How to talk about target capital

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CAPITAL

Reasons to hold capital

South Africa

- Capital is the cornerstone of an insurer's financial soundness and the primary means of ensuring the security of policyholder obligations.

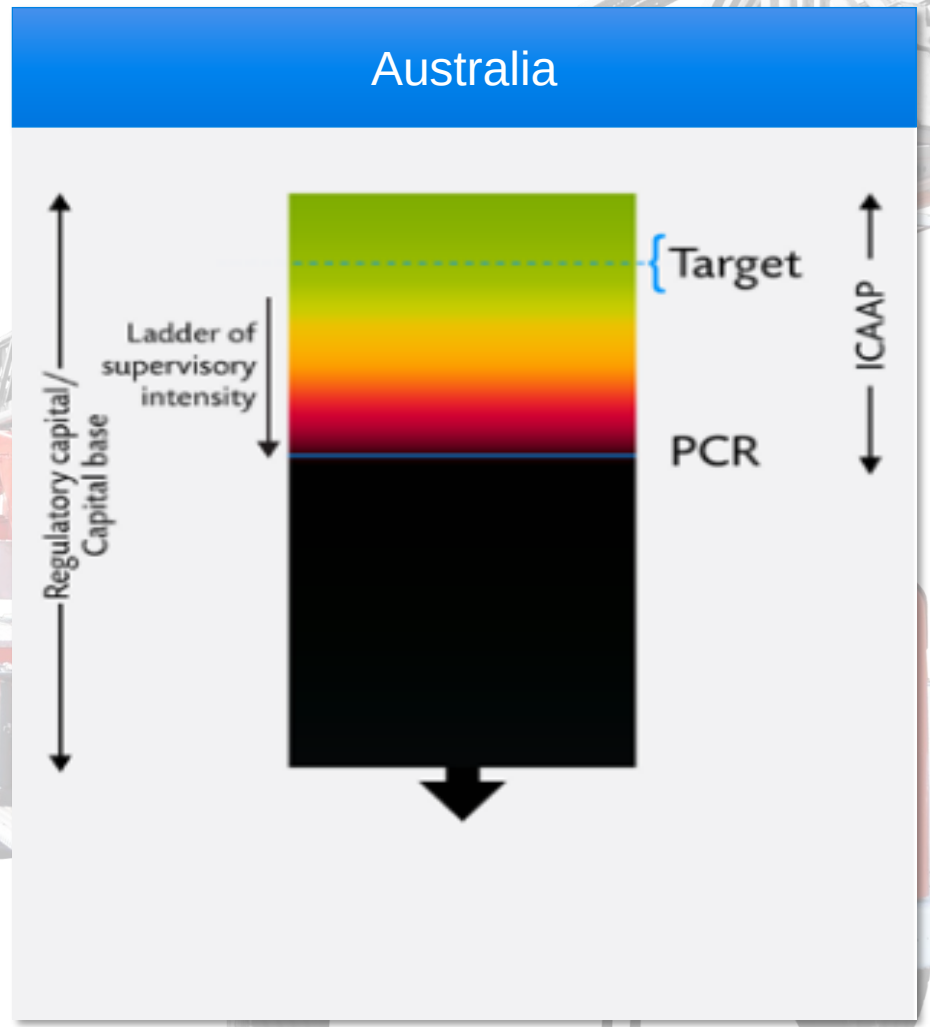
Australia

- "a buffer against losses that have not been anticipated and, in the event of problems, enables the insurer to continue operating whilst those problems are addressed or resolved"

Canada

- "Capital considerations include elements that contribute to financial strength through periods when an insurer is under stress as well as elements that contribute to policyholder and creditor protection during wind-up."

Ladder of intervention



Own Funds

Excess Capital

Free Assets

Target Capital

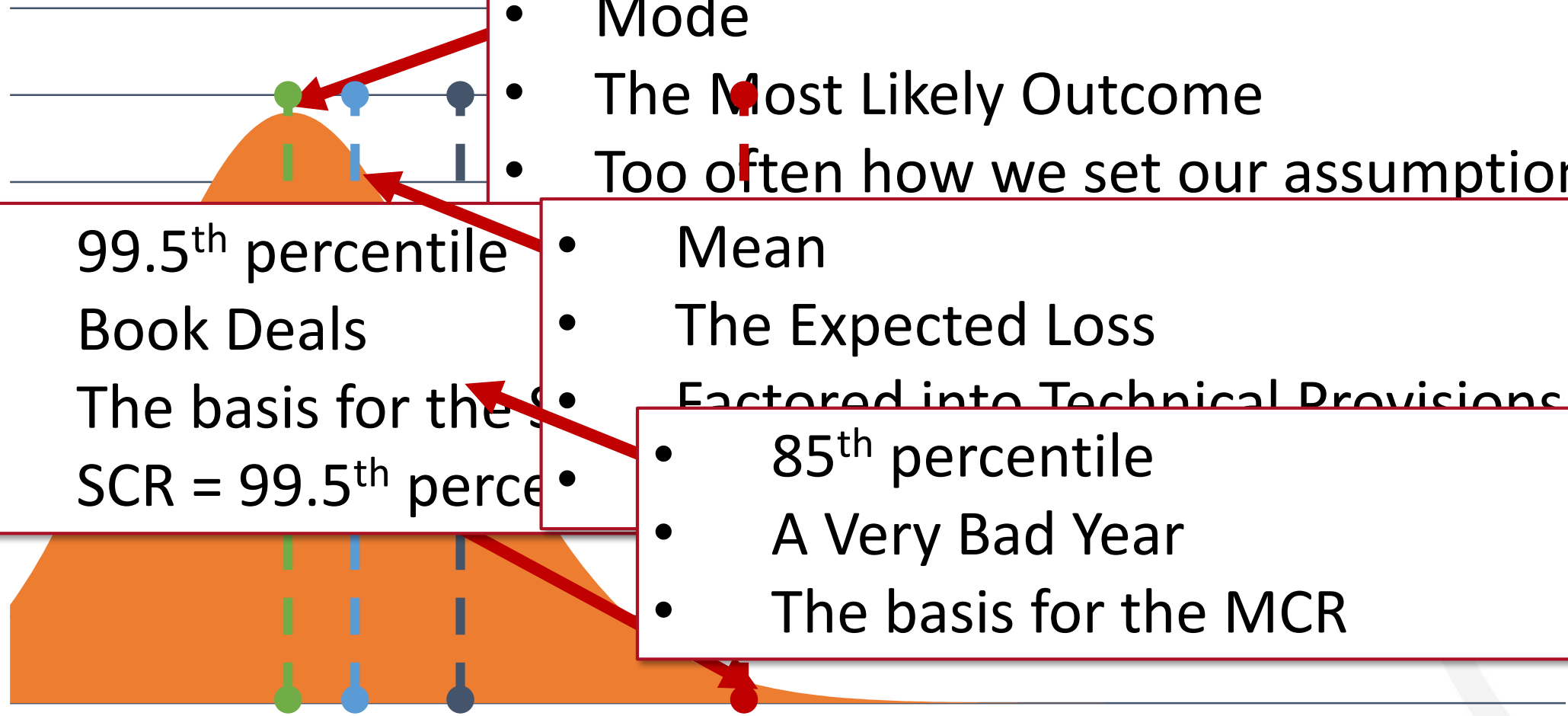
SCR

Initial Intervention*

MCR

Ultimate regulatory action

Distribution of losses and capital



- Mode
- The Most Likely Outcome
- Too often how we set our assumptions

- 99.5th percentile
- Book Deals
- The basis for the S
- SCR = 99.5th perce

- Mean
- The Expected Loss
- Factored into Technical Provisions
-

- 85th percentile
- A Very Bad Year
- The basis for the MCR

Greater Losses →

Target Capital Ratio

Capital coverage under Solvency II

Life Solvency Ratios under Solvency II

- Median of 2.2x (2016)
- Medians by country range from 2.9x in Germany to 1.5x in Latvia

Non-Life Solvency Ratios under Solvency II

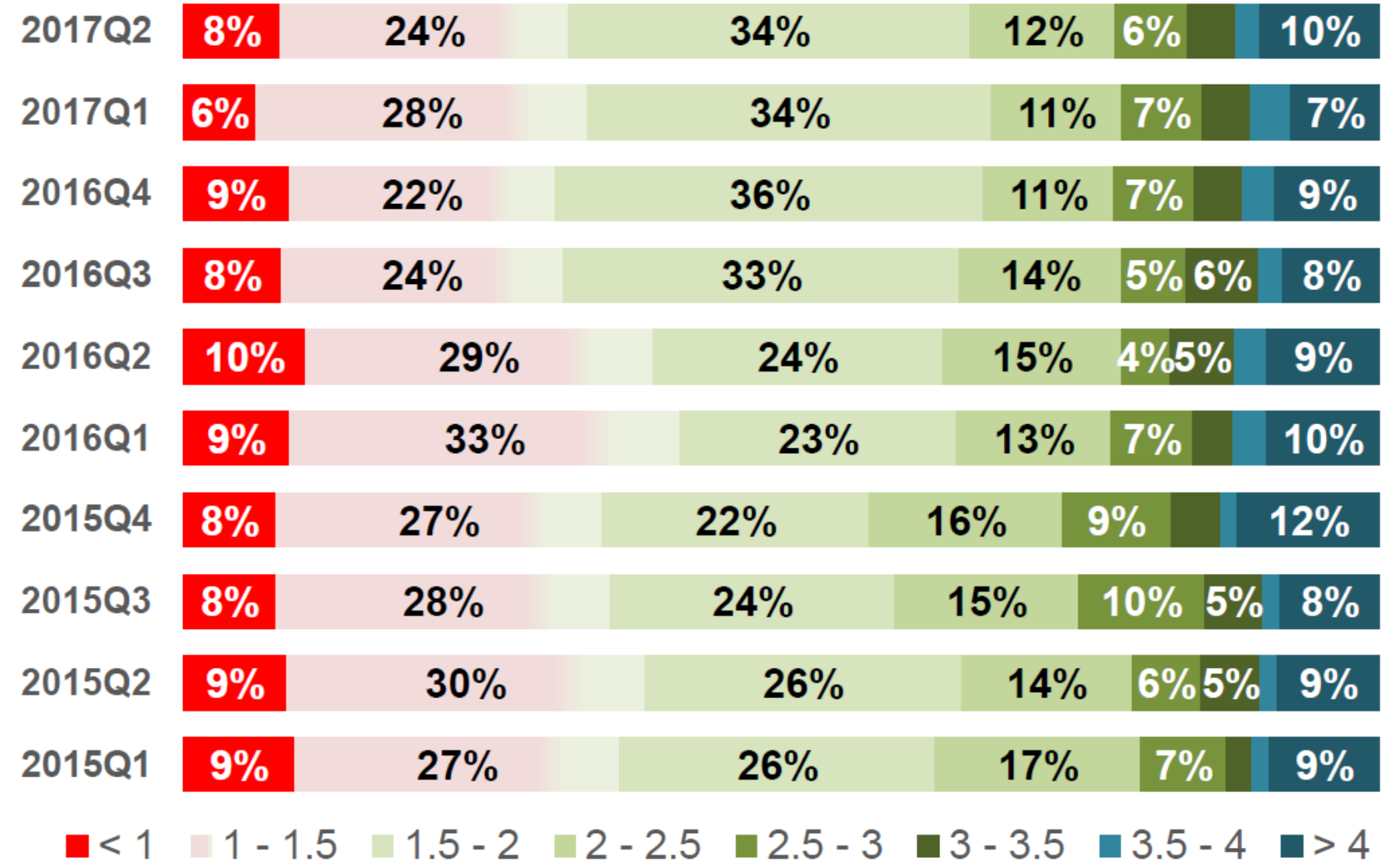
- Median of 2.1x (2016)

Combined Solvency Ratios under Solvency II

- Increased from 2016 to 2017
- Bottom 25th percentile of UK insurers was 1.5x (2016)
- European average is 1.9x (2016)
- About a quarter of firms would need to recapitalise after an MCR event

SCR Cover

SCR Cover – industry statistics



Reasons to hold more than 1.0x

For

- GOI 3 "Capital Management Policy" requires it
- New initiatives and opportunities
- Risks not factored into SCR
- Build customer and distributor confidence
- Greater protection for policyholders and creditors
- Prevent regulatory intervention

Against

- Dilution of returns to shareholders
- Limits opportunities for investment elsewhere
- Principal agent problems and wasteful expenditure

Simple, rational Target Capital Ranges

What is the distribution of losses?

Characteristics

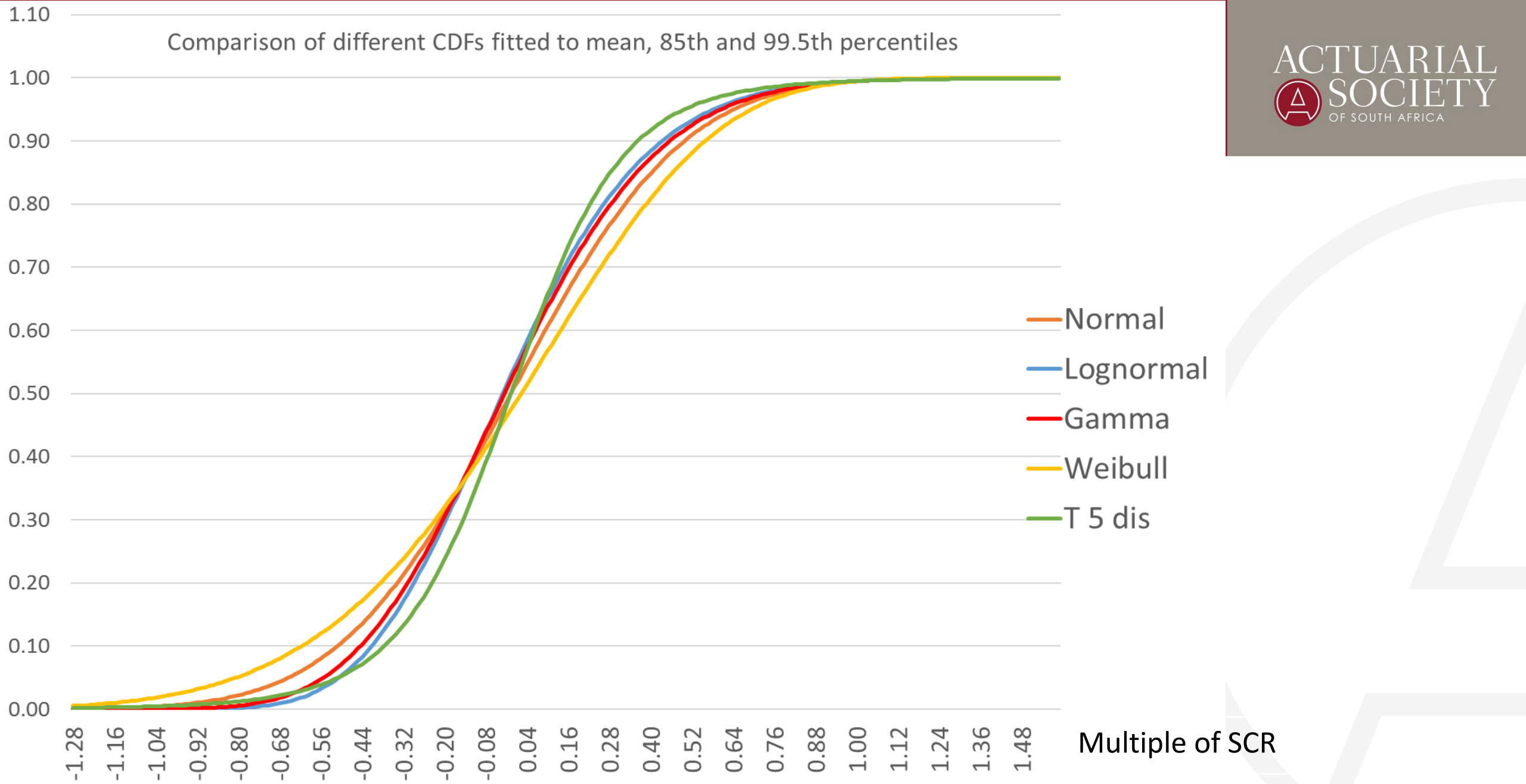
- Skewed
- Probability leptokurtic
- Probably not normal

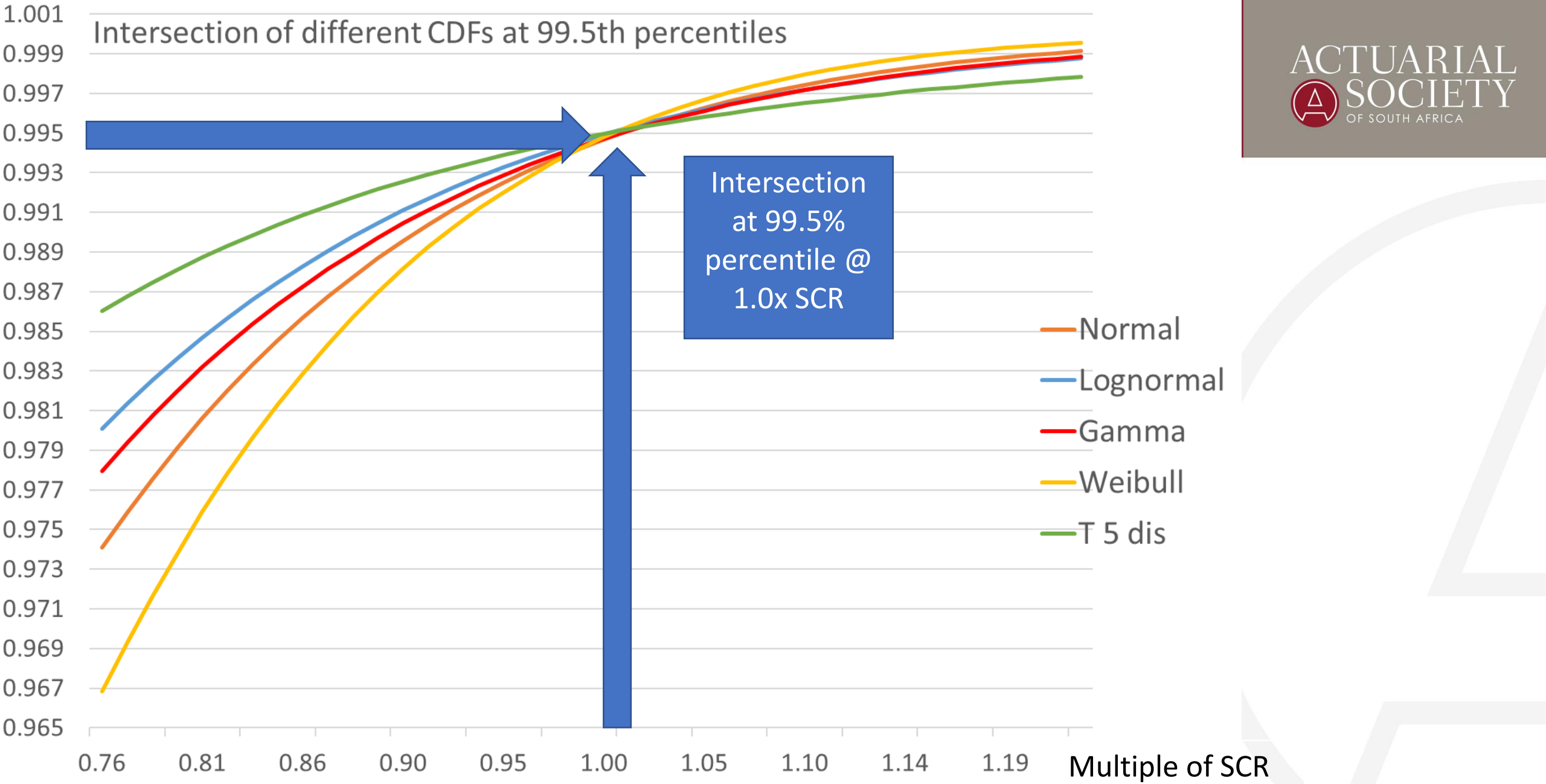
Possible approaches

- Full internal model
- Component build-up of primary risks
- Pick a shape, test

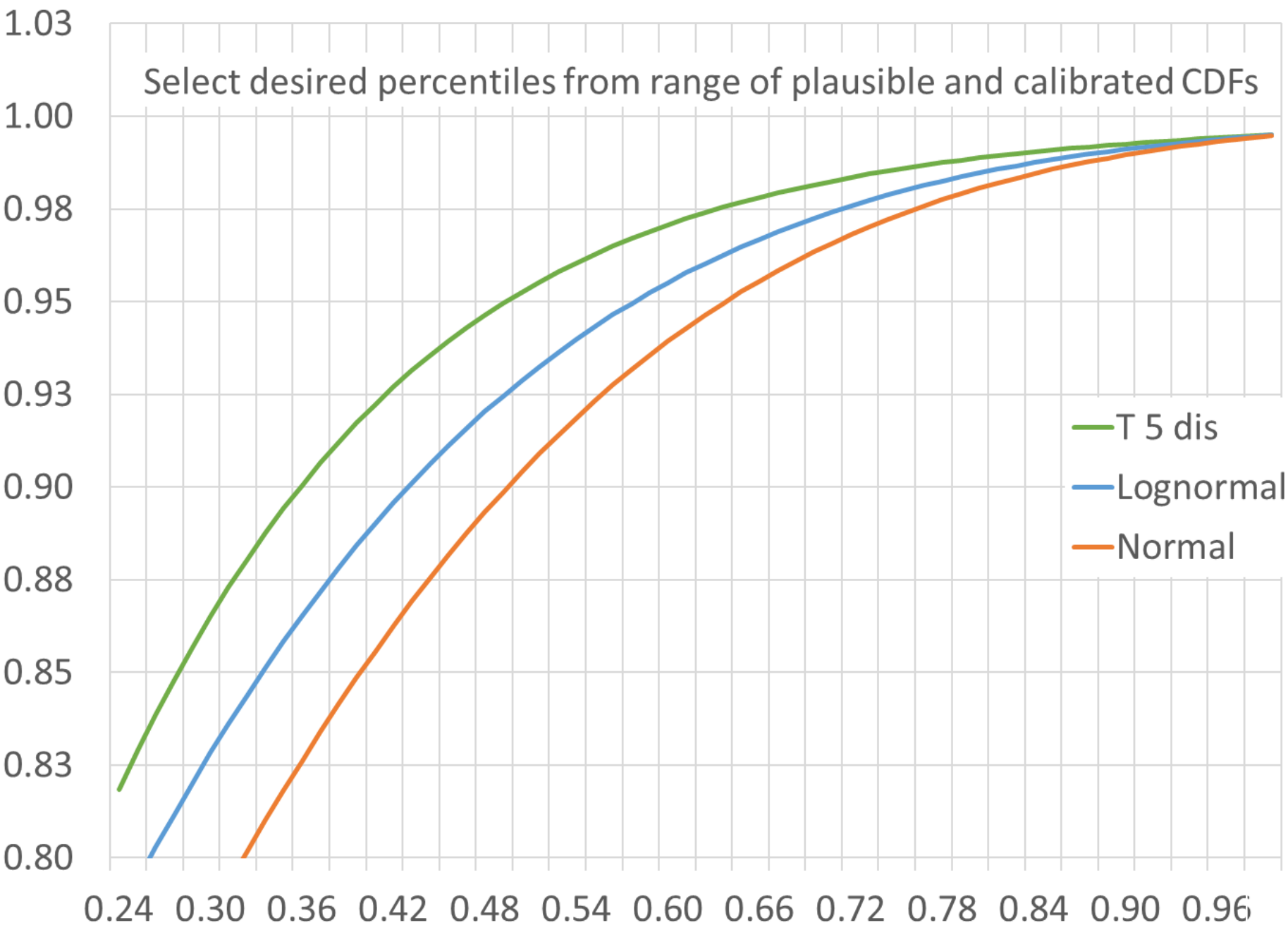
Candidates

- Normal
- Lognormal
- Gamma
- Student's T


Comparison of different CDFs fitted to mean, 85th and 99.5th percentiles
1.10
1.00
0.90
0.80
0.70
0.60
0.50
0.40
0.30
0.20
0.10
0.00
-1.28
-1.16
-1.04
-0.92
-0.80
-0.68
-0.56
-0.44
-0.32
-0.20
-0.08
0.04
0.16
0.28
0.40
0.52
0.64
0.76
0.88
1.00
1.12
1.24
1.36
1.48
Normal
Lognormal
Gamma
Weibull
T 5 dis
Multiple of SCR



ACTUARIAL SOCIETY OF SOUTH AFRICA



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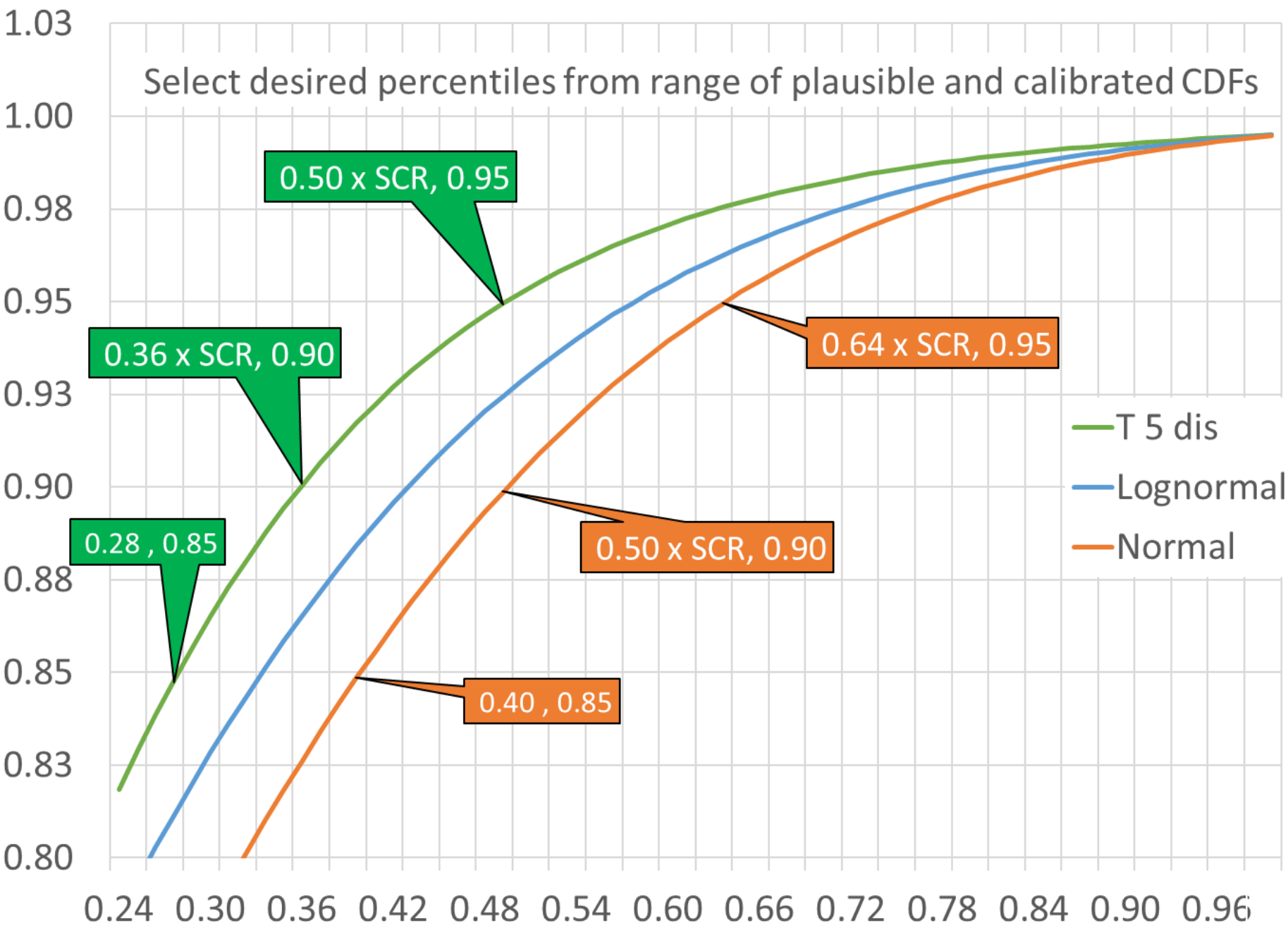
Select desired percentiles from range of plausible and calibrated CDFs
0.50 x SCR, 0.95
0.36 x SCR, 0.90
0.28 , 0.85
0.64 x SCR, 0.95
0.50 x SCR, 0.90
0.40 , 0.85
T 5 dis
Lognormal
Normal
1.03
1.00
0.98
0.95
0.93
0.90
0.88
0.85
0.83
0.80
0.24 0.30 0.36 0.42 0.48 0.54 0.60 0.66 0.72 0.78 0.84 0.90 0.96
Multiple of SCR

Determining target capital range

		Normal	Lognormal	T 5
1 in	7	0.41	0.34	0.29
1 in	10	0.50	0.42	0.35
1 in	20	0.64	0.58	0.50
1 in	30	0.71	0.65	0.57
1 in	50	0.80	0.75	0.68

- Ranges from1.3xSCR to 1.8xSCR?
- 1 in 7 realistically too frequent
- 1 in 50 seems to imply very conservative capitalization (?)

- Assumptions…

- **Assuming you're comfortable modelling entire loss distribution as one**

Special cases – operational risk

		Normal	Lognormal	T 5	OpsRisk no insurance A	OpsRisk no insurance B	OpsRisk with insurance
1 in	7	0.41	0.34	0.29	0.21	0.33	0.56
1 in	10	0.50	0.42	0.35	0.27	0.38	0.61
1 in	20	0.64	0.58	0.50	0.39	0.49	0.71
1 in	30	0.71	0.65	0.57	0.47	0.56	0.76
1 in	50	0.80	0.75	0.68	0.59	0.66	0.83

Special cases – pandemic risk

		Normal	Lognormal	T 5	Swiss Re flu pandemic for South Africa
1 in	7	0.41	0.34	0.29	
1 in	10	0.50	0.42	0.35	
1 in	20	0.64	0.58	0.50	
1 in	30	0.71	0.65	0.57	0.10
1 in	50	0.80	0.75	0.68	0.20

* http://www.swissre.com/library/Pandemic_influenza_A_21st_century_model_for_mortality_shocks.html (approximate calculations informed by Swiss Re analysis

Special cases – matched market risk for linked business

		Normal	Lognormal	T 5	Matched market risk
1 in	7	0.41	0.34	0.29	-
1 in	10	0.50	0.42	0.35	-
1 in	20	0.64	0.58	0.50	-
1 in	30	0.71	0.65	0.57	-
1 in	50	0.80	0.75	0.68	-

- Market risk arising from non linked assets generates SCR
- But "matched" in that these match the average assets in the linked assets
- Ignoring AMCR and second order impacts
- 1.0x SCR cover should be adequate

Special cases – new inflows for linked business

- Assuming all SCR rises from AUM
- 10% of AUM new in flow requires 0.1x SCR as buffer
- Need to assess that probability subjectively
- Consider management control over new in flows and timing of in flows

- Special case of “all risks not covered by Standard Formula”
- General Principle: Understand impact of risks on Own Funds and SCR

Special cases – mass lapse risk

		Normal	Lognormal	T 5	Mass Lapse
1 in	7	0.41	0.34	0.29	-
1 in	10	0.50	0.42	0.35	-
1 in	20	0.64	0.58	0.50	?
1 in	30	0.71	0.65	0.57	?
1 in	50	0.80	0.75	0.68	-

- Only in special cases
- Homogenous portfolio of profitable risk products
- No surrender values
- Only mass lapse (not level lapse)
- Ignores expense component of mass lapse
- Ignores AMCR, OpsRisk

Earnings at risk

Use Earnings at Risk

- Use existing earnings at risk models as observation for calibration
- Sense check on Earnings at Risk modelling

Use SAM consistent calibration to approximate Earnings at Risk

- Assume 25% Return on Capital target / expectation
- Assume 1.5x SCR cover
- 10% to 17% annual probability of negative earnings
- Ignores SAP104 margins, APN401 percentiles, STMs, zeroisation and IFRS17 CSM

Summary of the process

Recognise probability of SCR breach as key to risk appetite

Use consistent calibration from SCR + MCR + Mean

Separate committed buffers

Talk about implications of current Target Capital

Refine Target Capital

- AKA “The Start”

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