

The Actuarial Profession
making financial sense of the future

GIRO Convention and Exhibition 2011
Ji Yao

The Impact of SII on Pricing Practice

11-14 October 2011

© 2010 The Actuarial Profession | www.actuarial.org.uk

Agenda

- Introduction
- Link between capital and pricing
- Practice issues that could break the link
- Possible impact of SII on pricing practice
- Conclusion

The opinions expressed in this presentation are solely the opinions of the author and do not necessarily represent the opinions of firms affiliated with the author.

Agenda

- Introduction
- Link between capital and pricing
- Practice issues that could break the link
- Possible impact of SII on pricing practice
- Conclusion

The opinions expressed in this presentation are solely the opinions of the author and do not necessarily represent the opinions of firms affiliated with the author.

2

Introduction

- Solvency II objectives to improve risk management in the insurance industry, and to both modernize and harmonize prudential supervision of insurance across Europe.
- Huge effort from capital /reserving actuary
- Impact on pricing practice?
 - General Insurance Premium Rating Issues Working Party (GRIP) recommendation (2007)
 - Integration of ICAs
 - Variable capital loads

3

Agenda

- Introduction
- Link between capital and pricing
- Practice issues that could break the link
- Possible impact of SII on pricing practice
- Conclusion

The opinions expressed in this presentation are solely the opinions of the author and do not necessarily represent the opinions of firms affiliated with the author.

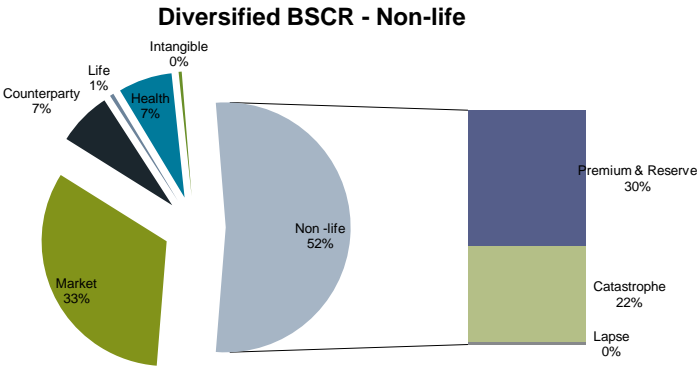
4

Underwriting risk is an important part of capital

- According to an EIOPA report on QIS5 for Solvency II
 - Non-life underwriting risk charge stands for 52% of total diversified Basic Solvency Capital Requirement (BSCR);
 - The Premium and Reserve risk charge stands for roughly 2/3 of Non-life underwriting risk charge;
 - The other 1/3 is mainly Catastrophe risk charge

5

Underwriting risk is an important part of capital



6

Underwriting risk is an important part of capital

- The underwriting risk charge is also various significantly by LoB
- In standard formula of QIS 5, the premium charge range from 5% to 21.5%.

Standard deviation calculation per lob	premium risk	Reserve risk
Motor vehicle liability	10.0%	9.5%
Motor, other classes	7.0%	10.0%
Marine, aviation, transport (MAT)	17.0%	14.0%
Fire and other property damage	10.0%	11.0%
Third-party liability	15.0%	11.0%
Credit and suretyship	21.5%	19.0%
Legal expenses	6.5%	9.0%
Assistance	5.0%	11.0%
Miscellaneous	13.0%	15.0%
Non-proportional reinsurance - property	17.5%	20.0%
Non-proportional reinsurance - casualty	17.0%	20.0%
Non-proportional reinsurance - MAT	16.0%	20.0%

7

Capital charge could be an important part of pricing

- Part of technical price
 - Capital loading, at LoB level or risk level
- Importance of capital in pricing structure depends on
 - What portion of premium is capital charge?
 - How much capital is needed
 - Cost of capital/marginal cost
 - How soon will the capital be released
 - Various by LoB
 - How various the capital charge is?

8

CAT risk could be an important part of pricing

- CAT model is used in pricing directly
- Volatility of CAT should be reflected as well
 - Part of capital model
 - Stand-alone model
- Accumulation / Diversification
 - Evaluate the impact on whole portfolio

9

Previous research and papers

- Capital and pricing was an interesting research topic for a while
 - Embedding capital Models in the Business 2006
 - Integrating Pricing & Capital Modeling - 2008
 - Variable Capital Loads in Pricing - 2008
- Focus on practical issues

10

Agenda

- Introduction
- Link between capital and pricing
- Practice issues that could break the link
- Possible impact of SII on pricing practice
- Conclusion

The opinions expressed in this presentation are solely the opinions of the author and do not necessarily represent the opinions of firms affiliated with the author.

11

Impact of SII on pricing practice ... so far

- SII is being embedded into business at high level
 - Planning/Budget/Investor analysis
 - Return on Equity
- Low granularity
 - Line of Business
 - Channel
 - Tenure
- Very limited impact at granular level of pricing

12

Practice issues that could break the link

- Uncertainty over capital calculation
 - *A written question tabled by Labour MP Chris Leslie asks the Chancellor about the discussions he had with his EU counterparts on Solvency II and "what assessment he has made of the potential effect on consumer prices of implementation of the capital requirements under consideration".*
 - *In reply, financial secretary to the Treasury Hoban said: "The potential effect on consumer prices of implementation of the Solvency II capital requirements **cannot be sensibly estimated yet as the rules are still not finalised.**"*

13

Practice issues that could break the link

- Subjective/judgement over capital calculation
 - Limited data, etc.
 - Explicit judgement are applied in several key areas
 - Correlation matrix between LoBs
 - Calibration level: 99.5%
 - Different method/assumption lead to different results
 - Lack of market value to reconcile against

14

Practice issues that could break the link

- Complexity over capital calculation
 - Technical specification could be several hundred pages
 - Premium/Reserve risk charge
 - Allocate diversification benefit back to LoB
 - CAT risk module

15

Practice issues that could break the link

- Inertia of pricing practice
 - Personal line
 - Capital charge seldom is built into the pricing structure explicitly
 - Normally reflected at LoB level
 - Commercial line
 - Could be explicit charge in technical price
 - Tend to be a fixed % capital loading by LoB
 - Might be challenged by underwriter
- Pricing is less interested if the capital charge is a fixed % at LoB level

16

Practice issues that could break the link

- Appetite/resource
 - Focus is on capital model build/IMAP
 - Need further resource to build capital model at granular level

17

Agenda

- Introduction
- Link between capital and pricing
- Practice issues that could break the link
- Possible impact of SII on pricing practice
- Conclusion

The opinions expressed in this presentation are solely the opinions of the author and do not necessarily represent the opinions of firms affiliated with the author.

18

SII impact on pricing

- Nine actuarial functions are listed in *Article 48* of Solvency II Directive. Three of them might be related to pricing
 - Assess the sufficiency and quality of the data used in the calculation of technical provision;
 - Express an opinion on the overall underwriting policy;
 - Express an opinion on the adequacy of reinsurance arrangement;

19

SII impact on pricing - Data

- FSA issue a tool in April to help firms demonstrate that data management process meet SII standards
- Pricing actuary could help:
 - Pricing data is integrated part of the whole data warehouse
 - Definition of data
 - Recovery
 - Age
 - Quality of data
 - On-going reconciliation – overall and by segments

20

SII impact on pricing – opinion on underwriting policy and reinsurance

- Interesting and relatively new function
- However, not clear how it will be implemented
 - Format of opinion
 - Where does this function sit
 - Pricing & underwriting
 - Risk management function
 - Different by company
- But could be one of key pricing functions in near future

21

SII impact on pricing – build capital into rating structure

- Build capital charge explicitly into the pricing structure
 - On top of the risk premium layer
 - Capital layer
 - Optimisation layer
- Need a capital model at policy level
 - High risk is charged high capital cost at a granular level
 - Capital could be another dimension in rating

22

Capital is a new dimension in rating structure

- Evolution of pricing technique
 - One way tables
 - Generalised Linear Model (GLM) – trade bad risk for good risk
 - Optimisation – trade between low and high elasticity
- What next?
 - Policy level capital model – trade high capital for low capital
- A new dimension for price optimisation

23

Policy level capital model

- Consistent to high level capital
- Marginal capital charges/correlations/diversification benefit is carefully modelled
 - Within LoB
 - Cross LoB
 - How could write one more within LoB affect the premium for other existing risk?
- Working party paper 'Variable Capital Loads in Pricing'

24

Practical consideration to build policy level capital model

- Could start from a very simple capital model
 - Fixed charge by
 - LoB/Channel/Tenure
 - Consistent to high level capital model
- Then focus on the diversification benefit
 - Marginal capital charge
- Or focus on a type of risk that differ significantly within LoB
 - CAT risk module is a good starting point

25

Practical consideration to build policy level capital model

- Find out a segment that could have real benefit
 - Low risk charge segment leading to lower premium
 - High risk charge so that deemed too risk to underwrite
 - Underwriting guidance
- Built capital charge into pricing MI
- Success -> More granular model

26

SII impact on pricing : pricing input into internal model

- The premium risk charge should reflect change in mixture of book within LoB
 - Planned
 - Market driven
- Approach
 - Policy level capital aggregated into overall level
 - Risk index
 - Concentration of risk
- Underwriting cycle modelling

27

Agenda

- Introduction
- Link between capital and pricing
- Practice issues that could break the link
- Possible impact of SII on pricing practice
- Conclusion

The opinions expressed in this presentation are solely the opinions of the author and do not necessarily represent the opinions of firms affiliated with the author.

28

Conclusion

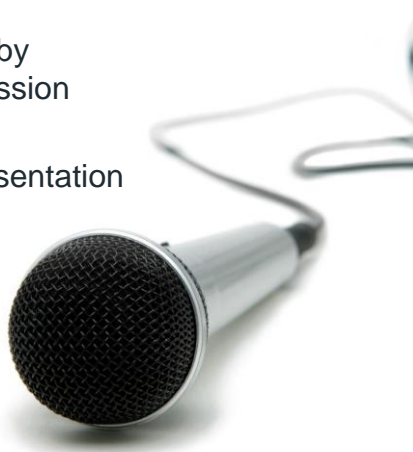
- Pricing and capital/SII are important to each other
- Although some practical issues could stop them working closely
- Pricing can start to take actions on
 - Data
 - Opinion on underwriting and reinsurance
 - Policy level capital model
 - Risk index of portfolio

29

Questions or comments?

Expressions of individual views by members of The Actuarial Profession and its staff are encouraged.

The views expressed in this presentation are those of the presenter.



© 2010 The Actuarial Profession • www.actuaries.org.uk

30

Working Party

- Initiate a new working party on 'Policy level capital model'
- Please sign up if you are interested

31