The Actuarial Profession
making financial sense of the future

Momentum conference 2010: for actuaries of today and tomorrow
Graeme Alexander; Anthony Brown and Rachel Evans

Solvency II: a business and regulatory perspective

9 December 2010

Agenda

- The Solvency II political process
- QIS5 early findings
- Solvency II modelled results
- Risk Mitigation
- Internal models
- Next steps
- Discussion

Agenda

- The Solvency II political process
- QIS5 early findings
- Solvency II modelled results
- Risk Mitigation
- Internal models
- Next steps
- Discussion

2

The Political Process

The prize question – Easier version

Quiz Question

Where is this?

3

The Political Process
The prize question – Easier version

Answer

European Parliament

4

The Political Process
The prize question – Hard version

Quiz Question

Who is this man?

5

The Political Process
and the winner is…

Answer:

Baron Lamfalussy

6

The Political Process
So far, so what?

So how are they linked?

7

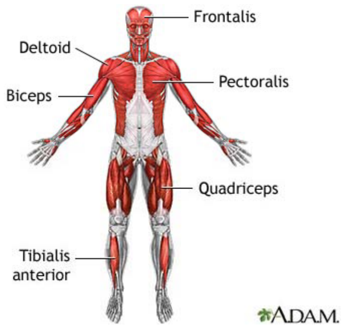
The Political Process

The Lamfalussy Process

Level 1 text
(The Directive)

Level 2 measures

Level 3 Guidance
(and BTS)



Political Process

Where are we?

Level 1 text
(The Directive)

Level 2 measures

Level 3 Guidance
(and BTS)

DONE!!!
(Omnibus II)

Political Process

Who are the players?

EC

Finance Ministry

HM TREASURY

Industry

CEIOPS

Political Process

Who are CEIO

Political Process

How do they fit together?

Level 2: 2	CEIOPS provide advice to EC EC: Considers CEIOPS + Industry + Treasury EC: Has final say
Level 3: 3	CEIOPS write papers EC have say on some papers only
QIS5: QIS	EC lead, CEIOPS supports

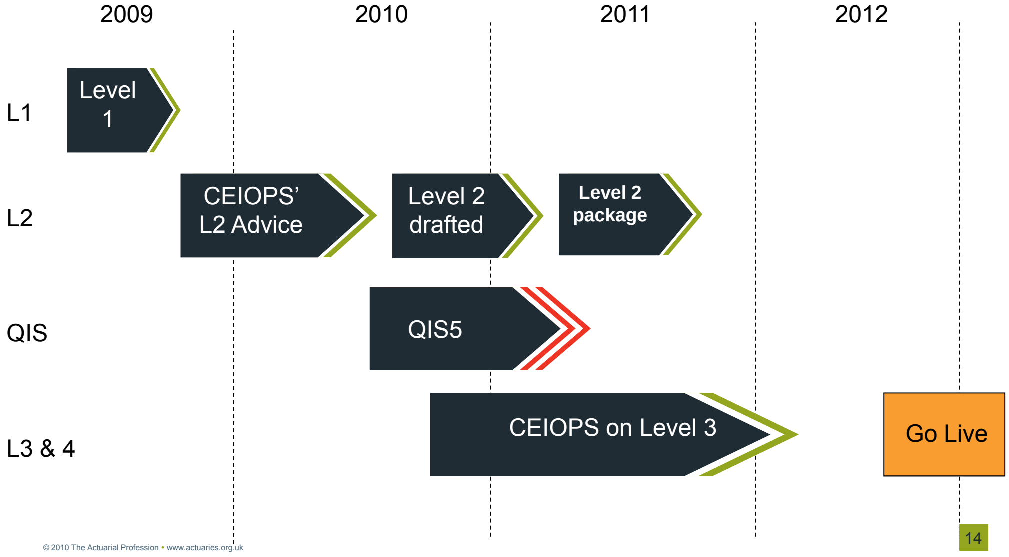
Political Process

So where does QIS5 fit?

Level 1 text (The Directive)	Level 2 measures	Level 3 Guidance (and BTS)
DONE!!! (Omnibus II)	•The focus of CEIOPS' advice from last year •Currently in discussion within EC •QIS5 will be a key influence for these measures	•Consultation this year and next year •A current focus of CEIOPS •QIS5 will be a key influence to this guidance

Solvency 2 timetable

Where are we?



Agenda

- The Solvency II political process
- QIS5 early findings
- Solvency II modelled results
- Risk Mitigation
- Internal models
- Next steps
- Discussion

QIS5 – Background

What was the exercise?

- European wide field study
- Owned by EC, support from CEIOPS, and Member States
- c5,000 firms in Europe
- c500 in UK
- Quantitative and Qualitative aspects
  - of equal importance
- The key input to Level 2
- The final chance to influence

QIS5 - Background

Why bother?

- Firms: Understand where they sit under Solvency II
  Understand what they need to do to get ready
  Influence
- Decision makers:
  Understand the capital implications of new regime
  Understand practical implications
  Hone the regulation

QIS5 - Preliminary Results

Practical Findings

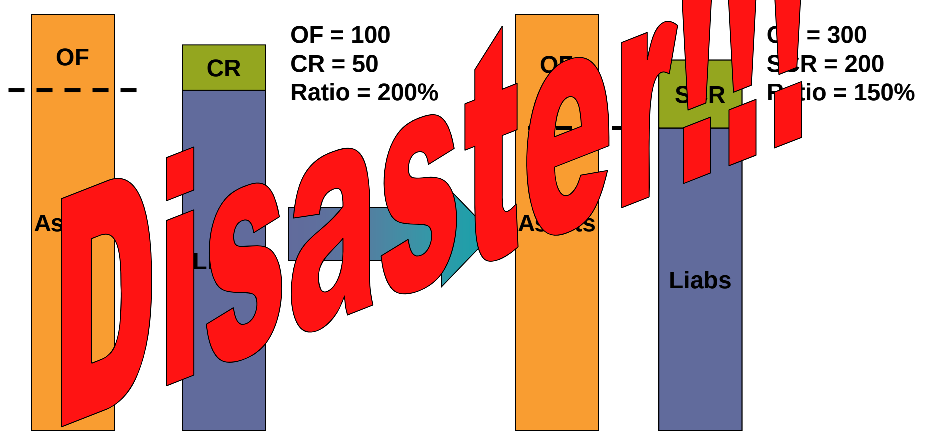
- Expected Profits In Future Premiums
- Contract boundaries
- Risk Margin
- ESGs
- Pension Schemes
- Single Equivalent Scenario
- SCR in the Standard Formula

18

Comparing results

Capital Implications – Health warning: the danger of Solvency Ratios

Solvency Ratio = ‘Own Funds’ / SC



19

Preliminary Results

Capital Implications – Health warning: the danger of Solvency Ratios

‘Free Assets’ are the key

Agenda

- The Solvency II political process
- QIS5 early findings
- Solvency II modelled results
- Risk Mitigation
- Internal models
- Next steps
- Discussion

Modelled Results

Capital impacts

SII versus Solvency I: A health warning

- Solvency I is currently in force across EU
- Implementation not consistent across EU
- UK - ICAS in force
- This is closer to SII than SI
- SII ≠ Standard formula !
- Must also consider other factors:
  - capital tiering
  - profits on future premiums

22

Modelled Results

Capital impacts

Annuity

- Technical Provisions: Up to 10%> Peak 1 reserves
- Due to Risk margin and only partial allowance for ILP
- SCR approx 20% of TP: (Spread risk, Longevity)
- LTICR was only 4% under Peak 1

UL

- Technical Provisions could be around 95% of unit fund
- SCR contributes 1%-3% of units. (Little risk borne by company)

WP

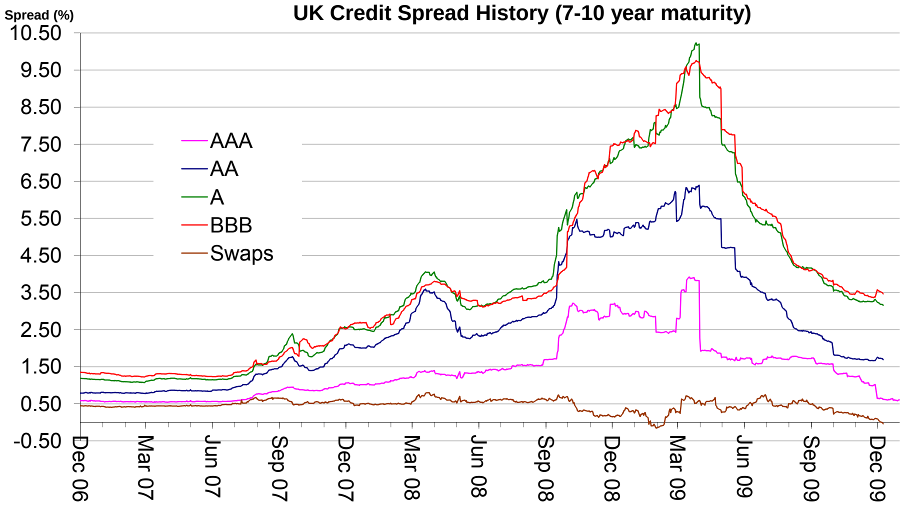
- Impacts vary considerably by firm

23

Modelled Results
Annuity impacts

- Historically, GRY corps > GRY gilts
- Explained by default and illiquidity risk
- c. 80% of UK annuities backed by corps
- Cashflows are matched
- Buy and Hold - little risk of forced sale
- Illiquidity risk / market volatility are excluded from Peak 1
- Peak 1 discount rate = GRY of portfolio less defaults
  > GRY gilts
- Market volatility in assets absorbed by the liabilities

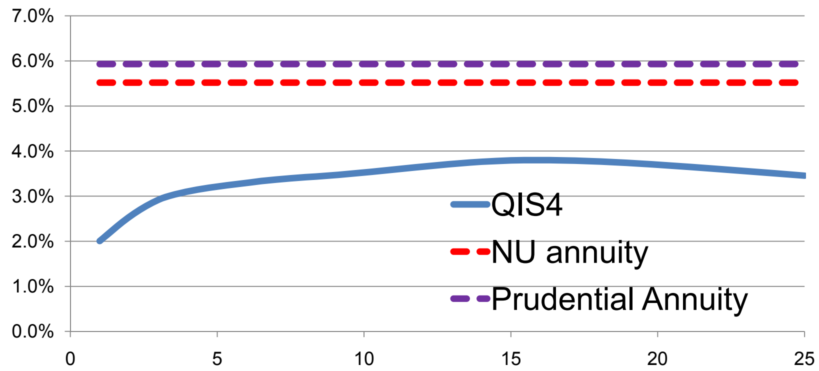
Modelled Results
Annuity impacts



Modelled Results
Annuity impacts

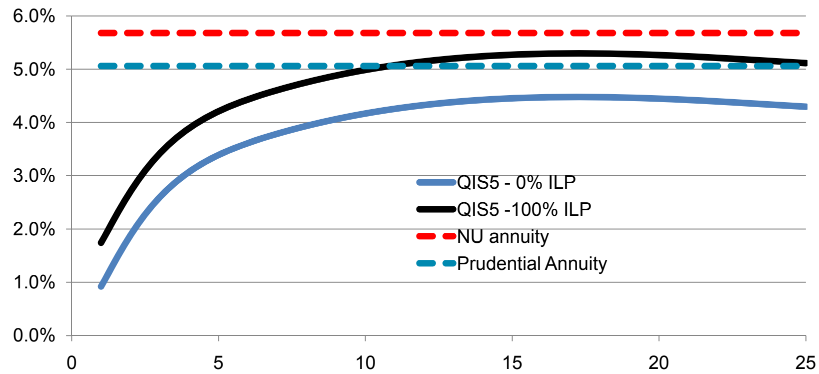
As at Dec 2008,

- QIS4 TP will have been around 20% greater than Peak 1



Modelled Results
Annuity impacts

- Situation eased as at end 2009
- QIS5 TP closer to Peak 1



Agenda

- The Solvency II political process
- QIS5 early findings
- Solvency II modelled results
- Risk Mitigation
- Internal models
- Next steps
- Discussion

28

Risk mitigation
Reasons for implementing risk mitigation strategies

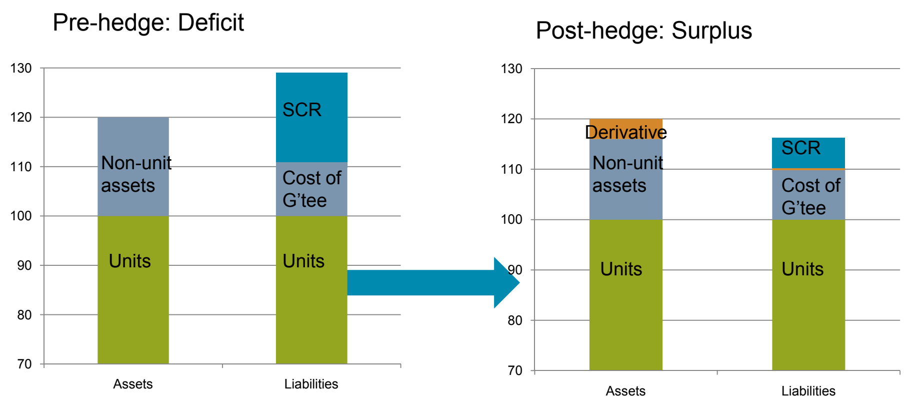
- Risk mitigation strategies reduce risk
  - Variance of expected profits versus plan
  - Volatility of company's share price
  - Risk of technical insolvency
- Reduced risk reflected in lower SCR
  - Frees up capital

BUT

- At a cost!
- And introduces counterparty risk
- Might reduce diversification benefit

29

Risk mitigation
Impact on balance sheet



- Assets are rebalanced - but not reduced!
- Liabilities unchanged
- SCR reduces due to better matching of assets and liabilities

Risk mitigation
Performance management

- Risk mitigation should be allowed for in performance management
- Return on Capital measures allow for reduced capital requirements
- But return likely to be lower due to cost of hedging
- Expect to see increased focus on risk adjusted return
- The “Use Test” requires risk models to be embedded in business

Risk Mitigation
Non-Profit Annuities

- QIS5 illiquidity premium calibration:
- Max { 0, 50% * [spread on IBOXX less 40 bps] }
- =72bps (GBP) as at 31 December 2009
- Does not depend on actual assets of the insurer
- Holding only gilts => exposure to narrowing spreads
- Holding 100% corp bonds => exposure to widening spreads
- Perfect matching = 50% gilts / 50% IBOXX corp bonds
- Mismatch risk partially measured by SCR for illiquidity premium
- Capital to protect against 65% fall in ILP – Impact ~5% of TP
- But illiquidity stress reduces overall SCR if $SCR_{illiq} < SCR_{sp}$
- SCR minimised when holding <<50% corporate bonds

32

Risk Mitigation
Non-Profit Annuities

- A further source of volatility arises from QIS5 discount rates
- Risk Free Rates implied by swaps, plus illiquidity premium
- Swaps spread (over gilts) has varied between -15bps and +50bps
- Holders of bonds are therefore exposed to spreads decreasing
- It is likely that annuity providers will want exposure to the swaps risk free rate
- Either directly through Euribor / LIBOR deposits + swaps
- Or indirectly through spreadlock contracts
- These contracts generate a payout when spreads decrease
- But insurer pays out if spreads increase

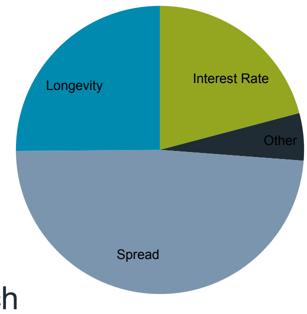
33

Risk Mitigation
SCR for Non-Profit Annuities

Longevity
- Longevity swap
- Reinsurance treaty

Spread risk
- SCR proportional to duration
- Purchase bonds with short duration
- Swaps to eliminate duration mismatch

Interest rate risk
- ALM – no obvious advantage to mismatching



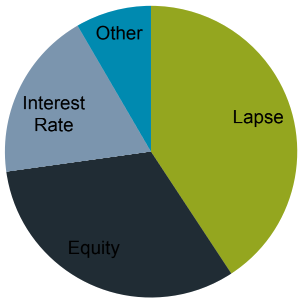
Annuity prices to rise? but increased policyholder protection

Risk Mitigation
SCR for Unit Linked Savings Contracts

- Future AMC recognised in TP
- Hence usually, TP < unit fund

Lapse Risk
- Surrender penalty
- Appropriate product structure

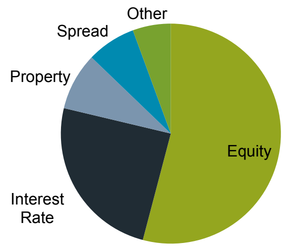
Equity / Property risk
- Actuarial funding
- Appropriate product structure
- Derivatives
- Actuarial funding is preferred method



Risk Mitigation
SCR for With-profits Savings Contracts

Equity and Interest rate

- Large equity / property exposure
- Due to guaranteed SA
- Appropriate asset mix / EBR
- Put options on equity index
- Interest rate derivatives for GAOs
- Implement in SHF / WPF?
- Consideration to PPFM
- Implications for mutuals



Diversification

Diversification is a key tool for effective risk management

- Capital aggregation formula: SCR = $\sqrt{(C^T P C)}$
- Group SCR is calculated on consolidated basis
- Good news for diversified insurers
- Niche providers could find it difficult to compete

Measuring diversification

Diversification benefit =

{Sum of Undiversified Capital Req.} / {aggregated risk capital}-1

Diversification

Why is diversification useful?

- Assume that can earn r% on undiversified capital
- Then return on diversified capital = r% * (1 + div ben)

Problem: Find capital distribution C to maximise div.?

- Answer: $C=P^{-1}\mathbf{1}$ where
  - P is the correlation matrix
  - **1** is the vector of 1s
- Gives an upper bound on diversification = $\sqrt{(\mathbf{1}^T P^{-1} \mathbf{1})} -1$

But not all risks generate equal returns.

Diversification

Extending to diversification across product lines

- Div ben = {Sum of SCR for each product} / {consolidated SCR}-1

A change of basis

- Suppose C_{ij} is the matrix of undiversified risk capital for risk i , product j
- Scaled so that SCR for each product = 1

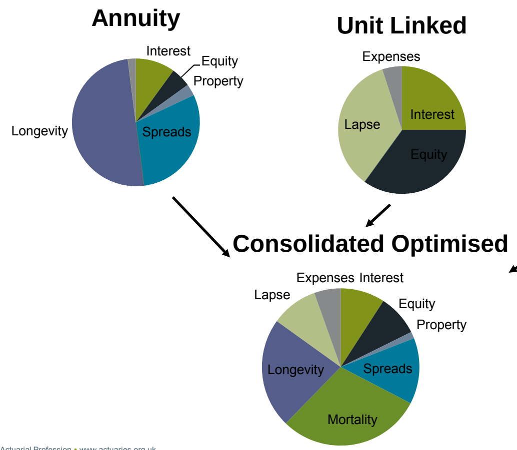
e.g. C=

	Annuity	Unit Linked	Term
Risk 1	0.3	0.7	0.3
Risk2	0.8	0.6	0.7
...	...	...	...
Risk 10	1.2	0.1	1.1
SCR	1	1	1

- Can think of Annuity, UL and Term as “risks” in the new basis
- Use correlation matrix $C^T PC$ to aggregate SCRs for these products
- Optimal capital allocation between products is then $(C^T PC)^{-1}\mathbf{1}$

Diversification

An example



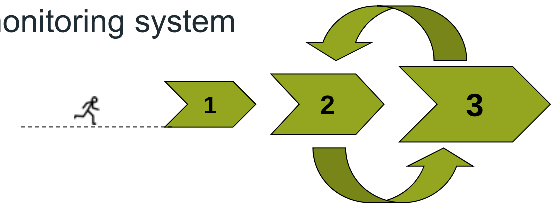
Diversification benefit = 50% relative to standalone businesses

Agenda

- The Solvency II political process
- QIS5 early findings
- Solvency II modelled results
- Risk Mitigation
- Internal models
- Next steps
- Discussion

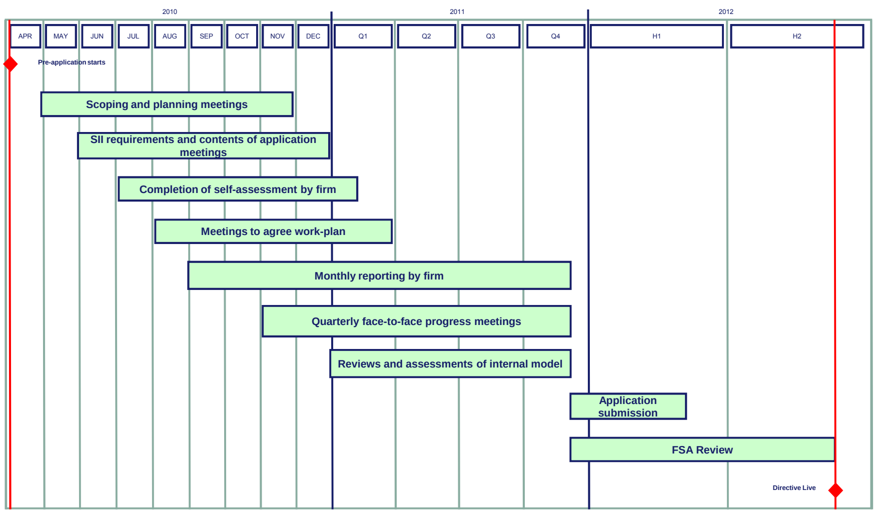
IMAP Process

- PAQC – Assessment of readiness to enter pre-application
- Pre-app
  - Scoping and planning meeting
  - Pre-application packs
  - Requirements meeting
  - Completion of templates
  - Iterative progress monitoring system
- Formal application



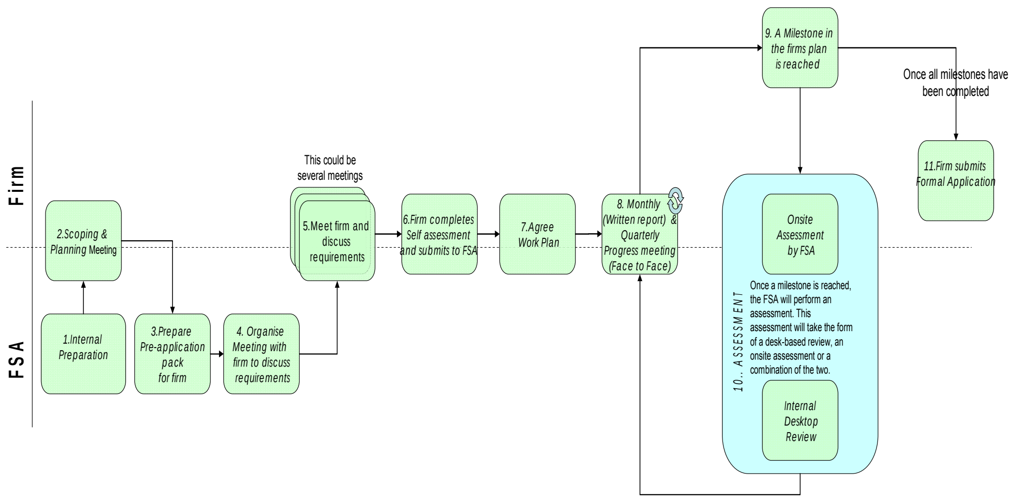
Pre-application Timetable

for firms entering pre-app between April and Oct 2010



43

Pre-application Process
Step by Step



44

Where are we…?

- Submissions of completed Contents of Application and Self Assessment templates
- Standards
  - Finalisation of Level 2
  - Level 3 guidance / BTS
- RAT Force
  - Cross FSA task force
  - Design review and assessment framework

To be aware…
Key messages so far

- Pre-application is NOT pre-approval
- Need to EXPLAIN how the CoA requirements have been met
- Timings
  - Day 1 approval
  - Updates / publications
  - Level 2/3 guidance
- Contingency plans
- Engage with FSA

46

Calibration with the Standard Formula

- Internal model reflects risk profile – each firm is different
- Internally modelled capital requirements might be higher or lower than the standard formula
- Benchmarking is a useful tool as part of a larger toolkit of techniques when reviewing the appropriateness of internal models

Information

Where to go

- FSA website
  http://www.fsa.gov.uk/Pages/About/What/International/solvency/imap/index.shtml
- CEIOPS website
  http://www.ceiops.eu/media/files/consultations/consultationpapers/CP80/CEIOPS-DOC-76-10-Guidance-pre-application-internal-models.pdf
- FSA supervisor
- Publications (Omnibus II, Level 2, Level 3…)
- Expert groups: IMEG, ISG…
- IMAP mailbox: IMAP@fsa.gov.uk
- QIS5 mailbox: QIS5@fsa.gov.uk

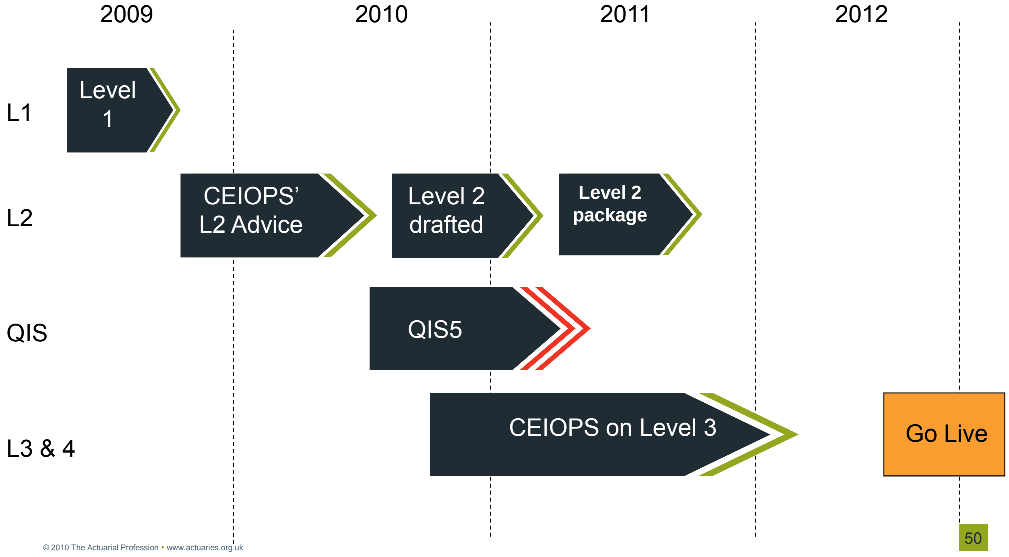
Agenda

- The Solvency II political process
- QIS5 early findings
- Solvency II modelled results
- Risk Mitigation
- Internal models
- Next steps
- Discussion

49

Next Steps

Where are now?



Next Steps

What's coming?

- Omnibus II – Imminent
- Level 2 package – Q2 2011
- Final Level 2 measures
- Level 3 papers – Throughout 2011
- Then we go live

Solvency 2 timetable

What happens with QIS5 results?

- UK country report to CEIOPS in January
- CEIOPS report end of Q1 2011
- UK communications in Q1 2011
- Culminating in FSA Solvency II conference in April

52

Agenda

- The Solvency II political process
- QIS5 early findings
- Solvency II modelled results
- Risk Mitigation
- Internal models
- Next steps
- Discussion

53

Hot Topics and discussion

Internal models
- Implementation dates
- Groups

ORSA

Transitional measures

QIS6

Complexity of standard formula

Liquidity premium

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.