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Recent Solvency II Developments for European Life Insurers and Hannover Life Re

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Overview

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2. Report on October 2010 German Conference on Solvency II
3. QIS 5 and Capital Requirements – QIS5-Early Results and Implications
4. Solvency II at Hannover Life Re – Where Do We Stand?
5. What the Future Holds – QIS 6 and Some Conclusions

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Chapter 1
Solvency II - The Big Picture

Basic Framework and Concepts

Components of Solvency II
The new European Solvency Regime / Basic Concepts

- **Drivers of Change**: European Commission (EC) supported by the association of European insurance and occupational pension supervisors (CEIOPS*)

- P. Skinner, Member of European Parliament: "This Solvency II legislation is a **world leader**, the first among the reforms mentioned by the G20 of financial legislation and regulation to adopt a **modern risk-based method** for the **security** of the industry and the **safety** of the consumer. It sets a high standard for other regulators elsewhere in the world to follow."

- Th. Steffen, former CEIOPS* chairman: "[...] supervisors will better **understand** insurance firms, their **risks and internal control processes** while supervised firms must rely on their **own ability to measure, control and steer risks** rather than rely on regulatory rules. That is why Solvency II is not just about capital. It is a **change in the behaviour**."

* from January 1st, 2011: EIOPA = European Insurance and Occupational Pension Authority

Solvency II
Banking versus Insurance - Basel II vs Solvency II

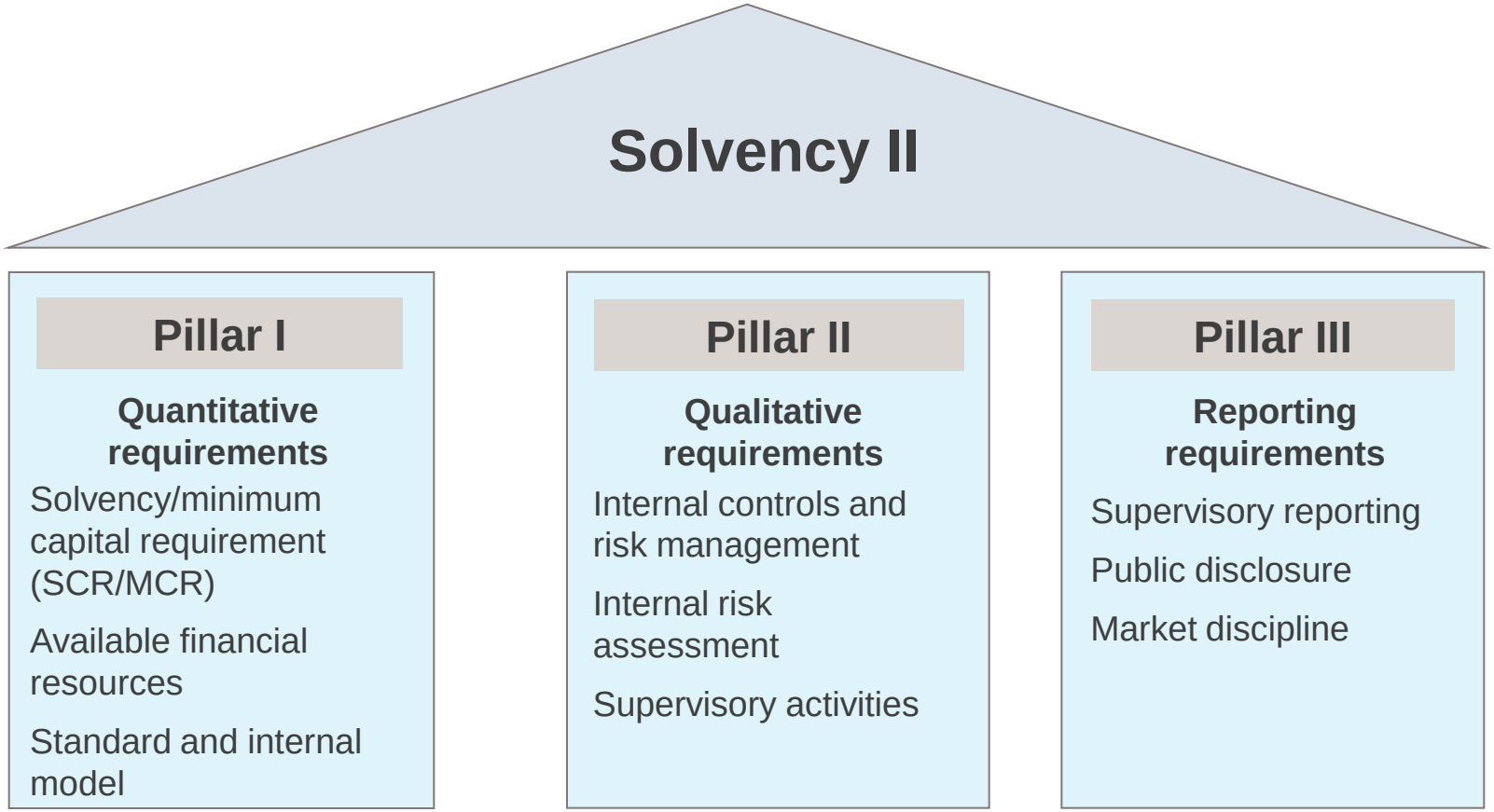
- Basel II are **recommendations on banking laws and regulations** issued by the Basel Committee on Banking Supervision, initially published in June 2004

- **Purpose of Basel II:**
  - Create an international consistent standard of regulation
  - Which banking regulators can use when creating regulations about how much capital banks need to put aside to guard against different types of financial and operational risks

- Solvency II, often called **"Basel for insurers",** has taken a similar approach as Basel II

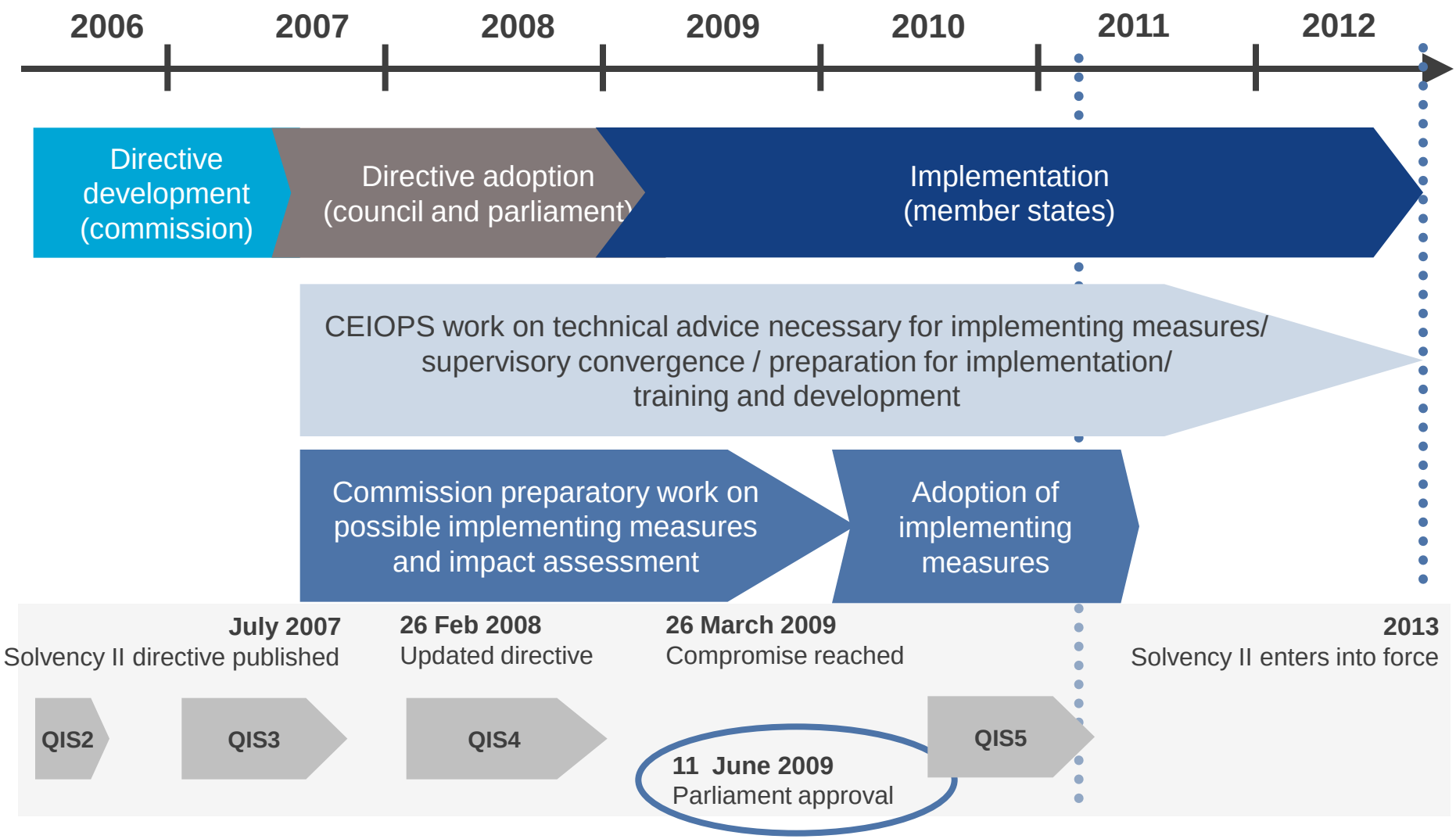
- In the meantime, Basel III has been introduced for banks. Many aspects of Basel III are already integrated into Solvency II

Solvency II - The Three Pillars
More than just Capital Requirements



Requirements of **the three pillars of Solvency II** have to be embedded in an overall Risk Management Framework including all steps of the value chain of an insurance company

Solvency II
Current timetable: implementation by 2013



Components of Solvency II
The Three Pillars

Pillar 1: Demonstrate adequate Financial Resources

Calculation of technical provisions, the Solvency Capital Requirement (SCR) and Minimum Capital Requirement (MCR)

- Applies to all firms and considers key quantitative requirements, including own funds
- SCR calculated either with an approved full or partial internal model or with the European standard formula approach

Pillar 2: Demonstrate an adequate System of Governance

- Including effective risk management system and prospective risk identification through the Own Risk and Solvency Assessment (ORSA)
- Supervisory Review Process: overall process conducted in reviewing insurance and reinsurance undertakings, ensuring compliance with the Directive requirements and identifying those with financial and/or organizational weaknesses susceptible to producing higher risks to policyholders

Pillar 3: Demonstrate public disclosure and reporting requirements

- Requirements to disclose information relating to risk and capital levels, designed to foster market discipline

Solvency II
A risk-based calculation of capital requirements

- Under **Solvency I**, solvency requirements are assessed in a very general way as percentages of P&L and balance sheet items
- Solvency II will be a more **risk-adequate solvency scheme** by taking into account various risks and all potential losses. It should reflect the true risk profile of the company

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- **Risk mitigation techniques** shall be taken into account, provided that credit risk and other risks arising from the use of such techniques are properly reflected
- **Quantitative requirements** under Solvency II regime determining the solvency capital requirement (SCR) will be based on **a 99.5% VaR metric** with one-year time horizon
- (Re)Insurers must hold enough **available financial resources** (AFR) in order to meet the solvency capital requirements

Pillar II - Qualitative Requirements
Components of Solvency II

Demonstrate an **adequate System of Governance**

- Including effective risk management system and prospective risk identification through the **Own Risk and Solvency Assessment (ORSA)**
- **Supervisory Review Process**
- Internal model has to be used for **day-to-day** operational and strategic business decisions (**Use Test**)
- **Corporate Governance**
  - Requires greater transparency around executive responsibilities, authorities and decision-making
  - Prescribes certain roles for key functions including actuarial, risk and internal audit

Pillar III
Disclosures and reporting requirements

- **Greater transparency** with aim to foster market discipline through
  - Public disclosure (for a public audience)
  - Private reports (for the supervisor)
- Will provide the supervisory authorities with the information for **effective, risk-based and proportionate supervision**
- **Both reports** based around
  - Firm's business and performance
  - System of governance
  - Risk profile
  - Regulatory balance sheet
  - Capital management

Chapter 2
October 2010 German Conference on Solvency II

Report on recent German Conference on Solvency II

The German Association of Insurance Science (DVfVW) conducted a conference in Oct 2010 in Munich under the title

‘Solvency II – Fair Value in Insurance Business’

in which numerous aspects of Solvency II were controversially discussed and debated.

Key Opinions from the conference
Solvency II features - Hotly debated

- **General Counsel of large European reinsurer**: Basic concept is correct and will lead to a more professional risk management of insurers

  However Solvency II, in the aftermath of the Global Financial Crisis, moves into a Corporate Governance discussion

- **Chief Investment Strategist of large German insurance group**: Concern that due to excessive capital requirements a number of insurance risks will not be able to be underwritten any longer

  On the life insurance side, longer term liabilities can only be hedged by top-quality government bonds which will lead to a systemic mis-balance between supply and demand for such bonds. Also introduction of Solvency II will lead to a pro-cyclic behaviour of insurers regarding their investment patterns – so additional market volatilities will have to be expected

Key Opinions from the conference
Pro's and Con's on Solvency II

- **Professor of Insurance Science from a German university**: Consequence of Solvency II will be the illusion at the level of both the regulators and corporations that future crises can be avoided

- **CFO of large European reassurer**: Underlying concepts of Solvency II make a lot of sense but even the best risk management models will not be able to replace sound business judgement

  Current complexity of Solvency II has to be reduced such that it can be managed by an insurer with, say, 100 employees

- **Professor of Insurance Economics from a German university**: Insurance industry will have to gain their own future and leaving the 'wind shadow' of the banks

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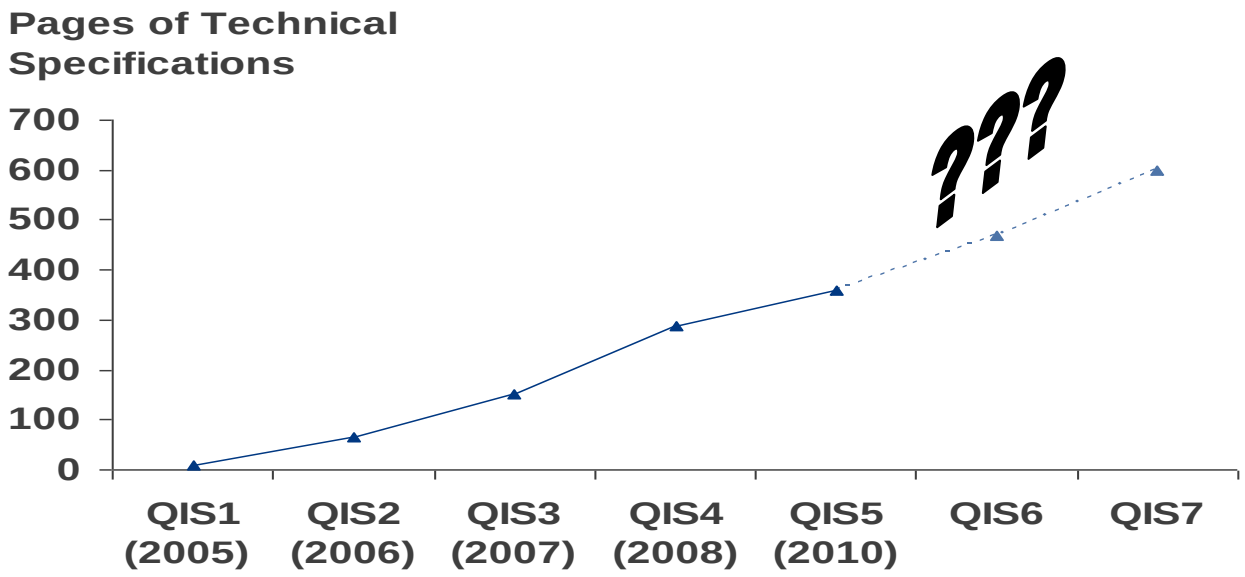
Chapter 3
QIS 5 and Capital Requirements

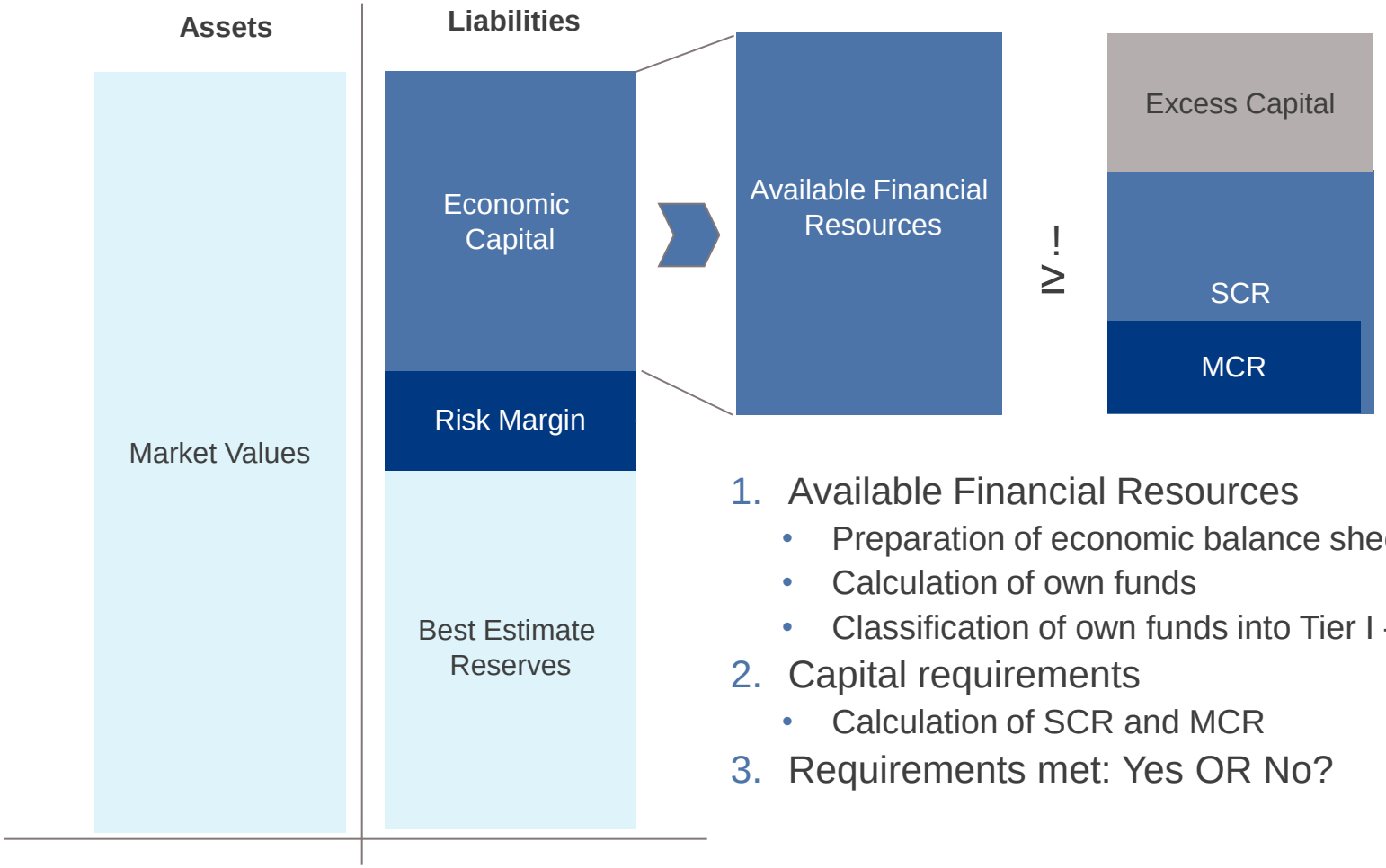
QIS5 - Early Results and Implications

More than a Standard Model
QIS 1 started it all, now we are at QIS 5

- The **Standard Model** is implemented in Excel and is regularly tested in the **Quantitative Impact Studies (QIS)** while subject to improvements (Work-In-Progress)
- The most recent QIS exercise **(QIS5)** ran from August to November 2010. Hannover Re participated in all QIS1 – QIS5
- The model gets more and more **complicated**



Economic Balance Sheet Approach
Standard Model



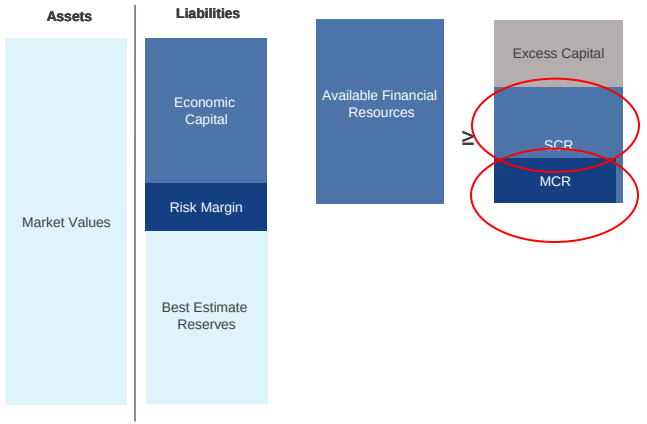
1. Available Financial Resources
   - Preparation of economic balance sheet
   - Calculation of own funds
   - Classification of own funds into Tier I – III
2. Capital requirements
   - Calculation of SCR and MCR
3. Requirements met: Yes OR No?

Capital Requirements
SCR and MCR

- **Solvency Capital Requirement (SCR)**
  - Has to be calculated at least once a year
  - Monitored on a continuous basis
  - Recalculated as soon as the risk profile has significantly changed

- The SCR can be calculated using **different methods** which should be **proportionate** to the nature and complexity of the risks:
  - Full internal model
  - Standard formula and partial internal model
  - Standard formula and undertaking specific parameters
  - Standard formula
  - Standard formula with simplifications

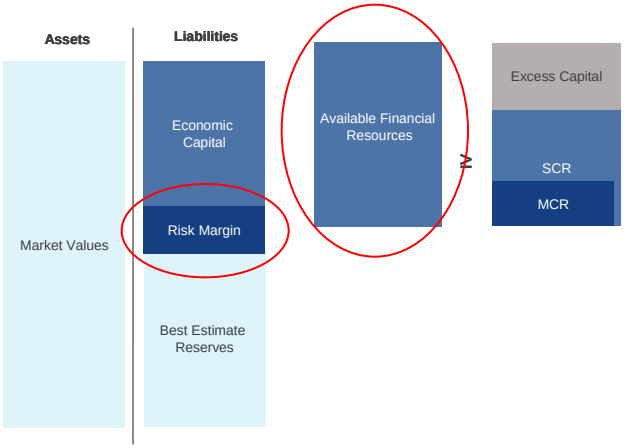
- The **Minimum Capital Requirement (MCR)** needs to be calculated quarterly with a simple and robust formula (simplified SCR formula or percentage of SCR)



Decreasing level of complexity and risk-sensitivity

Capital Requirements
SCR, MCR and AFR

- **The Available Financial Resources (AFR)** calculated based on an economic balance sheet approach where assets and liabilities are consistently valued according to economic valuation principles
  - Classification into Tier I – III



- **Risk Margin**

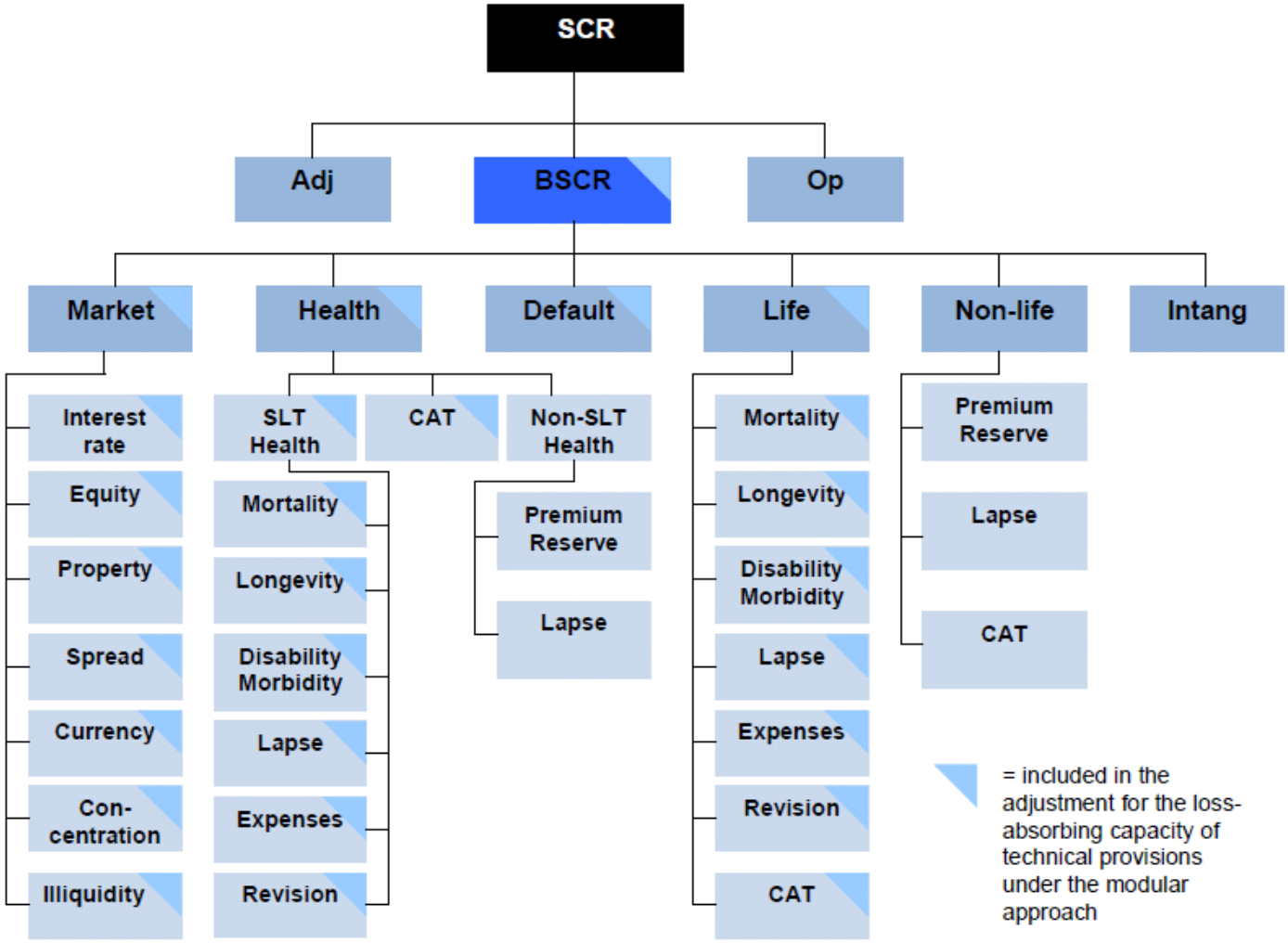
  "The risk margin shall be such as to ensure that the value of the technical provisions is equivalent to the amount insurance and reinsurance undertakings would be expected to require in order to take over and meet the insurance obligations." (Framework Directive, Article 76)

  - Risk Margin = Discounted capital costs on required capital for non-hedgeable risks
  - Parameters still under discussion, broad range of results, strong influence on economic capital

Solvency Capital Requirements
Extent of regulatory intervention

- The **Solvency Capital Requirement (SCR)** corresponds to the economic capital a (re)assurer needs to hold in order to limit the **probability of ruin** to 0.5% over the next 12 months
  - In case the SCR is breached the (re)asssurer must submit a recovery plan for approval by the supervisor and take the necessary measures to ensure compliance within 6 months (Framework Directive, Article 136)
- The **Minimum Capital Requirement (MCR)** represents a level of capital below which policyholders' interests would be **seriously endangered** if the (re)assurer were allowed to continue to operate
  - In the event that the MCR is breached ultimate supervisory action is triggered, i.e. authorisation is withdrawn (Framework Directive, Articles 127 and 137)

Solvency Capital Requirements
Components in the standard formula

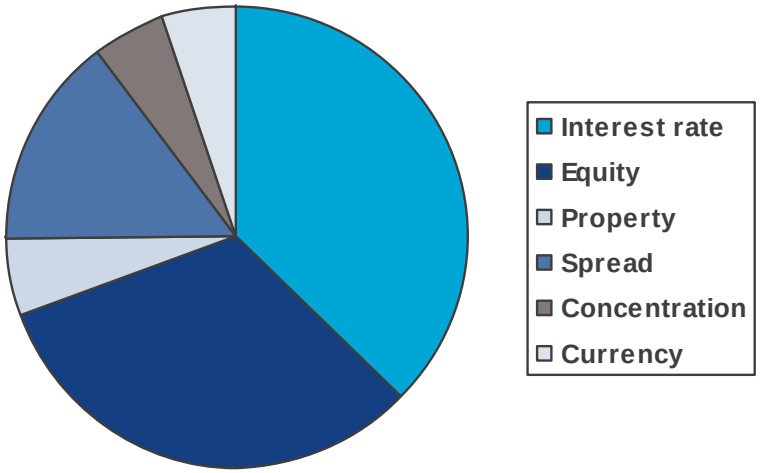


What are the RISK DRIVERS under Solvency II ?

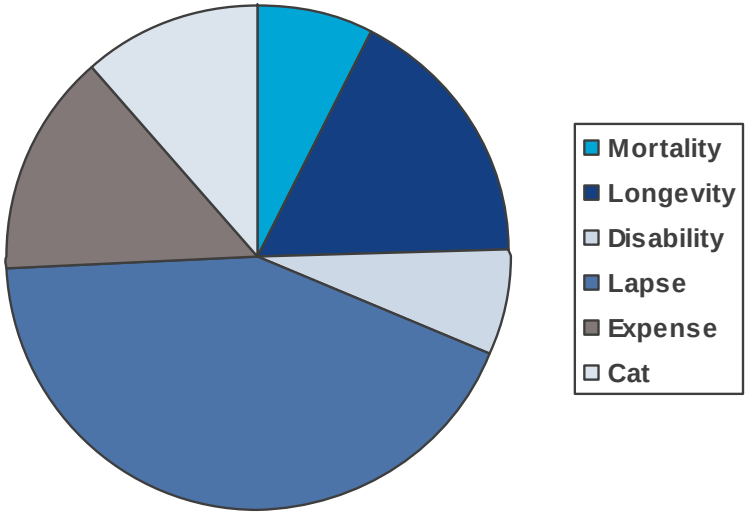
The EU Average Life Assurer

Market risk forms **about two thirds** of the BSCR for life insurance companies if diversification effects are included, according to QIS 4 study (November 2008)

Market Risk BSCR composition



Life Risk BSCR composition



Source: CEIOPS' Report on its fourth Quantitative Impact Study (QIS4) for Solvency II, November 2008

B(asic)SCR is the key component of SCR

Focus on Life Underwriting
The transition from QIS4 towards QIS5

- To stress **Assets and Technical Provisions** for each of the risk(s) at the 99.5% confidence level
- SCR (Mortality) is the **change in Net Asset Value** under mortality stress
- Run the individual risk SCR's through the appropriate **SCR covariance matrices** to quantify the expected diversification benefit

	QIS 5	QIS4
Mortality	Relative increase in qx 15% in all years	10%
Longevity	Relative decrease in qx 20% in all years	25%
Expense	10% increase in expenses + 1 % additional inflation	
Revision	3% increase in annual annuity amount	
Life catastrophe	One year shock, 1.5‰ excess mortality shock in first year	
Disability	35% year 1 increase / 25% thereafter, and 20% perm. decrease in recovery rate	Recovery rate stress new
Lapse	50% up/down; 30% mass lapse, but 70% for non-retail	Non-retail business stress new

QIS5 Results at Hannover Life Re - September 2010
Entity: Hannover Rueck AG, Germany

Life Risk Component	in %
Mortality	31.0
Longevity	12.1
Disability	10.9
Lapse	17.9
Expenses	3.2
Revision	0.0
CAT	24.9
Aggregate (Undiversified)	**100.0**
Diversification Effect	-43.3
SCR Life	**56.7**

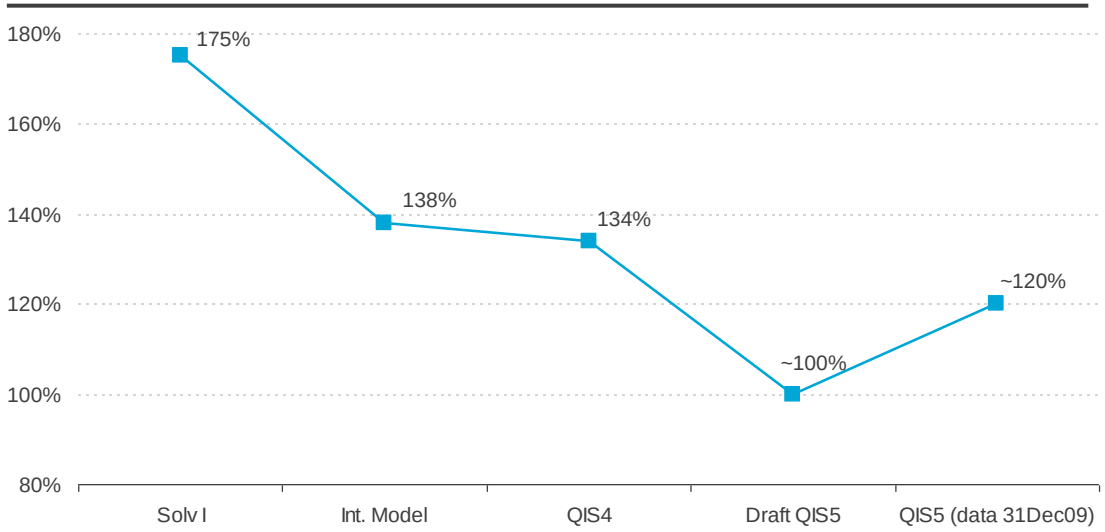
Observations:

- While mortality is leading life risk, CAT (= pandemic) risk already 2nd largest risk ahead of lapse and longevity
- Substantial diversification benefits emerging from longevity risk and lapse risk

Potential results of the QIS5 exercise
A sample of large European Insurers provides some insight

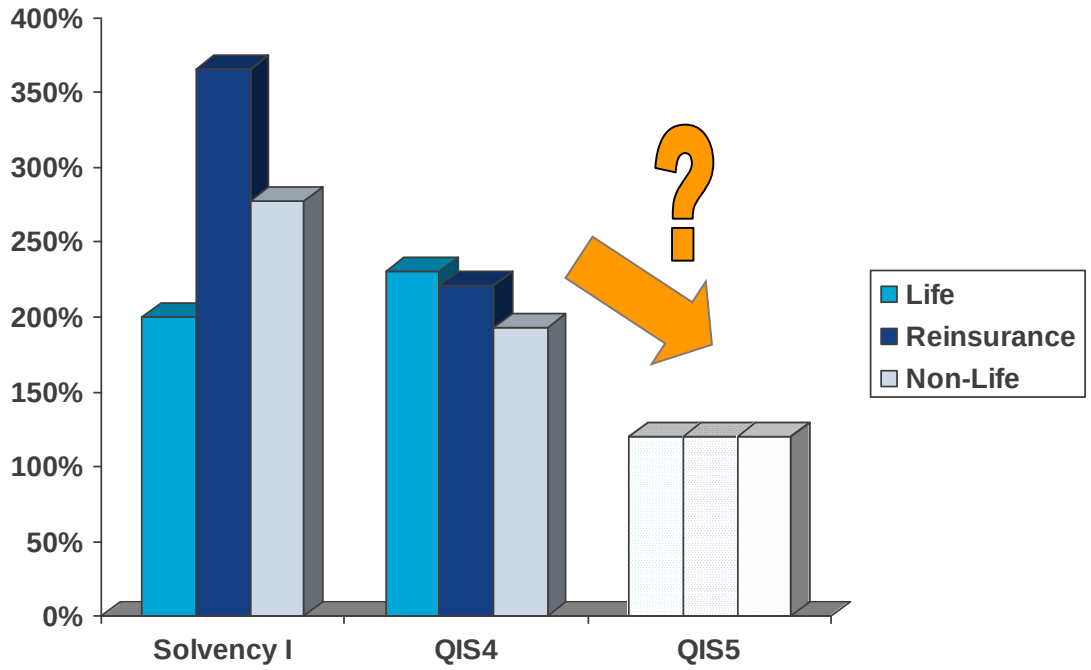
- The CRO Forum is currently performing the **benchmarking study on QIS5:**
  - Early results below show the average of the 14 participating companies (roughly 25% of European premiums, 60% of Insurance Stoxx Index)

Early results (at Q4/2009) average solvency ratio under various capital frameworks



  - **Preliminary results are worrying for European insurers. For further information, link into www.croforum.org**

Median Solvency ratio of European Life Assurers
It does not get any better...



- Currently no final QIS5 results are published but **decrease in Solvency II ratios** expected due to
  - Change in calibration for market and underwriting risks
  - Low interest rate at valuation date

Chapter 4
Solvency II at Hannover Life Re

Where Do We Stand?

We are firmly AMONG THE TOP 5 LIFE REINSURERS

Six international players make up for > 80% of world premiums

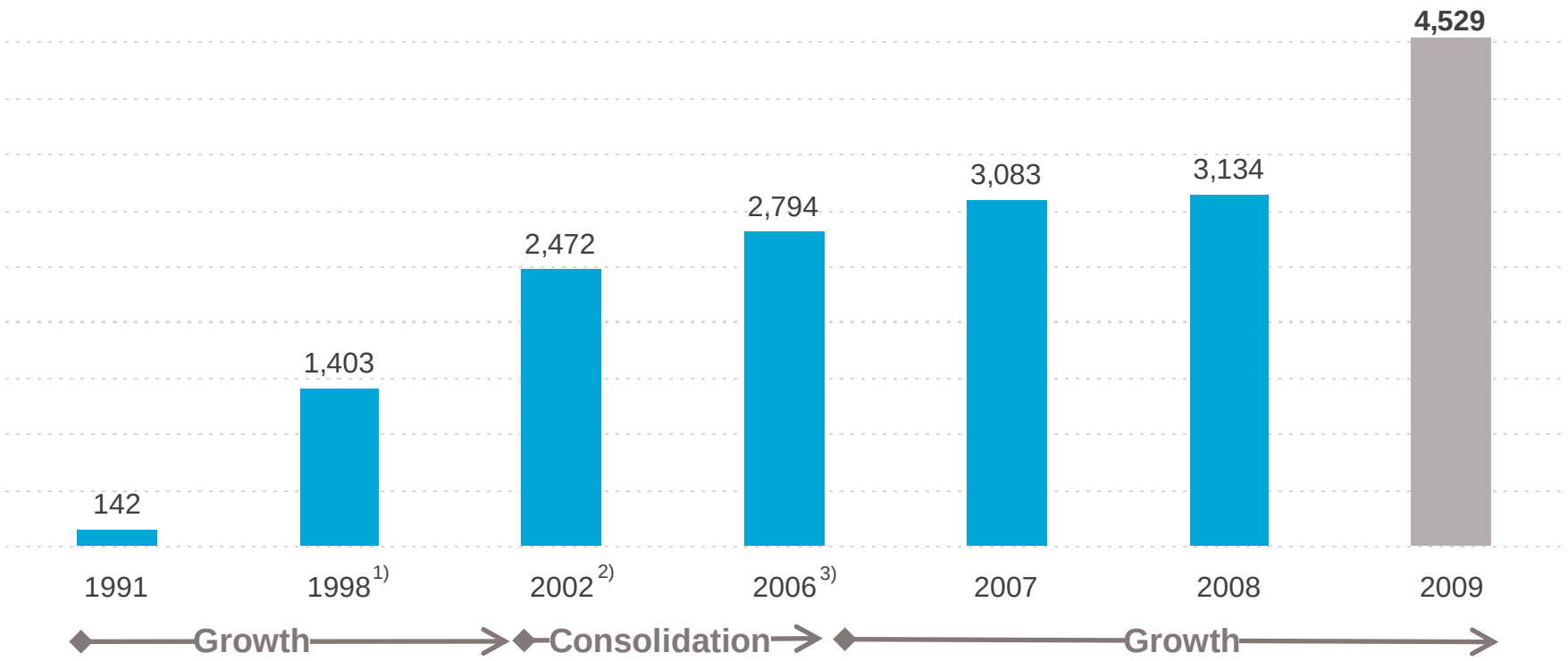
Premium ranking 2009 in m. EUR				
Rank	Group	Country	GWP[1)]	NPW[2)]
1	Munich Re	D	9,742	9,281
2	Swiss Re	CH	7,829	7,251
3	**Hannover Life Re**	**D**	**4,529**	**4,079**
4	RGA Re	USA	4,470	4,099
5	SCOR	F	3,118	2,779
6	Gen Re[3)]	USA	1,952	1,880
7	Transamerica Re	USA	n.a.	1,671
8	ING Re	USA	1,299	n.a.
9	Manulife	CDN	n.a.	706
10	Partner Re	BDA	426	420

Source: Own research - figures ranked by gross written premium (IFRS). If gross written premium is not available, net premium was taken instead
-Exchange rates: Average rate per 30th Dec. 2009
1) Gross written premium 2) Net written premium 3) GWP - own estimation based on 2008 retention level as 2009 figure is not available

Hannover Life Re: The global brand represents all Life and Health activities of the Hannover Re Group

From a "Nobody" to a Champions' League Player
With key strengths in innovative solutions and customer relationships

Gross written premium (GWP) in m. EUR



1) German-GAAP basis 2) US-GAAP basis
3) Since 2006 IFRS basis 4) Compound annual growth rate

With a CAGR[4)] of ~21% over the past two decades, HLR has become one of the leading global life & health reinsurers

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Hannover Life Re in Asia-Pacific Markets

Active since more than 20 years, with growing presence in East Asia

- Branches and Offices in
  - Tokyo (2000)
  - Seoul (2008)
  - Hong Kong (1997)
  - Shanghai (2008)
  - Taipei (1989)
  - Mumbai (2008)
  - Kuala Lumpur (late 1970s)
  - Sydney (1993)
- Staff of > 150 professionals in the Asia-Pacific region
- Gross premium income 2010E at appr. USD 700 mio.

Internal Model at Hannover Re
Stochastic Modelling of Life Reinsurance

Standard Model

- Value-at-Risk at 99.5% confidence level
- Scenario based approach

- Predefined risk categories - not tailored to the company's individual risk profile
- Calibration of risk factors based on "average company"
- "Average company" correlation structure

- Adequate for small companies without complex or highly unique risks
- Limited resource requirements

- Limited suitability for ERM - Enterprise Risk Management und business decision purposes (just external reporting)

Internal Model

- Full distribution of capital requirements
- Stochastic modelling

- Quantitative modelling of all material risk categories for Hannover Life Re
- Calibration of risk factors by company-specific data
- Company-specific dependency structure

- Adequate for a Global Reinsurer and large multi-national insurers

- Gives important additional information for capital management and business decision purposes (internal and external reporting)

- Adequate integration into internal model and Enterprise Risk Management of HR Group

Status of Internal Model Approval in Europe
BaFin has started early - Hannover Life Re too

- German regulator BaFin has started first round meetings for **internal model approval** in 4Q 2008 with three large insurance groups incl. Talanx (Hannover Re)
- Hannover Re started internal model **approval process in 4Q 2008.** Hannover Re has been advanced and thus is ahead of many other German companies
- Most other European supervisors started their approval processes in 2010
- The pre-application process for the individual companies will last until 2013, when the legal basis for approval is planned to be introduced
- Approx. **100 German companies** have indicated their intention to approve an internal model

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Chapter 5
What the Future Holds

QIS 6 and Some Conclusions

QIS 6 and further exercises

- **Further QIS studies requested by industry (!) and regulators (?)**
  - Various **important features of standard model** are still under controversial discussion like EPIFP, calculation of Risk Margin, classification of capital / treatment of VIF as Tier 1 capital, calibration of scenarios…
  - **QIS5b or QIS6** probably will take place in autumn 2011
- **Major concerns of the insurance industry**
  - **Small and medium sized insurers** who may be overwhelmed by implementing Pillar II requirements
  - Growing **complexity** and **volatility** of standard model
  - The principles of insurance valuation under Solvency II and IFRS 4/II will be very similar but valuation details differ. The extent of differences is presently uncertain

Affected insurers - Who will benefit and who will suffer?
The pinch will be felt differently

The Good, the Bad and the Ugly - Who may be most affected:

- **Specialty insurers** with little LOB (Lines of Business) diversification
- Insurers with a limited or volatile **past performance**
- Insurers with a large mathematical reserves – **annuity insurers**
- Insurers who rely **on lowly rated reinsurer(s)** → counterparty default risk
- **Small and medium sized insurers** who have to rely on the standard model when calculating SCR / MCR

Plus, those insurers who may face a SCR deficiency and consequently need additional capital:

- Insurers with **limited access** to capital markets (e.g. **mutuals**, start-ups, niche carriers)
- Insurers who by design operate with a **minimal capital base** (e.g. captives)

Conclusions
Pro's and Con's

- Solvency II will lead to a better understanding and wider picture of the solvency position of assurers. It will create state-of-the art risk management and bring greater transparency as well as identification and documentation of all risk relevant business processes

- Assets and liabilities of insurers will now be evaluated more realistically in accordance with economic principles

- Risk based calculation of capital requirements makes diversification, risk mitigation and risk transfer measurable. Innovative tailored reassurance solutions will continue to play an important role in the efficient management of risks

- BUT….

Conclusions
Pro's and Con's

- Solvency II will be unfavourable for many small-to-medium sized companies and therefore restrict the 'level playing field' competition in many markets
- Innovative approaches for product design & distribution as well as establishment of new insurers will be limited
- Massive reporting requirements will need resources which ultimately will have to be carried by life policyholders
- Procyclical behaviour in terms of asset management – the lemming syndrome – will enhance volatility

- **So, only time will tell if Solvency II can achieve what protagonists expect ...**

Thank you for your attention!