

Solvency II in Europe

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Council 2012

Chairman ERM Research Thought Leadership Committee

ERM Practice Executive Committee

Finance and Investment Research Committee

Agenda

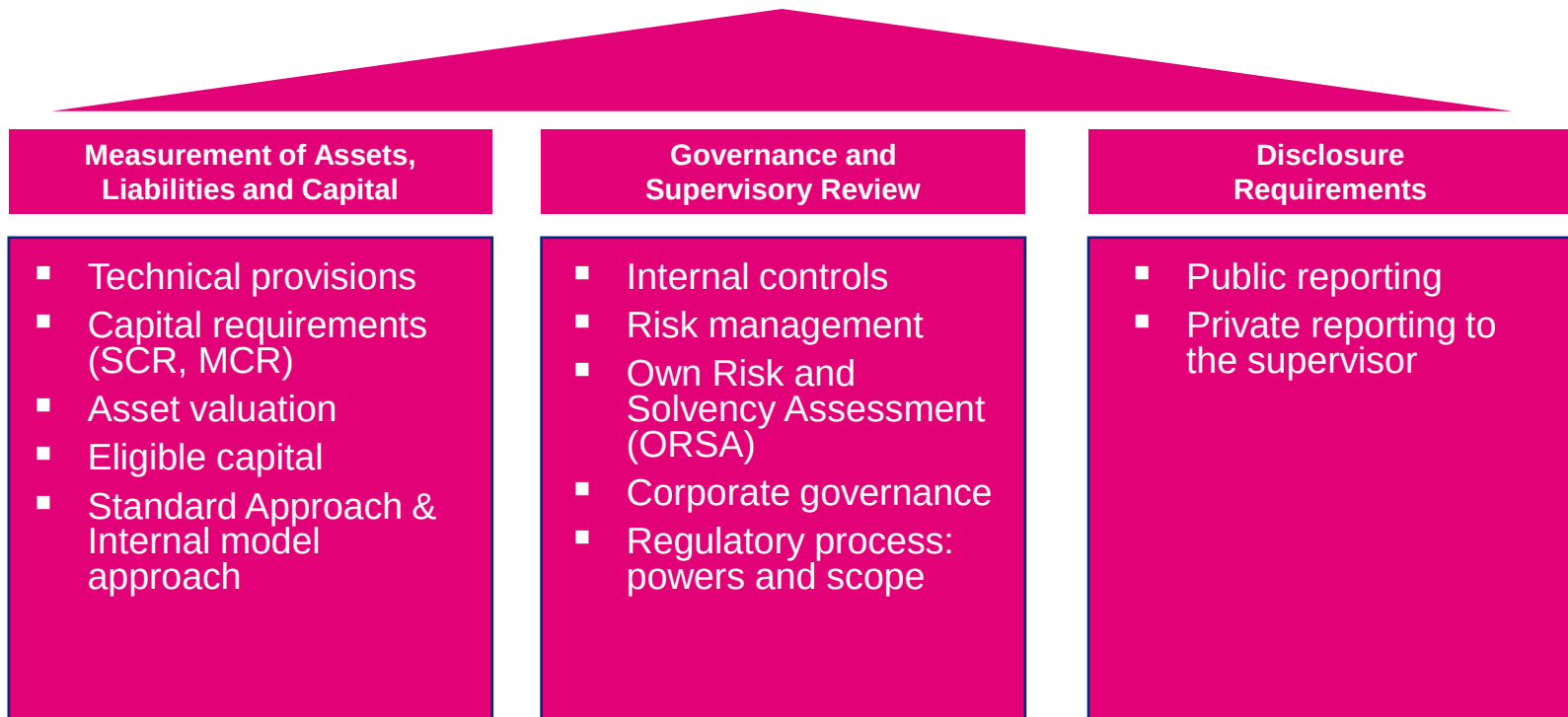
- Introduction
- Solvency II Pillars
 - Pillar 1
 - Pillar 2
 - Pillar 3
 - Pulling it all together
- Solvency II Reaction
- Next Steps

- New regime expected to come into force in January 2014, 2015?, 2016?
- Will apply to all insurers registered in the EEA
- No gold plating by individual state regulators – maximum harmonising Delegated Acts (Regulation).
- Solvency II is a risk-based, market consistent regime covering much more than just capital adequacy alone.



Solvency II

Three pillar approach



Solvency II covers not just capital requirements, also internal management and disclosure requirements.

➤ It intends to make managers aware of the risks they run and act on that information

Assets

Pillar 1

Balance Sheet

Assets

Participations (Financial)
Goodwill
Intangibles
Deferred Tax Assets (Disallowed)
Intangibles
Property / Plant
Inventories
Finance Leases
Investment Property
Financial Assets
Participations
Non-Current Assets
Deferred Tax Assets
Current Tax Assets
Cash

Non-Insurance financial participations were dis-allowed under QIS-5. to prevent assets in other parts of the financial system being used to cover insurance in addition to the protection they are providing to their participation. Some movement on this now. See next slide.

Goodwill on acquisition is dis-allowed as the future profitability of the firm (on existing business) should be allowed for elsewhere. Future new business over the business planning horizon can be included in the ORSA.

Some intangibles will be disallowed. Allowable intangibles will need to have a fair value price and that price will need to be observable in the market to some degree. If this is not possible or if the price is only calculable on business combination the intangible will have zero value.

Assets

Pillar 1

Balance Sheet

Assets

Participations (Financial)
Goodwill
Intangibles
Deferred Tax Assets (Disallowed)

Deferred Acquisition Costs are not a Solvency II Asset. Expenses are recognised when they occur – but capitalisation of future premiums should be allowed – but see slides later on EPIFP.

Intangibles
Property / Plant
Inventories
Finance Leases
Investment Property
Financial Assets
Participations
Non-Current Assets
Deferred Tax Assets
Current Tax Assets
Cash

There are restrictions on deferred tax assets (DTA) being included which can lead to some DTA being dis-allowed.

A large part of the asset will be financial assets and investment property. Solvency 2 requires these to be valued at fair value even if they are measured at cost for IFRS.

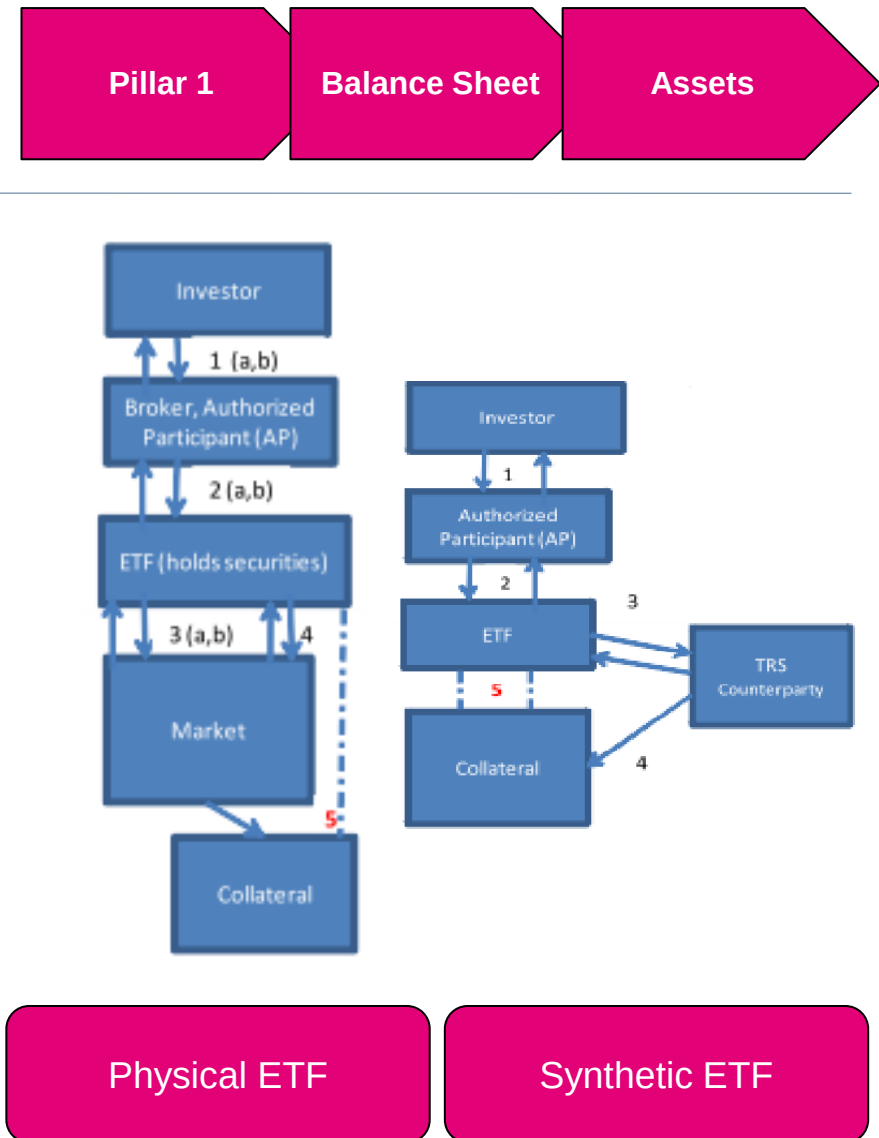
Insurance and Non-Financial Participations can be included. Some allowance for financial participations.

Some DTA allowable. If it can be demonstrated that the tax asset can be recovered.

Collective Assets

Look through requirement

- Solvency II requires look-through of collective investment vehicles.
 - The objective is to determine the **economic substance** of the investment and determine the appropriate stresses to apply.
- Breadth of application
 - Actively managed funds
 - Passively managed funds
- Application
 - Iterative approach to nested collective vehicles until the economic substance is found.
 - Most prudent interpretation of mandate where transparency doesn't exist.
- Issues
 - A significant issue for asset managers.
 - UK ABI working with IMA, AIMA, TPA to find a solution.
 - ETF industry (esp. synthetics looked at closely)



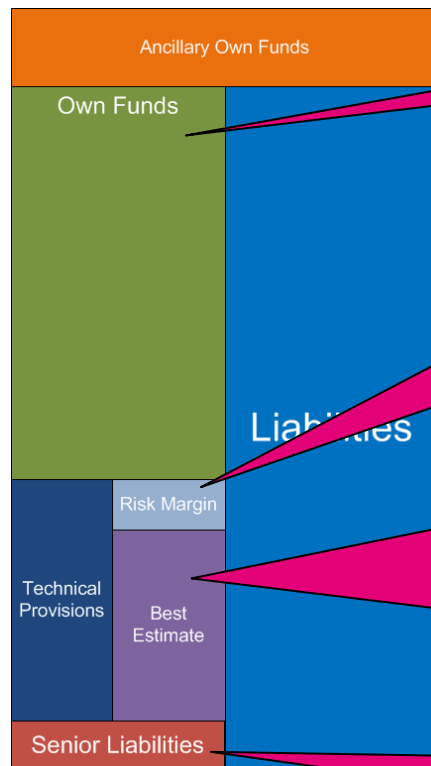
Source: Deutsche Bank

Solvency II Balance Sheet

Pillar 1

Balance Sheet

Liabilities



Own Fund liabilities that protect the policyholders. These liabilities are defaulted in order to protect the Technical Provisions.

A risk margin ...a reserve to compensate the people providing the Own Funds to the company.

Liabilities valued on a fair value basis too – even though they are not traded.

Ensures consistency between assets and liability valuation.

Valuation (usually) ignores investment strategy of the purchasing insurer

Valuation rate is “risk-free” rate.

Time value of options and guarantees must be included.

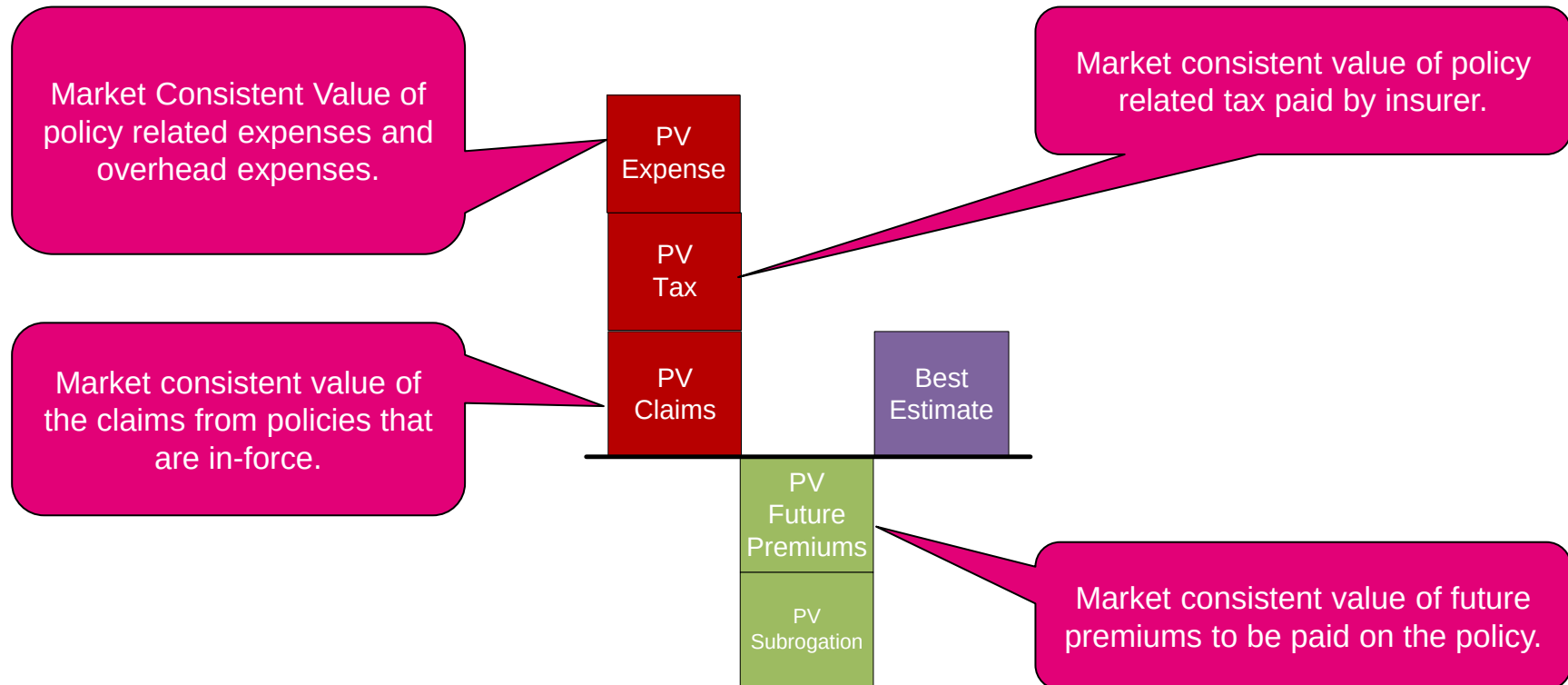
Liabilities not deemed “sub-ordinated” or beyond restrictions are senior liabilities that “push-up” the Technical Provisions.

Best Estimate Cash-Flows

Pillar 1

Balance Sheet

Best Estimate



Valuation

Life vs. Non-Life

Pillar 1

Balance Sheet

Best Estimate

Life

Non-Life

Valuation

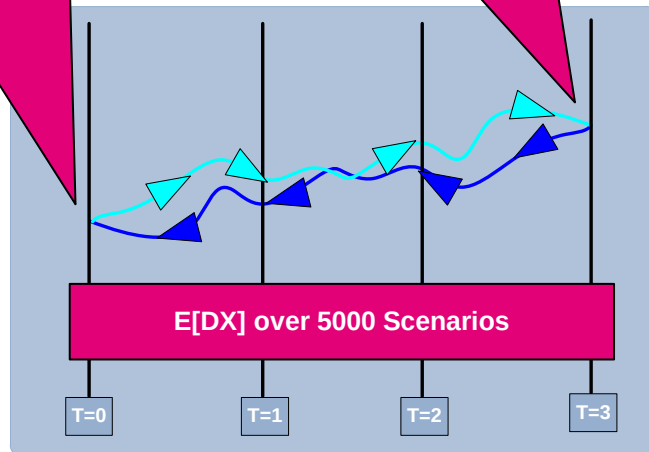
$E[DX]$

$E[]$ over ~5000 Scenarios
D – is a (risk-neutral) deflator process or just a risk-free discount factor.

Cash-Flow

X

Cash-flows are the basis of the Life Insurance approach.



Incremental claim patterns are the basis of the non-life reserving calibration.

Ratios are used to project claim amounts and infer non-life reserves.

year of occurrence	accounting year					
	0	1	2	3	4	5
0	1001	854	568	565	347	148
1	1113	990	671	648	422	200
2	1265	1168	800	744	500	200
3	1490	1383	1007	1000	500	300
4	1725	1536	1100	1100	500	400
5	1889	1600	1400	1000	600	400

<http://www.statistik.lmu.de>

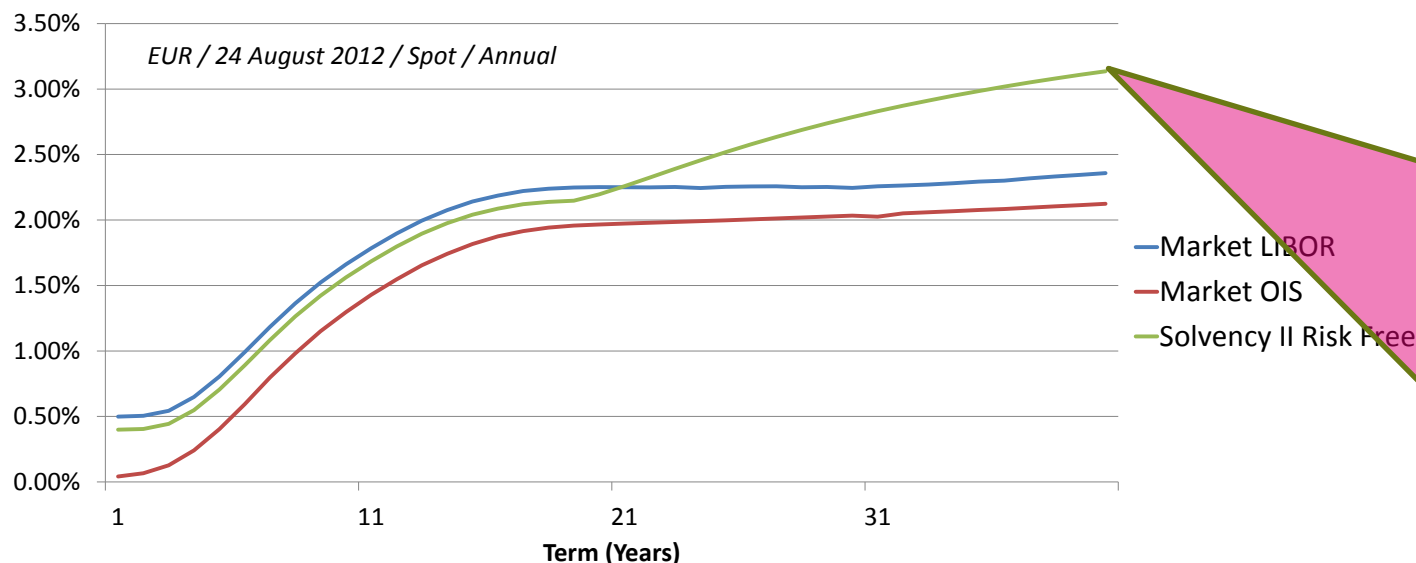
Risk Free Curves

Market and Solvency II Curves

Pillar 1

Balance Sheet

Best Estimate



Source: Bloomberg / Milliman

Risk Management → Hedging uses assets quoted on OIS

Pricing (Guarantees) → Funding for hedging based on OIS

Provisioning → Solvency II based on LIBOR & UFR

- One-off surplus (based on current market environment)
- Hedging efficiency and provisioning risk due to LIBOR-OIS basis

Risk-free rate term structure.

Swap curve based for each currency less a 10bps margin for the credit risk of the swap.

Pre-calculated by EIOPA.

Ultimate forward rate (UFR) used beyond last liquid point (LLP)

Solvency II-OIS Spread

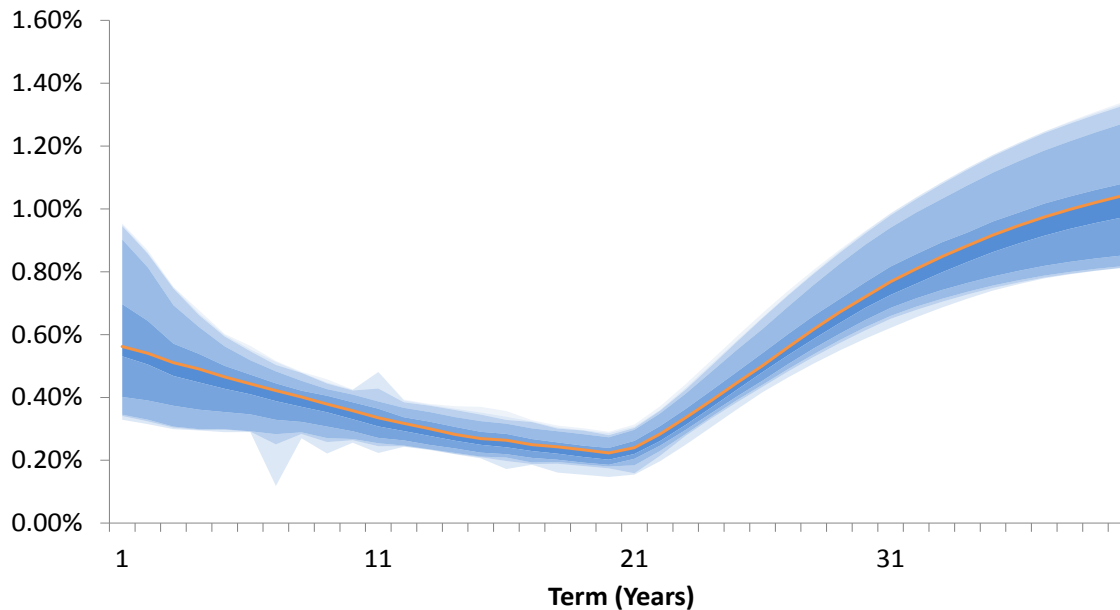
Analysis of daily data points

Pillar 1

Balance Sheet

Best Estimate

Term	1-year	20-year	30-year
0.5% percentile	34 bps	17 bps	61 bps
Median	56 bps	22 bps	72 bps
99.5% percentile	95 bps	29 bps	93 bps



EUR Solvency II
– Overnight
Indexed Swaps
Basis – Daily
from 01/01/12 –
15/09/12

Source: Bloomberg / Milliman

Long Term Guarantees & Volatile Spreads

Pillar 1

Balance Sheet

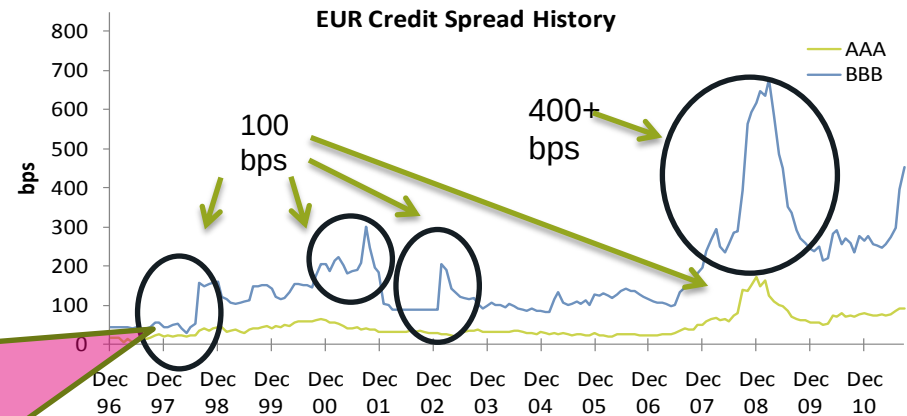
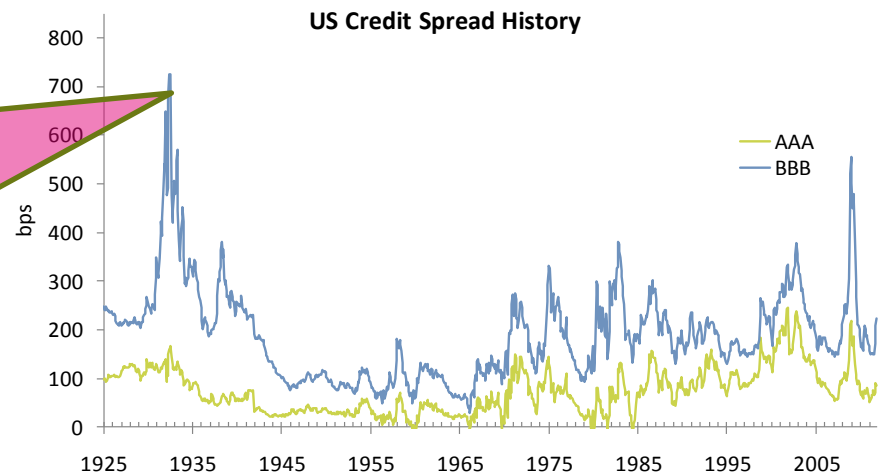
Best Estimate

Frequent credit spread spikes, both large and small, happen often and create artificial balance sheet volatility for *Long Term Guarantee* products.

The Matching Adjustment is proposed to provide relief from this volatility by adjusting the discount rate..

Large changes happen occasionally.

The counter-cyclical premium is proposed to provide all other portfolio with relief from excessive volatility.



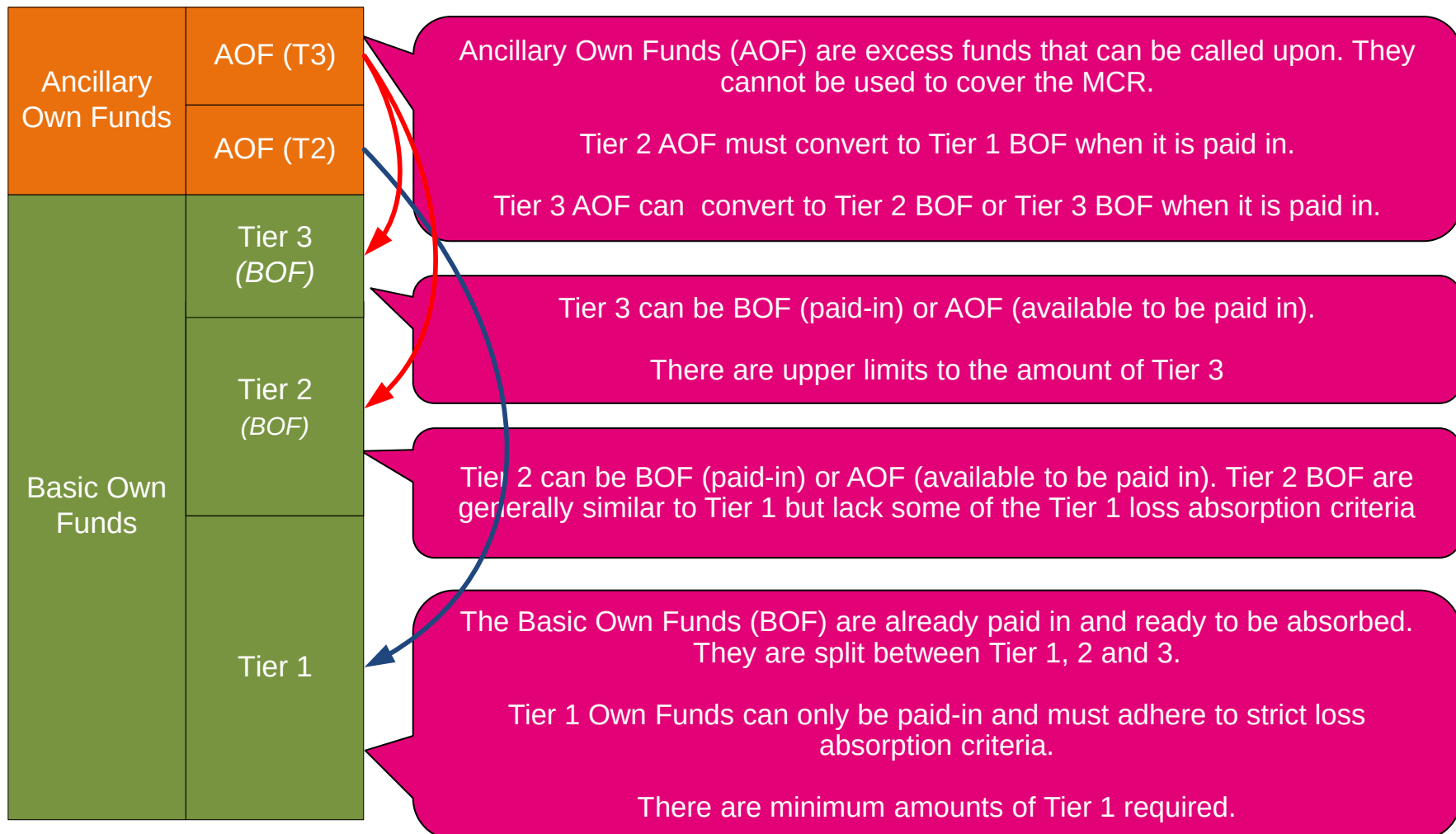
Own Funds

Three (Five) Tiers

Pillar 1

Balance Sheet

Own Funds

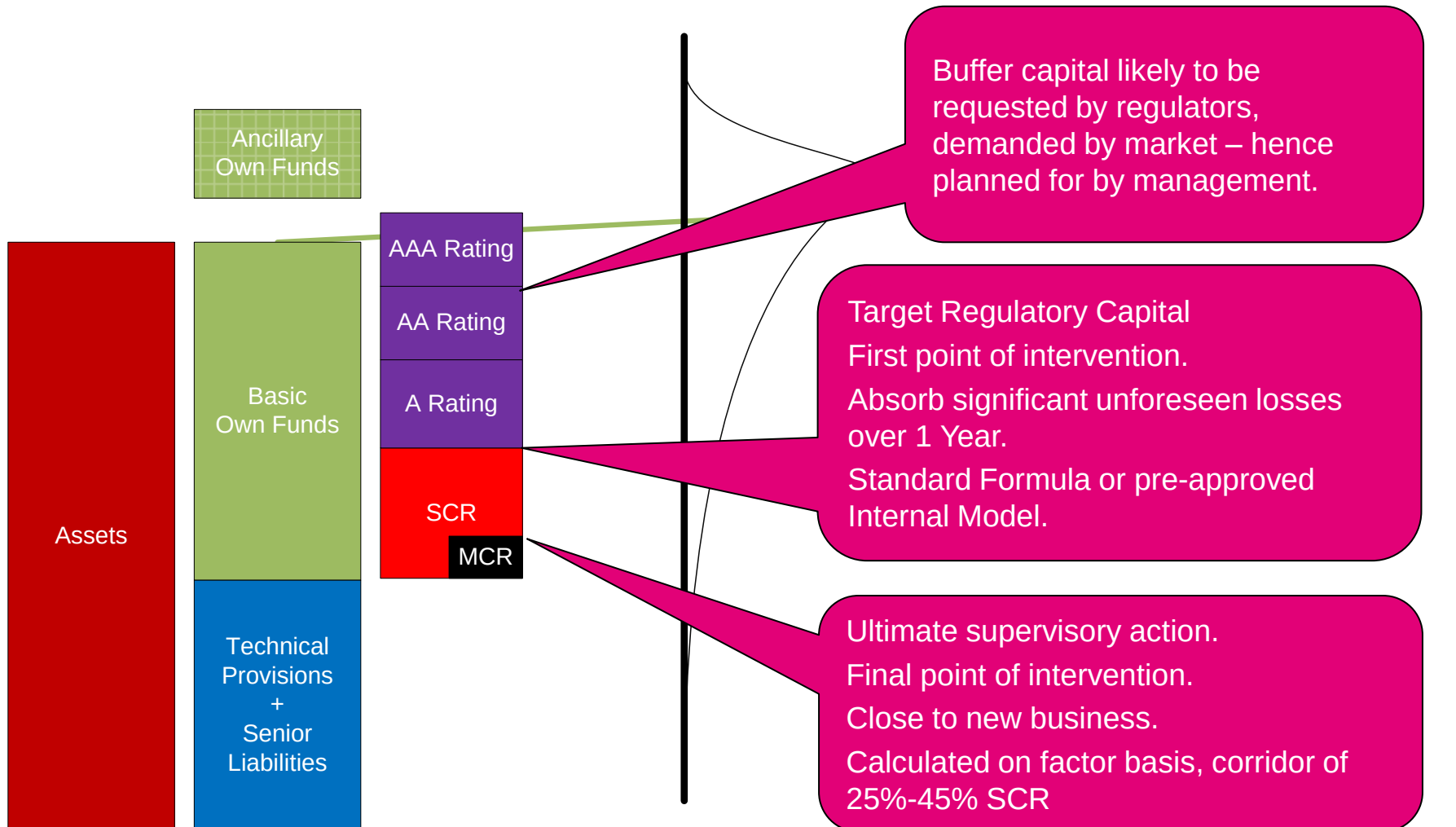


Capital Levels

Pillar 1

Balance Sheet

MCR / SCR



Aggregation

Standard Formula Methodology

Pillar 1

Balance Sheet

SCR

Solvency II Standard Formula uses *hierarchical* aggregation.

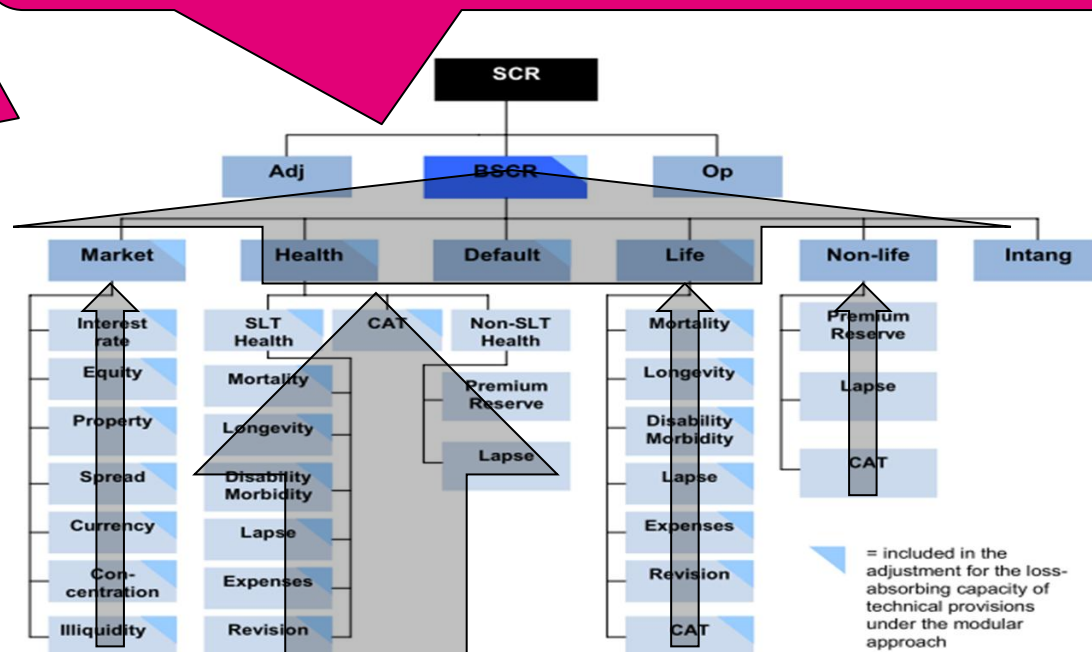
So risks are categorised into sub-modules such as market, life, non-life etc.

The risks inside these sub-modules are aggregated first and then the sections are aggregated.

Therefore the Standard Formula *averages out* correlations in different modules (e.g. *Life* and *Market*) and can result in inappropriate correlations being used as a result.

An advantage of this modularisation is that an insurer can replace an inappropriate sub-module by a Partial Internal Model (PIM).

For example a Real World Economic Scenario Generator could replace the Market Risk sub-module.



QIS-5 Technical Specifications

Aggregation

Simple LifeCo

Pillar 1

Balance Sheet

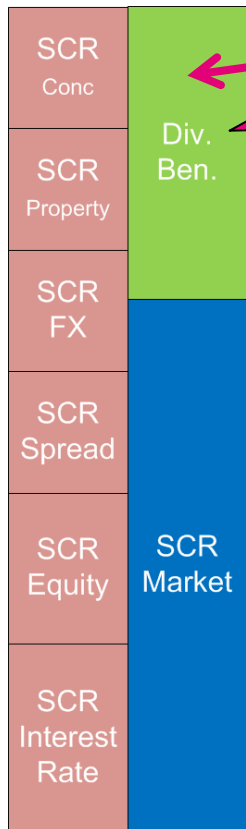
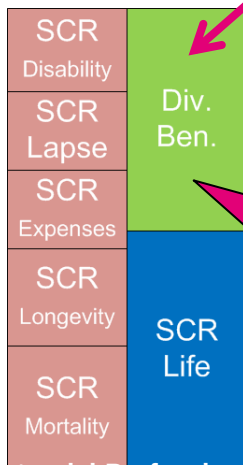
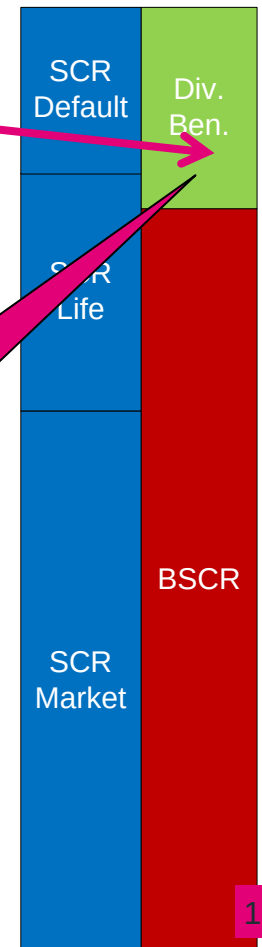
SCR

$$SCR = \sqrt{(SCR_A \quad SCR_B \quad SCR_C) \begin{pmatrix} 1 & \rho_{AB} & \rho_{AC} \\ \rho_{AB} & 1 & \rho_{BC} \\ \rho_{AC} & \rho_{BC} & 1 \end{pmatrix} \begin{pmatrix} SCR_A \\ SCR_B \\ SCR_C \end{pmatrix}}$$

The individual Market Risk SCR are calculated – then aggregated - and a diversified Market Risk SCR is calculated.

A similar calculation is done for insurance risks – e.g. life.

The Market Risk SCR is aggregated with the Insurance Risk SCR and additional relevant SCR modules such as Default Risk to create a diversified BSCR.



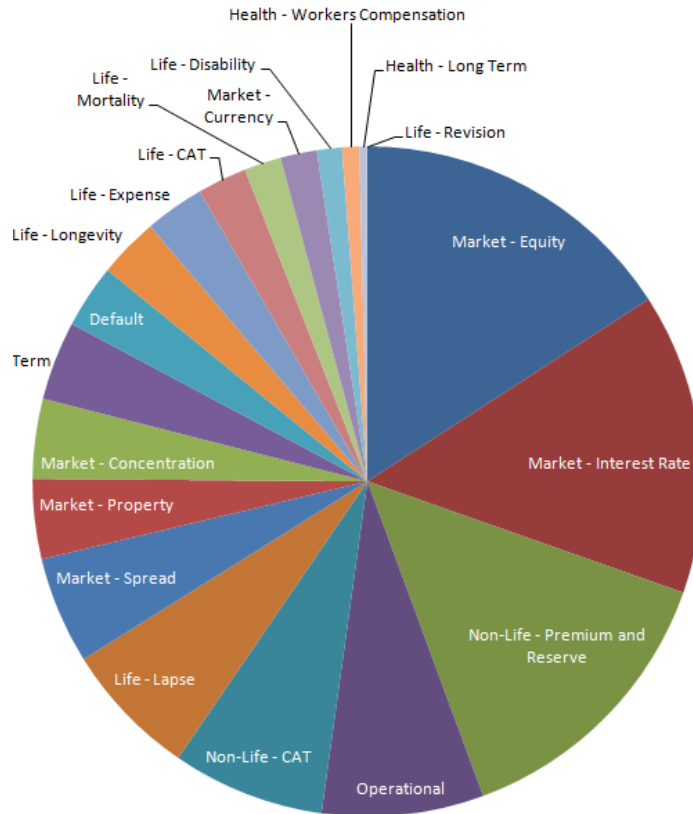
EU Insurance Risk Profile

QIS-4 (YE2007) & QIS-5 (YE2009)

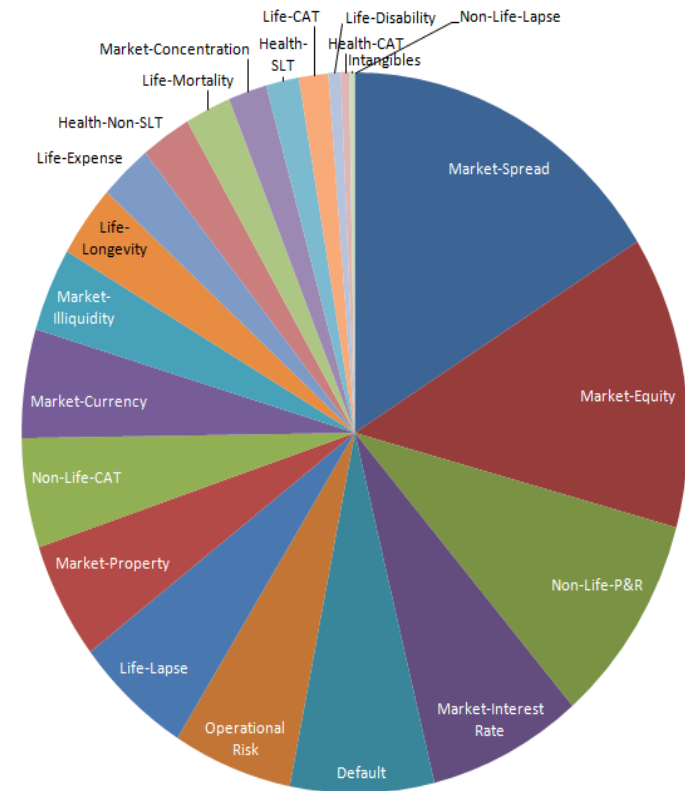
Pillar 1

Balance Sheet

SCR



QIS-4



QIS-5

SCR

Capital Coverage and Weather

Pillar 1

Balance Sheet

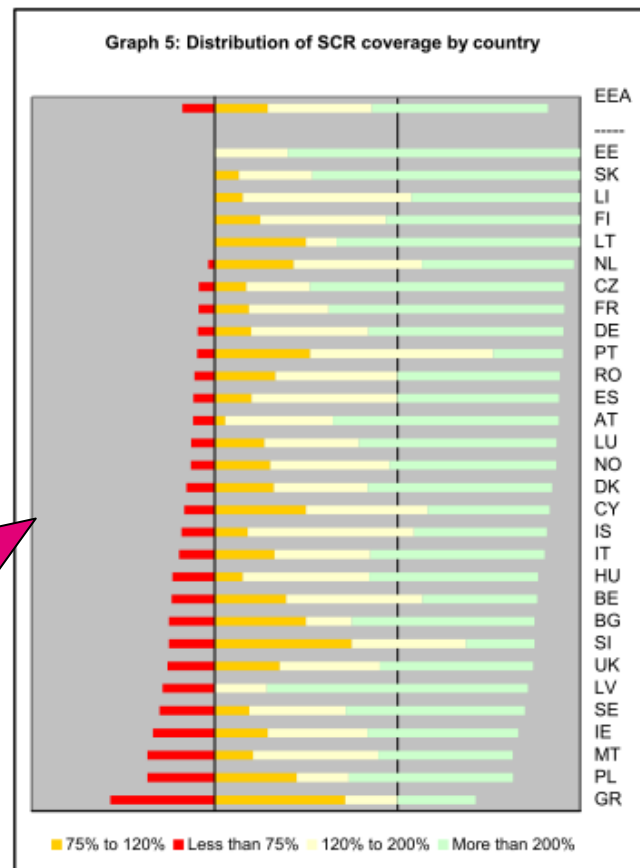
SCR

The distribution of SCR coverage.

Cold places tend to do well -
Estonia / Slovakia / Lithuania /
Latvia and Finland.

Warm places have struggled
more – Greece, Malta.

Rainy places don't do well either
– UK, Ireland



EIOPA QIS-5 Report

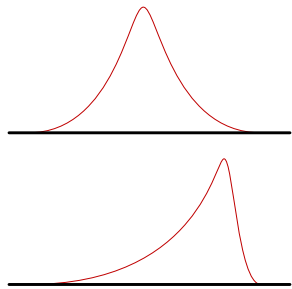
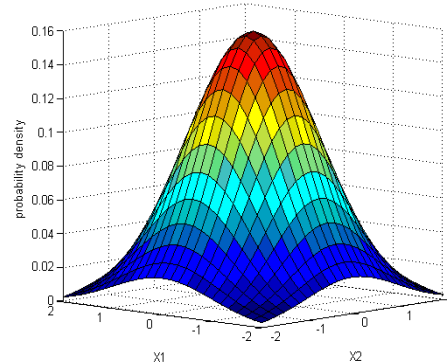
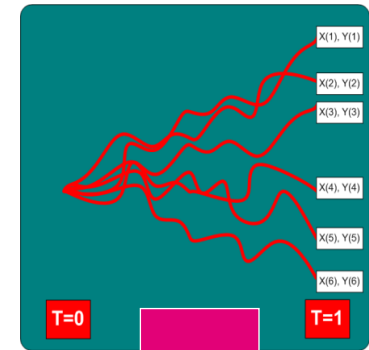
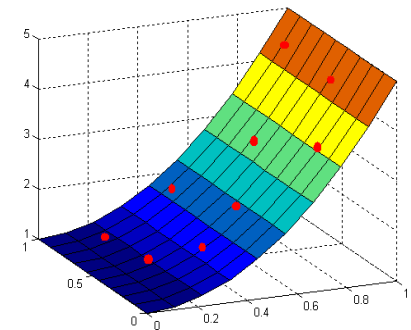
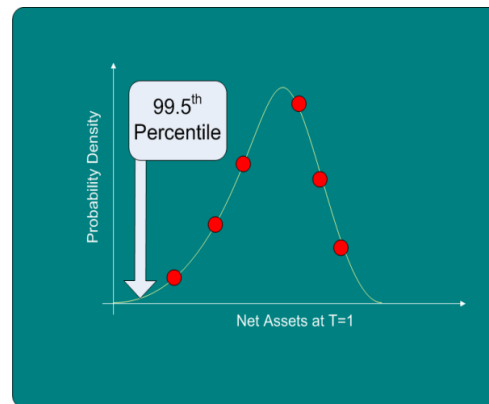
Internal Models

In 3 Minutes...

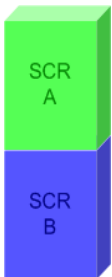
Pillar 1

Balance Sheet

SCR



$$r(\lambda) = \sum_i \lambda_i \frac{\partial r}{\partial \lambda_i}(\lambda)$$



Euler Allocation (style approaches) are used to allocate down capital to risks and businesses

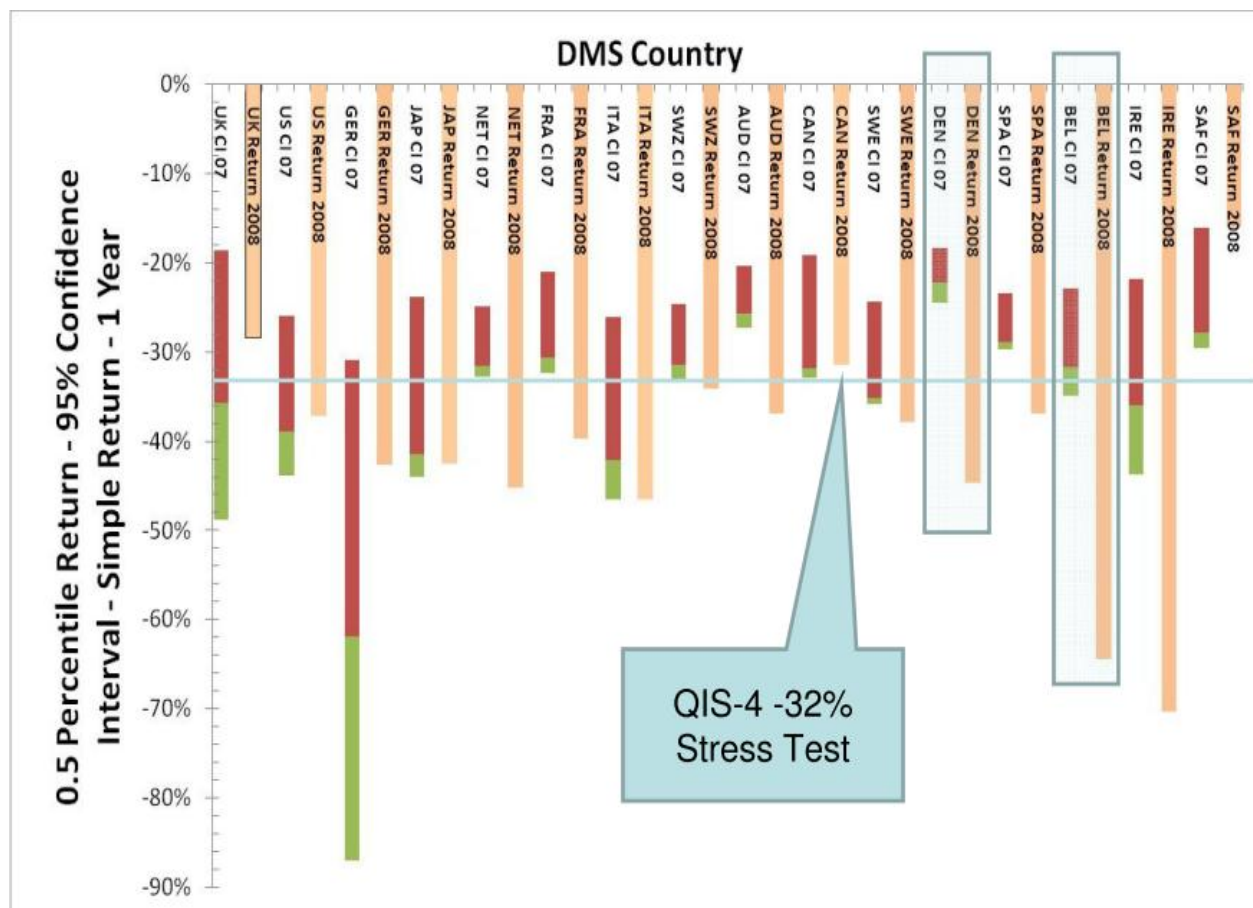
Risk Driver Calibration

Equity Risk Example

Pillar 1

Balance Sheet

SCR



95% Confidence Intervals for a 1-in-200 shock using data from 1900-2007 and a frequentist approach.

Frankland et al, Extreme Events, 2009

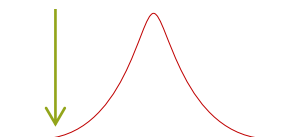
Risk Driver Calibration

Equity Risk Example

Pillar 1

Balance Sheet

SCR



Model Error
Confidence Intervals
for a 1-in-200 fitting a
selection of different
distributions (models)
to data from 1970-2008

Frankland et al, Extreme Events, 2009

Risk Driver Calibration

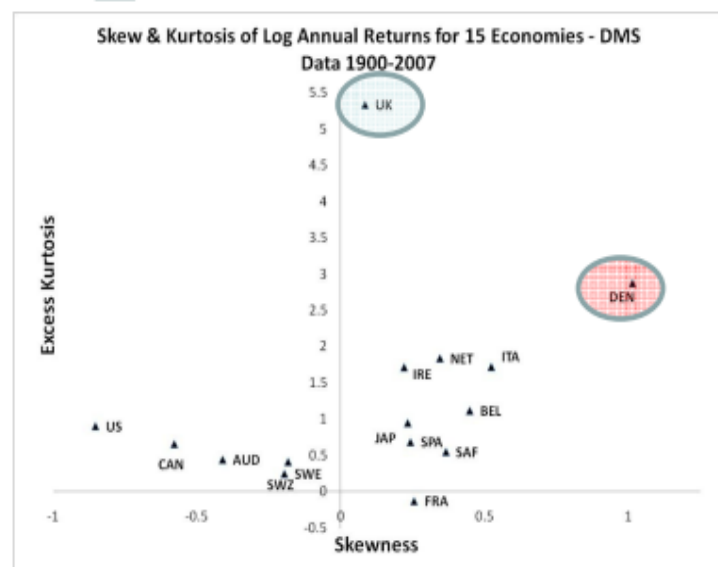
Outlier Sensitivity

Pillar 1

Balance Sheet

SCR

Removal of UK 1974 ,UK 1975 , Denmark 1983



The removal of “outlier” data from the UK and DK historical time series has a significant effect on the skewness and kurtosis – and hence the estimated 1 in 200 downside – using the data series.

Frankland et al, Extreme Events, 2009

Aggregation

What happens in practice?

Pillar 1

Balance Sheet

SCR

Groups typically have large numbers of risk drivers to consider.
500+ is not untypical.

Management of so many risk factors means that analytical methods
tends to be used to capture dependency.

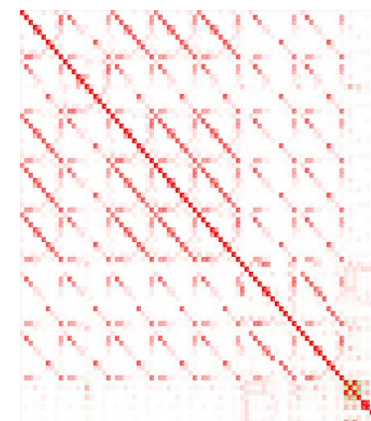
Furthermore association rather than causality tends to be the way
in which dependency is captured. Considerations include:

- **Flooding the plains of the matrix sensibly.**
- **Ensuring the Positive Semi-Definite property.**
- **Governance and Process**

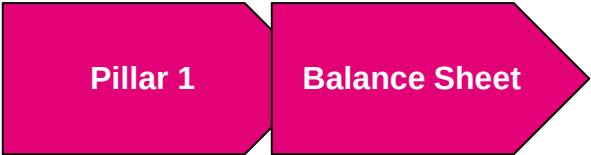
This matrix using Red for correlations near to 1 and Green for
correlations near to -1.

These matrices can reduce stand-alone capital significantly by
around 70%

	Risk A	Risk B
Risk A	1	$\rho(A,B)$
Risk B	$\rho(A,B)$	1

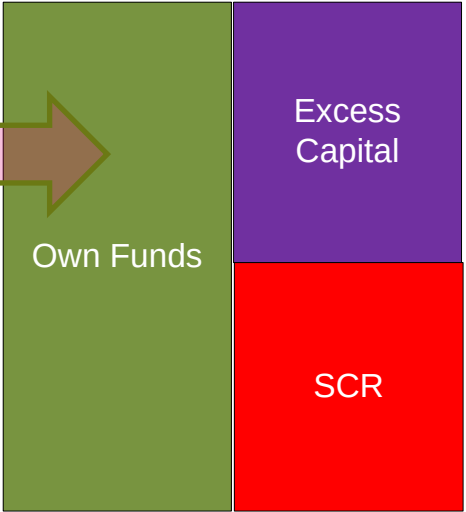


Solvency II Balance Sheet

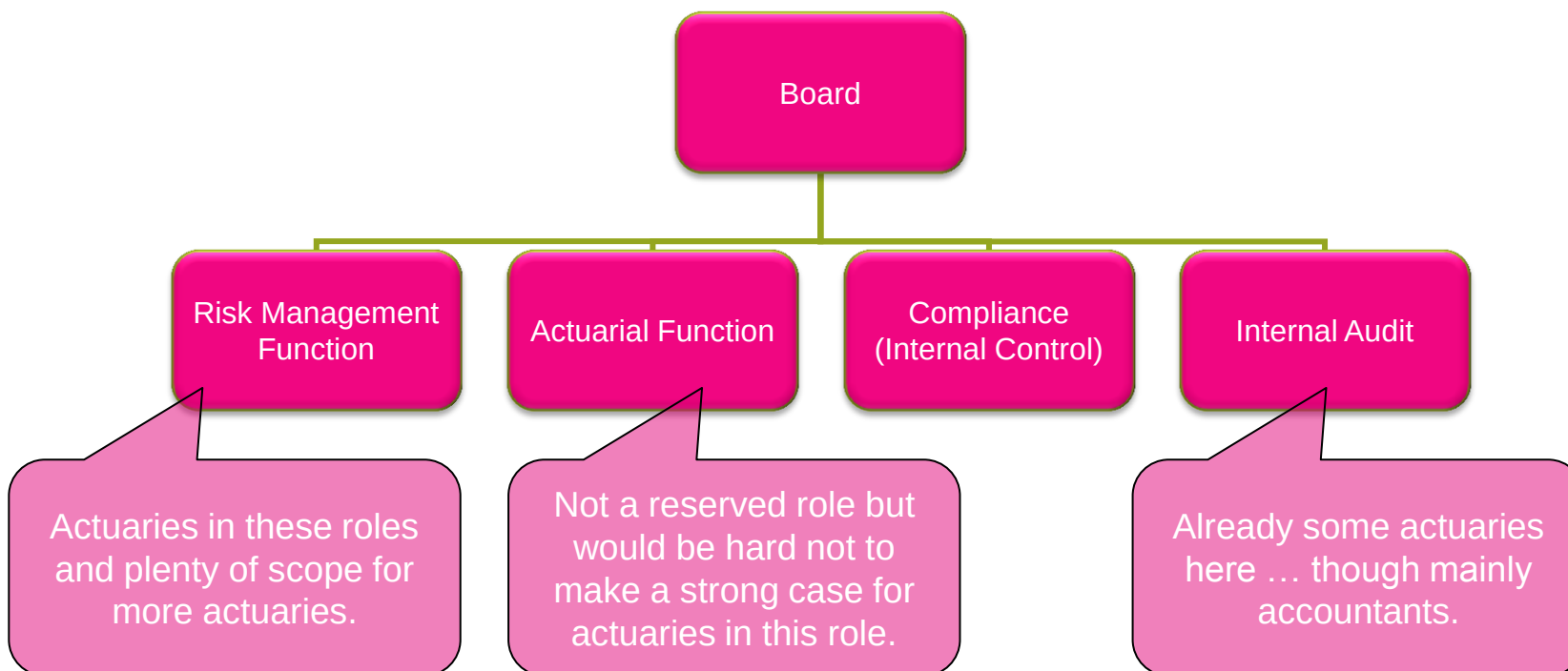


Intangibles	Assets
Property / Plant	
Inventories	
Finance Leases	
Investment Property	
Financial Assets	
Participations	
Non-Current Assets	
Deferred Tax Assets	
Current Tax Assets	
Cash	

Ancillary Own Funds	
Own Funds	Liabilities
Technical Provisions	
Risk Margin	
Best Estimate	
Senior Liabilities	



- Under Solvency II, key functions are those considered critical or important in the system of governance.
 - Include at least the risk management, compliance, internal audit and actuarial functions.



Own Risk and Solvency Assessment (ORSA)

Key Messages

Pillar 2

ORSA

- **The ORSA describes a process – it is not prescribed**
 - Demonstrate processes to identify and assess risks
 - Appropriately documented
 - “Process is as important as final outcome”
- **The ORSA is company specific**
 - should be proportional and consider the individual risk profile of the company
 - less complex risk profiles may use less sophisticated tools
- **The ORSA looks over the business planning horizon**
 - not just 1 year time horizon used for SCR
- **Should include identification and assessment of all material risks the company is exposed to**
 - Not just risks included in SCR
 - Take account of external factors
 - Performed regularly and without delay following a **change in risk profile**
- **Integral part of business strategy - must inform regulator of results**
 - Key part of Supervisory Review Process
 - ORSA is a management tool not a supervisory tool, but supervisor will intervene if it does not consider process to be proportionate

Many firms struggling to define the ORSA – challenge of pure principles based regulation.

Making model run to future horizons can mean a model re-build.

Concern that it is an internal model in disguise.

Pillar 3 – External Reporting

SFCR, RSR, QRT

Pillar 3

	Solvency & Financial Condition Report (SFCR)	Regular Supervisory Report (RSR)	Quantitative Forms
Audience	Public report	Private submission to the regulator	Regulator and some to be made public through SFCR
Content	Quantitative & qualitative information	Quantitative & qualitative information	Draft envisages up to 48 forms
Frequency	Annually	Full RSR annually where subject to annual detailed SRP Full report at least every 5 years Material updates annually On request by supervisor	Full forms annually Abridged forms quarterly
Filing date	14-20* weeks after year-end	14-20* weeks after year end	14-20* weeks for annual forms 5-11* weeks for quarterly forms

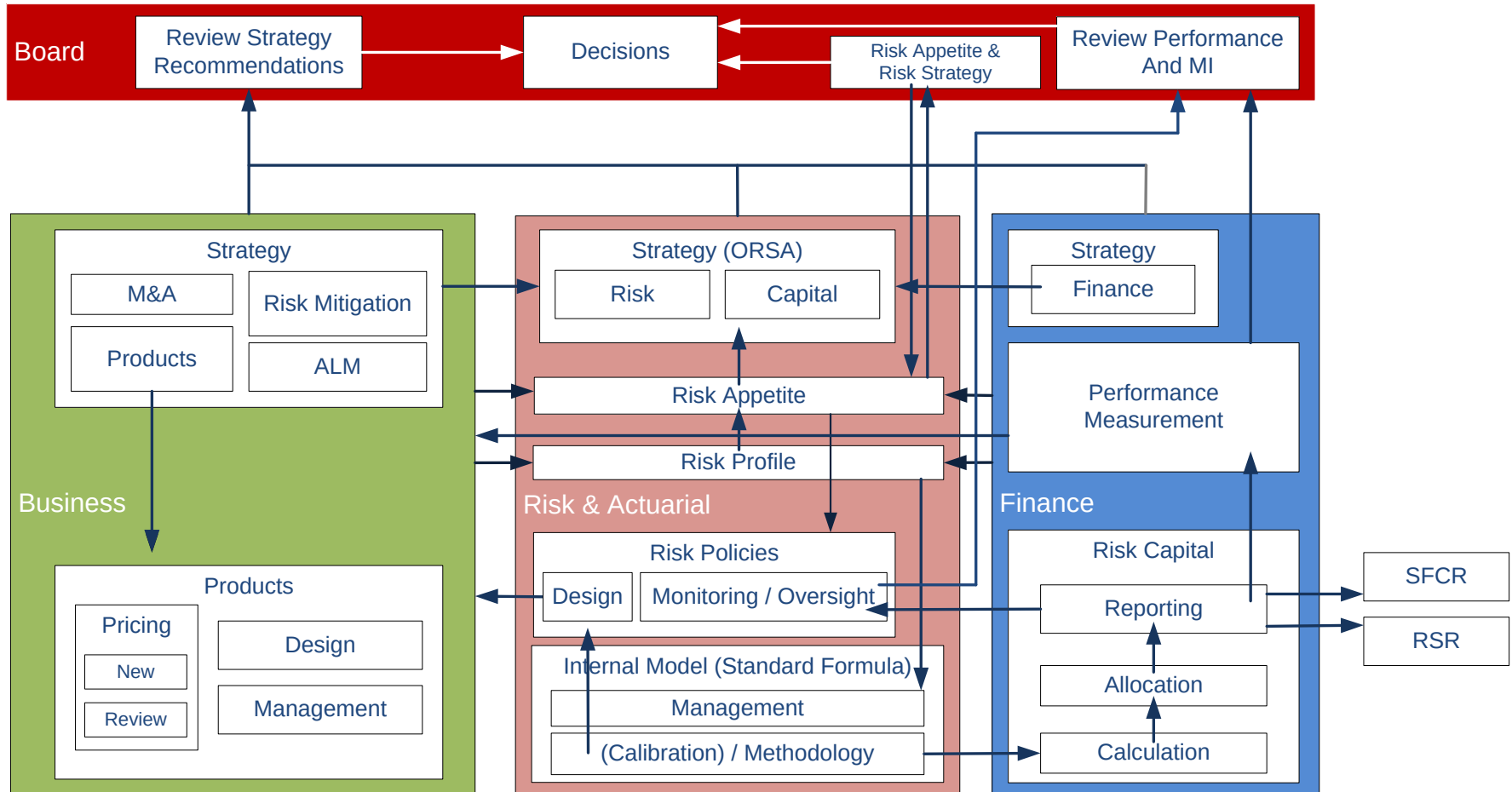
Forms came out in Summer 2012.

Many firms complaining about the volume and level detail that regulators are requiring.

Querying if it is really necessary and what will happen to all the data.

Solvency II Integration

Pillar 1,2,3



An interview with Christian Noyer of the Head of Banque de France (which includes ACP – the French regulator)

Les Echos
17^{eme} septembre 2012

“Il faut donc se reposer la question fondamentale: les hypotheses de base Solvabilite II sont-elles bonne?”

It is necessary to revisit the fundamental question of whether the underlying hypothesis (philosophy) of Solvency II is a good one.

Les normes de Solvabilité II pour les assureurs doivent-elles aussi être repoussées ?

Nous avons un problème particulier sur les branches longues (assurance-vie, responsabilité civile, construction). Conçu avant la crise, ce système de normes, qui fait varier les actifs en portefeuille selon leur valeur de marché, n'est pas adapté à un contexte de forte volatilité comme on l'a connus ces

cinq dernières années. Il faut donc se reposer la question fondamentale : les hypothèses de base de Solvabilité II sont-elles les bonnes ? Et chercher à réduire la volatilité en s'approchant de la réalité économique. Là encore, il importe de ne pas arrêter trop vite des règles dont l'impact peut être très important mais n'a pas été totalement mesuré en période de crise. Je pense que l'on gagnerait à suivre pendant quelques années « à blanc » plusieurs solutions techniques avant d'arrêter les règles définitives. En tout état de cause, je recommande aux assureurs français de poursuivre leur préparation pour être prêts techniquement en 2014 comme si le texte allait entrer normalement en vigueur.

Oliver Bäte, Group CFO and
Member of the Board of
Management of Allianz SE

Speaking about market
consistency

*EIOPA Conference
16 November 2011*

Reproduced from Solvency II Wire

“We all know that what we saw ... in the last few weeks has nothing to do with underlying demand and control, and demand and supply but rather it is panic by investors and politicians that are driving this sovereign debt crisis.”

“We cannot fulfil our commitment to our customers if we cannot rely on governments to honour their debt, that we use to guarantee those commitments.”

View from the UK

Solvency 2
Reaction

UK

Otto Thorsen, Chairman of
the ABI (Association of
British Insurers)

Daily Telegraph
17 March 2012

“At the heart of the problem is that Solvency II is being finalised in a very different era to that in which it began. Launched a decade ago (to update its imaginatively named predecessor, Solvency I), it seemed essential to improve the competitiveness of the EU insurance industry with capital rules that would provide a firm foundation for a globalised economy.

Then came the financial crisis of 2007-08, which changed everything. Increasingly for regulators Solvency II became about designing capital rules to prevent a crisis. With a renewed emphasis on stability and with banking regulators burnt by the perceived failure of the Basel II rules, the dynamic shifted in a way that resulted in the British and Spanish having to defend annuity markets and fight to ensure the new rules would not put big European (and UK) insurers with operations outside the EU at a major disadvantage when it came to competing locally.”

UK vs. Germany

Germany

UK

Jamie Dunkley of The Daily Telegraph explains some of the political manoeuvring during Spring 2012.

*Daily Telegraph
17 March 2012*

“Concerns over the rules have grown since Mr Balz removed a key clause in an early draft on the alleged instruction of the German government. The so-called “matching premium” clause eases the capital requirements on annuity providers, such as Legal & General and Prudential – a market that is large in the UK, Ireland and Spain, but not the rest of Europe where state pension provision is higher. Tensions have been running high in Brussels ahead of Wednesday’s vote. Sources close to the negotiations say David Cameron’s decision to veto changes to the Lisbon Treaty in December did not help negotiations between British MEPs and their foreign counterparts. This raised fears that a “German solution” was “being prescribed to a European issue”, according to one expert. Late last week, Mr Balz offered an “eleventh hour” compromise to Peter Skinner, a British MEP who sits on the committee. The final set of guidelines is likely to allow an “opt-in, opt-out” approach to the clause although other fears relating to the regulations seem likely to linger for several more months.”

Omnibus II / Solvency II

How we got here

Next Steps



What's next?

High Level

Next Steps

- Finalisation of trilogue discussions on Omnibus II
- Assessments for transitional equivalence (decisions due next year):
 - Australia, Chile, China Hong Kong, Israel, Mexico, Singapore, South Africa
- US still not included – discussions on-going to define work plan but difficulties due to state-level regulation
- Japan currently only assessed for reinsurance – may be covered by transitional equivalence for group solvency
- Internal model applications in process in many territories
- ITS and Level 3 pre-consultations – many still in circulation but winding down in anticipation of consultation process at end of year

Long Term Guarantees

Impact Assessment

Next Steps

- Impact assessment due to be conducted to test proposed measures to address issues with products with long-term guarantees:
 - Matching Adjustment
 - Counter-cyclical premium
 - Extrapolation
 - Transitionals
- Draft Terms of Reference and Technical Specifications circulated to limited audience for comment
- Tests balance sheets based on a number of different scenarios using YE11 data
- Expected to run from November for 10 weeks with results published April 2013

Questions

Summary

- Introduction
- Solvency II Pillars
 - Pillar 1
 - Pillar 2
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 - Pulling it all together
- Solvency II Reaction
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