FINMA’s model review approach and future challenges

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Agenda

- Components of the Swiss Solvency Test (SST)
- Validation of internal models – what to look out for

Capital and solvency requirements for Swiss insurers and reinsurers

- Capital and surplus requirements for insurers and reinsurers:
    1. minimum share capital requirements
    2. free and unencumbered capital in relation to the activities (solvency margin).
- Currently, two methods are used to evaluate the solvency requirements:

❶ **Solvency I**:

- based on the statutory balance sheet
- necessary capital resources determined by the volume of premiums or claims (required solvency margin), and the eligible capital (available solvency margin);

❷ **Swiss Solvency Test (SST)**:

- based on the economic balance sheet (market-consistent valuation of assets and liabilities)
- necessary capital resources determined in relation to the insurance, market and credit risk an insurer is exposed to (target capital), and the eligible capital (risk-bearing capital).

SST and Solvency II roadmap 2001 – 2016 (1/2)

	CH	EU
2001/02	Stock market crash	
2001		Launch of the Solvency II Project
2003	Launch of the SST project	
2004	Field test	
2005	Field test	QIS1
2006	Revised Insurance Supervision Law entered into force. SST becomes mandatory reporting requirement for *large* insurance companies.	QIS2
2007	SST reporting	QIS3
2008	SST reporting. SST now compulsory for *all* insurance undertakings, including small and mid-sized companies	QIS4
2009	- SST reporting - FINMA goes live	Adoption of the Solvency II Framework Directive
2010	SST reporting	QIS5
2011	End of the 5-year phasing-in period: all insurers must meet the SST capital requirements.	- Draft Level 2 implementing measures - Equivalence testing (CH, Japan, Bermuda)

SST and Solvency II roadmap 2001 – 2016 (2/2)

2013	1 January: Introduction of temporary adjustments to the SST (yield curve, intervention thresholds): FINMA-Circular 13/2 «Adjustments to the Swiss Solvency Test»	QIS6: impact assessment of the implications of long-term guarantees (LTGA)
2014	November: start of the public consultation on the revised Insurance Supervision Ordinance (ISO)	- Adoption of the Omnibus II-Directive (April) - Adoption of the Delegated Acts (10 October) - Public consultation on the Implementing Technical Standards (ITS; two sets) - Stress test exercise
2015	1 July: revised insurance supervision ordinance (ISO) becomes effective 31 December: expiration of the FINMA-Circular 13/2	- Implementation of Solvency II in national law (→ provides, among others, the legal basis for internal model reviews) - Adoption of Level 2 binding technical standards and Level 3 (non-binding) EIOPA guidelines
2016		Introduction of Solvency II (including long-term transitional measures)

The full implementation of the SST was not without difficulties …

Basler Zeitung (29.03.2011)

«Das ist Wettbewerbsverzerrung pur»

Die Kapitalvorschriften für Versicherer müssten gemildert werden, sagt «National»-Chef Hans Künzle. Ansonsten würden die Schweizer Anbieter aus dem Markt gedrängt.

Der Bund (23.03.2011)

Der Finanzchef der Bâloise muckt auf

Viele Versicherer machen die Faust im Sack. Aus Basel kommt die Kritik an der Finma hörbar.

Schweizer Versicherung (01.03.2011)

Wenn Modellrisiken die Marktrisiken zu übersteigen drohen

Die Schweizer Versicherungsindustrie steht zwar hinter der risikobasierten Aufsicht. Trotzdem bestehen noch Meinungsunterschiede zwischen Aufsichtsbehörde und Assekuranz in materiell wichtigen Fragen.

Basler Zeitung (26.01.2011)

Solvenztest unter harter Kritik Die seit diesem Jahr geltenden Vorschriften sind den Versicherern zu streng

Der neue Solvenztest sorgt seit Längerem für rote Köpfe bei den Versicherern. Viele forderten einen Aufschub. Gestern verteidigte sich die Finma vor den Medien. Einer kann sich besonders schön aufregen: Germann Egloff, Finanzchef der Basler Versicherung. Auf den Schweizer Solvenztest (SST) angesprochen, verfinstert sich seine Mine.

… but meanwhile the SST is well accepted

- Despite its initial criticism, the SST has gained high acceptance.

- Insurance companies, overall, are satisfied with the SST and use it to manage and steer their business. Evidence for this can be found in various studies such as:
  - Ernst Young (30 June 2011): *SST Studie*
  - University of St. Gallen HSG (June 2014): "Wirksamkeit und Effizienz der Regulierung in der deutschsprachigen Assekuranz – Eine juristische und ökonomische Analyse"

- Furthermore, the SST allows insurance companies to better manage their capital
  - issuance of double-trigger notes where one trigger is related to the SST-ratio.

- **Quote** from the International Monetary Fund (**IMF**): the IMF concludes in its final report on Switzerland's "Financial Sector Stability Assessment" (FSAP; May 2014):

The Swiss authorities passed and implemented SST, a state of the art solvency regime, ahead of any jurisdiction.

Why it was important to set the SST into force timely on 01/01/2011

Scenario: Protracted period of low interest rates [CHF 10y rate: ≈ - 20 bps]

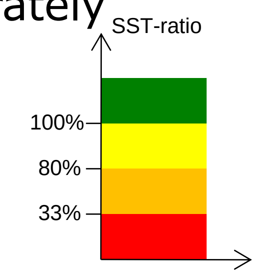
An enduring period of low interest rates poses a threat to all life insurers that have sold products with high return guarantees: current investment yields are not sufficient to cover the interest expenses [average technical interest rate ≈ 2.5%]

Solvency I (local statutory)

- Solvency margin is *not* sensitive to interest rate movements
- release of valuation reserves and / or bonus reserves may help to gloss over the problem for a certain time
- Policyholders, analysts, rating agencies etc. may be lulled into false security

SST

- Available funds and insurance obligations are valued market-consistently → SST-ratio *is* interest rate sensitive
- SST thus addresses potential problems timely and accurately
- FINMA has the right to intervene in case of an insufficient coverage ratio (intervention ladders)



The SST is defined via a set of principles

- **SST capital requirement**

  An insurance company meets the SST capital requirements if the risk-bearing capital (available capital) exceeds the target capital (required capital).

- **Mark-to-market (-to-model) for assets and liabilities**

  All assets and liabilities are to be valued market-consistently. This means that valuation is based on reliable market values or – if no such values exist – on model outputs, calibrated using market data.

- **Risks to be quantified**

  Risks to be quantified are market-, credit- and insurance risk.

- **Stress scenarios**

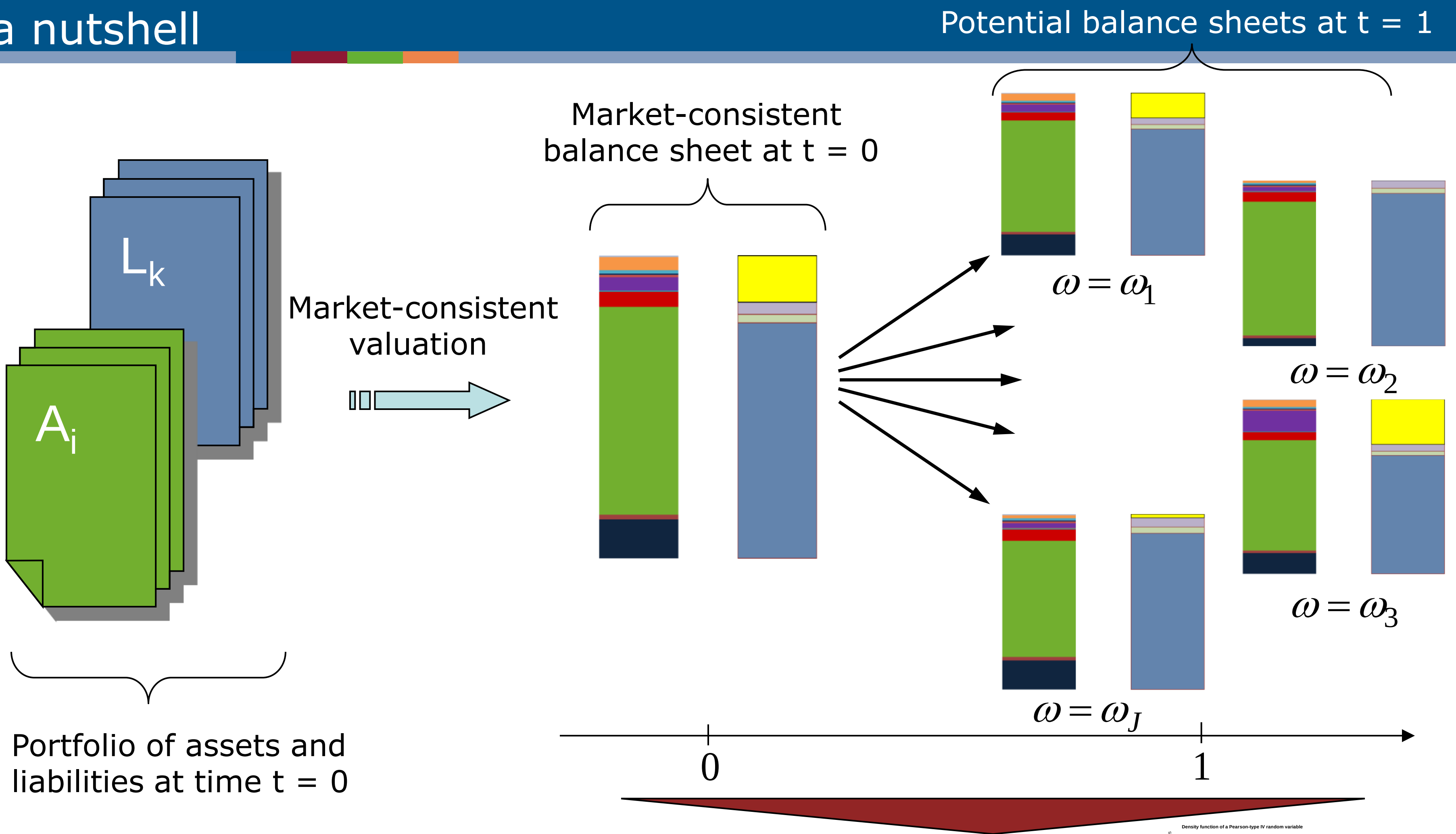
  Scenarios defined by the regulator as well as company specific scenarios have to be evaluated and, if relevant, aggregated to the target capital.

- **Models to be used**

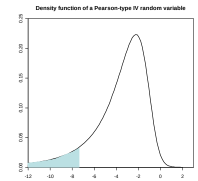
  A standard model or (partial) internal models can be used. Internal models must be used if the standard model provided by FINMA cannot capture the risks profile of an insurance company appropriately.

Source: FINMA-Circular 2008/44 “SST”.

Valuation and risk measurement in a nutshell



In the focus: changes of the available capital over a one-year horizon → target capital



SST reporting requirements

Dates and time limits:

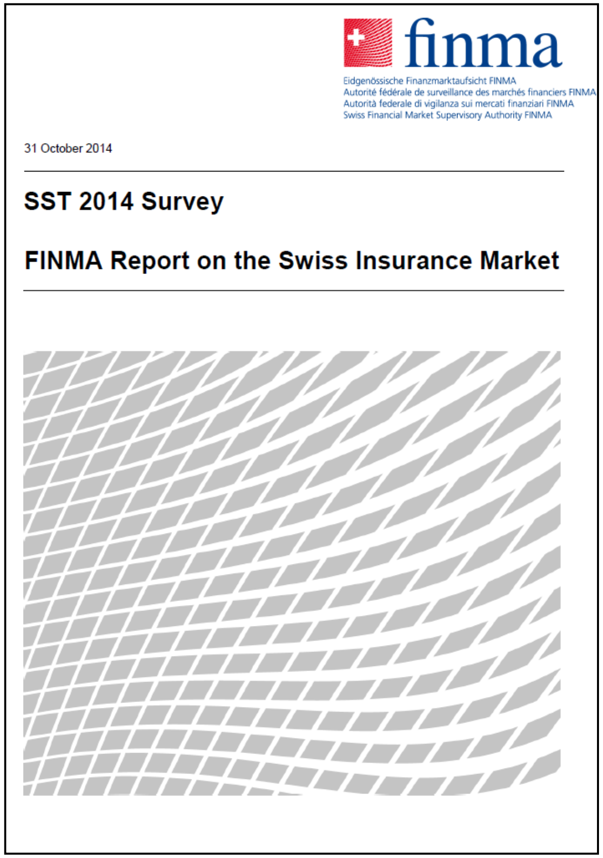
- The risk-bearing capital and the target capital shall be determined at least once a year[1]
  - Date effective: 1 January
  - Deadline for submission: 30 April
  - Deadline for FINMA review: 31 October

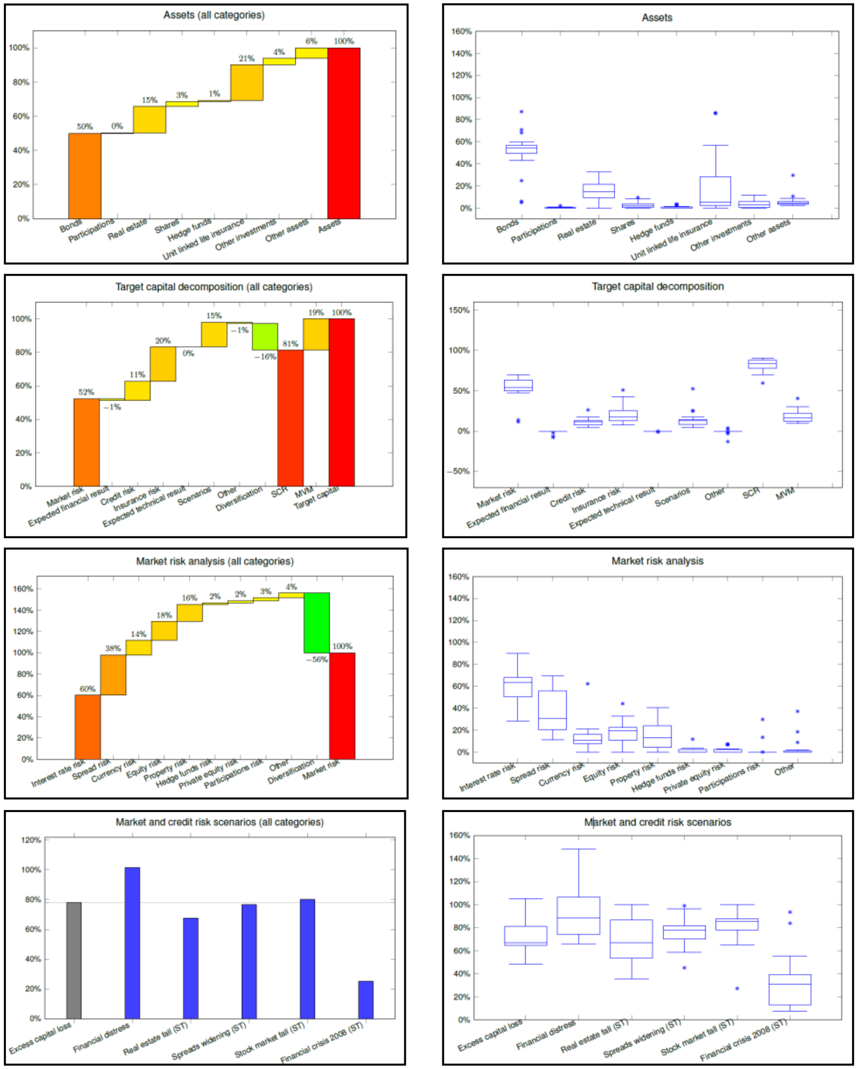
SST report

- As a general rule, insurance companies shall produce an SST-report on the calculation of the risk-bearing capital and the target capital *annually*. This report must be signed by the Executive Board.
- The SST report must contain all the relevant information such that a knowledgeable party could review the computations and understand the insurance company's risk situation.

[1] FINMA may increase the frequency of determination for one or more insurance companies if the risk situation so requires. In this case, FINMA may permit an approximate determination of the risk-bearing capital or the target capital instead of a precise calculation.

FINMA publishes SST market data





www.finma.ch/e/beaufsichtigte/versicherungen/schweizer-solvenztest/Documents/sst-ergebnisse-2014-e.pdf

A partially revised Insurance Supervision Ordinance will enter into force at 1 July 2015

- Based on the …
  - … lessons learned from the financial crisis,
  - … experience from the Swiss Solvency Test SST,
  - … EIOPA's equivalence assessment 2011 and
  - … the International Monetary Fund's assessment (FSAP) in 2013

  a partially **revised Insurance Supervision Ordinance (ISO)** will enter into force at 1 July 2015.

- **Major topics** of the ISO revision:
  - Repeal of Solvency I,
  - Stronger emphasis on standard models (instead of internal models),
  - Consolidated group solvency requirements as default option (instead of so-called granular approach),
  - Qualitative risk management issues (e.g. ORSA; audit and compliance function),
  - Public disclosure requirements.

Models to be used – Current ISO wording

Art. 43 ISO *Models for risk quantification*

1 Each insurance company must have a model to quantify the risks.

2 FINMA defines a standard model which is designed uniformly for all insurance companies in terms of financial risks, but designed specifically in terms of insurance risks. FINMA may require the standard model to be modified or an internal model to be used if the standard model does not reflect an insurance company's specific risk situation appropriately.

3 Insurance companies can use partially or wholly own models (internal models) for risk quantification upon approval by FINMA. Approval will be granted provided that FINMA's qualitative, quantitative and organisational requirements are met.

4 …

Remarks:

- The meaning of the word 'model' is biased towards *risk* quantification.
- The fact that insurance companies *can* use internal models led to a spate of applications. Approx. 70 insurance companies (out of 130 which are currently subject to SST reporting requirements) submitted a request for using an (partial) internal model.

Models to be used – New wording

Art. 50a ISO *Basic Principle*

[1] An insurance companies determines its solvency by means of a standard model defined by FINMA.

[2] An insurance company can determine its solvency partially or fully by means of an internal model provided it has been approved by FINMA.

Art. 50b ISO *Standard models*

[1] FINMA defines or identifies standard models which reflect the risk profile of most insurance companies.

[2] FINMA decides which standard model an insurance company must use.

[3] FINMA may require the standard model to be modified or to use an internal model according to art. 50c if the standard model used does not reflect an insurance company's specific risk situation appropriately.

Art. 50c ISO *Internal models*

FINMA allows an insurance company to use an internal model provided that

a. none of the standard models do reflect the specific risk situation appropriately
b. FINMA's qualitative, quantitative and organisational requirements are met.

FINMA has completed 69 model reviews

The result of a model review can be

- Unconditional acceptance
- Conditional acceptance [e.g. permission for a restricted period, increase of certain risk weights, ...]
- Rejection

Status as of 31-12-2014:

Branche / **Decision**	**Life**	**Non-Life**	**Health**	**Reins.**	**Ins. Groups**	**Total**
Unconditional Acceptance	1	2	1	2		**6**
Conditional acceptance	8	11		13	2	**34**
Rejection	3	9		11	6	**29**
Total	**12**	**22**	**1**	**26**	**8**	**69**

Reasons for rejecting internal models

Documentation:

- insufficient or incomplete documentation (w.r.t. assumptions, parametrization, justification of simplifications, validation, characteristics of business, different languages, different levels of granularity, …)
- wrong scope (Solvency II, user-manual like, …)

Modelling:

- selected approach not consistent with FINMA regulations (e.g. risk-free interest rate term structure, risk margin, group modelling, …)
- non-consideration of specific risk drivers (credit spread risk, FX risk, …)
- non-consideration of properties of the portfolio of contracts (e.g. options and guarantees, non-proportional contract structures) and parts of the portfolio (e.g. life business)
- data used inconsistent or not appropriate (e.g. time series of different lengths, missing trend corrections in empirical data, …)
- …

The complexity of a risk model should be adequate to the complexity of the portfolio

"Too simple"

Big calibration errors

optionalities in the liabilities not captured

model only working for a certain range of interest rates / volatilities / …

"Just right"

extremely difficult to calibrate

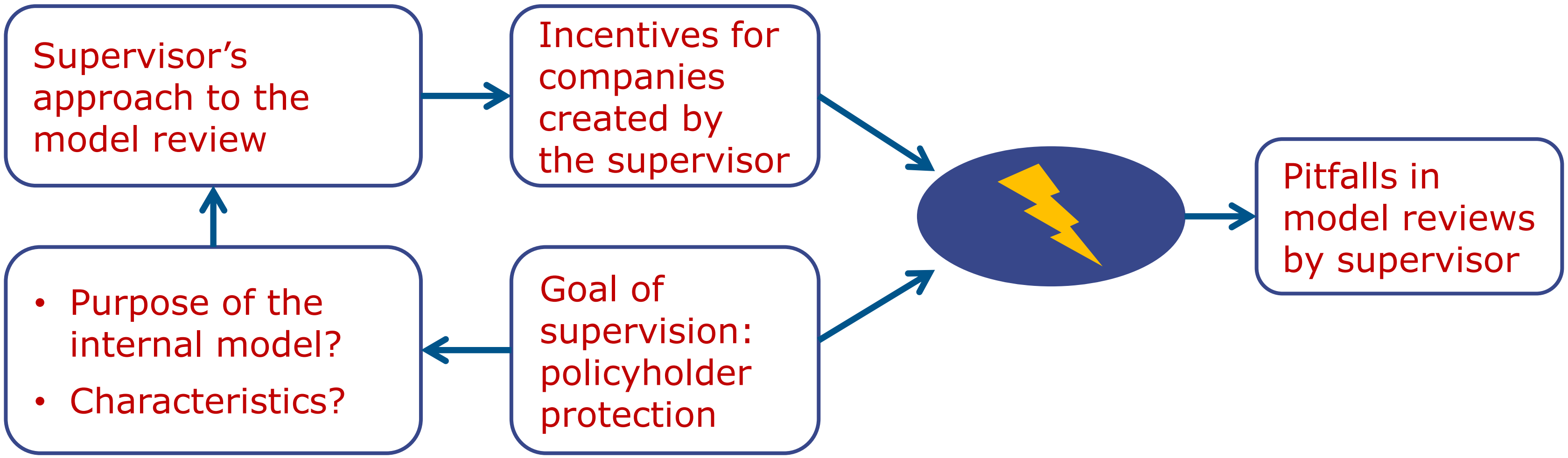
pseudo-accuracy

Economic scenario generators (ESG) as black boxes

"Too complex"

Pitfalls in model reviews

- The way supervisors approach the review of models can have implications on the behavior of insurers and can create counterproductive incentives.
- Pitfalls in model reviews can result if the supervisor creates incentives that run *counter* to the goal of supervision.



- Two potential pitfalls are presented in the following:
  1. "Look only at what is there but not at what is missing"
  2. "Focus on what is easy instead of what is important"

Look only at what is there but not at what is missing

There can be a tendency to look at and criticize only what the company makes explicit and not focus enough on what is not there but should be

➔ The consequence can be that insurers are punished for transparency / honesty and rewarded for intransparency / dishonesty

Examples:

- The more complex (and non-standard) a model and the more extensive the documentation including the justifications, the more questions can be asked.
- If a specific assumption is made explicit in the documentation, it can be criticized (e.g. non-stochastic biometric risk factors in best estimate valuation).
- Companies may develop risk modules for numerous but non-material lines of business (LoB) in P&C. They thus distract the supervisor from the modules that really matter.

Focus on what is easy instead of what is important

It is easy …

- to find something that is not there (e.g. documentation, justification, analysis, policy, process, functions, …)
- to focus on
  - letter of the law and to rely on rules (→ avoiding taking responsibility)
  - mathematical properties / issues / details
  - clear mistakes, even just formulations, that are ultimately irrelevant
- to put the emphasis on the use of standard approaches and procedures (to get comfort, comparability, consistency), although appropriateness can be questionable.

Challenges when reviewing internal model

Equal treatment of what is identical and unequal treatment of what is not identical!

- Challenges:
  - **Model** documentations often incomplete and inconsistent in terms of language, style, level of granularity,…
  - **Equal treatment** of what is identical (in particular, equal treatment of comparable insurance undertakings)
  - **Treatment of applications for model changes** (only weeks or days after first authorization, or even weeks after the application for using an internal model …)
  - Dealing with **political interests**.
  - Organization of the model review process.

Future Challenges (1/2)

For FINMA:

- Expiration of temporary adjustments – Full implementation of Solvency II (transition phase of up to 16 years)
- Potential increase of the number of interventions (due to e.g. low interest rate environment)
- Implementation of the revised Insurance Supervision Ordinance:
  - More emphasis on standard models ↔ on-going reviews of internal models
  - Reversion of the two methods for assessing the solvency of an insurance group (granular vs. consolidated)
  - Concretization of FINMA's supervisory practices (development from scratch or amendment or various FINMA-Circulars, respectively)

Future Challenges (2/2)

For insurance undertakings

- Economic environment: adjustment of business models and risk models:

Business model	Risk models
• Shift from traditional savings products to risk products • Modification of [current] contract conditions [if permissible] • Broader business mix • Changing investment strategies • Reducing expenses	• Amendment or replacement of certain risk modules (e.g. log-normal interest rate models) • Inclusion of stress scenarios (e.g. inflation, GREXIT, minimum exchange rates, …) • …

- Complying with
  - additional local regulatory requirements (disclosure, ORSA, …)
  - Solvency II requirements (Swiss domiciled insurance group)
  - …

Conclusions

- Switzerland succeeded in implementing a modern risk-based, economic solvency regime named SST.
- In the early stages of the SST regime, internal models were pushed forward.
- Not only the development and maintenance of an internal model is a challenging task, but also the subsequent review by the supervisors
  - When reviewing internal risk models, supervisors gain deep insight into “real-world” modelling problems.
  - Sometimes, when using an internal model as opposed to a standard model, the additional benefit in the accuracy of risk quantification is minimal.
- With the revision of the Insurance Supervision Ordinance, FINMA has paved the way to strengthen the (re-) usage of the standard models.
- Irrespective of the modeling questions, the economic and regulatory environment remains very ambitious for (life) insurers.

Appendix: Temporary adjustments (1/2)

The temporary adjustments(*) to the SST were introduced in 2013 and are a measure to alleviate the challenging situation for (life) insurance companies

- **Protracted period of low interest rates**: A protracted period of low interest rates poses a problem for life insurance companies. In particular for those whose back-books include high interest rate guarantees.

- **Delay in the Solvency II project**: The delay in the implementation of Solvency II has been regarded as a competitive disadvantage for Swiss insurance undertakings (in particular insurance groups), especially for those that have to comply with potentially higher capital requirements compared to European peers.

Temporary adjustments essentially refer to

– interest rate term structure for valuation purposes (→ no longer risk-free)

– intervention thresholds.

(*) applicable from 1 January 2013 until 31 December 2015.

Appendix: Temporary adjustments (2/2)

Key characteristics of the temporary adjustments

- Validity: The new FINMA-Circular 13/2 «Adjustments to the SST» is valid for three years only (2013, 2014, 2015).
- FINMA-Circular 08/44 «SST» remains valid: The existing FINMA-Circular 08/44 «SST» remains valid; the regulations of the new FINMA-Circular prevail though.
- Freedom of choice: Each insurance undertaking can choose whether or not it wants to use the “risky” yield curve. The FINMA-Circular grants insurers the choice for each of the subsequent three calendar years 2013, 2014 und 2015 independently.
- Relaxations apply only for business inforce: The relaxations can only be claimed for inforce-business (→ avoiding false incentives when writing new business).
- Transparency towards FINMA: For reasons of transparency, insurers must submit their SST-figures also on risk-free terms (shadow calculation).

Appendix: Equivalence (1/2)

Background

- The Solvency II Directive recognizes the fact that insurance is a global industry.
- To avoid unnecessary duplication of regulation, Solvency II allows the European Commission to decide about the equivalence of a third country's solvency and prudential regime.
- Equivalence findings promote open international insurance markets, whilst simultaneously ensuring that policy holders are adequately protected globally.

Appendix: Equivalence (2/2)

- **October 2011:** EIOPA provided the European Commission with a draft report regarding the Solvency II equivalence of the Swiss supervisory regime.
  - The Swiss regime has been assessed for Article 172 (reinsurance supervision), Article 227 (group solvency calculation) and Article 260 (group supervision) of the Solvency II Directive.
  - According to EIOPA's findings, Switzerland meets the Solvency II equivalence assessment criteria although there were some *caveats*.
- **March 2015:** EIOPA publishes a Final Report, which contains the advice to the European Commission regarding the full equivalence assessments of Switzerland.
  - ➢ EIOPA concludes that the caveats are expected to be addressed by the forthcoming revision to the Insurance Supervision Ordinance.