

Radionica o Solvency II

petoj kvantitativnoj studiji utjecaja

- QIS 5 -

Westin Zagreb Hotel

Dvorana Panorama

Zagreb, 22. rujna 2010. godine



Hrvatski ured za osiguranje



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Kroatisches Versicherungsbüro * Croatian Insurance Bureau
Bureau Croate d'assurance * Ufficio Croato d'assicurazioni

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Program radionice

Sadržaj i teme	Izlagač/govornik*	Sat
Otvaranje i uvodne napomene	Hrvoje Pauković (Hrvatski ured za osiguranje)	9.00 – 9.10
Uvodno o Solvency II Vremenski okvir Solvency II procesa Važnost QIS 5	Ministarstvo financija Mr. sc. Jakša Krišto	9.10 – 10.00
Pregled Tehničkih specifikacija QIS 5 Prvi dio – Vrednovanje Peti dio – Vlastita sredstva	Jiří Fialka (Deloitte)	10.00 – 11.00
<i>Pauza za kavu</i>		<i>11.00 – 11.30</i>
Drugi dio – Izračun solventnog kapitala (SCR)	Mr. sc. Jakša Krišto Jiří Fialka (Deloitte)	11.30 – 12.15
Četvrti dio – Izračun minimalno potrebnog kapitala (MCR)	Mr. sc. Jakša Krišto	12.15 – 12.35
Šesti dio – Grupe	Jiří Fialka (Deloitte)	12.35 – 13.00
<i>Pauza</i>		<i>13.00 – 13.15</i>
Izvan dosega QIS 5: Izazovi zahtjeva drugog i trećeg stupa Solvency II direktive	Mr. sc. Jakša Krišto	13.15 – 13.45
Završne napomene, postupanja oko primjene Solvency II i provođenja QIS 5, Q&A	Ministarstvo financija Mr. sc. Jakša Krišto Vančo Balen (Deloitte)	13.45 – 14.15



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Uvodno o Solvency II

Vremenski okvir Solvency II procesa

Važnost QIS 5

Jakša Krišto

Zašto Solvency II?

- Zašto je potrebno razvijati novu regulativu?
- Koje prednosti ona donosi?
- Zašto je kapital toliko važan?
- Koja je cijena primjene?
- Kako se pripremiti?

Osnove Solvency II

- Novi zakonodavni i regulatorni okvir poslovanja društava za osiguranje i društava za reosiguranje u Europskoj uniji
- Početak oblikovanja Solvency II je 28. lipnja 2000.
- Temeljni ciljevi Solvency II:
 - zaštita osiguranika,
 - upravljanje svim rizicima kojima je društvo izloženo,
 - anticipiranje tržišnih promjena i
 - utemeljenost na principima, a ne na strogim pravilima.
- Prudencijalna regulacija utemeljena na rizicima
- Solvency I, današnji sustav regulacije na snazi je od 1970. godine, uz posljednje izmjene 2002. godine

Tri stupa Solvency II



The diagram illustrates the Three Pillars of Solvency II, represented by a blue triangle above a table. The table is divided into three columns, each representing a pillar. The first column, 'KAPITALNI ZAHTEJEVI', lists capital requirements and is labeled 'I. STUP'. The second column, 'NADZOR I SUPERVIZIJA', lists supervision and control measures and is labeled 'II. STUP'. The third column, 'TRŽIŠNA DISCIPLINA', lists market discipline measures and is labeled 'III. STUP'.

KAPITALNI ZAHTEJEVI	NADZOR I SUPERVIZIJA	TRŽIŠNA DISCIPLINA
Granica solventnosti Minimalno potrebni kapital Vlastita sredstva Ulaganja Kapitalna oslobođenja Interni modeli Standardna formula Tehničke pričuve Vrednovanje ulaganja	Sustav upravljanja Interna kontrola Upravljanje rizikom Stres testovi Stalna kontrola izloženosti riziku Proces nadzora i supervizije	Izvještavanje Transparentnost poslovanja MRS MSRI
I. STUP	II. STUP	III. STUP

Izvor: CEA, *Solvency II, Introductory Guide*, Brussels, lipanj 2006., str. 8.

Tijela uključena u usvajanje Solvency II

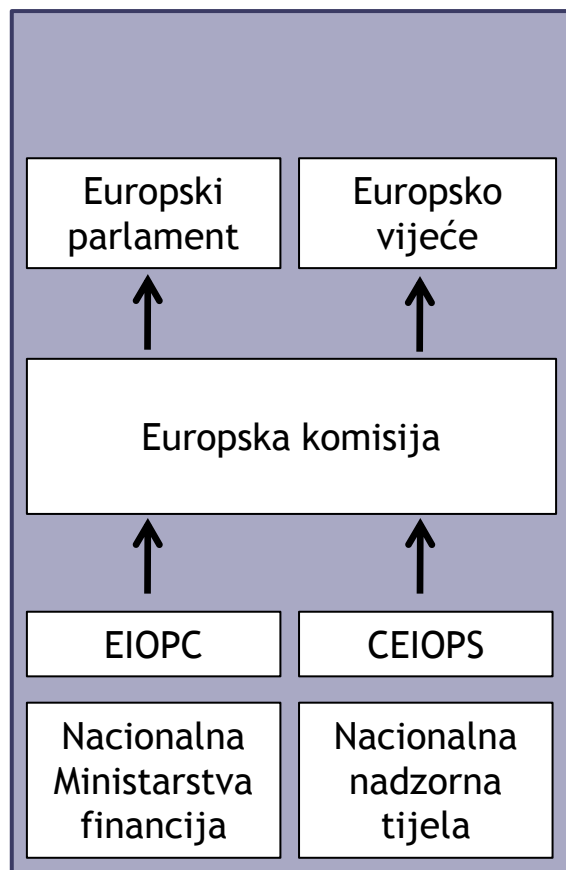
Lamfalussyev proces usvajanja Solvency II

Razina	Naziv	Što sadrži	Tko razvija	Tko odlučuje
1. razina	Direktiva o Solvency II	Ukupan zakonodavni okvir poslovanja	Europska komisija	Europski parlament, Vijeće ministara
2. razina	Provedbene mjere	Detaljne provedbene mjere	Europska komisija	EIOPC
3. razina	Smjernice nadzora	Smjernice nadzora i usklađivanja nadzora	CEIOPS	CEIOPS
4. razina	Provedba	Nadzor usklađivanja nacionalnog zakonodavstva i provođenja	Europska komisija	Europska komisija

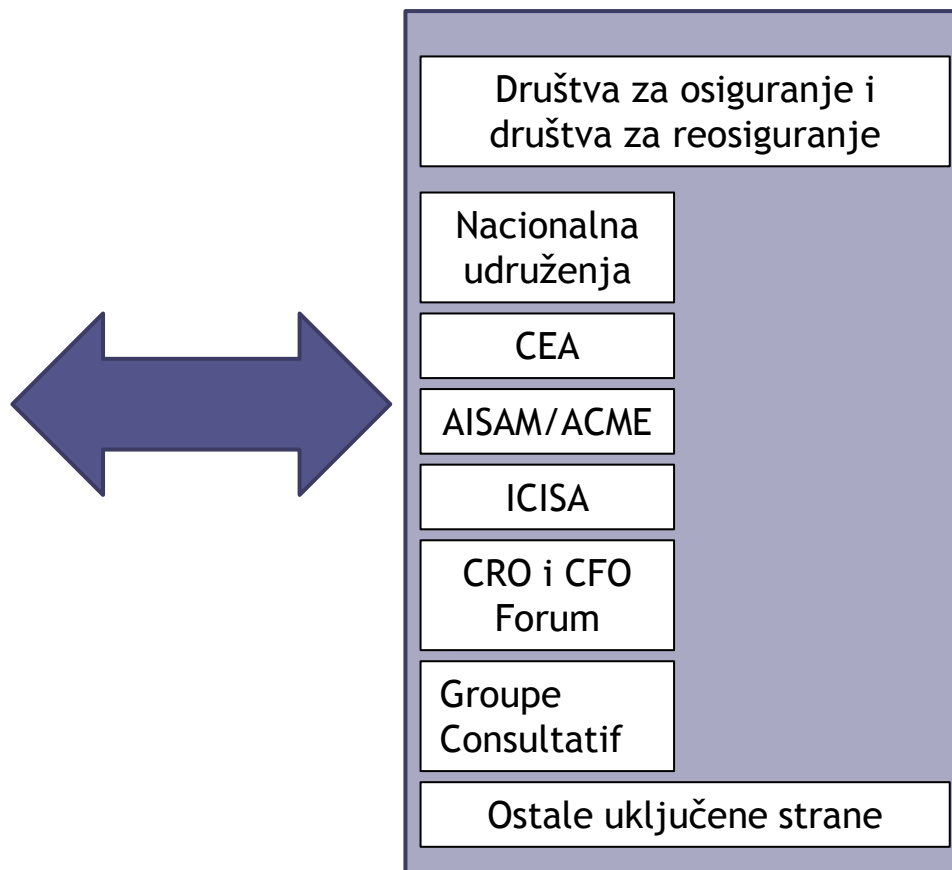
Izvor: CEA, *Solvency II, Understanding the Process*, veljača 2007.

Stakeholderi u Solvency II procesu

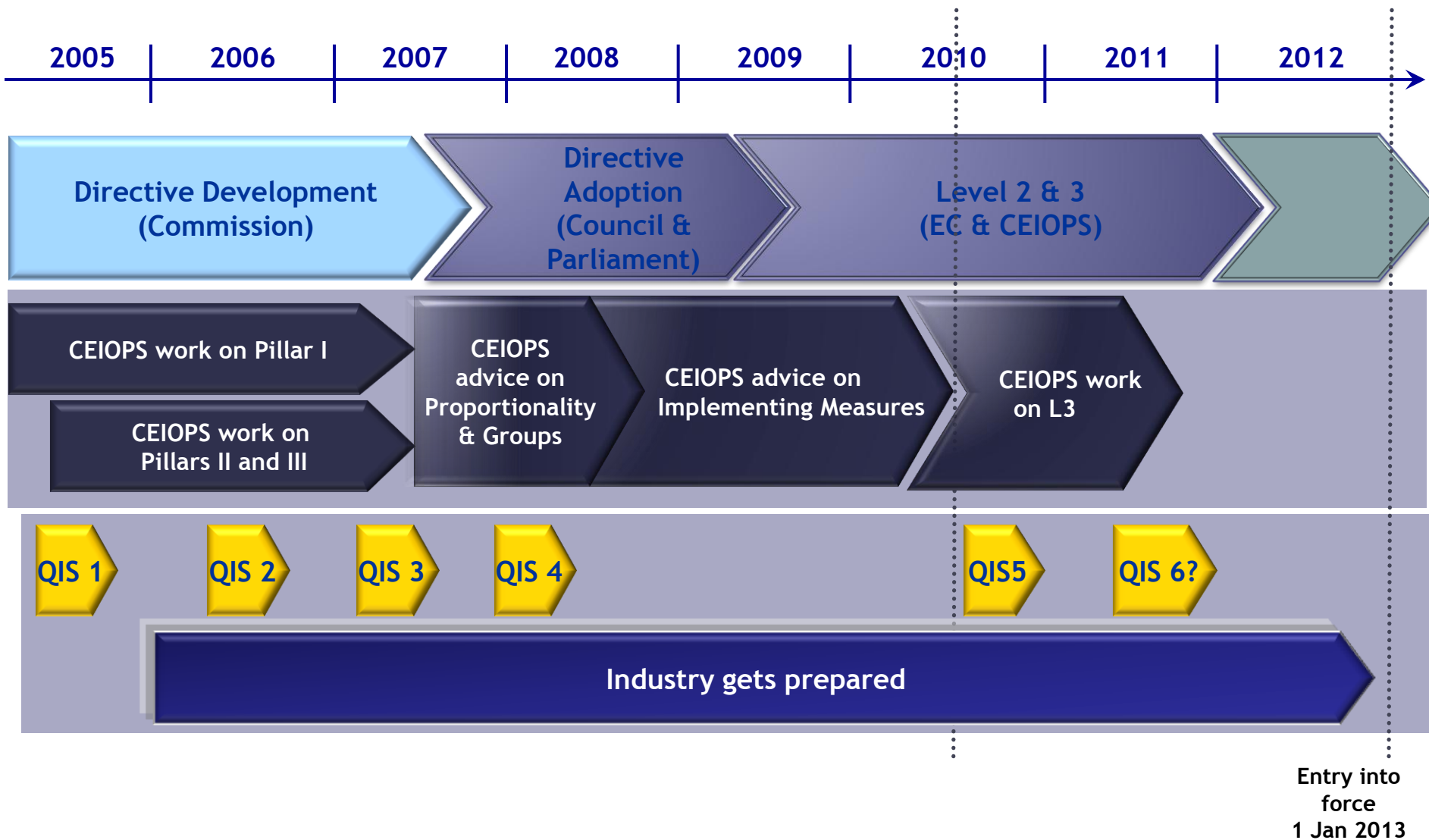
Sudionici u izradi Solvency II



Ostale uključene i zainteresirane strane



Vremenski okvir Solvency II



Iskustva prethodnih QIS-ova

QIS	Održavanje / predmet / sudjelovanje
QIS 1	10. do 12. 2005. godine Tehničke pričuve
QIS 2	5. do 7. 2006. Vrednovanje tehničkih pričuva, MCR i SCR-a 514 društava iz 23 zemlje
QIS 3	4. do 6. 2007. Kalibracija SCR i MCR-a, bilančni pristup pod S II Grupe Više od 1000 društava
QIS 4	4. do 7. 2008. Specifikacija standardne formule Pojednostavljenja izračuna SCR-a i tehničkih pričuva, mogućnost upotrebe specifičnih parametara Više od 1400 društava

QIS 4 - sudjelovanje

- **Ukupno 1412 društava, stopa sudjelovanja 33,6% društava**
 - 686 ili **32,0%** društava za **neživotno** osiguranje
 - 351 ili **41,5%** društava za **životno** osiguranje
 - 227 ili **31,9%** **složenih** društava
 - 49 ili **27,1%** društava za **reosiguranje**
 - 99 ili **19,2%** **vlastitih** društava za osiguranje

Društvima je u prosjeku trebalo **760 čovjek/sati** za ispunjavanje QIS 4!

Važniji zaključci QIS 4

- Većina društava 98,8% ispunjava zahtjeve minimalno potrebnog kapitala (MCR)
- 11% društava koja su sudjelovala ne ispunjava kapitalni zahtjev glede solventnosti (SCR)
 - 13,2% velika društva
 - 11,2% društva za neživotno osiguranje
- Europska industrija osiguranja kao cjelina ne treba dodatnu kapitalizaciju, po QIS 4
- Naglašeno pitanje razmjernosti/proporcionalnosti i pojednostavljenja/simplifikacije

Ciljevi QIS 5

- Preispitati utjecaj provedbenih mjera na bilančne pozicije, potrebnu razinu kapitala i solventnost
- Informirati i pripremiti društva te supervizore na uvođenje Solvency II te ih potaknuti na poboljšanja uočenih nedostataka u vlastitom poslovanju
- Provjeriti usklađenost usvojene direktive o Solvency II (prva razina implementacije) i provedbenih mjera (druga razina implementacije)
- Započeti i ostvariti stalnu suradnju društava i supervizora u pripremi i implementaciji novog regulatornog okvira.

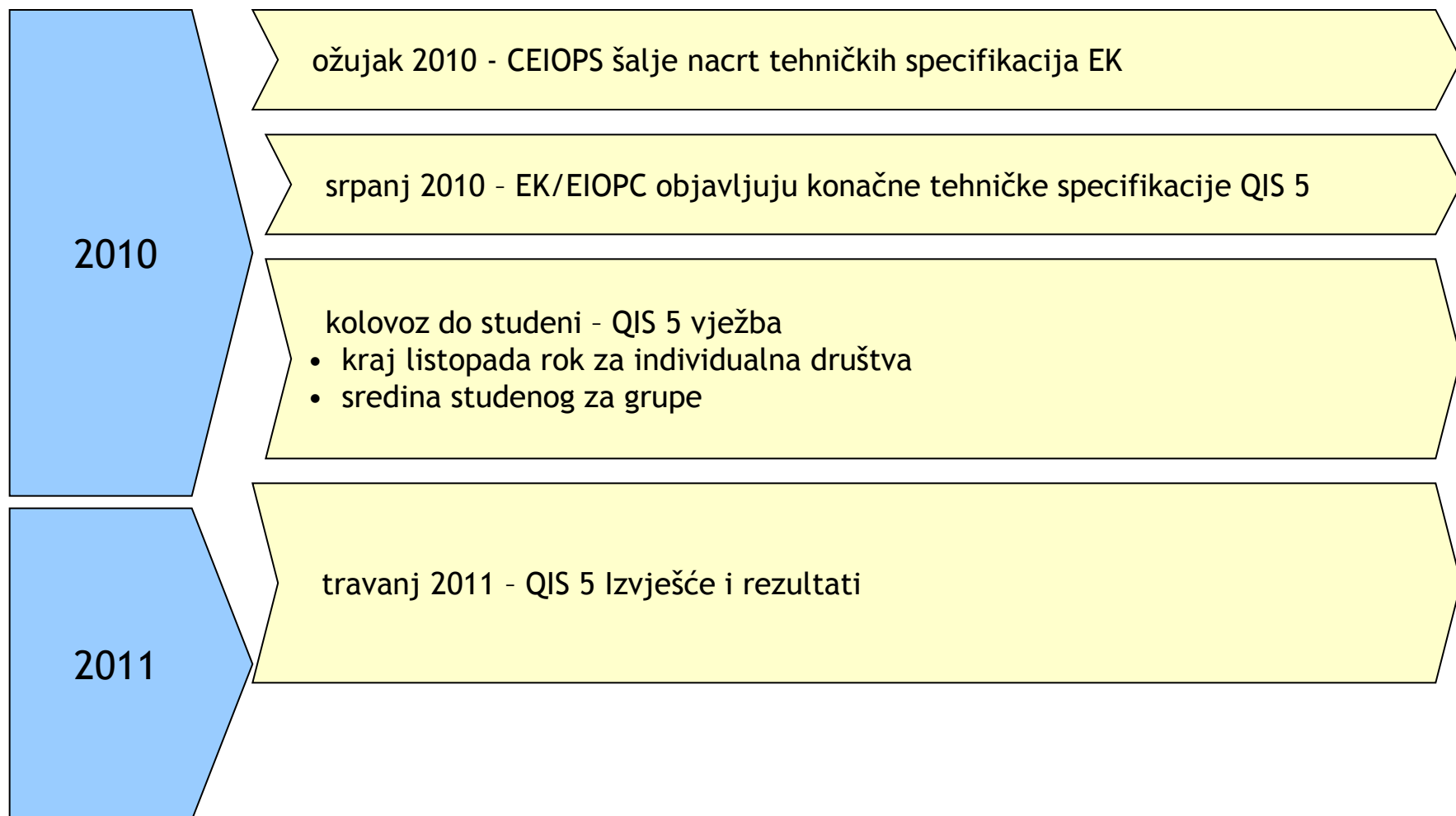
Sudjelovanje u QIS 5

- U idealnim uvjetima sva osiguravajuća društva čije će poslovanje biti regulirano direktivom o Solvency II sudjelovala bi u provođenju QIS 5
- Europska komisija očekuje da će najmanje 60% individualnih osiguratelja i reosiguratelja te 75% grupa sudjelovati u QIS 5.
- Vrlo je važno da se poveća sudjelovanje malih i srednjih osiguratelja kojima će implementacija Solvency II predstavljati najveći izazov.
- Dodatnu pomoć u provedbi QIS 5 osigurati će nacionalni regulatori i supervizori u zemljama članicama EU uz podršku CEIOPS-a.

Značaj QIS 5

- Sudjelovanje u QIS 5 vrlo je važno zbog:
 - Pripremljenosti i interne edukacije društava
 - Spremnosti supervizora za novu regulativu
 - Uočavanju pogrešaka i njihovom otklanjanju u okviru provedbenih mjera
- Sudjelovanje u QIS 5 je opsežan proces i po anketama, za njegovu provedbu društvima koja su već sudjelovala u prethodnim QIS-ovima potrebno je oko 600 čovjek/sat vremena
- QIS 5 testira samo zahtjeve I. stupa Solvency II

Vremenski okvir QIS 5



Informacije i dokumenti o QIS 5?



Restricted Area



- HOME / NEWS
- ABOUT CEIOPS
- REQUESTS FOR ADVICE
- CONSULTATIONS
 - Policy
 - Consultative Panel
 - Consultation Papers
 - Public Hearings
- QIS**
 - Quantitative Impact Study 5
 - Background Documents
 - Technical specifications
 - Spreadsheets and IT Tools
 - Questions and Answers
 - National Guidance
 - August 2010 Seminar
 - Quantitative Impact Study 4
 - Quantitative Impact Study 3
 - Quantitative Impact Study 2
 - Quantitative Impact Study 1
- Issues Papers, Surveys and Questionnaires
- PUBLICATIONS
- PRESS ROOM
- REVIEW PANEL
- EVENTS / TRAINING

QUANTITATIVE IMPACT STUDY 5

The European Commission has requested CEIOPS to run the QIS5 exercise between August and November 2010 and publish a report on the results of that exercise in April 2011 in order to provide quantitative input to the finalisation of the Commission's proposal on level 2 implementing measures for the Solvency II Framework Directive.

Below, interested parties all provided with all documents and information available and needed for the purpose of the QIS5 exercise.

QIS 5

QIS 5					
A.	B.		C.		
Background Documents	Technical specifications		Spreadsheets & IT Tools		
D.	E.	F.	G.	H.	I.
Questions & Answers	National contact points	National guidance	QIS5 Seminar - August 2010	Registration QIS5 Email-alerts	Contact CEIOPS-QIS5

Note 1: CEIOPS also provides for enhanced support an [overview](#) of all QIS5 documents in sections above. The overview is subject to continuous change as it shall be updated as per each additional CEIOPS posting.

Što sadrži paket QIS 5?

A1	Letter EC to Ceiops: QIS5 call for advice and technical specifications	7 pages
A2	EC call for Advice from Ceiops	8 pages
B1	QIS5 Technical specification	330 pages
B2	Annexes to the QIS5 Technical Specifications	66 pages
B3	Relevant risk-free interest rate term structures	-
B4	Parameters for non-life catastrophe risk	-
B5	Qualitative questionnaire for all participations	28 pages
B6	Qualitative questionnaire for internal model users	15 pages
B7	Qualitative questionnaire for groups	4 pages
C1	Solo spreadsheet	-
C2	Group spreadsheet	-
C3	Spreadsheet tools	-
D	Questions & Answers	17 pages
E	National contact points	-
F	National Guidance	-

Kvalitativni upitnici

- Za sve sudionike:
 - Pripremljenost na Solvency II
 - Procjena kvalitete podataka i rezultata
 - Ključni praktični problemi kod provođenja QIS5
 - Procjena QIS5 metodologije
 - Pojednostavljenja
- Interni modeli
- Grupe
 - Struktura grupe i podataka
 - SCR grupe
 - Specifični rizici grupe
 - Vlastita sredstva grupe
 - Ostali financijski sektori
 - Interni model grupe

Tehničke specifikacije QIS 5

- Tiskarske pogreške tehničkih specifikacija QIS 5
- **Tehničke specifikacije QIS 5**
- Dodaci tehničkim specifikacijama QIS 5
- Terminska struktura relevantne bezrizične kamatne stope
- Parametri za katastrofalni rizik preuzimanja neživotnog osiguranja
- Kvalitativni upitnici

Tehničke specifikacije QIS 5

- Sadrže 6 dijelova
 1. dio - Vrednovanje imovine, tehničkih pričuva i ostalih obveza
 2. dio - Kapitalni zahtjev glede solventnosti (Solvency Capital Requirement - SCR)
 3. dio - Interni modeli
 4. dio - Minimalno potrebni kapital (Minimum Capital Requirement - MCR)
 5. Vlastita sredstva
 6. Grupe



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Prvi dio - Vrednovanje

Peti dio - Vlastita sredstva

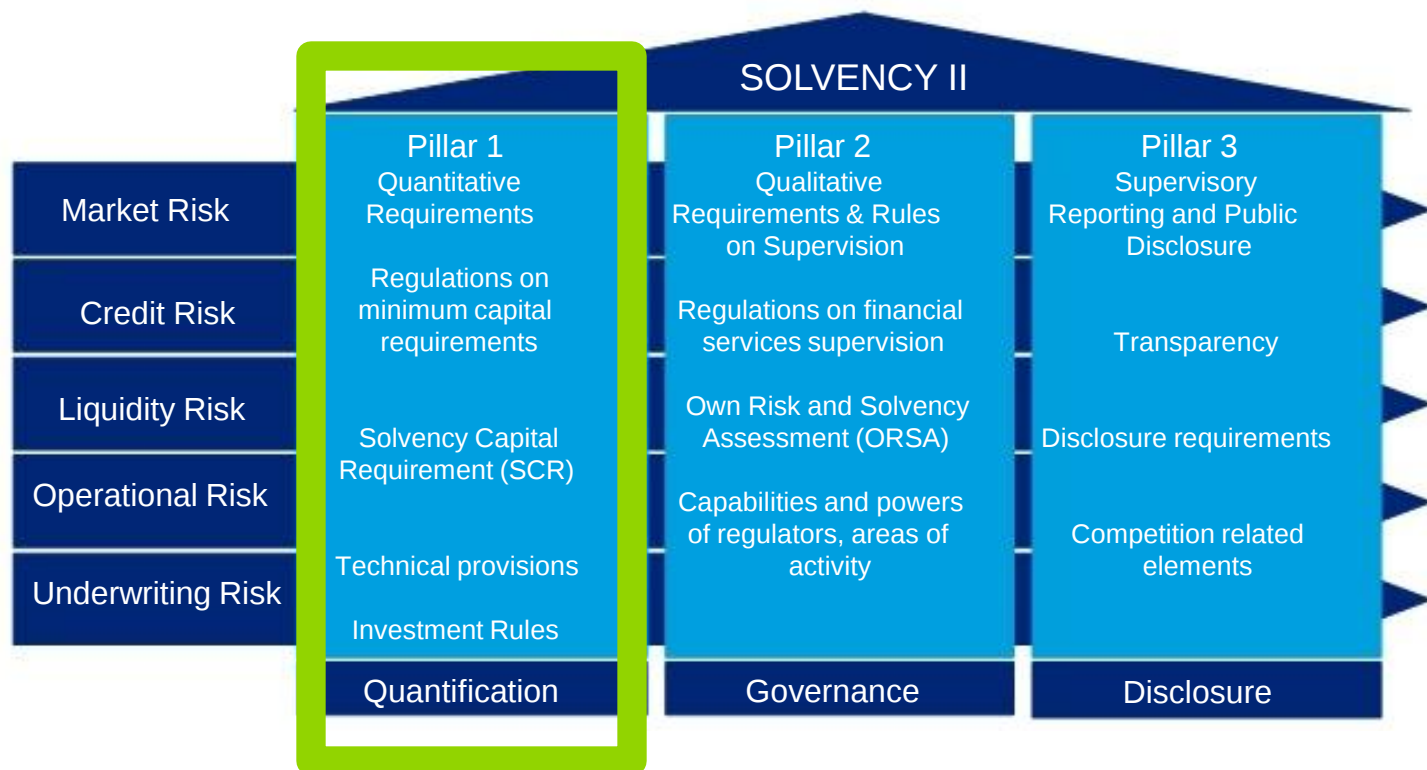
Jiří Fialka

Introduction - wrap up

How is Solvency II structured?

Solvency II is based on three guiding principles (pillars) which cut across market, credit, liquidity, operational and insurance risk

- The new system is intended to offer insurance organisations incentives to better measure and manage their risk situation - i.e. lower capital requirements, lower pricing etc.
- The new solvency system will include both quantitative and qualitative aspects of risk, each pillar focusing on a different regulatory component; minimum capital requirements, risk measurement and management and disclosure



Economic Balance Sheet Approach

Pillar I

Minimum Financial Requirements

- Appropriate Technical Provisions (Economic Value)
- Solvency Capital Requirement based on complete risk profile
- Appropriate Assets supporting the obligations

Solvency II will establish that the capital requirement should be based on a **total balance sheet approach** based on **economic valuation of all assets and liabilities**.

A **total balance sheet** approach means that the determination of an insurer's ability to cover its obligations with the required level certainty should be **based upon its total financial position**.

An economic valuation of assets and liabilities implies that:

- **Assets should be valued at market value** where this is both available and provides a reliable and appropriate valuation **or mark-to-model value** where this is not the case
- **Liabilities** should be value on a **best-estimate basis (economic value of liabilities)**

Economic Value of Liabilities

Pillar I

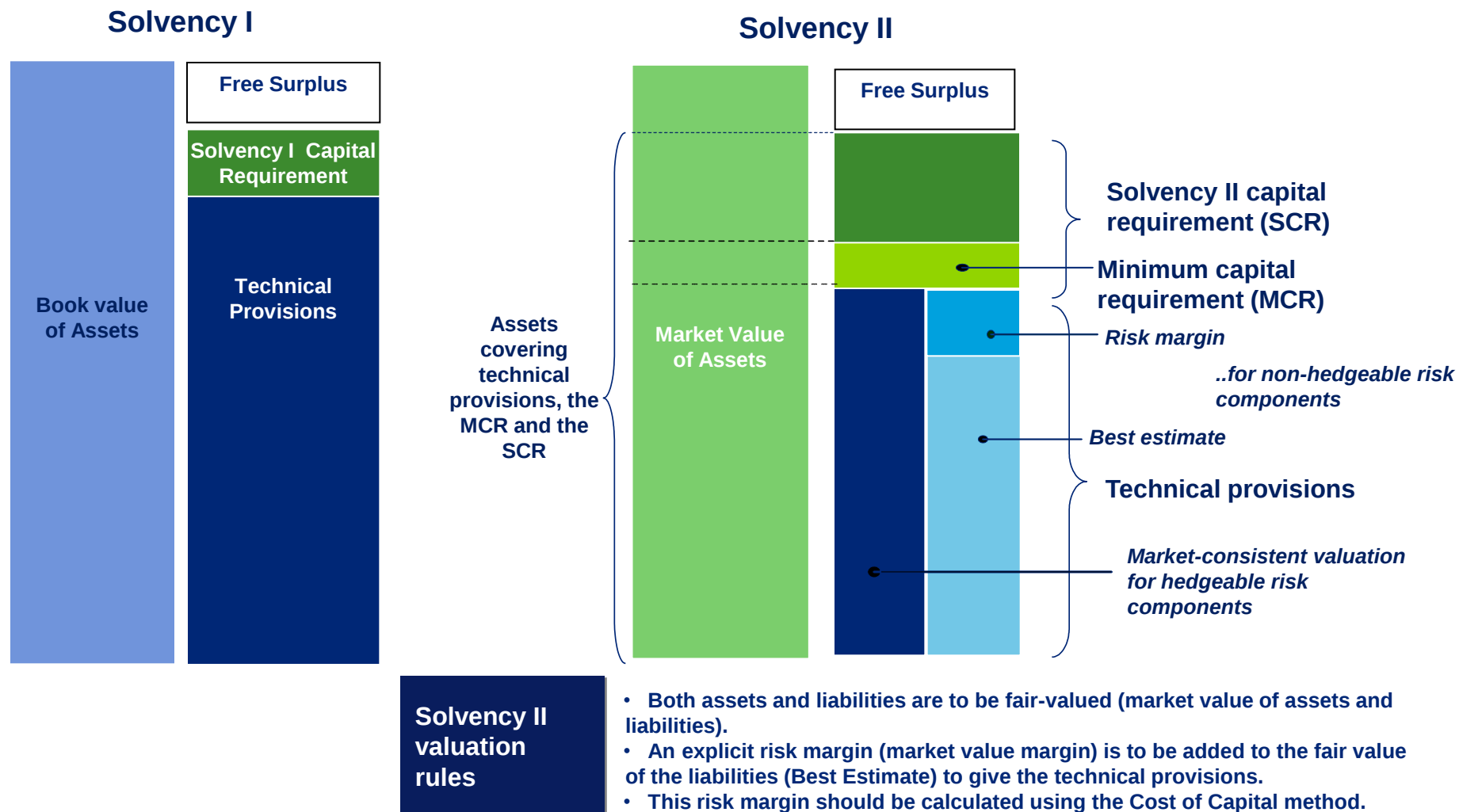
Minimum Financial Requirements

- Appropriate Technical Provisions (Economic Value)
- Solvency Capital Requirement based on complete risk profile
- Appropriate Assets supporting the obligations

How should the Economic Value of Liabilities be calculated ?

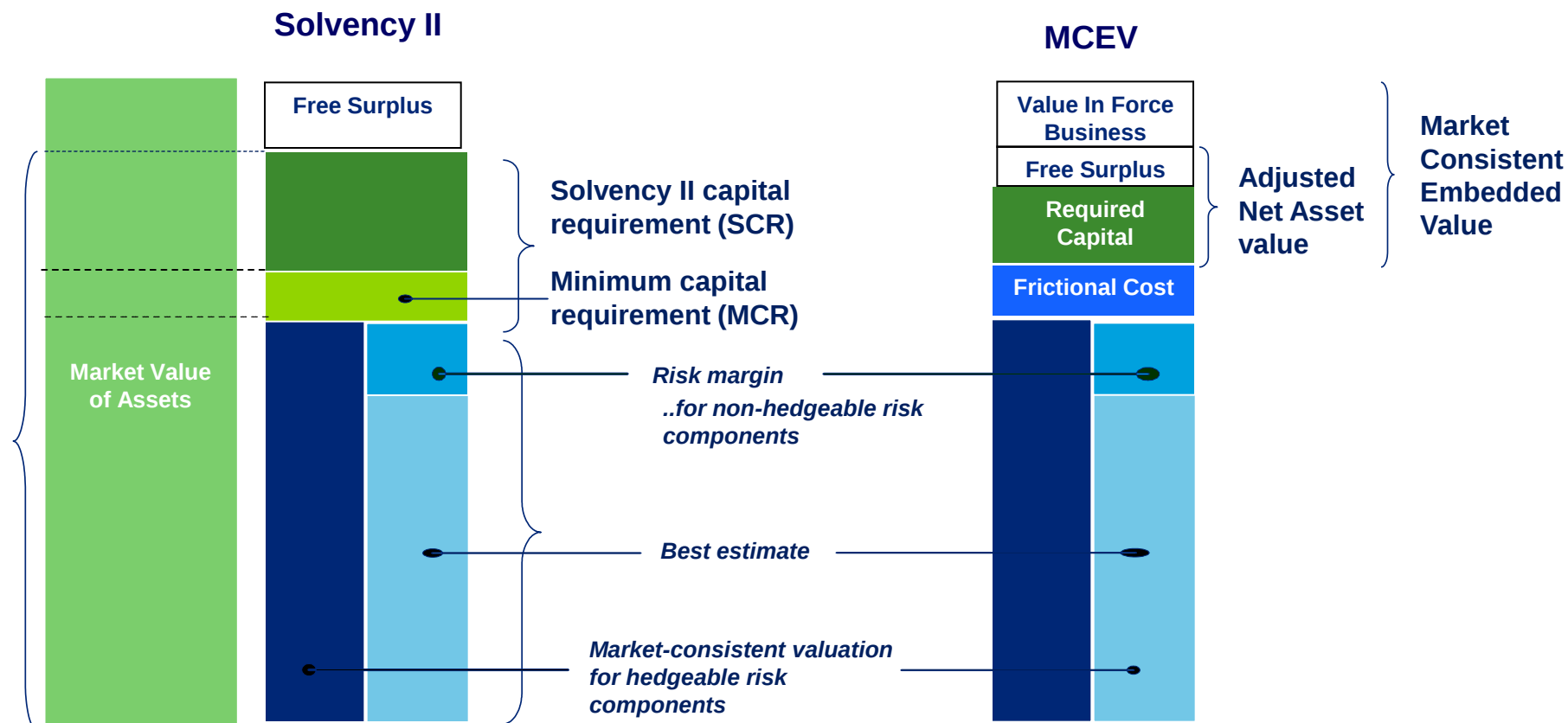
- Based on **expected present value of future liability cash flows** using best estimate assumptions i.e. not including prudence
- On top of the Best Estimate of liabilities is also added a **Risk Margin (RM)** for non-hedgeable financial and non-financial risks
- **Includes value of embedded financial obligations**, including options and guarantees
- **Appropriate discount rate** should be used (based on risk free curves)
- **Additional margin for prudence should not be included in the valuation of the Best estimate.** The prudence margin is expected to be included in the SCR (and risk margin) to provide protection against adverse outcomes

From Solvency I to Solvency II



Capitalisation on existing exercises ?

Comparison Embedded Value and Solvency 2

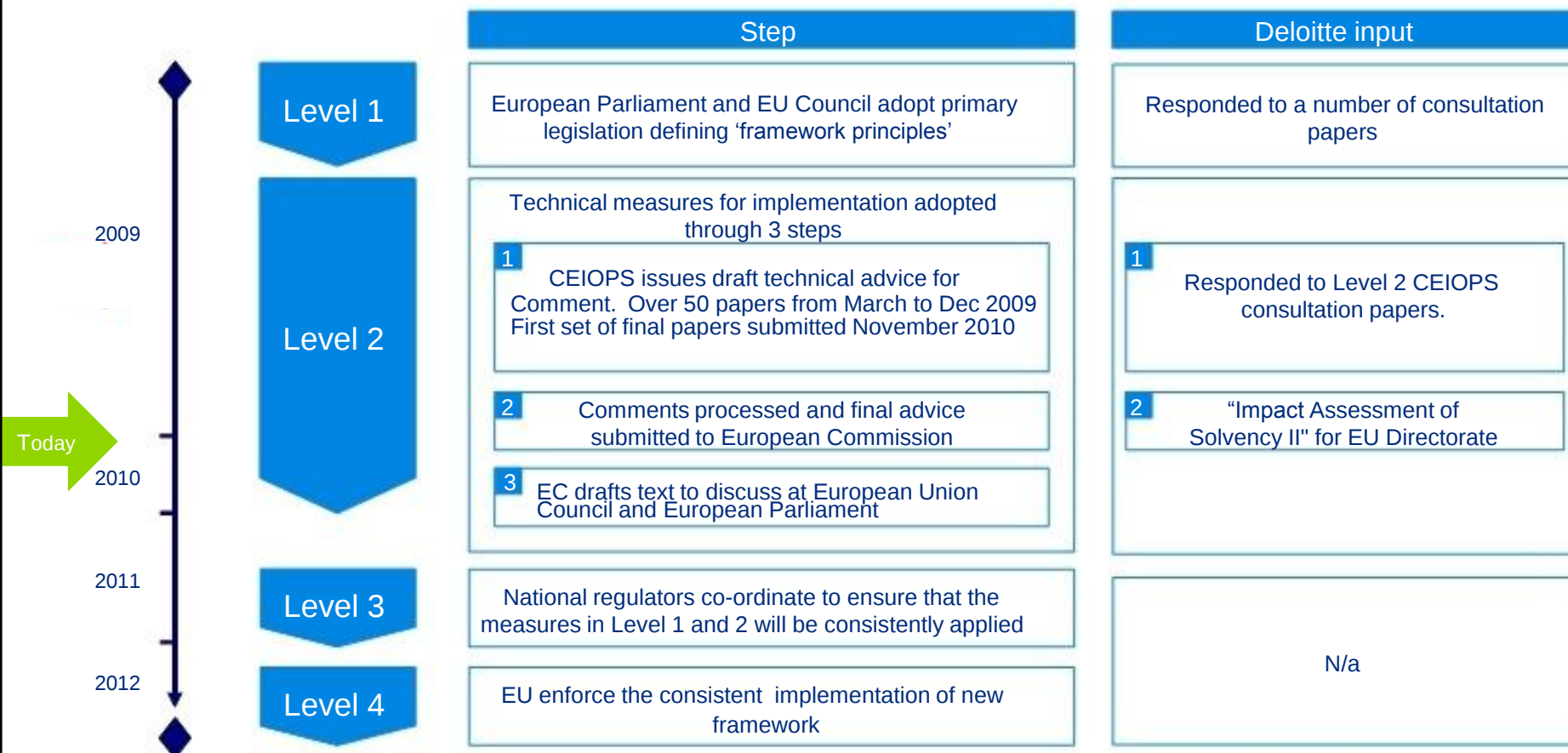


Similar
concepts,
different
angles

- Concept of market consistent valuation
- Requires similar inputs and projection tools
- Different point of view , scope and practical work-out

How is Solvency II being developed?

Consultation process



Solvency II is still a 'work in progress' from a legal and practical perspective. There is still debate with no definite answer on what compliance will look like in 2012.

Calculation of technical provisions

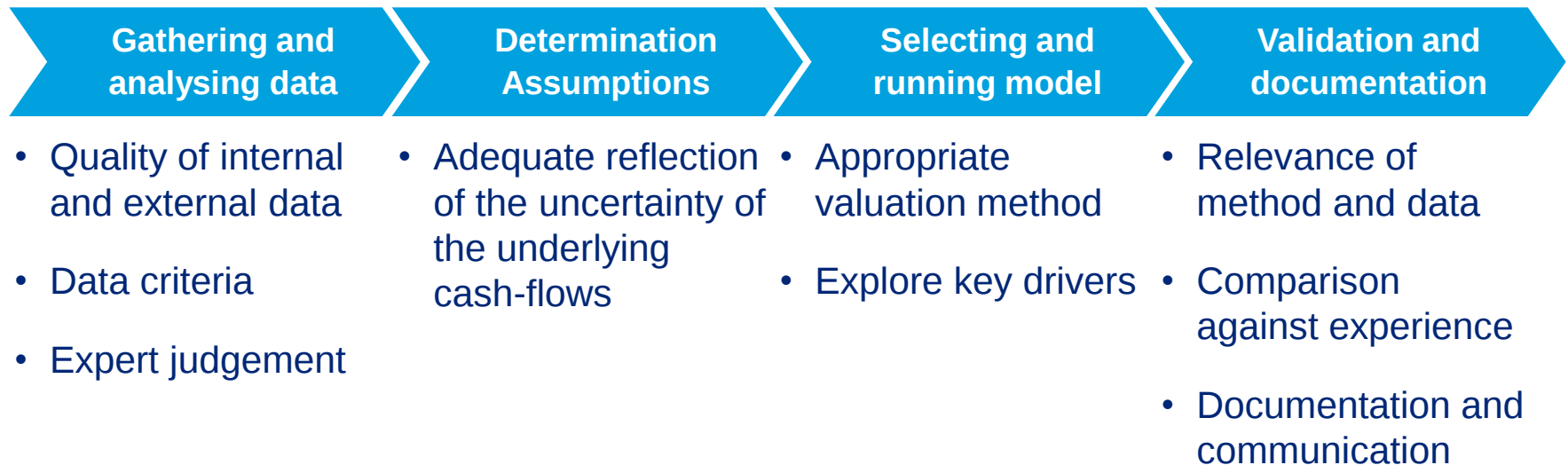
Best estimate of liabilities

Economic valuation

Definition

- **Probability weighted average** of all future cash in- and out-flows required to settle the obligations over the lifetime thereof, taking into account the time value of money, using the relevant risk free interest rate term structure (*)
- Calculated **gross** from amounts recoverable from reinsurance contracts and SPV's (which are valued on the asset side after a correction for counterparty default risk)

Calculation Process

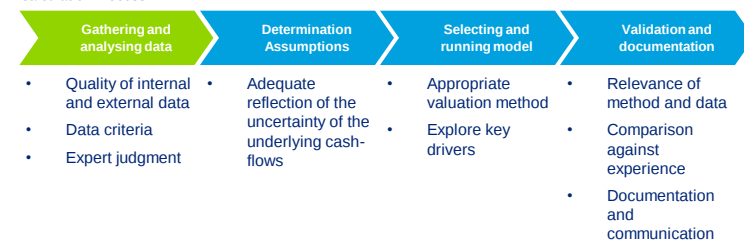


(*) Application of an illiquidity premium (IP) in QIS5: 0% for durations < 1 year and for the risk margin, 100% of the IP in case of only longevity and expense risk, no surrender risk and single premium policies (annuities), 75% of the IP for life insurance with profit participation, 50% of the IP in all other cases

Best estimate of liabilities

Data quality

Calculation Process



Data

- **All information needed** to carry out a valuation of technical provisions
- **Assumptions** are **not regarded as data**, although the use of data is an important basis to develop actuarial assumptions

Criteria to assess data quality

- **Appropriateness**: suitable for the intended purpose and relevant to the portfolio of risks being analysed?
- **Completeness**: Recognition of all of the main homogeneous risk groups? Sufficient historical information?
- **Accuracy**: free from material mistakes, errors and omissions (e.g. due to human error or IT failures)? Adequate recording, timely and consistent over time?

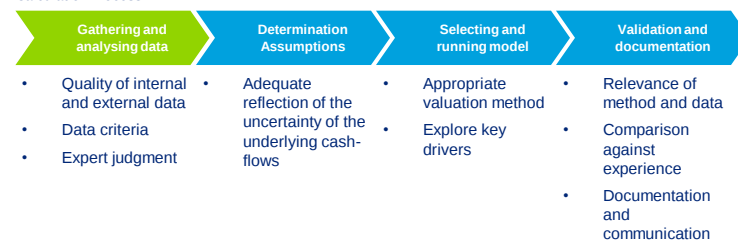
Data deficiencies

- E.g. due to changes in legal environment
- **Adjustments** could be made to the data, based on or complemented with expert opinion. Those should be justified and documented and not overwrite the raw data
- **Approximations** could be used to calculate the technical provisions
- In no case the use of approximations should be seen as an alternative to implementing appropriate systems and processes for collecting material relevant information and building historical databases

Best estimate of liabilities

Data quality requirements

Calculation Process



Requirements on internal processes

- Undertakings should have **data quality management** processes in place
- **Internal processes** on identification, collection, and processing of data
- **Auditors** should audit specific sets of data and the **actuarial function** will review the quality of data

Data Quality management: continuous process

- Detailed **definition and description** of the items to be collected
- **Assessment** of the **quality** of the data i.e. verification of the data quality criteria appropriateness, completeness and accuracy
- **Resolution of material problems** identified
- Periodically **monitored** (e.g. data quality indicators although expert judgment needs to play a key role)

Best estimate of liabilities

In- and out-flows

Gross cash in-flows

- Future premiums
- Receivables for salvage and subrogation
- No investment returns

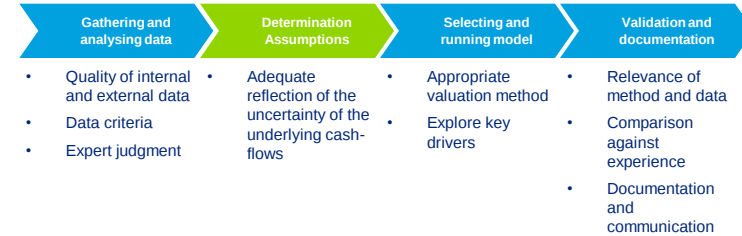
Gross cash out-flows

- Benefits
- Expenses
- Other e.g. taxation payments which are charged to the policyholder

Benefits

- Claims payments
- Maturity benefits
- Death benefits
- Disability benefits
- Surrender benefits
- Annuity payments
- Profit sharing bonuses

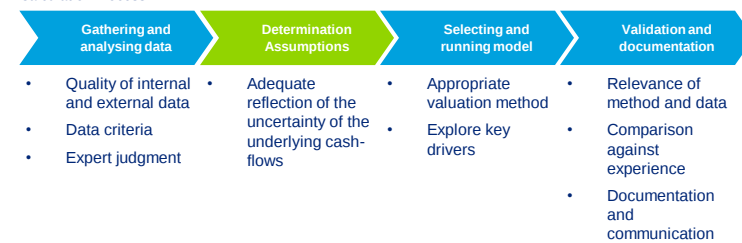
Calculation Process



Best estimate of liabilities

Expense assumptions

Calculation Process



Which expenses?

- Incurred in servicing all **obligations related to existing (re)insurance contracts** over the lifetime thereof
- Allocated expenses** directly assignable to individual claims, policies or transactions
- Unallocated (overhead) expenses**: all other expenses which the insurer incurs in settling its obligations assuming that the undertaking continues to write further new business (unless in run-off)

QIS5: Run-off remark deleted

Types of expenses

- Administrative expenses
- Investment management expenses
- Claims management expenses / handling expenses
- Acquisition expenses including commissions which are expected to be incurred in the future

Determination expense assumptions

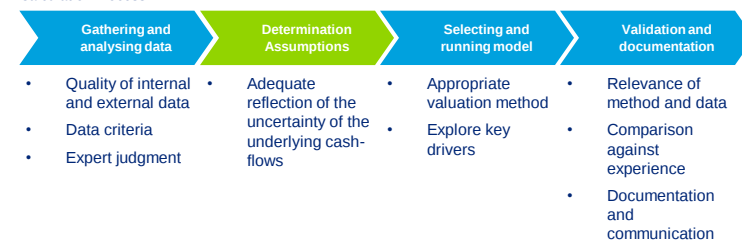
- Non-life: allocation between premium and claims provisions
- Based on own analysis and relevant market data. Allowance for inflation should be consistent with economic assumptions. Allowance for expected future cost increase
- No allowance for future cost reductions** where these have **not** been realized

QIS5: Realistic cost reductions

Best estimate of liabilities

Features of insurance contracts

Calculation Process



Cash-flow features

- The following features of existing (re)insurance contracts should be taken into account
 - Policyholders' behaviour
 - Options and guarantees
 - Management actions
 - Distribution of extra benefits

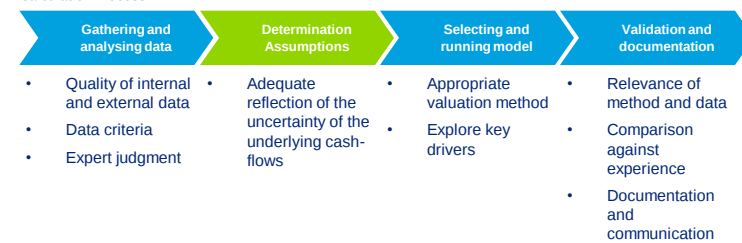
Policyholders' behaviour

- Assumptions about **contractual option exercise rates** e.g. surrender rates, paid-up rates and annuity take-up rates
- Policyholders' behaviour should **not be assumed independent** from **financial markets**, an undertaking's **treatment of customers** or publicly available information **unless proper evidence** to support the assumption can be observed (CEIOPS-DOC-33/09 and QIS5 draft TS)

Best estimate of liabilities

Types of options and guarantees

Calculation Process



Contractual options

- **Right** to change the benefits (or reduce premium) on the deliberate decision **of the (policy)holder**
- Examples: surrender value option, paid-up policy option, annuity conversion option, policy conversion option, extended coverage option

Financial guarantees

- **Possibility** to **pass losses** to the insurer or **receive additional benefits** (or reduce future premiums)
- Examples: guaranteed invested capital, guaranteed minimum investment return, profit sharing

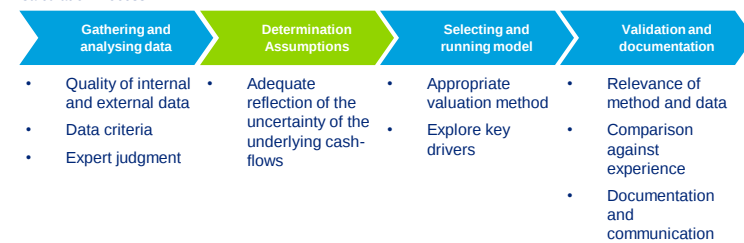
Non-financial guarantees

- Benefits driven by the **evolution of non-financial variables**
- Examples: reinstatement premiums in reinsurance, experience adjustments

Best estimate of liabilities

Valuation of options and guarantees

Calculation Process



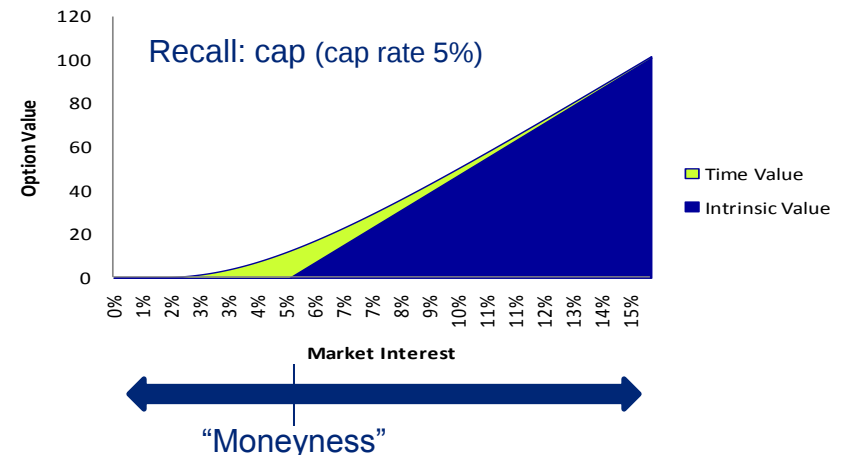
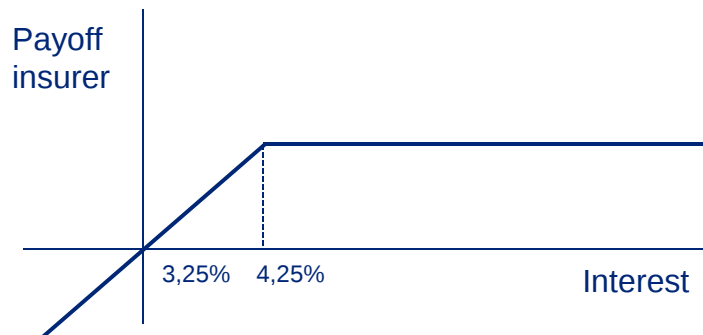
3 Methodologies

- **Stochastic approach** using for instance a market-consistent asset model (includes both closed form and stochastic simulation)
- Series of deterministic **projections with attributed probabilities**
- **Deterministic valuation** based on expected cash-flows in cases where this delivers a market-consistent valuation of the technical provision, including the cost of options and guarantees

Example: profit sharing

- Consider the following profit sharing rule:

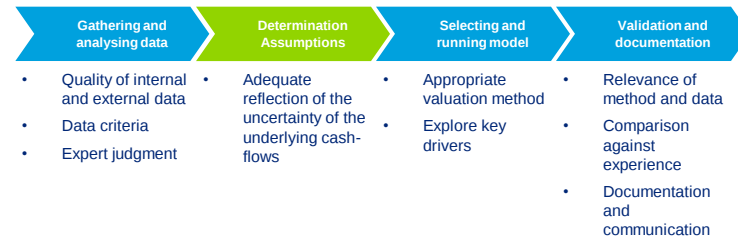
$$x\% * (y\% * \text{Return} - z\% * \text{Guaranteed Interest} - \text{Margin})$$
- For simplicity assume $x\%=y\%=z\%=100\%$ and $\text{Margin} = 1\%$, for a contract with a guaranteed interest rate of 3.25% we get the following payoff function:



Best estimate of liabilities

Market consistency

Calculation Process



Assumptions consistent with financial markets

- Risk free interest rate
- Exchange rates
- Market inflation rates (consumer price index or sector inflation)
- Economic scenario files (i.e. set of scenarios of correlated market variables)

ESG calibration

QIS5 favors market implied vol but leaves possibility open



- Although in the QIS4 exercise implied volatilities were considered as the relevant measure for financial instruments, the recent market conditions might raise some concerns. Both implied and historical volatility have their advantages and disadvantages.
- To be further assessed through level 3 guidance

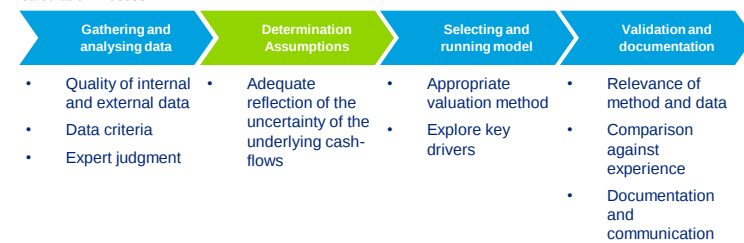
Consistency technical risk data

- Assumptions consistent with generally available data on (re)insurance technical risks are should be based on both internal and external data unless the other data source is not available
- Internal data may be either undertaking or portfolio specific data

Best estimate of liabilities

Life insurance obligations

Calculation Process



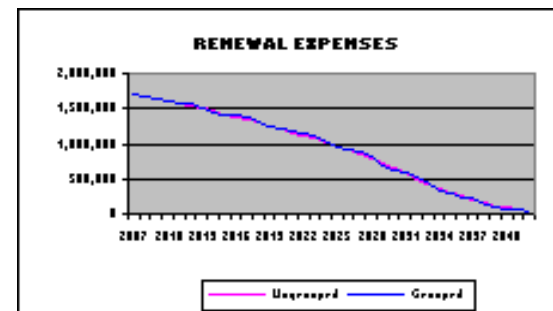
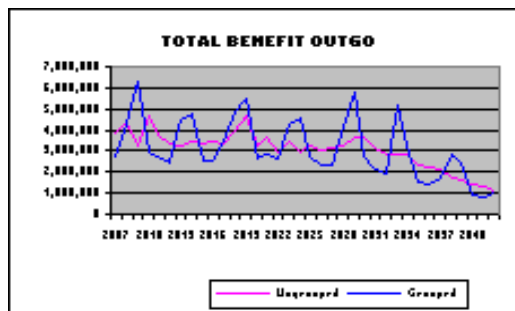
Valuation

- Cash-flow projection should be based on a **policy-by-policy approach**, but reasonable actuarial methods and approximations may be used
- Negative best estimates** are allowed and **no surrender floor** assumed

Conditions for the use of model points

- Grouping does **not misrepresent** the underlying **risk** and does not significantly misstate the **costs**
- Should not distort the valuation of **technical provisions** e.g. “moneyness” of the guarantees
- Sufficient **validation** that significant attributes of the portfolio have not been lost. Special attention to the amount of guaranteed benefits or restrictions to treatment of policyholders
- Projection on a policy-by-policy basis would be an **undue burden** compared to projection based on suitable model points

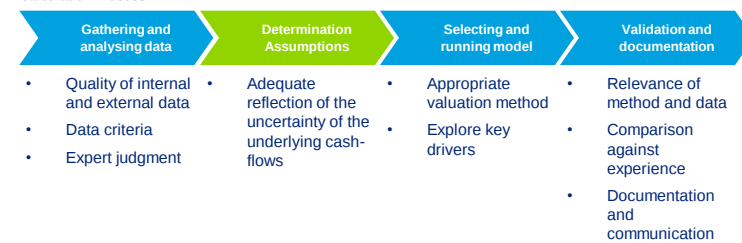
Example output



Best estimate of liabilities

Non-life insurance obligations

Calculation Process



Split of valuation of best estimate

Premium provisions

- Separate valuation of provisions for **claims outstanding** and **premium provisions**
- Related to future claim events after the valuation date and during the remaining coverage period of the policies held
- Cash-flow projections should take into account all future claim payments and claims administration expenses, cash flows arising from ongoing administration of the in-force policies and expected future premiums from existing policies
- **Negative best estimate** must **not** be set to **zero**
- **Time value** of money should be taken into account
- Future policyholder behaviour should be taken into account such as the likelihood of policy lapse during the remaining period
- The assessment of the premium provision should include an appropriate calculation of annuity obligations, if a material amount of incurred claims is expected to give rise to the payment of annuities.

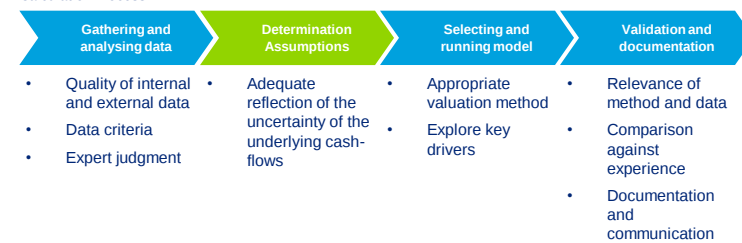
Claims outstanding

- Cash-flow projection of claims events before or at valuation date
- Whether the claims have been **reported or not**
- All future claim payments as well as **claims administration expenses**

Best estimate of liabilities

Expert judgement

Calculation Process



Scope and conditions

- May apply to **data, assumptions or model choice**
- Should **not be applied in isolation** unless there is no alternative
- **Prudent** in selection of alternative options
- Only applied by experts with relevant **knowledge, understanding and comprehension** of the subject and adequate **experience**

Documentation

- Expert judgment should be justified, explained and validated
- Documentation of the **inputs** on which the judgment is based, the **objectives and decisional criteria** used, the **limitations** and mitigating steps toward them and finally, the **validation and backtesting**

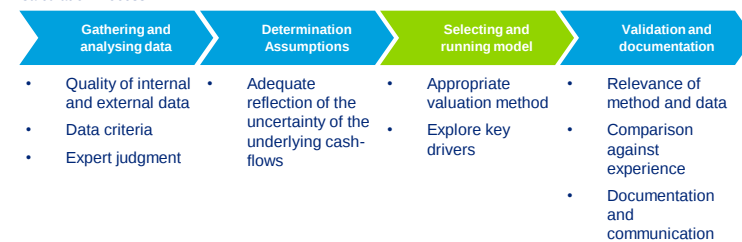
Test of expert judgment

- Back-testing with additional experience gained
- Should be compared to external information and tested with other similar internal or independent external opinions
- Should be accompanied with sensitivity analysis

Best estimate of liabilities

Model Choice

Calculation Process



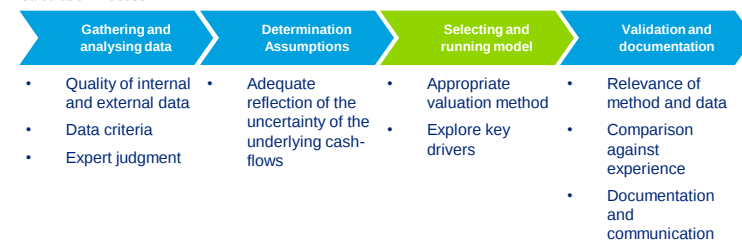
Requirements for the valuation of the best estimate

- Undertaking shall be able to provide a **sound rationale** for the **choice** of one technique over other relevant techniques
- Assessment of the **degree of judgment** required in each method and whether the undertaking is able to carry out this judgment in an objective and verifiable way
- Undertaking shall be able to **demonstrate** that the valuation technique and underlying assumptions are **realistic**
- Valuation technique should be chosen on the basis of the **nature of the liability** being valued
- Assumptions shall be **validated and reviewed**
- Valuation technique and its results is **auditable**
- Demonstration of appropriateness of grouped data
- Undertaking shall ensure that their **capabilities** (e.g. actuarial expertise, IT systems) are commensurate with the actuarial and statistical techniques used

Best estimate of liabilities

Model Choice

Calculation Process



Life insurance

- As **simulation** (monte carlo) may lead to a more appropriate and robust valuation for participating contracts or other contracts with embedded options and guarantees, simulation techniques would normally be required in such circumstances (CEIOPS-DOC-21/09 and QIS5 draft TS))

Non-life insurance

- For non-life insurance and life insurance not covered above, **deterministic** (e.g. chain ladder, Bornhuetter Ferguson, average cost per claims, outliers via case-by-case reserving, stress and scenario testing) and **analytical** techniques (e.g. Black & Scholes, Mack method) might be more appropriate (CEIOPS-DOC-21/09)

- Reason:
 - Deterministic results are often used to calibrate simulation methods
 - Both stochastic and deterministic methods are based on historical data so the resulting mean will be the trend in past data
 - Stochastic error
 - Non-life stochastic reserving methods are not mature and have a lot of limitations
- Regardless of the technique, **judgement** is necessary to make additions or adjustments to allow for circumstances not included in the history

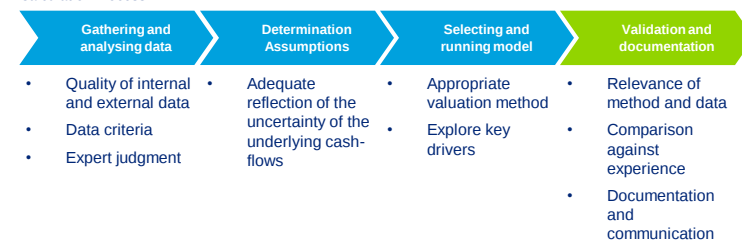
This has been rewritten in QIS5 TS but the same tendency remains →

Importance of judgement

Best estimate of liabilities

Validation

Calculation Process



Which method?

- Both **quantitative** and **qualitative** methods
- **Back-testing** explicitly mentioned in the directive (Art 83)

Not relevant in the context of QIS5

Application of validation methods

- At least **once a year**
- Changes in external environment or assumptions underlying the probability distribution might necessitate additional **ad hoc checks**
- **Sufficient granularity**: For life insurance obligations the validation should at least be made at the level of the product types, for all other (re)insurance obligations the validation should be made at least at the level of homogeneous risk groups. Per type of provision.
- Validation of **each assumption separately**
- Appropriate **documentation** and overseen by **expert**

Examples of methods

- CEIOPS-DOC-33/09 provides a (non-exhaustive) list of examples of validation methods (retaken in QIS5 draft TS)
- e.g. Martingale test for ESG, adequacy of the number of scenarios, percentiles and analysis of residuals, ratios analysis, stress and scenario testing, output testing (parallel testing, cash-flow checks, analysis of movement), etc.

Valuation of assets and other liabilities

Valuation of assets and other liabilities

Valuation approach

Proposed requirements under QIS 5

IFRS FAIR VALUE VALUATION PRINCIPLES TO BE APPLIED
(IFRS Balance Sheet is NOT equal to Solvency II Balance Sheet)

- QIS 5 requires an '**economic, market consistent**' valuation approach.
- In order to measure the economic value of assets and liabilities a **mark to market (default approach)** is required. **Mark to model** is proposed as an alternative valuation method if reliable market values are not available.
 - Assets shall be valued at the amount for which they could be exchanged between **knowledgeable willing parties in an arm's length transaction**.
 - Liabilities shall be valued at the amount for which they could be transferred, or settled, **between knowledgeable willing parties in an arm's length transaction**. **No subsequent adjustment to take account of the change in own credit standing of the (re)insurance undertaking !!!**
- Application of **significance / materiality** depending on professional judgment. **External independent value verification** in case of complex situations.

Valuation of assets and other liabilities

More details...

Goodwill

- Economic value of goodwill for solvency purposes is nil.
- Payment not being individually identified and separately recognised.

Intangible assets

- The intangibles must be separable and there shall be evidence of exchange transactions for the same or similar assets, indicating that it is **saleable in the market place**.
- **Probably no active market** (items are homogeneous / willing buyers and sellers at any time / prices are available to the public) exists for the recorded intangible assets.
- Possible practical approach : if not material, intangible could be valued at nil

Property, Plant & Equipment

- IFRS revaluation model.
- The fair value of land and buildings is usually determined from market-based evidence by appraisal that is normally undertaken by professional qualified fair value experts.
- The fair value of plant and equipment is usually their market value determined by appraisal.
- Possible practical approach re. plant & equipment : to evaluate materiality difference fair value and cost price => to report at cost

Valuation of assets and other liabilities

More details...

Inventories

- Inventories shall be valued at the net realisable value.

Finance leases

- Fair value

Investment property

- Fair value hierarchy (also applicable for P,P & E):
 - Active market price of the property
 - Current prices in an active market for properties of different nature, condition or location adjusted to reflect those differences
 - Recent prices of similar properties on less active markets
 - Discounted cash flow projections on reliable estimates of future current cash flows
 - No future expenditure and related benefits to be included

Valuation of assets and other liabilities

More details...

Subsidiaries, associates and joint ventures

- Holdings in related undertakings shall be valued using **quoted market prices** in active markets (default).
- In the case of a subsidiary undertaking where the requirements set for a market consistent valuation are not satisfied an **adjusted equity method** shall be applied (alternative). The adjusted equity method = the participating undertakings share of the excess of assets over liabilities of the related undertaking by applying the directive.
- All other undertakings (not subsidiaries) shall wherever possible use an adjusted equity method. As a last option mark to model.

Financial assets under IAS 39

- Instruments shall be measured at **fair value** for solvency purposes even when they are measured at cost in an IFRS balance sheet.

Non-current assets held for sale or discontinued

- Fair value less costs to sell.

Valuation of assets and other liabilities

More details...

Deferred tax assets & liabilities

- IFRS - probable that taxable profit will be available. No automatic recognition.
- Ability to demonstrate to the supervisory authority that future taxable profits are probable and that the realisation of that deferred tax asset is probable within a reasonable timeframe (no definition).
- (1) Carry forward of unused tax credits; (2) carry forward of unused tax losses; (3) Difference between the values ascribed to assets and liabilities in accordance with Directive and the values for tax purposes.
- DTA/DTL to be calculated on difference between SII values and the tax bases of the assets and liabilities

Current tax assets & liabilities

- Expected amount to be recovered = nominal outstanding amount.

Cash and cash equivalents

- Accounting value (not less than the amount payable on demand).

Valuation of assets and other liabilities

More details...

Provisions

- Provisions shall be valued at the amount recognised is the best estimate of the expenditure required to settle the present obligation at the balance sheet date => Equal to IFRS accounting value.

Financial liabilities

- Fair value – adjustments for changes in the risk free rate have to be accounted for subsequently (**not for changes in own credit risk standing**).
- Initial credit spread at issue date of the liability to be taken into account.

Contingent liabilities

- To be included in the economic Solvency II balance sheet (not under IFRS !!!).
- Valuation = the probability-weighted average of future cash flows required to settle the contingent liability over their lifetime of that contingent liability, discounted at the relevant risk-free interest rate term structure. **Only material contingent liabilities should be recognised !**

Employee & termination benefits

- Recommendation of the application of the applicable IFRS on post-employment benefits (but elimination of corridor!).

Classification of Own Funds

Classification of own funds into tiers

Overview

Pillar I

Minimum Financial Requirements

- Appropriate Technical Provisions (Economic Value)
- Solvency Capital Requirement based on complete risk profile
- **Appropriate Assets supporting the obligations**

Characteristics for classification:

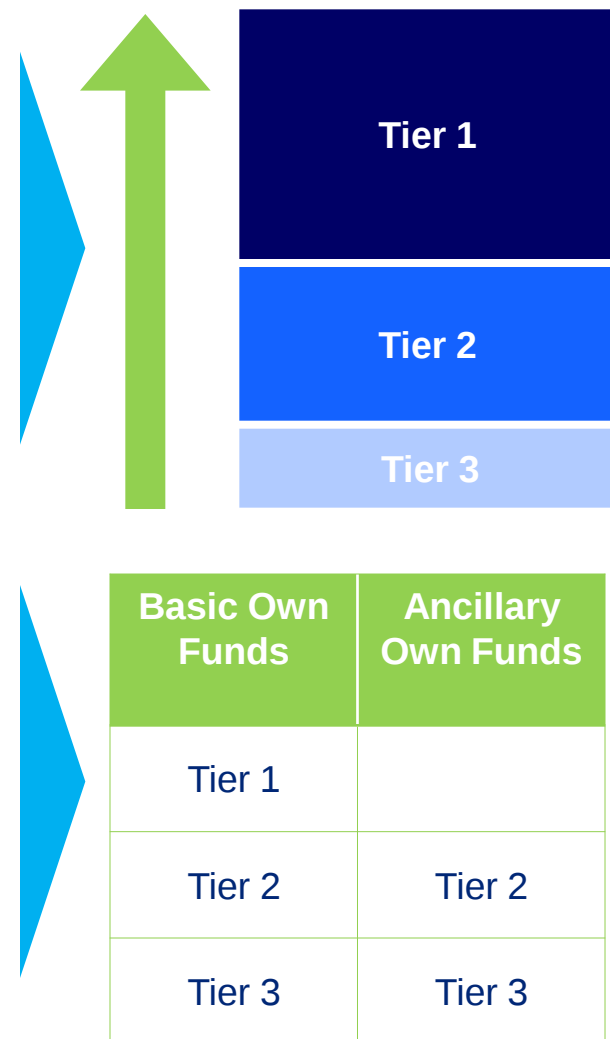
- Permanent availability
- Subordination
- Sufficient duration
- Absence of requirements or incentives to redeem the nominal sum
- Absence of mandatory servicing costs
- Absence of encumbrances

Basic and Ancillary Own funds

Basic own funds are:

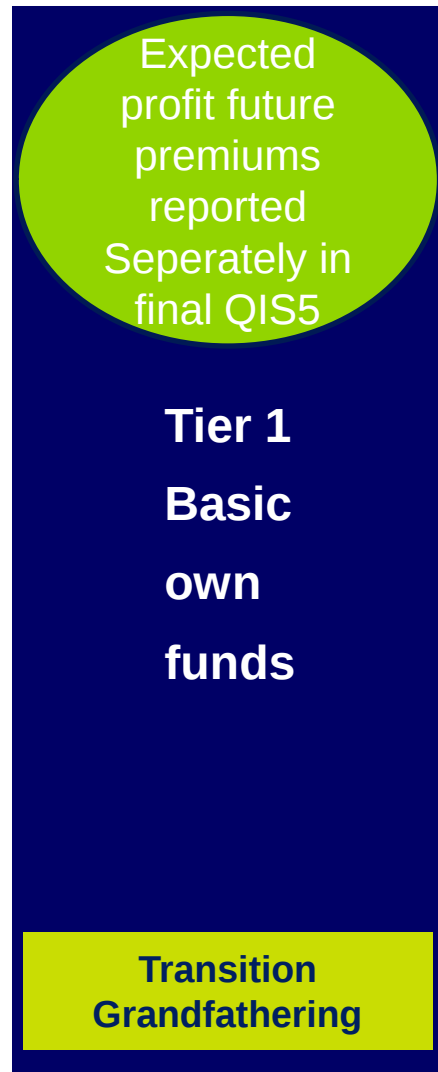
- Excess of assets over liabilities, reduced by the amount of own shares directly held by the insurance or reinsurance undertaking
- Subordinated liabilities

Ancillary own funds are subject to supervisory approval (the amount or method to determine the amount)



Classification of own funds into tiers

Tier 1



- Paid up and called up ordinary share capital **less own shares** held by the undertaking (also the initial fund, members' contributions or the equivalent basic own-funds item)
- Share premium account
- Reserves
 - Retained earnings and other reserves, including profit for the year and *net of foreseeable dividends*. Declaration or approval by the directors (timing ? / possibility to revoke ?)
 - Reconciliation reserve (being an amount representing the total excess of assets and liabilities reduced by items included in Tier 1, 2, and 3)
- Surplus funds : accumulated profits which have not been made available for distribution to policyholders & beneficiaries
- Expected profit included in future premium
- Deferred tax assets **Eliminated in final TS => transferred included in Tier 3** within the following
- Other paid in capital instruments
 - Preference shares
 - Subordinated liabilities (also subordinated mutual member accounts)
- **To be reduced by restricted reserves, T1 participations in financial / credit institutions and ring fenced funds**

Classification of own funds into tiers

Tier 2



- Called up ordinary share capital
- Other called up capital instruments that absorb losses first or rank pari passu, in going concern, with capital instruments that absorb losses first
- Other paid-in capital instruments including preference shares, subordinated mutual members accounts and subordinated liabilities, that do not have the features required for Tier 1 but that meet the Tier 2 criteria

- Unpaid share capital or initial fund that has not been called up
- Letters of credit or guarantees
- Any other legally binding commitments received by insurance and reinsurance undertakings

Classification of own funds into tiers

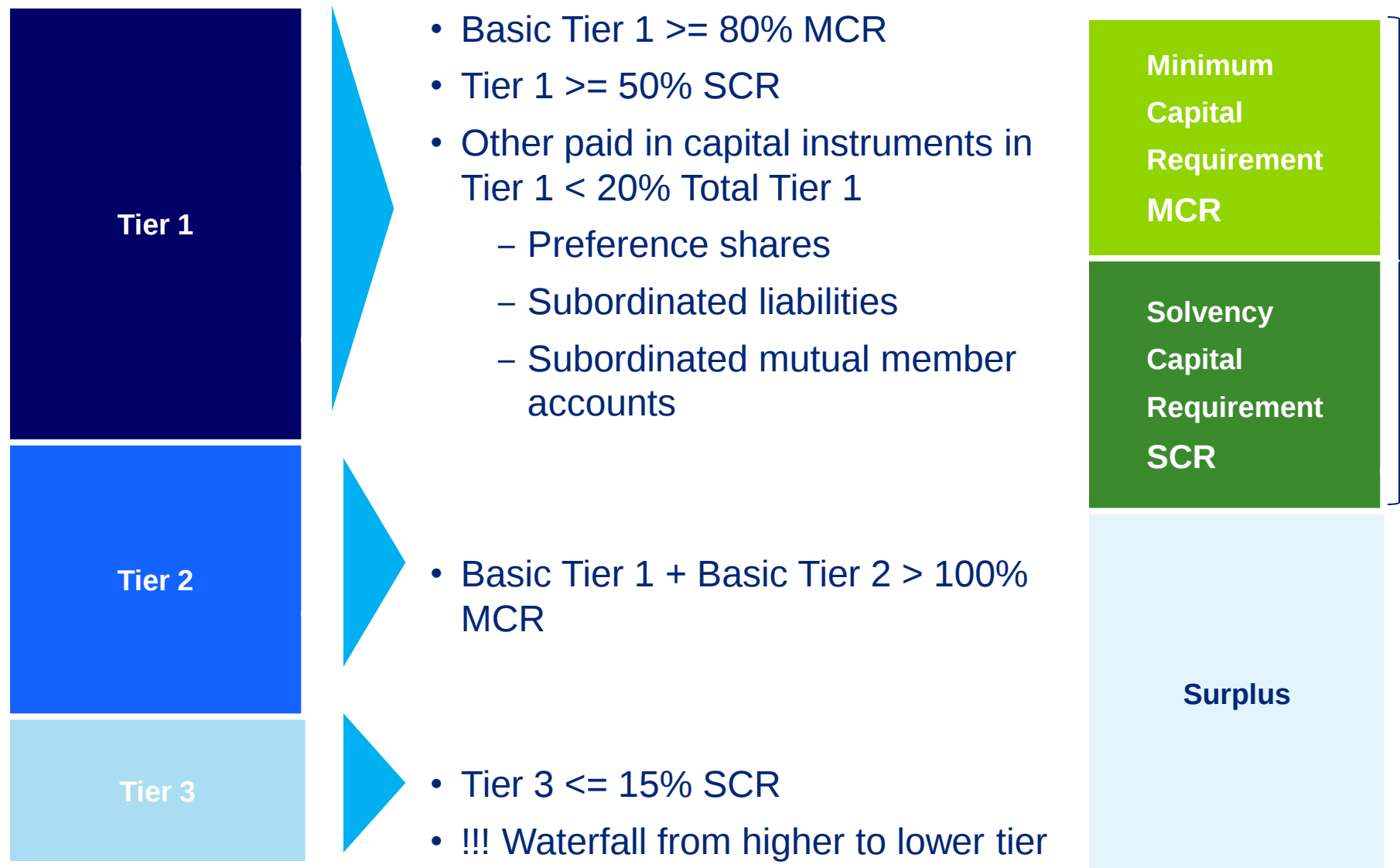
Tier 3

Tier 3
Basic
Own
Funds

Tier 3
Ancillary
Own
Funds

- **All Net deferred tax assets are included in Tier 3 (final specs)**
- Other capital instruments including preference shares, subordinated mutual members accounts and subordinated liabilities that do not have the features required for Tier 1 and Tier 2 but that meet the Tier 3 criteria
- Existing arrangements currently eligible for the available solvency margin but which would constitute ancillary own funds under Solvency II and which would not be eligible as Tier 2 ancillary own funds

Eligibility and limits applicable to Tiers 1, 2 and 3





Hrvatski ured za osiguranje

Kroatisches Versicherungsbüro · Croatian Insurance Bureau
Bureau Croate d'assurance · Ufficio Croato d'assicurazioni

Drugi dio - Izračun kapitalnog zahtjeva glede solventnosti

Solvency Capital Requirement - SCR

Jakša Krišto

Jiří Fialka

Izračun SCR

Tehničke specifikacije QIS 5

Vrednovanje imovine i obveza	Vlastita sredstva	Solventni kapital SCR	Minimalno potrebni kapital MCR	Grupe
------------------------------	-------------------	-----------------------	--------------------------------	-------

- Standardna formula izračuna SCR-a
- Individualni stres test primijenjen na svaki rizik
 - Kalibracija 99,5% VaR u vremenskom horizontu od jedne godine
 - Modularni i submodularni pristup, svaki se rizik promatra zasebno
- Rezultati individualnih stres testova su agregirani koristeći korelacijske matrice međuovisnosti rizika kako bi se postigli diversifikacijski učinci

SCR

- Solventni kapital ili kapitalni zahtjev glede solventnosti - SCR - članci 100 do 127, Direktive o Solvency II (2009/138/EZ)
- S obzirom na prirodu, opseg i složenost izloženosti riziku, društva biraju jedan od načina izračuna SCR-a:
 - Puni interni model
 - Standardnu formulu i djelomični interni model
 - Standardnu formulu sa specifičnim parametrima društva
 - Standardnu formulu
 - Pojednostavljenje/simplifikaciju

SCR

- Društva moraju imati prihvatljiva vlastita sredstva koja pokrivaju posljednji objavljeni SCR.
- SCR kalibrira se tako da se osigura da su u obzir uzeti **svi mjerljivi rizici** kojima je izloženo društvo.
- Pokriva postojeće poslove kao i nove poslove čije se sklapanje očekuje tijekom sljedećih 12 mjeseci.
- Jednak je rizičnosti vrijednosti (Value-at-Risk) osnovnih vlastitih sredstava društva sa stupnjem pouzdanosti od 99,5% tijekom jednogodišnjeg razdoblja.
- Društva izračunavaju SCR najmanje jedanput godišnje, a rezultat tog izračuna javljaju nadzornim vlastima.

SCR - princip proporcionalnosti i pojednostavljenja

- Bitno za društva u Republici Hrvatskoj!
- Sloboda odabira načina izračuna SCR-a
- Društva mogu upotrijebiti pojednostavljeni izračun za specifični podmodul ili modul rizika kad to opravdavaju priroda, opseg i složenost rizika s kojima se suočavaju i kad bi bilo neproporcionalno zahtijevati od svih društava da primjenjuju standardni izračun (čl. 109).
- Kako bi se koristila pojednostavljenja, društvo mora:
 - Procijeniti prirodu, opseg i složenost rizika
 - Procjena greške odstupanje modela

Izračun SCR-a po standardnoj formuli

$$\text{SCR} = \text{BSCR} - \text{Adj} + \text{SCR}_{\text{OP}}$$

BSCR

Osnovni kapitalni zahtjev glede solventnosti sadržava agregirane module rizika :

- Životno o.
- Neživotno o.
- Zdravstvenog o.
- Tržišni
- Neispunjenja obveze druge strane
- Nematerijalne imovine

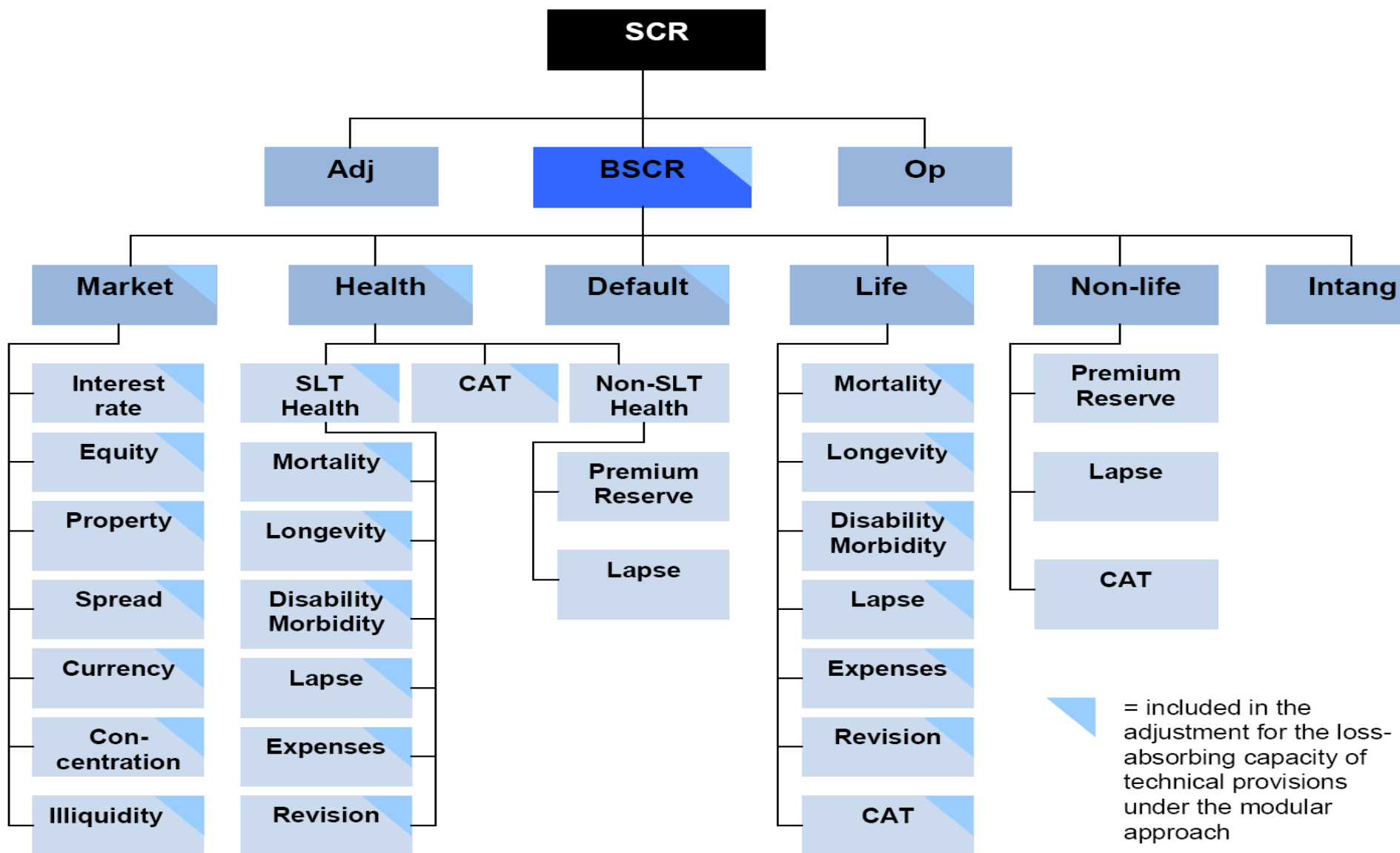
Adj

Prilagodbe za sposobnost tehničkih pričuva i odgođenih poreza da apsorbiraju gubitke

SCR_{OP}

Kapitalni zahtjev za operativni rizik

Izračun SCR-a po standardnoj formuli



Izvor: EK, *QIS5 Technical Specifications*, Brussels, 5. srpanj 2010., str. 90.

Izračun BSCR

- BSCR obuhvaća pojedine module šest ključnih kategorija rizika, koji se agregiraju u skladu koeficijentima korelacije za agregiranje modula rizika i zajedno čine ukupni kapitalni zahtjev za BSCR.
- Svaki od modula rizika BSCR-a, kalibrira se upotrebom mjere rizične vrijednosti sa stupnjem pouzdanosti od 99,5% tijekom jednogodišnjeg razdoblja. Po potrebi, učinci diversifikacije uzimaju se u obzir pri oblikovanju svakog od modula rizika.
- Kapitalni zahtjev za pojedini modul rizika izračunava se izračunom zasebnih podmodula rizika i njihovom agregacijom preko koeficijenata korelacije.

Izračun BSCR

$$BSCR = \sqrt{\sum_{ij} Corr_{ij} \times SCR_i \times SCR_j} + SCR_{intangibles}$$

BSCR	Osnovni kapitalni zahtjev glede solventnosti
$Corr_{ij}$	označava stavku navedenu u retku i i stupcu j korelacijske matrice SCR_i modul rizika i , a SCR_j modul rizika j , i gdje "i,j" znači da su u iznos uključene sve moguće kombinacije i i j . Pri izračunu, SCR_i i SCR_j se zamjenjuju rizicima
$SCR_{neživotno}$	je modul preuzetog rizika neživotnog osiguranja
$SCR_{životno}$	je modul preuzetog rizika životnog osiguranja
$SCR_{zdravstveno}$	je modul preuzetog rizika zdravstvenog osiguranja
$SCR_{tržišni}$	je modul tržišnog rizika
$SCR_{neispunjenje obveze}$	je modul rizika neispunjenja obveza druge ugovorne strane
$SCR_{nematerijalna imovina}$	je modul rizika nematerijane imovine

Korelacijska matrica

i \ j	Tržište	Neispunjenje obveze	Životno	Zdravstveno	Neživotno
Tržište	1				
Neispunjenje obveze	0,25	1			
Životno	0,25	0,25	1		
Zdravstveno	0,25	0,25	0,25	1	
Neživotno	0,25	0,5	0	0	1

Izvor: EK, *QIS5 Technical Specifications*, Brussels, 5. srpanj 2010., str. 96.

Modul prilagodbe za sposobnost tehničkih pričuva i odgođenih poreza da apsorbiraju gubitke - Adj

- Odražava potencijalnu naknadu neočekivanih gubitaka kroz istodobno
 - smanjenje tehničkih pričuva ili
 - odgođenih poreza ili
 - kombinaciju oba smanjenja.
- Podrazumijeva izračun bruto i neto SCR-a
- U okviru QIS 5 testirane su dvije metode izračuna *Adj* :
 - Metoda ekvivalentnog scenarija
 - Modularan pristup.

Modul operativnog rizika

- Uzima u obzir poslove osiguranja i reosiguranja (zarađene premije i tehničke pričuve).
- Kapitalni zahtjev za operativni rizik ne premašuje 30% osnovnog kapitalnog zahtjeva glede solventnosti koji se odnosi na te poslove osiguranja i poslove reosiguranja.
- Ugovori o životnom osiguranju kod kojih rizik ulaganja snosi osiguranik, izračun kapitalnog zahtjeva za operativni rizik uzima u obzir iznos godišnjih troškova koji su nastali u svezi s tim obvezama osiguranja.

$$SCR_{op} = \text{Min} (30\%BSCR, Op) + 25\% Exp_{UL}$$

Modul rizika nematerijalne imovine

- Novi rizik u okviru QIS 5
- Uzima u obzir fair vrijednost nematerijalne imovine u bilanci

SCR_{intangible} =

80% x intangibles

Modul tržišnog rizika

- Odražava rizik koji proizlazi iz razine ili volatilnosti tržišnih cijena financijskih instrumenata koje utječu na vrijednost imovine i obveza društva.
- Sadržava podmodule za sljedeće rizike:
 - kamatni rizik
 - rizik vlasničkih vrijednosnih papira
 - rizik promjene cijena nekretnina
 - rizik prinosa
 - valutni rizik
 - koncentracije tržišnog rizika
 - rizik nelikvidnosti
- **Odvojenost izračuna** za sudjelujuće udjele u financijskim i kreditnim institucijama, društvima za osiguranje i društvima za reosiguranje, te za ostalu imovinu i obveze.

Izračun kapitalnog zahtjeva za tržišni rizik

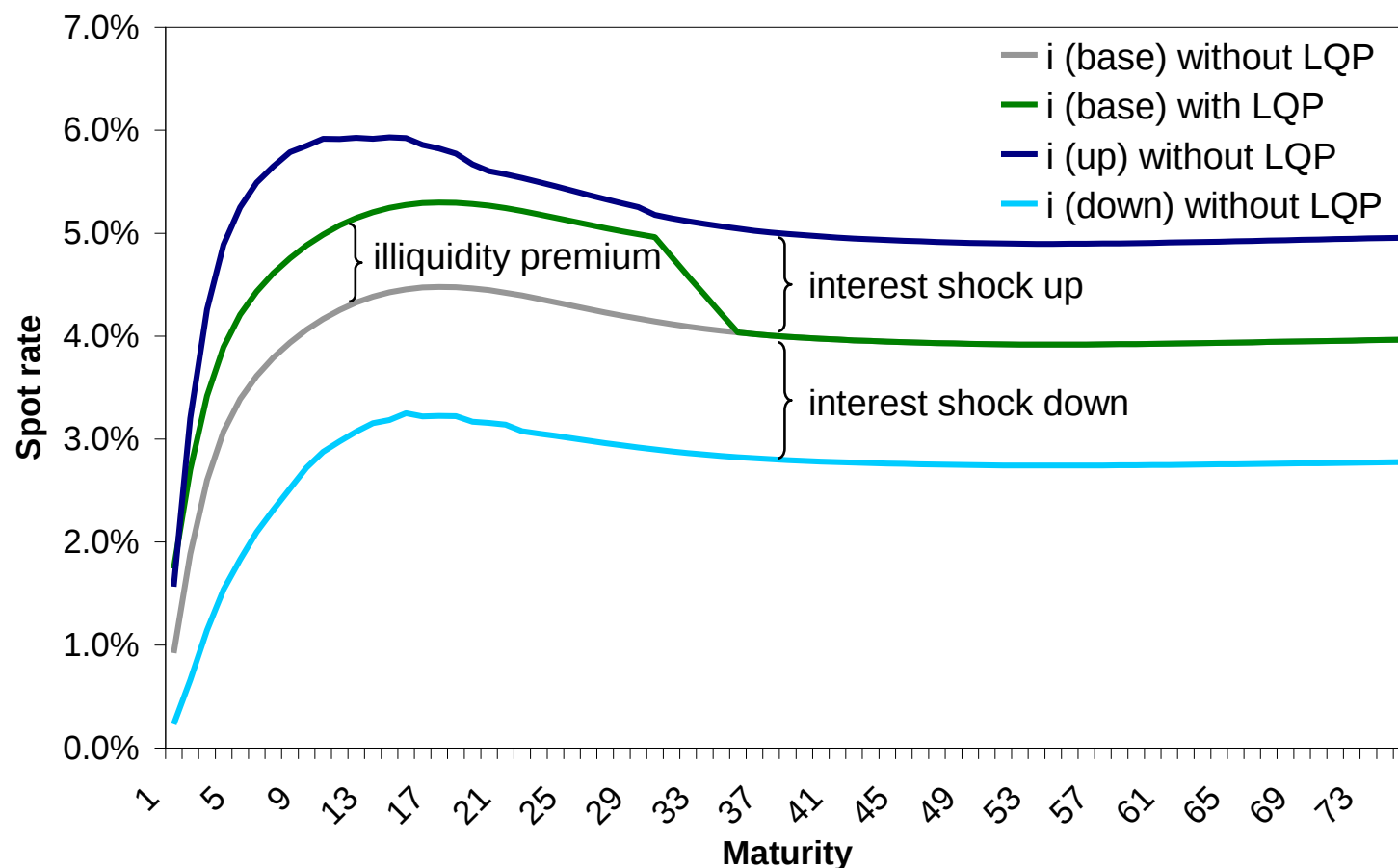
$$SCR_{tržište} = \sqrt{\sum_{i,j} Corr_{i,j} \times SCR_i \times SCR_j}$$

- gdje je SCR_i podmodul i a SCR_j podmodul j, i gdje "i,j" znači da su u iznos uključene sve moguće kombinacije i i j. Pri izračunu, SCR_i i SCR_j podmodulom pojedinog rizika

$Corr_{i,j}$	označava stavku navedenu u retku i i stupcu j sljedeće korelacijske matrice
$SCR T_{\text{kamatna stopa}}$	podmodul rizika kamatne stope
$SCR T_{\text{vlasnički vp}}$	podmodul rizika vlasničkih vrijednosnih papira
$SCR T_{\text{nekretnina}}$	podmodul rizika promjene cijene nekretnina
$SCR T_{\text{prinos}}$	podmodul rizika prinosa
$SCR T_{\text{koncentracija}}$	podmodul koncentracije tržišnog rizika
$SCR T_{\text{valuta}}$	podmodul valutnog rizika
$SCR T_{\text{nelikvidnost}}$	podmodul rizika nelikvidnosti (premije nelikvidnosti)

Izračun kapitalnog zahtjeva za tržišni rizik

- Dva scenarija za kamatni rizik, $SCR T_{\text{kamatna stopa RAST}}$ i $SCR T_{\text{kamatna stopa PAD}}$
- Time i dvije korelacijske tablice za tržišni rizik



Modul rizika druge ugovorne strane

- Odražava moguće gubitke zbog neočekivanog neispunjenja obveza ili pogoršanja kreditnog položaja drugih ugovornih strana i dužnika društava tijekom sljedećih 12 mjeseci.
- Obuhvaća:
 - ugovore za smanjenje rizika, kao što su aranžmani reosiguranja, sekuritizacije i izvedenica,
 - potraživanja od posrednika,
 - druge kreditne izloženosti koje nisu obuhvaćene podmodulom rizika prinosa.

Modul rizika druge ugovorne strane - vrste izloženosti

Izloženost tipa 1	Izloženost tipa 2
Ugovori o reosiguranju Sekuritizacija i izvedenice Ostali ogovori o prebacivanju rizika Gotovina kod banaka Sredstva kod reosiguratelja Kapital, inicijalna sredstava, akreditivi koja si su obveza društva, a nisu plaćeni Garancije i akreditivi	Potraživanja od posrednika Zajmovi osiguranicima, uključujući hipotekarne kredite Sredstava kod reosiguratelja Kapital, inicijalna sredstva, akreditivi, koja su neplaćena društvu

$$SCR_{def} = \sqrt{SCR_{def,1}^2 + 1.5 \cdot SCR_{def,1} \cdot SCR_{def,2} + SCR_{def,2}^2},$$

Solvency Capital Requirements

Solvency Capital Requirements

Risk Measures

Pillar I

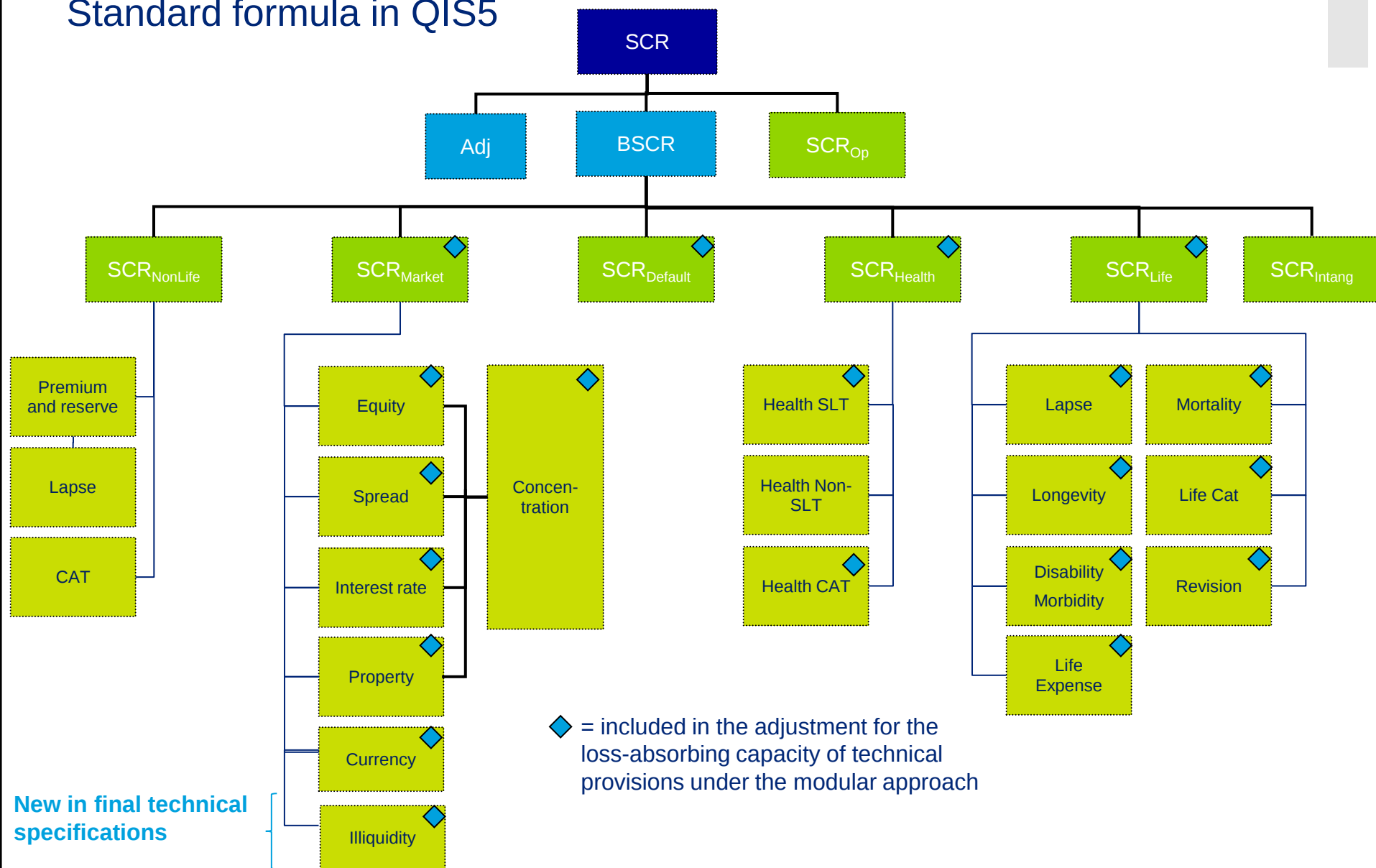
Minimum Financial Requirements

- Appropriate Technical Provisions (Economic Value)
- **Solvency Capital Requirement based on complete risk profile**
- Appropriate Assets supporting the obligations

- Basic principles for quantification of Solvency Capital Requirement :
 - **Economic value based approach**
 - Capital requirement over a **1-year time horizon**, however includes impact on all future liabilities and therefore represents “fair value”
 - Capital calculated to a **confidence level of 99.5%** (i.e. 1 in 200 year event)
 - Accounts for **diversification effects across risks and risk mitigation**
 - **VaR** is the chosen measure
 - Consistency is necessary (horizon/confidence interval/risk measure)

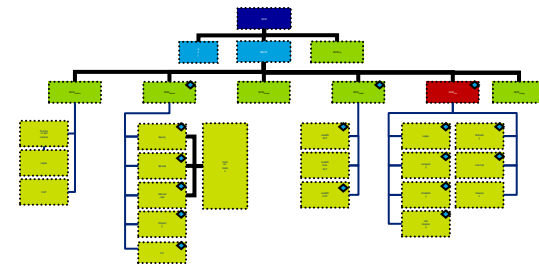
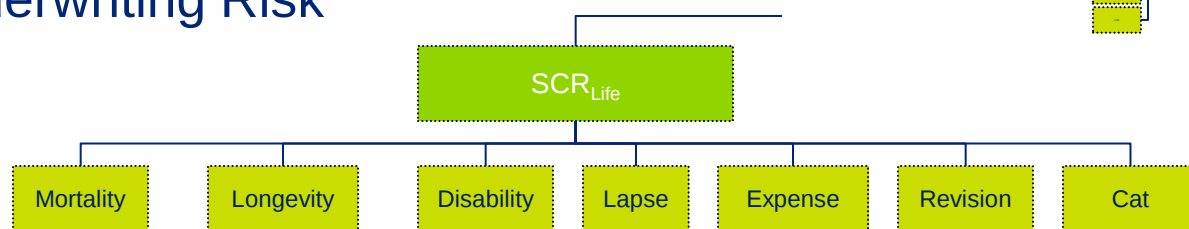
Solvency Capital Requirements

Standard formula in QIS5



Solvency Capital Requirement

Life Underwriting Risk



SCR for life underwriting risk

- The capital charge for each life underwriting risk is first calculated and then a correlation matrix is used to determine the overall SCR_{Life}

where

$Life_{UL/C}$ = Capital charge for life risk

$CorrLife_{r,c}$ = the cells of the correlation matrix $CorrLife$

$Life_r, Life_c$ = Capital charges for individual life sub-risks according to the rows and columns of correlation matrix $CorrLife$

$$Life_{UL/C} = \sqrt{\sum_{rxc} CorrLife_{r,c} \cdot Life_r \cdot Life_c}$$

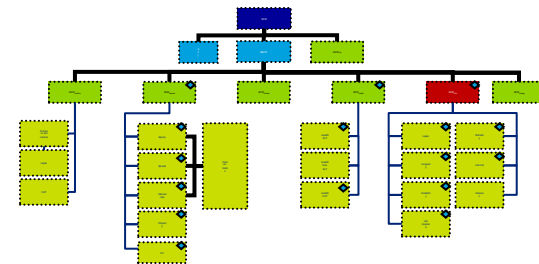
	Mortality	Longevity	Disability	Lapse	Expense	Revision	Cat
Mortality	1						
Longevity	-0.25	1					
Disability	0.25	0	1				
Lapse	0	0.25	0	1			
Expense	0.25	0.25	0.5	0.5	1		
Revision	0	0.25	0	0	0.5	1	
Cat	0.25	0	0.25	0.25	0.25	0	1

Final
QIS55: Cat
back in

Correlations are the same as level 2 advice CEIOPS. They are based on expert opinion (cfr. QIS5 calibration paper).

Compared to QIS4 most correlations are the same except for Mortality/Disability and Expense/Revision which were 0.5 and 0.25 respectively. Zero correlation existed between Cat and other risks in QIS4.

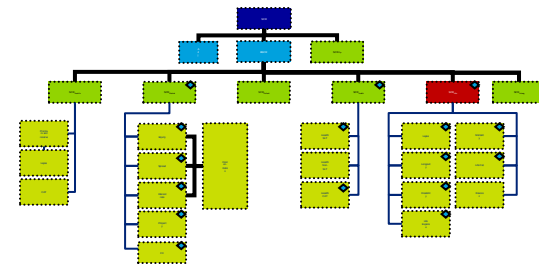
SCR Life Underwriting Risk Calibration



Risk	QIS5 Draft TS	Level 2 Advice	QIS4
Life Cat	Absolute increase in the rate of policyholders dying of 1.5 per mille over the following year . Applicable to obligations which are contingent on mortality i.e. an increase in mortality increases technical provisions.	Same	Same
Mortality	Permanent increase mortality rates with 15% applicable to obligations contingent on mortality risk i.e. where the amount currently payable on death exceeds the technical provisions. Where (re)insurance obligations provide benefits both in case of death and survival and the death and survival benefits are contingent on the life of the same insured person(s), these obligations should not be unbundled (floor of 0 at contract level).	Same	A permanent 10% increase in mortality rates for mortality risk Also possibility to unbundle
Longevity	Permanent decrease mortality rates with 20% applicable to obligations contingent on longevity risk i.e. there is no death benefit or where the amount currently payable on death is less than the technical provisions. Where (re)insurance obligations provide benefits both in case of death and survival and the death and survival benefits are contingent on the life of the same insured person(s), these obligations should not be unbundled (floor of zero at contract level).	A permanent 25% decrease in mortality	A permanent 25% decrease in mortality rates for longevity risk Also possibility to unbundle
Lapse	Shock up and down of 50% of lapse rates (but limited to a maximum change). Lapse mass shock of 30% of surrender strains for retail business and 70% for non-retail business.	Same	No non-retail stress

Changed in Final QIS55 compared to draft

SCR Life Underwriting Risk Calibration

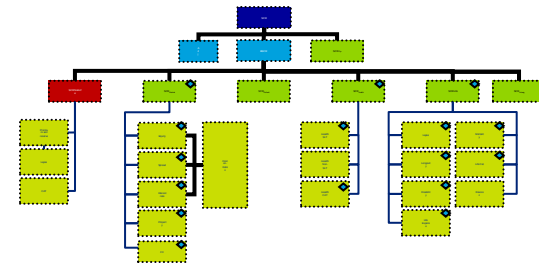


Risk	QIS5 Draft TS	Level 2 Advice	QIS4
Expense	Increase of 10% in future expenses compared to best estimate anticipations and increase by 1% per annum of the inflation rate compared to anticipations.	Same	Same, but for policies with adjustable loadings, 75% of these additional expenses can be recovered from year 2 onwards.
Revision	Increase of 3% in the annual amount payable for annuities exposed to revision risk. Only to be applied on annuities (or benefits that can be approximated by annuity) arising from non-life claims (excluding health SLT) where the amount of the annuity may be revised during the next year.	Same	Same
Disability	A 35% increase in disability inception rates and a 25% increase for subsequent years. Plus, where applicable, a permanent decrease of 20% in recovery rates (combined stress). Applicable for obligations contingent on a definition of disability (compensation of losses or medical expenses due to illness, accident or disability / where morbidity acts as an acceleration of payments or obligations which fall due on death). Is likely to be applied only in cases where it is not appropriate to unbundle contracts (otherwise in health module instead of life module).	Same but 50% increase in inception rates instead of 35%	The scenario tested was a 35%% increase in disability rates and a 25% increase for subsequent years. No stress in recovery rates.

Changed
in Final
QIS5
compared
to draft

Solvency Capital Requirements

Non-Life Underwriting Risk



QIS 4 SCR for Non-Life

Non-life risk module covers capital charge for non-life underwriting risk. This module is split into two sub-modules:

1. Premium and reserve risk,
2. Catastrophe risk.

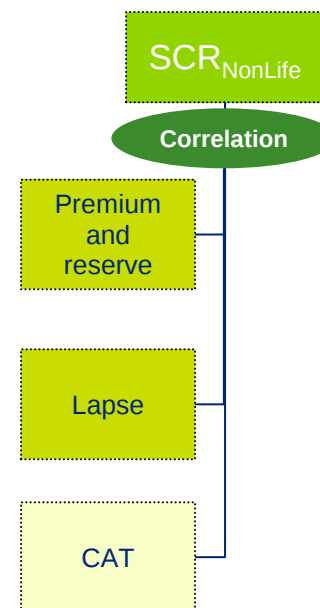
QIS 5 SCR for Non-Life

Non-life risk module covers capital charge for non-life underwriting risk. This module is split into three sub-modules:

1. Premium and reserve risk,
2. Lapse
3. Catastrophe risk.

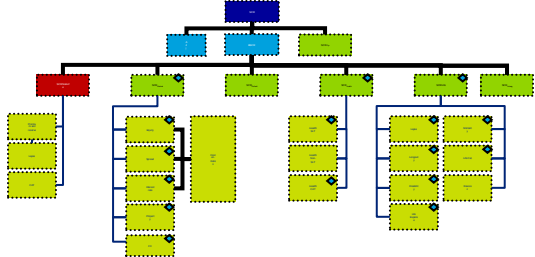
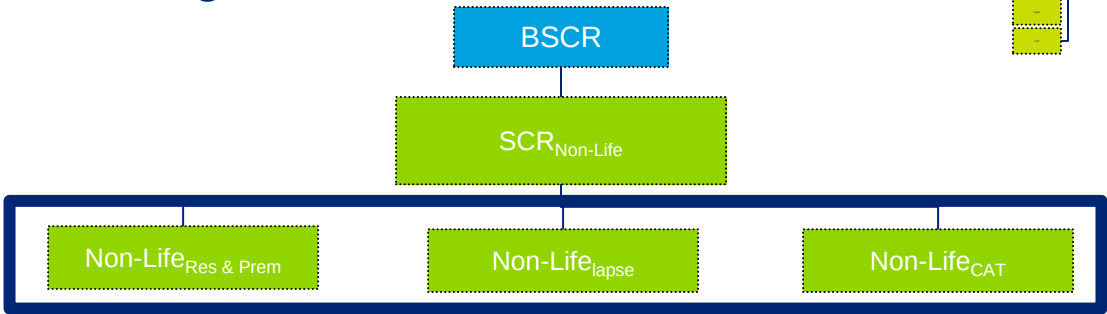
New content in QIS 5 TS with respect to QIS 4 TS are:
Non-Life

1. Correlation between Premium-Reserve risk and CAT risk (0.25)
2. Introduction of Lapse Risk in Premium-Reserve risk
3. There are higher factors / standard deviations with respect to QIS 4



Solvency Capital Requirements

Non-Life Underwriting Risk



SCR for non-life underwriting risk (stage 1)

- The capital charge for non-life underwriting risk is derived by combining the capital charges for the non-life sub-risks using a correlation matrix as follows (SCR_{nl})

Correlation lapse risk-CAT zero in final QIS5 (0,25 in draft)

$$SCR_{nl} = \sqrt{\sum \text{CorrNL}_{r,c} \cdot NL_r \cdot NL_c}$$

where

$\text{CorrNL}_{r,c}$ = The entries of the correlation matrix CorrNL

NL_r, NL_c = Capital requirements for individual non-life underwriting sub-risks according to the rows and columns of correlation matrix CorrNL

NL_{pr} = Capital charge for premium and reserve risk net of risk mitigation

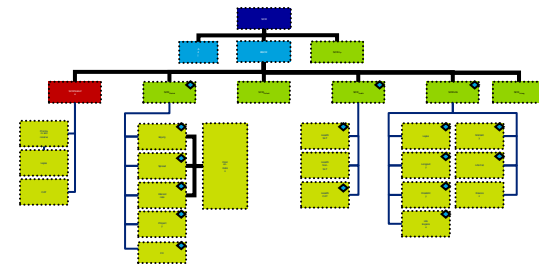
NL_{lapse} = Capital charge for lapse risk net of risk mitigation

NL_{CAT} = Capital charge for catastrophe risk net of risk mitigation

CorrNL	NLpr	NLlapse	NL_CAT
NLpr	1		
NLlapse	0	1	
NL_CAT	0.25	0	1

SCR Non life Underwriting Risk

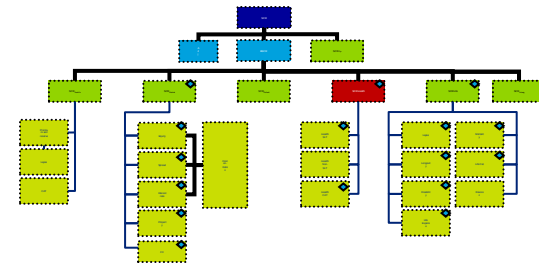
Calibration



Risk	QIS5 final TS	Level 2	QIS4
Premium	The market-wide estimate of the net of reinsurance standard deviation for premium risk for each line of business range between 5%* NPlob for assistance to 21,5%* NPlob for credit and suretyship. (Some Factors lowered compared to QIS5 draft TS – see earlier)	Higher factors than QIS5	Different approach (no explicit net to gross factors). Overall somewhat lower
Reserve	The market-wide estimate of the net of reinsurance standard deviation for reserve risk for each line of business range between 9% for legal expenses to 20% for non-proportional reinsurance casualty, property and MAT. (Some Factors lowered compared to QIS5 draft TS – see earlier)	Higher factors than QIS5	Lower parameters except for motor and legal
Lapse	Shock up and down of 50% of lapse rates (but limited to a maximum change). <i>(source: QIS 5: SRC.9.47 en SRC.9.48)</i> + addition of mass lapse scenario (in final TS)	Lapse risk sub-module did not exist	Lapse risk sub-module did not exist
NL Cat	2 methodologies: based on standardized scenarios and factor based formula. Refined and enriched in QIS5 final TS due to input from the catastrophe task force.	Same, but less without input of catastrophe task force	No. QIS4 allowed personalized scenarios

Solvency Capital Requirements

Health Underwriting Risk

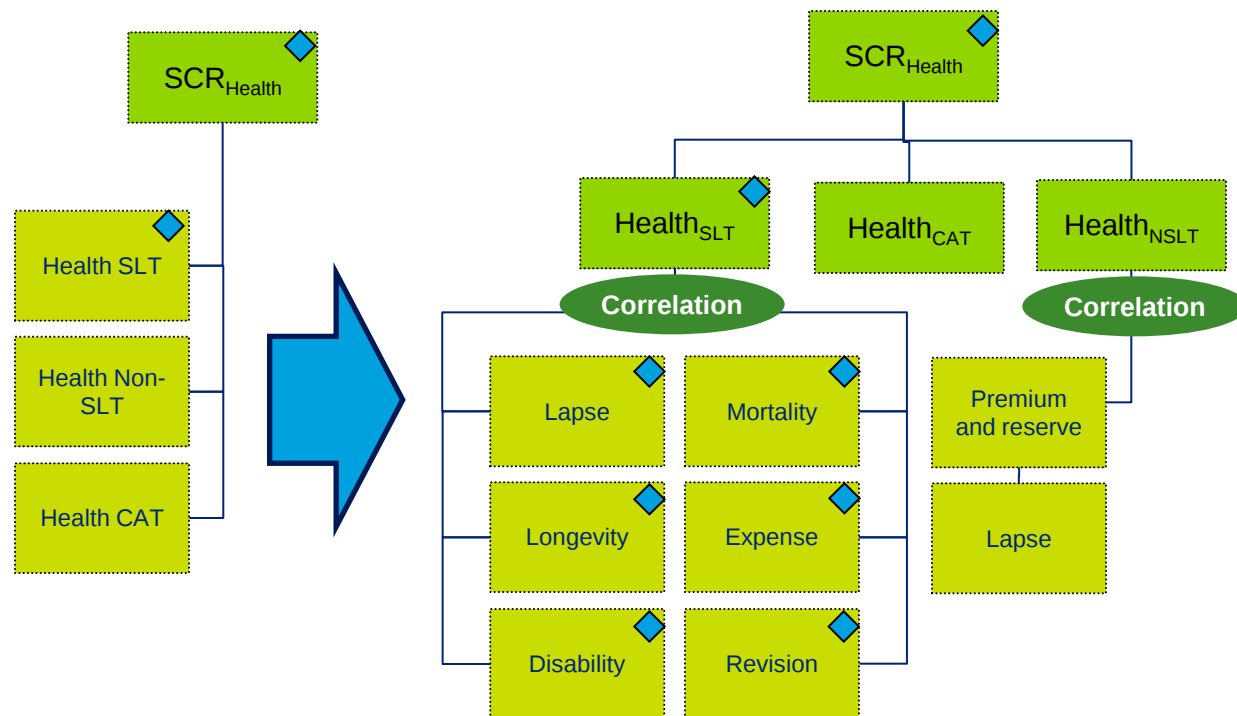


QIS 4 SCR for health

Health risk module covers underwriting risk for all health and workers' compensation guarantees, split into three modules

1. Long term health based on similar techniques to life (Germany)
2. Short term health
3. Workers' compensation

QIS 5 SCR for health



Segmentation health insurance obligations

The definition of health insurance applied in QIS5 may not coincide with national definitions of health insurance used for authorization or accounting purposes.

Similar technical basis to that of life insurance (**SLT Health**)

Changed in Final QIS55 compared to draft

Non-Similar technical basis to that of life insurance (**Non-SLT Health**)

SLT health obligations should be further segmented, according to the segmentation for life insurance obligations:

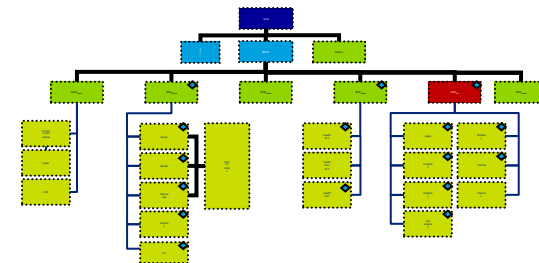
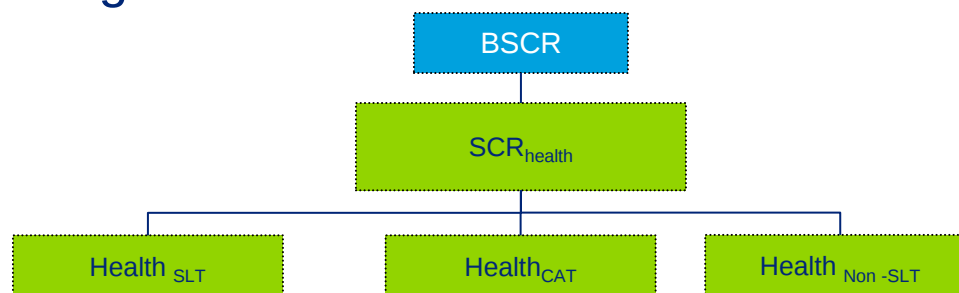
- Insurance contracts with profit participation where the main risk driver is **disability/morbidity risk**
- Index-linked and unit-linked life insurance contracts where the main risk driver is **disability/morbidity risk**
- Other insurance contracts where the main risk driver is **disability/morbidity risk**
- **Annuities** stemming from non-life contracts

Non-SLT health obligations should be further segmented, according to the segmentation for **non-life insurance** obligations:

- Medical Expense
- Income protection
- Workers' compensation

Solvency Capital Requirements

Health Underwriting Risk



SCR for health underwriting risk

- The capital charges for Health SLT insurance obligations, Health Non-SLT insurance obligations and for health insurance obligations cat risk are calculated and then a correlation matrix is used to determine the overall SCR_{health}

$$SCR_{Health} = \sqrt{\sum_{rxc} CorrHealth_{rxc} \bullet Health_r \bullet Health_c}$$

where

$CorrHealth_{rxc}$	=	Cells of the matrix $CorrHealth$
$Health_r, Health_c$	=	The capital charges for individual health underwriting sub-modules according to the rows and columns of correlation matrix $CorrHealth$

$CorrHealth$	Health _{SLT}	Health _{non SLT}	Health _{CAT}
Health _{SLT}	1		
Health _{non SLT}	0.5	1	
Health _{CAT}	0.25	0.25	1

Other approach in QIS4, in QIS5 draft TS the correlation between Health Non-SLT and Health SLT was 0.75



Hrvatski ured za osiguranje

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Četvrti dio - Izračun minimalno potrebnog kapitala Minimum Capital Requirement - MCR

Jakša Krišto

MCR

Tehničke specifikacije QIS 5

Vrednovanje imovine i obveza	Vlastita sredstva	Solventni kapital SCR	Minimalno potrebni kapital MCR	Grupe
------------------------------	-------------------	-----------------------	--------------------------------	-------

- Ključni kriteriji za MCR
 - Zakonska minimalna razina
 - Mogućnost revizije, jasan i jednostavan izračun
 - Zaštita
- MCR je utemeljen na postocima primijenjenim na kombinaciju:
 - Premija
 - Tehničkih pričuva
 - S najvišom i najnižom vrijednosti povezanom s SCR-om
- MCR može činiti najviše (45%) i najmanje (25%) SCR-a
- Postoji najniža apsolutna vrijednost MCR (Eur) ovisno o prirodi posla društva

Apsolutni prag MCR-a

- **2.200.000 eura** za društva za neživotno osiguranje, uključujući vlastita društva za osiguranje, osim u slučaju kad su pokriveni neki ili svi rizici uključeni u jednu od vrsta osiguranja od 10 do 15, u tom slučaju najmanji apsolutni prag mora biti najmanje **3.200.000 eura**,
- **3.200.000 eura** za društva za životno osiguranje, uključujući vlastita društva za osiguranje,
- **3.200.000 eura** za društva za reosiguranje, osim u slučaju vlastitih društava za reosiguranje, u tom slučaju minimalni kapitalni zahtjev mora biti najmanje **1.000.000 eura**;
- zbroj navedenih iznosa za društva koja istodobno obavljaju poslove životnog i neživotnog osiguranja.

Izračun MCR-a

Podložno uvjetima, minimalni kapitalni zahtjev izračunava se kao **linearna funkcija skupa ili podskupa sljedećih varijabli:**

- tehničkih pričuva društva,
- obračunatih premija osiguranja,
- rizikom ponderiranog kapitala,
- odgođenih poreza i
- administrativnih troškova.

Upotrijebljene varijable izračunavaju se bez reosiguranja.

Izračun MCR-a

$$MCR = \max\{MCR_{combined}; AMCR\}$$

$$MCR_{combined} = \{\min[\max(MCR_{linear}; 0.25 \cdot (SCR)); 0.45 \cdot (SCR)]\}$$

$$MCR_{linear} = MCR_{NL} + MCR_L$$

MCR	minimalno potrební kapital (minimum capital requirement)
$MCR_{combined}$	kombinirani MCR, rezultat linearnog MCR u odnosu na najvišu i najnižu razinu MCR-a u odnosu na SCR
MCR_{linear}	linearna formula koju čini $MCR_{NL(neživotno)}$ i $MCR_{L(životno)}$

MCR - faktori rizika za tehničke pričuve

Vrsta osiguranja	QIS4	CP73	Konačan savjet CEIOPS	QIS5
Motor TPL	16%	18%	12%	12%
Motor Other	9%	18%	15%	13%
MAT	13%	25%	21%	18%
Fire and other damage	13%	22%	15%	14%
TPL	20%	29%	19%	14%
Credit & Suretyship	20%	29%	30%	25%
Legal expenses	13%	18%	11%	12%
Assistance	13%	18%	15%	14%
Miscellaneous	13%	29%	24%	20%
NP Reins Property	20%	42%	30%	26%
NP Reins MAT	20%	42%	30%	26%
NP Reins Casualty	20%	42%	30%	26%
Index	100%	175%	133%	116%

MCR - faktori rizika za premiju

Vrsta osiguranja	QIS4	CP73	Konačan savjet CEIOPS	QIS5
Motor TPL	12%	14%	14%	13%
Motor Other	12%	14%	10%	9%
MAT	16%	29%	27%	22%
Fire and other damage	13%	18%	18%	13%
TPL	16%	25%	21%	20%
Credit & Suretyship	20%	29%	33%	28%
Legal expenses	6%	11%	10%	9%
Assistance	10%	14%	6%	7%
Miscellaneous	14%	29%	19%	17%
NP reins Property	20%	42%	24%	23%
NP reins MAT	20%	42%	22%	21%
NP reins Casualty	20%	42%	20%	22%
Index	100%	173%	125%	114%



Hrvatski ured za osiguranje

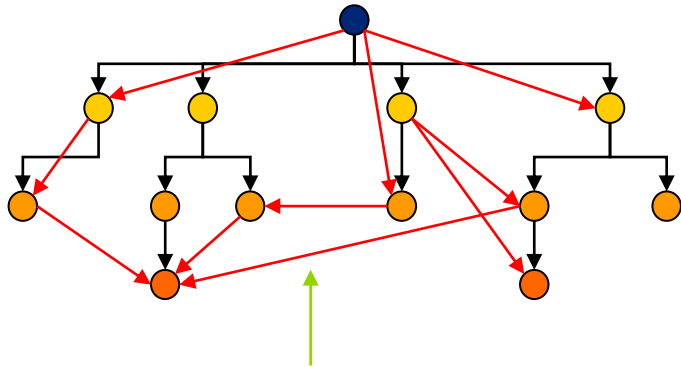
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Šesti dio - Grupe

Jiří Fialka

Groups

What is a Group?



Capital and Risk Transfer Instruments

A group and its risk exposures are defined by its ownership structure and its web of CRTI

Regulatory requirements on groups (including governance and risk management-, capital- and transparency requirements) have to be based on both the ownership structure and the CRTI in place

Between the different legal entities of the group (parent, subsidiaries and participations), there is a web of Capital and Risk Transfer Instruments (CRTI), e.g.

Capital transfer instruments

- Intra-group loans
- Guarantees
- Participations
- Dividends
- ...

Risk transfer instruments

- Intra-group retrocession
 - Quota Share
 - Stop Loss
 - ...
- Intra-group securitization
- ...

In large and complex groups, the number of CRTI can be in the order of tens of thousands

Group Supervision

Group supervision is highly complex and has to deal with a variety, sometimes conflicting, interests

Quantitative Issues:

- What does group solvency mean?
- When is a group solvent:
 - when the parent is solvent?
 - When the consolidated group is solvent
 - When every legal entity is solvent
- How to take into account non-insurance entities?
 - Banks
 - Entities engaged in non-insurance activities
- What is the valuation standard to be used?
 - A unifying standard for all entities (e.g. market consistent)
 - Different standards based on local regulatory requirements?
- How to quantify the risks?
 - Based on a consolidated balance sheet?
 - Based on the different legal entities
- How to take into account intra-group capital and risk transfer instruments (CRTI)?

Group Supervision

Qualitative Issues:

- Are there requirements on a group's structure?
 - Ownership relations
 - Subsidiaries vs. branches
- Are there limits to a group's size and complexity
- What are the requirements on risk management and governance?
 - Can certain functions be done by the group's headquarter for its legal entities?
 - What are the minimal requirements for subsidiaries
- How independent should subsidiaries be?
 - What are the requirements on the independence of their board of director?
- Agency Issues
 - How to deal with conflicting interests between the parent company and local subsidiaries?
- How to supervise a group?
 - Is there a lead supervisor?
 - Which supervisors are involved in the supervisory review?
 - How to ensure that the interests of all jurisdictions / legal entities are taken into account?
- How to deal with a group in financial stress
 - Which policyholders get how much of the remaining assets in case of insolvency?
 - Can certain subsidiaries be sacrificed to save the wider group?
 - How to deal with different legal and regulatory systems?

Groups in QIS 5

Introduction

- The competent authority responsible for group supervision (the current Lead Supervisor appointed by each College of supervisors) will manage the QIS5 process for each of their groups
- The proportionality rules which apply to the solo specifications also apply to the groups specifications
- Groups participating in QIS5 are requested to calculate the Solvency Capital Requirement and the group own funds according to different methods (see next slides)
- In general, the scope of the group for QIS5 should be the same as for the IFRS consolidated accounts
- The Directive also permits the Group SCR to be calculated using an internal model, or for elements of the Group SCR (also for some entities) to be calculated using a partial internal model

Groups

Method of calculation

Method	Description
Solvency II Default method – Accounting Consolidation	The standard formula for the calculation of the Solvency Capital Requirement (SCR) applied to the consolidated data (Article 230).
Solvency II Alternative method – Deduction & Aggregation (D&A)	The sum of the standard formula solo SCR and solo own funds of the participating insurance undertaking and the proportional share of each related insurance undertaking in the group with the necessary adjustments (Article 233).
Combination of default and alternative methods (optional)	Article 220(2) states that the group supervisor may decide, after consultation with the other supervisory authorities concerned and the group itself, apply to the group a combination of methods 1 and 2, where the exclusive application of method 1 would not be appropriate.
Group solvency capital requirement currently in force	The group capital requirements and capital resources under the regime currently in force, as calculated under the Insurance Groups Directive as amended by the Financial Conglomerates Directive.
Group solvency capital on the basis of a group internal model	Groups are also invited to provide the results of any internal models which they may use to calculate group solvency capital requirement.

Groups

Summary of methods and expected answers

Method	EEA groups without non-EEA entities	EEA groups with non- EEA entities	EEA subgroup(s) of non-EEA groups
Solvency 1 – current calculations	Already available	Already available	Already available
Solvency II Default method – Accounting Consolidation	Required	Required	Required
Solvency II Alternative method – Deduction & Aggregation (D&A) – SII applied to non EEA entities	Required	Required	Required
Solvency II Alternative method – Deduction & Aggregation (D&A) - local rules applied to the non-EEA entities).		Required if relevant	
Combination of default and alternative methods (optional)	Optional if relevant	Optional if relevant	Optional if relevant
Group solvency capital on the basis of a group internal model	Required if relevant	Required if relevant	Required if relevant
Default and D&A – subgroup* calculation	Optional if relevant	Optional if relevant	

* Undertakings that are part of a wider third country group (i.e. where the ultimate worldwide parent undertaking is located outside the EEA) and that are also part of an EEA subgroup.

Groups

Comparability and combination of methods

- It is important that the same set of group entities is included in all the calculations to ensure the comparability of the results of the different methods applied.
- The consolidated group SCR (**in final TS: Solvency Ratio instead of capital requirements**) as calculated under the default method will be compared with the Group solvency capital requirement currently in force method in order to measure the overall impact from the Solvency I to the Solvency II regime.
- The consolidated group SCR as calculated under the default method will be compared with the results of the D&A method adjusted for intra-group transactions to have a measure of diversification benefits.
- Groups may choose to combine the accounting consolidation and deduction and aggregation methods. The objective of this option is to test the discretionary provision in Article 220(2) that allows the group supervisor to ask, after consulting the other supervisors concerned and the group itself, for the use of the deduction and aggregation method or a combination of both the methods.



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Izvan dosega QIS 5: Izazovi zahtjeva drugog i trećeg stupa Solvency II

Jakša Krišto

Zahtjevi II. i III. stupa Solvency II



The diagram features a blue triangle at the top, representing the roof of a house, which is a common metaphor for the three pillars of Solvency II. Below the triangle is a table with three columns and two rows of content, plus a final row for the pillar names.

KAPITALNI ZAHTEJEVI	NADZOR I SUPERVIZIJA	TRŽIŠNA DISCIPLINA
Granica solventnosti Minimalno potrebni kapital Vlastita sredstva Ulaganja Kapitalna oslobođenja Interni modeli Standardna formula Tehničke pričuve Vrednovanje ulaganja	Sustav upravljanja Interna kontrola Upravljanje rizikom Stres testovi Stalna kontrola izloženosti riziku Proces nadzora i supervizije	Izvještavanje Transparentnost poslovanja MRS MSRI
I. STUP	II. STUP	III. STUP

Izvor: CEA, *Solvency II, Introductory Guide*, Brussels, lipanj 2006., str. 8.

II. stup - ishodište i središte Solvency II

- Ključna područja II. stupa:
 - Proces nadzornog preispitivanja (*Supervisory review process*)
 - Kapitalni dodatak (*Capital add-on*)
 - Sustav upravljanja (*System of governance*)
 - Upravljanje rizicima (*Risk management*)
 - Vlastita procjena rizika i solventnosti (*ORSA - Own Risk and Solvency Assessment*)
 - Unutarnja kontrola / unutarnja revizija / aktuarska funkcija

Proces nadzornog preispitivanja (čl. 36)

- Nadzorne vlasti posebno preispituju i vrednuju usklađenost sa:
 - sustavom upravljanja, uključujući vlastitu procjenu rizika i solventnosti,
 - tehničkim pričuvama,
 - kapitalnim zahtjevima,
 - pravilima ulaganja,
 - kvalitetom i kvantitetom vlastitih sredstava,
 - kontinuiranom usklađenošću sa zahtjevima koji se odnose na potpune i djelomične unutarnje modele, ako ih primjenjuje.
- **Kapitalni dodatak (čl. 37)**
 - Nakon procesa nadzornog preispitivanja, nadzorne vlasti mogu u iznimnim okolnostima odrediti kapitalni dodatak za društvo svojom odlukom u kojoj su navedeni razlozi za to!

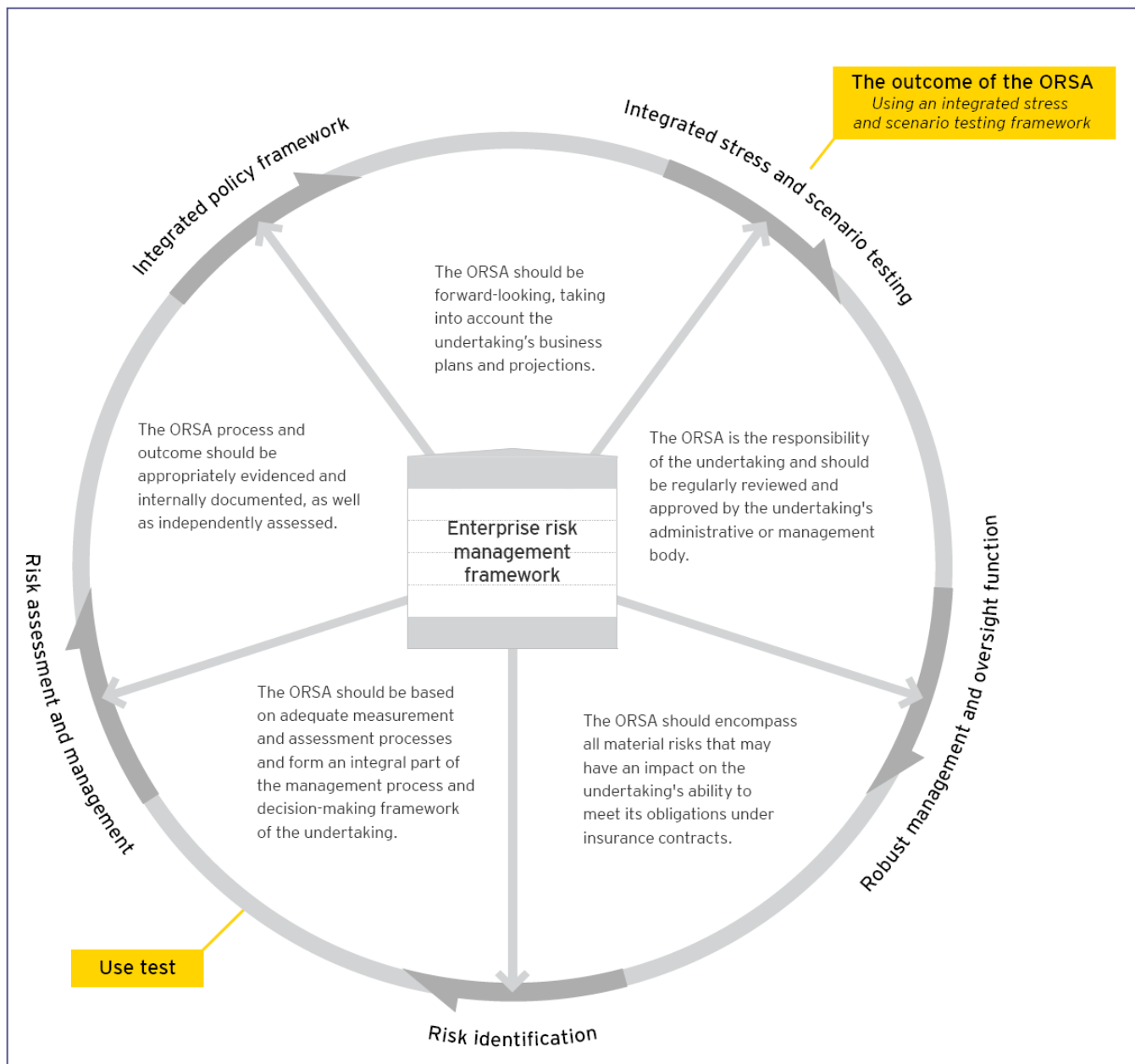
Sustav upravljanja (čl. 41 do 49)

- Treba osiguravati stabilno i razborito upravljanje
- Razmjeran je prirodi, opsegu i složenosti poslova društva
- Pisane politike
- **Funkcija** - unutarnja sposobnost obavljanja praktičnih zadataka, ne nužno zaseban organizacijski dio
- U dijelu *sustava upravljanja* podrazumijeva odvojenost funkcija:
 - funkcije upravljanja rizicima,
 - funkcije praćenja usklađenosti,
 - funkcije unutarnje revizije i
 - aktuarske funkcije.

Vlastita procjena rizika i solventnosti (čl. 45)

- Ključno za upravljanje i prepoznavanje vlastitih izloženosti riziku!
- Ta procjena obuhvaća najmanje sljedeće:
 - ukupne potrebe solventnosti uzimajući u obzir specifični profil rizika, odobrena ograničenja dozvoljenih rizika te poslovnu strategiju društva,
 - usklađenost, na kontinuiranoj osnovi, s kapitalnim zahtjevima propisanim te zahtjevima koji se odnose na tehničke pričuve,
 - značaj u kojemu profil rizika dotičnog društva odstupa od pretpostavki na kojima se temelji kapitalni zahtjev glede solventnosti, izračunat prema standardnoj formuli ili prema djelomičnom odnosno potpunom unutarnjem modelu

Načela vlastita procjena rizika i solventnosti - ORSA-e



III. stup donosi

- Tržišnu disciplinu
- Transparentnost poslovanja
- Izvješće o solventnosti i financijskom stanju
(*Report on Solvency and Financial Condition*)

Izvješće o solventnosti i financijskom stanju (čl. 51 i 53 do 56)

Izvješće sadržava sljedeće informacije:

- opis poslovanja i rezultata društva;
- opis sustava upravljanja i procjenu njegove primjerenosti za profil rizika društva;
- opis izloženosti riziku, koncentracije rizika, smanjenja rizika i osjetljivosti na rizik, za svaku kategoriju rizika zasebno;
- zaseban opis za imovinu, tehničke pričuve i ostale obveze, opis podloga i metoda upotrijebljenih u njihovom vrednovanju, zajedno s objašnjenjem svih većih razlika u podlogama i metodama koji su upotrijebljeni za njihovo vrednovanje u financijskim izvješćima;
- opis upravljanja kapitalom i kapitalnih zahtjeva



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Završne napomene

Primjena Solvency II i provođenja QIS 5 u RH

Q&A

Ministarstvo financija

Jakša Krišto

Vančo Balen

Prilagodba društava u RH Solvency II - preporuke

1. Sudjelovati u QIS 5
2. Formirati tim unutar društva koji će provesti QIS 5
3. Uočiti nedostatke u društvu i pokrenuti prilagodbu
4. Osnovati zasebnu organizacijsku jedinicu za upravljanje rizicima
5. Educirati zaposlenike društva o zahtjevima nove regulative
6. Mijenjati korporativnu kulturu i prihvatiti strategiju prepoznavanja i upravljanja rizicima (*risk-based approach*)
7. Započeti prilagodbu zahtjevima II. i III. stupa
8. Formirati komisiju za Solvency II na razini sektora osiguranja
9. Suradivati sa supervizorom na novoj regulativi te prihvatiti novu praksu i načela **aktivne suradnje** supervizora i društava

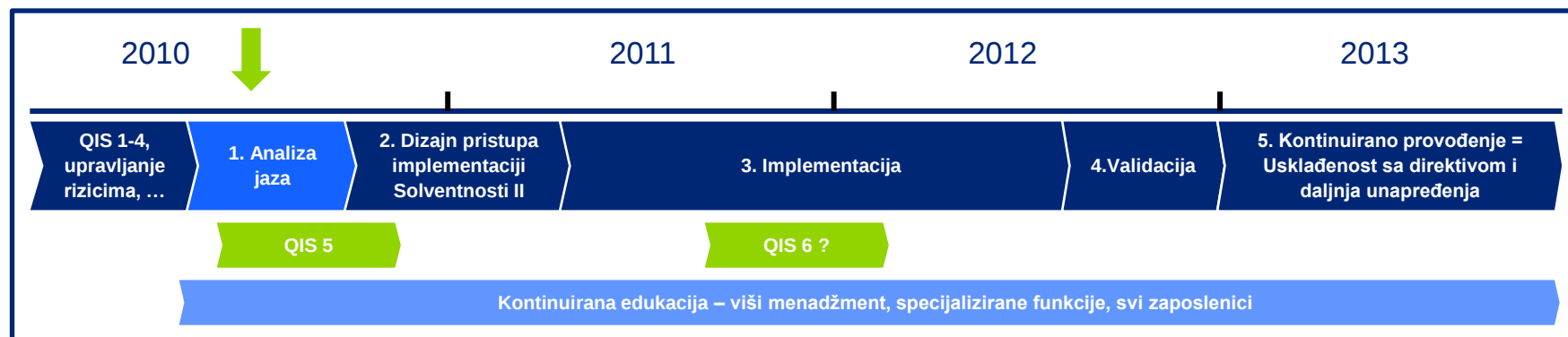
Zaključak: Naredni koraci

Pregled aktivnosti najboljih europskih praksi

Izazovi

- uključenost i razumijevanje višeg menadžmenta: **Solventnost II = izazov i odgovornost cijele tvrtke**
- potrebna znanja i resursi, “dugi rok implementacije”, interdisciplinarno rješenje: **projektni pristup**
- dostupnost i **kvaliteta podataka**, adekvatnost postojećih **tehnoloških rješenja**, potreba za novim rješenjima
- adekvatnost postojećih **procesa i organizacijske strukture**: integracija s drugim projektima
- implementacija **sustava upravljanja rizicima** (ORSA – ERM kao rješenje)
- **komunikacija s regulatorom**

Projektni pristup



Zaključak

- uspostava projekta (programa?)
- edukacija
- analiza jaza prvi korak
- detaljna analiza podataka, podatkovne infrastrukture i tehnologije
- rani dijalog s regulatorom
- traženje dodane vrijednosti (npr: unapređenje procesa naplate, optimizacija procesa, operativni rizik, ...)
- korištenje iskustava iz bankarske industrije (Basel II)



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Na kraju,
ispunili smo prvih 5 sati provođenja QIS 5,
još samo 755 čovjek/sati do kraja!

Hvala na pozornosti!

Kontakt za pitanja

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