

INTERNATIONAL ASSOCIATION OF INSURANCE SUPERVISORS



APPLICATION PAPER ON INFORMATION GATHERING AND ANALYSIS

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Preamble

The IAIS seeks to encourage a practical application of its principles and standards. An essential part of the standard implementation process has to do with supporting the enhancement of institutional capabilities, which constitute a precondition for a successful utilisation of principles and standards.

In directing its implementation efforts, it is necessary to pay particular attention to the needs of emerging markets:

- enhancing the understanding of IAIS principles and standards
- supporting the strengthening of supervisors' institutional capabilities required to adopt and implement principles and standards, and
- supporting supervisors in understanding particular regulatory issues, facilitating the exchange of experiences among IAIS members.

Therefore, the IAIS Implementation Committee prepared a "Roadmap for Standard Implementation Activities" which outlines a work plan and time path for standard implementation activities.

Based on the mentioned Roadmap, the Implementation Committee developed this **Application Paper on Information Gathering and Analysis** that aims to offer IAIS emerging markets' members a basic reference on issues such as:

- minimum statistical, financial and technical information required to undertake the supervisory process
- basic recommendations for collecting information, in order to ensure consistency, comparability, accuracy, transparency and reasonableness
- basic ratios that could support financial and technical supervision
- utilisation of basic analysis information techniques as part of the supervisory process.

The Application paper attempts to improve the understanding of concepts and methodologies for gathering information and analysing data for assisting implementation of IAIS principles and standards.

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1. Introduction

1. Insurance business requires insurers having adequate data to calculate losses, expenses and therefore, premiums; but information is also essential for insurance supervisors to correctly assess, both the liabilities and the required capital. Further, the study of each of the significant risks to which an insurer is exposed requires the use of both assumptions about future experience and data with respect to the business being studied. The accuracy of the results obtained and their appropriateness in reflecting the insurer's possible future experience will depend upon the integrity of the data used. In summary, a well functioning insurance market and supervisory regime need a sound system to collect, organise and make detailed data available.

2. Insurance supervision heavily relies on information gathering and analysis. In this sense, it is essential to assure that the data being used by the supervisor to obtain the mortality tables, calculate capital requirements, and fix regulatory parameters, among others, is correct, reliable and complete.

3. Therefore, supervisors should have in place mechanisms for the submission of regular and systematic financial, technical and statistical information, actuarial reports and other information from the insurers they supervise. While it is recognised that this is a common practice in mature markets, in some emerging markets data available might not be enough to comply with several Insurance Core Principles (ICPs) in an appropriate manner.

4. With this in mind, it is necessary that the standard implementation strategy considers an explicit plan to support emerging markets' supervisors with guidelines for the collection and basic analysis of information for supervisory purposes.

5. This document should be read together with the IAIS *Insurance core principles and methodology* (October 2003) (ICPs), in particular with ICP 12, which states that supervisory authorities receive the necessary information to conduct effective off-site monitoring, and to evaluate the condition of each insurer as well as the insurance market. With this information, supervisors can have a clear view of the insurer's business activities and financial position and a profound understanding of the risk to which they are exposed.

6. Therefore, it is essential for the supervisor to receive information which can often identify potential problems, providing early detection and prompting corrective action before problems become more serious. Supervisors must define what information they require, in what form, from whom and how often. It must reflect supervisory needs, and for this reason, it can vary according to markets structures and situations. The kind of information needed can also vary regarding individual insurer's situation and the way it control its own risks. The information requested should be current and forward-looking. The process of information gathering and analysis has to be transparent and consistent across all insurers.

7. As it was mentioned above, the application paper attempts to improve the understanding of concepts and methodologies for gathering information and analysing data for assisting implementation of IAIS principles and standards. This document is structured in several sections:

- The section on the "*Scope of the paper*" makes it clear that the application paper does not impose any obligation for supervisors. It is not prescriptive, because it intends to provide application guidance for information gathering and analysis.
- The section on the "*Minimum statistical, financial and technical information required to undertake the supervisory process*" points out that supervisors should require insurers to submit the information which is necessary for the purposes of supervision, among others: company profile (*general information, corporate governance, internal control system, risk management, stress testing, internal models*); financial information; audit opinion report; statutory compliance information (*minimum capital requirement, regulatory capital*); asset-liability matching; information on technical performance and risks; actuarial reports and statistical information, among others.

In general terms, this information is needed to understand the insurers organisational structure; to assess the qualitative requirements related to their system of governance; to assess the risks which the insurer face or may face; to do risk assessment; to confirm ongoing compliance with the laws, regulations and administrative requirements, in particular to review and evaluate compliance with the following: technical provisions, capital requirements, investment rules or investment policies, quality and quantity of assets or own funds, requirements for internal models, if it is the case; to do financial analysis that enable supervisor to identify deteriorating financial conditions in an insurer and to monitor how that deterioration could be remedied; to assist in conducting reviews (off-site and on-site); among others.

This section also suggests that some information is needed regularly, when reviews and evaluation should be conducted on a regular basis and the supervisor should establish the minimum frequency and scope of the reviews, evaluations and assessments, having regard to the nature, scale and complexity of the activities of the insurer. Other information will be needed on exception basis, for instance, if there is a change or an approval is needed from the supervisors.

The information referred in this section should comprise qualitative or quantitative elements, an appropriate combination of financial data and non financial information and historic, current and prospective data.

- The section on “*Quality of Information*” stresses the importance of having reliable high quality data for effective supervision.
- The section on the “*Utilisation of basic analysis information techniques as part of the supervisory process*” states that the depth of the reviews should depend on the nature, complexity, financial strength and sophistication of the insurer. Supervisors should conduct detailed analysis using regulatory reports, financial tools and other sources of information.
- The section on “*Basic ratios that could support financial supervision*” is intended to include a set of ratios that are helpful in identifying insurers likely to experience financial difficulties.
- Finally, the section on “*Resources*” points out the importance of requiring insurers to have appropriate systems and structures in place to fulfil the information requirements for supervisory purposes and the importance of having qualified supervisor that use the information required.

8. In setting the information requirements, supervisors should strike a balance between the need for information for supervisory purposes and the administrative burden it puts on insurers. In any case, supervisory needs should prevail.

9. Supervisors require information on a solo and a group-wide basis¹. Therefore, it may request and obtain information on any subsidiary of the supervised entity. Where different supervisors are responsible for the supervision of different parts of a group or conglomerate, appropriate cooperation and coordination should exist. Supervisors should cooperate according to their respective responsibilities to ensure that there are no supervisory gaps while avoiding unnecessary duplication. This document is not dealing with principles and norms regarding accounting and consolidation techniques to be used, neither particular information for group-wide supervision purposes.²

2. Scope of paper

10. This paper does not impose any obligations for supervisors. The purpose of this paper is to provide application guidance for information gathering and analysis. The content and recommendations of this document are based on the responses

¹ See essential criteria of ICP 17, new draft ICP 23 paragraph 23.1.2.

² For more information regarding group-wide-supervision see IAIS Principles No. 3.4 on group-wide supervision, approved in Budapest on 17 October 2008 and Guidance Paper No. 3.7 on the role and responsibilities of a group-wider supervisor, approved in Budapest on 17 October 2008. In addition, see new draft ICP2 and 23.

given by IAIS members to the Questionnaire “*Guidance Paper on Information Gathering and Analysis*” that was prepared by the Task Force in December 2008.³

11. In this sense, information requirements should apply to all insurers in a jurisdiction. This document aims to illustrate minimum requirements that should be reviewed periodically. Particular information that may be required for licensing purposes or additional information from specific insurers on a case-by-case basis is not included.⁴

3. Minimum statistical, financial, and technical information required to undertake the supervisory process

12. The current ICP’s establish that supervisors should set the requirements for the submission of regular and systematic statistical and financial information, actuarial reports and other information from all insurers in their jurisdiction. In this sense, the supervisor might define the scope and frequency of those reports and information, including any requirement to audit that reports and information.⁵

13. The information should provide a meaningful picture of the insurers. Therefore, the supervisor should establish information requirements that are to be applied uniformly to all insurers, so that the financial and technical situation of the company can be known without any ambiguity.

14. The information provided should be accurate, relevant, reliable and transparent. It should also be comprehensive and should be provided with sufficient frequency and timeliness. Considering the circumstances, some supervisors should require ad hoc intra-period reporting.

15. Information can be obtained by supervisors through a variety of means that are both quantitative as well as qualitative. This can imply that supervisors use different formats for different data or information needs and purposes. This may entail that all data is not necessarily stored within a single database or in a single format. It is also beneficial for supervisors to be able to process the data/information with appropriate information technology (IT) resources to effectively make use of them.

16. The information should comprise some qualitative and quantitative elements, historical, current and prospective, in order to reflect the nature, scale and complexity of the business operations of the insurer.

17. The supervisor should have in place appropriate monitoring tools that support the assessment of the strengths and vulnerabilities of insurers.

³ The main purposes of this questionnaire were to identify if the “Original Minimum statistical, financial and technical information proposed to undertake the supervisory process” proposed by the member of the Task Force corresponded to the current practices of the jurisdictions, to identify if there were missing items and to identify if the level of details on each section was adequate. The questionnaire was responded by 47 jurisdictions. The deadline was January 30th, 2009.

⁴ See ICP 6. This principle lays down the criteria for the licensing of an insurer.

⁵ See ICP 12. Essential criteria a). IAIS. Insurance core principles and its methodology. Approved in Singapore on 3 October 2003.

18. The supervisor should determine the nature, scope and formats that the insurers should use in order to submit the information required, at predefined periods; upon occurrence of particular events; and during special situations.

19. Insurance supervision should be exercised over the entire operations of the insurance company undergoing control and should involve various aspects. In order to meet this objective, in this section, we are presenting the minimum statistical, financial and technical information that the Task Force is proposing as the information required to undertake the supervisory process.

3.1 Company profile information

20. It is essential for the supervisor to be able to access updated information on company's profile.

3.1.1 General information

21. General information includes, among other, the corporate structure, corporate data, key functionaries, corporate structure, capital structure and shareholders, corporate organisation chart, objectives, policies and management, summary of selected financial data for five years, key performance indicators and other information.

3.1.1.1 Corporate structure

22. An important element of the insurer's supervision is the initial and on-going assessment of the legal corporate structure of the insurer.

23. The legal corporate structure must allow for the effective supervision of an insurance company. It limits the objects of the business of the insurer and its related operations.

24. Supervisors should receive insurer's corporate structure information at least annually from the insurer and whenever a significant change in corporate structure occurs.

3.1.1.2 Corporate data

25. The supervisor establishes the corporate data that they need to undertake the supervisory process. It should include, at least:

- the name of the insurer and address of its offices
- former names of the company (if applicable)
- if insurer belongs to a group, the name of the organisational group, key branches and participations
- date of establishment
- number of full time employees
- name of the key functionaries, such as board members, senior management, key persons in control functions (if applicable, risk managers, compliance officers, internal auditors and appointed actuaries)

- name and address of the external auditors and actuaries
- contact details.

3.1.1.3 Key functionaries⁶

26. Insurers should be required to demonstrate to the supervisor the fitness and propriety of key functionaries to fulfil their respective roles by submitting documentation like executive biographies, and other illustrating their knowledge, experience, skills and integrity upon request, or where there are changes in key functionaries. The knowledge and experience required depends on the position and responsibility of the functionary within the insurer.

27. Insurers should provide to the supervisor general information regarding the assessment of the fitness and propriety of the insurer's external experts, such as external auditors and actuaries. In some cases, supervisors might rely on professional bodies that set and enforce professional conduct standards.

28. The insurers should notify their supervisor if any of the persons mentioned in paragraphs 26 and 27 have been replaced because they no longer comply with suitability requirements.

3.1.1.4 Capital structure and shareholders⁷

29. Supervisors should receive at least annually information about significant shareholder positions in order to know the owners in control of an insurer. It is important to know the holding of a defined number or percentage of issued shares or specified financial instruments above a designated threshold in an insurer or its intermediate or ultimate beneficial owner, and the voting rights attached to the shares or financial instruments.

30. Upon request insurers should provide the supervisory authority with information on their shareholders and any other person directly or indirectly exercising control.

31. An important element of the supervision of insurers is the initial and on-going assessment of the fitness and propriety of an insurer's significant owners. Supervisor should be satisfied that significant owners have the financial soundness and integrity to fulfil their role.

32. Supervisors are able to grant or deny approval to a person who wants to acquire significant ownership or a controlling interest in an insurer. For this reason, notification should be required for changes in ownership or control according to the percentages of an insurer's issued shares. These established percentages typically range between 5 and 10 percent. Where supervisory approval is required in addition to notification, specific thresholds (equal to or higher than those for notification) should be set.

⁶ See ICP 7. Suitability of persons. IAIS–Insurance core principles. Approved in Singapore, October 2003.

⁷ See ICP 8. IAIS–Insurance core principles. Approved in Singapore on 3 October 2003.

33. Supervisor might also require information about transactions with shareholders and members of the management body; intra-group transactions, and distribution to shareholders.

3.1.1.5 Corporate organisation chart

34. Insurance supervisors might require insurers to submit documents proving the organisational or group structure with a clear allocation and segregation of responsibilities.

35. If the insurer belongs to a group, the information must include the legal and organisational group structure, considering, for example, a list of their subsidiaries, key branches and participations; the name of the parent company, and other controlling parties.

36. This information should be submitted at least annually and more frequently if there are material changes.

3.1.1.6 Objectives, policies and management⁸

37. Supervisors require and verify that the insurer complies with corporate governance principles. For this reason, supervisors require insurer to submit annually information regarding insurers' business strategy, objectives, policies and main practices. This should include information on any changes in the management structure and organisation.

38. Where insurers have written policies related to risk management, internal control and internal audit, those policies should be submitted to the supervisor at least annually.

39. In some jurisdictions, insurers are required to develop a written policy, to ensure the on-going appropriateness of the information to be reported to the supervisor. This policy should ensure that the information reported to the supervisor is complete, consistent and accurate. In these cases, this policy should be reviewed annually and should be submitted to the supervisor.

3.1.1.7 Summary of selected financial data for five years

40. Taking into account the responses of the Questionnaire of Information Gathering and Analysis, the IAIS considered the need of having selected financial information over a 5 years period. It might include, among other:

- Gross premiums written (by line of business)
- Net premiums written (by line of business)
- Statement of income:
 - Net underwriting gain or loss
 - Net investment gain or loss
 - Dividends to policy holders
 - Net income
- Balance sheet items:

⁸ See ICP 9. Idem.

- Total admitted assets (this is a concept used in some jurisdictions; if not, it would be desirable to ask for Total assets)
- Intermediaries' balances or uncollected premiums
- Total liabilities
- Losses / claims paid
- Loss Adjustment Expenses
- Unearned premiums
- Capital paid up
- Surplus as regards policyholders
- Percentage distribution of Cash and Invested assets (by type of assets: bonds, stocks, mortgage loans or real estate, among others).
- Capital and surplus accounts
 - Net unrealised capital gains or losses
 - Dividends to stockholders
 - Change in Surplus
- Gross losses paid (by line of business, including non proportional reinsurance)
- Net losses paid (by line of business, including non proportional reinsurance)
- Catastrophe exposure development
- Operating percentages:
 - Premiums earned
 - Losses incurred
 - Loss expenses incurred
 - Other underwriting expenses
 - Net underwriting gain or losses

41. This information should be submitted at least annually, considering that it includes information of the last five years.

3.1.1.8 Key performance indicators⁹

42. Considering the responses to the IAIS- Questionnaire on Information Gathering and Analysis, supervisors deem necessary to have more detailed key performance indicators than those considered in point 3.1.1.7. Key performance indicators should be submitted to the supervisor at least annually..

43. Key performance indicators can vary from one jurisdiction to another; however in general terms it is accepted that they should provide information on technical performance in the areas like pricing adequacy, provision adequacy, claims statistics, risk concentration, reinsurance and capital.

44. Key performance indicators on pricing adequacy might include:

- loss ratio: the ratio of claims incurred to premiums earned
- expense ratio: the ratio of expenses to premiums earned
- combined ratio: the sum of the loss ratio (claims ratio) and the expense ratio
- operating ratio: is the combined ratio adjusted by the addition of allocated investment return in relation to premium income

⁹ Refer to IAIS - Standard on disclosures concerning technical performance and risks for non-life insurers and reinsurers, approved in Amman on 7 October 2004.

45. Key performance indicators on provision adequacy might include:
- the run off result
 - claims development
46. Key performance indicators on claims statistics might include:
- the trend in the number of claims and average size of claims
 - the ratio of the total cost of claims incurred to the number of claims
 - the claims frequency
 - the trends in mortality and morbidity experiences
 - supportability of bonus rates for participating policies
47. Key performance indicators on risk concentrations might include:
- the geographical concentration of premiums
 - the economic sectoral concentration of insurance risk
 - the risk concentration inherent in the reinsurance cover
 - a description of the extent to which the risk is reduced by reinsurance and other risk mitigating elements
 - the top-five-premium concentration ratio: the premiums ceded to an insurer's five largest reinsurers in aggregate, as a ratio of the total reinsurance premium ceded
48. Key performance indicators on reinsurance might include:
- information on their objectives, policies and practices for retaining and mitigating insurance risks
 - the reinsurance result - the cost of reinsurance less recovery from reinsurance of incurred claims. The cost of reinsurance should include reinsurance premiums as well as foregone investment return from these reinsurance premiums
 - the credit quality of the reinsurers, for example, by grouping reinsurance assets by credit rating
 - the credit risk concentration of reinsurance assets
 - the proportion of the reinsurers that are supervised
 - the nature and amount of collateral held against reinsurance assets
 - the development of reinsurance assets over time
 - the ageing of receivables from reinsurers on settled claims.
49. Key performance indicators on capital might include:
- information on capital adequacy in relation to solvency requirements: the generic solvency requirements of the jurisdiction and how insurers comply with the requirements:
 - the ratio of regulatory capital to premium income
 - the ratio of regulatory capital to losses
 - the ratio of regulatory capital to technical provisions.

3.1.1.9 Other information

50. The supervisor might require insurer to submit for the purposes of supervision any other relevant information. This information might include:

- key assumptions about market variables, such as the inflation rate
- the main sources of data used and the chief elements of methodologies applied in measuring insurance assets and insurance liabilities
- the main factors considered when calculating adjustments to the value of insurance assets and insurance liabilities to reflect risk and uncertainty
- significant pending matters that may cause a reassessment of the value of the insurance assets and liabilities reported (for example changes in legislation or court rulings)
- on-going lawsuits and regulatory actions taken by other jurisdictions, if it is the case.

3.1.2 Corporate governance

51. Taking into account the responses to the IAIS-Questionnaire on Information Gathering and Analysis, most supervisors require and verify that the insurer complies with corporate governance principles. For this reason, they require information and documentation regarding insurer's corporate governance. It might include, among others:

- the information necessary to assess the system of governance applied by the insurer, the business they are carrying on, the valuation principles applied for solvency purposes, the risks faced and the risks management system
- written policies in relation to risk management, internal control, internal audit and if it is the case, outsourcing
- the information regarding the insurer's compliance with applicable corporate governance principles
- the information to assess the capital structure, needs and management
- validate that an insurer's system of governance has not materially changed over the year, or, if an internal reorganisation occurs, the supervisor must receive details on any material changes to the system of governance.

52. This information should be reviewed at least annually.

3.1.3 Internal control system¹⁰

53. Insurers are required to set up a comprehensive internal control system according to the nature, scale and complexity of the insurers' business. This requires establishing committees where appropriate, and implementing procedures and policies, which clearly set out how they deal with internal control. The written policies should be approved by the administrative or management body and be revised at least annually or before any significant change is implemented in the system.

¹⁰ See ICP 10. IAIS- Insurance core principles. Approved in Singapore on 3 October 2003, and proposed revised ICPs.

54. Supervisor should verify that relevant control functions, such as internal and external audit, actuarial and compliance functions exist and must test the adherence to the internal controls as well as to applicable laws and regulations. Internal control system should at least include administrative, accounting procedures and internal control framework.

55. Supervisors require having access to reports of internal audit function and reports of external audit, actuarial and compliance functions.

3.1.4 Risk management

56. As it was mentioned in paragraph 39, insurers are required to have written policies and procedures in relation to risk management, when applicable. In addition, some supervisors require insurers to have manuals and other documentation requiring insurers to recognise the range of risk that they face and to assess and manage them effectively. In those cases this documentation should be submitted to the supervisor. In most jurisdictions, relevant risk areas include: technical risks, investment risks, non-technical risks.¹¹ Insurers should take into account the effect of risk mitigation techniques, provided that credit risk and other risk arising from the use of such techniques are properly considered.

3.1.4.1 Technical risks

57. Technical risks include various kinds of risk, which are associated with the technical or actuarial bases of calculation for premiums and provisions, as well as risks associated with operating expenses and extreme growth, i.e. underwriting risk and reserving.

3.1.4.2 Investment risks

58. Investment risks include various kinds of risk which are associated with the insurers' asset management, i.e. asset risks, investment (in particular derivatives), liquidity and concentration risk.

59. In assessing an insurer's investment risk management function, a supervisor should review the insurer's investment risk management framework and the investment policy.

60. The supervisor might request, among other, the following information relating to the management of investment risks:

- The insurer's investment risk management policy, approved by the Board of Directors, including the insurer's tolerance and limits for managing its: ¹²
 - market risk: is the risk to an insurer's financial condition arising from movements in the level or volatility of market prices. Market risk involves the exposure to movements of financial variables such as equity prices, interest rates, exchange rates or commodity prices. It also includes the exposure of derivatives to movements in the price of the underlying

¹¹ See ICP 21, Essential criteria d. IAIS-Insurance core principles. Approved in Singapore on 3 October 2003.

¹² Definitions provided within the current IAIS glossary.

instrument or risk factor. Market risk also involves the exposure to other unanticipated movements in financial variables or to movements in the actual or implied volatility of asset prices and options. Market risk incorporates general market risk (on all investments) and specific market risk (on each investment).

- credit risk: the risk of financial loss resulting from default or movements in the credit rating assignment of issuers of securities (in the company's investment portfolio), debtors (e.g. mortgagors), or counterparties (e.g. on reinsurance contracts, derivative contracts or deposits) and intermediaries, to whom the company has an exposure. Credit risk includes default risk, downgrade or migration risk, indirect credit or spread risk, concentration risk and correlation risk.
- liquidity risk: the risk emerging when the insurer fails to make investments (assets) liquid in a proper manner as its financial obligations fall due.
- The details of the insurer's investment policies, including the policy guiding the works of the investment committee, and the details of the investment guidelines for derivatives or structured products that have the effect of derivatives.
- Investment risk management reports, covering the following areas:
 - details of position by asset type, concentration analysis of credit exposures by counterparty, regulatory or internal limits breached in the period, planned future investment activities
 - specific details relating to market risk types such as interest rate risk, equity and real estate risk, commodity risk and currency risk
 - interest rate risk
 - credit risk reports
 - liquidity risk reports

3.1.4.3 Non-technical risks

61. Non-technical risks include various kinds of risk which cannot be classified as technical risks or investment risks. For example, operational risks¹³, reputational risks, regulatory risk.

3.1.4.4 Impact of various risk transfer or risk sharing mechanisms used by the insurer

62. Supervisors should request insurer's overall risk management philosophy and policy. This policy should include whether and how reinsurance, derivatives, securitisation and alternative risk transfer or mitigation tools are used to manage risk.

3.1.5 Sensitivity, stress testing and scenario analysis

¹³ Operational risk is the risk that deficiencies in information systems of internal controls will result in unexpected loss. This risk is associated with human error, system failures and inadequate procedures and controls.

63. Supervisors practice is to require insurers to undertake an annual stress test, but the frequency is a matter for supervisors. These tests can be used to identify and quantify the impact of different stress scenarios on an insurer's expected future financial position¹⁴.

3.1.6 Internal models

64. The IAIS recognises that the use of internal models is an important new area of work for many insurers and an evolving area of practice for the insurance industry worldwide. Internal models can be considered in the dual context of: a) a method by which an insurer determines its own economic capital needs; and b) a means to determine an insurer's regulatory capital requirements in the context of the solvency regime, where appropriate¹⁵.

65. The supervisor will likely want to be satisfied that all aspects of the model are appropriate, satisfy regulatory/supervisory requirements, and are reviewed regularly. The choice of the type or review will depend on the specific situation of an insurer and the supervisor's discretion. Whichever type is chosen, there will be qualitative, quantitative and governance requirements to be met that are defined by the supervisor before the model will be accepted and approved for use.

In reviewing an insurer's internal model for regulatory capital purposes, the supervisor should require the insurer, as a minimum, to subject the model to three tests: statistical quality test, calibration test and use test.

3.1.6.1 Information on the risks assessed by the model and possibly capital assessment derived from its operation

66. Considering the responses to the IAIS- Questionnaire on Information Gathering and Analysis, where an insurer calculates its regulatory capital requirements using an internal model, this model needs to be approved by the supervisor. If this is the case, in any application for approval, the insurer should submit documentary evidence that the internal models meet the requirements established by the supervisor.

67. The documentary evidence must demonstrate among other issues, the following:

- that the insurer has an appropriate organisation and adequate system of internal controls, related to its size and characteristics and the nature and complexity of its risks
- that the insurer is able to understand the nature of the identified risks.

3.1.6.2 Details of how the internal model is embedded within the insurer's corporate governance and operational processes and risk management

¹⁴ See ICP 20, criteria g) ICP 21, criteria k, and ICP 23, criteria j).

¹⁵ For more details, see the IAIS Standard No. 2.2.7. on the use of internal models for regulatory capital purposes, approved in Budapest on 17 October 2008 and the IAIS Guidance paper No. 2.2.6. on the use of internal models for regulatory capital purposes approved in Budapest on 17 October 2008.

68. If the use of internal models is allowed for regulatory capital purposes, the documentary evidence should demonstrate that:

- The internal model is widely used and plays an important role in the insurers' governance system, and particularly, in their risk management system and their decision-making processes.
- The insurer has adequate resources, skills and independence of the people responsible for developing and reviewing its internal model

3.1.6.3 Information to understand the structure of a model, level of complexity of the components, reference to appropriate theory or practice, appropriateness of use, selection assumptions

69. The supervisor must require the insurer to provide the following information regarding the internal model:

- Documentation explaining the overall scope of the internal model and describing its structure.
- Documentation of the various modules of the internal model and the interactions between these modules:
 - It should enable a knowledgeable third party to ascertain, in a reasonable amount of time, whether the regulatory requirements for approval of the internal model are satisfied.
 - It must explain the methodology (theories and assumptions) on which the internal model is based. For example: assumptions for insurance risk variables (i.e. insurance risk parameters that may be determined by random sampling from distributions); assumptions for financial risk variables (parameter values may be obtained from scenario generators); assumptions for policyholder behaviour risk; assumptions on company management actions such as asset/liability management, risk mitigation, pricing and re-pricing actions, and expenses management among others.
 - The manner in which the model parameters were estimated, and the datasets and other information sources used in the process.
 - It must include expected correlations in normal environments as well as dependencies in tail scenarios; project and discount future cash flows, and assess estimates for model error, among others.
 - It must describe the limitations and weaknesses of the internal model. The documentation must indicate which positions and financial instruments or which risks have not been taken into account.
 - It must explain its implementation within the insurance company.

3.1.6.4 Information regarding test, audit, controls and storage

70. Supervisors should require insurers to have detailed documentation of the internal model structure, contents and changes. The documentation must consider:

- all algorithms, relating components and assumptions in the model should be thoroughly documented
- the testing of the entire model

- the developer's manuals if a commercial software package is used as the basis of the model
- the documentation of each step in the designs and construction should be integrated if the model is developed in-house
- the reports of each internal and external review and the results of testing should also be documented, and
- the files, working papers, programs, and data sets that may need to be available for on-site audit or supervisory reviews.

3.1.6.5 Use of experts

71. The quality and depth of the documentation should be such that it would be possible for independent professionals, to understand the most important design decisions and, in principle at least, to reproduce the model's outputs with reasonable accuracy if all parameters and exposure data were available. In this context the independent professionals would be persons who have experience in building and assessing models for insurance or reinsurance companies and knowledge in the modeling of the relevant risks the insurer is exposed to.

3.2 Financial information

72. Financial supervision might include the verification of the insurer's state of solvency, the establishment of the assets covering technical provisions and capital requirements in accordance with the regulation. Supervisors require insurers to submit information about their financial condition and performance on both a solo and a group-wide basis.

3.2.1 Financial statements

73. Considering the responses to the IAIS-Questionnaire on Information Gathering and Analysis, financial statements should provide an overview of an insurer's financial condition. In general terms, jurisdictions consider some basic financial statements:¹⁶

- Balance Sheet. It is also referred as statement of financial position or condition, reports on an insurer's assets, liabilities and ownership equity at a given point in time.
- Income Statement. It is also referred as profit and loss statement, reports on an insurer's income, expenses, and profits over a period of time.
- Statement of retained earnings. It explains the changes in an insurer's retained earnings over the reporting period.
- Statement of cash flows. It reports on insurer's cash flows activities; particularly it's operating, investing and financing activities.

74. The submission of those statements should be established by the supervisor in a clear manner. It could be monthly, quarterly or annually. The submission should be timely, received within three months of the close of reported period, and should be on a standard consistent across the industry. In the case of the annual statements, they should be audited.

75. For large insurers, financial statements are often complex and may include an extensive set of notes to the financial statements. The notes typically describe each item on the balance sheet, income statement and cash flow statement in further detail. Notes to financial statements are considered integral part of the financial statements.

76. The supervisor should require annual quantitative reporting templates that contain all the financial and solvency information; and quarterly quantitative reporting containing the core financial and solvency information such as the capital requirements, liabilities, including technical provisions, premiums and claims, data on assets including investments and own funds.

3.2.2 Investments

77. The supervisor authority should request, among other, the information listed in the following sub-sections relating to investments. The submission of those information should be established by the supervisor in a clearly manner. It could be monthly, quarterly or annual.

78. In addition to aggregate information on each asset class (§§ 3.2.2.1 to 3.2.2.5), an insurer should, for various asset classes, provide the detailed list of all the assets that belong to the class (§ 3.2.2.6).

79. This section provides an example on how the quantitative investment requirements may be complied with. Supervisors could adopt a different format from that given here or further disaggregate the asset classes and provide more detailed breakdowns. For example, supervisors could also request information on significant investments (i.e. investments that account for more than a particular percentage of total assets).

3.2.2.1 Summary information on different classes

80. For each asset class, an insurer should provide the supervisor with the necessary information to understand the nature of the asset class. This would generally include the following:

- criteria for recognition as an asset
- criteria for classification into that asset class
- methods and assumptions used in measuring asset value
- significant terms and conditions that may affect the amount, timing and certainty of future cash flows.

81. There is an example of asset class segregation:¹⁷

¹⁶ The number and nomination of those financial statements can vary. However the information contained is similar in many countries.

¹⁷ See IAIS – Standard on disclosures concerning investment risks performance for insurers and reinsurers, Approved in Vienna on 21 October 2005

Table 1 Breakdown by asset class					
	Table*	Market value		Historical costs**	
		This year	Last year	This year	Last year
Equity securities	2				
Debt securities	3				
Loans	4				
Properties	5				
Cash and deposits	6				
Receivables	7				
Others	8				

* This column refers to the number of the tables provided as an example on how the quantitative aspects of this section may be complied with.

** This document uses the term “historical cost” in accordance with the terminology used by the IAIS- Standard on disclosures concerning investment risks performance for insurers and reinsurers.

3.2.2.1.1 Equity securities

82. For an asset class that involves equity securities, an insurer should submit information to the supervisor showing a breakdown of listed securities versus unlisted securities.

83. There is an example of details regarding equity securities:

Table 2 Details regarding equity securities								
	Market value				Historical costs			
	This year		Last year		This year		Last year	
	Amount	As % of total for this class	Amount	As % of total for this class	Amount	As % of total for this class	Amount	As % of total for this class
Breakdown by listing status								
Turnover								
Total bought								
Total sold								

3.2.2.1.2 Debt securities

84. For an asset class that involves debt securities, an insurer should submit information to supervisor showing:

- a breakdown by credit rating of the issue
- a breakdown by residual maturity (up to 1 yr, from 1 to 3 yrs, from 3 to 7 yrs, from 7 to 10 yrs, + 10 yrs)
- a breakdown among government, semi-government and corporate securities

85. There is an example of details regarding debt securities:

Table 3 Details regarding debt securities								
	Market value				Historical costs			
	This year		Last year		This year		Last year	
	Amount	As % of total for this class	Amount	As % of total for this class	Amount	As % of total for this class	Amount	As % of total for this class
Breakdown by credit rating AA- or better Worse than AA- but not worse than A- Worse than A- but not worse than BBB- Worse than BBB- but not worse than B- Worse than B- Unrated								
Breakdown by residual maturity Up to 1 year More than 1 year and up to 3 years More than 3 years and up to 7 years More than 7 years and up to 10 years More than 10 years								
Breakdown by type of issuer Government Semi-government* Corporate securities								

*Include debt securities issued by statutory bodies or municipalities.

3.2.2.1.3 Loans

86. For an asset class that involves loans (except policy loans to policyholders secured by cash value of life insurance policies), the insurer should submit to supervisor information showing:

- a breakdown by types of loans (e.g. residential mortgage, commercial mortgage, loans to natural / legal persons, loans to related entities, among others)
- a breakdown of loans according to whether they are backed by collateral / mortgages or are uncollateralised.
- if available, loans should be broken down into credit quality of the obligor.

87. There is an example of details regarding loans:¹⁸

Table 4 Details regarding loans								
	Market value				Historical costs			
	This year		Last year		This year		Last year	
	Amount	As % of total for this class	Amount	As % of total for this class	Amount	As % of total for this class	Amount	As % of total for this class
Breakdown by types Residential mortgage Commercial mortgage Other private loans Other commercial loans								
Breakdown by whether collateral exists* With collateral Otherwise								

*Excludes guarantees

3.2.2.1.4 Properties

88. For an asset class that involves properties (e.g. land and buildings), an insurer should submit to the supervisor information showing :

- a breakdown by types of properties (e.g. residential, commercial, among others)
- a breakdown by geographical location
- a breakdown by properties according to whether they are held for investment or are owner occupied

89. There is an example of details regarding properties:

Table 5 Details regarding properties								
	Market value				Historical costs			
	This year		Last year		This year		Last year	
	Amount	As % of total for this class	Amount	As % of total for this class	Amount	As % of total for this class	Amount	As % of total for this class
Breakdown by type Residential Commercial Industrial Others								
Breakdown by geographical location Domestic Foreign								
Breakdown by purpose Investment property Own occupation								

¹⁸ If information is available, loans should be broken down into credit quality of the obligor.

3.2.2.1.5 Cash and deposits

90. Insurers should submit information regarding cash and deposits. It could consider:¹⁹

Table 6 Details regarding cash and deposits								
	Market value				Historical costs			
	This year		Last year		This year		Last year	
	Amount	As % of total for this class	Amount	As % of total for this class	Amount	As % of total for this class	Amount	As % of total for this class
Breakdown by type Cash Deposits Cash equivalents								

3.2.2.1.6 Receivables

91. For an asset class that involves receivables, an insurer should submit to the supervisor information showing:

- a breakdown of the ageing of the receivables aggregated by time bands (for example, less than 90 days, from 91 days up to 1 yr, +1 yr)
- a breakdown by types of counterparties or obligors (e.g. from reinsurers, from cedents, from other insurers, from agents & brokers, from policyholders, from other counterparty)

92. There is an example of details regarding properties:

Table 7 Details regarding receivables				
	Historical costs			
	This year		Last year	
	Amount	As % of total for this class	Amount	As % of total for this class
Breakdown by ageing Less than 90 days 90 days up to 1 year More than 1 year				
Breakdown by obligor From reinsurers From cedents From other insurers From agents/brokers From other counterparty				
Confirmed by counterparty				

3.2.2.1.7 Other assets, including intangibles

93. For others assets classes an insurer should submit to supervisor information by type of assets.

¹⁹ Also see section 3.2.2.6. Detailed information on some asset classes. Identity of bank should be known, as well as location and currency of cash.

Table 8				
Details regarding other assets				
	Historical costs			
	This year		Last year	
	Amount	As % of total for this class	Amount	As % of total for this class
Breakdown by type				
Intangibles				
Goodwill				
Deferred tax				
Other intangibles				
Others <describe>				

3.2.2.2 Derivatives²⁰

94. In regard to derivatives, an insurer should submit information to the supervisor showing:

- a breakdown of how derivatives are allocated into different asset classes (equity securities, debt securities, properties, other asset class)
- a breakdown of derivatives according to whether they are used for hedging purposes or not
- a breakdown of exchange-traded derivatives versus over-the-counter derivatives (exchanged traded vs. OTC)
- the difference between the market value of derivative positions and the value shown on the balance sheet
- a breakdown of the main types of derivatives used (e.g. forward/futures, versus options, versus swaps, interest rate versus equity versus debt/credit, etc.).

95. Given the nature of insurance operations, derivatives should be used preferably as a risk mitigation mechanism. Supervisory authorities may restrict the use of derivatives to the reduction of investment risks or efficient portfolio management. Derivatives should be considered in the context of a prudent overall asset/liability management strategy.²¹

96. Supervisors should monitor the extent of an insurer's exposure in derivatives. Supervisors should obtain some or all of the following quantitative information:

- notional amounts of derivatives by broad risk category, instrument type and trading type (over the counter or exchange traded) in order to understand the scope and nature of the of insurer's involvement in derivatives activities

²⁰ Where a jurisdiction completely prohibits the use of derivatives and similar commitments this section clearly do not apply.

²¹ See ICP. 22. Explanatory note 22.2

- market values of derivatives, or equivalent for over the counter instruments, by broad risk category, instrument type and trading type in order to gauge the insurer's exposure to financial risk
- for derivatives used in relation to the management of invested assets or liabilities, the net value of the related positions
- where derivatives are held for purposes other than the management of the portfolio of assets, additional information, as appropriate.

Information may include the end-of-period position, the average position and the maximum position over the analysis period.

97. There is an example of details regarding derivatives

Table 9 Details regarding derivatives								
	Market value				Historical costs			
	This year		Last year		This year		Last year	
	Amount	As % of total for that class	Amount	As % of total for that class	Amount	As % of total for that class	Amount	As % of total for that class
In asset class Equity securities - for hedging - otherwise Debt securities - for hedging - otherwise Properties - for hedging - otherwise Other asset classes								
Breakdown by counterparty Exchange-traded Over-the-counter								
Breakdown by type Forward/futures Swaps Options Others								

3.2.2.3 Other investments

98. The Supervisors should require any other information necessary for supervisory purposes.

3.2.2.4 Investments in related parties

99. Supervisors should require the amount of assets invested in, lent to, or otherwise dependent on the operations of related parties of an insurer, including the insurer's parent, subsidiaries or associates as defined by the insurance supervisor or by other legislations, or a joint venture (often referred to collectively as affiliated investments).

3.2.2.5 Off-balance sheet exposures

100. Supervisors should require the amount of off-balance sheets assets and liabilities

3.2.2.6 Detailed information on some asset classes

101. For some asset classes²², an insurer should provide a detailed list of all the assets that are aggregated in the asset class. These detailed lists aim at helping the supervisor check that these assets are effectively held by the insurer.

102. These lists could be provided under tables. The form of which could be the following:

Identification number ^{a)}	Number of assets held ^{b)}	Name & designation of the asset ^{c)}	Location and currency of the asset ^{d)}
-------------------------------------	-------------------------------------	---	--

- a) *e.g.* for securities, the ISIN number (ISIN: International Securities Identification Numbers)
- b) Applicable to securities.
- c) In the case of land / buildings, this should include its complete address (city, street and number etc.) of the building. In the case of bank accounts, this should include name and address of the bank.
- d) This should at least include the country where the asset is located: *e.g.*, for securities, country of the depository (bank, etc) that holds the securities owned by the insurer.

Allocation ^{e)}	Market value	Historical cost	Repayment value ^{f)}
--------------------------	--------------	-----------------	-------------------------------

- e) This should include information such as: Is the asset without particular allocation? Is it allocated to the coverage of capital requirements? Is it allocated to the coverage of unspecific technical liabilities? Of specific technical liabilities (*e.g.* unit-link life liabilities, specific insurance contracts, liabilities that are located outside the jurisdiction / that are assessed in foreign currency, etc.)? Was the asset provided as a collateralisation to a third party?

The insurer should provide a list of possible allocations for assets so that insurers can carry out the breakdown

- f) For bonds, etc.

3.2.3 Commissions and expenses

103. Supervisors should require the amount of commissions and other expenses related to insurance operations.

3.3 Audit Opinion report

104. Because it is essential for the supervisor to receive the necessary information in order to effectively monitor the insurer and identify potential problems, supervisors should require, as a minimum, an audit opinion provided annually by an external auditor. The supervisor requests more frequent and more detailed additional information whenever there is a need.

105. Both internal and external audits are necessary and these constitute important complements to the assessment of insurance companies by the insurance supervisor.

3.3.1 Audited financial statements

106. Supervisors should at least annually, receive audited financial statements from the insurer. The auditor's report should be issued by an independent external auditor

²² Typically, this could exclude assets such as receivables. But it would normally include securities, land / buildings, loans, etc.

as a result of an audit or evaluation performed on an insurer. This may also include a report by the responsible accountant.

107. More frequent audited financial statement may also be beneficial under specific circumstances in order to enhance regular reporting under specific circumstances and regarding a particular insurer.

3.4 Statutory compliance information

108. Considering the responses to the IAIS-Questionnaire on Information Gathering and Analysis, supervisors should review that insurers comply with a prescribed solvency regime. For this reason, insurer needs to supply supervisors with the necessary information to review and evaluate such compliance.

109. This assessment should be performed at least annually. However, some supervisors might require carrying out this assessment quarterly.

3.4.1 Minimum capital test

110. Supervisors should perform minimum capital tests at least annually in order to analyse the capital adequacy of the insurer and whether capital is commensurate to the company's risk profile.

111. The minimum capital requirement represents a level of capital below which policyholder's interests would be seriously endangered if the undertaking were allowed to continue to operate. In the event that the minimum capital requirement is breached, supervisory action is triggered.

112. Insurers should calculate the minimum capital requirement at least quarterly and report the results of that calculation to supervisor. Breaches of minimum capital must be reported as soon as they occur.

3.4.2. Regulatory capital or solvency margin required

113. Regulatory capital requirements may be determined using a range of approaches, such as standard formulas, or other approaches, more tailored to the individual insurer (such as internal models), which are subject to approval by the supervisor.

114. Insurers should be required to disclose appropriate qualitative and quantitative information about risk exposures and the components that make up their regulatory capital requirements. Supervisors should specify which solvency information should be made public.²³

115. Insurers should calculate the regulatory capital requirement or solvency margin required, at least once a year, and report the result of that calculation to the supervisor. This facilitates the determination of the actual solvency coverage.

²³ For more information, see IAIS Standard on the structure of regulatory capital requirements, approved in Budapest on 17 October 2008 and the IAIS Guidance paper on the structure of regulatory capital requirements, approved in Budapest on 17 October 2008.

3.4.2.1 Amounts of the components and structure of capital

116. Supervisors should receive this information at least annually from the insurer. This is also important with regards to suitable forms of capital.

3.4.2.2 Quality of capital

117. Supervisors should receive information on the quality of capital at least annually from the insurer. This should also include information on the quality of the assets covering the technical provisions of the insurer, if such requirements exist in the particular regulatory regime.

3.5 Asset-liability matching

118. Supervisors should receive at least annually, information regarding insurers' asset-liability positions to ensure that their investment activities and asset positions are appropriate to their liability and risk profile

3.5.1 Duration of assets and technical provision

119. Supervisors should receive effective duration information at least annually from the insurer. This is also important with regards to suitable forms of capital.

3.5.2 Solvency and liquidity dimensions

120. Supervisors should receive this information at least annually from the insurer. This is also important with regards to suitable forms of capital.

3.6 Information on technical performance and risks

121. Technical risks are the essence of insurance activity. It is therefore crucial for the supervisor to receive the necessary information on the underwritten risks, on their valuation in balance sheet, other financial statements and supervisory returns, and on their mitigation through reinsurance and other forms of risk transfer.²⁴

3.6.1 Life insurance

3.6.1.1 Segmentation of data

122. Most of all technical data (premiums, technical provisions, among others) should be broken down into relevant segments, taking into account the timing and nature of liabilities. These may vary across jurisdictions, depending on the characteristics of each market. Possible segmentations are the following:

- type of risks: savings without mortality or longevity risks, savings with mortality or longevity risks, annuities²⁵, death benefit, unit-linked contracts

²⁴ Current IAIS disclosure standards No. 10 and 12 provide appreciable inputs on technical risks to be disclosed to the general public. These also constitute a solid basis for determining the relevant information that is to be gathered by the supervisor.

²⁵ This is a particular case of saving with longevity risk, which often calls for specific segmentation.

- type of contract: individual / group, participation / non–participation
- type of premiums: single / regular payment.

123. To facilitate the analysis, it is advisable that data are provided for both current and previous years.

3.6.1.2 Operating data

124. Supervisors should receive information regarding operating data. This should also include:

- gross and net premiums
- investment income
- other income
- gross and net payments to policyholders
- change in Technical provisions
- policyholder bonuses
- acquisition costs
- acquisition costs amortised
- administration and other expenses
- other

3.6.1.3 Technical provisions

125. Supervisors should receive information on the calculation and valuation of the technical provisions. Technical provisions should be calculated by class of business.

126. The following items should be provided:

- discount rates
- mortality / longevity assumptions
- provision for participation
- methodologies for valuing guarantees and options
- value of guarantees and options as a percentage of value of liabilities
- duration of technical provisions
- duration of assets covering technical provisions
- negative technical provisions (if any)
- technical provisions that are lower than the surrender value; amount of the difference, and
- expenses assumptions.

127. The supervisor might review the sufficiency of the technical provisions through off-site monitoring and on-site inspection.

3.6.1.4 Sensitivity analysis

128. The supervisor requires that insurers undertake regular stress testing for a range of adverse scenarios in order to assess the adequacy of capital resources, in case technical provisions have to be increased

129. The insurer should provide sensitivity analysis of its technical provisions and performance, displaying, for example, the following items:

- effect on performance of 1% decrease / increase in Yield curve
- effect of 1% decrease / increase in Mortality rates.

130. Because the technical provisions of some contracts may increase and the TP of other contracts may decrease when there is a decrease or an increase in mortality rates, it is advisable to conduct two separate calculations:

- calculation on those contracts where the amount currently payable on death exceeds the technical provisions, and therefore an increase in mortality is likely to lead to an increase of technical provisions
- calculation on those contracts where there is no death benefit, or where the currently payable death benefit is lower than the technical provisions, and therefore a decrease in mortality is likely to lead to an increase of technical provisions
- Lapse/surrender risk. Lapse risk may involve a liquidity risk for the insurer, and technical losses when rates of surrender increase and surrender value exceeds technical provision, or conversely when rates of surrender decrease and surrender value is lower than the technical provisions.

The following items should also be reported:

- Expected surrenders; effect of a 10% increase / decrease in surrenders:
 - for those contracts where the surrender value is higher than the technical provision: effect of a 10% increase in surrenders
 - for those contracts where the technical provision is higher than the surrender value: effect of a 10% decrease in surrenders.

3.6.1.5 Risk concentration

131. Supervisors should receive information on risk concentrations. A risk concentration refers to an exposure with the potential to produce losses large enough to threaten an insurer's economic health or ability to maintain core operations. Insurers should submit a qualitative and quantitative description of the kinds of risk concentrations to which the insurer is exposed and how high these are. It is necessary to understand the extent to which the risk is reduced by reinsurance and other risk mitigating tools.

132. This item is usually more relevant in non-life business than in life business. However, concentrations relating to maximum amounts insured (gross and net of reinsurance) may be relevant data to be provided to the supervisor.

3.6.2 Non-life insurance

3.6.2.1 Segmentation of data

133. Most or all technical data (premiums, technical provisions, among others) should be broken down into relevant classes. Although these may vary across jurisdictions, depending on the characteristics of each market, segmentation could generally include the following:

- motor insurance
- fire and other property damage
- accident and health insurance
- liability insurance
- marine, aviation and transport insurance (including freight)
- credit insurance and suretyship
- other non-life insurance
- non-proportional reinsurance treaties.

134. Policies combining different risks could be classified according to the most important risk.

135. To facilitate the analysis, it is advisable that data are provided for both the current and previous years.

3.6.2.2 Operating data

136. Supervisors should receive information regarding operating data. This should also include:

- gross and net premiums
- investment income
- other income
- gross and net payments to policyholders
- gross and net changes in technical provisions
- policyholder bonuses
- expenses
- other.

3.6.2.3 Technical ratios

137. The following ratios should be provided:

- loss ratio (claims ratio): refers to the ratio of claims incurred to earned premiums. Gives an indication of how well the pricing of an insurer matches the risks taken in the insurance contracts.
- expense ratio: the ratio of expenses to earned premiums. Expenses are the sum of commissions, administrative expenses and other technical charges. This ratio could vary depending on the way an insurer allocates its general costs. It can be used to assess how well premiums cover expenses incurred.
- combined ratio: the sum of the loss ratio (claims ratio) and the expense ratio. Gives a rough indication of the profitability of an insurer's underwriting operations. It does not, however, take into account the allocated investment return except to the extent that discounting takes into account future interest rates. Since income from invested premiums also contributes to technical performance, the business can be profitable even if the combined ratio exceeds 100%. The combined ratio is, amongst other factors, a function of the period of time premiums are invested and the return on investments.

Furthermore, the characteristics of the class of business in question, that is, the uncertainties concerning a particular class of business (volatility of losses, legal framework, the time to re-establish surplus etc.) can influence the combined ratio.

- operating ratio: is the combined ratio adjusted by the addition of allocated investment return in relation to earned premiums. This ratio enables the assessment of business performance after inclusion of allocated investment return. If the operating ratio exceeds 100%, losses (claims incurred) and expenses exceed earned premiums and allocated investment return, thereby contributing negatively to the overall return on invested capital.

3.6.2.4 Technical provisions

138. Supervisors should receive information on the calculation and valuation of the technical provisions. Technical provisions should be calculated by class of business.

139. When technical provisions are discounted, information such as rates of discount, duration of technical provisions, should be provided.

140. Technical provisions can be divided in two: one part that covers claims from insurance events which have already taken place at the date of reporting, and another part that should cover losses from insurance events which will take place in the future (the sum of provision for unearned premiums and provision for unexpired risks). Insurers should provide information on the run off results defined below for each part of the technical provisions.

141. When the running-off period extends over more than one year, insurers should provide the run-off results over several years, the length of the period reflecting how long-tailed the segment is.

142. Except for short-tailed business, it is appropriate to provide run-off results in a claims development triangle. Claims development triangles should be consistent from one year to the following.

143. In most cases, it will be appropriate that claims development triangles data can be reconciled with balance sheet data.

144. The form of claims development triangles could be the following:

	A	B	C	D	E	F
1	claims incurred in	2005 and previous years	2006	2007	2008	2009
2	Payments in year 2006					
3	Outstanding claims as of 31.12.2006					
4	ECC as of 31.12.2006					
5	Payments in year 2007					
6	Outstanding claims as of 31.12.2007					
7	ECC as of 31.12.2007					
8	Payments in year 2008					
9	Outstanding claims as of 31.12.2008					
10	ECC as of 31.12.2008					
11	Payments in year 2009					
12	Outstanding claims as of 31.12.2009					
13	ECC as of 31.12.2009					
14	Cumulative payments					

(ECC= estimate of cumulative claims), where non-shaded cells should be filled in.
(IBNR is included in outstanding claims).

145. In the above table one should have:

$$\begin{aligned}
 &F11 = F14 \\
 &E8 + E11 = E14, \\
 &D5 + D8 + D11 = D14, \text{ etc.}; \\
 &\text{and} \\
 &F13 = F12 + F14 \text{ (or alternatively } F13 = F12 + F11), \\
 &E13 = E12 + E14 \text{ (or alternatively } E13 = E12 + E11 + E8), \\
 &E10 = E9 + E8, \\
 &D13 = D12 + D14 \text{ (or alternatively } D13 = D12 + D11 + D8 + D5), \\
 &D10 = D9 + D8 + D5, \text{ etc.}
 \end{aligned}$$

that is, estimation at a given date of cumulative claims of a given year = estimation at this given date of outstanding claims of this given year + cumulative payments for claims of this given year performed up to this given date.

146. In various ways, such table permits a summary assessment of the adequacy of the provisioning for outstanding claims. For instance, if E13 is higher than E10, this means that as of 31.12.2008 provisioning for outstanding 2008 claims was inadequate. Similarly, if B11 + B12 is higher than B9, this means that as of 31.12.2008 provisioning for outstanding claims incurred in 2005 and previous years was inadequate.

147. Other findings can be drawn from such run-off triangles, in particular building on settlement rates. For instance, C2/C13 represents the 1st year settlement rate of 2005 claims (estimated as of 31.12.2009); F11/F13 represents the 1st year settlement rate for 2009 claims (estimated as of 31.12.2009). In a similar way, (D5 + D8)/D13 represents the two 1st years settlement rate for 2006 claims (estimated as of 31.12.2009); etc.

148. If F11/F13 is higher than C2/C13, this may mean that:

- the settlement of 2009 claims is quicker than the settlement of 2005 claims. This may be due to a variety of factors: because the insurer's settlement policy has quickened; because one huge 2005 claim was not settled in 2005; because one huge 2009 claim was settled in 2009, etc;
- outstanding 2009 claims (cell F13) may be underestimated as of 31.12.2009.

Such changes in claims settlement rates may thus lead the supervisor to investigate more on the issue — e.g. through meetings with the insurer's managers, through on-site inspections, etc.

3.6.2.5 Risk concentrations

149. The insurer should provide information on risk concentrations, which could include, when relevant

- the geographical concentration of the risks considering the concentration of premiums taking into consideration where the insured risk is located
- the economic sectoral concentration of insurance risk
- concentrations relating to maximum amounts insured (gross and net of reinsurance)
- other concentrations. For example, risk concentration inherent in the reinsurance cover, the top-five concentration ratios.

3.6.2.6 Reinsurance and other risk mitigation

150. Insurers should provide the supervisor with information on their objectives, policies and practices for retaining and mitigating insurance risks. They should provide information about reinsurance and other risk mitigation tools. They should provide information on the adequacy of their reinsurance cover, how reinsurance is obtained —e.g. through brokers or directly—, information on their reinsurers and on the credit risk of the reinsurance.

151. Balance sheet information should show separately:

- the reinsurers' share of technical provisions and
- receivables from reinsurers on settled claims.

152. Further quantitative information on reinsurance should be given including:

- the credit quality of the reinsurers, for example, by grouping reinsurance assets by credit rating
- credit risk concentration of reinsurance assets
- the proportion of the reinsurers that are supervised
- the nature and amount of collateral held against reinsurance assets
- the ageing of receivables from reinsurers on settled claims
- the development (run-off) of reinsurance assets over time.

153. Credit risk concentration of reinsurance assets could include the following data, for each of the top ten reinsurers (sorted according to the amount of credit the insurer has on each):

- name of reinsurer
- ceded technical provision
- receivables
- receivables aged more than one year
- collaterals and other guarantees (if they are established in the regulation)
- ratio of uncollateralised assets (ceded technical provisions plus receivables) over insurer's own funds (if they are established in the regulation).

154. Run-off of reinsurance assets could be provided in the form of a development triangle, which could be divided into 6 time-bands: current year; current year minus 1; ...; current year minus 4; current year minus 5 and previous years.

3.7 Actuarial reports

155. In some jurisdictions, actuaries have a clearly defined statutory role with respect to insurers.

156. Where the use of an actuary is adopted, supervisor should have access to actuarial reports. The actuary's report may be supported by appropriate documentation in the form of work papers and/or electronic files. The actuary's documentation may include not only the actuary's conclusions, but also a description of the process followed by the actuary.

3.8 Statistical information

157. The supervisor should set the requirements for the submission of regular and systematic statistical information from all insurers licensed in the jurisdiction.

158. The statistical information should be separated by line of business, group of classes.

159. Statistical Information might have a lot of purposes. For example, to analyse the solvency of the company, particular products, the development of the markets or to develop the regulation, among others.

160. In order to develop a quantitative analysis of the market, the information required could include, the number of insurers and reinsurers subdivided by ownership structure whether a branch, domestic or foreign; the number of insurers and reinsurers entering and exiting the market; market indicators such as premiums, balance sheet totals and profitability; investment structure; new product developments and market share; distribution channels, and; use of reinsurance, among others.

161. The market information should include historical data and current situation, but also aims to identify trends and possible future scenarios and issues, so that the supervisor is well prepared to take action at an early stage, if required.

162. The supervisor requires market-wide systematic reporting to analyse and monitor particular market-wide events of importance for the financial stability of insurance markets.

3.8.1 Premiums, claims and adjustment expenses

3.8.1.1 Unearned premiums

163. Supervisors should receive information regarding unearned premiums. This section should include, for each significant line of business, information of the portion of the policy premiums written that has not yet been "earned" by the company because the policy still has some time to run before expiration. The amount on the balance sheet represents that part of premiums written which is to be allocated to the following financial year, or to subsequent financial years.

164. Supervisors should receive information regarding the unearned commissions. This is the estimated amount of commission revenue on ceded premiums coverage period beyond the current year end. Unearned Commissions ceded business must not be reduced by Deferred Commissions arising assumed business, and must be estimated by class of insurance.

3.8.1.2 Premiums and claims by line of business analysis of claims paid and unpaid

165. Supervisors should receive information on the premiums and claims by line of business, and analyse claims paid and unpaid.

166. Jurisdictions define the lines of businesses based on the classes of non-life and life insurance generally accepted. The follow classification of Premiums and Claims by line of business should be requested where available:

- Non-life insurance premiums: Non-life insurance premiums comprise both the actual premiums payable by policyholders to obtain insurance cover during the accounting period (premiums earned) and the premium supplements payable out of the property income attributed to insurance policyholders, but excluding social contributions.
- Gross Premiums: total premiums written, excluding any premium taxes or other charges, but before deduction of commission or reinsurance outwards. It is acknowledged that the inclusion or reinsurance will mean that there is some element of double-counting in the figures provided.

Gross premiums could be required by source of business/distribution channels such as direct, corporate, agents, brokers, bancassurance, among others.

- Premiums Ceded: Includes all premiums (reinsurance and retrocession) ceded.
- Reinsurances Accepted: Includes all reinsurance business accepted. Facultative reinsurance may be included under Direct business or Reinsurances Accepted according to practice in the reporting country.

- Net Written Premiums: are total premium retention and normally Net Written Premiums should be equal to total Gross Premiums less Premiums Ceded.
- Acquisition Expenses: policy acquisition expenses are those renewal businesses. They include items allocation of operating expenses.
- Non-life insurance claims: Non-life insurance claims are the amounts payable in settlement of claims that become due during the current accounting period (claims become due at the moment when the eventuality occurs which gives rise to a valid claim accepted by the insurance enterprise), but excluding payments to households in the form of social insurance benefits.
- Claims Incurred: an insurer's total liability arising from insurance events related to an accounting period either on an accident year basis or on an underwriting year basis.
- Claims provision: amount set aside on the balance sheet to meet the total estimated ultimate cost to an insurer of settling all claims arising from events which have occurred up to the end of the reporting period, whether reported or not, less amounts already paid in respect of such claims.
- Gross Claims Payments amount set aside on the balance sheet to meet the paid claims by an insurer up to the end of the reporting period.

3.8.1.3 Net claims and adjustment expenses run-off

167. The Run-off result: is the difference between a provision made at the beginning of the financial year and the sum of the payments made during the year on account of that provision and the provision for the same claims shown at the end of the year.

168. Net Claims and Adjustment Expenses Run-off are related to an accounting period either on an accident year basis or on an underwriting year basis. Loss adjustment expenses are assignable or allocable to specific claims.

3.8.1.3.1 In non-life insurance: claims development triangles

169. This section should include numeric information that will constitute a summary database and a set of derived exhibits for each significant line of business.

170. It is important that each exhibit and table identify clearly on which basis the figures are presented (direct, assumed and net).

171. For each line of business, the summary database should include accurate, historical information that can be readily reconciled to the records of the company. More specifically, the summary database of claim information should include, for each line of business, on a direct, assumed and net basis, the following data triangles by accident year:

- the cumulative paid losses, including paid adjustment expenses where appropriate, for each accident year, observed at regular intervals
- the case reserves, including reserves for adjustment expenses where appropriate, for each accident year, observed at regular intervals
- the cumulative number of claim units reported, for each accident year, observed at regular intervals
- the number of claim units still unsettled, for each accident year, observed at regular intervals.

172. Whenever large retention limits are used (i.e. excess loss, large or aggregate deductibles, self-insured retentions, etc.) the "ground up" loss figures, when available, should be included in the report.

173. In exceptional cases, the summary database may be different from the situation described here, only to the extent that such differences are necessary for the proper valuation of the policy liabilities.

174. For each line of business, the derived exhibits should include any necessary modifications, adjustments, combination and analysis, derived from the summary database or from prior exhibits.

3.8.1.3.2 The nature, frequency and severity of claims

175. This section should include numeric information for each significant line of business, including the frequency and severity of large losses; any significant trends in the severity and frequency of claims.

- Frequency: Number of times that an accident occurs. It is used in predicting losses upon which premiums are based.
- Severity: Extent of the loss caused by accidents. Used in predicting the amount of losses upon which the premiums are based.
- Claims Ratio: With respect to any particular period, for any policies issued by an insurer for a particular class of insurance, the ratio of claims incurred, including adjustment expenses, during that period under those policies, to net premiums earned during that period for those policies, expressed as a percentage.
- Claims Ratio - By Year of Accident: The claims ratio determined when claims and premiums used in the calculation are those which pertain to a specific accident year.
- Claims Ratio - By Year of Account: The claims ratio determined when claims and premiums used in the calculation are those which pertain to a specific calendar year.

3.8.1.3.3 Risk concentration (potential for aggregation of claims)

176. Insurers should report information on risk concentrations. A risk concentration refers to an exposure with the potential to produce losses large enough to threaten an insurer's economic health or ability to maintain core operations. It includes:

- a qualitative and quantitative description of the kinds of risk concentrations to which the insurer is exposed and how high these are (including a description of the methods used and assumptions made in arriving at the quantitative data). If it is not possible to provide quantitative data, it should be explained why it is not possible;
- a description of the extent to which the risk is reduced by reinsurance and other risk mitigating elements.

177. The description of the insurer's risk concentrations should, as a minimum, include information on the geographical concentration of insurance risk, the economic sectoral concentration of insurance risk, and if relevant, and the risk concentration inherent in the reinsurance cover.

3.8.1.4 Adjustment expenses

178. Loss Adjustment Expenses (LAE): LAE are expenses incurred while determining the value of a claim, over and above the cost of the claim. These can include fees from doctors, trial lawyers, and adjusters. Loss adjustment expenses are divided into two categories: Allocated loss adjustment expenses and unallocated loss adjustment expenses.

- Allocated loss adjustment expenses (ALAE): ALAE are loss adjustment expenses that are assignable or allocable to specific claims. Fees paid to outside attorneys, experts, and investigators used to defend claims are examples of ALAE.
- Unallocated loss adjustment expenses (ULAE): ULAE are adjustment expenses that result from a broad array of claims or that result from the general process of determining the amount of claims payments. All external, internal, and administrative claims handling expenses, including determination of coverage, that are not included in ALAE.

4. Quality of information

179. Availability of reliable, high quality data is also essential for effective market discipline. In particular, insurance premiums are calculated on the basis of the law of large numbers. For this reason, establishment of reliable policy data such as loss frequency and loss severity is fundamental in calculating correct insurance premiums and the technical provisions. This is crucial for maintaining the solvency of insurance companies and the stability of insurance markets. Reliable mortality tables are also essential for life insurance products. In the case of some emerging market

economies, insurance companies often do not have enough experience of insurance policies to create a reliable historical data basis, and in some cases a comprehensive data collecting system has not yet been properly established. Thus the collection of claims information through cooperation of insurers should be encouraged. The insurance supervisory authorities should ensure a reliable claims database to assist insurers and supervisors exists. Such a database can be established either by supervisory authorities or other appropriate institutions.

4.1 Criteria to assess the quality of data

180. The quality of information is viewed as a multi-variable concept. The most important quality characteristics depend on supervisory perspectives, needs and priorities. As stated in the document Quality Guidelines for OECD Statistics, quality is defined as “fitness for use” in terms of user needs. In accordance with the quality framework, it is viewed as having seven dimensions, namely, relevance, accuracy, credibility, timeliness, accessibility, interpretability and coherence. The quality characteristics of most importance depend on user perspectives, needs and priorities, which vary across groups of users.²⁶

181. An assessment of the quality data should be carried out on the basis of the following criteria: accuracy, appropriateness, completeness and timeliness.

182. In order to ensure on a continuous basis a quality of the insurer data, the insurer should have in place suitable governance, approvals, controls, internal audit and periodic independent review.

183. Supervisors should confirm the quality of the information they are receiving through many means, for example, validation rules, and verifying the integrity of the information.

184. To guarantee quality, the information should be understood across the insurance industry, and has to be consistent across all insurers.

4.2 Time horizon

185. A reasonable period for solvency assessment time horizon, for purposes of determining an insurer's current financial position, is about one year. However, it should not be confused with the need to consider, in such assessment, the full term of all of the assets and obligations of the insurer.

²⁶ Eurostat defines the quality of statistics taking into account six criteria: 1) Relevance: an inquiry is relevant if it meets users' needs. The identification of users and their expectations is therefore necessary. In the European context, domains for which statistics are available should reflect the needs and priorities expressed by the users of the European Statistical System (completeness); 2) Accuracy: accuracy is defined as the closeness between the estimated value and the (unknown) true value; 3) Timeliness and punctuality in disseminating results: most users want up-to-date figures which are published frequently and on time at pre-established dates; 4) Accessibility and clarity of the information: statistical data have most value when they are easily accessible by users, are available in the forms users desire and are adequately documented; 5) Comparability: statistics for a given characteristic have the greatest usefulness when they enable reliable comparisons of values taken by the characteristic across space and time. The comparability component stresses the comparison of the same statistics between countries in order to evaluate the meaning of aggregated statistics at the European level, and 6) Coherence: when originating from a single source, statistics are coherent in that elementary concepts can be combined reliably in more complex ways.

186. It may also refer to the length of time for which data are collected. It is extremely important define the period of time for which data have been collected.

187. Time horizons can range from monthly, all the way up to quarterly or annually. There is no "right" time frame - it depends on the supervisor authority objectives.

188. Financial statements, including reports on capital, are usually prepared by insurance companies at the end of each fiscal year or the end of each quarter. Producing these statements is a considerable task that requires significant preparation and time. Often there will be a delay of several months between the statement date and the actual receipt of the statement by the supervisor. The company management may also require some time to implement possible corrective actions. The supervisor, having many companies to oversee, may need several additional months to fully analyse a particular company's results. If this analysis shows a company's position to be weak, it will take additional time to formulate action plans and issue appropriate directions to the company. If it were necessary to remove a company's licence and "wind it up," the formalities of governmental and legal systems could introduce considerable delays before the supervisor's objectives are achieved. During the period until final action against a weak or insolvent company is taken, the company would continue to operate and conduct business, including the sale of new insurance and/or annuity contracts.

In formulating a capital requirement in a particular jurisdiction, a supervisor must take into account the time horizon between the date as of which company financial statements are prepared and the expected date by which a supervisor could take control of the insurer, if this was deemed to be necessary. Since this time horizon depends upon local business practices, the supervisor's resources, legislation and the legal system, this horizon will vary from one jurisdiction to another. However, it would be rare to assume this time horizon could be considerably shorter than one year.

5. Utilisation of basic analysis information techniques as part of the supervisory process

189. Regulatory requirements are of little value if there is no mechanism to monitor insurers' compliance with those requirements. Thus, solvency monitoring encompasses a broad range of regulatory activities including: Financial Reporting; Financial Analysis; and, Examinations. The primary purpose of financial analysis is to assess the financial condition and compliance of the insurer as of a date in time, and to identify and assess risks and prospective risks evidenced in the insurer's financial reports and activities. To accomplish this task, supervisors should conduct detailed financial analysis on a quarterly basis using regulatory financial reports, financial tools and other sources of information. Sources utilised in the analysis include annual and quarterly financial statements, independent auditors report, SEC filings, corporate reports, financial statements of ultimate controlling individual/corporation or reinsurers, market conduct reports, rate and policy form filings, consumer complaints,

When originating from different sources, and in particular from statistical surveys of different frequencies, statistics are coherent in so far as they are based on common definitions, classifications and methodological standards.

independent rating agency reports, correspondence from agents and insurers, and business media.

190. Financial analysis should include follow up on risks identified during the previous quarter's analysis and examination. Additionally, the depth of the review should depend on the nature, complexity, financial strength and sophistication of the insurer and/or group. As risks are identified, additional work should be performed to understand and evaluate the potential impact.

191. Regulators should generally prioritise the review of their insurers based on a system of financial ratios, other screening analytical tools and criteria that are both qualitative and quantitative in form. When insurers with anomalous results (e.g., insurers experiencing significant variations or negative financial results) that may impact financial solvency are identified, regulators should allot necessary resources and prioritise further analysis of these insurers (relative to other non-priority insurers). The results of the ongoing financial analysis can then be used to help prioritise and provide focus to future quarterly financial analysis activities and/or any examination efforts.

192. Generally, regulators should enhance their financial analysis activities to facilitate more timely regulatory action against troubled insurers. For example, financial analysis should occur every quarter on all insurers within each jurisdiction. Jurisdictions should prioritise the review of their domiciliary companies to ensure potentially troubled companies are reviewed promptly. Some jurisdictions might also perform analysis on foreign and alien insurers who write business in their jurisdiction.

193. The financial analysis process should be the collection and analysis of insurer and "group" financial information. Financial analysis also involves the review of non-financial information regarding insurance companies that is routinely collected by other department units within the regulatory jurisdiction (e.g. market, legal, licensing, rates and forms, etc.). In situations where the insurer has been identified as a troubled insurance company, the regulator will determine an appropriate regulatory course of action as well as communicating results of regulatory actions to other jurisdictions. If the insurer has submitted a corrective action plan outlining proposed steps to correct the underlying issues, the financial analyst will be involved in evaluating and monitoring the progress of corrective plans. If a financial examination resulted in findings that required correction, the analysis function could be involved in following-up on those findings.

6. Basic ratios that could support financial supervision

194. Ratios and trends are helpful in identifying insurers likely to experience financial difficulties. In general, ratios and range comparisons are computer-generated.

195. Key financial ratios designed to highlight potential risks in such areas as profitability, liquidity, and leverage, include the following:

6.1 Trends of insurance portfolios

- Premium growth rates
- Renewal rates

6.2 Profitability ratios

- Loss Ratio (or claims ratio): the ratio of claims incurred to premiums earned
- Expense Ratio: the ratio of expenses to premiums earned
- Combined Ratio; the sum of the loss ratio (claims ratio) and the expense ratio
- Operating ratio: is the combined ratio adjusted by the addition of allocated investment return in relation to premium income
- Return on Revenue
- Net Investment Yield
- Interest Margin
- Return on Equity (ROE)
- Return on Assets (ROA)

6.3 Reserve and leverage ratios

- Surplus Aid to Policyholder's Surplus
- Reserves to Policyholder's Surplus
- Gross or Net Premiums to Policyholder's Surplus
- Reserve Development to Policyholder's Surplus
- Surplus arising by different sources in life insurance (mortality, investment, expenses)

6.4 Asset and liquidity ratios

- Adjusted Liabilities to Liquid Assets
- Non-Investment grade bonds to Policyholder's Surplus
- Risky Assets to Capital and Surplus
- Problem Real Estate and Mortgage Loans to Capital and Surplus
- Affiliated Investments & Receivables to Policyholder's Surplus
- Surrenders to Net Premiums

196. Supervisors should collect the supporting data for calculating those ratios. In the case of reserves and leverage ratios, it would be important to control their analysis process.

7. Resources

7.1 Internal systems and policies

197. Supervisors should require insurers to have appropriate systems and structures in place to fulfil the requirements laid down in the guidance paper

198. In order to achieve confidential treatment of information received for supervisory purposes, the supervisor requires that supervisory staff and all persons

gaining access to information in the course of their duties are bound by an obligation of professional secrecy. The professional secrecy requirements should apply to any person currently or previously employed by or acting on behalf of the supervisor.

7.2 Qualified supervisors users

199. Supervisors must be sure that the supervisory body is provided with the necessary means, and have the relevant expertise and capacity, and mandate to achieve the main objective of supervision, namely the protection of policyholders and beneficiaries

200. Appropriate ability can generally be judged from the level of a person's professional or formal qualifications or relevant experience within the insurance and financial industries or other related businesses.