



Role aktuárů v ORSA procesu podle AAE

Požadavky SAP 3 a pomoc, kterou najdete v EAN 1.

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Obsah

1. SAP 3 a EAN 1 – přehled
2. SAP 3
3. EAN 1 – kapitoly 2 a 3 – výběr
4. EAN 1 – kapitola 4 – další témata relevantní pro ORSA



SAP 3 – Standard aktuárské praxe 3, který je lokalizací European Standard of Actuarial Practice 3 (ESAP 3), EAN 1 – European Actuarial Note 1 on ESAP 3 and ORSA.



SAP 3 a EAN 1

Přehled

SAP 3

Část 1: Účel, Působnost, Soulad, Vztah ke standardu SAP 1, Jazyk, Definice, Křížové odkazy, Účinnost

Část 2: Definice

Část 3: Patříčné postupy

- Nastavení procesu ORSA:
 - Stanovení strukturovaného přístupu k nejistotě,
 - Odchyly od přístupu a metodiky založené na rozvaze podle Solventnosti II,
 - Období zohledněné v ORSA,
 - Nekonzistence s přístupem společnosti k řízení rizik
- Provádění procesu ORSA:
 - Kvantitativní vyhodnocení rizik a finanční projekce,
 - Kvalitativní vyhodnocení rizik

EAN 1

1. Introduction: Due process on this EAN, This EAN on ESAP 3 and ORSA, Executive summary, List of abbreviations used

2. Supplementary notes to the definitions in ESAP 3:

- Additional material relating to "Risks", "Uncertainties" and "Exposures",
- Additional material relating to an "ORSA-triggering event"

3. Supplementary notes to the text in ESAP 3:

- Design of the ORSA process,
- Establishing a structured approach to uncertainty,
- Deviation from Solvency II balance sheet approach and methodology,
- The ORSA consideration period,
- Inconsistency with the undertaking's risk management approach,
- Performance of the ORSA process,
- Quantitative risk assessment and financial projections,
- Quantitative risk assessment and financial projections

4. Other subjects relevant to the ORSA process



Standard aktuárské praxe 3

Aktuárská praxe ve vztahu k procesu ORSA dle
Solventnosti II

SAP 3 – 1.1 Účel

Pokyny pro aktuáry, kteří se významně podílí na, nebo mají zodpovědnost za nastavení nebo průběh procesu ORSA, aby zamýšlení uživatelé měli dostatečnou jistotu, že:

- aktuárské služby jsou prováděny profesionálně a s náležitou péčí v souladu s pravidly Solventnosti II;
- výsledky jsou relevantní vzhledem k potřebám zamýšlených uživatelů, jsou prezentovány jasně a srozumitelně a jsou dostatečné v kontextu Solventnosti II; a
- předpoklady a metodika (včetně, ale ne pouze, modelů a technik modelování) jsou přiměřené a jsou patřičně používány.

SAP 3 – 1.2 Působnost, 1.3 Soulad

- Vztahuje se pouze na aktuárské služby vykonávané aktuárem ve vztahu k procesu ORSA, pokud se aktuár významně podílí nebo je zodpovědný za nastavení nebo průběh procesu ORSA, a to do té míry, která odpovídá zapojení a odpovědnostem aktuára. Širší aplikace tohoto standardu SAP je vítaná.
- Jsou situace, kdy se aktuár může odchýlit od pokynů tohoto standardu, a přesto s ním být stále v souladu, a to pokud:
 - Dodržuje legislativní požadavky, které jsou v konfliktu se standardem.
 - Dodržuje Kodex profesionálního chování aktuára vztahující se na práci, které mohou být v rozporu s tímto standardem.
 - Odchýlí se od doporučení (formulace s „měl by“) uvedených v tomto standardu a v příslušné zprávě uvede patřičné vyjádření vztahující se k povaze, smyslu a dopadům jakéhokoli takového odchýlení. Od povinností (formulace s „muset“) se nelze odchýlit, vyjma případů výše.

SAP 3 – 3.1 Nastavení ORSA procesu

Pokud se aktuár významně podílí, nebo odpovídá za nastavení

- procesu ORSA, doporučuje se, aby rozsah jeho práce pokrýval požadavky standardu.
- pouze částí procesu ORSA, měl by si potvrdit se zadavatelem, do jaké míry zodpovídá za témata popsaná ve standardu.

Aktuár musí podniknout přiměřené kroky, odpovídající jeho/jejímu zapojení a odpovědnosti, aby zajistil, že proces ORSA probíhá podle patřičně strukturovaného přístupu k nejistotě.

SAP 3 – 3.1.1 Stanovení strukturovaného přístupu k nejistotě

Aktuár musí podniknout přiměřené kroky, odpovídající zapojení a odpovědnosti, aby zajistil, že proces ORSA probíhá podle patřičně strukturovaného přístupu k nejistotě, tedy zda tento přístup:

- Umožňuje porozumění, řízení a sdílení oblastí nejistot, vývoje expozic a procesu ORSA;
- Umožňuje koherentní identifikaci a kvantifikaci, nebo kvalitativní vyhodnocení materiálních rizik;
- Dává jasně najevo, která materiální rizika jsou vyhodnocena kvalitativně a která kvantitativně;
- Umožňuje začlenit nová a nově vznikající („emerging“) rizika a přístupy k rizikům;
- Umožňuje porozumění interakci mezi riziky a expozicemi tak, jak se vyvíjí;
- Umožňuje procesu stanovení předpokladů zohlednit plánovaný vývoj obchodu;
- Zajišťuje výkon patřičných scénářových a zátěžových testů, včetně reverzních zátěžových testů;
- Zajišťuje výkon patřičného zpětného testování („back testing“) minulých předpokladů;
- Zajišťuje patřičné soustavné posuzování a aktualizaci procesu ORSA;
- Umožňuje účinné spuštění a vykonání běhu ORSA jak v rámci periodického cyklu ORSA, tak jako následek patřičně definované události spouštějící ORSA;
- Umožňuje koherentní začlenění procesu ORSA do ostatních procesů a do rozhodování AMSB.

Aktuár musí být schopen vysvětlit a obhájit jím přijatý přístup, pokud je k tomu důvodně vyzván.

SAP 3 – 3.1.2 Odchyly od přístupu a metodiky založené na rozvaze podle Solventnosti II

Pokud proces ORSA zahrnuje přístup k ocenění rozvahových položek aktiv a závazků a/nebo ke kvantifikaci rizik, který se významně odchyloje od přístupu, který společnost používá pro vykazování solventnostního kapitálového požadavku regulátorovi, musí aktuár zdokumentovat rozsah takového rozdílu, jeho zdůvodnění a možné dopady.

Při vyhodnocování významu jakékoli takové odchyly by měl aktuár zohlednit:

- Rozsah, v jakém se daný přístup shoduje, nebo odlišuje od principů a pravidel SII;
- Pravděpodobné dopady jakékoli takové odchyly, zejména s důrazem na to, nakolik finanční projekce zahrnuté v ORSA umožní identifikaci významných rizik pro schopnost společnosti krýt své SCR ve zvoleném časovém horizontu;
- Rozsah, v jakém je ORSA vhodná pro zamýšlené použití v obchodní činnosti;
- Rozsah, v jakém ORSA přiměřeně zohledňuje jakoukoli takovou odchyly s ohledem na zamýšlené použití ORSA.

Aktuár musí podniknout přiměřené kroky, aby zajistil, že jakákoli taková odchyly a její dopady jsou patřičně sděleny těm, kteří přímo spoléhají na ORSA při výkonu svých významných rozhodovacích pravomocí.

SAP 3 – 3.1.3 Období zohledněné v ORSA

Aktuár musí podniknout přiměřené kroky, aby zajistil, že období zohledněné v procesu ORSA je patřičné pro zamýšlený účel ORSA. Při určování patřičnosti časového období zvoleného pro proces ORSA by měl aktuár zvážit horizont projekcí používaných pro obchodní plánování a vývoj rizikového profilu pojišťovny, včetně:

- Možného budoucího run-offu současného kmene;
- Povahy a možného run-offu jakéhokoli nového kmene získaného v budoucnu;
- Očekávaných změn v obchodních praktikách, jako např. změny v procesech upisování nebo likvidace pojistných událostí;
- Změny v ekonomickém prostředí, které považovány za pravděpodobné; a
- Změny v ekonomickém prostředí, které jsou považovány za možné a věrohodné, ale momentálně nejsou považovány za pravděpodobné.

Aktuár musí být schopen vysvětlit a obhájit zvolený výběr časového období zvažovaného v ORSA, pokud je k tomu důvodně vyzván.

SAP 3 – 3.1.4 Nekonzistence s přístupem společnosti k řízení rizik

Pokud se aktuár důvodně domnívá, že existuje materiální nekonzistence mezi procesem ORSA a přístupem společnosti k ostatním částem řízení rizik, musí aktuár zajistit, že jsou takové nekonzistence patřičně sděleny.

SAP 3 – 3.2.1 Kvantitativní vyhodnocení rizik a finanční projekce

Aktuár musí podniknout přiměřené kroky, aby zajistil, že kvantifikace rizik a finanční projekce používané v procesu ORSA jsou vhodné pro zamýšlený účel.

Při zvažování, zda jsou kvantifikace a projekce patřičné, by měl aktuár zohlednit rozsah, v jakém:

- může jakékoli přijaté zjednodušení nebo aproximace (ve vztahu k přístupům použitým pro stanovení zveřejňovaných finanční výsledky) ve výpočtu způsobit nepatřičnou indikaci významnosti materiálního rizikového driveru nebo rizika;
- jsou použité předpoklady patřičné a je dostatečně jasné, jak byly odvozeny; a
- jsou použité scénářové, zátěžové a citlivostní testy dostatečné pro indikaci významnosti rizikových driverů a rizik.

Aktuár musí být schopen vysvětlit a obhájit jím zvolený přístup při vyhodnocování patřičnosti, pokud je k tomu důvodně vyzván.

Pokud se aktuár důvodně domnívá, že zvolené kvantifikace nebo projekce obsahují materiální nedostatky, které učiní proces ORSA nevhodným pro svůj účel, pak musí aktuár zajistit, že jsou takové nedostatky patřičně sděleny.

SAP 3 – 3.2.2 Kvalitativní vyhodnocení rizik

Aktuár musí podniknout přiměřené kroky, v rozsahu odpovídajícím jeho zapojení a zodpovědnostem, aby zajistil, že kvalitativní vyhodnocení rizik používaná v procesu ORSA jsou vhodná pro zamýšlený účel ORSA.

Při zvažování, zda jsou kvalitativní vyhodnocení patřičná, by měl aktuár zohlednit rozsah, v němž vyhodnocení:

- Využívají příslušné historické údaje od samotné společnosti a z ostatních patřičných zdrojů;
- Zohledňují patřičně širokou škálu relevantních scénářů; a
- Prošla dostatečně důkladným procesem vnitřního posouzení.

Aktuár musí být schopen vysvětlit a obhájit jím zvolený přístup při vyhodnocování patřičnosti, pokud je k tomu důvodně vyzván.

Pokud se aktuár důvodně domnívá, že zvolené kvalitativní vyhodnocení rizik obsahuje materiální nedostatky, které učiní proces ORSA nevhodným pro svůj účel, pak musí aktuár zajistit, že jsou takové nedostatky patřičně sděleny.



European Actuarial Note 1 on ESAP3 and ORSA

Kapitoly 2 a 3 - výběr



European Actuarial Note 1 on ESAP3 and ORSA

Chapter 4: Other subjects relevant to ORSA

Topics

1. Methodology

Basis & Overall solvency needs

Risk measures, time frames

What is best estimate and why?

Risk capital versus policyholders' protective risk capital

Economic BE

2. Modelling

Nature of stresses

Dependencies

Loss absorbing capacity of TP and DT

Defaults, spreads and market values

3. Assumptions

Contract boundaries

Future new business

Yields (Risk Neutral vs. Real World, Discounting)

Sovereign credit risk

4. Risk maps and ORSA



Motto

- Po druhém přečtení mi na 4. kapitole EAN1 přijde hezké, že je tam zmíněna snad každá otázka nebo problém, na který jsem při psaní ORSA zprávy narazil a musel ho řešit. A ošklivé na tom je, že konkrétních odpovědí se vlastně moc nenabízí – pouze ujištění, že od aktuára se prostě čeká, že se s tím popere s dokonalostí sobě vlastní.

Petr Pošta

I. Methodology

A business projection model and multiple bases

EAN 1

- A business projection model which includes only the SII basis may be valid and sufficient to project future solvency needs but is not likely sophisticated enough to support product pricing or profitability measures.
- Different methods and assumptions provide for regulatory, prudential reserves and capital while other methods support product pricing, cost of capital and profitability measures. The ORSA model may support both aspects, as well as others.

Remarks

- **ORSA requirements**
Own solvency needs
TP continuous compliance
Suitability of SCR model
- **Are there other goals?**
- **What are the questions that ORSA should answer?**
- Is it worth to invest in a “comprehensive business projection model”?
- What would be its value in supporting product pricing and profitability metrics?

A business projection model and multiple bases

EAN 1

Multinational insurer

- Multiple reserving & capital bases
- Interactions of different regimes

Small local insurer

- SII + local GAAP

In general, the bases may need to include all regulatory, statutory, accounting and other bases which define reserves (and the balance sheet) as well as all annual profit and loss accounts.

A business projection model which includes only the SII basis may be *valid and sufficient* to project future solvency needs but is not likely sophisticated enough to support product pricing or profitability measures.

Remarks

Metrics / KPIs ↔ ORSA goals

- Profit-like (P&L, CoR, VNB, ...)
- Solvency (SCR, solvency ratio)
- Combination (RoE, RoRC, ...)
- Analysis of key profit drivers
- Analysis of key risks

Stability of KPIs in time

- Growth vs. resilience vs. dividends

Impact of events on different bases

- Example: increasing spreads → drop in solvency but P&L increase from reinvestments

Overall solvency needs (OSN)

EAN 1

- EAN cites a push from supervisors regarding **insurers' development of their own internal view** of OSN
- Given the complexity of SII and the difficulty of implementing Pillar 1 and Pillar 2, some insurers may be in the "early days of their journey of discovery" into OSN.
- A company's OSN assessment may incorporate risks not captured by the SII SF (risk coverage) and may utilise methods distinct from SII regulation in assessing capital needs (adequacy).
- Developing alternative risk / capital / reserving assessment frameworks **may be very beneficial to the insurer.**

Remarks

Having "own view":

- Is it necessary? Is it worth it?

EAN is aware of such questions:

Given the complexity of SII and the difficulty of implementing Pillar 1 and Pillar 2 ... insurers may be reticent to establish their own view and thus commit to an additional reserving / capital framework before they fully understand it and how it may move over time in response to movements in markets and other risks or uncertainties.

The lack of understanding poses an impediment to investigating potential bases that might serve as the insurer's OSN.

OSN: Actuary may find useful to go through these aspects

EAN 1

In investigating and selecting an OSN basis/framework, the actuary might find it useful to go through these aspects

- Risks
- Reserves
- Capital
- Product pricing & profitability
- Other business uses

(details can be found in the appendix)

Remarks

Plenty, e.g.

- **Regulatory segregation of duties**
 - **Formal side:** Can models of 2nd line of defense be used for business steering? Can they support it at least? Or is it solely for risk management purposes (verification, second opinion, ...)?
 - **Informal side:** Communication, mutual respect, level and area of expertise

Does OSN heavy model bring something which cannot be get by easier means?

Risk measure as a key calculation tool

EAN 1

Calculates capital as a shortfall arising from sensitivity or scenario

- SCR = 1y 99.5% VaR as default
- ES, TVaR, ... / different quantiles
- Burn-through, ALM & liquidity, ...
- Coherent with strategic needs (= return on capital, ext. rating)

Four key components:

- confidence level
- timeframe
- risk measure (e.g. VaR), and
- extent of exposure (e.g. the SII total balance sheet or a subset which only protects policyholders, but not PVFP).

Remarks

Need / simplicity vs. mathematical properties or rigorousness

- Apart from market risk, calibration and estimates often difficult for higher quantiles
- Coherency with business steering
- Scenarios without estimate of its occurrence probability (“plausible”)
- Unlikely but devastating event with $SCR = VaR(1y, 99.5\%) = 0$ but having an essentially infinite expected shortfall (nuclear cat?)
- Some risks are irrelevant in one year horizon but might be very relevant over longer term (e.g. fall in interest rates)

Risk measurement time frames

EAN 1

Various choices

- Very short (daily/weekly/monthly market risks VaRs)
- One year
- Strategic planning horizon
- Product driven

The risks, uncertainties and time frames in non-life (re)insurance may differ substantially from those of life (re)insurance. While the range of outcomes for non-life insurance risks may be more widely distributed, there may be more uncertainty in long term life risks. The converse may also be true.

Remarks

Usual framework

- One year as SII default
- 3-5 years for planning purposes
- Isolated long-term view where appropriate
 - Life savings with guarantees
 - Climate changes (?)

Time horizon may be driven also by strategic decisions.

- Campaigns, dumping prices
- Safe/unsafe investment strategies
- Mergers, acquisitions, portfolio migrations, business partnerships & other business “disruptions”

Projection basis: what is best estimate and why?

EAN 1

This is a question of what comprises the undertaking's true view of reality.

From the collection of assumptions arising from SII, IFRS, local accounting, etc, the actuary may be able to produce an objective combined best estimate set of assumptions, taking aspects from each paradigm as appropriate.

The undertaking may opt to use this objective best estimate in two manners: inside and/or outside the SII capital and reserving model.

Remarks

Actuaries run many models for many purposes. Usually none of these represent the “objective” view on reality on its own:

- Pricing models tend to ignore the fact that reserving on “objective” best estimate is practically impossible
- Statutory reserves contain explicit prudence margins
- SII reserves may be distorted by forced assumptions on discounting curve, UFR, contract boundaries, ignore economic fundamentals embedded in the product or contain margins on “uncertainties”

Projection basis: what is best estimate and why?

EAN 1

Use inside the capital models:

- Use the objective best estimate in lieu of or in addition to the IM / SF SCR. The alternative capital model may be a candidate OSN basis.

Use outside the capital models:

- Perform projections into the future of various balance sheets and profit and loss accounts, e.g. SII, IFRS, local GAAP.
- The objective best estimate might be used to move from the valuation date (broadly “the present”) to the point in time when the accounts are to be recalculated (i.e. modelled).

Remarks

“Inside” use:

- Hypothetical SCR in a world without contract boundaries, UFR, transitional measures, without VA, including reasonable MA, realistic yields after LLP, ...
- Soft requirement of ČNB

“Outside” use:

- Essential for objective planning
- Many things to consider, including the uncertain development of many valuation parameters → time consuming and difficult exercise → compromises in reality

Risk capital versus policyholders' protective risk capital

EAN 1

Risk view differs from the perspective of policyholders and shareholders.

TBS approach = risks measured by:

- Impact on SII Balance Sheet and
- Impact on own funds.

Own funds essentially consist of:

- Share capital
- PVFP
- Subordinated debt

Risks to each own funds component have different implications.

Details can be again found in Appendix

Remarks

Very simply:

- Share capital = risk of shareholders' initial investment
- PVFP = policyholders cover the risk for different policyholders
- Subordinated debt = risk of debtholders' investment

Economic best estimate liability

EAN 1

“Economic BEL” = “the amount of CF matched assets required to meet liabilities on a net yield basis.”

The margin in the SII BEL above this economic BEL is “economic risk capital” and within the Best Estimate projection that margin is expected to materialise and accrue to the undertaking.

EAN further discusses the role of VA, MA, UFR, LLP and their influence on the difference between economic BEL and SII BEL.

Remark

Economic BEL is a possible basis for OSN – it has a close connection to the question of what is best estimate.

- Influence of VA, UFR and LLP may vary in portfolios
- The impact may or may not be significant
- Other assumptions should be investigated as well

II. Modelling

Nature of stresses: isolated vs. combined stresses

EAN 1

SII SF SCR – two-tier covariance aggregation of isolated, single-risk stresses.

SII IM SCR – Monte Carlo multi-variate risk stresses where the severity of individual risks is jointly sampled according to a dependency structure (e.g. copula).

For ORSA, isolated stresses do not suffice for the outer scenarios. Stress and scenario tests are required. These usually include combined-risk events, reverse stress tests, and sensitivity tests.

Remark

- Even for IM, the calibration may be based on isolated stresses
- Thus even for IM, the cross-effects might be underestimated in the core design (usually challenged by the regulators)

→ SF / IM may not be suitable for the evaluation of combined stresses

Examples:

- Covid
- Pure UL with fees as % of premium and death benefit as maximum of premium paid or fund value:
 - SCR for EQ risk = X
 - SCR for mortality risk = Y
 - “SCR” for EQ+mortality risk may be $\gg X+Y$
- How to construct the right (and complete) stresses?

Nature of stresses: imperfect design – lapse risk

EAN 1

For SII SF lapse stresses (increase / decrease of 50% and the 40% mass lapse event), there are two potential issues which the actuary may wish to address with distinct modelling or methodology.

- Restriction to policies (HRGs) where it leads loss in own funds
- Lapse mechanics of the SII SF assume that the policyholder, in exercising an option to surrender or lapse, **will act to the detriment of the insurer**. For many products, it may be the case that policyholders are more so motivated by **personal circumstance**.

Remark

ČNB stress test

- Single mass lapse of 10% affecting all policies
- Beneficial effects are not excluded

Many other dimensions to analyze:

- Guarantees
- Distribution channels
- Cheaper competitors
- Change in needs
- Retention activities
- ...

Implicit margins in expert judgments for the long tail

Nature of stresses: imperfect design – Nat CAT risk

EAN 1

Modelling of Nat CAT for business purposes may differ from the SII SF (or even IM). Own models may serve:

- To investigate the likelihood of combined events, evolution over time, effects on reserves / OF
- To investigate combined scenarios driven by climate events
- As potential OSN (non-prudential, non-regulatory) basis

Own models may be most useful in Stress and Scenario Testing to help the insurer understand their products, risks and exposures.

Remark

Where to find suitable models?

- Reinsurers
- Brokers
- Advisors

How to do a quality check?

Other practical uses:

- Capacity of RI program

Dependencies, correlations, interactions

EAN 1

Correlations

- Prescribed for the SII SF
- Possibly own for SII IM

If the “real” correlations or dependencies differ from those used for SII SF or IM, the company may wish to reflect this within the ORSA or via their OSN assessment.

Similarly for dependencies within financial markets.

Remark

Connections with the market narrative

Example:

- Banking stocks = increase and steepening in IR generally positive for EQ value
- Growth stocks = increase of IR generally negative for EQ value

Loss-absorbing capacity of deferred taxes

EAN 1

LAC DT may be allowed for explicitly within a *business projection model* which projects the appropriate balance sheets and profit and loss accounts into the future.

Multiple bases such as SII, IFRS, local accounting as required to reliably model the tax reality.

A simple assumption that LAC DT is the full tax rate (times SCR) may overestimate the relief which is scenario dependent.

Remark

- In CZ, additional complexity coming from tax regime taking elements from SII world
- LAC DT is an area where the “business projection model” is actually useful since future profits may provide a lot of capital relief
Need for another set of assumptions for a post-shock world
- SII shocks might not realize in P&L and tax base (e.g. spreads)

Loss-absorbing capacity of technical provisions

EAN 1

1. Scenario analysis may be useful in assessing the reliability of the adjustment for the LAC TP. Within SII SCR, the adjustment is formulaic. The use of scenario analysis may give comfort (or concern) if liabilities will be able to absorb losses consistently with the reduction in the SII SCR.
2. The construction of a business projection model to suit this purpose is no small task and the actuary may need to consider the reliability of a simplified calculation and the cost-benefit analysis of building the sophisticated model.

Remark

- LAC TP benefits come from future discretionary benefits and thus can be very small
- Technically speaking, even the assessment of what amount of profit sharing is **really** discretionary might be a difficult task

Defaults, downgrades, credit spreads, and market values

EAN 1

Credit risks affect assets or liabilities differently for different products (UL, participating, protection, non-life).

Useful to separate asset backing liabilities from assets backing capital.

It may be necessary to model multiple risks. For example:

- Changes in credit spreads to model changes in market values of bonds and other credit-risky assets and
- Separately expected (or shocked) credit defaults to measure actual (potential) asset shortfall arising from a long term ALM cash flow matching strategy.

Remark

Product based examples:

- General account vs pure UL (total loss vs. only loss in fees)
- Split useful even for pure UL (fund value vs. claims reserves)

Real impact of credit spreads:

- Loss in OF eventually recovered?
- Positive for future P&L?

Connection with the real economy

- Spreads on sovereign debt
- IFRS 9

Rare experience with the real defaults

- Fin crisis in 2009 (Iceland banks)

Subsequent problems (liquidity)

III. Assumptions

Contract boundaries

EAN 1

Since SII contract boundaries cause the projection to **deviate from otherwise real-world BE assumptions**, these assumptions may be used within the ORSA to project the expected effects (profits, Basic Own Funds, Eligible Own Funds, future capital needs, etc.).

The insurer may benefit from developing their own contract boundary basis, or in fact multiple for varied purposes.

- Inner scenarios (alternative reserves or capital calculations)
- Outer scenarios

Remark

Various approaches possible

- No additional scenario since CBs are obviously prudent
- CBs removed completely
- Inclusion of repricing or cancellation options in a completely realistic way (the use triggered in case of adverse development but perhaps not immediately as it takes some time between observation and action)

Outer scenario “without CB” may be a minimum for realistic planning.

“Risk neutral” versus “real world”

EAN 1 (RN)

Non-market risks: no distinction between RN and RW

Market risks: RN / RW assumptions serve distinct purposes.

- RN required for SII TP
- Expected return on **all** assets is the risk-free rate
- Stochastic evaluation may replicate the market prices but individual stochastic paths may not be meaningful
- Risk of invalidity in using dynamic models for non-market risks or actions interacting with RW factors

EAN 1 (RW)

- RW aims to provide a realistic projection of assets and liabilities
- Assets earn their real-world expected return = the risk-free rate plus risk premium
- More reliable representations of future potential paths
- Dynamic models (policyholder behaviour and management actions) may be more appropriate
- The analysis of stochastic outcomes more meaningful within a real-world framework

“Risk neutral” versus “real world”

EAN 1

Implications for a valuation

- SII uses a market RFR (+VA/MA) for discounting
- Non-risk-free assets may provide realistically higher yield
- SII discount rate may thus provide a margin of implicit risk capital within the SII BEL itself
- The actuary may want to assess the adequacy of reserves under multiple valuation approaches
- Dynamic modelling issues when RW interactions may be different a lot from RN world

Remark

- EAN does not discuss particular RN / RW models and their pros & cons
- Nor does it discuss which view is the better one although the flavor is shifted to the RW
- It simply encourages on several places and here once again to consider the economic reality compared to the regulation so that the conclusions made purely from “SII world” are not misleading

Discount curves

EAN 1

Apart the discussion on RN / RW, there are other aspects to SII which may be treated differently for SII BEL valuation and ORSA projection:

- UFR
- VA/MA
- LLP

There may be a need for a second (objective) basis for the management of interest-rate related risks and reinvestment risks, which is not smoothed as SII in fact is.

- Relevant also for pricing

Remark

Pricing of long-term savings product based on SII EIOPA curves including UFR is “dangerous”.

Using of different underlying curves might be difficult to communicate:

- Pricing new business margin and reporting new business margin will differ
- Reporting figures might go above or below managerial thresholds

Open question whether to use SII yield curves in IFRS17

Future new business

EAN 1

ORSA reflects the expected NB:

- Once future NB comes onto the books it needs to be treated per SII SF/IM rules in calculating reserves and capital
- What effects (e.g. solvency, capital, NB financing limitations) would be in various scenarios relating to new business
- Increasing uncertainty over time

Remark

NB might have both expectable and surprising effects on the KPIs.

Expectable one:

- Higher NB → higher future profits (usually)

Potentially surprising:

- Contract boundaries may lead to negative NB value and impact on own funds
- Liquidity situation may worsen due to high commissions (especially with other factors like unexpected dividends)

Solvency II and assessment of long term credit risks

EAN 1

EIOPA provides the risk-free curve → SII reduces the reliance upon external credit rating agencies and the need for in-house “asset valuation” and credit assessment to determine a reliable, prudent yield curve based on the insurer’s own portfolio of assets.

SII risk capital focuses on 1y view.

But the Prudent Person Principle causes a company to focus on longer measurement periods for assessing credit-related risks as they pertain to the company’s insurance contracts.

Remark

SII has a “soft” requirement not to rely too much on EIOPA or external ratings.

- How to do it in practice?
- Is it relevant / obligatory only for large groups or also small entities?
- Is it really useful?

Sovereign credit risk

EAN 1

An insurer's treatment and risk assessment of EU sovereign bonds may be a **core issue** in terms of the assessment of the appropriateness of the Standard Formula for many insurers.

SII makes an assumption on how sovereign debt will default. Financial markets have different beliefs.

While there is no risk capital in SF, the SII balance sheet is not protected from the risk.

Remark

Possible approaches:

- Full independent calibration (IM)
- Simpler ways, e.g. treat sovereign debt as high quality corporate debt
- Use SII MA like framework to assess the sovereign credit risk:
 - Gross yields decreased by the fundamental spreads = no less than 30% of long term average of the spreads over risk-free of assets from the same asset class with the same duration and credit quality

IV. Risk maps and the ORSA

Risk maps and the ORSA

EAN 1

Commonly used risk maps can be extended for use in the ORSA.

Scenarios that can be studied are:

- Killer scenarios
- Contingency measures
- Climate changes
- Macro-economic drivers changes
- Maps for different portfolios (UL, participating, non-life, etc.)

Risk maps might be a good way to build a picture, preferably holistic, on the insurers risk profile in short term but even in longer horizon.

Remark

Risk map = probability x severity approach

Benefits

- It looks nice
- It is a good communication tool

Difficulties

- Construction of relevant scenarios
- Scenario likelihood or severance may be difficult to estimate
- Scenario analysis should not be the only tool in the box

V. Appendix

OSN: Actuary may find useful to go through these aspects

EAN 1

Risks:

- Products offered (historically and currently), risks from the policy itself / from regulatory requirements, overlap and differences
- How OSN supports identification / assessment / management of those risks
- Fundamental uncertainties / assumptions
- Special needs in managing risks arising e.g. from ALM, product management or underwriting
- The assessment of the appropriateness of the SII Standard Formula (for SF firms)

Remarks

Example:

- Czech 3rd pillar transformed fund (before IFRS 9 introduction)
- The risk from the policies itself is very similar to the usual endowment + annuity option life policy
- SF essentially blind (pension company is a generic participation)
- **Specific capital requirement in local law = to cover whole amount of all unrealized capital losses on AFS investments and limit on HTM investments = would make any usual and reasonable investment strategy toxic in the rising interest rates environment**

OSN: Actuary may find useful to go through these aspects

EAN 1

Reserves:

- The measurement of the adequacy of reserves in covering insurance liabilities
- How the reserving methodology of the OSN can support other business functions such as strategic planning and product pricing

Remarks

Example:

- SII (SF) penalizes duration mismatch in the interest rate risk
- Let us consider the portfolio of:
 - Run-off traditional life savings with guarantees in outflow phase
 - Pure UL business with fees based on premiums
- These two portfolio have essentially opposite duration sensitivity
- Minimizing the SF interest rate risk leads inevitably to a reinvestment risk on guarantees with potential negative impacts in LAT

OSN: Actuary may find useful to go through these aspects

EAN 1

Capital:

- A comprehensible definition of capital components, their sources or nature, their purpose and which aspects of the insurer's balance sheet they protect
- A basis to investigate whether capital (money) is an appropriate measure to protect against a risk and when it might not be
- How the OSN capital basis assists with the prudential management of the insurer and ensures the insurer's continued solvency under stress

Remarks

Examples:

- Usually in CZ, capital components are mainly share capital + PVFP
- Money not appropriate for e.g.
 - Operational excesses
 - Nat CAT (rather reinsure)
 - Un-insurable risks (drought, some sports, ...)
 - And many others...
- If OSN appropriately reflects the risk and its severance, it may help where SF / IM fails (or implicitly assumes that the risk is mitigated in a different way)

OSN: Actuary may find useful to go through these aspects

EAN 1

Product pricing & profitability:

- Whether the OSN can play an integral part in product pricing and profitability analyses

Remarks

Example:

- Cost of capital vs. cost of reinsurance (property insurance)
- Implications of OSN on held capital and profitability metrics like RoE
- Preferred vs. undesired products (e.g. protection business vs. savings with financial guarantees)

Does OSN heavy model bring something which cannot be get by easier means?

OSN: Actuary may find useful to go through these aspects

EAN 1

Other business uses:

- The extent to which models faithfully reflect the risk profile of the company. This might also include an assessment of the various business purposes for which models can reliably be used.

Remarks

Problems:

- **Regulatory segregation of duties**
- **Formal side:** Can models of 2nd line of defence be used for business steering? Can they support it at least? Or is it solely for risk management purposes (verification, second opinion, ...)?
- **Informal side:** Communication, mutual respect, level and area of expertise

Kiln's Group 7 views of risk capital (2013)

Kiln's approach to their 3-year ORSA projection horizon

<u>3 views</u>	<u>6 flavours – existing basis, pre SII</u>	<u>New basis – post SII</u>
Regulatory	(1) ICA: 99.5% VaR DFB Risks to ultimate GAAP reserves	(7)SCR: 99.5% VaR DFB 1-year emergence Tech provs: disc, RM
Rating agency	(2) ECA: 99.5% VaR DFB * 1.35 (3) 99.9% VaR DFB	No change
Economic	(4) Buffer: ECA + 80% TVaR DFM (5) HO carry: 99.9% VaR DFB (6) HO allocation: 99% TVaR DFM	No change

Step 1:

1-year capital calculation: fully stochastic DFA model

Step 2:

Chain together 3 consecutive 1-year calculations: trends on volume, exposures, PRI, loss ratios, the insurance cycle → financing of preferred path for the business

Step 3:

Apply shocks to central capital forecasts → contingency capital planning

→ studies of plan ROE and variability of ROE

Projection basis: what is best estimate and why?

EAN 1

Thus for BE ORSA scenario, insurer may choose the assumptions:

- Fully consistent with SII BE, or
- “True real-world basis” – some assumptions same as SII basis while others differ. When they differ, the actuary may wish to explain why.

The latter may form part of the basis for the insurer's Overall Solvency Needs.

Remarks

Practical difficulties:

True real-world basis may

- Be unknown or highly uncertain (real future claims or lapses)
- Be too complex to model reliably (future changes to yield curves, risk premium on asset classes)
- Require too much additional work (running everything twice or even more times)
- Be difficult to communicate
- Require too much calculation time to be used fully e.g. in later phases of the planning

Projection basis: what is best estimate and why?

EAN 1

It is vital to keep in mind the realities in addition to and as opposed to SII modelling, SF/IM, prescribed assumptions (e.g. in SII MA).

When evaluating risks, potential risk events both at extremes and as expected, the distribution of risk events (if appropriate), exposures to those risks, as well as related elements such as management actions, regulatory actions, and policyholder behaviour might need to be taken into account.

Remarks

Instead of own remarks, let us close the topic by citing the EAN 1 directly:
“A vital aspect related to the (whole) discussion is that the actuary will need to understand the differences, both individually and in aggregate, between the SII approach and methodology and rules and any deviations appropriate for the ORSA.”

Risk capital versus policyholders' protective risk capital

EAN 1

PVFP protects share/debtholders but does not protect policyholders directly but business against business. FP belong to shareholders, paid as dividend or retained as capital.

Shareholder equity and subordinated debt protect against losses **not supportable by future profits** and protect policyholders in the short term in the event that the insurer has insufficient means to meet its liabilities.

Remarks

Example:

Technical losses on one portfolio may be covered by the following sources:

- Investment income on associated technical reserves
- Cross-subsidy from other business (technical, investment)
- Investment income on capital
- Direct usage of shareholder equity
- Subordinated debt
- Direct capital injections

While all of it may be the same Tier 1 capital, the implications for business are clearly different.

Risk capital versus policyholders' protective risk capital

EAN 1

Loss-making business may be subsidised by profitable business (going concern).

This assumption of cross-subsidy might be reviewed. It may not be maintainable as competitors or new entrants may be able to offer similar profitable products but will not need to subsidise loss-making legacy business.

Remarks

Potential cross-subsidies in CZ:

- Corporate vs. retail business
- Large vs. small clients
- Guarantees vs. UL / protection etc.

The EAN 1 advises the actuaries to find such portfolios and re-think whether the subsidy is sustainable and how much strain it presents on the whole portfolio.

Economic best estimate liability

EAN 1

EAN further discusses the role of VA, MA, UFR, LLP and their influence on the difference between economic BEL and SII BEL.

Calculating an "economic BEL" on a net yield basis – which may be viewed as "not prudent" (not imprudent, just not prudent) by supervisors – would increase the need for accuracy, reliability and completeness in the risk capital calculation, e.g. for credit risk capital as the reserves would not contain a prudent buffer against credit risk.

Remark

- Influence of VA, UFR and LLP may vary in portfolios
- The impact may or may not be significant
- Other assumptions should be investigated as well

Nature of stresses: examples of combined risk models

EAN 1

Examples of combined risk models useful for investigating combined effects on an insurer's balance sheet and product portfolios include:

- A causal macro or market model (formal model or mental model) which provides coherent combined market risk scenarios
- A model for investigating the common and distinct risk drivers for mortality, morbidity, and longevity risks
- A dynamic lapse model incorporating policyholder behaviour and market movements, as appropriate
- An interest rate model which stresses all portfolios by the same stress (not the worst-of-up-or-down per Pillar 1) to investigate the inherent interest rate diversification or lack thereof arising from the insurer's various product portfolios

Remark

Other examples:

- ?

Contract boundaries

EAN 1

Other topics related to CB:

- Projecting SII reserves or capital must respect both economic reality and SII regulation
- Split of premiums & costs to different coverages (main cover & riders) which are affected by CB differently. “In addition to the difficulty, there may be unresolvable uncertainty due to the incompleteness of the SII rules or the scope for interpretation.”
- Cross-subsidy of different covers

Remark

Various approaches possible

- No additional scenario since CBs are obviously prudent
- CBs removed completely
- Inclusion of repricing or cancellation options in a completely realistic way (the use triggered in case of adverse development but perhaps not immediately as it takes some time between observation and action)

Outer scenario “without CB” may be a minimum for realistic planning.