Eidgenössische Finanzmarktaufsicht FINMA
Autorité fédérale de surveillance des marchés financiers FINMA
Autorità federale di vigilanza sui mercati finanziari FINMA
Swiss Financial Market Supervisory Authority FINMA

Circular 2017/3
SST

Swiss Solvency Test (SST)

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Adressees

BankA			ISA			FinIA						FMIA						CISA						AMLA		Other	
Banks	Financial groups and congl.	Other intermediaries	Insurers	Insurance groups and congl.	Intermediaries	Portfolio managers	Trustees	Managers of collective assets	Fund management companies	Investment firms (proprietarian trading)	Investment firms (non propriet. trading)	Trading venues	Central counterparties	Central securities depositories	Trade repositories	Payment systems	Participants	SICAVs	Limited partnerships for CISs	SICAFs	Custodian banks	Representatives of foreign CISs	Other intermediaries	SRO	SRO-supervised institutions	Audit firms	Rating agencies
			X	X																							

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I. Purpose and scope of application

This circular sets out the supervisory provisions on the principles, calculation and reporting of the SST. 1

It applies to all insurance companies as defined in Article 2 para. 1 let. a of the Insurance Supervision Act (ISA; SR 961.01) and to insurance groups and conglomerates ("groups") which are subject to group/conglomerate supervision under Article 2 para. 1 let. d ISA in conjunction with Articles 65 and 73 ISA. It does not apply to insurance companies as defined in Article 2 para. 1 let. b ISA (branches of foreign insurance companies). 2

For the purposes of this circular, the specificities, size and complexity of the insurance company in question is to be taken into account and due consideration given to the principle of proportionality. As far as possible, FINMA will grant insurance companies appropriate transitional periods to implement its instructions. 3

II. Principles

A. Solvency in the SST

Using a model, the SST determines a quantitative solvency condition in the form of a comparison between risk-bearing capital and target capital. The solvency condition is derived from the following: if, in the one-year period from the reference date, an insurance company adheres to its own realistic business plan, there should be a high probability of it being able to meet its existing insurance liabilities at the end of the one-year period without taking on new insurance liabilities. 4

B. Principles of the SST calculation

The SST calculation involves determining the risk-bearing capital and target capital (Section V). 5

The SST calculation covers all economically relevant balance sheet items and the risks resulting from them. Risks in principle comprise all possible changes in the value of the items in the SST balance sheet over the one-year period from the reference date. To cover these risks, the insurance company examines the results of the relevant internal analyses, particularly in respect of the requirements of Articles 96 paras. 1 and 2, 96*a* para. 1 and 111*a* para. 2 let. d of the Insurance Supervision Ordinance (ISO; SR 961.011). 6

The information and data used in the SST calculation is up to date and credible. 7

The SST calculation is designed in such a way that the following criteria are taken into account for the assumptions underlying the SST calculation (i.e. the real-world assumptions under which the SST calculation would correctly reflect the real world): 8

- The assumptions can be identified by the insurance company. 9
- The assumptions are realistic given the situation and the point in time in question. 10
- The assumptions do not contradict relevant data and information, or any contradictions that exist are explicable. 11
- The assumptions are consistent with each other (as far as possible); inconsistencies between them can be identified. 12

Expert judgements used in the SST calculation are up to date and have been produced by individuals competent in the field. The judgement process is explained in a manner that can be understood by a person familiar with the topic; this includes the processes carried out, the data and information used, and the underlying assumptions. The materiality and uncertainty of expert judgements are made transparent. 13

The following characteristic is taken into account when designing the SST model: actual and relevant hypothetical changes in the risk situation of the insurance company have a realistic impact on the (partial) results produced by the model. 14

C. Materiality and simplifications

For the purposes of the SST, information (including balance sheet items, relevant risks, data, assumptions, expert judgements and simplifications) is material if it could influence the decisions or judgement of those to whom it is addressed, including FINMA. Information that is not material may be disregarded for the purposes of the SST. 15

Taken together, the elements disregarded and simplifications in the modelling of balance sheet items and risks in the SST should not result in the quantitative materiality threshold of a relative change of 10% in the SST ratio being exceeded. Moreover, the elements disregarded and simplifications should not result in the company moving above or below an intervention threshold (Section XVI). The elements disregarded and simplifications, as well as the analyses used to assess materiality, are documented. 16

III. SST balance sheet

The SST balance sheet at the reference date forms the basis for determining the risk-bearing capital. The target capital is additionally based on the SST balance sheet and the market value margin at the end of the one-year period from the reference date. 17

A. Scope

The SST balance sheet is based on a total balance sheet approach, i.e. it contains all economically relevant balance sheet items of the insurance company including off-balance sheet items as defined in accounting terminology, in particular contingent liabilities. It does not contain any corporation tax items. 18

In particular, the SST balance sheet at a given point in time contains all rights and obligations in scope of the insurance contracts to which the insurance company has legally committed itself at that point in time, as well as all other legally binding rights and obligations of the insurance company at that particular time. 19

The following simplification is permitted, provided it does not lead to material deviations: the SST balance sheet at a given point in time contains all rights and obligations in scope of the incoming (active) insurance contracts and outgoing (passive) reinsurance and retrocession contracts whose coverage periods begin before that point in time. In this case, premiums paid in advance are not to be counted twice. 20

New business at a given point in time over a time period consists of all insurance contracts whose obligations are not in the balance sheet at that point in time but would be entered in the balance sheet at the end of that time period. 21

B. Reference date

The reference date is the date to which the SST calculation refers. 22

Generally, only information and data known at the reference date are used for the SST calculation. 23

For the purposes of the annual SST calculation, the balance sheet as of 31 December is normally used as the balance sheet on the reference date. 24

C. Currency

The currency used to present the SST balance sheet (SST balance sheet currency) is based on the currency used for the audited balance sheet in the annual financial statements. 25

The SST currency is the currency in which the solvency condition set out in Margin no. 56 is calculated. 26

Use of an insurance company’s own currency basket comprising a number of currencies is subject to FINMA's approval. 27

D. Granularity and offsetting

The minimum structure of the SST balance sheet will be published on the FINMA website at least six months before the deadline for submitting the SST report. 28

Balance sheet items may not normally be offset against each other in the SST balance sheet. 29

IV. Valuation

A. Market-consistent valuation

A market-consistent valuation at a given point in time is based on (and does not contradict) the most up-to-date information obtainable from trading in liquid and transparent financial markets, and in particular takes account of Margin no. 11. 30

An asset or liability has a reliable market value if enough arm's length transactions between independent and knowledgeable business partners are carried out or a sufficient number of securities firms or brokers, as business partners, offer prices for a business transaction involving significant volumes. If not all these conditions are met, the appropriateness of observed transaction prices used is shown. 31

Market-consistent valuation of assets using valuation models is designed in such a way that independent, knowledgeable and willing business partners would normally purchase or sell the assets at that price in an arm's length transaction. The market-consistent valuation of liabilities is based on the insurance company's financial expenditures to meet those liabilities. 32

Margin nos. 134 and 137 apply by analogy to the valuation models and the valuation models are integrated into the insurance company's internal processes. 33

B. Assumptions used for the valuation and for the one-year period from the reference date

For the valuation on the reference date and for the one-year period from the reference date, it is assumed that the insurance company follows its own business plan. For the SST calculation, FINMA may restrict the use of assumptions of the insurance company's business plan if the insurance company is unable to demonstrate that these assumptions are realistic given its situation on the reference date. 34

In respect of subsequent one-year periods, the following assumptions are made for the valuation at the end of the one-year period from the reference date: 35

- The insurance company does not write any new business. 36
- Legally enforceable reductions in insurance benefits may be made. 37
- The assumptions regarding policyholder behaviour and financial expenditures (including expenses) and other assumptions are realistic given the situation in question (in particular as defined in Margin nos. 36, 37 and 39-43). 38
- At the beginning of every one-year period, the risk-bearing capital is equal to the sum of the one-year risk capital and the market value margin. 39
- The insurance company follows a plan to fulfil its insurance liabilities existing at the end of the one-year period from the reference date, by means of which their value (Margin no. 48) is minimised as far as reasonably possible. 40
- Under the plan, only assets with a reliable market value may be bought and/or sold in any one-year period. 41
- By way of deviation from Margin no. 41, assets without a reliable market value may also be sold at the end of the one-year period from the reference date, but no later, with the exception of existing outgoing (passive) reinsurance and retrocession. 42
- By way of deviation from Margin no. 41, outgoing reinsurance and retrocession coverage existing at the end of the one-year period from the reference date may be renewed once at realistic conditions in the following one-year period. 43

C. Default risk

A value of an asset or of incoming payment streams determined using a valuation model takes account of the default risk of any counterparties as well as any other risks. 44

The valuation of insurance liabilities, other liabilities and outgoing payment streams does not take account of the insurance company's own default risk. This does not apply to liabilities counted as supplementary capital towards risk-bearing capital. 45

D. Yield curves

In principle and where available, the risk-free yield curves specified by FINMA are used when valuing balance sheet items with valuation models. The use of an insurance company's own risk-free yield curves in place of those prescribed is permitted only as part of an internal model. 46

For currencies for which there are no FINMA-specified yield curves, risk-free yield curves determined or selected by the insurance company are used. They are determined in line with Margin no. 33. 47

E. Insurance liabilities

The value of the insurance liabilities corresponds to the insurance company's (future) financial expenditures to fulfil those liabilities by itself ("own fulfilment"). The valuation uses the assumptions applicable from Section B and, normally, a valuation model. 48

The best estimate of the insurance liabilities includes all the insurance company's (future) financial expenditures to fulfil those liabilities, with the exception of capital costs, taking account of future inflation in benefits, premiums and costs. 49

The best estimate is determined without considering outgoing (passive) reinsurance and retrocession. The best estimate of recoverables from outgoing (passive) reinsurance and retrocession is determined separately and reported as an asset. 50

The market value margin defined in Article 41 para. 3 ISO at a given point in time is calculated as the sum of the expected values at that point in time of the discounted capital costs of each one-year risk capital over the future one-year periods required by the insurance company to fulfil its insurance liabilities. 51

Unless otherwise prescribed by FINMA, the market value margin at a given point in time may be calculated as the sum of the discounted capital costs of each one-year risk capital over the future one-year periods required by the insurance company to fulfil its insurance liabilities according to the development expected at that point in time. 52

The capital costs of the one-year risk capital in Margin no. 51 are equal to the one-year risk capital (defined by analogy as in Margin no. 60), multiplied by the cost of capital rate. 53

F. Participations in insurance companies

When using a valuation model, the value of a participation in an insurance company is, as far as possible, determined as the difference between the core capital as defined in Article 48 ISO and the market value margin, taking account of any limited liability of the participation holder. 54

V. Risk-bearing capital, solvency condition and target capital

A. Risk-bearing capital

Risk-bearing capital as defined in Article 47 para. 1 ISO is determined on the basis of the SST balance sheet (Section III). Information on supplementary capital can be found in Section VI.B. 55

B. Solvency condition

An insurance company meets the solvency condition under the SST at a given point in time if, at that point in time, the risk-bearing capital is at least equal to the target capital. 56

The target capital corresponds to the minimum risk-bearing capital that must be available on the reference date of the SST calculation so that the expected shortfall of the difference between the risk-bearing capital at the end of the one-year period from the reference date and the market value margin at the end of that one-year period is greater than or equal to zero. The expected shortfall is defined in Margin no. 58 and is evaluated at the specified probability of occurrence (Margin no. 59). 57

The expected shortfall for a probability of occurrence α is given for continuous random variables X by $ES_\alpha[X] = E[X|X \leq q_\alpha]$ and generally by $ES_\alpha[X] = \frac{1}{\alpha}\int_0^\alpha q_u du$, where $q_u = q_u(X) = inf\{x|P[X \leq x] \geq u\}$ denotes the u quantile of X. 58

FINMA will announce the confidence level (1 minus the probability of occurrence α) no later than twelve months prior to the reference date for the SST calculation. In the absence of any notification to the contrary, the confidence level is 99%. 59

C. Target capital, one-year risk capital and SST ratio

If there is evidence that the simplifying assumption that the market value margin at the end of the one-year period is deterministic at the reference date does not lead to any material deviations, the target capital (ZK) can be set equal to the sum of the one-year risk capital and the discounted expected market value margin at the end of the one-year period (MVM_1). The one-year risk capital is defined as the negative of the expected shortfall (ES_α) in accordance with Margin no. 58 of the difference between the discounted risk-bearing capital at the end of the one-year period (RTK_1) and the risk-bearing capital on the reference date (RTK_0). 60

$$ZK = -ES_\alpha\left[\frac{RTK_1}{1+r_{0,1}} - RTK_0\right] + \frac{MVM_1}{1+r_{0,1}}$$

In this formula, $r_{0,1}$ is normally the one-year risk-free interest rate at the reference date in the SST currency.

The one-year risk capital is calculated using the assumptions set out in Section IV.B. 61

The SST ratio is the ratio of the risk-bearing capital (RTK_0) less the expected value of the discounted market value margin $MVM_1/(1+r_{0,1})$ in the numerator, to the one-year risk capital in the denominator, if the one-year risk capital is positive. If this is not the case, no SST ratio can be reported. 62

VI. Capital and risk transfer instruments

A. General remarks

For the purposes of the SST, capital and risk transfer instruments consist of outgoing (passive) reinsurance and retrocession agreements, risk-absorbing capital instruments within the meaning of Article 22*a* ISO and other capital and risk transfer instruments such as guarantees received. 63

The SST only takes account of capital and risk transfer instruments that are legally binding and enforceable and are available as signed contracts on the reference date. However, in line with Margin no. 34, when determining the target capital, account is also taken of outgoing (passive) reinsurance or retrocession agreements that, under the insurance company's realistic business plan, will be written during the one-year period from the reference date. For capital and risk transfer instruments after the one-year period from the reference date, see Margin nos. 35-43. 64

Modelling of capital and risk transfer instruments in the SST is carried out in accordance with the valuation and risk modelling principles of the SST, taking account of the risk situation and participation structure of the counterparties. 65

B. Risk-absorbing capital instruments

An application for approval to consider risk-absorbing capital instruments in the SST is to contain an unambiguous statement within the meaning of Article 22*a* para. 1 ISO as to whether the risk-absorbing capital instrument is to be counted towards risk-bearing capital or target capital. An instrument can only be counted towards target capital if it is reflected in the SST model accepted by FINMA (Section IX.A). 66

When determining the target capital, risk-absorbing capital instruments that are not approved by FINMA for inclusion in target capital, or are not counted towards target capital, are modelled excluding their risk-absorbing characteristics. 67

In its SST report, the insurance company describes for the current SST which of the approved risk-absorbing capital instruments under Article 22*a* ISO are counted towards risk-bearing capital and which towards target capital, and how the restrictions on risk-absorbing capital instruments set out in Article 22*b* ISO are complied with. 68

C. Other capital and risk transfer instruments

A contract that falls within the category of other capital and risk transfer instruments may be included in target capital for the SST calculation only under the following condition: the SST ratio would not deteriorate if there was a change in the strategy assumed in the modelling for the exercising (after the reference date) of options within the existing contractual provisions. 69

Changes, after the reference date, to a contract taken into account in the SST are submitted to FINMA for approval. 70

VII. Scenarios

FINMA may define prescribed scenarios for all insurance companies or for specific insurance companies. 71

The insurance company's own scenarios in accordance with Article 44 para. 2 ISO are chosen in line with its current risk situation and the extent to which it is covered by the model used. This includes the probabilities of extreme events, including those affecting several risk classes, and the coverage of risk concentrations (Margin no. 75). The insurance company's own scenarios are documented and the reasons for selecting them and the underlying assumptions are explained; they are reviewed annually and adjusted or changed as necessary. 72

The insurance company determines the impact of the prescribed scenarios and its own scenarios on risk-bearing capital at the end of the one-year period from the reference date using the corresponding assumptions from Section IV.B and assuming that no measures are taken by the insurance company following the occurrence of the specified event. 73

The results of the prescribed scenarios and the insurance company's own scenarios are analysed and incorporated into risk management. If the model used does not reflect some scenarios sufficiently, these scenarios are taken into account in the target capital by means of aggregation, adjustments to the model, or add-ons. 74

A risk concentration exists where a single possible event (or a number of events occurring together), possibly via knock-on effects, can lead to a substantial change in the solvency situation. Relevant risk concentrations may, for example, exist in relation to counterparties of assets and real estate but also in relation to operational, liquidity, legal and political risks. 75

VIII. Stress tests

Independently of the SST reporting, FINMA may have the quantitative impact of specified (adverse) events on insurance companies' risk-bearing capital investigated by means of stress tests. When instructed by FINMA, insurance companies compile a report on the impact, setting out the consequences (for themselves) of the occurrence of the events and the measures planned to deal with those consequences. 76

IX. Models for the SST calculation

A. SST models

An SST model is a model for determining the relevant variables for the SST reporting, in particular the risk-bearing capital and target capital, in accordance with regulatory and supervisory provisions. This includes standard models as well as partial or full internal models, including models with adjustments. 77

An SST model accepted by FINMA is either a standard model prescribed by FINMA or an SST model approved by FINMA for use in the SST. 78

FINMA will decide on a case-by-case basis whether specific modelling approaches used in the SST calculation constitute an internal model. 79

A standard model adequately reflects the risk situation of an insurance company within the meaning of Article 50*c* let. a ISO if it reflects the aspects of the risk situation that are material in accordance with Margin nos. 15 and 16. 80

B. Replacing and changing SST models accepted by FINMA

Normally, in the case of an approved internal model for which the proof of need has been completed and a summary review (Section C) carried out, FINMA may only compel an insurance company to replace such a model on the basis of a material review or a material change in circumstances. 81

Where SST models previously accepted by FINMA are replaced or changed substantially, FINMA's prior approval is required. Specifically: 82

- Approval of an internal model and/or material changes to an approved internal model follow the approval process set out in Section C. 83

- To replace an internal model prescribed by FINMA with a standard model, the insurance company demonstrates in particular that the standard model adequately reflects its risk situation. 84

Changes to an internal model (model changes) are deemed material if one of the following conditions holds true: 85

- The model change results in a relative change of at least 10% in the SST ratio, normally on the basis of the most recent SST reporting. The threshold applies to each individual model change and to the combination of all model changes since the internal model was last approved by FINMA; or 86

- In FINMA's assessment, the model change involves changes of approach or novel methods, or takes account of data or business areas that are essentially new, when compared with the approved internal model. This includes model elements previously used and now disregarded, and changes to the qualitative and organisational aspects of the SST calculation (Section XII). 87

Non-material changes to an approved internal model are reported to FINMA no later than in the SST reporting the first time the model is used, together with a description and rationale, a presentation of the quantitative impact on the SST results compared with the approved internal model and its key drivers, normally on the basis of the most recent SST reporting, as well as updated documentation of the internal model in which the changes to the model are highlighted. 88

The insurance company conducts a regular review of the SST model accepted by FINMA, as prescribed in Article 50*d* para. 3 ISO, in particular with regard to whether it still sufficiently reflects the risk situation, in such a way that an SST model accepted by FINMA can normally be used for the annual SST calculation. 89

FINMA will normally notify the insurance company no later than six months before the deadline for submitting the SST report if the SST model accepted by FINMA must be used for the next SST calculation subject to adjustments, deductions from risk-bearing capital or add-ons to target capital specified by FINMA. It will grant the insurance company a period of 30 days in which to comment. 90

C. Approval process for internal models

a) Proof of need

The insurance company notifies FINMA of its intention to use an internal model. It sets out in writing the scope of the model and the rationale behind it as well as a detailed explanation stating why none of FINMA's standard models sufficently reflect its risk situation. 91

FINMA will notify the insurance company swiftly as to whether it has met the proof of need requirement and can submit an application for approval to use an internal model. It will grant the insurance company a period of 30 days in which to comment. If FINMA rejects the proof of need, it may require the company to make adjustments to the SST model previously accepted by FINMA. 92

b) Application for approval and summary review

If an insurance company meets the proof of need and if the internal model and accompanying documentation are available in full, it notifies FINMA and presents the model and the scope and structure of the documentation. 93

Within three months of the presentation described in Margin no. 93, the insurance company submits to FINMA an application for approval to use the internal model in the SST. The insurance company supplies the following documents: 94

- the application, in one of Switzerland's official languages, together with a list of enclosures. The application is clear and comprehensible; it confirms compliance with the requirements set out in Article 50*c* let. b ISO; and it is signed by the executive board. In particular, it sets out the purpose, scope and area of application of the internal model; 95
- the documentation of the internal model (Section XI.A); 96
- a report on the validation of the internal model; 97
- a commented impact analysis in the form of a quantitative comparison of the fundamental data (*Fundamental Data Sheet*, FDS) between the internal model for which the application is being made and the SST model previously accepted by FINMA or a standard model stipulated by FINMA. On the basis of a justified request, FINMA may exempt an insurance company from carrying out the comparison with a standard model. 98

FINMA will review the completeness of the application under Margin no. 94. If the application does not meet the formal requirements, FINMA will return it to the insurance company for revision. 99

FINMA's summary review will focus primarily on whether the model sufficiently reflects the material risks, the completeness of the internal model documentation, and compliance with the qualitative and organisational requirements. FINMA will normally complete the review swiftly and notify the insurance company of its decision, giving the company 30 days to comment. It will stipulate an SST model accepted by FINMA. In particular, it may approve the internal model for which the application is made subject to collateral clauses, adjustments or deductions from the risk-bearing capital or add-ons to the target capital in accordance with Article 50*f* ISO. 100

c) Material review

If FINMA initiates a material review, it will notify the insurance company of the scope, purpose and initially planned format of the review (in particular of planned on-site reviews and outsourcing of the review to external parties). 101

FINMA will notify the insurance company of its decision resulting from the material review and give the company 30 days to comment. 102

X. Standard models

A standard model typically has a modular structure, i.e. it consists of sub-models that model, for example, specific risk classes, the aggregation of the results from sub-models, or aspects of the valuation. These sub-models are also referred to as standard models (e.g. market risk standard model). 103

Standard models are published on FINMA's website, together with explanatory documents and mandatory templates. 104

Changes to standard models that go beyond parameter updates, as well as the dates for the publication of updated parameters, will be announced by FINMA at least six months before the deadline for submitting the SST reporting for which they are to be used for the first time. 105

In the specification of a standard model, FINMA may define certain permitted adjustments to the model under which it is still regarded as a standard model. 106

Company-specific adjustments to a standard model (i.e. adjustments that are not explicitly permitted or required in the specification of the standard model) are submitted to FINMA for approval (within the meaning of Margin no. 79) before being used, including 107

- a description of the adjustments for which the application is being made, including the methods, data sources and processes used and their implementation; and 108
- reasons for the adjustments, including the available data and relevant analyses and an examination of the advantages and disadvantages compared with the default approach. 109

FINMA will review on a regular basis the extent to which standard models are to be further developed and/or supplemented as a result of new findings. Refinements and supplements to standard models will normally apply to all users of the standard models concerned. Margin nos. 104 and 105 apply by analogy to refinements and supplements. 110

When reviewing and refining the standard models, FINMA will work in an appropriate manner with the insurance companies affected, either directly or indirectly via the relevant associations (e.g. the Swiss Insurance Association). 111

XI. Internal models

A. Model documentation

The documentation of an internal model contains the following documents: 112

- a description of the insurance company's risk profile and the material risk drivers for the SST; 113
- the technical documentation of the internal model; 114
- the model governance documentation, describing: 115
    - duties, responsibilities and the process for developing, refining, implementing, operating and validating the internal model. This contains the process for the SST calculation including the setting of the model parameters; 116
    - the processes by which the qualitative and organisational requirements (Section XII) are met. 117

The technical documentation of the internal model is clear and structured in accordance with the structure of the model, as well as understandable, unambiguous, complete and free from contradictions. It permits a knowledgeable person, with reasonable effort, to understand the purpose, scope, area of application and function of the model; to understand the reasons for the choice of the model; and to assess whether the qualitative, quantitative and organisational requirements set down by FINMA are met. 118

The technical documentation of the internal model contains in particular: 119

- a list of all the documents that form part of the technical documentation of the internal model; 120
- a description of the purpose, scope and area of application of the internal model and the rationale behind each of them. The description of the scope and area of application of the internal model in particular sets out the situations in which the internal model is / is not usable, stating reasons; 121
- a description of the calculation of the target capital / risk-bearing capital, even if the internal model does not directly determine these itself, e.g. because it is combined with standard models. In particular, the description sets out how the one-year change in the 122

risk-bearing capital over the one-year period is calculated. It explains the extent to which the calculations fully cover the one-year change, without overlaps and using consistent assumptions. The simplifications applied are documented and their materiality is described;

- a description of the design and structure of the internal model and its elements (e.g. sub-models, risk factors, distributions, etc.), including the methods and model parameters used; 123

- a description of the procedures used to estimate the model parameters (methods, processes, expert judgements, data and information used) and the approach used to determine the future dates on which the individual parameters are to be re-estimated. A description of the determination of those model parameters whose value is set in the model documentation; 124

- a list of the expert judgements that can be made in each individual SST calculation, as well as a description of the procedures (methodology, data and information, process) used to produce and apply those expert judgements, or a reference to relevant internal guidelines; 125

- for the data and information used in the model, an explanation of their characteristics, sources and use in the model; 126

- a description of the theory, mathematical basis and assumptions underlying the internal model. As far as possible, the assumptions are identified and justified, and their materiality is estimated; 127

- a description of, and reasons for, the choice of the internal model (choice of assumptions underlying the internal model) and the data sources used with regard to the risk situation, and the criteria under which the model was chosen; 128

- a description of the limitations and weaknesses of the internal model and a self-assessment by the insurance company of the extent to which the internal model complies with regulatory and supervisory provisions; 129

- a list of all the changes made to the model since the most recent version of the technical model documentation submitted to FINMA for approval, with the changes highlighted in the model documentation. 130

B. Model design

The internal model, possibly together with certain FINMA standard models, is an SST model as defined in Margin no. 77. This includes, in particular, the determination of the modelled probability distribution of the one-year change in the risk-bearing capital from the reference 131

date and the determination of the market value margin at the end of the one-year period from the reference date.

The internal model covers the balance-sheet items and risks in its scope in accordance with Margin no. 6. To this end, it is normally necessary to model material unknown parameters as random variables. 132

The assumptions underlying the model (e.g. with regard to the model structure, dependencies, methods, choice of distributions, estimation of model parameters, expert judgements, simplifications) are selected taking account of the criteria set out in Margin nos. 8-12. 133

The choice of methods used for the internal model is based on up-to-date and credible information and takes account of well-founded techniques from actuarial and financial mathematics as well as general progress in modelling techniques. Those responsible for developing, validating or operating the internal model have an in-depth understanding of the underlying theory and assumptions of the methods chosen. 134

The design of the internal model takes account of the characteristic described in Margin no. 14. The functional relationship between the risk factors selected in the model, the insurance company's portfolio, the values of the assets and liabilities in the SST balance sheet and the one-year change in the risk-bearing capital is understandable and can be justified. 135

The model parameters are estimated having regard to the purpose of the model and, where possible and appropriate, using well-founded statistical methods of estimation and otherwise expert judgements (Margin no. 13). 136

The data and information used is as up to date and objectively observable as possible, and is also credible and complete. 137

Simplifications in the modelling in particular satisfy the materiality criterion (Section II.C). The situations in which the simplifications are not appropriate can be identified. 138

XII. Qualitative and organisational aspects

The provisions of FINMA Circular 2017/2 "Corporate governance – insurers" apply to the SST; for the SST calculation and SST reporting to FINMA in particular the applicable corporate governance principles. 139

A. Responsibilities

The board of directors of the insurance company, as its governing body for guidance, supervision and control, is responsible for compliance with the SST regulatory and supervisory provisions. 140

The executive board and board of directors have a sufficient understanding of 141

- the results of the SST and the material risks and risk drivers of the insurance company with regard to the SST; and 142
- the purpose, area of application, basic features, limitations and weaknesses of the SST model used. 143

B. Outsourcing of the SST calculation

Where the SST calculation is outsourced either in whole or in part to other companies (service providers), including other units of the same insurance group, responsibility remains with the insurance company. The insurance company reviews the outsourced elements when compiling the annual SST report and documents this. 144

C. Data recording

The insurance company uses documented and audited processes to ensure the quality of the data used, in particular the complete, correct and timely recording of the relevant transactions and agreements and their preparation for the SST calculation. 145

The physical security of data storage is adequately safeguarded, in particular in order to ensure that the data used in the SST calculation and the data reported to FINMA in the SST reporting are complete, correct and up to date. 146

D. Use test for internal models

The insurance company takes account of the results and insights from the internal model and its limitations in its risk management, including the self-assessment of the risk situation and capital requirements (ORSA; Art. 96*a* ISO). 147

The executive board and board of directors have a sufficient understanding of the reasons for the chosen design of the internal model. They take account of the results and findings from the internal model and its limitations in their decision-making processes. 148

E. Validation

The insurance company validates compliance with the qualitative and organisational requirements of the SST at regular intervals and in particular when compiling the annual SST report. 149

The insurance company regularly validates and documents the suitability of the internal model used for the SST, employing a risk-based approach. Where necessary, the validation results in changes to the model or its replacement by another model. 150

The insurance company has documented policies on the process for validating the internal model, including the scope of the validation and the validation instruments used, the frequency of and triggers for a validation, the documentation of its execution, and the definition of duties and responsibilities. 151

XIII. SST report

A. Reporting

The insurance company determines the risk-bearing capital and target capital for the applicable reference date (Margin no. 22) annually and reports them to FINMA in its SST reporting. 152

The annual SST calculation and SST reporting to FINMA takes place by 30 April each year. Later submission requires prior approval from FINMA. 153

B. Contents

The SST report enables a knowledgeable person to understand and assess the following aspects: 154

- calculation of the risk-bearing capital and target capital on the reference date; 155
- the risk situation of the insurance company on the reference date and its expected change in the one-year period from the reference date; 156
- the relationship between the SST calculation and the risk situation and the appropriateness of the SST calculation in relation to the risk situation; 157
- changes to the SST calculation, its results and the risk situation compared with the previous annual SST reporting; 158

- compliance with Section XII in the period since the reference date of the previous SST reporting. 159

The SST report contains in particular the following information: 160

- management summary; 161
- list of all documents comprising the SST reporting; 162
- confirmation that the SST model accepted by FINMA has been used and, if applicable, designation of the current version of the internal model documentation; 163
- detailed overview and explanation of the SST balance sheet on the reference date including reconciliation with the audited balance sheet from the annual financial statements. List of the items that constitute off-balance sheet items in the audited balance sheet; 164
- quantitative and qualitative description of the material items in the SST balance sheet on the reference date and their impact on the risk situation of the insurance company including risk concentrations. Explanation of the changes compared with, and reconcilation with, the previous annual SST reporting, including investment result, insurance result and claims experience; 165
- quantitative and qualitative description of any foreseen material developments in the material balance sheet items over the one-year period from the reference date according to the insurance company's business plan; 166
- listing of the SST results, in particular risk-bearing capital, target capital and its breakdown by risk category, core capital, supplementary capital, market value margin, evaluation of scenarios and stress tests. Comparison with the corresponding results of the previous annual SST calculation, with comments; 167
- where not specified in the SST model accepted by FINMA or documented as non-material model changes in accordance with Margin no. 88 in the internal model documentation, detailed overview and explanation (including methods used, their assumptions and limitations) of the determination of 168
    - the values of the items in the SST balance sheet; 169
    - the risk-bearing capital; 170
    - the one-year risk capital; 171
    - the prescribed scenarios and the insurance company's own scenarios; and 172

- the market value margin. 173

- list of the material parameters determined and used in the specific SST calculation and the material expert judgements made. Description and justification of the calibration of the parameters and information on the expert judgements in accordance with Margin no. 13. Comparison with the corresponding assumptions of the previous annual SST reporting, with comments; 174

- description and explanation of the data and information used in the specific SST calculation. Comparison with the previous annual SST reporting, with comments; 175

- reasons for the choice of the insurance company's own scenarios with regard to its risk situation on the reference date; 176

- description, in principle, of all capital and risk transfer instruments, including outgoing (passive) reinsurance and retrocession, risk-absorbing capital instruments and other capital and risk transfer instruments including guarantees, and how they are accounted for and modelled in the SST; 177

- comments on disregarded balance sheet items and disregarded relevant risks; 178

- confirmation and description of compliance with Section XII in the period since the reference date of the previous annual SST reporting. 179

The insurance company uses in its SST reporting the templates specified by FINMA for the insurance company. 180

FINMA will, at least six months before the deadline for submission, notify the insurance companies affected of any further requirements regarding the content and structure of the SST reporting and additional documents and data to be submitted. 181

For each of the risk categories market, credit and insurance risk, FINMA will specify a minimum granularity in which certain specified results of the SST calculation are to be reported. In principle, this granularity also applies to internal models. 182

C. Review

On the basis of the SST report, FINMA will assess the insurance company's SST calculation. In particular, FINMA will review whether the accepted SST model has been applied appropriately and the requirements for the SST reporting are being met. 183

If FINMA identifies shortcomings in the SST reporting, it may send it back for revision. 184

Within six months following submission of the SST report / the revised SST report according to Margin no. 184, FINMA will notify the insurance company in writing if it has identified 185

shortcomings in the course of its review and/or is imposing deductions from the risk-bearing capital or add-ons to the target capital in accordance with Article 50*f* ISO. Add-ons and deductions are made only if they are material in accordance with Section II.C.

XIV. Reporting of special events

Insurance companies notify FINMA of changes to their risk situation since the most recent SST calculation that result in a relative reduction in the SST ratio of at least 33% (from over 190%) or at least 20% (from 190% or less), or that move the insurance company above or below an intervention threshold (Section XVI). The notification is made as soon as the changes to the SST ratio are foreseeable or – in particular for changes due to external influences – identifiable. The most recent SST calculation is deemed to be the last annual SST calculation or the last SST estimate after a notifiable event. 186

The insurance company submits to FINMA within four weeks estimates of the risk-bearing capital after the event and the impact on the target capital. 187

XV. Group SST

There are two approaches to determine group solvency: 188

- Consolidated group SST: The group is modelled under the assumption that the assets and liabilities of all group companies are consolidated in a single, fictional legal entity (consolidated entity). 189

- Granular group SST: The group is modelled as a network of granular entities with intra-group participations and intra-group transactions between them. A granular entity is a single legal entity of the group or a cluster in the form of a sub-consolidation of several legal entities within the group. 190

In the granular group SST, the granular entities are modelled jointly, taking account of the intra-group interactions and the respective risk situations of the granular entities. 191

The determination of group solvency and reporting to FINMA are conducted by analogy in accordance with the ISO and this circular 192

- for the consolidated entity, if solvency is determined using the consolidated group SST. The solvency condition for the consolidated group SST is met if it is satisfied by the consolidated entity in accordance with Margin no. 56; 193

- for the individual granular entities, if solvency is determined using the granular group SST. The solvency condition for the granular group SST is met if it is satisfied by each granular entity in accordance with Margin no. 56. 194

The group sets out how its group model is embedded in the risk management in order to safeguard the financial stability of the group and the interests of policyholders. 195

Transactions that directly result in group solvency no longer being satisfied are reported to FINMA. 196

Groups may submit a joint SST report for the group SST and for the solo SST of the group companies supervised by FINMA. In this case, the executive board of each company subject to solo supervision by FINMA signs off the sections of the joint SST report relevant to that company. 197

XVI. Measures and interventions

A. Intervention thresholds

FINMA has defined three intervention thresholds based on the current SST ratio, corresponding to four zones in which an insurance company can find itself: 198

- green zone: the SST ratio exceeds the 100% threshold; 199
- yellow zone: the SST ratio is between the 100% and 80% thresholds; 200
- orange zone: the SST ratio is between the 80% and 33% thresholds; 201
- red zone: the SST ratio is below the 33% threshold. 202

B. Measures

a) General remarks

The content and extent of the measures taken by FINMA, as well as the scope and frequency of the SST reporting to FINMA, will depend on the insurance company's solvency situation, in particular the level of the SST ratio. 203

The insurance company submits solvency-relevant actions – such as dividend payments, voluntary redemptions of own bonds, liquidation of passive reinsurance coverage, intra-group transactions and the apportionment of surpluses to insured persons – to FINMA for prior approval if the insurance company would not be in the green zone immediately after their implementation. This does not affect other regulatory or supervisory reporting or approval provisions. 204

Insurance companies in the orange or red zone are prohibited from making dividend payments. 205

b) Measures in the yellow and orange zones

If an insurance company is in the yellow or orange zone, and unless otherwise stipulated by FINMA, the company draws up an action plan based on realistic assumptions and submits it to FINMA for approval within two months of this being established. FINMA may prescribe elements of the action plan. 206

The action plan is designed such that, with a high probability, 207

- the company can reach the green zone from the yellow zone, normally within three years; 208
- the company can reach the yellow zone from the orange zone, normally within two years, and then reach the green zone, normally within three years. 209

The relevant date is the date on which the action plan is approved by FINMA. 210

The action plan contains as a minimum: 211

- a description of the immediate measures taken and planned, together with an assessment of their impact on the SST ratio; 212
- a description of the procedure for achieving the objectives set out in Margin nos. 207-209 within the specified period; 213
- details of the targets to be achieved at specified times, by means of which the achievement of the objectives in Margin nos. 207-209 can be measured; 214
- a list of the measures and the timescale for their implementation; 215
- an assessment of the development of the SST ratio in various scenarios throughout the entire period of the action plan. The scenarios are chosen in such a way as to demonstrate the achievement of the objectives in Margin nos. 207-209. 216

The insurance company informs FINMA at least twice a year, or if required by FINMA more frequently, of the status with regard to achieving the targets set out in Margin no. 214. It ensures that the action plan is updated over time where necessary to achieve the objectives of Margin nos. 207-209 and the targets in Margin no. 214, and submits the adjustments to FINMA. 217

If the insurance company does not draw up an action plan approved by FINMA or if the targets defined in the action plan in accordance with Margin no. 214 prove to be 218

unachievable within the period set out in Margin nos. 207-209, FINMA will take measures as set out in Article 51 ISA.

c) Measures in the red zone

If an insurance company is in the red zone, it submits emergency measures to protect policyholders to FINMA for approval without delay. It must be immediately transparent to FINMA whether the emergency measures will result in the insurance company leaving the red zone within a short period of time. 219

If the insurance company is unable to take emergency measures that are likely to be effective, and the measures ordered by FINMA under Article 51 ISA are not effective within a short period of time, FINMA will withdraw the insurance company's licence. 220

XVII. Transitional provision

The assumptions set out in Margin nos. 35-43 are implemented in the SST models accepted by FINMA by 1 January 2020. 221

List of modifications

The references and terms were adjusted upon the entry into force of FinIA and FinSA on 1 January 2020.