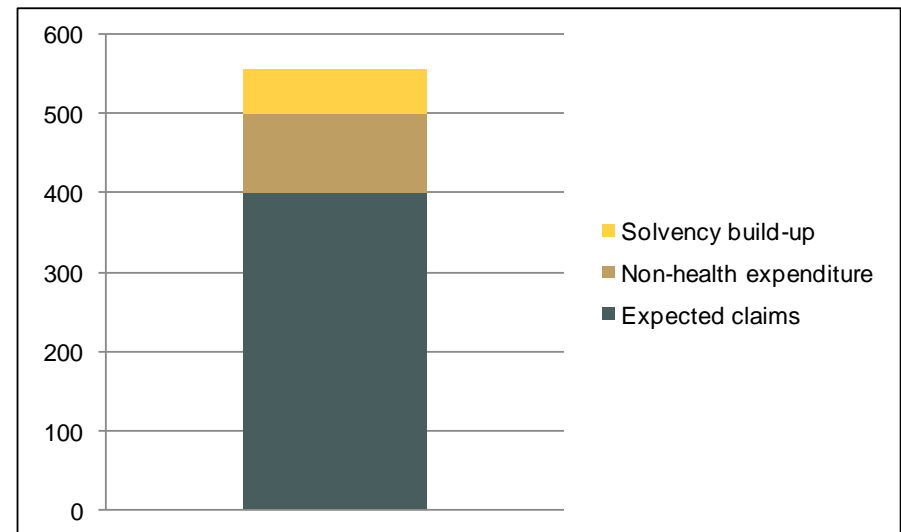
Figure 46: Industry solvency for restricted schemes 2000-2011



# Affordability

- Growing or new schemes
- Consider a low-income example

	Rand
Expected claims	400
Non-health expenditure	100
<b>Total risk premium</b>	<b>500</b>
Solvency build-up (10%)	56
<b>Total premium</b>	<b>556</b>



Regulation 29 allows for solvency to be built up over four years.

Requirement after first year is 10%.

# Affordability

- Exacerbated by circular logic of linking requirements to contributions
- Higher contributions → higher solvency requirements

	<i>Year 1</i>
Accumulated funds	50,000,000
Contribution income	310,000,000
Claims	294,000,000
Non-health expenditure	30,000,000
<b>Net undewriting result</b>	<b>-14,000,000</b>
Investment income	3,500,000
<b>Net result</b>	<b>-10,500,000</b>
Accumulated funds	39,500,000
Solvency margin	12.7%
Required solvency	77,500,000
Shortfall	38,000,000

# Affordability

- Exacerbated by circular logic of linking requirements to contributions
- Higher contributions → higher solvency requirements

	Year 1	Year 2			
		7% increase	10% increase	12% increase	15% increase
Accumulated funds	50,000,000	39,500,000	39,500,000	39,500,000	39,500,000
Contribution income	310,000,000	331,700,000	341,000,000	347,200,000	356,500,000
Claims	294,000,000	314,580,000	314,580,000	314,580,000	314,580,000
Non-health expenditure	30,000,000	32,100,000	32,100,000	32,100,000	32,100,000
<b>Net undewriting result</b>	<b>-14,000,000</b>	<b>-14,980,000</b>	<b>-5,680,000</b>	<b>520,000</b>	<b>9,820,000</b>
Investment income	3,500,000	2,765,000	2,765,000	2,765,000	2,765,000
<b>Net result</b>	<b>-10,500,000</b>	<b>-12,215,000</b>	<b>-2,915,000</b>	<b>3,285,000</b>	<b>12,585,000</b>
Accumulated funds	39,500,000	27,285,000	36,585,000	42,785,000	52,085,000
Solvency margin	12.7%	8.2%	10.7%	12.3%	14.6%
Required solvency	77,500,000	82,925,000	85,250,000	86,800,000	89,125,000
Shortfall	38,000,000	55,640,000	48,665,000	44,015,000	37,040,000

# Mathematical extreme – locked-in at 100%

	<i>Year 1</i>
Accumulated funds	300,000,000
Contribution income	329,998,506
Claims	294,000,000
Non-health expenditure	30,000,000
<b>Net underwriting result</b>	<b>5,998,506</b>
Investment income	24,000,000
<b>Net result</b>	<b>29,998,506</b>
Accumulated funds	329,998,506
Required solvency	100%

# Mathematical extreme – locked-in at 100%

**Year 2**

	<b>Year 1</b>	<b>10% increase</b>
Accumulated funds	300,000,000	329,998,506
Contribution income	329,998,506	362,998,357
Claims	294,000,000	323,400,000
Non-health expenditure	30,000,000	33,000,000
<b>Net underwriting result</b>	<b>5,998,506</b>	<b>6,598,357</b>
Investment income	24,000,000	26,399,880
<b>Net result</b>	<b>29,998,506</b>	<b>32,998,237</b>
Accumulated funds	329,998,506	362,996,744
Required solvency	100%	100%

# Mathematical extreme – locked-in at 100%

		<i>Year 2</i>	
	<i>Year 1</i>	<i>10% increase</i>	<i>25% increase</i>
Accumulated funds	300,000,000	329,998,506	329,998,506
Contribution income	329,998,506	362,998,357	412,498,133
Claims	294,000,000	323,400,000	323,400,000
Non-health expenditure	30,000,000	33,000,000	33,000,000
<b>Net undewriting result</b>	<b>5,998,506</b>	<b>6,598,357</b>	<b>56,098,133</b>
Investment income	24,000,000	26,399,880	26,399,880
<b>Net result</b>	<b>29,998,506</b>	<b>32,998,237</b>	<b>82,498,013</b>
Accumulated funds	329,998,506	362,996,744	412,496,520
Required solvency	100%	100%	100%

# Mathematical extreme – locked-in at 100%



	<b>Year 1</b>	<b>Year 2</b>		
		<b>10% increase</b>	<b>25% increase</b>	<b>100% increase</b>
Accumulated funds	300,000,000	329,998,506	329,998,506	329,998,506
Contribution income	329,998,506	362,998,357	412,498,133	659,997,012
Claims	294,000,000	323,400,000	323,400,000	323,400,000
Non-health expenditure	30,000,000	33,000,000	33,000,000	33,000,000
<b>Net undewriting result</b>	<b>5,998,506</b>	<b>6,598,357</b>	<b>56,098,133</b>	<b>303,597,012</b>
Investment income	24,000,000	26,399,880	26,399,880	26,399,880
<b>Net result</b>	<b>29,998,506</b>	<b>32,998,237</b>	<b>82,498,013</b>	<b>329,996,893</b>
Accumulated funds	329,998,506	362,996,744	412,496,520	659,995,399
Required solvency	100%	100%	100%	100%



# Mathematical extreme – locked-in at 100%

	<i>Year 1</i>	<i>10% increase</i>	<i>25% increase</i>	<i>100% increase</i>	<i>90% decrease</i>
Accumulated funds	300,000,000	329,998,506	329,998,506	329,998,506	329,998,506
Contribution income	329,998,506	362,998,357	412,498,133	659,997,012	32,999,851
Claims	294,000,000	323,400,000	323,400,000	323,400,000	323,400,000
Non-health expenditure	30,000,000	33,000,000	33,000,000	33,000,000	33,000,000
<b>Net undewriting result</b>	<b>5,998,506</b>	<b>6,598,357</b>	<b>56,098,133</b>	<b>303,597,012</b>	<b>-323,400,149</b>
Investment income	24,000,000	26,399,880	26,399,880	26,399,880	26,399,880
<b>Net result</b>	<b>29,998,506</b>	<b>32,998,237</b>	<b>82,498,013</b>	<b>329,996,893</b>	<b>-297,000,269</b>
Accumulated funds	329,998,506	362,996,744	412,496,520	659,995,399	32,998,237
Required solvency	100%	100%	100%	100%	100%

# Membership growth

Whack-a-mole

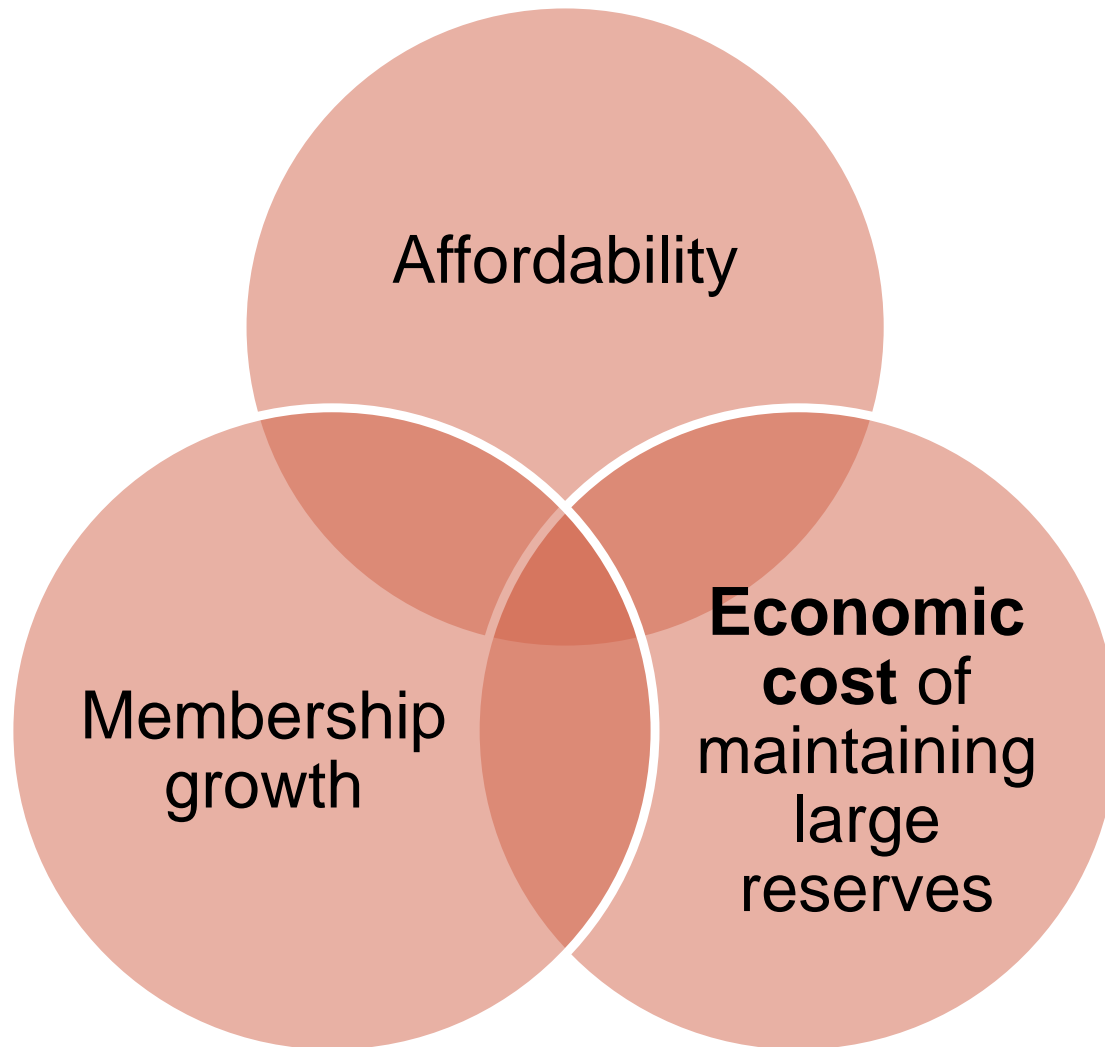
- Rewarding shrinking schemes
- Penalising growing schemes



# Economic cost

- Two largest schemes in South Africa
- Ultimately required to hold approx **R10 billion** each (2012 money)
- It has been suggested that each of these could be less than half the current on a risk-based approach
- What could either of these schemes achieve if R5 billion of capital were released?

## Issues with current model



# Europe – Solvency II



# South Africa (FSB) - SAM

FSB Solvency **A**ssessment and **M**anagement regime (SAM)



# FSB – SAM

## Prescribed model (presently being developed)

- Complex

## Own model “internal model”

- Subject to approval by FSB
- Onerous process to get approval
- Need to demonstrate how **model is applied on an operational level on a daily basis**
- Very costly to develop



# Regulatory dispensation



Department of Health / Department of  
Finance

Medical skills / Actuarial skills

Appetite and capacity to evaluate complex  
models



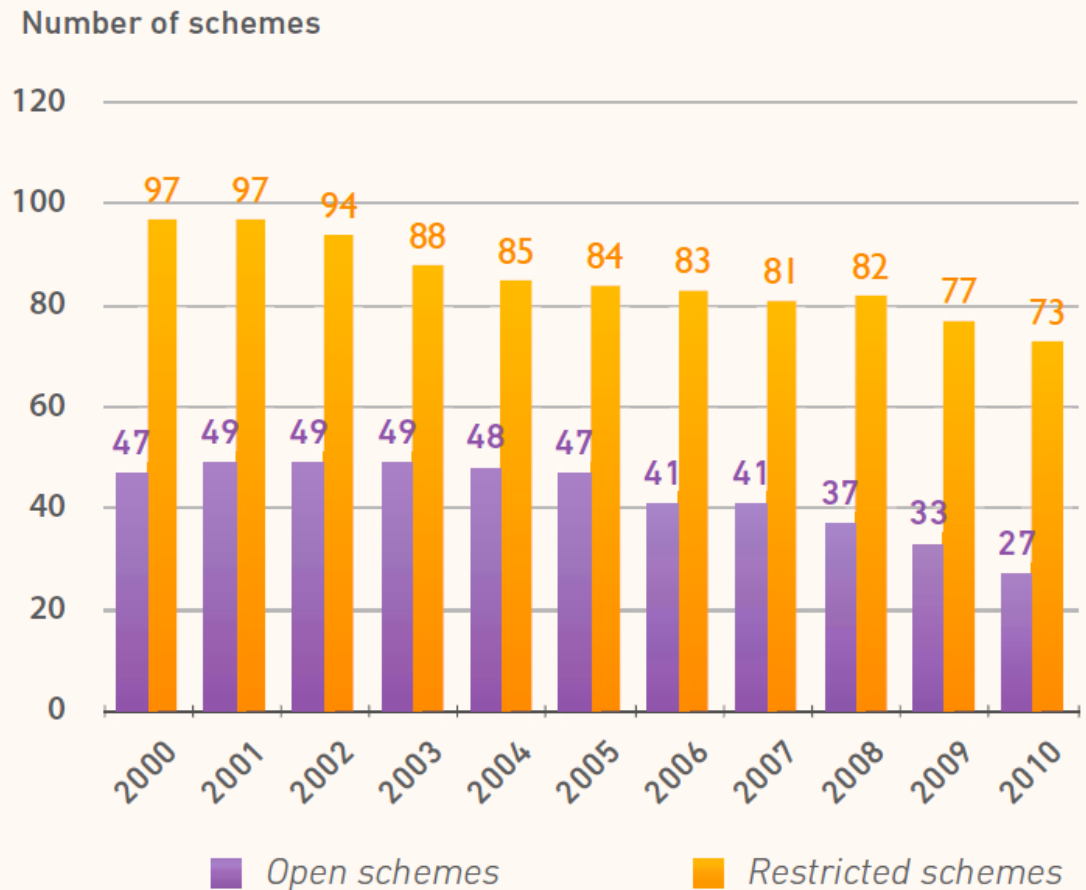


# Research – South Africa

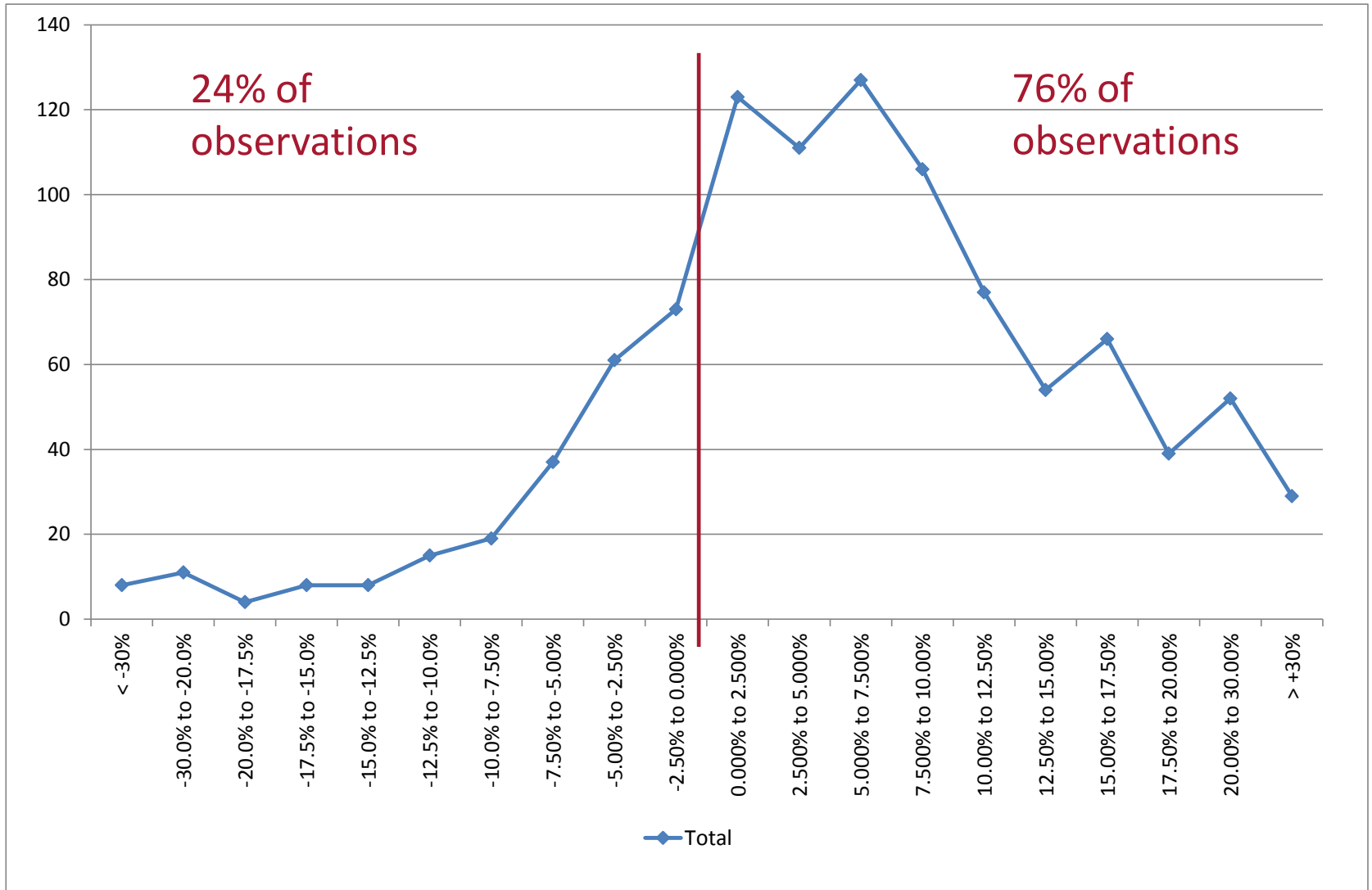
# Research – South Africa

**More than 1000** observations of annual financial results over 10 years

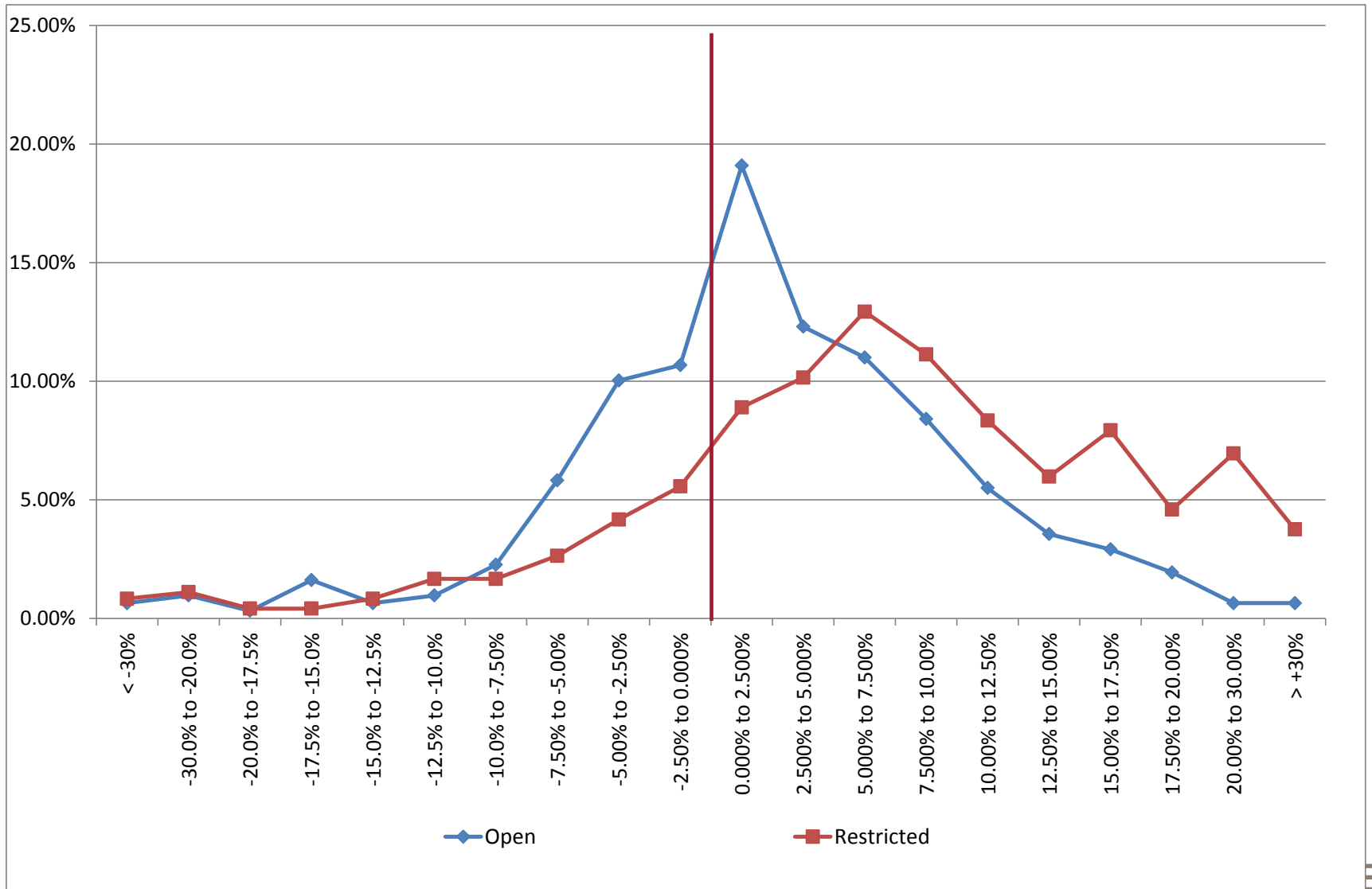
Figure 9: Trend in number of schemes 2000-2010



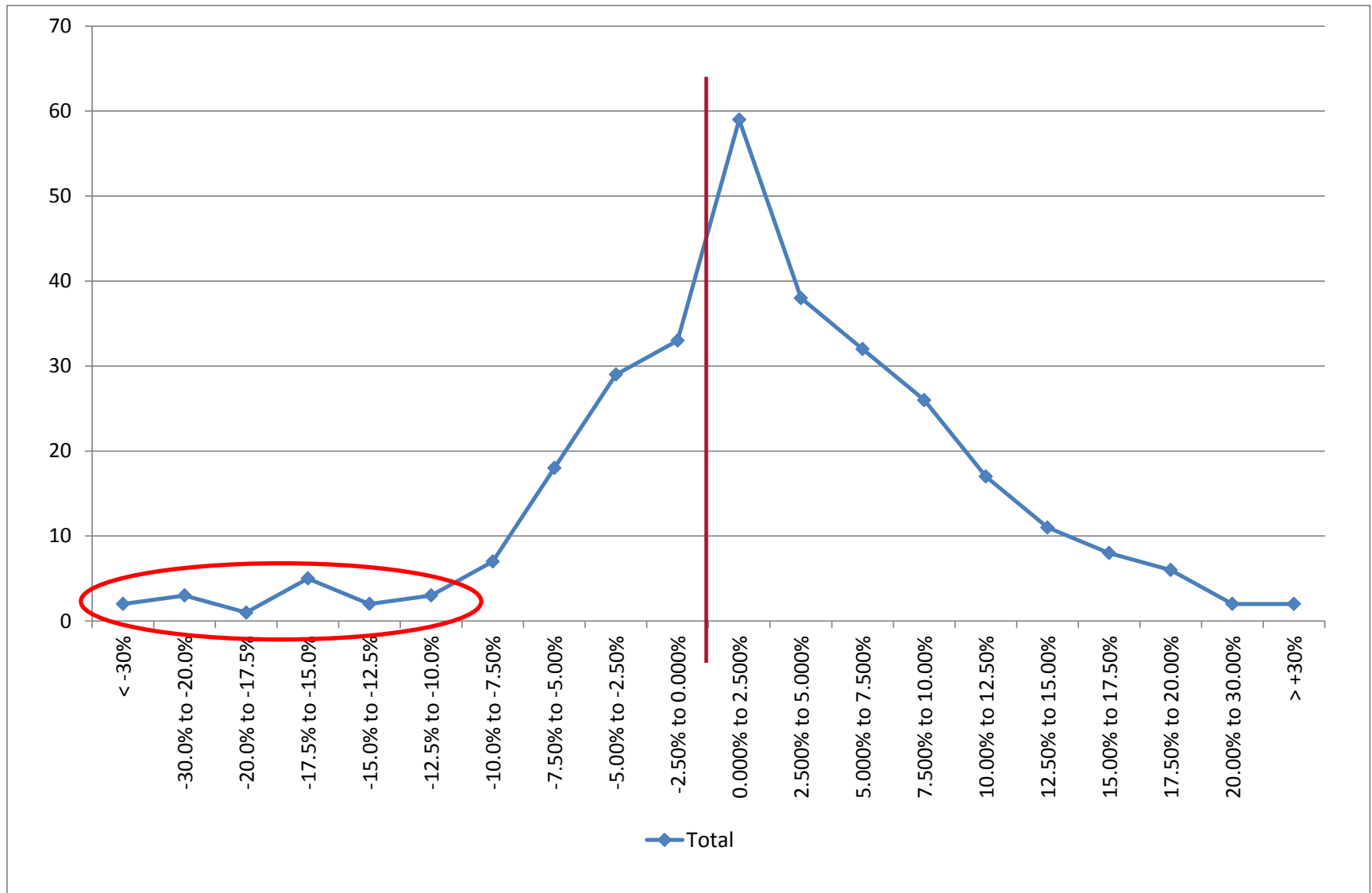
# Results – all schemes



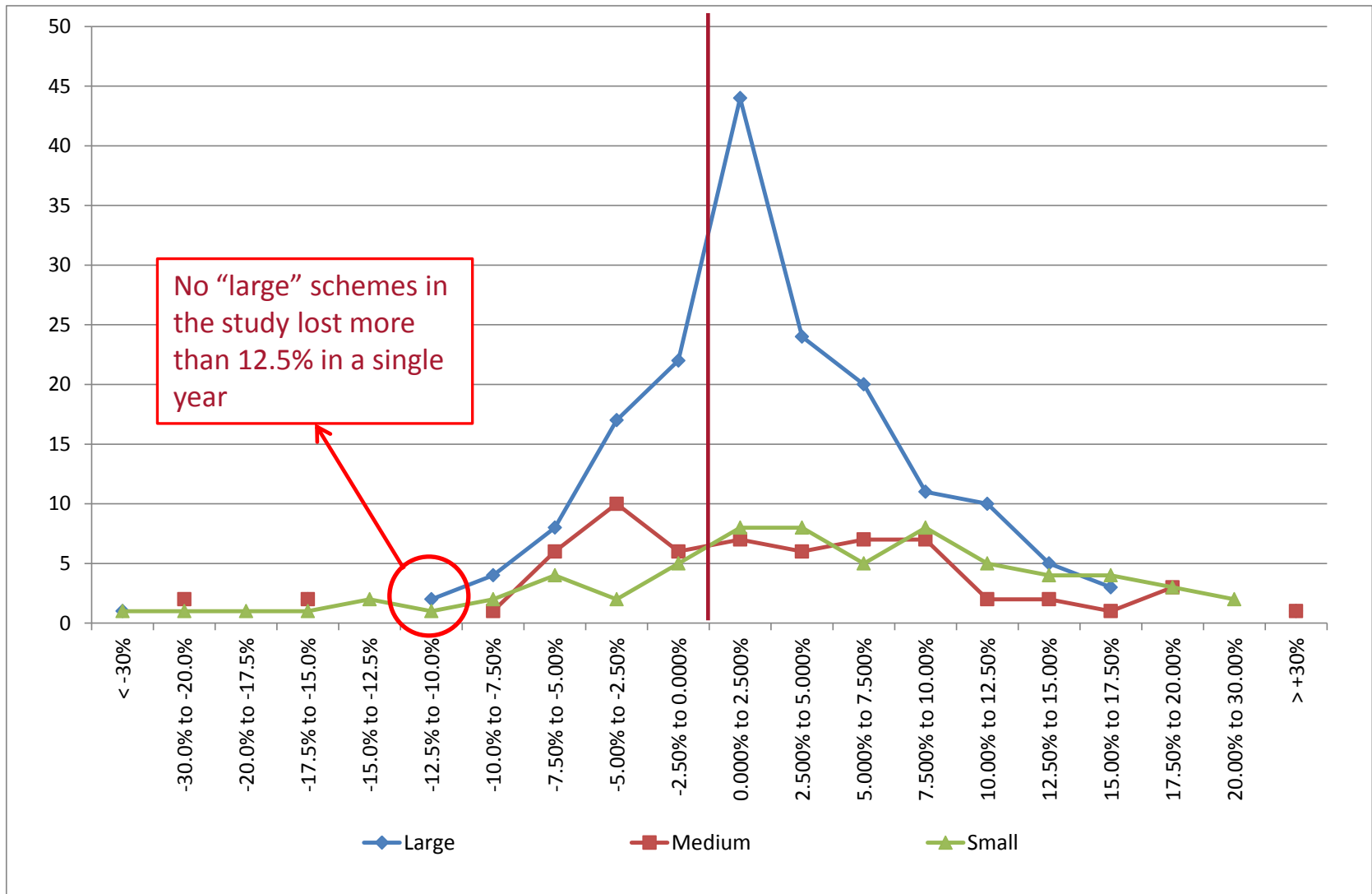
# Results – all schemes



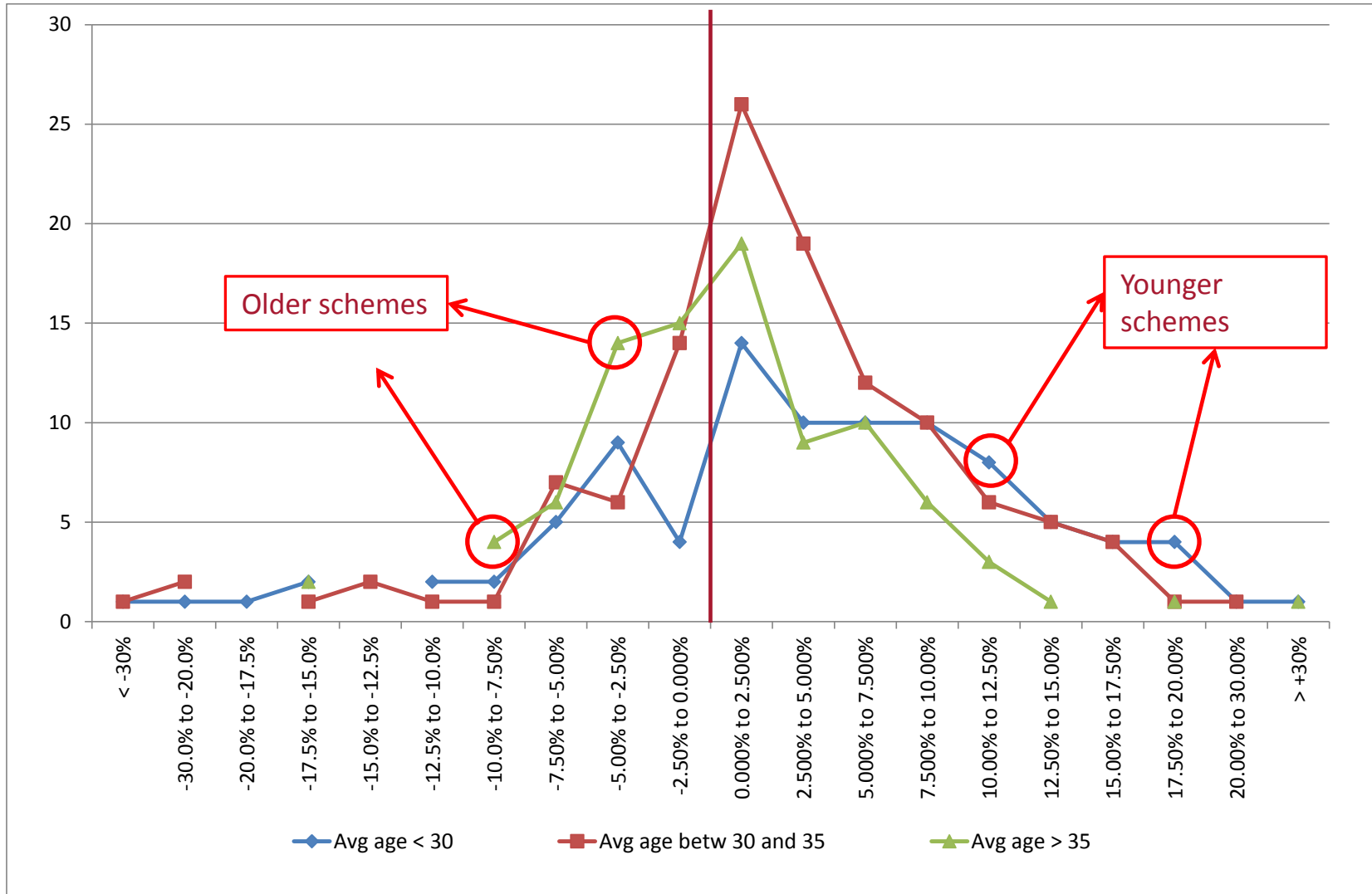
# Results – only OPEN schemes



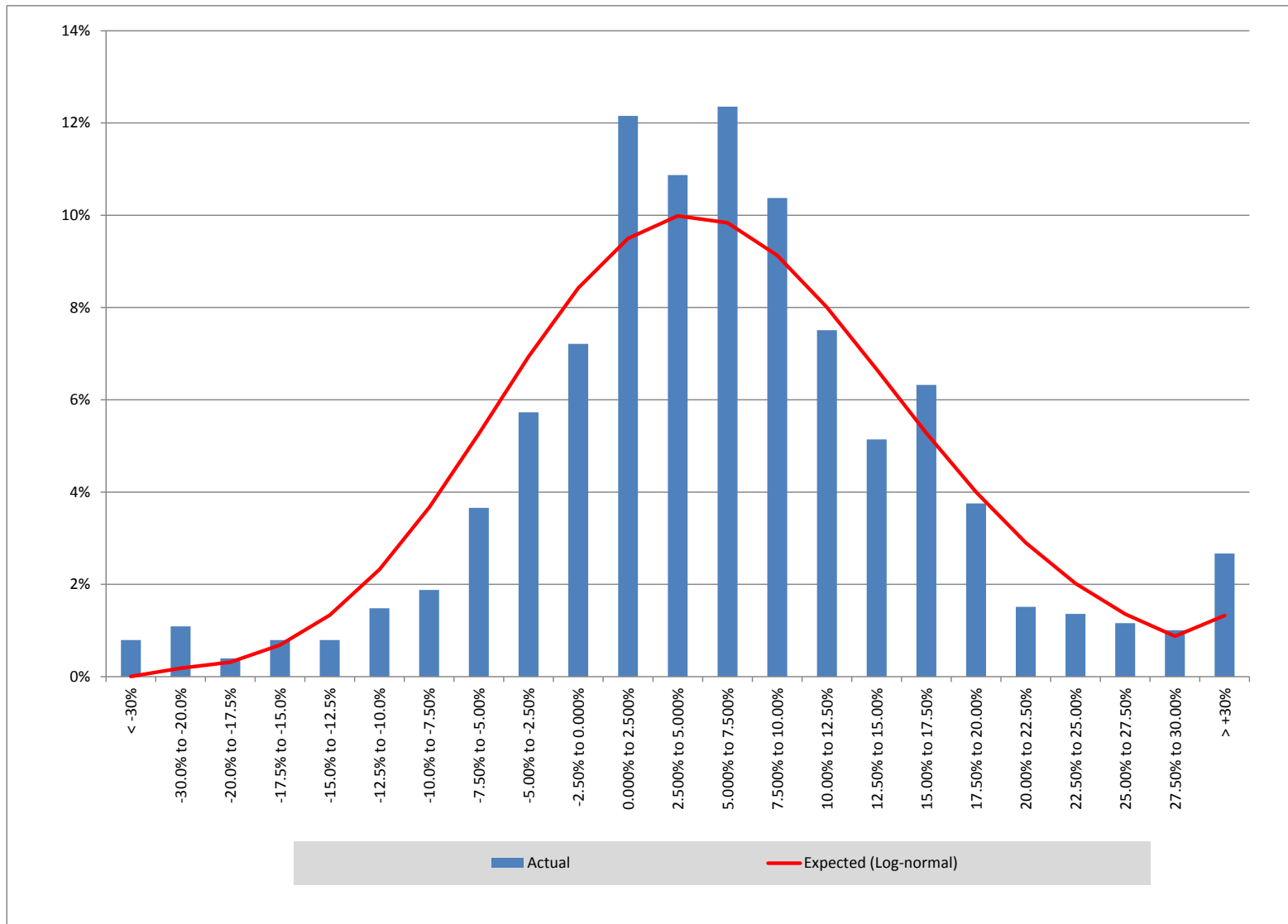
# Results – only OPEN schemes



# Results – only OPEN schemes



# Results





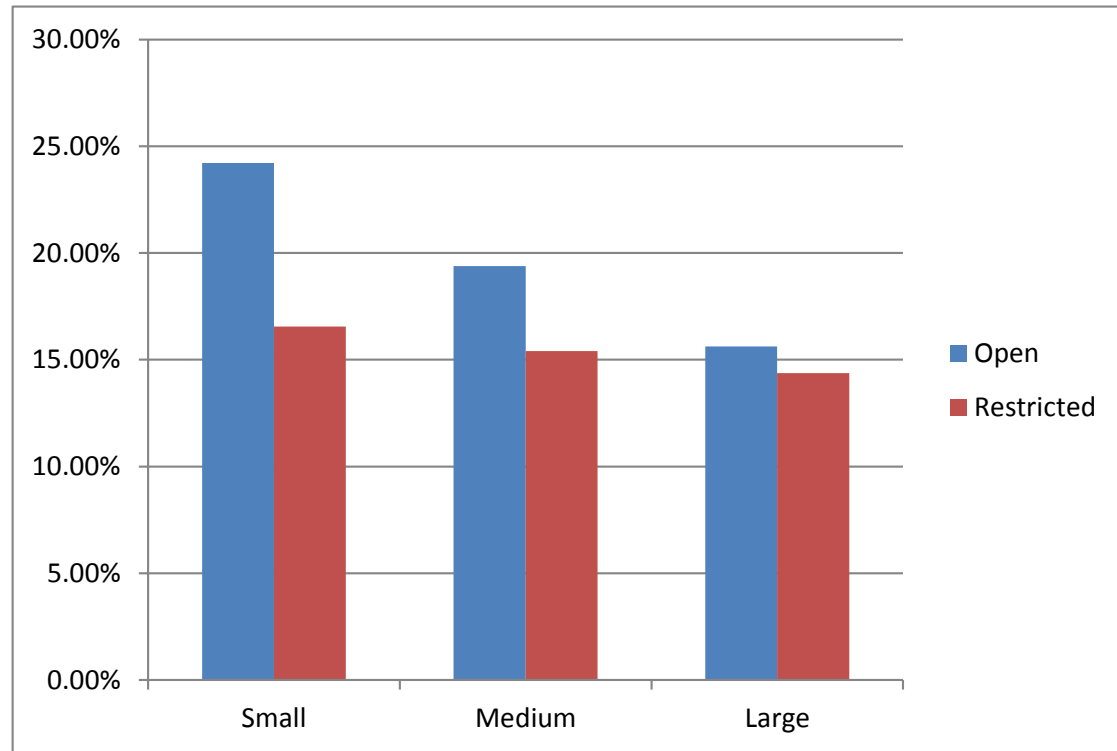
# Results

## 85% (once in seven years)

	Open	Restricted
Small	9.07%	3.20%
Medium	7.72%	2.05%
Large	5.60%	3.05%
<b>Total</b>	<b>7.03%</b>	<b>2.99%</b>

## 99.5% (once in 200 years)

	Open	Restricted
Small	24.21%	16.56%
Medium	19.39%	15.41%
Large	15.62%	14.37%
<b>Total</b>	<b>18.81%</b>	<b>16.04%</b>



# Long-term considerations

Cross-subsidy liability

Consideration moves away from unpredictable risks to predictable ageing

For example, a scheme that is (or could be) closed to new entrants

Analyses and projections suggest solvency in excess of 500% (in some case more than 1000%) is required for a scheme to fund existing members

# Response to circular 12/17/28

Inappropriateness of current model widely recognised

Risk Based Capital (RBC) approached favoured

Prefer a pragmatic and simplified model

- Net contributions only
- Consider past results (surplus or deficit)
- Consider size of scheme

Alternatively, consider approval of “internal” models – but this would impose a significant technical and administrative burden on CMS

# “Beware of geeks bearing formulas” – Warren Buffet



Thank you

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