



# Changes in ALM under LAGIC

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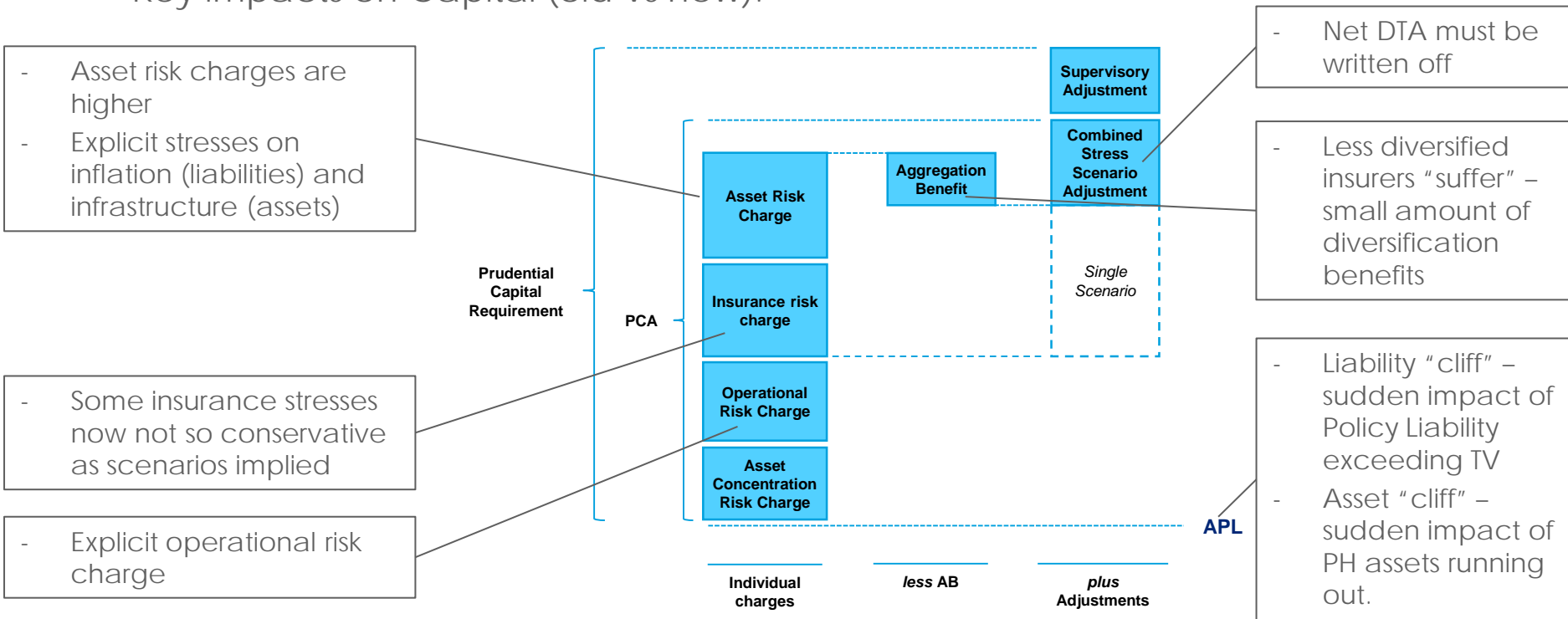
## Agenda

- Impact of LAGIC changes on Life Insurer Capital Slides 3-7
- Target surplus setting Slides 8-10
- How to manage the resulting volatility Slides 11-13



## LAGIC has made capital requirements more risk sensitive

- Now "risk based" rather than scenario based
- Key impacts on Capital (old vs new):

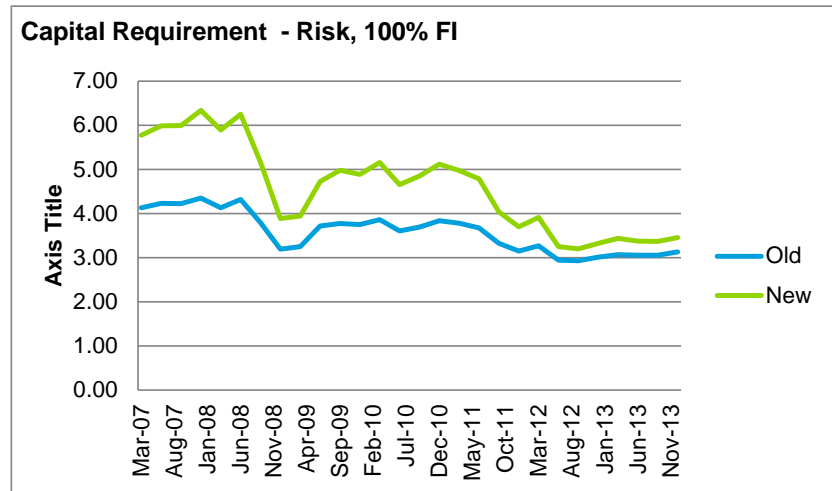




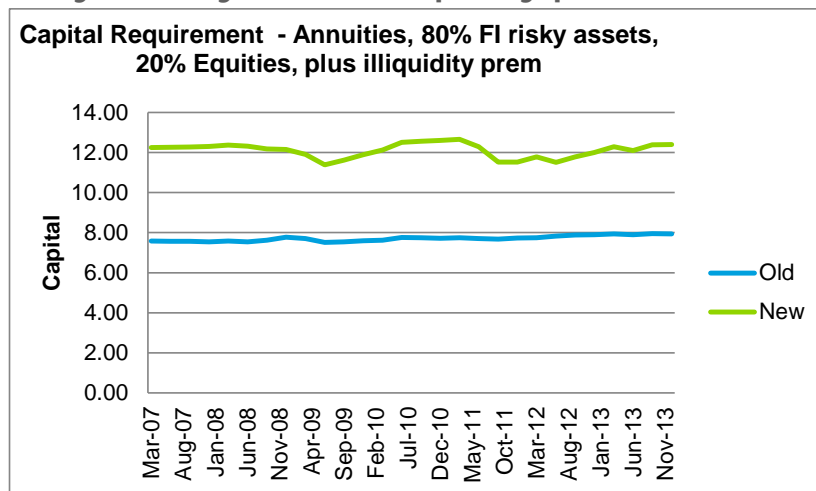
## Capital requirements are more volatile

Decreasing volatility	Increasing volatility
<ul style="list-style-type: none"> <li>- <b>Insurance risk</b> – some stresses less conservative</li> <li>- <b>Diversification</b> – helps to smooth capital</li> </ul>	<ul style="list-style-type: none"> <li>- <b>Larger asset stresses</b> now applied</li> <li>- <b>Explicit CPI stress</b> (liabilities) and <b>infrastructure stress</b> introduced</li> <li>- <b>Illiquidity premium</b></li> </ul>

FI book – stronger stresses



Risky annuity book – illiquidity premium



Standard Deviation	Risk 100% FI		Annuities w/lliq prem 80% risky FI, 20% Eq	
	Old	New	Old	New
Last 4 years	0.35	0.75	0.11	0.39
Last 2 years	0.11	0.22	0.07	0.32

→ →  
*More volatility under both scenarios.*

- Risk scenario: 30% CGS, 60% CGS indexed bonds, 10% corporate debt (AA rating). Ca 3yr effective duration.
- Annuities scenario: 10% CGS indexed bonds, 70% corporate debt (AA rating), 20% equities.



## Volatility from “new risks” : Solvency 2 example

- Liabilities are discounted using Swap (LIBOR) based rates
- Inflation (RPI / LPI) and interest rate swap cash flows use are discounted using Overnight Index Swap (OIS) rates (i.e SONIA) when marking to market
- Historically SONIA and LIBOR were almost identical
- This changed dramatically during the GFC...meaning liabilities did not move similarly to assets as was expected

- Could something similar happen in stressed conditions in Australia?
- Liabilities discounted at Commonwealth government bond yields
- Swaps pricing based on BBSW and discounted using OIS rates?

# Financial Services Forum



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## Pre Crisis

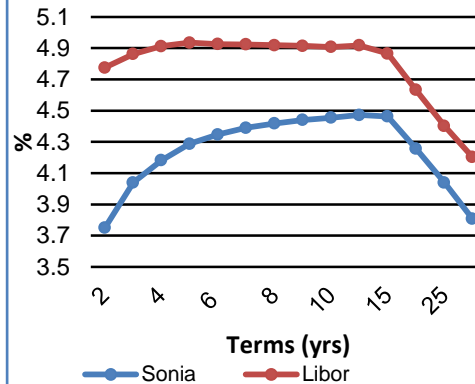
- Difference between LIBOR & SONIA almost zero

## Difference

- Difference almost zero

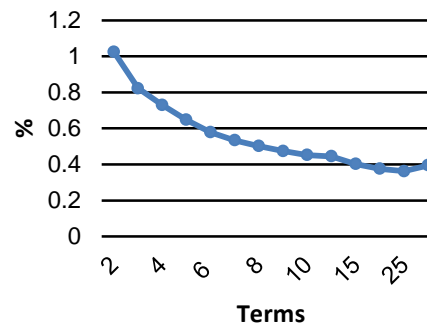
## Mid Crisis

**15 October 2008**  
SONIA vs LIBOR



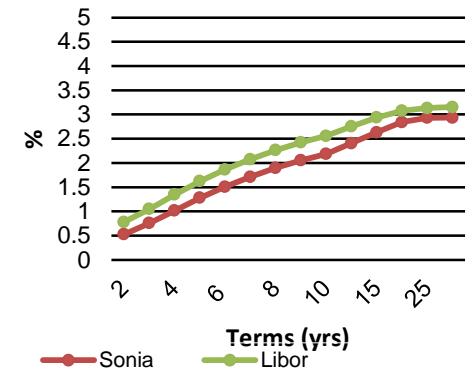
## Difference

**Difference**  
LIBOR - SONIA



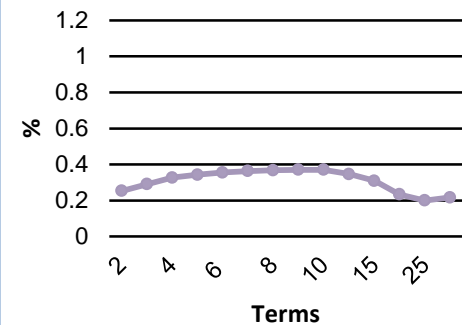
## Post Crisis

**29 Oct 2013**  
SONIA vs LIBOR



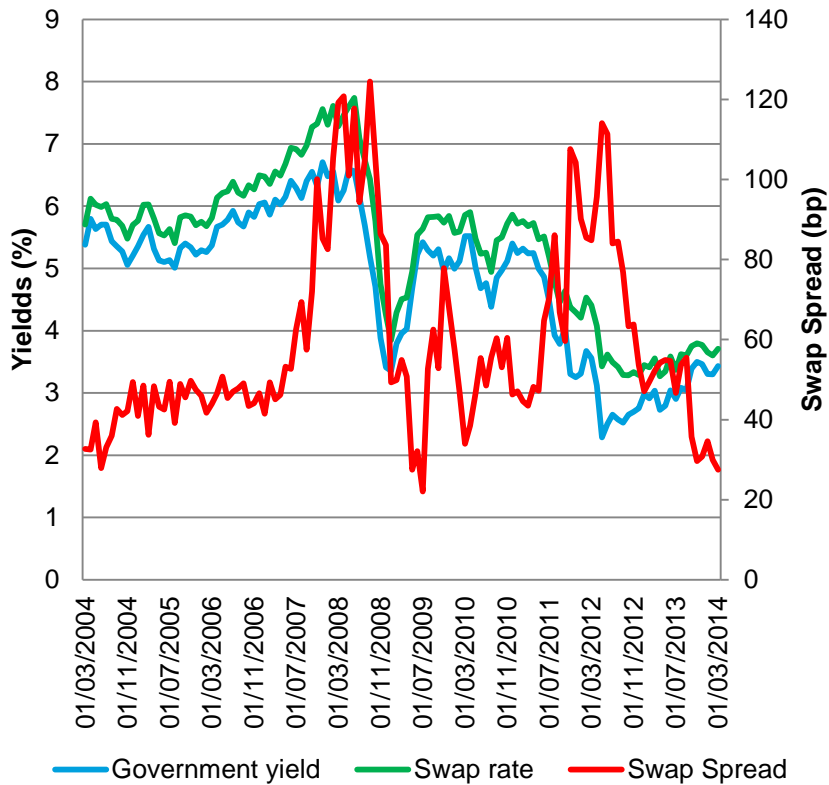
## Difference

**Difference**  
LIBOR - SONIA

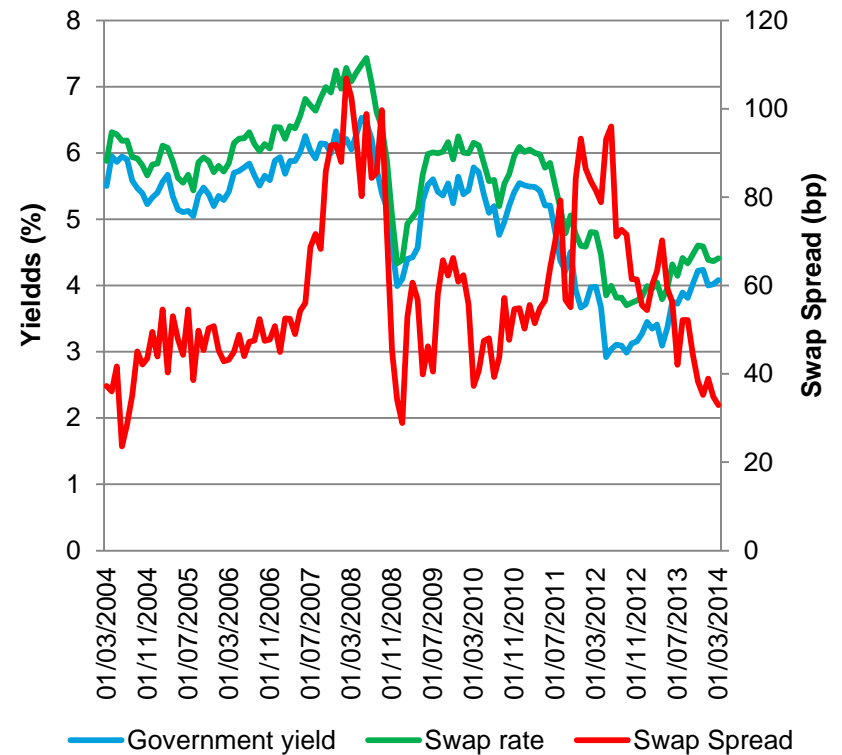




## Australian 5 year swap spreads



## Australian 10 year swap spreads





## How to manage a volatile capital position?

- Accept a certain level of volatility through risk appetite and set commensurate target surplus?
- Actively seek to reduce volatility – tighter hedging programs (e.g. inflation), asset allocation?
- A bit of both?

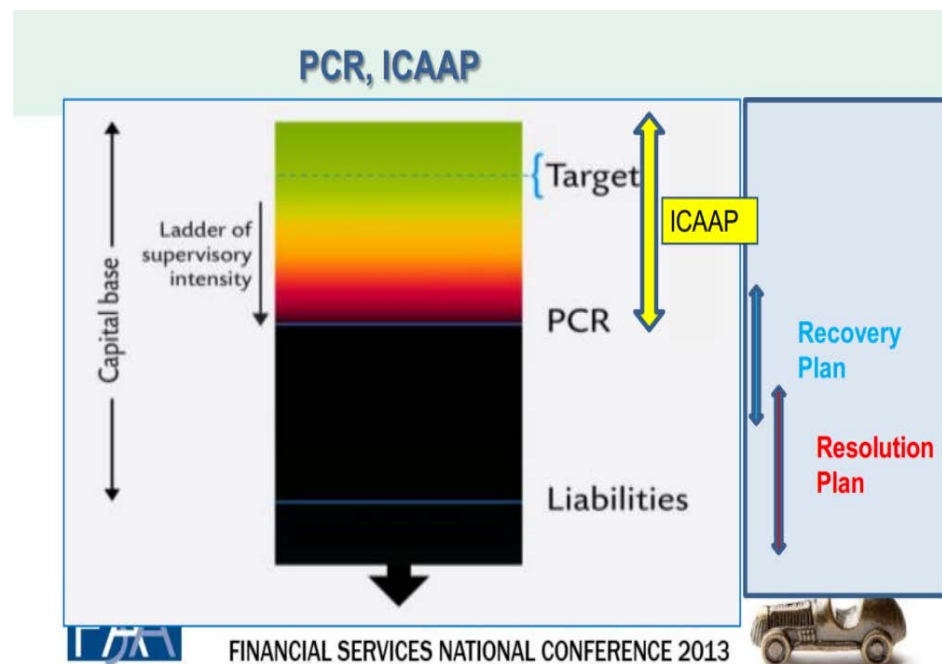




# Formalisation of Target surplus setting

ICAAP has formalised the process of target surplus calculation:

- What do we need target surplus for?
  - New business
  - Change in market conditions – more so than before
  - Change in risk from assumption changes
- Considerations to include
  - Board's risk appetite framework
  - Sensitivities of PCR calculation
  - Business plan considerations
  - Access to capital / shareholder preferences
  - Desired credit rating





# Approaches to Target surplus setting

How is it typically done?

- Par funds in run-off – need for derisking

	Advantages	Disadvantages	Market popularity
<b>LAGIC approach, but with stronger shocks</b>	<ul style="list-style-type: none"> <li>• Clear, objective calculation</li> <li>• Aligned with LAGIC/ICAAP</li> <li>• Can be built on existing LAGIC calcs</li> </ul>	<ul style="list-style-type: none"> <li>• More volatile</li> <li>• Need to watch out for “cliffs”</li> <li>• Technical to explain movements to management</li> </ul>	<ul style="list-style-type: none"> <li>• Still less common, but gaining popularity</li> </ul>
<b>Stress and scenario testing approach</b>	<ul style="list-style-type: none"> <li>• Aligned with ICAAP</li> <li>• Easy to explain to management</li> </ul>	<ul style="list-style-type: none"> <li>• Subjective</li> </ul>	<ul style="list-style-type: none"> <li>• Less popular – to the extent required under ICAAP</li> </ul>
<b>High level allocation</b>	<ul style="list-style-type: none"> <li>• Stable</li> <li>• Easily understood</li> </ul>	<ul style="list-style-type: none"> <li>• Can lead to higher amount of excess assets – inefficient</li> </ul>	<ul style="list-style-type: none"> <li>• Popular amongst well-capitalised companies</li> </ul>
<b>Combined approaches (high level plus LAGIC)</b>	<ul style="list-style-type: none"> <li>• Best of both worlds</li> </ul>	<ul style="list-style-type: none"> <li>• Additional work</li> </ul>	<ul style="list-style-type: none"> <li>• Popular amongst larger sophisticated companies</li> </ul>



## How to Improve target surplus setting...

- Review of **risk appetite** – how close to PCR are companies willing to get given increased volatility over a longer time horizon?
- More detailed approaches for ICAAP and target surplus setting using stress and scenario testing over a **longer time horizon**?
- **Averaging** target surplus across multiple periods to smooth volatility?
- Shareholder **communication**!



## Actively managing the volatility...

- Closer A/L matching – specifically around duration, inflation linked cash flows, and risk of assets
- Working with banks to refine hedges
- Asset allocation changes – asset teams to consider post-capital returns before changing asset allocations
- Push for diversification ; review product and asset allocation?
- Governance and organisational structure
  - Closer interaction between pricing and ALM teams
  - Reward behaviour which controls volatility within risk appetite



# Asset allocation and hedge effectiveness

Example product : Disability Income Contract

Features : CPI linked monthly payments to policyholder till recovery or death

	Economics	
Best Estimate Liability = Assets	\$100m	
Duration	5 years	
Inflation Sensitivity	\$0.05m per bp	
<b>Hedging Strategy</b>	<b>Approximate Capital Charges</b>	
Interest rate swaps + Equity	\$40m equity + \$6.25m inflation = \$46.25m	<ul style="list-style-type: none"> <li>• Interest rate swaps hedge duration risk</li> <li>• Equities provide real returns to match CPI linkage</li> <li>• Very large equity capital requirement</li> <li>• Large inflation risk requirement</li> </ul>
CPI swap + 5 year AA Fixed Interest	\$4.6m credit risk	<ul style="list-style-type: none"> <li>• Fixed interest hedges duration risk</li> <li>• CPI swaps hedge inflation mismatch</li> <li>• Only credit risk capital charge</li> </ul>

- Demand for CPI Swaps is increasing
- Closer attention to interest rate matching
- Groups need to understand the LAGIC impacts for trade off decisions on asset mix and return on capital



# Actively managing the volatility...

- Economic capital regimes (e.g. in the UK) have resulted in much closer links between ALM functions and pricing functions because capital is costly!
- Aim to maximise returns on economic capital
- Decisions on what CPI and Interest rate hedges should be used follow from this
  - » removal of "unrewarded risks" e.g. inflation and rates





## Catalysts for further change to ALM

- Large superannuation lump sums are accumulating
- Aging population & increasing life expectancy
- Increasing shift towards purchasing annuity type products?
- Demand for hedges (interest and CPI linked) increases
- Development of swaps such as CPI, Limited CPI with caps and floors e.g. in UK
- Banks structuring derivatives to hedge longevity e.g. longevity swaps