



Institute
and Faculty
of Actuaries

Optimising the balance sheet under S2

Scott Eason, Barnett Waddingham and
Cormac Galvin, RGA Re

2 June 2014



Institute
and Faculty
of Actuaries

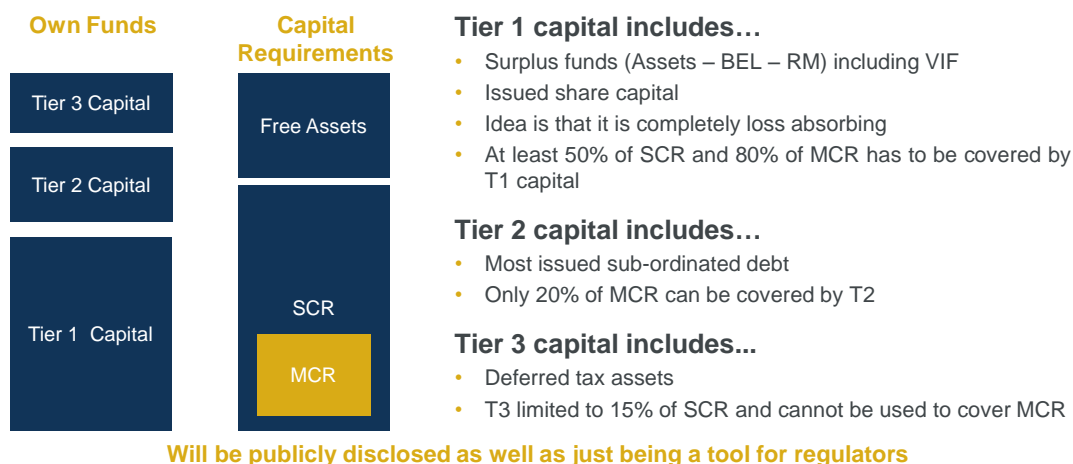
Optimising the balance sheet under S2

Introduction

2 June 2014



Solvency II balance sheet



2 June 2014

3

Management actions available for managing the S2 balance sheet

- Solvency II is an economic framework – less need (opportunity?) for arbitrage solutions
- Actions to reduce liabilities (eg assets that are eligible for matching adjustment, transition measures)
- Internal model to accurately reflect risks where standard formulae doesn't
- Managing risks (risk transfers, hedging, changes in mix / features of business written, changes in asset mixes)
- Optimising capital issuance
- Improving fungibility of capital for groups
- Generate additional profits!

2 June 2014

4



Institute
and Faculty
of Actuaries

Optimising the balance sheet under S2

Possible bank solutions



2 June 2014

Possible bank solutions

- **Debt/Equity Management**
- Ideas for hedging individual risks (eg equity, credit spread, interest rate, longevity)
- Fungibility ideas to reduce group SCR
- New asset classes (eg infrastructure, CRE, social housing loans)

Debt / equity management

- Any equity capital or eligible subordinated debt raised will improve the S2 balance sheet
- Equity capital issuance is generally unpopular due to its dilutive nature unless it is M&A related
 - will tend to cost more in terms of the discount to current share price than debt
- For this reason, virtually all debt issued by insurers is eligible subordinated debt
 - To be Tier 1, has to be perpetual, have no early repayment and have a non-payment trigger on both coupons and redemption in the event of SCR breach
 - Tier 2 can be dated, have early repayment (after 5y)
 - **Tier 2 is much cheaper than Tier 1 and represents virtually all debt issued**

Issue Date	Issuer	Type	Maturity	Size	Issue spread
4/12/2013	Prudential PLC	T2	50NC30	700m	UKT + 208
22/11/2013	RL Mutual Insurance	T2	30NC10	400m	UKT +332
17/10/2013	Allianz	T2	PerpNC10	1,500m	MS + 260

- Optimisation involves raising and cancelling debt at optimal times
- In practice, to date, debt issuance is governed more by peer leverage levels and rating agency / analyst views

2 June 2014

7

Contingent capital

- Contingent capital allows an insurer to access Tier 1 capital at pre-agreed terms, should a pre-defined event (e.g. a natural catastrophe) happen
- Typical examples of contingent capital structures include:
 - **Contingent hybrid debt:** the insurer has the right to stop coupon and redemption payments or convert debt to equity without the issuer being considered as in default
 - **Equity put:** the insurer has the right to issue and sell shares at a fixed price, thus increasing its available capital
- Contingent hybrid debt is more expensive than vanilla T2 debt and the equity option will have a premium so is only used where there are concerns about the lack of T1 capital in stressed conditions
- Other drawbacks of contingent capital structures may include increase in financial leverage, dilution of shareholder value and need to seek prior Board approval for share issues
- Key block to the market to date has been the uncertainty of treatment under S2
- However, (re)insurers that have issued contingent capital include Swiss Re, SCOR and Aviva

2 June 2014

8

Possible bank solutions

- Debt/Equity Management
- **Ideas for hedging individual risks (eg equity, credit spread, interest rate, longevity)**
- Fungibility ideas to reduce group SCR
- New asset classes (eg infrastructure, CRE, social housing loans)

2 June 2014

9

Derivative hedging solutions

- Insurers usually classify risks as rewarded (eg equity, credit spread, longevity) or unrewarded (interest rates, FX)
- For unrewarded risks, it is typical to enter into linear derivatives that remove the exposure completely (eg swaps, forwards)
- For rewarded risks, don't want to remove full exposure (unless exceeded risk limits) so tend to prefer non-linear derivatives (eg put options) that give upside exposure but reduce downside risk



2 June 2014

10

SCR can be reduced through financial risk mitigation...

- SCR may be reduced by taking into account any financial risk mitigation techniques (eg derivative strategies)
- The benefit allowed is the change in value of the derivative held under the SCR stresses
- Hedging instruments have to be eligible for standard formulae
 - Effective risk transfer to 3rd party
 - Not material basis risk (see box)
 - BBB minimum counterparty rating
- Can only get full benefit if maturity >1y or part of a documented rolling program
- Undertakings should not reflect knowledge of their SCR shocks

Focus on basis risk

- Overall principle: the protection must cover 90% of the changes in MtM of the underlying
- When an index-based protection is used on a particular allocation, the basis risk between the index and the allocation may be beyond limits given in the actual specifications. However:
 - Specifications are rather vague at this stage on two aspects: measurement period and the scenario under which the correlation needs to be measured
 - We believe correlation should be appreciated in stressed periods, during which the correlation between underlyings increases and on which stress tests are usually calibrated
 - One way to show the efficiency of a protection is to use a methodology similar to that chosen in the CEIOPS Consultation Papers, where the SII stress test calibrations were discussed. Under this, EIOPA would calculate historical Cornish Fisher VaR
 - Moreover, companies have to consider that protections are fungible in the insurance company portfolio, so that the basis risk may not be appreciated at the level of a particular investment, but at the balance sheet level

2 June 2014

11

...but need to include capital for increased counterparty risk

- Risk mitigating contracts (including derivatives and reinsurance) are classified as Type 1 credit exposures

$$\text{SCR}_{\text{counterparty}} = \text{Stressed probability of default (PD)} \times \text{Loss Given Default (LGD)}$$

Rating	Stressed PD
AAA	1.34%
AA	3.00%
A	6.71%
BBB	14.68%
BB	54.44%
B or less, unrated*	100.000%

* Excludes unrated banks and insurers

$$\text{LGD} = \text{Max}[0, (1 - \text{Recovery rate}) \times (\text{Market Value} - \text{RM} - \text{Collateral})]$$

where

Recovery rate = 10% for derivatives or reinsurance if reinsurer has >60% of its assets tied up in collateral arrangements; 50% for other reinsurance

Market Value = the current market value of the instrument

RM = the reduction to the SCR due to the risk mitigation

Collateral = post-stress value of collateral held

Counterparty SCR can be zeroised by over-collateralisation. If arrangements are not collateralised, then the rating of the counterparty is important

2 June 2014

12

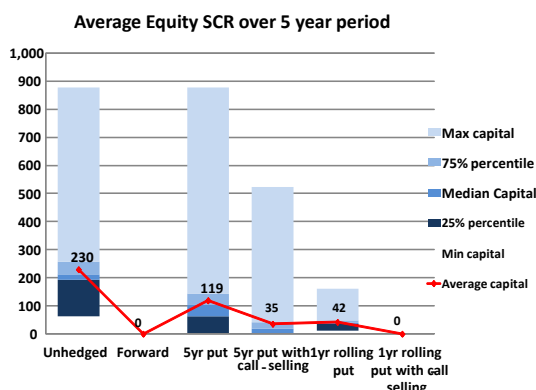
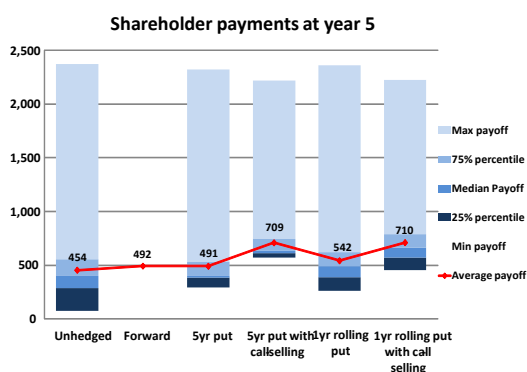
Analysis of best approach for hedging equity-linked VIF

- Equity exposure is high, mainly due to the inclusion of VIF of unit-linked books as an asset that is subject to the SCR stresses
- Some companies see the equity exposure as a rewarded risk and some see it as an unwanted consequence of writing unit-linked business
- Key issue with hedging VIF is that it is not a physical asset so certain strategies such as using short-term futures are not appropriate as you need to find cash to settle hedges if markets have gone up
- We therefore think of VIF as a stream of equity-linked cashflows and hedge these accordingly reflecting the term to the VIF emergence
- To determine the optimal strategy, we need to consider the impact on the SCR capital to be held but also the expected cash generation due to the strategy as this will impact the balance sheet going forward
- To give an example of this, we consider the impact of various strategies on AMCs expected to be received in 5y time from a block of unit-linked business under these criteria

2 June 2014

13

Analysis of best approach for hedging VIF - example



Forward strategy is better than doing nothing as removes the CoC;
However, an option strategy can be devised that also removes the CoC and is expected to significantly enhance the cash generation

2 June 2014

14



Institute
and Faculty
of Actuaries

Optimising the balance sheet under S2

Reinsurance, an important risk and capital management tool

Cormac Galvin – RGA UK Services Limited

2 June 2014

Optimising an insurer's balance sheet

Why

- New business
- Dividends
- Leverage ratio
- Management time

Success

- Capital
- Profits
- EV
- Share price
- Cash

Tools

- Equity
- Debt
- Reinsurance
- Divestiture
- Management actions

Economic Stability

Regulatory Stability

2 June 2014

16

In the press



2 June 2014

17

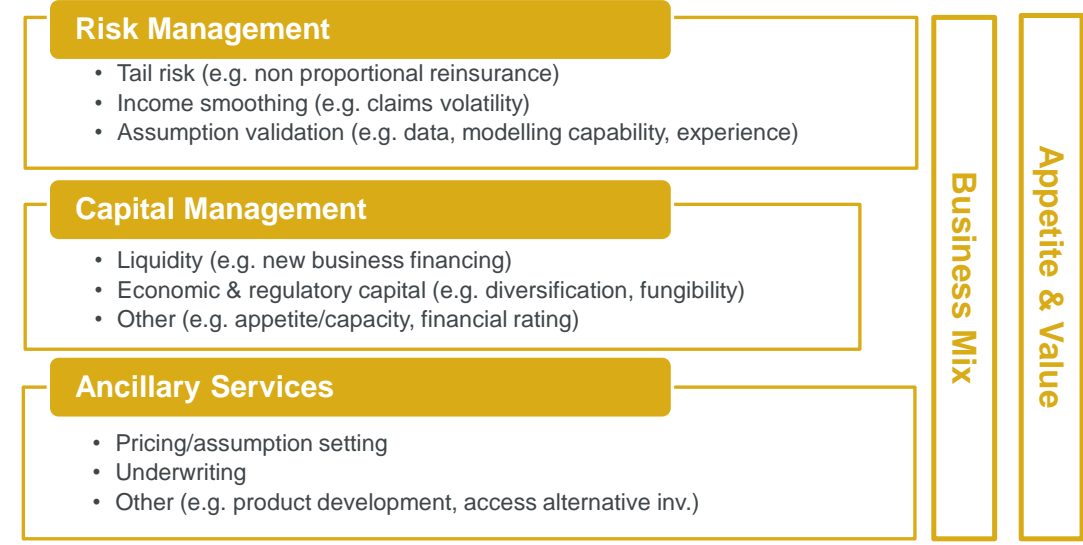
Sources of financing

Benefit	Equity	Reinsurance	Debt
Cost			
Capital benefit			
Risk transfer			
Liquidity			
Counterparty risk			
Flexibility			
Implementation			
Confidentiality			
Ancillary services			

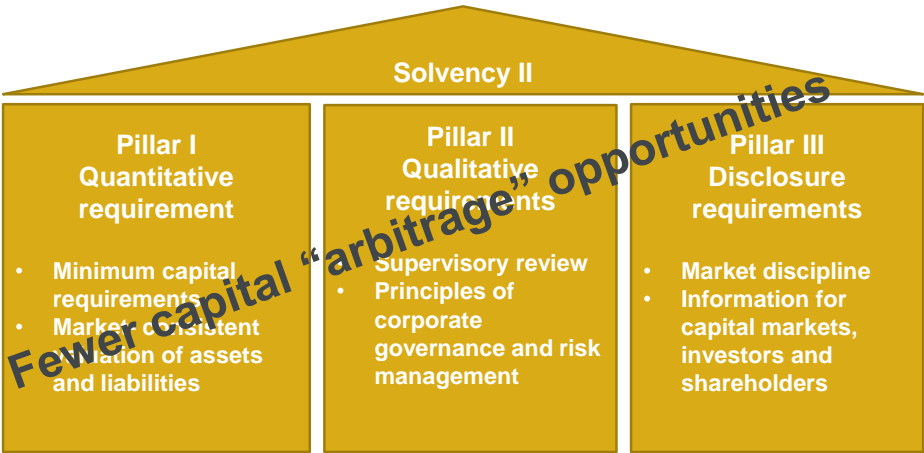
2 June 2014

18

Reinsurance and optimising an insurer’s balance sheet



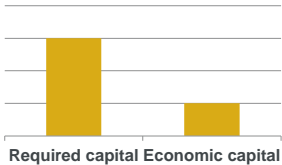
Solvency II – an economic framework



Protection Reinsurance

European market

Continental Europe: relatively small
The UK – AP c.£1bn:
10- 20% retentions



Why so much reinsurance?

Capital (Solvency I required capital):
Insurer: 3 per mille of sum at risk + 4% of reserves
Reinsurer: 1 per mille

But that’s not the full story...

The solvency relief is capped for 3 per mille is capped at 50%
Ancillary services – assumption setting, ...

Protection Reinsurance

	Solvency I	Solvency II
Risk management		
Capital management		
Ancillary services		

Solvency II – less reinsurance?

Reinsuring (payout) annuities

European market

- Continental Europe: relatively small
- The UK: AP c.£19bn (and growing)
- Almost full retention
- Some large backbook transactions

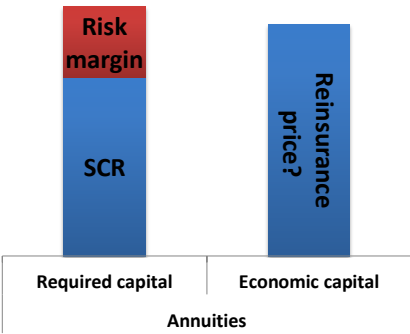
Why “little” reinsurance under Solvency I?

- Capital:
 - Insurer's Solvency I capital:
 - 4% of reserves (no cost of capital)
 - No cost of capital or deferred profit reserve
 - Reinsurer's: economic capital + cost of capital



Reinsuring annuities

- **Solvency II (SII)**
 - BEL – matching adjustment, yield curve extrapolation
 - SCR – diversification
 - Risk margin (RM)
- **Reinsurance**
 - Economic capital (SCR)
 - Cost of capital (RM)



• **IFRS 4**

Reinsuring annuities

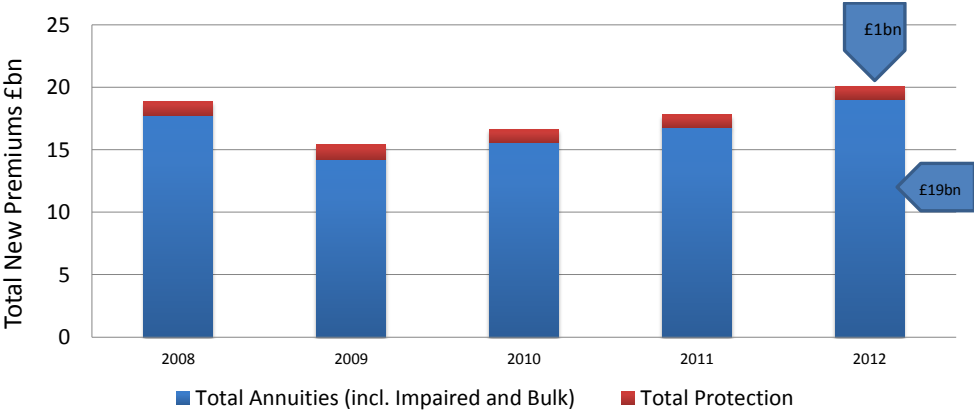
	Solvency I	Solvency II
Risk management		
Capital management		
Ancillary services		

Solvency II – more reinsurance?

2 June 2014

25

Reinsuring annuities – a growing opportunity



2 June 2014

26

Longevity reinsurance

- **European market**
 - Continental Europe: to date limited, Aegon (NL)
 - The UK: vibrant (re)insurance of pension schemes and insurers:
 - Reinsurers providing the majority of capacity
 - Other capacity - insurer retention and capital market
- **Why are the reinsurers providing the majority of capacity?**
 - Risk management:
 - Demonstrates holistic risk management approach to investors
 - Mitigation of lumpy and illiquid risk (particularly for monoline insurers)
 - Ancillary services:
 - Underwritten annuities solutions
 - Capital:
 - Solvency I: no reduction in required capital (second order); mortality pad
 - Solvency II: SCR is a function of the risk (diversification benefit)



Longevity reinsurance

	Solvency I	Solvency II
Risk management		
Capital management		
Ancillary services		

Solvency II – more reinsurance?

Other reinsurance – VIF monetisation

	Solvency I	Solvency II
Risk management		
Capital management		?
Ancillary services		

2 June 2014

29

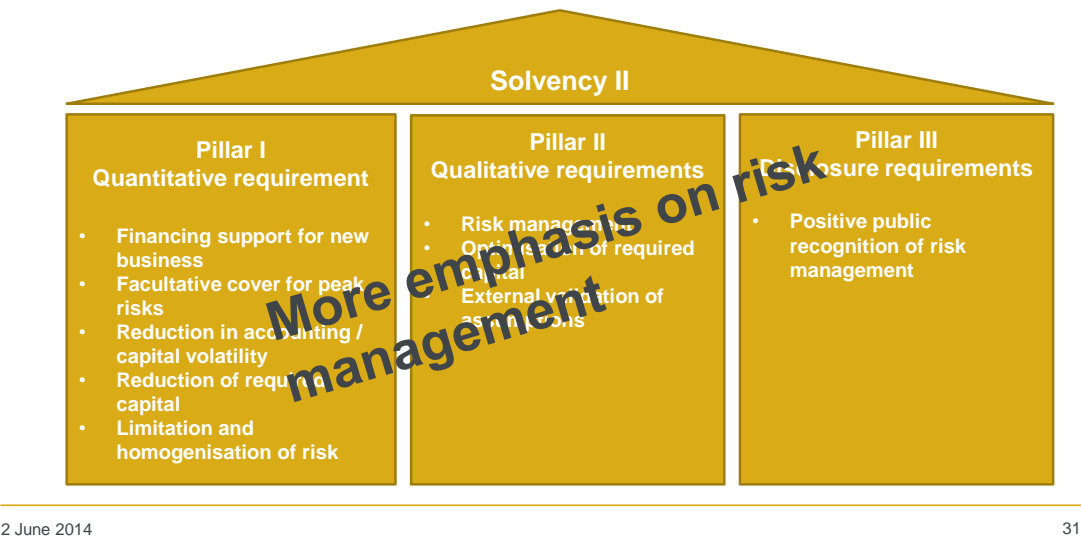
Capital motivated reinsurance under Solvency II

- New business financing
- Diversification benefit
- VIF monetisation/crystallisation
- “Arbitrage” opportunities
 - Size or shape of the shock
 - Fungibility of capital
 - Contract boundaries
 - Matching adjustment
 - Risk margin

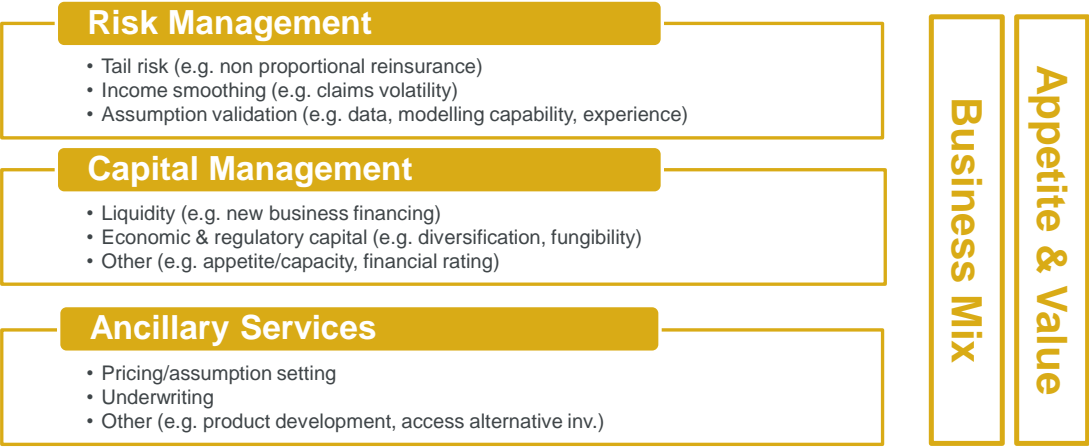
2 June 2014

30

Possible reinsurance solutions



Reinsurance and optimising an insurer's balance sheet





Institute
and Faculty
of Actuaries

Thank you for your attention.



2 June 2014