



PÉNZÜGYI SZERVEZETEK  
ÁLLAMI FELÜGYELETE  
HUNGARIAN FINANCIAL  
SUPERVISORY AUTHORITY

# Internal Capital Adequacy Assessment Process (ICAAP)

GUIDELINES FOR SUPERVISED INSTITUTIONS

June, 2007

Contributing authors:

Sponsor: Katalin Mérő, Csaba Varga  
Coordinator: Judit Matusek

Group members:

Lóránt Baracsi  
Sándor Bede, Dr.  
Katalin Csordás  
János Gyenese  
Mónika Horváth  
Csaba Kádár  
Zsuzsanna Vadászi Kardos  
Béla Krekó  
Gábor Magyarai  
Andrea Pesel  
László Seregdi  
Gyöngyvér Szakál  
Sándor Szegedi  
Erika Takács  
Márta Temesvári  
Endre Vincze  
Katalin Wittmann

Special thanks to the associates of the National Bank of Hungary, Anikó Szombati and István Czajlik for their assistance in preparing the guidelines and in evaluating the underlying working documents.

I. Introduction.....	5
II. General Expectations - Principles.....	9
III. ICAAP Components.....	13
III.1 The Strategy for Ensuring Internal Capital Adequacy – Risk Strategy .....	13
III. 2. Evaluation of Material Risks.....	14
III.2.1 <b>Risks captured in Pillar 1</b> .....	14
III. 2.1.1 Credit risk.....	14
III.2.1.2 Operational risk.....	15
III. 2.1.3 Market risk .....	17
III. 2.2 <b>Risks not fully covered in Pillar 1</b> .....	19
III.2.2.1 Residual risks .....	19
III.2.2.2 Securitisation risk.....	19
III.2.2.3 Model risk .....	20
III. 2.3. <b>Risks captured in Pillar 2</b> .....	20
III.2.3.1 Credit concentration risk.....	20
III.2.3.2 Country risk.....	23
III.2.3.3 Interest rate risk in the banking book .....	24
III. 2.3.4 Liquidity risk.....	27
III.2.3.5 Settlement risk.....	29
III.2.3.6 Other material risks .....	32
III. 2.4 <b>Consideration of external factors – Capital planning</b> .....	33
III.3. Calculation of Required Capital.....	35
IV. Stress Testing.....	39
V. Internal Governance .....	40
V.1 Guidelines.....	40
V.2 Internal governance .....	40
V.4 Risk management system, monitoring and control .....	47
VI. ICAAP Compliance at Individual and Consolidated Level .....	49
VII. Expectations Concerning the ICAAP of Smaller Institutions .....	53
VIII. The ICAAP Implementation Process .....	57
IX. List of Documents.....	58

## Acronyms

AIRB	Advanced Internal Rating Based Approach
AMA	Advanced Measurement Approach
ALCO	Asset Liability Committee
ASA	Alternative Standardised Approach
BCM	Business Continuity Management
BIA	Basic Indicator Approach
CEBS	Committee of European Banking Supervisors
CCP	Central Counterparty
CRD	Capital Requirement Directives
DVP	Delivery versus Payment
FIRB	Foundation Internal Rating Based Approach
ICAAP	Internal Capital Adequacy Assessment Process
IRB	Internal Rating Based Approach
SD	Settlement day
SREP	Supervisory Review and Evaluation Process
RVP	Receive versus Payment
TSA	Standardised Approach
VAR	Value at Risk

## I. Introduction

As part of the series of actions to implement the new Capital Requirement Directives (CRD), one supervisory responsibility is to prepare guidelines that set forth the steps of the internal capital adequacy assessment procedure (to be carried out by institutions), discuss the key risks to consider and provide guidance to the practical interpretation of the directives. Another purpose of these guidelines is to explain the expected contents of materials to be submitted by institutions regarding their internal capital adequacy calculations and the principles on which the supervisory authority will assess the submitted documents and information.

Beyond the minimum capital requirements for credit, market and operational risks captured in Pillar 1, institutions are also required to calculate the adequate capital under the framework of Pillar 2 along their internal procedures. The methodology of internal calculations may and usually will differ from that of minimum capital requirement calculations set out in the directive. As institutions are required to calculate the adequate capital for all relevant risks, internal capital calculations may result a higher figure than the regulatory minimum capital, thus an additional capital requirement may appear in Pillar 2. In the other scenario, where the Supervisory Authority could make sure that an institution does not need to hold additional capital, the adequate capital will be the same as the regulatory one, meaning the minimum capital requirement calculated under Pillar 1<sup>1</sup>. This way the capital requirement of an institution will be the higher of the two figures resulting from the two calculation methods.

**ICAAP:** Domestic and EU regulations on capital adequacy assessment require all credit institutions and investment firms (hereinafter institutions) to develop an **internal capital adequacy assessment procedure**. The purpose of this procedure is to assess, based on the institution's own calculations, the adequate capital which institutions consider necessary to cover the risks they take and which they are exposed to<sup>2</sup>.

Thus internal capital adequacy assessment (ICAAP) is a procedure that ensures that governing bodies (supervisory and management functions alike)

- properly identify, measure, summarise and monitor the risks of an institution,
- make sure that the institution has adequate capital as per internal regulations to cover all material risks,
- operate an adequate risk management procedure and develop it on an ongoing basis.

As the ICAAP applies to **all companies subject to the CRD**, it is not only mandatory for institutions that implement an advanced methodology to measure credit, operational or market exposure.

The ICAAP shall be applied **simultaneously** to the launch of capital requirement calculations as per the CRD, that is not later than 1 January, 2008.

---

<sup>1</sup> The CRD do not allow economic capital calculations on minimum capital.

<sup>2</sup> 2006/48/EC, Article 123.

**SREP**<sup>3</sup>: Pillar 2 of the CRD includes regulations on the supervisory review of capital positions<sup>4</sup>, aiming to reveal whether an institution has sufficient capital to cover the risks it is undertaking based on its strategy, regulations, established processes, procedures and mechanisms. The elements of the supervisory review include the evaluation of the institution's exposure to material risks (risk profile), the examination of the adequacy and reliability of its internal governance and internal capital requirement calculations, plus the checking of compliance with minimum statutory requirements. The primary requirement of the review is to have the institution present the methodologies and calculations it applies.

Supervisory reviews are based on four internationally accepted principles:

- I. Measurement of own risk and capital adequacy of banks: Banks should have a process for assessing their overall capital adequacy in relation to their risk profile and a strategy for maintaining their capital levels.
- II. Supervisory review of internal banking procedures: Banks should have a process for assessing their overall capital adequacy in relation to their risk profile and a strategy for maintaining their capital levels.
- III. Capital above the regulatory minimum: Banks should have a process for assessing their overall capital adequacy in relation to their risk profile and a strategy for maintaining their capital levels.
- IV. Supervisory action: Banks should have a process for assessing their overall capital adequacy in relation to their risk profile and a strategy for maintaining their capital levels.

**ICAAP-SREP dialogue**: The assessment of capital adequacy should be the outcome of a dialogue between the institution and the supervisor. In other words, the two processes (internal assessment and supervisory review) are linked up during this dialogue. The dialogue between the supervisor and the institution is targeted at comparing supervisory expectations to the risks and methodology taken into consideration by the institution while executing the ICAAP. The intensity and frequency of the dialogue is a function of the level of complexity and magnitude of the institution's activities, plus the difference between the capital requirement assessed by the institution and the supervisor. The CEBS GL03 document defines four main elements of the dialogue:

1. Pillar 1 risks
2. Risks not fully captured under pillar 1 (e.g. residual risk of credit risk deriving from risk mitigation techniques, securitisation risk, model risk)
3. Risks to be covered under pillar 2 (interest rate risk in the banking book, concentration risk, etc.)
4. External factors (risks deriving from the economic and regulatory environment, risks resulting from the business performance of the institution)

In the course of the SREP, the supervision will review the institution's internal governance after the examination of these four elements.

---

<sup>3</sup> Supervisory Review and Evaluation Process

<sup>4</sup> Article 124 in 2006/48/EC

It is not always simple to categorise a specific risk since each risk may fit into more than one risk category<sup>5</sup>. What the Supervisory Authority has to assess is if the institution has taken into consideration all risks in some form, that is, if the ICAAP covers the full range of potential risks. Another requirement is the presence of a clear correlation in risk classification. In other words, it should be clear where and to what extent the institution considered a specific risk.

In the course of the ICAAP-SREP dialogue, the Supervision will evaluate the institution's ICAAP recommendations and will require capital add-ons under supervisory actions with a view to the institution's financial position and prudential problems.

This document is only setting out guiding principles, as the expectations concerning the ICAAP depend on the type and size of the institution concerned, and on the complexity of its activities. Therefore, there is no standard method that could be applied at every institution. When checking an institution's compliance with the requirements, the supervisor will act with a view to the principle of proportionality.

Like with the choice of the regulatory capital calculation method, it is up to the institutions to establish mechanisms for calculating their internal capital requirement. The primary responsibility for elaborating these mechanisms and for the quality of the ICAAP lies with the management body of the institution. This responsibility remains there even if the ICAAP is elaborated at group level.

The ICAAP can be broken down to the five following areas<sup>6</sup>:

- A valid capital analysis – processes to establish correlation between risks and required capital
- Comprehensive risk analysis – identification and assessment of relevant risks
- Adequate oversight and governance by the board of directors and top management
- Monitoring and reporting – establishment of a structure of regular reporting on the institution's risk profile and capital position
- Internal audit mechanisms – independent review under the framework of the internal control system

**The supervisory review of internal procedures is not only focusing on capital calculation methodologies and the size of capital, as capital cannot substitute for prudential operations. Therefore, the assessment of the adequacy of internal procedures will be of key importance** and this assessment will focus on the harmony and effectiveness of internal limits, control procedures, risk management and internal governance.<sup>7</sup> The purpose of capital requirement calculation under Pillar 2 is not only to have institutions accumulate additional capital, but also to motivate them to employ more conscious and effective risk management techniques for

---

<sup>5</sup> E.g. it is due to regulatory reasons that certain risks are rated as items to be handled under Pillar 2: concentration risk, country risk, interest rate risk in the banking book. Furthermore, the assessment of risks not fully covered under Pillar 1 poses difficulties, too (e.g. which residual risks has the institution covered with haircuts already)

<sup>6</sup> Basel recommendations, article 727

<sup>7</sup> Basel recommendation, article 723

revealing, measuring and handling their exposure, and to make sure that all these elements are embedded in processes and are thus an integral part of the institution's day-to-day operation.

Institutions are required to employ these procedures and, when necessary, they have to be in a position to demonstrate their effective operation to the Supervisory Authority. Naturally, the implementation of an ICAAP mechanism does not necessarily bring about a change in the institution's existing internal capital calculation methods provided these methods have been functioning satisfactorily and have met CRD expectations. In the case of large, complex institutions, it is an acceptable approach in the ICAAP if they compare the quantified value of risks to a set of capital elements determined by them instead of their solvency capital<sup>8</sup>.

**Economic capital** (economically needed capital) refers to the amount of capital required for the institution's business operations and for financing the associated risks. The calculation of economic capital is the statistical or probability estimate of potential business losses at a level of likelihood determined by the institution and for a certain period (usually one year). Therefore, it is a more forward-looking method for capital adequacy assessment than any other approach. The management of an institution would often set the level of likelihood depending on the external qualification they intend to achieve. Companies often compare the economic capital that relates to a specific type of exposure to the assets which can be employed to cover that specific type of risk. The composition of this set of assets might be different from that of the own capital or the regulatory capital. In these cases, the methodology and validity of the economic capital calculation should be presented to the Supervision.

The two most frequently used terms in these guidelines are **capital** and **risk**. Capital is looked at with a view to its buffer role in covering unexpected losses and in the light of the secure operation of the institution<sup>9</sup> whereas capital requirement is interpreted as the adequate capital determined on the basis of specific risk metrics.

These guidelines also address considerations that are specific to smaller institutions (principle of proportionality), as the risk profile of these institutions is different from that of their complex counterparts. They have a smaller market share and expectedly use simpler risk measurement techniques to ensure cost efficiency. Similarly, considerations that relate to institution groups are discussed in a separate chapter.

These guidelines were elaborated principally on the basis of the CRD, the related articles of the Basel recommendations<sup>10</sup> and on relevant CEBS<sup>11</sup> recommendations. Further sources included

---

<sup>8</sup> Larger institutions compare their economic capital both to the regulatory capital requirement and to what they determine for themselves as adequate solvency capital. It can be their capital net worth, the corrected capital net worth used by rating firms or funds determined otherwise. Still, all this is not supposed to mean that the regulatory minimum requirement does not have to be complied with. Please refer to the capital calculations chapter for details.

<sup>9</sup> Although the term "risk" is not defined explicitly either in the Basel recommendations or in the CRD, when used in conjunction with capital it usually refers to unexpected losses. Nevertheless, it is true that during both budgeting and capital adequacy assessment the full amount of losses is to be compared against the sum of loss of value, provisions and capital. It is only sufficient to assess capital adequacy in the light of unexpected losses if we can rest assured that the loss of value and the setting up of provisions furnish adequate coverage for expected losses.

<sup>10</sup> Basel recommendations: International Convergence of Capital Measurement and Capital Standards - A Revised Framework

<sup>11</sup> Committee of European Banking Supervisors



the relevant documents and materials published on the home pages of fellow supervisory authorities, especially those operating within the EU (Please refer to Annex 1 and 2 for a list of sources used or referenced herein).

**The relation between validation and the ICAAP review:**

Although the ICAAP is a requirement for all institutions subject to the CRD, it is not only mandatory for institutions that implement and advanced methodology for it. When approving such advanced methodologies and examining the use test (consideration of estimated parameters in the bank's decision-making processes) and stress tests applied, the Supervisory Authority may review the relation between the IRB and the ICAAP. At the same time, the adequacy check of the ICAAP is not part of the validation exercise and the approval of an advanced methodology will not be influenced by the adequacy of the ICAAP.

## **II. General Expectations - Principles**

Below we present the general ICAAP principles elaborated in CEBS recommendation GL 03<sup>12</sup>. We discuss in detail each of the ten principles which must serve as a guideline for all institutions for establishing their own ICAAP.

**ICAAP 1: Every institution must have a process for assessing its capital adequacy relative to its risk profile (an ICAAP).**

Every institution must have adequate corporate governance and risk management procedures, including a strategy and processes aiming to achieve and sustain a capital level that is adequate to the nature of the institution's business activities and risks. The fulfilment of this principle can be examined both at group and individual company level (see later).

**ICAAP 2: The ICAAP is the responsibility of the institution**

- Each institution is responsible for its ICAAP, and for setting internal capital targets that are consistent with its risk profile and operating environment.
- The ICAAP should be tailored to the institution's circumstances and needs, and it should use the inputs and definitions that the institution normally uses for internal purposes.
- The ICAAP shall meet supervisory requirements and the institution should be able to demonstrate that it does so.
- The outsourcing of any portion of the ICAAP must meet CEBS' standards on outsourcing<sup>13</sup>. Institutions retain full responsibility for their ICAAP regardless of the degree of outsourcing, as it expresses the specific position and risk profile of the institution<sup>14</sup>.

**ICAAP 3: The ICAAP's design should be fully specified, the institution's capital policy should be fully documented, and the management body (both supervisory and management functions) should take responsibility for the ICAAP.**

---

<sup>12</sup> Guidelines on Supervisory Review Process

<sup>13</sup> Guideline on Outsourcing - CP 02 revised, CEBS 14 December 2006

<sup>14</sup> See the chapter on ICAAP compliance at group level

- The responsibility for initiating and designing the ICAAP rests with the management body (both supervisory and management functions). The supervisory function within the management body should approve the conceptual design (at a minimum, the scope, general methodology and objectives) of the ICAAP. The details of the design (i.e. the technical concepts) are the responsibility of the management function.
- The management body (both supervisory and management functions) is also responsible for integrating capital planning and capital management into the institution's overall risk management culture and approach.
- The institution's ICAAP (i.e. the methodologies, assumptions and procedures) and capital policy should be formally documented, and it should be reviewed and approved at the top level (management body in the sense of both functions) of the institution
- The results of the ICAAP should be reported to the management body (both supervisory and management functions).

**ICAAP 4: The ICAAP should form an integral part of the management process and decision-making culture of the institution.**

The ICAAP should be an integral part of institutions' management processes so as to enable the management body to assess, on an ongoing basis, the risks that are inherent in their activities and material to the institution. Depending on the complexity of activities, this could range from using the ICAAP to allocate capital to business lines, to generate expansion plans and even to having it play a role in the individual credit decision process. Yet it is also important at smaller institutions that ICAAP considerations should already appear in decision-preparation both in their business and banking operations.

**ICAAP 5: As the ICAAP is based on processes and procedures, the appropriateness of its operation should be reviewed regularly, at least once a year.**

- A The ICAAP should be reviewed by the institution as often as deemed necessary (but at least once a year) to ensure that risks are covered adequately and that capital coverage reflects the actual risk profile of the institution.
- The ICAAP and its review process should be subject to independent internal review.
- Any changes in the institution's strategic focus, business plan, operating environment or other factors that materially affect assumptions or methodologies used in the ICAAP should initiate appropriate adjustments thereto. New risks that occur in the business of the institution should be identified and incorporated into the ICAAP.

**ICAAP 6: The ICAAP should be risk-based.**

- The adequacy of an institution's capital is a function of its risk profile. Institutions should set capital targets which are consistent with their risk profile and operating environment.
- Furthermore, institutions may take other considerations into account in deciding how much capital to hold, such as external rating targets, market reputation and strategic goals.
- The institution should clearly establish for which risks a quantitative measurement is warranted, and for which risks qualitative factors are dominant; in the latter case, the emphasis is on risk management and the use of risk mitigation tools.

- Even institutions who apply simpler methods to measure Pillar 1 risks (credit, operational and market risks) are required to base their ICAAP and the related governance and supervisory functions on their actual risks.

**ICAAP 7: The ICAAP should be comprehensive.**

- In the ICAAP, the institution should capture all material risks to which it is exposed to, albeit that there is no standard categorisation of risk types and definition of materiality. The institution is free to use its own terminology and definitions, yet it should be able to explain in detail the differences of terms used in the ICAAP and in the calculation of the regulatory minimum capital. E.g. when the institution uses for ICAAP purposes a definition of operational risk that differs from the definition in Pillar 1, or uses a definition of interest rate risk that included both banking book and trading book risk.
- The ICAAP should be comprehensive and should take into consideration all relevant risks, in particular the following:
  - Credit, operational and market risks captured under Pillar 1, including their handling in the ICAAP which is different from Pillar 1.
  - Pillar 1 risks not sufficiently covered with simpler methods (e.g. residual risk stemming from the limited collectibility of collaterals),
  - Pillar 2 risks (liquidity risk, interest rate risk in the banking book, concentration risk, strategic and reputation risk),
  - Risks of external factors (regulatory, economic, business environment).

**ICAAP 8: The ICAAP should be forward-looking.**

- The ICAAP should take into account the institution's strategic plans and how they relate to macroeconomic factors. The institution should develop an internal strategy for maintaining capital levels which can incorporate factors such as the expected growth of borrowings, potential sources of future capital raise, dividend policy, and any procyclical effects which can occur upon the measurement of Pillar 1 risks.
- The institution should have an explicit, approved capital plan which states the institution's objectives and the time horizon for achieving those objectives, and in broad terms the capital planning process and the specification of individuals who are responsible for that process. The plan should also lay out how the institution will handle situations that call for immediate action (for example, the raising of additional capital, restriction of business, or the use of risk mitigation techniques).

**ICAAP 9: The ICAAP should be based on adequate measurement and assessment processes.**

- The ICAAP should be based on the adequate measurement and assessment of risks, but there is no single correct ICAAP method. Depending on proportionality considerations, there are various acceptable procedures<sup>15</sup>. Institutions are not required to use economic capital models<sup>16</sup>, yet the Supervisory Authority expects international institutions pursuing complex and diverse activities to establish and apply more sophisticated risk management and measurement methods.
- Certain risk elements may be difficult to calculate and estimates are acceptable in these cases. Nevertheless, the capital requirement of a relevant risk element must not be omitted even if it is difficult to estimate it.
- It is important that institutions not rely on quantitative methods alone in the course of the ICAAP, but apply qualitative considerations and prudent management estimates regarding model inputs and outputs.

**ICAAP 10: The ICAAP should produce a reasonable outcome.**

The ICAAP should result in a total capital requirement figure and an assessment which supports it. The internal capital adequacy assessment procedure should produce a reasonable overall result. The institution should be able to explain any similarities and differences between the ICAAP result that covers all material risks and the regulatory capital requirement (Pillar 1). In case a significant difference is found during the supervisory review process between the supervisor's expectations and the institutions own capital requirement calculation, the institution should be able to justify the adequacy and comprehensive nature of the method it applied.

---

<sup>15</sup> “Add-up” method: The amount of capital raised additionally for addressing Pillar 1 risks and other institution-specific exposures. “Building block” method: an institution choosing this method would assess all Pillar 1, Pillar 2 and external factor risks separately and then calculate the sum of the resulting capital needs. “Complex” methods: internal risk assessment models applied by the most advanced credit institutions. These models are transaction-based and take into account the correlation effects between risks.

<sup>16</sup> ECM

## III. ICAAP Components

### ***III.1 The Strategy for Ensuring Internal Capital Adequacy – Risk Strategy<sup>17</sup>***

When designing its internal capital requirement calculation mechanisms, the institution should establish its approach to risks and risk management. This approach should then be summarised in a risk strategy elaborated by top management and approved by the management bodies. The risk strategy should be revised regularly and its content should be communicated within the organisation so as to enable the organisation to adhere to the principles set out therein. The scope and extent of the document should match the size and the activities of the institution.

The document can cover the following topics:

- risk policy,
- risk appetite, the willingness to take risks,
- risk structure,
- structure of risk management, its place within the organisation.

#### **Risk policy**

The risk policy provides a summary of the institution's risk-taking and risk management principles, presents the rules and risk management targets set by management which are expected to be applied consistently throughout the organisation.

Such principles may include e.g.

- the principle of prudent risk-taking,
- the principle of applying best practices,
- principles designed to handle/avoid conflicts of interest,
- observation of risk management considerations upon the launch of new activities, business lines or products.

Risk policy principles can also be determined with a view to specific risk categories.

#### **Risk appetite**

In the risk strategy, the institution is expected to determine its risk appetite. Risk appetite is the level of the institution's willingness to take on risks which can be determined through the assessment of risk-taking capabilities. A clear determination of risk appetite is a fundamental precondition to establishing a consistent risk limit system and serves as a basis for capital planning. When determining the risk appetite, the following factors should be assessed:

---

<sup>17</sup> GL03: Institutions should have a process for assessing their overall capital adequacy in relation to their risk profile and a strategy for maintaining their capital levels

- How much and what type of risks can the institution take on with a view to its capabilities to understand and keep in control a specific type/level of risk (e.g. large business or small business customers),
- What type and extent of risks the institution intends to take on and what payoff can be expected from taking these risks?
- Does the institution enjoy comparative advantages in some areas?
- What capital is required for covering the actual risks?

The definition can include quantitative elements like a ROE target, solvency rate, quantifiable limits set for individual risks, portfolio composition, coverage policy, maximum losses undertaken in stress situations, credit rating to be achieved, profitability targets and the tolerable volatility of profitability, dividend policy, etc. Furthermore, the definition can include qualitative elements like the targeted customer segment, regions, business lines, expansion policy, plans and barriers. It can also address areas where the institution's risk tolerance is minimal.

### **Risk structure**

The target risk structure can be defined by reviewing the institution's actual risk structure and breaking down the risk appetite to risk types and business lines.

The analysis of the actual risk structure can set the course of action by which the desired risk structure can be achieved. The development of risk structure should be based on the business structure and strategy, so as to establish harmony between business and risk strategies.

Therefore, the target risk structure can be derived from the business strategy and the risk appetite.

### **Structure of risk management, its place within the organisation**

Once the risk policy principles, risk appetite and risk structure have been identified, the institution needs to define the structure of risk management and its place within the organisation.

## ***III. 2. Evaluation of Material Risks***

### **III.2.1 Risks captured in Pillar 1**

#### **III. 2.1.1 Credit risk**

Credit risk is a quite general term and the partial repayment of a bank loan, i.e. non-payment is only a narrowed interpretation of it. In a broader sense, credit risk refers to the risk that a contractual partner defaults on its contractual obligations (or does not deliver in full accordance with the conditions of the contract).

Such risks include

- the risk of non-payment in relation to a bank loan as mentioned above,
- the risk of certain investments (typically bonds), where payment is not executed in accordance with the contract,
- counterparty risk,

- transfer risk,
- fulfilment risk (in part),
- risk of non-payment by reinsurance firm (does not impact banks directly),
- residual risk

Concerning the risk of non-payment, Pillar 1 does not allow the use of “real” credit risk models (i.e. models that also reflect portfolio effects) even in the case of AIRB, whereas Pillar 2 permits their use. Several models of this sort are available on the market (e.g. Creditmetrics, Creditrisk+). These are expensive methods that require significant expertise and data which makes their use profitable only for larger institutions usually. Furthermore, these models may convey rather significant model risks, although many of these are not exactly known due to their short usage history<sup>18</sup>.

The CRD allows three approaches for calculating the regulatory capital for the credit exposure of risks undertaken in the banking book. The first two are based on internal ratings (basic and advanced) and their application is subject to approval by the Supervisory Authority<sup>19</sup>. The third, simplest approach is the standardised one.

General rules on credit risk management:

- Credit-granting shall be based on sound and well-defined criteria. The process for approving, amending, renewing, and re-financing credits shall be clearly regulated.
- The ongoing administration and monitoring of various credit risk-bearing portfolios and exposures, including for identifying and managing problem credits and for making adequate value adjustments and provisions, shall be operated through effective systems.
- The diversification of credit portfolios shall be adequate given the credit institution's target markets and overall credit strategy.

### **III.2.1.2 Operational risk**

Operational risk<sup>20</sup> is defined as an institution’s exposure to potential losses that may impact its profitability and capital position. Operational risk may derive from inadequate internal processes or systems, external events, inadequate employee performance or from the breaching of or non-compliance with statutory provisions, contracts and internal regulations (as per the draft amendment to the Act on Credit Institutions).

The CRD cites the following typical operational risk events: internal fraud; external fraud; employment practices and workplace safety; clients, products and business practices; damage to physical assets; business disruption and system failures; improper execution, delivery and process management.

---

<sup>18</sup> Actually this is why these are not acceptable for regulatory purposes.

<sup>19</sup> Please refer to the Validation Manual I-II for further information on approving advanced credit risk management methods.

<sup>20</sup> Detailed guidance on operational risk is set forth in volume II of the Validation manual.

In case a risk event occurs, the institution may suffer financial losses (depending on the work process and the risk event concerned, financial losses may appear in the following forms: write-offs, legal expenses, penalties, unsuccessful recourse, indemnification to customers and other parties, loss/replacement of physical assets). Potential risk events and losses relate to the various work processes of the institution. The CRD sets out eight business line categories. Accordingly, the management of operational risks is targeted at preventing risk events and damages (by in-process and managerial controls, protection schemes), handling critical situations (contingency plans, business continuity management /BCM/) and mitigating potential losses (insurances). The institution should tailor its risk management system, direction and control to its operational risks. Furthermore, taking into consideration the capital set up for operational risks, the institution should limit its exposure to an acceptable level (with a view to the institution's risk-bearing capability/risk appetite). The principle of proportionate risk management calls for the monitoring of operational risks (incident registry, analysis, actions) while capital-raising on an as-needed basis requires regular risk assessment.

Institutions can apply own model-based Advanced Measurement Approaches (AMA) or simpler methods based on fixed ratios (BIA, TSA, ASA) to determine the capital required for covering financial losses that are likely to happen under the risk management method applied (except for BIA, all of these approaches are subject to supervisory approval).

If advanced measurement approaches (AMA's) are applied, the impact of other circumstances should be taken into consideration in a comprehensive system during risk qualification and quantification, when the operational risks categorised in the CRD are assessed. This way, the possibility and impact of extreme scenarios (stress situations) should be considered, along with the impact of forced or intentional strategy shifts and changes in the regulatory environment. All these factors have to be observed either in the likelihood or in the impact of risk events when assessing specific activities / work processes.

The comprehensive oversight and reasonable mitigation of risks and thus including operational risks are mandatory and form part of the corporate governance system also when more simplistic methods are applied (BIA, or TSA, ASA). As capital requirement calculations render only an approximate result here and sometimes (e.g. in the case of institutions with low profitability) may render a lower capital against actual operational risks, these calculations must be supplemented with further analysis, and the capital requirement must be increased if necessary. (Institutions choosing to apply a simplistic method are advised to pay special attention to sensitivity tests in relation to e.g. key customers that may impact business results. Investment firms should focus on control systems in order to mitigate losses that derive from the violation of customer regulations or fraud).

In the case of institution groups, the systems targeted at the identification, measurement, management and analysis of operational risks should be established for the group of institutions that are subject to consolidated supervision. A procedure is to be established for allocating the group-level capital requirement for operational risks as calculated under the AMA. This procedure should adequately reflect the operational risk of individual subsidiaries and their contribution to the consolidated capital requirement.



The guidelines in CEBS' GL 03 on corporate governance systems and on general expectations regarding institutional ICAAP are clearly applicable to procedures that relate to operational risks.

### **III. 2.1.3 Market risk<sup>21</sup>**

Market risk: the current or prospective risk to earnings and capital arising from adverse movements in bond prices, security or commodity prices or foreign exchange rates in the trading book. This risk can arise from the market-making, dealing, and position taking of bonds, securities, currencies, commodities or derivatives.

In the course of the ICAAP, investment firms should assess whether the procedures they established properly handle market risks and if the capital set aside for market risks provides sufficient coverage for such risks at all times. As the institution has to provide for capital adequacy on an ongoing basis, it is advised to build the ICAAP on internal risk measurement and management processes and thereby it should form an integral part of the institution's internal governance system. The Supervisor will expect an effort from the institution that is commensurate with the level of complexity and risks of its activities. The principle of proportionality dictates that investment firms should perform their ICAAP with a level of diligence that is in proportion with the extent of their dealings on own account and to the complexity of positions in their trading book<sup>22</sup>. Below we present the main processes that institutions are recommended to cover in their ICAAP so as to comply with the principle of proportionality:

#### **Elements of the trading book**

According to the Act on Capital Markets, all positions should be registered in the trading book which an institution holds on the basis of a pre-defined trading strategy and with a trading intent. The contents of the trading strategy and that of the trading book should be cross-checked on a regular basis and results should be reported to senior management. When the institution presents the ICAAP results to the supervisor, documents on counter-checking should be filed as an attachment.

#### **Organisational and control mechanisms**

The institution needs to employ appropriate control mechanisms to keep market risks within the limits set in the trading strategy. Institutions need to operate a suitable limit system to keep under control all risks associated with trading book positions, exchange rates and commodities. In a default case, this system includes day trading and overnight limits for traders, currencies and various trading positions. The operation of the limit system should be reported to top management on a regular basis. It is advised that top management (or a dedicated committee like ALCO) should review at their regular sessions the trading positions, market risks, potential limit violations and make decisions on changes if necessary. Furthermore, the regulations call for the regular analysis of the tradeability of positions in the trading portfolio based on the availability of

---

<sup>21</sup> We discuss market risks in detail here as the Validation Manual does not address this type of risks.

<sup>22</sup> Naturally, if an institution does not keep a trading book or uses it for very few positions only but still has a considerable banking book exchange rate exposure or perhaps commodity exposure, the institution is expected to elaborate and apply more detailed procedures for the associated risks.

market prices, market turnover and size. Institutions with a significant portfolio which regularly expand their product range are expected to have procedures in place also for the management of new products.

### **Valuation**

Besides the accurate and consistent definition of trading book contents, the fair valuation of recorded positions also plays a key role in the presentation of market risks. Valuation must be fully separated from trading activities. According to regulations, institutions should verify the prices set on a market basis or by way of models at least monthly, in an ex-post control exercise which may also be supplemented with ad-hoc verification. Regular reports should be submitted to top management on the ex-post verification of market and model-based prices and on other reliability checks. The Supervisory Authority will review these reports when assessing the ICAAP.

As part of the valuation process, the institution should have procedures in place which set out the rules for setting up valuation reserves. The purpose of these reserves<sup>23</sup> is to have the institution set aside capital for covering the risk of events and phenomena that may derive from the imperfection of markets or internal processes. The regulation declares that within the scope of these procedures, at least the following reserves should be considered: unearned credit spreads, close-out costs, operational risks, early termination, investing and funding costs, future administrative costs and, where relevant, model risk.

Furthermore, formal procedures are required for determining the adequate level of reserves for book positions<sup>24</sup> that are becoming illiquid<sup>25</sup>.

### **Risk measurement**

Measuring risks and comparing them to the capital set aside for covering them are indispensable parts of the ICAAP. At the minimum level, it involves the assessment of trading book risks and that of the overall exchange rate and commodity exposure of the institution's activities using regulatory methods, plus the review of the permanent availability of the identified adequate capital.

Larger institutions with a significant trading portfolio and complex positions are expected to employ more accurate and risk-sensitive methods for measuring market risks. Therefore, regardless of which method these institutions apply to meet supervisory reporting obligations (standard or internal model method), they are expected to develop and employ as part of the ICAAP an advanced methodology that is based on value at risk (VaR). In these cases, it is acceptable if the institution chooses the use parameters<sup>26</sup> with the internal model which (it thinks)

---

<sup>23</sup> Article 9, Part B of Annex VII to 2006/49/EC

<sup>24</sup> Illiquidity may derive from market imperfection but may also be generated by the institution itself by e.g. holding an excessively concentrated portfolio.

<sup>25</sup> In case an institution is of the opinion that the setting up of such reserves is sufficiently handled by the accounting regulations, it is not a mandatory requirement to raise additional capital (on top of what is already required by accounting provisions).

<sup>26</sup> e.g. holding period, confidence interval, correction factor, etc.

better reflect the underlying risks instead of the parameters set out in the regulation. These deviations, however, must always be supported with a valid explanation.

For institutions using internal models, the regular backtesting<sup>27</sup> and evaluation of the model's performance are fundamental requirements. The upper management body responsible for managing market risks should review the results of backtesting and evaluation on a regular basis. With a view to the limitations of internal models, the institution should run regular stress tests and scenario-analyses of extreme events. The results and conclusions of these exercises should also be reviewed at top management level.

### **III. 2.2 Risks not fully covered in Pillar 1**

#### **III.2.2.1 Residual risks<sup>28</sup>**

The risk that approved credit risk mitigation techniques applied by the credit institution prove less effective than expected should be managed and regulated in written procedures and regulations.

The CRD enables institutions to employ risk mitigation techniques to reduce the capital requirement of credit risks. While institutions mitigate these risks by way of collaterals, these collaterals can pose additional risks (legal, documentation and liquidity risks) which may deteriorate the impact of risk mitigation. For example,

- the liquidation of the collateral is either problematic or time consuming,
- collaterals were valued inappropriately (e.g. overvaluation).

Institutions must be able to prove to the Supervisory Authority that they have proper risk management procedures in place to control risks that derive from the use of credit-risk mitigating collaterals, including residual risks, e.g. legal risks. The institutions should have in place appropriate governing and control systems, valuation procedures, internal regulations and assigned responsible individuals for the prudent handling of risks that occur. These procedures should be subject to regular review.

In case the Supervisory Authority does not find the procedures and methodologies employed by the institution under Pillar 1 appropriate and comprehensive, it may require the institution to take specific action (e.g. change the haircuts on the volatility of collaterals) or raise additional capital for covering residual risks.

#### **III.2.2.2 Securitisation risk<sup>29</sup>**

Risks deriving from securitisation deals for which an institution acts as a protection buyer, protection seller or sponsor should be evaluated and managed through appropriate procedures to

---

<sup>27</sup> backtesting should be interpreted as the result of an ex-post comparison of the trading strategy and the contents of the trading book.

<sup>28</sup> See Article 4 in Annex V to 2006/48/EC and Articles 726-728 of the Basel recommendations.

<sup>29</sup> Due to the lack of legislative background, the Validation Manual could not settle securitisation and we only mention it in this chapter. A more thorough elaboration will only be possible once the underlying laws are known.

ensure in particular that the actual economic content of the transaction is fully reflected in risk evaluation and management decisions. Where there is a securitisation of revolving exposures subject to an early amortisation provision, the originator credit institution shall have liquidity plans that manage the impact of both scheduled and early amortisation.

### **III.2.2.3 Model risk**

This is the risk that the institution makes decisions (e.g. in assessment and valuation) that result in financial losses due to model deficiencies. The underlying primary cause of model errors is not necessarily negligence, but knowledge limits, insufficient data or changes which cannot be predicted from historic data, or simply the fact that models are never perfect.

It is rather difficult to quantify model risks. Practically it is next to impossible as quantification calls for an estimation of both **model deficiencies** and their financial impacts. Model deficiencies can be isolated with sensitivity analyses and stress tests, yet the conversion of their results into economic loss figures is a rather difficult task. Therefore, in the case of this risk, the recommended way of protection is not coverage with capital but risk management. A conservative approach that is based on sensitivity analyses, the use of subjective elements (also required in Pillar 1) and the permanent monitoring of the models' performance may provide sufficient protection against such unfavourable impacts.

**The use of simpler capital calculation methods** (underestimation of credit-granting risk when a standard method is used or the underestimation of operational risks in the case of BIA or a standard method) may also lead to a capital adequacy calculation that renders lower results than what the actual risks would call for. The institution should assess the potential deficiencies of the applied methods and should take them into consideration during the ICAAP.

In case the Supervisory Review finds that the minimum capital requirement of the institution calculated with the applied methods is not sufficient to cover its risks, the supervisor, with adequate explanation, may require additional capital coverage in Pillar 2 during the ICAAP-SREP dialogue.

## **III. 2.3. Risks captured in Pillar 2**

### **III.2.3.1 Credit concentration risk<sup>30</sup>**

The concentration of credit risks is interpreted as a distribution of exposures to customers and trading partners where potential default by a relatively small group of counterparties or large individual counterparties is driven by a common underlying cause and may hazard the “business-as-usual” operation of the institution (uninterrupted operations with the usual and expectable profitability). The term individual customers and trading partners does not only refer to individual counterparties but also to groups of individual customers/partners that are closely connected (through ownership and/or financing)<sup>31</sup>.

---

<sup>30</sup> Further information: Technical aspects of the management of concentration risk under the supervisory review process – CP11 2nd part; CEBS 14 December, 2006.

<sup>31</sup> Please refer to article 20 in Annex 2 to the Act on Credit Institutions (Act 112 of 1996)

In practice, the expression large exposure is used as a reference to cases that involve small groups of individual counterparties<sup>32</sup>. Concentration may be used in a broader sense<sup>33</sup> and include the following reasons: concentration by economic sector or geographical location, concentration in a specific foreign exchange and concentration of credit-risk mitigating measures (concentration of the type or issuer of such assets).

Based on the definition, there are two main types of concentration risks:

- Concentration of exposures to individual customers/customer groups (single name risk – large exposure): the source of exposure here is default by a relatively small group of customers/partners
- Concentration of risks arising from a group of exposures that share a common underlying cause (e.g. sector).

### **Starting point:**

In relation to the risk of credit risk concentration, for institutions that apply the IRB method, the starting point could be the same as the assumption in the risk-weighted asset value calculation formula in CRD – namely, that the portfolio is sufficiently granulated. In case this precondition is not met, the formula automatically underestimates the capital required for covering credit risks. In other words, in all these cases it may be reasonable to ask whether there is a need for setting an additional capital requirement under Pillar 2. The necessity for such additional capital should be judged under the SREP dialogue with the institution, as a function of risks and the adequacy of risk-measurement and risk-management instruments applied.

In the case of institutions that apply the standard method, the regulations do not convey any built-in assumptions concerning portfolio concentration. What it indirectly implies is that the weights therein are designed for averagely concentrated portfolios.

The review and revision of concentration risks are of special importance in the case of smaller institutions<sup>34</sup>. A “smaller institution” should not imply larger concentration risk because the drawbacks of a limited market and specialised profile may be offset by comparative advantages like a deeper knowledge of the market and higher proficiency. At the same time, this institution segment is far more sensitive to shocks deriving from a common underlying cause. Therefore, the potential need for additional capital is always a valid question in their case, noting that the assessment of risk concentrations should always receive more attention at smaller institutions than at larger ones.

### **Supervisory expectations concerning risk measurement and risk management:**

As the concentration of credit risks may be a source of extensive losses (as it actually happened several times in the past), the risk policy for concentration risks should always be an integral part of the risk-taking and risk-management procedures of institutions. According to the requirements in the Act on Credit Institutions, the concentration risk policy should be handled in line with the

---

<sup>32</sup> Para. 79-91 of the Act on Credit Institutions (Act 112 of 1996) regulates the taking of large exposures.

<sup>33</sup> Please not that concentration risks are not equal to large exposures.

<sup>34</sup> See definition of smaller institutions later.

applicable written procedures and regulations. These documents should address at least the following:

- Each institution should have a risk policy and procedures approved by top management for both types of concentration risks (single name and sensitivity to a common underlying risk factor). The risk policy should be reviewed regularly and the review should always observe changes in the institution's risk appetite and in the external business environment.
- Institutions should apply internal methods/systems commensurate with their specific activities, size and complexity to identify and measure concentration risks.
- Institutions should operate limit-mechanisms for concentration risks and these mechanisms should match the institution's risk appetite and profile.
- Institutions should have adequate action schemes which enable them to monitor, assess and handle concentration risk policies, procedures and limits and by which they can mitigate risks.
- Institutions should be in a position to evaluate the adequacy of assumptions which they use in their internal capital allocation processes employed to cover concentration risks.

### **Practices applied by institutions**

Metrics applied to measure credit risk concentration:

- Size of top 'x' large exposures relative to relevant ("appropriately selected") numeraire (e.g. balance sheet/own funds/total exposure),
- Size of top 'x' connected exposures relative to relevant ("appropriately selected") numeraire (sensitivity analysis),
- Portfolio concentration ratios (Gini coefficients, Hirschman-Herfindahl index),
- Portfolio correlations and variance/covariance,
- Sophisticated institutions do not necessarily perform separate concentration tests. Instead, they manage concentration under the framework of integrated risk management systems.

Stress tests are especially useful supplements to metrics. Under usual business conditions, concentration risks rarely cause problems as concentrations usually remain in the background. Therefore, it is especially important to reveal concentration hazards with stress tests.

Methods suitable for keeping concentration risks under control:

- Use of limits based on concentration metrics. To establish such limits, the institution needs to have a clear-cut risk policy and has to provide for permanent monitoring. The requirements of the CRD and the regulations in the Act on Credit Institutions on single name risks are good starting points. It is worth supplementing them with measurements that are specific to an industry, country or product/deal concentration scenario.
- Active portfolio management is a suitable way of adjusting concentration risks to changing circumstances.
- Conversion of risks to market instruments and "selling" them. Structured securitisation or the purchase of protections provided by credit derivatives, collaterals, guarantees, etc.

- Allocation of capital to concentration risks. Many institutions allocate additional capital on top of the regulatory requirement to cover concentration risks. This additional coverage, however, is often not a separate one. Instead, it is integrated into the coverage for “carrying” risks.

### III.2.3.2 Country risk

Country risk refers to potential losses that may be generated by an (economic, political, etc.) event that occurs in a specific country, where the event can be controlled by that country (government) but not by the credit grantor/investor. Upon the domestic implementation of the CRD, the Ministry of Finance’s regulation on the capital requirement for country risks ceases to be in effect. Thus the issue of capital coverage for country risks is becoming a fully integrated element of Pillar 2.

The components of **country risk** are as follows:

- transfer risk: the risk that the obligor<sup>35</sup> of a contract (loan borrower, securities buyer, etc.) is unable to meet his payment obligations in the contractual currency while he has the necessary amount in local currency,
- sovereign risk derives from the insolvency of the country in which the institution has an exposure,
- collective debtor risk derives from the fact that an event impacting the whole country leads to default by a large group of debtors.

Specific elements of country risk appear in the CRD<sup>36</sup>:

- exposures denominated in different currencies but belonging to the same debtor may be classified in different rating classes – consideration of transfer risk,
- differentiation between the risk weights of exposures to the central bank based on denomination,
- collective debtor risk is incorporated into the measurement of credit concentration risk with a view to correlations between defaults.

In order to manage country risks, the credit institution or investment service provider should develop the rules of country-risk management and set out the following items therein:

- country limit for specific countries,
- factors and sources of information taken into consideration for setting country limits,
- person or organisational unit in charge with approving country limits,
- person or organisational unit in charge with verifying country limits,
- mechanisms and frequency of reviewing country limits.

With the termination of the specific statutory provision on the capital requirement for country risks and in addition to the requirements on risk management systems discussed above, the Supervisory Authority sets an additional capital requirement as part of Pillar 2 for covering country risks. This requirement applies to institutions that use the standard method for calculating their adequate credit risk capital:

---

<sup>35</sup> The CEBS links this risk type to the borrower, yet we handle it in a broader sense and do not relate it to credit-granting exclusively.

<sup>36</sup> Claesses – Embrechts: Basel II, Sovereign Ratings and Transfer Risk. External versus Internal Ratings.

- Where the weight of exposures to central governments in the CRD is 0 or 20 %, no additional capital requirement is set.
- Where the weight of exposures to central governments in the CRD is 50%, the additional capital requirement shall be 20% for country risk exposures that are between 75% and 100% of the institution's capital base<sup>37</sup> and 100% for exposures that exceed the capital base.
- Where the weight of exposures to central governments in the CRD is 100%, the additional capital requirement shall be 25% for country risk exposures that are between 50% and 100% of the institution's capital base and 100% for exposures that exceed the capital base.
- Where the weight of exposures to central governments in the CRD is 150%, the additional capital requirement shall be 30% for country risk exposures between 20% and 100% of the institution's capital base and 100% for exposures that exceed the capital base.

Institutions that choose to calculate the adequate capital for credit risks using an internal assessment approach are allowed to determine the capital requirement for country risks with an internal capital allocation method instead of the formulas presented above. If the institution is able to demonstrate convincingly to the Supervisory Authority that its internal capital allocation method sufficiently observes potential losses deriving from country risks, the Supervisory Authority will accept it for capital adequacy assessment purposes. In the contrary scenario, the institution applying internal assessment shall also raise the same additionally required capital for covering country risks as their peers which use the standard method.

### **III.2.3.3 Interest rate risk in the banking book<sup>38</sup>**

Interest rate risk is taken to be the current or prospective risk to both the earnings and capital of institutions arising from adverse movements in interest rates. In the context of Pillar 2, this is in respect of the banking book only, given that interest rate risk in the trading book is already covered under the Pillar 1 market risk regulations.

Sources and types of interest rate risks:

- deviation between interest rate changes and cash-flow changes over time (repricing risk),
- change of relations between interest rates and yield curves specific to individual markets and products (basis risk),
- change of relations between interest rates specific to different maturities for the same products or markets (yield curve risk),

---

<sup>37</sup> Capital base: Solvency capital calculated as per Article 15 in Annex 5 to the Act on Credit Institutions

<sup>38</sup> Further information: Technical aspects of the management of interest rate risk arising from non-trading activities under the supervisory review process – CP11; CEBS 3 October, 2006



- inherent (embedded) interest-related options in banking products (option risk).

A repricing risk is generated when there is a mismatch between the maturity structure of assets and liabilities and if pricing takes place at different intervals or at differently based interest rates (e.g. receivables at a fixed interest rate and liabilities at a variable interest rate).

A basis risk may occur for a credit institution if the relation between the interest rates of two external products changes or if the relation between an external interest rate and that applied by the credit institution is modified. Yield curve risks may amplify the exposure deriving from maturity mismatches.

An option risk is generated if the credit institution or the client is entitled to change the conditions of an asset, a liability or an off-balance sheet item. E.g. early repayment sparked by interest rate changes will modify a credit institution's interest rate exposure through the difference between budgeted and actual cash flows.

From a credit institution's perspective, an interest rate risk may occur for both its trading book portfolio and banking book transactions (traditional credit/deposit and investment transactions).

Out of the items discussed above, repricing risk is the most frequent source of interest rate risk in the banking book for credit institutions.

### **Requirements concerning systems and mechanisms that manage interest rate risks in the banking book:**

- They should be able to evaluate all types of interest-rate risks which relate to receivables and payables not registered in the trading book and also to off-balance sheet items. Furthermore, they should cover all balance sheet items and off-balance sheet items that are exposed to interest-rate risks, non-interest expenditures and revenues that are sensitive to changes of market interest rates along with interest-bearing assets, liabilities and off-balance sheet items not registered in the trading book (fees and commissions).
- They should use generally adopted risk management techniques. The systems should be able to measure the interest rate risks' short-term impact on earnings and their long-term impact on capital value.
- In order to determine the effect of interest rate risks on earnings and capital, input data (interest rates, maturity ranges, repricing results, internal options) should be specified properly and in line with the nature and magnitude of the credit institution's activities. Furthermore, these data should be generated accurately using the institution's records.
- The underlying assumptions should be valid, properly documented and be sufficiently consistent over time. It is an especially important consideration for new products and assets/liabilities, whose maturity or repricing time differs from the original contract conditions. Key changes should be documented and are subject to approval by management.

- The handling of interest rate risks in the banking book is an integral part of the credit institution's risk management activity. The management and the board should take into consideration information derived from the risk management system when making decisions on interest rate risks.
- Standard interest rate shocks which are best practice elements as per international recommendations should form part of the institution's system of managing interest rate risks in the banking book.
- The credit institution should operate an IT system which provides adequate basis for measuring interest rate risk both at individual company and group level and for preparing management reports. Furthermore, the institution should regulate the related access and decision-making authorisations.

### **Stress tests that relate to interest rate risks in the banking book<sup>39</sup>**

As part of its management of interest rate risks in the banking book, the credit institution should regularly perform analyses (stress tests) which show the potential impact of a sudden and unexpected interest rate change on the short-term profitability and long-long term capital value of the institution. From a prudential viewpoint, and thus from the supervisory point of view as well, the measurement of the impact on economic value should be considered a top priority. However, as changes in profitability may influence the institution's solvency on the long run, the measurement of profitability effects is also of key importance for the institutions.

The credit institution should model standard interest rate shocks to the banking book for all currencies in which the aggregate sum of its denominated, off-trading book assets and liabilities and off-balance sheet transactions make up 5% of the total volume of banking book items. In order to fully cover the banking book, the institution should aggregate all other positions and test them against a 200 base point shock out of the options listed in the methodology guideline.

The execution of standard interest rate shocks is a minimum requirement which can be supplemented based on the specific characteristics of the institution.

In case the standard interest rate shock on the interest rate risk in the banking book shows a potential decrease of the institution's economic value in excess of 20% of its solvency capital<sup>40</sup>, the credit institution should take actions to reduce its exposure to interest rate risk. These actions may equally be targeted at increasing capital or reducing risk exposure.

If the standard interest rate shocks indicate a potential decrease of the institution's economic value in excess of 20% of its solvency capital, the Supervisory Authority will initiate measures to reduce the credit institution's risk exposure and to strengthen its risk management processes. Furthermore, the Supervisory Authority will set an additional capital requirement for the institution concerned on an as-needed basis. Before taking such steps, however, the Supervisory

---

<sup>39</sup> This topic is elaborated in detail in HSFA methodological guideline 5/2004 on the management of interest rate risks at credit institutions.

<sup>40</sup> This is how the Supervisor interprets economic value defined in Para. 5 of Article 124 in the CRD.

Authority would always assess the sufficiency of the actions taken by the institution itself and consider the form and means of supervisory action accordingly.

### **III. 2.3.4 Liquidity risk**

Liquidity risk occurs when an institution is unable to fulfil its commitments in time when payment falls due.

Institutions should come up with estimates on their liquidity risk, comparing their liquid assets to short-term liabilities. The purpose of daily liquidity measurements is to ensure that the institution remains solvent in its day-to-day operations at all times. In order to maintain immediate solvency, analyses are to be carried out concerning future liquidity as well<sup>41</sup>. Regulations and procedures are to be implemented which serve the ongoing and forward-looking measurement and management of the institution's financing position. Alternative scenarios are to be developed and decisions on net financing positions should be reviewed on a regular basis. Contingency plans should be available for handling a potential liquidity crisis.

Liquidity risks can be classified into four categories:

- Term liquidity risk (due to discrepancies between maturities),
- Withdrawal/call risk (mass disinvestment before maturity),
- Structural liquidity risk – when the necessary funding transactions cannot be carried out or only on less favourable terms,
- Market liquidity risk

An institution can analyse the expected changes of its liquidity by comparing the maturity of its receivables and payables. Further options include a so-called static analysis where the institution assumes that its position is “frozen” at the current level (there are no new borrowings and deposits) and a dynamic analysis where the institution makes certain assumptions on credit granting and depositing.

Term liquidity risk occurs if the cash flows of receivables and payables are not harmonised adequately and payables falling due exceed receivables in certain periods. Risk significance increases in line with the proximity of the variance.

Withdrawal/call liquidity risk occurs if funds are withdrawn before contract maturity.

It is important to estimate as accurately as possible the time required for liquidating assets and for closing exposures. Institutions are recommended to analyse their liquidity forecast for the relatively foreseeable future using scenarios that are based on historic experience and expert estimations. When doing so, the institution should take into consideration the impact of all scenarios that have a positive likelihood<sup>42</sup>. Analyses should definitely address cases when

---

<sup>41</sup> Para. 89 (3) of the Act on Credit Institutions also requires the preparation of internal liquidity regulations and plans.

<sup>42</sup> *Reasonable consideration is expected from institutions concerning potentially identified additional risks and the required resources.*

problems occur with the institution's receivables (including, as a worst-case scenario, the potential bankruptcy of a certain percentage of debtors) and when funding opportunities are shrinking. It is also recommended to examine the impact of potential early repayments, as e.g. amounts repaid early can only be placed with debtors at a lower credit fee which may decrease the institution's budgeted revenues.

It is not mandatory to set up required capital for term liquidity and withdrawal/call risk. Still, it is recommended that certain accurately specified scenarios, as expected outcomes of potential future events should meet certain criteria. E.g. specific limits should be set and compliance with them should be checked against clearly defined metrics during the scenario analyses. Such limits are expected to be defined at least for the indicators specified in liquidity risk management regulations. The institution is recommended to have action plans in place for handling the increase of liquidity risk. These plans should specify responsibilities and organisational background for the management of increased risk levels.

Beyond short-term exposures, structural liquidity risk can also pose problems. This risk is actually the possibility that the cost of sustaining liquidity may change (putting the institution in a worse position as financing becomes more expensive due to its worsening credit rating). For the calculation of structural liquidity risk, it is advised to estimate the likelihood of the deterioration of the institution's credit rating (by other market players) and to estimate its impact on the interest rate of loans granted to the institution. The capital requirement of covering this risk is principally equal to the difference between the present value of funds required for paying a higher (interest) future rate and that of the the current rate.

Market liquidity risk is the possibility that a market position cannot be closed at the market price within an appropriately short time horizon, only at a less favourable rate. This way, a proper market price can only be realised if the position is retained which may call for the tie-up/taking out of liquid assets. This kind of risk appears e.g. on the market of less liquid assets (including cases where the closing of a position is not hindered by the product's illiquidity but by the size of the position) and on the derivatives market where the amount of mandatory deposits may change relatively quickly. The recommended method for estimating the capital requirement of covering this risk is to take the capital requirement for market risks as a basis. It can be calculated by e.g. setting up a partial portfolio of positions that convey liquidity risk. Then the capital requirement of the portfolio should be calculated with the applied VaR-model for both the usual and an adequately extended period. Then the resulting additional capital requirement of the illiquid portfolio should be added to the capital requirement computed for the entire portfolio for the usual holding period. In case the application of this approach is challengeable on grounds of technical reasons (e.g. the effect of correlations cannot be considered properly) or if the institution is not using a VaR-based model, it is also acceptable to base capital requirement calculations (using a different methodology) on experience and expert estimates.

### III.2.3.5 Settlement risk<sup>43</sup>

#### Definition of settlement risk<sup>44</sup>

Settlement risk is the risk that a transaction executed is not settled as expected<sup>45</sup> through a settlement system. Settlement risk comprise credit risk and liquidity risk elements.

Treasury transactions, trading book items (deals) and capital market dealings concluded as part of investment services convey a settlement risk that is a specific mix of credit and liquidity risk. The credit institution or the investment firm bears the risk that while it fulfils its contractual obligations (payment or delivery), the counterparty fails or defaults to do so. Finally, it may lead to the non-performance in further securities transactions of that party meeting its obligation stemming from the first transaction (e.g. due to the non-availability of a financial instrument or to liquidity problems).

The settlement risk in Pillar 1 can be regarded as a limited interpretation of risks associated with the settlement of securities transactions (The 2006/49/EC directive calls for an additional capital requirement for the price difference of unsettled transaction from the fifth day after the due delivery day (SD+5) onwards. The definition applied by the Supervisory Authority interprets settlement risk as the sum of credit and liquidity risks arising during the settlement of transactions and depending on the design and specific features of the securities settlement system.

Under regular market conditions in Hungary, non-performance of delivery is mostly of technical nature; i.e. transactions are simply settled with a delay<sup>46</sup>. (One reason is e.g. the long chain of custodians involved in the delivery of securities.) With a view to the fact that transactions completed (settled) late on the settlement day (SD), or completed after the SD but within SD+4 days can convey a material principal, replacement cost and liquidity risk, the Supervisory Authority regards it is necessary to monitor and manage such transactions in the ICAAP as well. Although the 2006/49/EC directive declares that unilaterally completed transactions (open deliveries) should be handled as a risk from the first (contractual) payment day or delivery period to the fourth day following the second (contractual) payment day or delivery period, the Supervisory Authority, based on the components of settlement risk, prefers to apply a broader definition under Pillar 2.

#### Credit-granting and liquidity risks

---

<sup>43</sup> The Supervisory Authority interprets settlement risk in a broad sense, not limiting its meaning to the settlement risk presented in the CPSS-IOSCO recommendation where it is defined as a type of credit risk of securities settlements. The Supervisory Authority's interpretation of the term, however, also includes replacement cost risk.

<sup>44</sup> Based on the background paper "Clearing & settlement of securities; Risks of deposit management; the related supervisory responsibilities" by the HSFA's Capital Markets Institutions Supervision and on the CPSS-IOSCO's "Recommendations for securities settlement systems".

<sup>45</sup> The CEBS' GL 03 defines settlement risk as the risk, that the credit institution (investment service provider) will deliver the sold asset or cash to the counterparty and will not receive the purchased asset or cash as expected.

<sup>46</sup> In relation to securities settlements, market players take different risks depending on whether the settlement of the transaction is guaranteed (involves a CCP), how it is settled and how many markets and settlement systems are involved. The difficulties of cross-border and multi-market securities settlements, especially those stemming from the lack of system interoperability, convey increased risks. Deposit management chains also highlight the relevance of replacement cost and liquidity risk.

Credit risk derives from partial performance, late performance or default of the counterparty in the concerned transaction.

Principal or settlement risk, the possibility of losing the contractual amount is the highest but still manageable risk that counterparties to a transaction have to bear. This risk has a significant impact and it occurs if the party to a transaction is not getting back the asset transferred to the party in default (money or securities).

Replacement cost risk (or pre-settlement risk) is a type of risk that is smaller than the principal risk, yet it has more practical relevance in the existing settlement systems. We think that the capital requirement calculation for settlement risk in the case of a 5-15 day delay, as set out in Annex II to directive 2006/49/EC, is an acceptable starting point here, too.

Replacement cost risk from another aspect: the default by a partner may mean that the exchange rate gain (upon the selling of securities, the difference between historic cost and the contractual price, adjusted with interests) of a transaction is not realised. In this case, replacement cost risk can be supplemented with the opportunity cost of lost earnings, especially if the transaction is renewed at a less favourable rate (or is not renewed at all).

Credit risk-related liquidity risk derives from the potential failure of the counterparty to fully deliver (the contractual amount) in due time, which may lead to the following consequences:

- the duly delivering seller needs to seek other sources of liquidity to fulfil further contractual obligation(s) (take out loans or sell certain assets),
- the duly delivering buyer will have to obtain the financial instrument concerned from another seller so as to be able to deliver on further transaction(s).

For credit institutions and investment service providers operating under tight liquidity conditions, defaults on high-value transactions (delays) may cause significant problems. This risk type should especially be taken into consideration in the case of financial instruments that have a modestly liquid market (for the purchase of the instrument is more difficult and delivery defaults are more frequent under such conditions).

### **Quantification of settlement risk, estimation of the related capital requirement**

As settlement risk is composed of credit and liquidity risk, it is an obvious choice to quantify it with the building block model. The methods outlined in the chapters on liquidity and credit risks can be used, yet they have to be customised and combined to match the specifics of settlement risk.

Settlement risk can be regarded as a traditional type of credit risk so the relevant measurement methods presented above can be applied to it, too. Yet this risk can be terminated or mitigated by DVP (delivery versus payment) or RVP (receive versus payment) settlements, and by involving a central counterparty (CCP)<sup>47</sup> between the partners. As the mechanisms of settlement systems mostly ensure the minimisation of principal risk<sup>48</sup> by applying these principles, the credit risk of

---

<sup>47</sup> The central counterparty is an organisation which acts directly or indirectly between the parties to the transaction, taking over their rights and obligations in a way that it acts directly or indirectly as a buyer with all sellers and as a seller with all buyers.

<sup>48</sup> In the case of defaults, central counterparties use assisting mechanisms to safeguard the settlements (settlement system) and to have the past-due open transaction settled as soon as possible. KELER (Central Clearing House and Depository, Budapest) applies a three-stage assisting mechanism; (1) if the default occurred on a client sub-account, KELER will settle the defaulted securities from the investment service provider's own sub-account; (2) KELER will

securities settlements executed via a central counterparty is limited to the replacement cost. In the course of transactions settled bilaterally outside the CCP, however, the settlement risk should also be considered, monitored, and managed, depending on the partner's rating. The reason is that in this scenario, no there is no independent third party or mechanism between the dealing partners which could enforce the DVP (RVP) principle. In this respect, the institution is expected to apply limit and partner evaluation systems and to perform appropriate monitoring.<sup>49</sup>

In a securities transaction, the further away the seller is from the buyer and the longer the (deposit management) chain, the higher is the probability of partial fulfilment, defaults and non-fulfilment. In these cases, the counterparty/credit risk is multiplied. If the institution also provides clearing agent services to its customers (sub-clearing members), it bears further risks due to the fact that as general clearing member, it has to warrant for each sub-clearing member's delivery to the central counterparty (only the institution is in contractual relation with the CCP). This risk can be kept at an appropriate level by setting risk limits, requiring adequate coverage and elaborating a proper monitoring system.

The extent of replacement cost risk depends on the institution's agreements with other investment service providers. Frame contracts (e.g. on securities lending) may be proper risk management means. If the institution does not have an appropriate procedure in place for handling this risk, an additional capital requirement may be justified in the case of volatile markets.

Using an ex-post approach, the extent of replacement cost risk can be determined accurately (as demonstrated above); it can be estimated ex ante, and its relative size will be a reflection of market volatility. The Supervisory Authority considers the following formula as the starting point for calculating the capital requirement for covering replacement cost risk:

(Average exchange rate fluctuation per day) \* (max. number of default days) \* (contract value) \* (likelihood of default)

- the likelihood of default and the average exchange rate fluctuation per day can be estimated using historical data,
- concerning the maximum number of default days, it has to be considered for spot deals guaranteed by KELER that the CCP will initiate a forced purchase procedure on the SD+2 day or, with derivatives, on the last day of the settlement cycle. In the case of a financial default, KELER will provide a settlement credit to the clearing member or draw on the Stock Exchange Settlement Fund to finance the transaction.<sup>50</sup>

As discussed above, credit risk-related liquidity risk has material relevance especially in cases when the institution operates on a lower liquidity rate, or if the financial instrument concerned has a limitedly liquid market. At the same time, settlement by multilateral contract netting can be a suitable way of mitigating liquidity risk or keeping it low.

This risk can be quantified using the methods presented in the liquidity risk chapter and it can be mitigated with other methods (transactions limits, limitation of the range of traded products).

---

attempt to obtain the required securities via the central securities lending system; (3) it will set up an örökített korrekciós DVP transaction between the defaulting and the duly delivering parties.

<sup>49</sup> See HFSA Chairman Recommendation 3/2000 on the risk management systems of investment service providers

<sup>50</sup> For a detailed introduction of procedures applied by KELER in case of non-fulfilment by either party, please refer to KELER's General Rules of Business at [http://www.keler.hu/keler/keler\\_angol.head.page?nodeid=170](http://www.keler.hu/keler/keler_angol.head.page?nodeid=170)

### III.2.3.6 Other material risks

ICAAP 7 requires that the institution's internal capital allocation process should capture all risks which have not been identified earlier but are material for the institution. Such risks may include e.g. strategic risk or reputation risk, but the institution needs to consider all risks not specified herein in case it can be captured in the institution's operation and can be regarded as material. Risks may appear here which are specific to the institution and derive from its non-standard activities or clientele but fall outside the scope of usual risk definitions. The institution is free to use its own terminology and definitions for other material risks, albeit that it should be able to explain these to the Supervisory Authority in detail, along with the related risk measurement and management procedures.

The Supervisory Authority is not providing a detailed list and definitions of other risks. It is the institution's responsibility to map out other relevant risks for which it has to elaborate an adequate risk identification mechanism. The institution needs to examine the materiality of the identified risk and the result of the assessment. Furthermore, it has to be able to explain these satisfactorily to the Supervisory Authority.

**Materiality:** in the context of an institution's activities, all risks which affect the achievement of business objectives should be considered material. Other risks are usually difficult or impossible to quantify, thus their measurement and management typically call for qualitative methods. Therefore, institutions are advised to elaborate detailed methodologies for their evaluation and management which enable the revealing of risks and help keep them under control.

There might be a strong link between these risks and other risks, either because the former may amplify the latter (e.g. strategic risk can increase credit risk) or because they stem from the escalation of basic risks (e.g. IT problems carrying a high operational risk may also result in the fast increase of reputation risk if they impact customer systems). Thus the assessment of the materiality of other risks is a highly subjective exercise. The Supervisory Authority takes a stand on this matter in the course of the SREP process, during the dialogue with the institution and on the basis of submitted documentation.

**The minimum supervisory requirement concerning other risks is the assessment of reputation risk and strategic risk.**

#### **Reputation risk**

Reputation risk is the current or prospective indirect risk<sup>51</sup> to earnings and capital arising from adverse perception of the image of the financial institution on the part of customers, counterparties, shareholders, investors or regulators. It is manifested in the fact that the external opinion on the institution is less favourable than desired.

---

<sup>51</sup> Reputation risk has an indirect impact on capital and profitability. Its effect is mainly manifested in the deterioration of goodwill and lost earnings.



Reputation risk may originate in the lack of compliance with industry service standards, failure to deliver on commitments, lack of customer-friendly service and fair market practices, low or inferior service quality, unreasonably high costs, a service style that does not harmonise with market circumstances or customer expectations, inappropriate business conduct or unfavourable authority opinion and actions.

Signs of significant reputation risk include the extensive and repeated voicing of a negative opinion on the institution's performance and overall quality by external persons or organisations, especially if such negative opinion receives broad publicity along with poor performance by the institution which may lay the grounds for such opinions.

### **Strategic risk**

Strategic risk means the current or prospective risk to earnings and capital arising from changes in the business environment and from adverse business decisions, or from the overlooking of changes in the business environment.

Typical sources of strategic risk are e.g. endeavours to achieve a growth rate or market share that does not harmonise with the market environment, lack of timely and proper adherence to environmental changes, assignment of inappropriate means to correctly chosen objectives, poorly timed alignment to changes in the business environment, or specific actions that do not comply with strategic objectives.

It may be a strong indication of strategic risk if the institution persistently proceeds against the clearly articulated requirements and trends of the economic environment in matters which exercise a substantial influence on its services and business performance, or if the institution fails to revise its strategy despite clearly identifiable and substantial changes in the environment.

## **III. 2.4 Consideration of external factors – Capital planning**

The fourth element of the ICAAP-SREP dialogue<sup>52</sup> is the consideration of external factors. The capital requirement of assumed risks that have been examined in a static manner so far is now put in a dynamic context through the observation of external factors. The level of capital has to be adequate on an ongoing basis, not only at specific times, so that sound operations can be sustained even under potentially adverse turns in the economic or business environment. The capital requirement is affected by the economic environment (e.g. recessions), the regulatory environment and by risks arising from the institution's activities (profitability, business performance). These factors are taken into consideration through capital planning which ensures that the institution calculates its adequate capital with a sufficiently forward-looking outlook. Stress tests enable the identification of necessary capital for times of economic recession. The adequate capital should be corrected with a view to additional capital requirements based on this outlook.

---

<sup>52</sup> CEBS GL03, Chapter 4

## **Capital planning**

The purpose of capital planning is to enable the institution to ensure capital adequacy under changing economic conditions, even at times of economic recession.

In the capital planning process, the following items should be reviewed:

- current capital requirement of the institution,
- planned capital consumption,
- the targeted and sustainable capital level (with a view to the institution's strategy and risk appetite),
- the means of capital management: internal and external resources that can be employed to increase capital (profit-generating capability),
- other employable means of ensuring capital adequacy (e.g. budgeting of dividend payments and balance sheet items, etc.),

The assessment of the internal sources of capital planning calls for the review of risk arising from the institution's financial management (actual performance versus business plans, profitability and profit generating capability).

Concerning the timeline of the capital plan, the Supervisory Authority expects a 3 to 5 year outlook, depending on the complexity of the institution. For smaller institutions, a three-year outlook is sufficient, but large institutions are required to work with a 5-year outlook. The capital plan should be revised on an as-needed basis but at least once in every three years and it should also be aligned to circumstances.

In the capital planning process, it is advised to use stress test to reveal the impacts of unfavourable changes in circumstances.

### **Earnings risk:**

Earnings risk arises due to the inadequate diversification of an institution's earnings structure or its inability to attain a sufficient and lasting level of profitability.

### **Risk originating in the economic environment**

Risks belonging to this category affect capital or earnings. They derive from significant changes either in international and national growth, or in the economic or business growth specific to regions, industries, earnings by ownership sector and to financial and other markets. Furthermore, such risks may stem from changes in product, service and asset prices and exchange rate fluctuations which originate in supply and demand imbalances. They may result from changes in investment instrument yields and changes in the cost of operating financial institutions.

The risk of the economic environment usually appears as a strategic, credit, market or financial management risk. Its typical sources include recessions in economic, business or market growth, including cyclical recessions.

A macro-economical adjustment that breaks the usual trend of economic growth is a significant risk, and the same applies to inflation, significant changes in interest rates and/or exchange rates, the material increase in their volatility, and to the cyclical fluctuation of macro-economical processes which exceed the usual limit.

## **Risks of the regulatory environment**

The risk of the regulatory environment is a risk that impacts capital and earnings and arises from changes in mandatory regulations set by international and national authorities. Typical examples of this risk include rules of and limitations on activities, rules of financial management and inventories, customer care procedures, regulations on market conduct and changes in taxation and subsidy schemes.

It is a sign of significant regulatory risk if changes in regulations fundamentally hazard the size of business of the institution's major operations, its usual growth rate or profitability, or if an institutional reform or macro-economical adjustment leads to unfavourable regulatory changes in multiple areas.

### ***III.3. Calculation of Required Capital***

Under Pillar 2, the institution is required to determine to its best knowledge the level of capital it needs to cover actual and potential risks. In the capital calculation process, all material risks of the institution should be observed and, unlike in Pillar 1, diversification among various risks can also be taken into consideration.

Apart from providing criteria on risk types that should be considered, neither the CRD nor the GL03 document sets requirements or provides recommendations on capital calculation methods. What is more, the GL03 explicitly emphasises methodological diversity. A probably not insignificant reason for this is the intent that an institution which has been using capital calculation methods that practically comply with the new requirements (which is not a rare phenomenon among advanced institutions) should not have to replace those methods just because of CRD implementation. In line with the CRD's core philosophy, however, this freedom has a price: the institution should be able to demonstrate to the Supervisory Authority's satisfaction the correctness and validity of the method it has chosen.

The level of sophistication of the method chosen by the institution may depend on the following:

- the size and complexity of the institution (based on the principle of proportionality, smaller and simpler institutions should not be required to have sophisticated and complicated capital calculation methods,
- the weight and relevance of the risk within the institution (an institution may apply very simplistic approaches like capital cushions for negligible risks and sophisticated models to material risks),
- available (especially intellectual) resources. The institution is expected to have a thorough understanding of the models it applies. It should not employ methods which it did not have the capacity/time to learn adequately. (This point is closely related to the first one: larger institutions usually have more means at their disposal.)
- the institution's risk appetite: one definite expectation is that an institution which takes larger risks should employ more sophisticated and more accurate methods than a risk-averse institution – at least for material risks.

Therefore, depending on the complexity and risk appetite of the institution, various approaches can be used for determining the capital requirement. Even in the simplest scenario, the required capital in Pillar 1 can be used as a starting point and it can be supplemented with capital allocated to risks not captured (or not properly handled) in that pillar. This is actually a conservative margin. Even in this case, however, the institution is required to provide evidence that Pillar 1 methods render a good approximation for the risks handled therein and that other risks are negligible compared to these.

Institutions with a more complex risk profile may employ an internal model to determine the capital requirement of all material risks, regardless of which Pillar these risks belong to. These institutions may also take into consideration the correlations between individual risks when calculating the total required capital.

The handling of the same (Pillar 1) risks may be different under Pillar 1 and 2<sup>53</sup>. An institution may use a portfolio model (e.g. Creditmetrics, Creditrisk+) in Pillar 2 instead of the portfolio-independent approach employed in Pillar 1. Or, as it frequently happens today, it may identify market risks for internal purposes with an internal model, while reporting as per the standard method in Pillar 1 (for the calculation of regulatory capital).

This freedom of choice does not only apply to the methods that serve the calculation of capital requirement – it also means the freedom of selecting the approach, risk metrics and capital definition.

When **calculating the adequate capital**, usually the going concern or the liquidation principle is used.

When the calculation is performed on a going concern basis, an amount of required capital will be determined which enables the business to continue even when significant losses are suffered (thus this principle reflects the viewpoint of owners and employees who have an interest in maintaining the business). In these cases, typically an interim, alerting capital level is set as well. The drop of capital below that limit is still not a direct threat to business continuity, yet it is a warning sign that only a slight further decrease of capital is allowed and that actions are needed to avoid it.

The use of this approach requires more than just knowing the current situation. Some assumptions need to be used (although usually very simple ones) to take into consideration the future course of business. This thinking also involves the setting of a time horizon for which the institution wishes to guarantee the continuity of its business. The reasonable length of this horizon is subject to factors like the time of resolving capital shortages or the rating period of credit rating institutions. Thus this time horizon can be freely chosen theoretically, usually a one-year period is used in practice, due to various reasons. Here a differentiation is required between the holding period and the time horizon of the capital calculation (especially with portfolios that can be terminated quickly, e.g. trading portfolios). The calculation of capital requirement for the latter requires further assumptions.

---

<sup>53</sup> Obviously, methods applied in Pillar 2 are supposed to be more sophisticated.

When the liquidation principle is used, an amount of required capital will be determined which enables the fulfilment of all liabilities in the case of immediate liquidation (this approach represents the viewpoint of bank deposit holders and creditors). Here it is sufficient to know the current situation and time horizon is only mentioned as the time required for winding up the positions which may differ significantly per asset type (e.g. the ten-day typical holding period for trading portfolios and the one-year period applied to credit risks)<sup>54</sup>.

Concerning the extent of risk, it is increasingly common to use VAR and its more consistent variants (tail VAR, expected loss, extreme value, etc.) besides “traditional” distribution methods. VAR-type metric require the setting of a confidence level and it seems natural that this level should be identical for different risk types (although in Pillar 1 different levels belong to credit and market risk)

If the institution chooses to use the going concern basis and VAR-type risk metrics, the capital requirement has to be set in a way that it provides adequate coverage against potential risks for a certain period and at a specific level of security<sup>55</sup>.

One may ask if a confidence level lower than that in Pillar 1 can be used for the calculation of economic capital. In the ICAAP, the institution can apply a confidence level which is different from that in Pillar 1, but then the two results will not be comparable. The institution, however, needs to provide for such compliance, thus it has to be able to demonstrate capital calculation per risk also at the confidence levels defined in Pillar 1. The application of a higher confidence level reflects a more conservative approach and the Supervisory Authority will accept it when performing the comparison to Pillar 1. At a lower confidence level, however, the Supervisory Authority cannot execute this comparison as it can only be performed at identical confidence levels. Furthermore, in the SREP process, the Supervisory Authority will take into consideration the higher of the capital requirements calculated at identical confidence levels for Pillar 1 and 2. Another question is if different holding periods can be applied to specific risks. Different holding periods are natural in the liquidation approach, because the termination time of individual portfolio types is not identical (which also explains e.g. the differences in holding periods in Pillar 1).

Concerning the definition of capital: whereas in Pillar 1 capital is defined as solvency capital (usually on the basis of applicable accounting rules), the bank may apply an own definition of capital under Pillar 2 which it views as a better reflection of the true value of assets and liabilities and the risk-bearing capability of individual capital elements<sup>56</sup>.

Please note, however, that not only the selected method has to be “defended” before the Supervisory Authority, the institution should also be able to demonstrate the relations between its own capital calculations and the capital requirement in Pillar 1<sup>57</sup>. The more distant the approach, risk size and capital definition used in Pillar 2 are from their Pillar 1 counterparts, the more

---

<sup>54</sup> It seems that banking regulations (concerning Pillar 1) apply this philosophy, albeit it is not stated explicitly...

<sup>55</sup> This solution is the most common practice. The time horizon is typically 1 year but it can be longer in certain cases.

<sup>56</sup> In the ICAAP, institutions can use a different definition of capital than surety capital and in most cases they do so. Please note, however, that differences should be explained satisfactorily.

<sup>57</sup> If for no other reason, then for assessing the adequacy of the requirement in Pillar 1

complex this task is. Therefore, it is an obvious expectation that banks should be able to justify the deviations between Pillar 1 and Pillar 2 definitions<sup>58</sup>.

Various methods can be used for aggregating risks at institution or group level. The organisational structure, however, cannot affect risk aggregation. The most obvious and most frequently used method is a simple add-up (as in Pillar 1). In most cases, however, it leads to the overestimation of required capital (when the usual risk metrics are used) as it is based on the conservative assumptions that various risks are fully correlated (have a correlation rate of +1). Usually this is not the case and the consideration of actual correlations leads to a lower capital requirement. This calculation, however, requires the knowledge of the combined distribution of individual risks. The institution can either assume a known, multi-dimensional distribution or use copula functions, and perform calculations with analytic, approximating or simulation techniques, depending on the nature of the problem. These techniques require an in-depth knowledge of methodologies, a specialist team and a good data background. They are costly and the Supervisory Authority has to be convinced of their adequacy. Usually, only large institutions can afford and use these methods in a profitable manner.

The capital requirement of an institution is not only dependent upon the direct factors discussed so far, but on the following ones as well:

- the institution's strategy must definitely be taken into consideration (the capital calculations of an institution seeking powerful growth is recommended to be based on a multi-year business plan which is expected to yield a higher capital requirement even in a one-year horizon than it would with the usual one-year outlook)
- an institution may be forced to raise its confidence level (and consequently its capital) compared to the level it considers necessary based on other criteria in order to achieve a higher rating (to match the expectations of credit rating institutions). (This move can easily pay off through better refinancing opportunities and higher earnings).

## **Capital allocation**

Theoretically and except for the determination of the economic capital of group members, capital allocation is not closely related to capital adequacy. In reality, however, it can serve as a control to capital calculations as it is a different way of determining, aggregating and breaking down capital to the organisational units.

Capital allocation should be comprehensible, internally accepted, consistent and feasible. By ensuring the efficient availability of capital, it has to contribute to risk-observing business management. Therefore, capital optimisation while ensuring profitability and the consideration of the strategic plan are of special importance. Allocation can be based on e.g. the individual handling of business lines (no diversification effect is considered here) or on the business line's contribution to risks.

---

<sup>58</sup> Expectedly, the typical difference will be that certain foreign-owned banks will employ IFRS-compliant definitions in Pillar 2 instead of the Hungarian accounting definitions used in Pillar 1.

In the capital allocation process, the institution should make an effort to make the level of allocation as “deep” as possible.

#### **IV. Stress Testing<sup>59</sup>**

Stress test is a general term covering the techniques and methodologies which financial institutions can employ to measure their vulnerability or exposure to the impacts of exceptional, rare but potentially occurring events. Such events can be e.g. the following: interest rate changes, HUF exchange rate fluctuations, changes in credit rating, events which influence liquidity, etc.

There are various methods<sup>60</sup> for measuring the impact of the above factors. In an ICAAP context, they are as follows:

- Simple sensitivity tests determine the short-term sensitivity to a single risk factor.
- Scenario analyses involve risk parameters (with low but positive probability) which change along a pre-defined scenario and examine the impact of these parameters.

Out of these methods, the sensitivity test is the simpler one and institutions with a simple portfolio can use it best. A scenario analysis is somewhat more complicated and requires more resources. Still, institutions with a complex portfolio use this approach to assess risk factors which they consider material – after the proper calibration of scenario parameters.

The time horizon of the analysis should be set in accordance with the composition of the portfolio.

The institution should verify regularly that the assumed risk profile used during the stress test is in harmony with the external factors. The CRD declares that every institution needs to perform stress tests on a regular basis<sup>61</sup>. Regularity means that test should be run and evaluated at least once a year.

In the case of credit risks, macro-economical changes can cause potential losses on crediting<sup>62</sup>. Therefore, credit risk stress tests should model at least two main types of macro-economical

---

<sup>59</sup> In Pillar 1, the CRD requires separate stress tests to verify the effectiveness of assessment systems. Pillar 2 stress tests do not mean the repeating of Pillar 1 tests. Further details: Technical aspect of stress testing under the supervisory review process (CP 12), CEBS, 14 December, 2006.

<sup>60</sup> Further methods include the maximum loss approach, which renders an estimate of the worst-case scenario belonging to specific risk parameters: the biggest “realisable” loss based on the combination of parameters. Extreme value theory (EVT) which is the most accurate method for determining the result if stress events. The EVT is to be applied at the edges of the distribution curve, that is with information that have a low (but greater than 0) probability.

<sup>61</sup> Point g) in Para. 2 in Annex V to 2006/48/EC

<sup>62</sup> Concerning credit risks, it is more difficult to identify sensitive positions which the stress would impact. Yet stress testing is one of the key elements of Pillar 2 and its methods are expected to improve as a result of a learning process.

phenomena: mild and severe recession. Potential losses on crediting can be estimated by e.g. changing the rating category, increasing the LGD or raising the risk correlation factor as an impact of the shocks.

Based on their market position, institutions identify risk factors which sensitively impact their portfolios and estimate the impact of these factors during the stress test. The stress tests performed by institutions should be forward looking.

For IRB-applying institutions, the CRD is only setting an additional regulatory capital requirement in relation to the stress testing of a mild recession scenario.

## **V. Internal Governance**

In the course of the SREP, the Supervisory Authority will evaluate the institution's internal governance. If it is found poor, the Supervisory Authority may deem it necessary to have the institution raise additional capital for covering its reported risks.

### **V.1 Guidelines**

Financial organizations shall set up and operate internal safeguards<sup>63</sup> that promote:

- a) the prudent, reliable and efficient operation of the organization in compliance with statutes and internal regulations;
- b) the protection of the organization's assets and social goals, the economic interests of the clients and owners ;
- c) and, thereby, the undisturbed and successful operation of the organization, preserving trust in the institution.

The most important function of the internal safeguards of financial organizations is to contribute to meeting these goals in a preventive and proactive manner by identifying and managing potential problems arising in the course of operation in the earliest possible phase, already at the time of occurrence or even before that, if possible, thereby guaranteeing the solution's adequate speed and efficiency. The internal safeguards act as a primary filter in the protective network guaranteeing the safe operation of the system of financial intermediaries.

The internal safeguards of financial organizations consist of internal governance and internal control functions.

Internal governance is guaranteed by the financial organization by way of setting up and operating an adequate organizational structure, organization and system of corporate bodies and by exercising management and supervisory functions. Internal governance shall be interpreted as part of corporate governance the former is narrower to the extent that it does not extend to relationships with owners and other stakeholders of an institution.

---

<sup>63</sup> This section is based on Supervisory Authority recommendation 11/2006 (December 14) on setting up and using internal safeguards, prepared with a view to the GL 03 document. The ICAAP is closely related to the quality of risk management, therefore a separate chapter has been devoted to this topic. In our opinion, the requirements concerning risk management and internal governance are the same for regulatory capital or internal capital adequacy calculations. That is why we chose to use the text of the former recommendation



Internal control functions include the risk control function, the compliance function and the internal audit function.



The elements of the internal audit function (hereinafter ‘internal audit system’) include:

- the checks embedded in the processes,
- the control by management,
- the management information system and
- the independent internal audit unit.

The internal safeguards of the financial organization and the individual elements that form part thereof shall be set up and operated in light of the relevant statutory requirements, furthermore proportional to the particular features, complexities and risks of the service activities carried out by the institution.

In case of financial groups the Authority calls for the use of internal safeguards on the group level as well. Doing so attention shall be paid to the particular features of the provision of service and operation by groups in all subareas that constitute the internal safeguards (internal governance and internal control functions)<sup>3</sup>.

Upon outsourcing an activity the financial organization shall take into account the governance and control considerations that make up the internal safeguards and treat the outsourced activity accordingly. When an element of the subareas making up the internal safeguards of the financial organization is outsourced (for example the risk control function or a special area thereof) it shall be ensured that the responsibility for the given area remain with the management of the financial organization.

The management of the financial organization shall regularly review the functioning of the internal safeguards and its individual subsystems and make certain that, when necessary, corrective action is taken.

## **V.2 Internal governance<sup>63</sup>**

The establishment of sound internal governance is a factor that fundamentally determines the quality and security of an institution’s operations.

Elements of internal governance:

- Corporate structure and organisation
- The management body, management and supervisory functions
- Internal control mechanisms
- Public disclosure and transparency

### **Corporate structure and organisation**

---

<sup>63</sup> Here we present the Internal Governance guidelines elaborated by CEBS (GL 03) – the number of the referenced guideline is shown in brackets.

Institutions and groups should have an organisational structure which is sufficiently transparent and provides an appropriate basis for the effective and prudent management of the institution or the group (IG 1).

The reporting lines and the allocation of responsibilities and authority within an institution should be clear, precise, well defined, transparent, coherent, and enforced. Furthermore, they should ensure the prevention and handling of conflicts of interests and authorities within the organisation (IG 2).

The institution should ensure that the risk management function is organised in a way that facilitates the implementation of risk policies and the management of the institution's risks. More complex institutions should establish a risk management function for all major business lines (IG 3).

### **The structure of the management body, management and supervisory functions**

In compliance with legal requirements, institutions need to operate management bodies which ensure the prudent execution of management and supervisory functions within the institution<sup>64</sup>.

The description of the institution's management and supervisory bodies, their tasks and the main procedures that determine their activities should be set out in a written document. This document should comply with the applicable statutory requirements (IG 4). The role of the individual management bodies (executive management, chief officers, board of directors, supervisory board, control committee, audit committee) should be clearly specified concerning the following tasks:

- Elaboration and implementation of policies that promote the achievement of the institution's business and operational objectives and the financial and social goals and risk profile of shareholders,
- Communication of a objectives and policies within the organisation (IG 5),
- Elaboration and approval of related internal regulations and guidelines, provision for the conditions of applying them (IG 5),
- Verification of the compliance of operations with the strategy and policies,
- Regular review and, if necessary, modification of risk management strategies and policies (IG 6),
- Developing, harmonising and maintaining strong internal control functions (IG 7),
- Setting up and operating reporting procedures,
- Ensuring the clear allocation of responsibilities and establishing and operating an adequate decision-making process (IG 8),
- Establishing and operating adequate compensation schemes and executive selection procedures (IG 12)

---

<sup>64</sup> Please refer to Volume III of the Validation Manual for a more detailed description of requirements concerning management bodies and the supervisory and management functions.

- Elaborating and operating an effective ICAAP (IG 9)
- Regular assessment of the financial institution's internal safeguards and the elements thereof (IG 10).

The members of the management body should be independent and should have the necessary expertise to make proper decisions that serve the interests of the institution<sup>65</sup> (IG 11).

The management body should promote high ethical and professional standards in the internal control culture (IG 13).

The organisation's culture, responsibilities, authorities, reporting lines and the management body should be designed and established in a way that enables the exercising of management and supervisory functions over outsourced activities and, in the case of financial institutions that qualify as parent undertakings, over the entire group if relevant.

### **Internal control**

In order to implement an efficient and comprehensive internal control system that encompasses all the activities and organisational units, the institution needs to establish and operate the following functions (IG 14):

- risk control
- compliance
- internal audit

These internal control functions must be independent of the activities and business lines which they monitor and control.

Risk control, compliance and independent internal audit functions should be independent of each other as well, since they perform different tasks. In the case of smaller institutions, this segregation is not always needed. In these cases, however, other means should be employed in a properly documented manner to ensure that existing or potential conflicts of interests between the individual control functions are terminated or mitigated.

A control function can generally be regarded as independent if the following conditions are met:

- The members of the control function staff do not perform any tasks that fall within the scope of the activities that the control function is intended to monitor and control.
- The control function is organisationally separate from the activities it is assigned to monitor and control.
- The head of the control function is subordinated to a person who has no responsibilities for managing the activities that are being monitored and controlled. The head of the

---

<sup>65</sup> Para. (3) in Article 21 of Act 6 of 2006 on Businesses (Gt): A chief officer shall perform his duties independently. In this quality, he shall only be subordinate to statutory provisions, the articles of association and the resolutions of the governing body of the corporation. He cannot be instructed by the members (shareholders) of the company.

control function reports directly to the management body (both supervisory and management functions) and/or the audit committee.

- The remuneration of the control function staff must not be linked to the performance of the activities that the control function is intended to monitor and control.

There is no single adequate method for ensuring independence, instead, there are options. One such option is to make credit risk control report directly to the management body. The other option is to keep the supervisory and business function separated by designating one member of the management body to be in charge with this function.

It is the responsibility of the management body to establish and operate the risk control function, the compliance function and the internal audit function in compliance with the applicable statutory provisions and to ensure that all these functions have sufficient resources. In this context, the management body shall be responsible in particular for the following:

- Elaboration of risk policies for individual control functions,
- Communicating these policies within the organisation,
- Regular revision of internal rules on specific control functions,
- Exercising the related supervisory functions.

One basis requirement concerning the design and operation of the internal control system is that it should cover all activities and organisational units of the institution (IG 18). Financial groups are required to establish and operate an internal control system at group-level.

Risk is an integral element of the activities of financial institutions. Accordingly, the purpose of the **risk control function**<sup>66</sup> is not to minimise risks but to ensure that the institution properly identifies, measures and handles risks and prepares adequate reports on all these efforts so that the extent of risks which have occurred should not endanger the continuity of operations.

Institutions and groups of institutions should establish and operate mechanisms which equally ensure the ongoing assessment of relevant risk types on an individual basis and of the overall risk position of the institution or the group of institutions (before and after decision-making). These mechanisms should also keep risks below the set limits (IG 15).

**The compliance function** is intended to identify and manage compliance risks (IG 16). Compliance risk is defined as the risk of legal or regulatory sanctions, material financial loss, or loss to reputation an institution may suffer as a result of its failure to comply with applicable laws, including guidelines and methodologies issued by the Supervisory Authority, rules of self-regulating bodies (KELER, Stock Exchange, MABISZ), market practices, ethical norms (hereinafter compliance rules). The compliance function is principally a tool for management to reveal and assess potential deviations from laws, regulations, standards and internal guidelines so that violations can be reported to the leader of the organisational unit concerned or to senior management.

---

<sup>66</sup> Please refer to Volume III of the Validation Manual for a more detailed description of the credit risk control function.

In the ICAAP, the compliance unit has to provide an opinion whether new products, transaction types and procedures are in line with effective laws and internal rules. Another important role of the compliance function is to establish a culture of compliance at the institution, to educate employees on the current legal environment and any known upcoming changes to it, thereby contributing to the mitigation of the institution's compliance risk.

**Internal auditing** is also a management instrument which is especially suitable for the process-independent monitoring of the institution's risk management system and for ensuring an adequate level of quality in internal controls (IG 17). In this context, the risk control and compliance functions should also be reviewed regularly by the internal audit organisation. On top of that, internal audit is responsible for evaluating the adequacy of existing guidelines and procedures on an ongoing basis. Concerning the ICAAP, internal audit is responsible for reviewing the ICAAP's application and verifying the validity of built-in controls, both on an ongoing basis. All deficiencies should be reported to management. The related efforts should include the guaranteeing of confidentiality to employees so that they can report any observed violation of regulations to the body in charge (internal audit, compliance) (IG 19). Furthermore, the fulfilment of resolutions concerning discrepancies should be reviewed under follow-up procedures.

The purpose of operating an internal control system, its scope, functions, elements and organisation, the professional requirements concerning the management of internal audit, the rules of internal audit procedures and the related IT and technical requirements should all be stated in an internal regulation (chart or rules of internal auditing) which should be approved by management.

In order to enable the best possible transparency of the institutions' activities and operation, institutions should disclose information to the public concerning the structure and operation of their internal safeguards. This disclosure should provide information beyond the statutory requirement. It should be updated regularly and help stakeholder develop a true and valid assessment of the institution.

The Supervisory Authority recommends that institutions should establish procedures that staff can use to draw the attention of management or the supervisory board to significant and legitimate concerns regarding matters connected with internal safeguards or any part thereof.

### **Public disclosure and transparency<sup>67</sup>**

Institutions should strive for attaining the highest level of transparency concerning the conduct of their business (IG 20).

Concerning public disclosure, each institution should present its current position and future prospects in a balanced, accurate and timely way (IG 21).

---

<sup>67</sup> Public disclosure is an element of Pillar 3. Here we only present the internal governance principles set out in GL for the sake of completeness.

## V.4 Risk management system, monitoring and control

### Risk management system

One indispensable prerequisite of the operation of the ICAAP is that the institution should have an appropriate risk management structure in place and should provide for its development and review.

The process of risk management integrated into the ICAAP consists of five stages. These stages constitute a control cycle which also involves feedback and feedforward loops.

### Stages of integrated risk management:

**1. Comprehensive risk identification:** This stage involves the revealing, definition and recording of all potential risks. Its importance derives from the fact that it sets the course of downstream risk management stages, for the institution can control and manage only the risks which it is aware of. The institution can estimate the risks which it considers relevant. The range of these risks may differ depending on the size, profile, activities and complexity of individual institutions. The institution is required to record and document the risks revealed during the identification process (e.g. under the framework of its Rules of Risk Management).

The next step is to find and define suitable systems for measuring the identified risks and to define and retrieve the necessary data from available systems and databases. The risk identification process should be flexible enough so that it can take into account any newly revealed risks in the future.

**2. Risk quantification** (quantification of risks and coverage capital). This second stage is necessary to render an objective basis for decision making both to the risk control function and to the entire institution. Risk quantification is also important because it helps the institution identify the limits of its risk-bearing capacity. Furthermore, it is also needed for assessing the performance of the independent control function.

Besides and in relation to risk quantification, the institution also has to quantify existing and potential liabilities (capital and quasi-capital elements) which can serve as risk coverage as approved by the institution. In this effort, the institution should observe processes which impact the value of calculation elements (e.g. stability of results considered by the institution, hidden reserves, etc.).

**3. Comparison of risks and risk-mitigating instruments.** Once risks have been quantified, individual risk results have to be aggregated. The result of the aggregation will be the institution's overall risk exposure within the ICAAP. In this step, it is necessary to ensure that no risks have been omitted during the process, that risks have not been recorded redundantly and that individual risks can be aggregated. Moreover, it is also important to review the assumptions on risk correlations.

Decision makers need to have up-to-date information on the findings of the risk management process so that they have a clear and accurate view of the institution's position and can take the necessary steps to manage risks. Risk management decisions can be made after risks and

coverages have been compared. The transparency and understandability of the institution's risk profile are indispensable for the determination of the institution's risk-bearing capacity.

Prevention is an effective instrument of risk management. One form of it is the use of pre-defined operational limits. For each independent risk-taking organisational unit, a maximum limit should be set under which the unit is allowed to take risks. Ex ante control should also involve the preparation of contingency plans which present extreme, unexpected situations and the stress tests designed for them.

Concerning pricing, the setting of a risk premium in the light of the borrower's creditworthiness is also an important element of ex-ante control. In case pricing cannot be aligned to the customers' creditworthiness, it can lead to the deterioration of the quality of the portfolio. The reason is that if the risk premium of customers with poor creditworthiness is the same as that of customers with a better rating, practically borrowers with a poor rating are favoured. It may lead to a situation where customers with low creditworthiness stay with the institution while more reliable borrowers will leave it.

#### **4. Risk monitoring**

Risk monitoring is the process where the institution is ensuring that its (actual) risk profile is in line with its (planned, expected) risk preferences<sup>68</sup>. During monitoring, the utilisation of pre-defined limits is checked and the exercise should always address the consequences of increasing utilisation or potential limit overruns. In the case of non-quantifiable risks, process-related expectations or quality requirements are monitored. The institution can summarise monitoring results in an internal (risk) reports. Therefore, a crucial element of effective internal ICAAP reporting is the procurement and preparation of all information (risks and risk-mitigating instruments) regarding the risk positions of individual business lines and overall institution. These reports should be prepared on a regular basis and with a view to the specific needs of recipients (institution management and business line leaders).

#### **5. Ex post control, feedback**

Internal reports are important starting points of ex post control actions. The purpose of ex post control is to enable the active influencing of risk positions defined earlier, but now with the observation of actual risks. It can be implemented by the following:

- Risk reduction: measures taken to reduce risks (e.g. involvement of additional collateral in credit deals, insurance, etc.)
- Risk transfer: transfer of receivables to a third party (e.g. selling of receivables, hedge deals...)
- Reallocation of risk capital, i.e. a limit raise. It is only possible if other units have not utilised their limits in full, or if the bank can allocate additional capital to cover the transaction. This method can be used due to certain business considerations, depending on the bank's risk bearing capability.
- Raising of cover capital: raising of additional capital (e.g. capital increase, capital issue...)

---

<sup>68</sup> A plan/actual comparison.



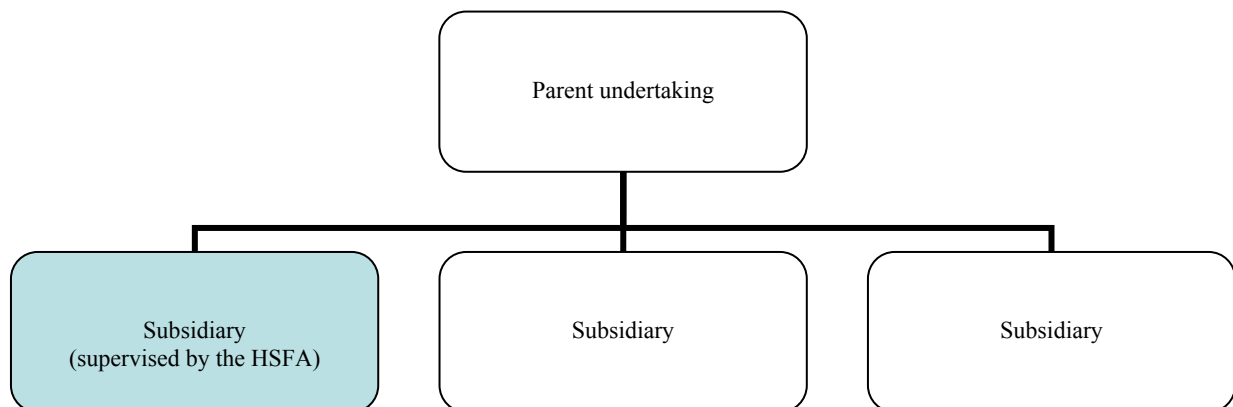
Ex post control is the last stage of the risk management process. At the same time, it can serve as a basis of further steps.

## VI. ICAAP Compliance at Individual and Consolidated Level

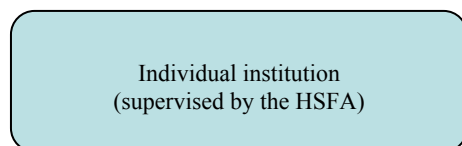
The ICAAP can take place at the level of individual institutions or at group level, in consolidated or sub-consolidated form. The basic principle is that capital adequacy should be fulfilled at the institution which ultimately bears the risk and that this principle should be observed adequately at member state level as well, as stipulated in the CRD.

### 1. SREP at individual level

In case the institution is not a subsidiary and not a parent undertaking in the country where it is authorised and supervised, and is not subject to consolidated supervision, it shall comply with ICAAP requirements at **individual level**<sup>69</sup>.



Or:



### **2. SREP at consolidated level**

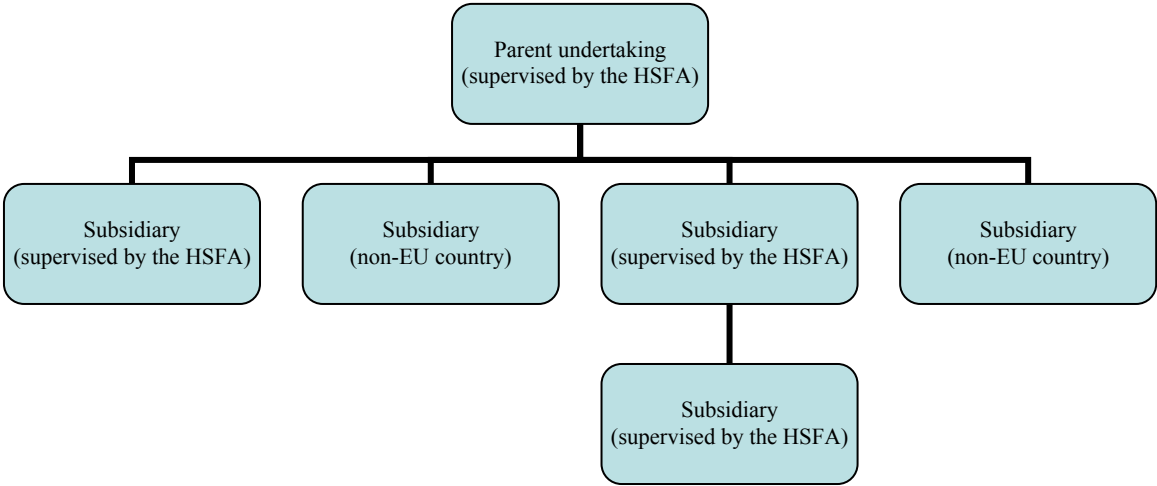
The internal capital requirement calculation should be applied at **group or consolidated level** if the institution is a subsidiary or a parent undertaking in the country where it is authorised or supervised.

#### **2.1. The group's EU-level parent undertaking has a seat in Hungary**

---

<sup>69</sup> 2006/48/EC, Article 68 (2)

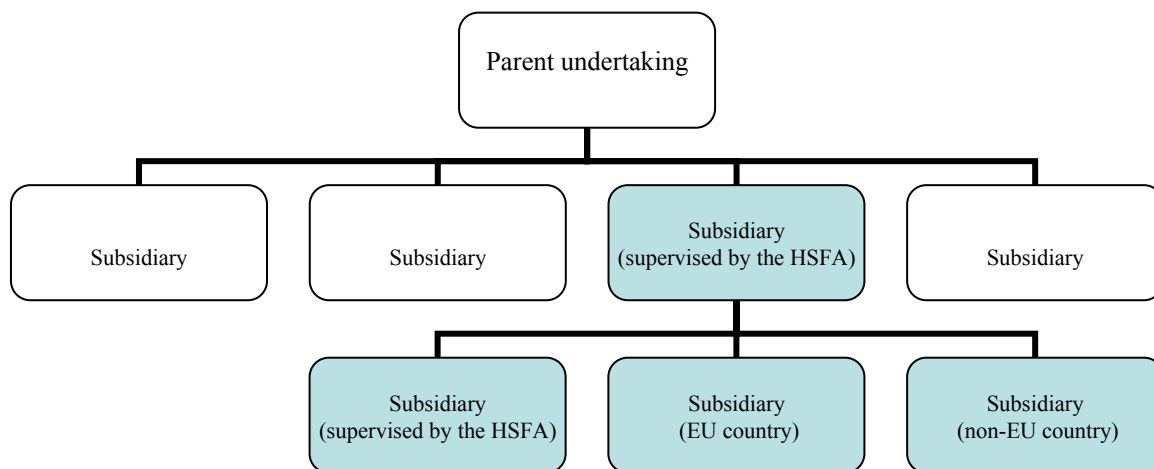
If the group’s EU-level parent undertaking has a seat in Hungary, the parent undertaking of the **domestic parent undertaking**, which is also the EU-level parent undertaking, has to comply with ICAAP requirements for the institutions which are subject to consolidated supervision<sup>70</sup>.



If the group’s EU-level parent undertaking has a seat in a country other than Hungary<sup>71</sup>, then ICAAP requirements have to be complied with at member state level, that is in consolidated form in respect of the institutions that belong to the consolidated supervision of the domestic subsidiary. The management of the domestic group shall be responsible for elaborating the mechanisms and for the quality of the ICAAP, even if the domestic group’s ICAAP is designed at EU level. In this case, the strategy, the processes and the systems elaborated at EU level should be suitable for assessing the risks of institutions that belong to the consolidated supervision of the domestic group leader. Furthermore, they should also be suitable for measuring the risks against the capital requirement that matches the risk profile and for demonstrating all this to the Supervisory Authority as the host supervisor in an acceptable manner.

<sup>70</sup> 2006/48/EC, Article 71 (1)

<sup>71</sup> It should be noted that if the parent undertaking is registered in a non-EU member (third) country, Article 143 of the CRD should be followed.



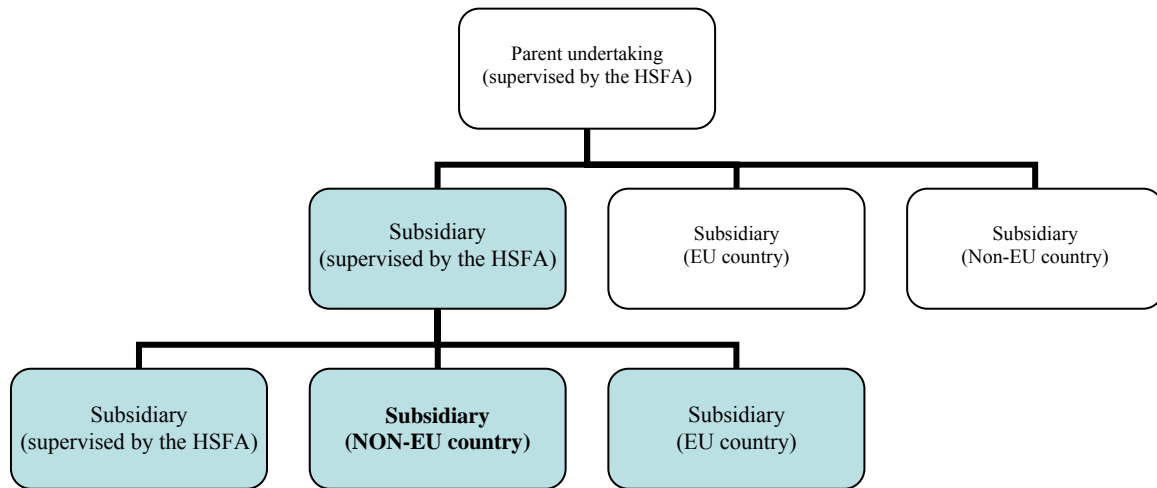
### The relation between EU and member state-level consolidated ICAAPs

If the EU-level parent undertaking has a seat in a country other than the one where it is authorised and supervised (case 2.2), the group has to fulfil ICAAP requirements at two levels of consolidation. Domestic institution groups typically fall in this category as they have a foreign (EU-level) parent undertaking. Therefore, the ICAAP has to be applied both at EU level (consolidated for the overall group of the EU-level parent undertaking) and at member state level (for the institutions that belong to the consolidated supervision of the domestic subsidiary). In this case, however, the application of requirements at individual level is not mandatory.

### 3. SREP at sub-consolidated level

Still, if a subsidiary credit institution with a domestic parent undertaking has a credit institution, investment firm, financial enterprise or investment fund manager subsidiary or affiliate with a seat in a third country, the domestic subsidiary credit institution has to meet ICAAP requirements at **subconsolidated level** as well (without prejudice to the mandatory group-level compliance of the domestic parent undertaking), that is in consolidated form in respect of the institutions that belong the subsidiary's consolidated supervision<sup>72</sup>.

<sup>72</sup> 2006/48/EC Article 73 (2)



### Cooperation with other supervisory authorities:

Like the validation process, the supervisory review and evaluation (SREP) of international institution groups should also be based on cooperation between Supervisory Authorities. In other words, the consolidating supervisor (home) and the supervisors of host countries (host) need to collaborate<sup>73</sup>. The basis of cooperation and information flow should be the significance of the institution concerned<sup>74</sup>.

In the case of cross-border groups, the Supervisory Authority reviews the level of integration into processes using the following criteria:

- What is the dialogue between the subsidiary and the parent undertaking like, to what extent does the subsidiary apply ICAAP methods in a conscious manner: is there local access to in-depth information on the centrally applied method?
- Are central and local tasks during ICAAP application clearly defined and segregated: Is risk identification fully comprehensive? Are risk identification, review and evaluation efforts consistent?
- To what extent do the results of group-level calculations appear in local decision making, internal governance and risk management?

When reviewing capital adequacy, the Supervisory Authority will consider the following criteria at subsidiary level:

- During the ICAAP, is sufficient attention paid to the revealing of special local risks, as material risks may differ at local and group level?
- Are the applied stress tests and sensitivity analyses properly adapted? Do they observe the economic environment of the country concerned?

<sup>73</sup> CEBS recommendation on cooperation between Supervisory Authorities (GL 09)

<sup>74</sup> For more information on significance, please refer to Chapter 2 in Volume I of the Validation Manual.

- Is adequate capital available concerning local business plans? Is this capital commensurate with risk limits and exposures?
- How are internal transactions validated? Where is risk-taking captured?
- What method is used for capital allocation within the group: is it a simplistic approach or one that observes the diversification impact<sup>75</sup> for capital allocation?
- Are the diversification impacts considered for risk aggregation acceptable at local level?
- Capital transfer opportunities within the group: how can the institution raise the required capital in a tight financial situation?

In case the allocated capital is insufficient, the Supervisory Authority as host supervisor can require a capital add-on based on Pillar 2 stipulations and can initiate other action as well<sup>76</sup>.

## ***VII. Expectations Concerning the ICAAP of Small Institutions***

### **The principle of proportionality:**

The principle of proportionality is a key consideration of the ICAAP review. Supervisory expectations concerning the ICAAP depend on the

- nature,
- scale,
- complexity
- and, naturally, the risk exposure of the institution's activities.

Thus proportionality is a relative term and results from the review of multiple factors as listed above. It should be noted that the fulfilment of proportionality applies to all institutions that are subject to the CRD. This way, based on the above factors, the depth of the supervisory review and evaluation process (SREP) and the intensity of the dialogue with the institution will be different. During the SREP, so-called small institutions should be mentioned and differentiated.

### **Small institution**

An institution should be considered small if it meets the majority of the following criteria:

- its activities are non-complex and focus on a limited product range,
- it has a relatively small market share,
- it does not use any advanced methods which are approved by the Supervisory Authority to calculate the capital requirement of credit, operation or market risk,
- it mainly operates in the territory of Hungary and does not have any significant cross-border activities,
- it describes itself as a small institution in its own assessment.

---

<sup>75</sup> There are various methods to consider diversification earnings during allocation: equal distribution, distribution of marginal risked capital to the units of distribution based on absolute risk contribution.

<sup>76</sup> Based on the Act on Credit Institutions and the Act on Capital Markets

The ultimate decision whether an institution can be considered as a small institution rests with the Supervisory Authority.

Concerning the elaboration of the ICAAP at small institutions, the Supervisory Authority recommends that interest representation organisations, central organisations and professional associations established by the institutions should play a coordinating, directing role in that process. These organisations could elaborate guidelines and an ICAAP for their member institutions which the institutions can adapt and use in their operations. In this case, the Supervisory Authority will negotiate for the compliance of the methods with the interest representation or other central organisations which elaborated them. Nevertheless, the Supervisory Authority will review the application of the method upon the review of individual institutions as well.

### **Requirements for smaller institutions**

While individual principles can be applied proportionally, small institutions, too, have to meet all ICAAP related requirement of the Supervisory Authority<sup>77</sup>. This way, all relevant risks should be taken into consideration in the internal capital requirement calculation process.

The purpose of making the ICAAP mandatory for institutions is not just to establish compliance with the new capital requirement regulation, but to make the ICAAP a key management instrument for institutions that are subject to the new laws. The purpose of implementing and regularly employing the ICAAP is to strengthen the risk-aware governance of institutions, to measure the institution's risk level regularly and to determine the amount of capital that is necessary to cover unforeseeable losses.

The ICAAP includes several elements which institutions have been using already, partly in their annual business and strategic planning processes and partly for calculating the capital adequacy ratio which has been a standard requirement to date.

Small institutions can comply with obligations set out in domestic ICAAP regulations by examining their exposure to risk types listed herein and the amount of capital which serves to cover those risks. There might be other risks, however, which are not presented in this material. In these cases, it is the institution's responsibility to ensure that the ICAAP considers such risks as well. Institutions should also be aware that capital is only the ultimate mitigant of risks and that the use of more efficient risk management and control methods can mitigate those risks.

### **Methodology**

There is no one single correct process when setting up the ICAAP. Small institutions could, for example, adopt a method based on the Pillar 1 minimum capital requirement and then assess if extra capital proportionate to non-Pillar 1 risk is necessary or not.

The same way, small institutions can choose the building block approach, using different methodologies for the individual risk types and then calculating the sum of the resulting capital requirement. When choosing to employ this approach, the institution has to consider if it is able to collect the information necessary for operating this model and if it is in possession of the instruments required for capital requirement calculations.

---

<sup>77</sup> Proportionality in the Supervisory Authority's requirements is only applicable to compliance with ICAAP guidelines 6-10. Every institution must fully comply with the first five ICAAP guidelines.

Regardless which methodology a smaller institution decides to adopt, it needs to compare its actual and future capital with the actual and future internal capital need arising from the assessment. The preparation of a capital plan is of key importance. The internal capital requirement calculation consists of two steps: the identification of risk exposures and, based on these exposures, the calculation of required capital.

### **Pillar 1 minimum capital requirement approach**

An institution choosing this method needs to assess the following:

- if the capital requirement calculated on the basis of Pillar 1 appropriately reflects all material risks,
- amount of capital that should be allocated due to Pillar 2 risks and exposures deriving from external factors.

### **Building block approach**

An institution which chooses to use a structured approach will need to assess separately the capital amounts for all Pillar 1, Pillar 2 and external risks and then add up the capital requirement calculated for the individual risk types. Sensitivity analyses can be used for determining whether a risk type should be considered relevant or not.

### **Steps of the ICAAP**

- Risk identification: as the first step, the institution has to draw up a list of relevant risk types. When doing so, the primary reason of past losses should be identified along with the likelihood of the occurrence of similar losses. Upon compiling the list, not only historic information should be considered but expected future events as well.
- Capital assessment: for each risk listed as relevant, an assessment is to be made of the potential loss which the risk can cause to the institution. The amount of capital to cover these risks can be calculated as the sum of all such potential losses.
- Forward capital planning: the institution should not only consider the present situation but also assess the amount of capital which will be available to it and see if it is in line with the likely capital requirement based on the institution's business plan.
- ICAAP outcome

Based on the above steps, the institution has to determine the amount of internal capital it should hold with a view to the actual situation and expected future events.

### **Typical risks of smaller credit institutions**

- concentration risk (individual customers, geographical, industry-specific),
- control/management risk (internal governance),
- credit risk,
- interest rate risk,
- liquidity risk,
- operational risk,
- strategic risk,
- risk of external factors.

### **Internal capital requirement calculation of small investment firms**

Capital adequacy requirements for investment firms are different from that of credit institutions. The formula to calculate the regulatory minimum capital includes 25% of the investment firm's operating expenses in the previous year. Regulations differentiate between two kinds of investment firms:

- for investment firms with more simplistic activities<sup>78</sup>, the capital requirement shall be the larger of the capital requirement of credit and market risks or 25% of the previous year's fixed overheads,

- for investment firms with a broader service portfolio, the capital requirement shall be the sum of the capital required for credit and market risks and 25% of fixed overheads in the previous year.

In both cases, however, the institution needs to examine whether the fixed overheads properly reflect the institution's exposure. This examination is of special importance for institutions with simpler activities, as in their case 25% of operating expenses will be the first estimate of their internal capital requirement.

In the case of small investment firms, it is advised to review exposure to the following typical risks:

- concentration risk (large exposure, large transaction, product concentration, etc.),
- operational risk,
- risks of external factors (deterioration of market circumstances, penetration to new markets, launch of new products, etc.),
- credit risk,
- control/management risk,
- interest rate risk,
- liquidity risk,
- strategic risk,
- reputation risk (due to e.g. inadequate fulfilment of customer orders, poor business counseling
- market risk

---

<sup>78</sup> See details in Para. (2)-(3) in Article 20 of the 2006/49/EC directive



## ***VIII. The ICAAP Implementation Process***

The ICAAP can be implemented in a four-phase process.

### **Definition of institution-specific requirements (target state)**

In the first step, the institution should identify the range of applicable supervisory requirements, especially in respect of the 2006/48/EC and 2006/49/EC directives, the Validation Manual and these Guidelines. In the second step, the general requirements should be deployed and specified to reflect the special characteristics of the institution. During the ICAAP, all material risks should be identified which have to be used as a starting point for defining the institution's risk profile. Requirements concerning the applied ICAAP, the procedures and the organisation can only be defined if the risk profile is known. The entirety of these requirements will constitute the target state.

### **Gap analysis (target/actual comparison)**

Once the target state has been defined, the institution should analyse those requirements which are currently not (or not completely) fulfilled. In this process, the institution should survey the current state of methods, processes and organisation in its internal risk management system. The comparison of the target state to the actual state can help identify the gaps which will need to be bridged during implementation. The identification and analysis of the actual state and the gaps should be performed by specialists of the areas concerned. The outcome of the exercise, including identified gaps, the assessment of their relevance and impacts, along with the corrective actions deemed necessary should be documented in detail.

### **Implementation planning**

In the first step of planning, required measures have to be prioritised so that implementation resources can be allocated appropriately. The next step is to assign the individual measures to the organisational unit which will perform them and to name responsible persons who will be in charge with topics that have not been addressed yet. Finally, due dates and responsibilities should be specified for each process phase.

### **Implementation**

The elaboration or adaption of methodological plans can take place in the first phase of implementation. Next, the institution can execute actions (e.g. risk measurement, limit system) which are targeted at establishing compliance with organisational and IT requirements set by the ICAAP. Then the process-related aspects and responsibilities within the IPAAC should be defined and documented (e.g. linking up risks and required capital, limit monitoring, taking of actions). The ICAAP should be integrated into the institution's strategic and operational control mechanisms (e.g. annual planning and budgeting). Furthermore, the ICAAP should also be an integral part of the institution's governance and decision-making processes.

## **IX. List of Documents**

In the course of the supervisory review, institutions are required to present the ICAAP they are using. For the time being, the Supervisory Authority does not intend to release an ICAAP submission template.

In this chapter, we only provide recommendations on the topics to consider in the document. Nevertheless, institutions are free to decide on both the format and the contents of the submission.

### **Summary:**

- Presentation of risk strategy
- Brief presentation of the major activities/business lines of the institution
- Brief overview of the ICAAP methodologies applied and any potential changes in these methodologies
- The relation between ICAAP results and available capital
- Assessment of the adequacy of risk management methods
- Brief assessment of the institution's material risks, presentation of changes since the previous assessment
- Time of the capital adequacy assessment exercise, institution group members that it covered, specification of personnel who performed it and who approved it

### **Presentation of actual and target financial and capital positions**

Capital plan in detail: capital requirement-capital expenditure, internal/external resources, dividend policy

### **Detailed presentation of capital adequacy calculations**

- documentation of methodologies established for identifying and managing risks (including other risks),
- detailed presentation of calculation methods and results, specification of confidence level and conditions in the case of an economic capital calculation,
- time and time horizon of the calculation,
- a map of risks (including other risks), definition of risks,
- presentation of material risks that have been considered in the ICAAP, comparison to Pillar 1 calculation results where necessary, comparison to the institution's risk appetite (limit) concerning a specific risk,
- risk mitigants,
- presentation of methodology and assumptions (risk management approach),
- consideration of other risks in the internal capital allocation process,
- presentation of the findings and results of stress tests and scenario analyses

- presentation of the aggregation procedure, the correlation and diversification effects considered including an explanation thereto,
- assessment of the compliance of the institution's risk management methods and processes (self-assessment: weaknesses, deficiencies, action plans).

**The integration of the ICAAP methodology into processes**

- demonstration and assessment of the level of integration of the ICAAP into decision-making processes,
- result of the ICAAP review, main findings,
- planned and current changes to the ICAAP.

The Supervisory Authority reviews the ICAAP in the context of risk cycles, in accordance with and under the framework of its audit plan. Therefore, underlying documentation should only be submitted on the request of the Supervisory Authority (with preliminary notification).

## **Documents referenced or used herein**

2006/48/EC Directive, including the new Capital Requirements Directives (CRD) for credit institutions and investment service providers

[http://eur-lex.europa.eu/LexUriServ/site/hu/oj/2006/l\\_177/l\\_17720060630hu00010200.pdf](http://eur-lex.europa.eu/LexUriServ/site/hu/oj/2006/l_177/l_17720060630hu00010200.pdf)

### **Documents of international organisations**

#### **Committee of European Banking Committee (CEBS)**

Guidelines on the Application of the Supervisory Review Process under Pillar 2 (25 January, 2006) CEBS GL 03 revised

<http://www.c-ebs.org/pdfs/GL03.pdf>

Technical aspects of the management of interest rate risk arising from non-trading activities under the supervisory review process (3 October 2006) CP11

[http://www.c-ebs.org/documents/guidelines\\_IRRBB\\_000.pdf](http://www.c-ebs.org/documents/guidelines_IRRBB_000.pdf)

Technical aspects of the management of concentration risk under the supervisory review process (14 December 2006) CP11 2nd part

<http://www.c-ebs.org/documents/GL03Cr.pdf>

Technical aspects of stress testing (14 December 2006) CP12

<http://www.c-ebs.org/documents/GL03stresstesting.pdf>

Guideline on outsourcing (14 December 2006), CEBS GL 02

<http://www.c-ebs.org/GL02OutsourcingGuidelines.pdf.pdf>

Paper on the Internal Capital Adequacy Assessment Process (ICAAP) for Smaller Institutions (27 March 2006), CEBS Groupe de Contact

[http://www.fsa.gov.uk/pubs/international/cebs\\_icaap.pdf](http://www.fsa.gov.uk/pubs/international/cebs_icaap.pdf)

#### **Basel Committee on Banking Supervision**

International Convergence of Capital Measurement and Capital Standards - A Revised Framework (Updated November 2005)

<http://www.bis.org/publ/bcbs118.pdf>

Principles for the managing and supervising of interest rate risk (July 2004)

<http://www.bis.org/publ/bcbs108.pdf>

The management of liquidity risk in financial groups (May 2006)

<http://www.bis.org/publ/joint16.pdf>

Studies on credit risk concentration – Working Paper No 15. (November 2006)  
[http://www.bis.org/publ/bcbs\\_wp15.pdf](http://www.bis.org/publ/bcbs_wp15.pdf)

#### **Guidelines of supervisory authorities<sup>79</sup>**

##### **Financial Services Authority UK:**

Report and first consultation on the implementation of the new Basel and EU Capital Adequacy Standards (Jul 2003), FSA CP189  
<http://www.fsa.gov.uk/pubs/cp/cp189.pdf>

Strengthening Capital Standards 2 (February 2006), FSA CP06/03  
[http://www.fsa.gov.uk/pubs/cp/cp06\\_03.pdf](http://www.fsa.gov.uk/pubs/cp/cp06_03.pdf)

ICAAP submission – suggested format  
[http://www.fsa.gov.uk/pages/About/What/International/pdf/ICAAP\\_sub.pdf](http://www.fsa.gov.uk/pages/About/What/International/pdf/ICAAP_sub.pdf)

Pillar 2 Overview of the SREP framework proposed for use by the FSA  
[http://www.fsa.gov.uk/pages/About/What/International/pdf/SREP\\_overview.pdf](http://www.fsa.gov.uk/pages/About/What/International/pdf/SREP_overview.pdf)

FSA'S implementation of CRD Pillar 2: home/host issues  
[http://www.fsa.gov.uk/pubs/international/home\\_host.pdf](http://www.fsa.gov.uk/pubs/international/home_host.pdf)

##### **Austrian National Bank:**

Guidelines on Bank-wide Risk Management Internal Capital Adequacy Assessment Process (February 2006)  
[http://www.oenb.at/de/img/lf\\_icaap\\_englisch\\_gesamt\\_tcm14-39190.pdf](http://www.oenb.at/de/img/lf_icaap_englisch_gesamt_tcm14-39190.pdf)

##### **Dutch National Bank:**

Supervisory Review – The Internal capital Adequacy Assessment Process (June 2004)  
[http://www.dnb.nl/dnb/home/file/con\\_supervisory\\_review\\_tcm12-98126.pdf](http://www.dnb.nl/dnb/home/file/con_supervisory_review_tcm12-98126.pdf)

---

<sup>79</sup> The documents of fellow supervisory authorities are extended and amended on an ongoing basis. The list is not a complete one.

**Related and referenced HSFA recommendations:**

Recommendation No. 11/2006 (14 Dec.) on Setting up and Using Internal Safeguards

Recommendation No. 7/2006 (28 Sept.) on Increasing the Effectiveness of Credit Risk Management

Recommendation No. 2/2006 (2 Feb.) on the Investment Decision Making Process of Those Engaged in Investment (Asset) Management, Expectations Related to Their Deals and the Management of Eemerging Risks

Recommendation no. 10/2001 on the Security Conditions of the Operation of Financial Organisations

Recommendation No. 8/2001 on the Management of Credit Risk

Recommendation No. 3/2000 on the Risk Management Systems of Investment Firms

Recommendation No. 2/2000 on the Credit Institutions' Asset and Liability Management and the Management of Market Risks

Methodology Guidelines No. 5/2004 on the Management of the Interest Rate Risk of Credit Institutions

Methodology Guidelines No. 3/2002 on the Consolidated Governance and Risk Management of Financial Groups