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# Internal Capital Adequacy Assessment Process (ICAAP)

GUIDELINES FOR SUPERVISED INSTITUTIONS

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I. Introduction.....	4
II. General Expectations - Principles.....	8
III. ICAAP Components.....	11
III.1 The Strategy for Ensuring Internal Capital Adequacy – Risk Strategy .....	11
III.1.1. Risk taking policy.....	11
III.1.2. Setting of risk appetite.....	12
III.1.3. Attainable risk structure .....	13
III.1.4. Risk culture .....	13
III.1.4. Risk management organisation .....	14
III. 2. Evaluation of Material Risks.....	15
III.2.1 Risks captured in Pillar 1 .....	16
III. 2.1.1 Credit risk.....	16
III.2.1.2 Operational risk .....	18
III. 2.1.3 Market risk .....	20
III. 2.2 Risks not fully covered in Pillar 1 .....	23
III.2.2.1 Residual risks .....	23
III.2.2.2 Securitisation risk.....	23
III.2.2.3 Model risk .....	24
III. 2.3. Risks captured in Pillar 2 .....	24
III.2.3.1 Concentration risk .....	24
III.2.3.2 Country risk.....	27
III.2.3.3 Interest rate risk in the banking book .....	29
III. 2.3.4 Liquidity risk .....	31
III.2.3.5 Settlement risk.....	34
III.2.3.6 Other material risks .....	37
III. 2.4 Consideration of external factors – Capital planning.....	38
III.3. Calculation of Required Capital.....	40
IV. Stress Testing .....	45
V. Internal Governance .....	49
V.1 Guidelines.....	49
V.2 Internal governance .....	50
V.4 Risk management system, monitoring and control .....	55
VI. ICAAP Compliance at Individual and Consolidated Level .....	57
VII. Expectations Concerning the ICAAP of Small Institutions .....	63
VIII. The ICAAP Implementation Process .....	66
IX. Disclosure and transparency .....	67
X. List of Documents .....	69
Annexes:.....	71
Documents of international organizations.....	72



## 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
CCF	Credit Conversion Factor
CEBS	Committee of European Banking Supervisors
CCP	Central Counterparty
CRD	Capital Requirement Directives
DVP	Delivery versus Payment
EAD	Exposure at Default
FIRB	Foundation Internal Rating Based Approach
ICAAP	Internal Capital Adequacy Assessment Process
IRB	Internal Rating Based Approach
LGD	Loss Given Default
PD	Probability of Default
SD	Settlement day
SREP	Supervisory Review and Evaluation Process
RVP	Receive versus Payment
TSA	Standardised Approach
VAR	Value at Risk



## I. Introduction

In conjunction with the implementation of the new capital requirement directives (CRD) for credit institutions and investment enterprises, the Hungarian Financial Supervisory Authority (HFSA) has prepared a handbook which addresses the elements of the internal capital adequacy assessment process and provides guidance on the interpretation of the provisions of the directive. Furthermore, the document sets out the principles and methods which the HFSA intends to apply for assessing the capital requirement calculations of institutions.<sup>1</sup>

Beyond the minimum capital requirements for credit, market and operational risks captured in Pillar 1, credit institutions and investment enterprises (hereinafter institutions) are also required to calculate the adequate capital under the framework of Pillar 2 along their internal procedures. Due to the differences of approaches, the two calculation methodologies usually deviate from each other. As Pillar 2 requires institutions to calculate the capital requirement for all relevant risks, the figure resulting from internal capital calculation usually exceeds the regulatory minimum capital, presenting an additional capital requirement in Pillar 2. In case the results of internal capital calculation as approved by the HFSA show that the institution does not need to hold additional capital, the regulatory minimum capital shall prevail.<sup>2</sup> This way the capital requirement of an institution will be the higher of the two figures resulting from the two calculation methods.

However, the purpose of Pillar 2 capital requirement calculations is not only to make the institution set up additional capital on top of the regulatory minimum level. What the HFSA considers more important is the motivating effect which spurs the institution to apply more effective risk management techniques and internal procedures for better detecting, measuring and managing its exposures. Therefore, embedded into day-to-day processes, the internal capital adequacy assessment process can greatly contribute to the prudent operation of the institution.

These guidelines primarily set out basic principles as the regulatory requirements regarding internal capital adequacy calculation vary based on the type, size and service complexity of the institution concerned. As a standardised method that is equally applicable to all institutions cannot be provided, the HFSA develops requirements for specific institutions with a view to the principle of proportionality.<sup>3</sup> In Pillar 3 credit institutions and investment enterprises must comply with the disclosure requirements.

### **The internal capital adequacy assessment process (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

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<sup>1</sup> These guidelines are based primarily on the CRD, the relevant articles of the recommendations issued by the Basel Committee on Banking Supervision and the applicable recommendations of the Committee of European Banking Supervisors (CEBS). Further sources of this document include materials published on the web sites of other financial supervisory authorities, in particular authorities operating within the EU. (Please refer to Annex 1 and 2 for a list of sources used or referenced herein.)

<sup>2</sup> The CRD do not allow economic capital calculations on minimum capital.

<sup>3</sup> Based on the principle of proportionality, these guidelines discuss separately the criteria that apply to smaller institutions as their risk profile may differ from that of more complex institutions, their relative market share is low and they usually apply simpler risk measurement methods due to cost efficiency considerations. Group criteria are also discussed in a separate chapter.



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>4</sup> Thus the internal capital adequacy assessment process (ICAAP) is designed to ensure that the institution

- operates a sufficiently sophisticated risk management system that adequately identifies, measures, summarizes and monitors all materials risks
- has a sufficient amount of capital to cover these exposures as calculated along the institution's internal rules.

The internal capital adequacy assessment process applies to **all institutions that are subject to the CRD**. The ICAAP has been mandatory since the launch of minimum capital requirement calculation as per the CRD, i.e. since 1 January 2008. The primary responsibility for the proper implementation and quality of the internal capital adequacy assessment process rests with the top management of the institution. This responsibility is also there if the ICAAP is determined at group level.

The internal capital adequacy assessment process includes the following areas<sup>5</sup>:

- **Comprehensive risk analysis** which identifies and assesses the material risks of the institution;
- **A valid capital analysis** which quantifies the extent of risks and determines the required level of risk capital;
- **Adequate oversight and governance by the board of directors and top management** and their involvement in capital adequacy processes;
- **Establishment of an adequate monitoring and reporting structure** by which the institution is able to present regularly its risk profile and capital position;
- **Elaboration of internal audit mechanisms**, provision for independent review.

Two pivotal terms in the guidelines are **capital** and **risk**. Existing regulations basically require capital adequacy at institutions for covering unexpected losses, with adequate capital also functioning as permanent collateral that enables the institution to operate prudently in any regular business and economic situation.<sup>6</sup> Accordingly, the term capital requirement refers to adequate capital that corresponds with the risks quantified by some method and the size of potential losses that may result from these risks.

Under the ICAAP in Pillar 2, the amount of economically needed capital is determined. Economically needed capital captures the risks deriving from the institution's business activities through the statistical and/or probability estimate of potential future losses at a level of likelihood determined by the institution and for a certain period (usually one year). When calculating capital adequacy, institutions may also compare the aggregate economically needed capital that covers all risk types to resource elements (e.g. available capital) that are not part of regulatory (Pillar 1)

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<sup>4</sup> 2006/48/EC, Article 123

<sup>5</sup> Basel recommendations, article 727

<sup>6</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 allowances for impairment, provisions and capital. It is only sufficient to assess capital adequacy in the light of unexpected losses if we can rest assured that the allowances for impairment and provisions furnish adequate coverage for expected losses.



capital by definition. In these cases, the HFSA requires the detailed presentation of the methodology and validity of the economic capital calculation.

### **The supervisory review process (SRP)<sup>7</sup>**

Pillar 2 of the CRD includes regulations on the supervisory review of capital positions<sup>8</sup>. Under the framework of this review, the HFSA assesses whether the institution has sufficient capital based on its strategy, regulations, established processes and internal procedures to cover the risks it is taking. Furthermore, the HFSA reviews the material risks of the institution, examines the compliance and liability of internal governance and internal capital adequacy assessment processes and checks the fulfilment of minimum requirements set out in legal provisions. Obviously the supervisory review process can only be successful if the institution presents both comprehensively and in detail the risk models and the internal capital calculation methodology it applies.

The internationally accepted principles of the supervisory review process are as follows:

- **Institutions measure their risk exposures on their own and ensure that the required level of capital is sustained.** Institutions must have capital calculation procedures in place that correspond with their risk profile and a strategy for maintaining their capital levels.
- **The internal procedures of institutions are reviewed by the supervisory authority.** The HFSA examines and assesses the internal capital adequacy assessment processes, risk strategy and capital plan of institutions to determine whether they will be able to provide for the level of capital required for prudent operations. If the institution's capital adequacy processes are deemed inadequate, the HFSA takes measures.
- **The available capital of the institution exceeds the regulatory minimum.** The HFSA expects and requires institutions to operate with a capital level that exceeds the regulatory minimum.
- **The supervisory authority takes action if needed.** The HFSA interferes or takes corrective action in time in case the capital adequacy or capital supply of the institution is not deemed guaranteed.

### **ICAAP-SREP dialogue**

The capital adequacy of the institution is evaluated in the form of a dialogue between the institution and the HFSA. In the course of this dialogue, the results of internal capital calculation can be compared to the supervisory requirements that are based on SREP, both parties can clarify their standpoints and a consensus can be reached regarding the amount of adequate capital. The intensity and frequency of the dialogue depend on the size and activities of the institution and on the extent to which the opinion of the institution and the HFSA differ concerning the capital requirement. According to CEBS guidelines, the dialogue covers all material risk types (Pillar 1 and 2), the observation of external factors and the review of the institution's internal governance.

We know from experience that the efficient implementation of the ICAAP-SREP dialogue is greatly facilitated if a designated person is in charge with ICAAP at the institution. This

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<sup>7</sup> Supervisory Review and Evaluation Process

<sup>8</sup> 2006/48/EC, Article 124



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responsible person coordinates the internal capital adequacy assessment process, ensures that the materials presented to the HFSA render a true and reliable picture and is familiar with the capital calculation methods applied locally and at group-level.

In case the dialogue is not successful and the HFSA does not deem the institution's internal capital adequacy processes acceptable or if it cannot reach an agreement with the institution on the required level of capital adequacy, the HFSA may take actions (that are commensurate to the identified deficiencies) and may impose an additional capital requirement on the institution.



## II. General Expectations - Principles

Below we present the general ICAAP principles elaborated in CEBS recommendation GL 03<sup>9</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>10</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>11</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.**

- 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).

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<sup>9</sup> Guidelines on Supervisory Review Process

<sup>10</sup> Guideline on Outsourcing - CP 02 revised, CEBS 14 December 2006

<sup>11</sup> See the chapter on ICAAP compliance at group level





**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. The HFSA requires the institution to be able to present in detail the approaches and terminology definitions it applies under the ICAAP (along with the differences compared to regulatory capital calculation methods) during the dialogue between the institution and the HFSA.
- 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 collectability 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. As institutions are free to choose the method they wish to apply, the HFSA considers several approaches acceptable and does not necessarily require the use of complex capital calculation models. Nevertheless, based on the principle of proportionality, the HFSA requires institutions pursuing complex and diverse activities to apply sufficiently advanced quantitative techniques in line with their unique and systemic.
- Certain risk elements and thus the related capital requirements may be difficult to calculate. Nevertheless, the HFSA requires that these risk capital figures be determined by way of expert estimates.
- 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.**

- Once the capital requirement of specific risk types has been identified, the ICAAP should produce the total economic capital requirement of the institution. This figure must be reasonable, i.e. it must be proportionate to the actual risks of the institution and it must be adequately reconcilable with the level of regulatory capital. 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.

### III. ICAAP Components

#### III.1 The Strategy for Ensuring Internal Capital Adequacy – Risk Strategy<sup>12</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 scope and extent of the document should match the size and the activities of the institution.<sup>13</sup>

In a relevant case, the risk strategy must include the parent institution's ICAAP-related requirements. Accordingly, the risk strategy must set out at group level the main risk factors, the types and tolerable extent of risks that can be taken. Furthermore, it is necessary to break down the group risk strategy consistently for the individual subsidiaries.

#### The steps of preparing the risk strategy

##### III.1.1. Risk taking policy

1. *Identification of group members and the scope of the ICAAP*

As the first step in developing a risk strategy, the institution must specify the group of institutions that the ICAAP covers, define what is meant by “group level” and “institution-specific” along with the relation between the two.

2. *Setting of risk management guidelines/principles*

As a precondition to standardised and prudent risk management, the institution defines its risk management principles which it sets out as requirements throughout the entire organization (e.g. independent control, increase of risk awareness, etc.). When defining the risk management principles, special attention must be paid to the fact that according to Hungarian regulations, credit institutions subject to consolidated supervision must fulfil the requirements regarding the governance system and risk management together with its credit institution and investment enterprise subsidiaries in which it holds a controlling stake. The establishment and enforcement of a risk culture throughout the institution (group) is the basis of implementing effective risk management. Each member of the

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<sup>12</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

<sup>13</sup> The principle of proportionality is a key consideration during the ICAAP review. The requirements concerning internal capital adequacy depend on the type and size of the institution, the complexity of its activities and the level of risks they convey. The same criteria must be applied to the scope and depth of the risk strategy.



organization must be familiar with the institution's risk strategy, risk appetite and risk-related responsibilities. The related documents must be communicated appropriately within the group. Everyone in the organization must be aware of his/her responsibility<sup>14</sup> in identifying and reporting risks, regardless of whether that risk is financial in nature or not (e.g. reputation risk).

The adequate governance structure of risk management supports the institution's strong risk management approach and culture.

### 3. *Identification of risk/return trade-off*

The institution must specify the extent of risk/return trade-off which it still considers acceptable at strategic level. To this end, institutions must systematize the networks of interests ("hunger") which serve as a basis for shaping risk appetite (e.g. shareholder expectations, customer expectations, supervisory requirements). In this exercise, the following factors may be assessed:

- types and extent of risks that the institution intends to take and the expected returns;
- whether the institution has comparative advantages in any area;
- capital requirement of actual risks.

The weighing of the above factors enables the creation of a strategic framework which contains the target market, the targeted segments and the range of key products and services. The development of the strategic framework also includes the specification of key target variables and indicators and the linking of an appropriate measurement system to the targets based on the risk-taking principles of the institution.

### 4. *Backtesting*

It is important put the risk-taking policy in a dynamic environment. The operation of existing risk management systems and models must be monitored on an ongoing basis. Results must be backtested and the models must be improved based on the experiences.

## **III.1.2. Setting of risk appetite**

Risk appetite refers to the amount of risk which an organisation is ready to take and is able to tolerate. Risk appetite may differ from group member to group member. If so, risk appetites need to be presented separately.

Institutions must identify (at group level) the relevant internal and external risk factors and draw up an accurate risk map of the exposures that apply to them. (Keeping in mind the risk definitions provided in the ICAAP guidelines.) Each institution (or group) must have a detailed view of the ratio, concentration and significance of specific risk types within the portfolio.

The institution's management body and senior management are responsible for setting risk appetite<sup>15</sup> and risk tolerance at levels that serve the business and risk strategy of the institution (group). When setting risk appetite and tolerance, all risks taken by the institution must be considered, including the exposures conveyed by off-balance sheet activities.

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<sup>15</sup> CEBS CP 24 Principles for Risk Management



The process of setting risk appetite and risk tolerance must encompass the review and modification thereof in case newly obtained environmental, business and risk information and analyses call for it.

Risk appetite and risk tolerance levels can be expressed in different forms, either as qualitative or quantitative requirements (e.g. targeted business lines, products, sectors, key risk indicators [KRIs], limits). They can also address areas where the institution's risk tolerance is minimal (e.g. not preferred sectors and products).

The fulfilment of targets and requirements specified in conjunction with risk appetite and tolerance must be measured on a regular basis. This approach ensures that the set limits, risk indicators, etc. are consistent with the institution's risk appetite and risk tolerance even in a stressed environment.

In the course of budgeting, the institution must determine the percentage of risk capital and the way of allocating it to specific portfolios based on its risk appetite

### **III.1.3. Attainable risk structure**

The risk preference developed in accordance with the risk appetite must be checked against business strategies. The prevalence of risk/return trade-off rules determined at strategic level must be verified. The toolset for all this might be a properly designed system of limits and indicators. In this respect, the following steps are needed:

- The system of limits and indicators must be assigned to additional levels. (Assignment of aggregate limits to risk types and deeper levels.)
- Elaboration of detailed requirements or methods, or reference to the thorough regulation thereof. Institutions must be able to show on their risk map how the internal capital requirement is determined for specific risk elements, what internal processes are employed for managing risks (four eye principles, incorporation of KRIs and triggers) and how these items are monitored (monitoring).

The changes in risk appetite and the extent of risks taken can be monitored and checked using the indicators that represent specific dimensions. This approach ensures the permanent control of the desirable risk structure and its comparison to the actual one.

### **III.1.4. Risk culture<sup>16</sup>**

Risks are the organic parts of the activities of financial organisations. In line with this, financial organisations are expected to develop an integrated risk culture encompassing the entire institution/group, which ensures the identification, assessment and management of the arising risks in accordance with the risk appetite and risk tolerance level of the institution/group.

The primary tools for the establishment of the risk culture are the internal policies, regulations and guidelines, communication as well as employee training.

Within the organisation risk management is not exclusively the task of risk experts or the organisational unit responsible for risk management. All employees must be aware of their

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<sup>16</sup> EBA Guidelines on Internal Governance (GL44)

respective roles in connection with the management of risks arising at the institution.

The HFSA finds it important to have a daily risk management practice corresponding to the risk policies, procedures and controls.

The HFSA recommends the implementation of a comprehensive risk management practice that:

- a) covers the entire institution/group, as well as all organisational units, business areas, institutions and activities of the institution/group,
- b) starts out from the internal economic content of the risks,
- c) manages all risks relevant for the institution in addition to the credit, market, liquidity and operational risks, e.g. it covers concentration, reputation, compliance and strategic risks as well,
- d) allows for the summing up and breakdown of the risks bottom up, and top bottom across business areas and reporting lines, as well as for the assessment and maintenance of the risks within identical frameworks in terms of contents and methodology.

Risk management must enable the institution to make well-grounded decisions based on the identification, assessment or evaluation and monitoring of the risks.

#### **III.1.4. Risk management organisation<sup>17</sup>**

In addition to the purposes outlined above, the role of risk strategy is to define the organisational framework for the process that enables the identification of risk appetite along with the ongoing monitoring and maintenance of risks taken. The presentation of the organisational separation, structure, independence, decision-making competences and supervisory function of risk management must receive adequate emphasis in the risk strategy. The management of risks should not be confined to the risk management function. In an institution that has a risk intelligent culture, the management body, senior management and employees are equally responsible for managing the institution's risks. The organization dedicated to risk management at the institution is the risk management function.<sup>18</sup>

The risk management function should be sufficiently wide in scope (covering all activities and members) and independent (of all areas that it controls from a risk standpoint). It should be managed by a Chief Risk Officer (CRO) (or a sufficiently high-ranking executive with regards to the size of the institution).

The responsibilities of the Chief Risk Officer extend to the entire organization and its risk management.

The Chief Risk Officer must have sufficient independence within the organization (subordination and superiority, reporting obligation, decision-making) to enable him to form and maintain a contrary opinion (veto) in the risk-related decision-making process.

Within the institution's management body, the Chief Risk Officer has a key role in establishing the risk culture, strategy, policy, appetite and in performing day-to-day risk management tasks accordingly.

The Chief Risk Officer and the employees working at the risk management function must have adequate expertise and practical experience (consistent to the complexity of the institution's

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<sup>18</sup> CEBS CP 24 Principles for risk management



activities) so that they can handle and manage the identification and measurement of the institution's risks, the internal rating systems, analysing tools and the risks associated with new products. It is the responsibility of the management body and the senior management of the institution to provide for the necessary resources (in adequate quantity and quality) and IT support.

Internal audit is responsible for reviewing if the Risk Control functions enjoy sufficient independence within the organization.

The responsibilities of the Credit Risk Control Unit (CRCU) include the following among others:

- establishment of risk measurement and risk assessment systems,
- ongoing revision of risk rating criteria and model development,
- checking the adequacy of risk rating grades,
- assessment of concentration per sector, portfolio and geographical region,
- evaluation of model application,
- evaluation of overrides and exceptions,
- review and revision of the quantification process,
- gaps between current and expected ratings,
- benchmarking to external data sources

The following items are required in the risk management organisation chapter of the institution's ICAAP:<sup>19</sup>

- clear definition and separation of responsibilities and mandates, avoiding conflicts and overlaps,
- presentation of risk management processes, ,
- with a view to the principle of proportionality, subdivision of risk management to sub-classes (define and present the transparency and functionality of the organisational structure, the level of segregation, separation of business areas, back office risk and risk management),
  
- presentation of internal audit, control and compliance function (define and present the independence of internal control functions from supervised and controlled activities and from each other),
- presentation of the MIS, controlling and internal information system,
- definition of the nature, scope and frequency of reporting at specific levels,
- presentation of how the risk strategy is communicated and how risk awareness is developed within the organization (information, training),
- application and presentation of group-level risk management and coordination, application and presentation of a remuneration policy that harmonises with the risk management system.

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

In this chapter we review the fundamental risks emerging in the operation of institutions in order to provide guidance for the identification and measurement of material risks in the internal capital adequacy calculation process. We review risks following the structure provided in the



CEBS GL03 for the ICAAP-SREP dialogue. For each risk, we provide the definition of the risk concerned, its possible elements (risk segments) and the basic requirements for risk management.

Institutions must strive for aligning each of their material risks to the risks defined herein. Special risk definitions as described in the “Other risks” chapter should only be used if the scope of the underlying risk is truly different from the risk types presented in this chapter.

Furthermore, after the identification of their material risks, institutions must make efforts to **apply an integrated risk management approach** for generating a standardised, single view of their risks. Individual risks are often difficult to separate, strong interworkings may exist between them and a certain type of risk may transform into a different type as a result of external effects. One example is the impact that the increased exchange rate risk conveyed by foreign exchange-based products exercise on credit risk. (See details in Chapter IV, Stress test: Enforcement of an integrated risk management approach)

### III.2.1 Risks captured in Pillar 1

#### III. 2.1.1 Credit risk

Credit risk refers to the threat of losses that impact the institution’s profitability and capital position and arise due to the non-performance of contractual partners (or from performance that is not compliant with contract conditions, i.e. from failures to fulfil (balance sheet or off-balance sheet) liabilities to the institution.

Credit risk in a narrower sense, i.e. the risk of a partner’s non-performance or non-compliant performance of payment obligations deriving from a loan, a deferred payment agreement or some other loan-type relationship is undertaken by credit institutions, financial enterprises and certain investment service providers *as part of their regular business*.

In the ICAAP, the institution sets out the capital calculation methods for credit risk, the systems of procedures for assessing and monitoring these risks (both inherently and as part of controlling) and the process of verifying that the calculated capital requirement provides an adequate buffer in general for unexpected losses associated with credit risk.

#### **Inherent risk**

Based on general and typical causes, credit risk can be broken down to the following segments:

- **credit risk**
  - 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,
  - risk of non-payment by other contractual partner or customer
  - dilution risk
  - card acceptance risk: payment with banking card or credit card may imply several risks that the credit institutions must manage. International banking card companies typically specify in their contracts that the card accepting credit institution must undertake a guarantee in the amount of transactions carried out at the card accepting places that are contracted with the credit institution for transactions carried out without the authorisation or knowledge of the card holders, or for unfulfilled services in the amount of the cost of such services. Coverage for such losses is provided only when the amount disputed within the





charge-back procedure is available on the cash-flow account of the contracted trader. In other cases the disputed amount shall be the accepting bank's loss. (Fraud, abuse and data fishing risks related to payments by card must be managed under the operational risk.);

- **partner risk** (credit risk against professional money and capital market players),
- **concentration risk** (we consider it a pillar 2 risk, see detailed description in the chapter "Risks captured in Pillar 2"),
- **country risk** (we consider it a pillar 2 risk, see detailed description in the chapter "Risks captured in Pillar 2"),
- **settlement risk** (we consider it a pillar 2 risk, see detailed description in the chapter "Risks captured in Pillar 2"),
- **residual risk** (we consider it a risk not fully covered in Pillar 1, see detailed description in chapter "Risks not fully covered in Pillar 1"),
- **securitization risk** (we consider it a risk not fully covered in Pillar 1, see detailed description in chapter "Risks not fully covered in Pillar 1"),
- **risk of non-payment by insurance company.**

### Control<sup>20</sup>

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.

### Capital calculation

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>21</sup>. The third, simplest approach is the standardised one.

The third, simplest approach is the standardised approach. Institutions applying the standardised approach are expected to ensure that the adequacy of classification according to exposure classes be supported by regulations and documentation. It is especially important to specify the conditions for inclusion in the retail portfolio at regulatory level (in scheme instructions/risk taking regulations, etc.), as well as to define the other characteristics of the products (standardised products). The regulation must also include the definition of granularity<sup>22</sup>. During

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<sup>20</sup> See supervisory requirements in detail in HFSA Recommendation No. 8/2001 on the Management of Credit Risk and in HFSA Recommendation No. 7/2006 (28 Sept.) on Increasing the Effectiveness of Credit Risk Management

<sup>21</sup> Please refer to the Validation Manual I-II for further information on approving advanced credit risk management methods.

<sup>22</sup> According to Subsection b) of Section 11(1) of the Government Decree on the management and capital requirement of credit risks "an exposure can be put into a group of a significant number of exposures with similar characteristics, which allows for the mitigation of risk associated with the lending risk"



the calculation of the capital requirement the HFSA accepts the following management solutions in connection with the management of granularity:

1. Classification of the products into so called “pools”, i.e. identification of products that “behave” in a similar way (identical, standard conditions, limited amount, etc.). It is worth determining a minimum amount of transactions for the individual pools in order to meet the granularity requirement.
2. Definition of the average size of credit per contract in connection with the exposures in the retail portfolio in accordance with Subsections a), c) and d) of Section 11 (1) of the Government Decree on the management and capital requirement of credit risks, and the provision of a relevant distribution threshold.

This means that the institutions must determine their retail exposures so that the individual exposure risks should be adequately small proportionately to the entire portfolio. The institutions may use indicators measuring the portfolio concentration to assess this.

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>23</sup>.

### III.2.1.2 Operational risk

Operational risk<sup>24</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.

Under the framework of the ICAAP, the institution lays down the capital calculation methods for operational risks, the systems of procedures for assessing and monitoring these risks (both inherently and as part of controlling) and the process of verifying that the calculated capital requirement is suitable for eliminating the institution’s probable losses from operational risks in a prudent manner.

#### **Inherent risk**

Operational risk events are the materialisation of threats which are classified to segments in applicable laws as follows (risk segments):

- internal fraud;
- external fraud;
- employer practices and labour safety;
- customer, business practices, marketing and product policy;
- damages to tangible assets;
- business continuity interruption or system failure;

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<sup>23</sup> Actually this is why these are not acceptable for regulatory purposes.

<sup>24</sup> Detailed guidance on operational risk is set forth in volume II of the Validation manual.



- implementation, fulfilment and process management.

Possible risk events (scenarios belonging to the event types listed above) relate to specific business activities of the institution and to the way these activities are performed (work processes). In compliance with the CRD, Hungarian laws group these activities into eight business lines (in case the standardised/advanced capital calculation method is selected, a mandatory separation of business lines shall apply). Financial losses resulting from potential risk events may appear in the following forms: write-offs, legal expenses, penalties, unsuccessful recourse, indemnities to customers and other parties, loss/replacement of physical assets). The extent of losses correlate with the actual volume figures of the activities pursued. The estimated sum of losses arising from operational risk for all activities of the institution is the institution's inherent operational risk.

### **Control**

The management of operational risks is targeted at preventing risk events and damages (by in-process and managerial controls, internal safeguards), handling critical situations (contingency plans, business continuity management (BCM)) and mitigating potential losses (collaterals). The risk management system and the direction and control thereof must be commensurate to the institution's operational risks and must rely on relevant internal regulations and procedures. By establishing and operating a system of control procedures commensurate to risks, the institution limits its exposure to an acceptable level that corresponds with its risk-bearing capability/risk appetite. The principle of proportionate risk management calls for the monitoring of operational risks (process-specific Key Risk Indicators (KRIs), incident registry, analysis, actions). The quality of control affects the extent of probable damages.

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.

### **Capital calculation**

Calculated (and accumulated) capital is intended to function as a buffer covering the net risk which is a function of inherent risks as mitigated by controls and is therefore changing over time.

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.

### III. 2.1.3 Market risk<sup>25</sup>

Market risk: the current or prospective risk of losses on balance sheet and off-balance sheet positions arising from adverse movements in market prices (changes of bond prices, security or commodity prices, exchange rates or interest rates that impact the positions).

In the course of the ICAAP, institutions keeping a trading book must 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 institution must have a clear strategy that contains guidelines on managing interest and exchange rate risk.<sup>26</sup>

#### **Inherent risk**

The elements of market risk are as follows:

- risk of trading book positions (interest and foreign exchange risk in the trading book);
- interest rate risk outside the trading (banking) book (where Pillar 2 is relevant);<sup>27</sup>
- foreign exchange risk conveyed by the activity;
- product risk conveyed by the activity.

According to the definition in Act CXXXVIII of 2007 on Investment enterprises, commodity brokers and the rules of their activities (hereinafter ICBA), the elements of the trading book

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<sup>25</sup> We discuss market risks in detail here as the Validation Manual does not address this type of risks.

<sup>26</sup> 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 institutions should perform their ICAAP with a level of diligence that is in proportion with the market risks they take and thus with the complexity of their trading book positions. Naturally, if an institution does not keep a trading book or if the book includes very few items while its foreign exchange risk in the banking book or commodity risk is significant, then the HFSA expects the institution to elaborate and apply a more detailed process with a view to these risks.

<sup>27</sup> Discussed in detail in Chapter III.2.3.3



include positions consisting of financial instruments or commodities held by the institution for trading purposes or for covering the elements of the trading book.

### **Control**

The management of the institution must review regularly the items and structure of the balance sheet along with the external environment and must respond to external and internal changes in a timely manner. Institutions are advised to set up a dedicated unit for this role, the Assets and Liabilities Committee (ALCO). In addition to the institution's liquidity risk, the committee must monitor and regularly check stock positions, interest rate and foreign exchange positions, various equilibrium balances (interest rate, foreign exchange and liquidity balances), the changes of key items and various asset groups, the impact of all these on profits and the trading book positions.

The institution must have an approved policy in place for managing the risks of stock positions. This policy must define the purpose and reason for holding stock positions for own account, the range of stocks and stock-related derivatives that are allowed to be held as positions, the size and composition of the portfolio for own account, the revenue targets and profitability requirements of speculation activities and the main methods of managing stock position risks.

The institution must draw up a policy for managing foreign exchange risk. This policy must specify how this risk arises and how it is taken, identify deals that generate major foreign exchange risk along with off-balance sheet activities that affect this risk, describe the evaluation of foreign exchange positions (in particular foreign exchange options), set the value of foreign exchange positions that can be taken, specify the related profitability targets and the key methods of managing foreign exchange risk.

The institution must use appropriate control mechanisms to keep market risks within the limits allowed in the trading strategy, operate a proper limit system for controlling foreign exchange and interest rate positions in the trading book and commodity and foreign exchange risks. The tracking of portfolio-specific profits, open positions and limit utilisation enables the measurement and benchmarking of the profits of individual organisational units (desks) at specific limit utilisation and risk levels and at an average open position, facilitating the planning of risk capital allocation.

Market risk management is in charge with monitoring and recording overdrafts. Applicable sanctions must be regulated in rules.

The volume limits assigned to open positions can be allocated to financial instruments within individual financial portfolios, while limits that are driven by specific loss or risk amounts (e.g. VaR) can only be applied to the total assets of specific portfolios. VaR limits are set based on the probable maximum loss of the portfolio for a specific holding period and range of confidence, assuming regular market conditions.

In a default case, these limits include day trade and overnight limits for traders, currency types and various trading positions. The operation of the limit system must be reported to top management on a regular basis. Furthermore, the marketability of positions in the trading portfolio must be analysed regularly based on the availability of relevant 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. The contents of the trading strategy and that of the trading book must be cross-checked on a regular basis and results should be reported to senior management. When the institution presents the ICAAP results to the HFSA, documents on backtesting must be filed as an attachment.



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>28</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>29</sup> that are becoming illiquid<sup>30</sup>.

### **Capital calculation**

Risk measurement and the calculation of the capital requirement allocated to risks actually mean risk assessment using regulatory methods in respect of trading book risks and exchange rate and commodity risks that relate to the entire business and also the calculation of the related overall capital requirement for risks.

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>31</sup> with the internal model which (it thinks) 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>32</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

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<sup>28</sup> Article 9, Part B of Annex VII to 2006/49/EC

<sup>29</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>30</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>31</sup> e.g. holding period, confidence interval, correction factor, etc.

<sup>32</sup> backtesting should be interpreted as the result of an ex-post comparison of the trading strategy and the contents of the trading book.



and scenario-analyses of extreme events. The results and conclusions of these exercises should also be reviewed at top management level.

In case the institution also covers other Pillar 2 risks (e.g. interest rate risk of the banking book, market liquidity risk, etc.) as part its market risk management, the HFSA requires that the rules of market risk management set out in detail the management of these risks is presented in detail in the.

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

#### **III.2.2.1 Residual risks<sup>33</sup>**

Residual risk is the risk of the large-scale devaluation or limited enforceability of collaterals behind credit exposures. In other words, residual risk is the risk that recognised credit risk mitigation techniques used by the credit institution prove less effective.

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).

Residual risk must be managed through written procedures and rules. 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>34</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 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.

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<sup>33</sup> See Article 4 in Annex V to 2006/48/EC and Articles 726-728 of the Basel recommendations.

<sup>34</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.



### 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 Concentration risk<sup>35</sup>

The concentration of risks refers to the exposures that may arise within a single risk category (intra-risk) or across different risk categories (inter-risk) with the potential to produce (1) losses large enough to threaten the institution's regular business operations (of usual and expectable profitability) or (2) a material change in the institution's risk profile. While efforts to manage concentration risks traditionally focused<sup>36</sup> on the concentration of credit risks, the crisis highlighted the fact that risk concentrations often make an impact via various risks (credit, market, operational, liquidity risk) and in close interworkings with each other. As their combined impact may exceed the extent that would derive from the separated handling of individual exposures, concentration risks must be managed with an integrated approach.

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<sup>35</sup> For further details please refer to the CEBS Guidelines on the management of concentration risk under the supervisory review process (GL31); CEBS 2 September 2010.

<sup>36</sup> Not entirely though as market risk models usually handle market risk concentration. Therefore, it is not completely accurate either to discuss concentration entirely under risks captured in Pillar 2.





The concentration of risks may be a source of significant losses and therefore the HFSA expects institutions that the handling of concentration risks should always be an integral part of risk measurement and management efforts as supported by written procedures and rules. As a minimum requirement, these documents must address the following:

- Every institution must have a risk-taking policy and procedure approved by senior management in respect of concentration risks. The risk-taking policy must be reviewed regularly, taking into consideration the changes of the institution's risk appetite and the business environment as well.
- Institutions must elaborate internal systems and methods for identifying and measuring concentration risk which are suitable with regards to the institution's activities, size and complexity and which are able to reveal the interworkings of concentrations across multiple risk categories.
- Stress tests are an especially useful supplement to measurement indicators. Under normal business conditions, concentration risks rarely cause problems as concentration mostly remain in the background. Therefore, the detection of concentration threats with stress testing is of outstanding importance.
- Institutions must operate limit structures for concentration risks that are consistent with their risk appetite and risk profile.
- Institutions must have adequate action mechanisms in place which enable them to mitigate concentration risks and to monitor, assess and manage the related policies, procedures and limits.
- Institutions must be able to assess the adequacy of assumptions that served as a basis in the capital allocation process for setting the level of capital for covering concentration risks.

Methods suitable for keeping concentration risks under control:

- Application of limits for concentration indicators. For setting the limits, the institution must have a clear risk-taking policy and must provide for ongoing monitoring. (Regarding credit concentration risk, the requirements in the CRD and the ACI for large exposures are suitable starting points but it is worth supplementing them industry, country and product/transaction-specific concentration measurements.)
- When converting risks to market instruments and "selling" them, the institution buys protection provided by structured securitisation or credit derivatives, collaterals, guarantees, etc.
- Many institutions allocate capital beyond the regulatory minimum for covering concentration risks albeit not separately but in relation to the underlying risks.

#### ***III.2.3.1.1. Credit concentration risk<sup>37</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

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<sup>37</sup> For further details, see the Technical aspects of the management of concentration risk under the supervisory review process – CP11 2nd part; CEBS 14 December 2006.



individual counterparties but also to groups of individual customers/partners that are closely connected (through ownership and/or financing)<sup>38</sup>.

In practice, the expression large exposure is used as a reference to cases that involve small groups of individual counterparties<sup>39</sup>. Concentration in a broader sense<sup>40</sup> also includes the followings: 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), etc.

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).

When discussing the concentration risk of credit risk, institutions applying advanced and standard methods should be mentioned separately. The main issue for these institutions relates to the fact that the IRB capital function used for calculating the weighted asset value assumes a fully granulated portfolio, thus it theoretically underestimates the actual capital requirement for the credit risk of the institution's portfolio. Therefore, the aforementioned distortion is an issue for every institution which may call for the setting of an additional capital requirement in Pillar 2. This will be judged (both on the part of the institution and the HFSA) depending on the extent of risks and the adequacy of applied risk measurement and management tools.

The review and revision of concentration risks are of special importance in the case of smaller institutions and institutions that pursue specialised activities (e.g. mortgage banks). Smaller size and a special activity profile should not imply larger concentration risk on their own 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.

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,

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<sup>38</sup> Please refer to article 20 in Annex 2 to the Act on Credit Institutions (Act 112 of 1996)

<sup>39</sup> Para. 79-91 of the Act on Credit Institutions (Act 112 of 1996) regulates the taking of large exposures.

<sup>40</sup> Please note that concentration risks are not equal to large exposures.



Sophisticated institutions do not necessarily perform separate concentration tests. Instead, they manage concentration under the framework of integrated risk management systems.

### III.2.3.1.2. Market and liquidity concentration risk

Market concentration derives from the fact that exposures relating to specific risk factors may be correlated (e.g. the prices of stocks held by an institution fluctuate together within certain limits). In most cases, this is only apparent in a stressed market environment while the correlation effect may be insignificant under normal conditions. Therefore, institutions should employ various quantitative methods (sensitivity analyses, stress tests) to reveal the extent of concentration in their books,<sup>41</sup> i.e. to understand the impact of correlation changes on portfolio value.

The VaR models that most institutions use in their ICAAP do not take market concentration risk into consideration as these models rely on assumptions that relate to unstressed business conditions. Therefore, the HFSA expects institutions to identify their market concentrations and incorporate this aspect into their risk management processes.

Concentrations in both assets and liabilities may convey significant liquidity risks for the institution. A concentration in assets can impact adversely an institution's ability to generate cash or the market liquidity of assets. Liability concentration may make the institution highly vulnerable from a funding standpoint. (Just think of funding structure. If concentration is significant there, the loss of a single channel may cause significant liquidity problems.)

In order to be positioned to manage liquidity concentration risks, institutions are expected to gain a thorough understanding of their assets and liabilities structure. Taking into consideration the nature of their business activities, they should identify the sources of concentration risks and take adequate measures to eliminate these sources. The related analyses should also take into account off-balance sheet items.

### 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>42</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,

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<sup>41</sup> It must be noted that net positions may often be misleading. In many cases, there are large gross exposures behind them which may cause significant risks for the institution.

<sup>42</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.



- 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>43</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:

- 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>44</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.

Where the weight of exposures to central governments in the CRD is 0 or 20 %, no additional capital requirement is set.

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

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<sup>43</sup> Claesses – Embrechts: Basel II, Sovereign Ratings and Transfer Risk. External versus Internal Ratings.

<sup>44</sup> Capital base: Solvency capital calculated as per Article 15 in Annex 5 to the Act on Credit Institutions



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>45</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.

Types of interest rate risks:

- **repricing risk**, i.e. risk deriving from the different maturity structure of receivables and payables and from pricing that is based on different interest rates or different periods;
- **basis risk**, i.e. risk deriving from the change of relations between the interest rates of two external products or between an external interest rate and a rate applied by the credit institution;
- **yield curve risk**, i.e. risk originating in changes of the shape and steepness of the yield curve;
- **option risk**, i.e. the risk deriving from interest-related options inherent (embedded) in banking products.

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).

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<sup>45</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



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>46</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

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<sup>46</sup> This topic is elaborated in detail in HSFA methodological guideline 5/2004 on the management of interest rate risks at credit institutions.



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.

Formerly the HFSA considered testing against a 200 base point shock appropriate but in the light of recent economic events this figure is regarded as insufficient today. Therefore, the HFSA requires institutions to observe the relevant recommendation of the Basel Committee on Banking Supervision<sup>47</sup> which sets forth the following:

- For exposures in the currencies of G10 countries, a +/- 200 base point interest rate shock
- For exposures in the currencies of non-G10 countries, parallel yield curve shifts where the shift equals the 1<sup>st</sup> and 99<sup>th</sup> percentile of the interest rate changes observed (for an at least 5-year series of data and a 1-year (240-day) holding period).

In case the calculated shock with a scenario involving a non-G10 country's currency fails to reach +200 or -200 base points, these two figures shall be applied.

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>48</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 these measures are missing, the HFSA will initiate the decrease of the credit institution's risk exposures and the reinforcement of risk management processes. If needed, the HFSA will also take measures. Before taking such steps, however, the Supervisory 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 is the institution's ability to finance the growth of its assets and fulfil expiring obligations without undertaking significant and unexpected losses. Liquidity risk is embodied in maturity transfer carried out for the sake of profitability, long-term lending from short-term liabilities, environmental impacts and the uncertainty of the behaviour of other market players.

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<sup>47</sup> BIS: Principles for the Management and Supervision of interest Rate Risk, 2004

<sup>48</sup> This is how the Supervisor interprets economic value defined in Para. 5 of Article 124 in the CRD.



Effective liquidity management enables the institution to fulfil obligations under any circumstances. The management of liquidity risk is of fundamental importance because the liquidity problems of a single institution may impact all partners and customers and ultimately all market players.

Basically, liquidity risks can be classified into two categories:

- funding liquidity risk
- market liquidity risk

Funding liquidity risk means the institution's potential inability to fulfil expected and unexpected obligations deriving from current and future cash-flows and collaterals without impacting its day-to-day operations or market position. Risk types that belong here include term liquidity risk (due to discrepancies between maturities), withdrawal/call risk (mass disinvestment before maturity) and structural liquidity risk (which relates to the renewability of funding and changes of funding costs) etc.

Market liquidity risk refers to the potential inability of the institution to realize its positions at an adequate market price, i.e. 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.

Institutions are required to manage liquidity risks effectively. To this end, institutions must have an adequate liquidity risk management framework in place and apply effective risk mitigation techniques which provide them with appropriate liquidity and include a buffer (additional reserves) for covering unexpected market shocks.

The following considerations should be observed regarding this framework<sup>49</sup>:

- The institution should clearly determine the level of liquidity risk which it can tolerate with a view to its current business strategy and market position.
- The executive management of the institution should elaborate a strategy (and regulation guidelines) which keeps liquidity risk under the identified critical level and provides the institution with adequate liquidity. This strategy (and guidelines) must be reviewed at least once per year. The decision on approval and modifications must be made by executive management who should also submit a report to the board.
- The institution's executive management should incorporate liquidity costs, revenues and risk into internal pricing, performance measurement and product development processes and thereby align activities that motivate risk-taking to liquidity risk exposures.
- The institution must have a reliable system in place for identifying, measuring, monitoring and controlling liquidity risks. In the course of risk identification, the institution must specify the liquidity risk elements which appear in its operations. This system must be capable of taking into consideration the cash flows that derive from assets, liabilities and off-balance sheet items in a specific period.
- The institution must monitor and check its liquidity risk exposures and funding needs, taking into consideration all applicable legal, regulatory and operational limits that relate to the place and transferability of liquid assets.

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<sup>49</sup> The HFSA's requirements concerning the management of liquidity risk are set out Methodology Guideline No. 6/2010 on Measuring and Managing Liquidity Risk





- The institution's risk management system must be capable of efficiently diversifying liabilities based on funding terms and must help the diversification of funding resources. The institution must track funding concentrations (funds that exceed 1% of total liabilities.). Furthermore, the institution must assess regularly how quickly it can renew the various liabilities. It must identify and monitor factors which impact the availability and cost of various funding opportunities.
- Institutions that also hold foreign exchange accounts are expected to manage and plan liquidity per currency type. The risk management framework must assess and observe the liquidity impacts of off-balance sheet hedge deals, especially in respect of the deterioration of the forint exchange rates and the potential operating failures of swap markets.
- The distribution of work within the group is a requirement concerning the liquidity management system of group member institutions and so is the clear specification of mandates and responsibilities. The rules must set out the liabilities and obligations of the governing institution to the governed institutions along with the liquidity management responsibilities and duties delegated to governed institutions.
- The institution must actively manage its intraday liquidity positions and risks and must operate suitable payment and settlement systems for this purpose.
- Using stress tests that have been elaborated with a view to regularly run institution-specific and market scenarios, the institution must identify potentially liquid assets and ensure that actual exposures remain under the threshold set by the institution itself. Institutions are advised to use a one-month survival period in stress testing and are required to pay special attention to the first week within that. The results of stress tests must be taken into account in liquidity management processes, in the risk management strategy and policy, in the contingency plan, in the size of the necessary liquidity buffer and potentially in the capital requirement.
- The institution must have a compliant contingency plan which specifies the steps which must be performed in case of an unexpected emergency in order to maintain liquidity.
- Using high quality liquid assets, the institution must set up a liquidity buffer for successfully fighting situations predicted in the stress scenarios. The institution must specify the range of assets to be taken into account as liquidity buffer and rank them by liquidity in an internal regulation. The creation of a liquidity buffer shall not substitute either careful preparation for stress situations or any other measures that serve to manage funding gaps and resources.

Information must be published<sup>50</sup> regularly by the institution to enable market players to assess its liquidity position and liquidity risk management system.

The institution can analyze the expected changes in its liquidity position by comparing the timing (maturity match) of its receivables and payables. It can perform a so-called static analysis which relies on the assumption that payables and receivables will be realized in line with the related contracts (no new loans provided and no new deposits are placed). The other option is a so-called dynamic analysis which assumes the renewal of portfolios. The tools applied in the analyses may apply to regular course of business and liquidity emergencies.

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<sup>50</sup> Government decree no. 237/2007 on the Fulfilment of the Publication Obligations of Credit Institutions sets out requirements regarding the scope of information to be published in relation to liquidity risk.



The limit system and the specific limit values are important elements of the liquidity management system. The HFSA requires the specification of limits in the rules of liquidity risk management and the generation of reports on limit utilisation. The latter must contain the decision of the organisational unit in charge on the elimination of possible limit violations. Limit values must be reviewed at least annually.

In case the institution takes liquidity risk or certain elements thereof into consideration under another risk type, the HFSA requires the declaration of this in the relevant rules. The rules on the risk concerned must include a detailed description of the measurement/management of liquidity risks

### III.2.3.5 Settlement risk<sup>51</sup>

#### Definition of settlement risk<sup>52</sup>

Settlement risk is the risk that a transaction executed is not settled as expected<sup>53</sup> through a settlement system. Settlement risk comprises 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>54</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

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<sup>51</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>52</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>53</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>54</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.



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**

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>55</sup> between the partners. As the mechanisms of settlement systems mostly ensure the minimisation of principal risk<sup>56</sup> by applying these principles, the credit risk of 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, 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>57</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>58</sup>

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<sup>55</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>56</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 attempt to obtain the required securities via the central securities lending system; (3) it will set up a legacy correction DVP transaction between the defaulting and the duly delivering parties.

<sup>57</sup> See HFSA Chairman Recommendation 3/2000 on the risk management systems of investment service providers

<sup>58</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=1233](http://www.keler.hu/keler/keler_angol.head.page?nodeid=1233)



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).

### 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>59</sup> to earnings and capital arising from adverse perception of the image of the financial institution on the part of customers,

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<sup>59</sup> Reputation risk has an indirect impact on capital and profitability. Its effect is mainly manifested in the deterioration of goodwill and lost earnings.



counterparties, shareholders, investors or regulators. It is manifested in the fact that the external opinion on the institution is less favourable than desired.

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>60</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.

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<sup>60</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 if 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 effects<sup>61</sup> within credit risk and across various risks can also be taken into consideration.

### **Free choice of methodology with mandatory reasoning**

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.

### **Differences concerning the degree of sophistication of applied methods**

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

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<sup>61</sup> The HFSA's considerations concerning the recognition of diversification effects are set out in the SREP guideline. [http://www.pszaf.hu/en/left\\_menu/regulation/supervisory\\_methodologies/supervisory\\_guidance\\_](http://www.pszaf.hu/en/left_menu/regulation/supervisory_methodologies/supervisory_guidance_)





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.

### **Potential methodology-related differences between Pillar 1 and 2**

The handling of the same (Pillar 1) risks may be different under Pillar 1 and 2<sup>62</sup>. An institution may use a portfolio model (e.g. Creditmetrics, Creditrisk+) in Pillar 2 instead<sup>63</sup> 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

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<sup>62</sup> Obviously, methods applied in Pillar 2 are supposed to be more sophisticated.

<sup>63</sup> This is one of the most important differences. In Pillar 1, it is not allowed to apply an internal model to credit risk which would also recognize diversification effects.



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.

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>64</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>65</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 must be able to demonstrate<sup>66</sup> 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.

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

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<sup>64</sup> It seems that banking regulations (concerning Pillar 1) apply this philosophy, albeit it is not stated explicitly...

<sup>65</sup> This solution is the most common practice. The time horizon is typically 1 year but it can be longer in certain cases.

<sup>66</sup> The confidence levels required in Pillar 1 are more compliant with the stricter liquidation approach.



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>67</sup>.

Besides the capital elements that constitute solvency capital, trading book profits, the guaranteed profit level for the year, risk premium revenues deriving from already priced risk expenditures, subordinated loan capital which cannot be considered part of solvency capital from a regulatory standpoint are all elements which individual institutions may take into consideration as risk collaterals in their internal capital adequacy assessment process. It must be pointed out, however, that the institution must be able to explain satisfactorily the risk-bearing capability of the items considered. According to the HFSA mutual shareholdings in financial institutions shall be deducted from the own funds calculated under Pillar 2.

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>68</sup>. The more distant the approach, risk size and capital definition used in Pillar 2 are from their Pillar 1 counterparts, the more 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>69</sup>.

### **Aggregation of capital requirements, diversification**

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.

Institutions must take into consideration the modelling risk of diversification and they are advised to apply a conservative approach when aggregating risks. The lesson of the recent past shows that correlations increase during a crisis and that the change of certain risks can trigger a substantial increase of other risks (see Stress testing chapter).

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

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<sup>67</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>68</sup> If for no other reason, then for assessing the adequacy of the requirement in Pillar 1

<sup>69</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.



- 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 and exposures. If allocation is linked to performance measurement or pricing, it suggests that the institution takes capital calculation seriously and applies it in its day-to-day operations (use test). The HFSA regards this circumstance a material criterion when assessing<sup>70</sup> the reality and reliability of capital calculation.

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<sup>70</sup> We found at several institutions that although allocation for the purpose of performance measurement and pricing exists, this allocation does not encompass Pillar 2 capital (but typically Pillar 1 instruments). If so, the HFSA definitely takes it as a sign of immaturity and of the lack of internal acceptance regarding Pillar 2 capital calculation.



## IV. Stress Testing

Stress test is a general term covering all the quantitative and qualitative techniques and risk management methodologies which financial institutions can employ to gain an overview of their exposure or vulnerability to the impacts of exceptional but possible events that may occur due to rare risk events that can have severe consequences. Due to the recent financial and economic crisis, the HFSA considers stress tests outstandingly important.

The purpose of Pillar 2 stress tests required in the ICAAP is to assess all material risks of the institution in a comprehensive, integrated and forward-looking manner. This way, the scope of stress tests (including but not limited to the risk types discussed earlier) includes the consideration of the impact of all market, economic, institutional or political risk factors which may have a perceivable, substantial impact on the prudent and solvent operation of the institution concerned. In this sense, the stress testing methodology discussed herein definitely exceeds CRD requirements. This is equally true for credit risk stress tests<sup>71</sup> to be applied under Pillar 1 by institutions using IRB approaches and for general regulations that relate to Pillar 2 stress tests<sup>72</sup>.

The HFSA believes there is no single “correct” stress testing methodology. The range of approaches acceptable for a specific institution greatly depends on its size, activities, risk appetite and the quality of risk management. With a view to the principle of proportionality, however, the HFSA requires that the applied stress testing methodology should be sufficiently sophisticated in the light of the aforementioned factors.

Different stress testing techniques represent different ways for assessing an institution’s risks, with each of them capturing different aspects of exposures only. Therefore, the HFSA prefers the heterodox approach and believes that the simultaneous application of different methodologies is desirable. The HFSA intends to stay away from limiting institutions in following their selected approaches as long as they comply with the regulatory requirements set out herein. What it also means in practice is that in relevant cases the use of qualitative expert estimates is not considered less suitable an approach than the application of quantitative methods and statistical models.

Nevertheless, the stress tests applied under the framework of the ICAAP in business and regulatory practice usually relate to two main methods. The HFSA definitely expects institutions to apply these<sup>73</sup>:

- **Sensitivity analyses**

Sensitivity analyses are usually based on a less complex methodology and illustrate how the institution’s position would change in case a single relevant risk factor is modified but all other circumstances remain unchanged.

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<sup>71</sup> Paragraph 2 in Article 84 of the CRD declares that the launch of an IRB approach at an institution shall only be permitted by the Supervisory Authority if the institution is able to measure properly by way of stress tests the impact of potentially adverse events on its loan portfolio and if it proves to be resistant against these impacts (see Annex VII, Part 4, paragraph 40). Furthermore, the latter section requires the institution to quantify the impact of at least a “mild recession” scenario on its capital requirement on a mandatory basis.

<sup>72</sup> The CRD regulates Pillar 2 tests in a rather general manner but sets out more specific regulations for certain risk types (e.g. interest rate risk in the trading book, concentration risk of lending etc.)

<sup>73</sup> For certain risk types, the use of the aforementioned techniques is also a typical way of quantifying the related capital requirement (e.g. liquidity risk, interest rate risk in the trading book etc.). However, here we do not mean this kind of tests. As both approaches provide ample room for the most diverse analyses, the HFSA believes that their application on a mandatory basis is consistent with the principle that institutions are free to choose the methods they intend to apply.



The main advantage of this method is that the magnitude of losses/risks for a specific factor is easy to determine (e.g. how the increase of capital requirement reduces the value of collateral; the impact of exchange rate changes and GDP setback on the probability of non-performance by households and businesses). The drawback is that the method often fails to render a true picture of the actual exposures of the institution. The reason is that in real life the risk factor applied would make an impact in combination with other factors and not in a stand-alone manner.

- **Scenario analyses**

Scenario analyses assume the simultaneous change of several risk factors and quantify their combined impact on the institution's position, in a suitable case also taking into consideration secondary and delayed effects. These analyses can also be based on hypothetical and historic scenarios.

The benefit of this method is that it takes into consideration the interworkings among risk factors and thereby enables the capturing of the institution's risks in an integrated approach during model building. However, real-life application is challenged by a serious difficulty: In a crisis situation, the interrelations between risk factors are not necessarily stable and the modelling of their impact mechanisms raises a number of concerns even under regular conditions and on top of empirical issues. When elaborating scenario analyses, institutions must use scenarios that are consistent with their risk profile and complexity and they must also take into account the interworkings and backlashes of parameters.

If structural models are applied, then depending on their complexity and level of sophistication, the HFSA expects the institution to have a sufficiently in-depth knowledge of relevant international technical literature, statistics and time series econometrics.

Based on a number of additional considerations, the HFSA considers stress testing important and suitable for the reliable assessment of the institutions' risk characteristics with special regards to the following:

- **Reliability of applied risk models**

The risk exposure of institutions is determined by the operation of the financial system which is a complex network. The interworkings within this network and their uncertainty make the clear identification, accurate pricing and proper management of risk very difficult. Due to the complexity of the system, economic capital calculation models can only capture the aggregate risks of the institution in an indirect manner and must employ various assumptions regarding correlations between asset prices and risk factors. Empirical experience shows the latter tend to grow significantly (in absolute value) in a stress situation, thus models which focus on regular operations often underestimate the actual risks under a crisis. This problem not only applies to risks within specific risk types but also to the interrelations of risks. Therefore, the HFSA requires institutions to have a clear view of the performance of their risk models perform in crisis situations.



- **Enforcement of an integrated risk management approach**

Due to a number of many reasons, risk types are discussed separately in existing business and regulatory practice and thus they supply inputs for economic capital calculations independently of each other. Recent developments (the integration of money and capital markets, securitisation, economic bookkeeping techniques, spreading of derivatives, etc.), however, blurred the differences between risks from in many aspects. A typical example would be loan products offered with a variable interest rate and disbursed in foreign currency (a product category of special significance for the Hungarian financial system). In the case of these products, market risk and credit risk factors cannot be separated clearly; and the crisis highlighted the organic relationship between liquidity risk and the two previously mentioned risk types.

The HFSA regards integrated, comprehensive approaches as highly important because the consideration of cross-effects among risks often produces a much higher risk exposure than the mere summing of exposures associated with individual risk types (i.e. aggregation that lacks any diversification).

In the light of the considerations outlined above, stress testing methodologies that are limited to changing the input parameters of internal risk models (e.g. shifting of PDs, increase of LGDs) are not considered sufficient by the HFSA. Furthermore, the HFSA requires institutions to have a clear-cut and identifiable stress testing program that is embedded in a coherent narrative. We also consider it necessary that supervised institutions should interpret and understand the results of their stress tests so that test results can serve as a basis of clearly defined risk mitigation measures. As a prerequisite of all that, the HFSA requires the top management body of the institution to assume responsibility for, be adequately informed of and actively participate in the operation of the stress testing program and in the evaluation of results.

Regarding the values used for the tests, the HFSA requires that the stress tests (also) reflect the effect of environmental shocks that are really exceptional and significant.<sup>74</sup> With a view to the recent financial crisis and macroeconomic and business developments, the HFSA requires institutions to use their experiences gained during the crisis when selecting risk magnitudes and methods and to act in a sufficiently conservative manner.

Therefore, stress tests must be defined with a view to the institution's portfolio characteristics and assumed risks and in line with the actual external environment. In case any change (or expected change) occurs in these factors, the applied tests must be revised. The HFSA requires institutions to carry out this revision annually even if the changes of the aforementioned factors would not call for it. The HFSA requires that stress tests are run more frequently than that.

In the current situation, the HFSA believes that stress tests must indispensably become organically integrated into the risk management practices of institutions and that their results are utilised in the following areas:

- verification of the results of capital calculations and the identification of their reliability
- capital budgeting;
- elaboration of the risk strategy;

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<sup>74</sup> Due to the presence of nonlinear risk correlations, the HFSA believes it is useful to test stress situations of different severity and probability.



- overall top management decision-making, e.g. elaboration of emergency scenarios, setting of limits, etc.;
- primarily for the calculation of additional regulatory capital after harmonisation with the HFSA;
- and, if necessary, for taking adequate risk-mitigating measures (equity raise, strategy, use of stricter limits, etc.)

In order to ensure that regulatory requirements are actually fulfilled, the HFSA requires institutions to have a comprehensive stress testing policy that is documented in detail and has been approved by the institution's top management. This policy must contain all important aspects of the stress testing process (detailed description of the applied method, comparison and utilisation of results, organisational units in charge, etc.). It is also important that the institution should have sufficient resources and an adequate pool of experts for stress testing. It should be noted that as a supplement to the various stress testing methodologies, a reverse stress test can also be performed. When a reverse stress test is applied, scenarios and parameters are sought which could potentially shake the institution (e.g. by causing a significant loss, loss of capital or a tense liquidity situation). The resulting parameters are then analysed based on the probability of their occurrence (monitoring). Although the application of this method is not mandatory, it may contribute to the development of more conscious risk management.

In order to assess systemic risks in a more reliable manner, the HFSA reserves the option to require the application of specific stress scenarios at the supervised institutions. The benefit of that exercise would be that the cross-checking of models and results would enable both the HFSA and the institutions to gain a more accurate picture of the institutions' risk exposures and the suitability of their stress-testing procedures.

Beyond the general considerations outlined above, the HFSA will observe and apply the *CEBS Guideline on Stress Testing (GL32)*, issued 26 August 2010, when forming an opinion on the stress tests of institutions.<sup>75</sup> The HFSA expects supervised institutions to study the referenced guideline in detail and strive for complying with its provisions.<sup>76</sup>

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<sup>75</sup> The referenced guideline replaces the 2006 CEBS guideline titled *Technical aspects of stress testing under supervisory review process (CP12)*. The CEBS cited the recent changes in processes as the reason for preparing the new guideline. These changes related in part to the stress testing practices of supervised institutions, to the characteristics of the financial and business environment and to the stricter requirements of supervisory authorities.

<sup>76</sup> CEBS guidelines are available at the following URL: <http://www.c-eps.org/Publications/Standards-Guidelines.aspx>





## 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:

- the prudent, reliable and efficient operation of the organization in compliance with statutes and internal regulations;
- the protection of the organization's assets and social goals, the economic interests of the clients and owners;
- 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.

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

Internal audit is a part of the institution's entire internal control system and, also includes built-in controls and managerial controls.

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, internal safeguards must be established and operated at group-level as well. When doing so, attention shall be paid to the particular features of the provision of service and operation by groups in all sub-areas that constitute the internal safeguards (internal governance and internal control functions).

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<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



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.

Furthermore, in respect of employees whose professional activities have a material impact on the institution's risk profile, institutions must establish remuneration policies and practices that foster effective risk management. The remuneration policy must strive for harmonising the personal interests of employees with the long-term interests of the institution.

In addition, the remuneration policy must also be consistent with effective and efficient risk management, foster the application thereof and it must not encourage the taking of risks that exceed the risk tolerance of the institution.

## **V.2 Internal governance<sup>77</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 organisational set-up**

The HFSA expects that the financial organisations and groups should function in an organisational set-up that is sufficiently transparent, and provides an adequate basis for the efficient and safe management of the institution/group, as well as of the outsourced activities, and for the exercising of monitoring and control functions, including especially risk management.

The reporting lines, as well as the distribution of responsibilities and competencies within the institution/group, and with regard to the outsourced activities, must be clear, precise, clearly defined, transparent, coherent, and must be able to prevent conflicts of interests and competencies within the organisation/group, and must be able to ensure management and enforcement. The development of the above, as well as its communication to the employees and

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<sup>77</sup> Here we present the Internal Governance guidelines elaborated by CEBS (GL 03) – the number of the referenced guideline is shown in brackets.



continuous operation is the primary responsibility of the management of the financial institution. In cases where the business reporting lines do not correspond to the structure of the institution or group in the legal sense of the word, the tasks and competencies of the individual areas must be unanimously defined and transparent.

The institution must ensure that the risk management function is organised in a way that facilitates the implementation of the risk policy and of the risk management procedures. More complex institutions should establish a risk management function for all major businesses. The management of the institution is expected to know and understand the organisational set-up of the institution/group, and to ensure that the organisational set-up is in harmony with the strategy and risk profile of the institution. In the case of group-level operation the management of the institution acting as the head institution must also know the relationships among the institutions that belong to the group, the operating risks for the entire group, deals within the groups, as well as the funding, capital and risk profiles of group-level operation under normal business conditions and in crisis situations.

### **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>78</sup>. In compliance with the legal requirements, institutions need to operate management bodies which ensure the efficient and prudent execution of management and supervisory functions within the institution/group<sup>79</sup>. The formal existence of these bodies alone is not considered sufficient by the HFSA; it expects the implementation, efficient operation of the management, monitoring and control functions, as well as the clarity and transparency of the applied practice.

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),

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<sup>78</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.

<sup>79</sup> The more detailed description of management bodies can be found in Volume III of the Validation Manual, which also contains a detailed description of the audit (supervision) and management functions. Further assistance is given by the relevant HFSA recommendation.



- 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)
- 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>80</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.

### **Remuneration policy**

In accordance with CRD III, the Act on credit institutions and financial enterprises, Government Decree 131/2011 and the expectations of the HFSA in connection with the remuneration policy<sup>81</sup>, the remuneration policy must be in harmony with the business strategy, objectives, values and long-term interests of the institution. The scope of the remuneration policy extends to the executive officials of the institution, as well as to employees fulfilling the risk assumption and control functions specified in the internal regulation, and to those employees that belong to the same remuneration category as the previously mentioned employees, and whose activities has a significant effect on risk assumption by the institution.

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<sup>80</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.

<sup>81</sup> Recommendation No. 3/2011 of the President of the Hungarian Financial Supervisory Authority on the application of the remuneration policy, which contains the provisions of CRD III, and the expectations of the CEBS Guidelines on Remuneration Policies and Practices (CP42) prepared on the basis of that directive. The CEBS Guidelines cover several such areas of remuneration that the CRD III includes as a new element in regulation. Furthermore, they provide detailed and practical guidelines in connection with the existing principles as well. This chapter includes the requirements of CRD III, which also form the basis for the Hungarian regulations.



## Internal control system

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 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>82</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 prevented or, if necessary, reported to the leader of the organisation concerned or to a member of senior management.

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.

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<sup>82</sup> Please refer to Volume III of the Validation Manual for a more detailed description of the credit risk control function.



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.

## **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.

#### **3. 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.).

During the identification and assessment of the risks the institution/group must use forward looking (e.g. stress tests) and back-looking tools with which it can detect risk concentrations as well. Forward-looking tools can be used for the identification of risks that may arise in crisis situations. Back-looking tools are suitable for the comparison of the risk profile and the risk appetite/risk toleration ability of the institution/group.

During the evaluation of the risks it is advised to take quality considerations (e.g. expert evaluations, presumptions and limitations of the risk assessment models) into account in addition to the quantitative information and data.

It is expected that the institution/group should possess a well defined, appropriately documented internal reporting system approved by the management of the institution for the risk management activity. The task of the internal reporting system is to ensure that the management of the institution, as well as persons/organisational units involved in risk management and the implementation of the risk control function should obtain adequate, timely, clear, understandable, relevant and usable information on the identification, assessment or evaluation and monitoring of the risks.

#### **4. 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 coverage 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>83</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...)

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.

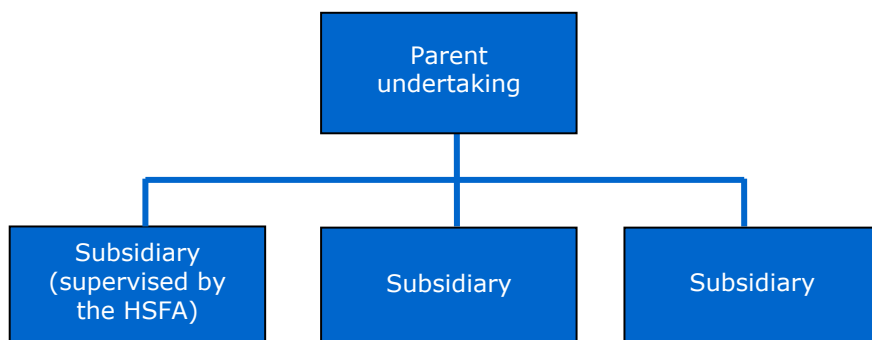
### **1. SREP at individual level**

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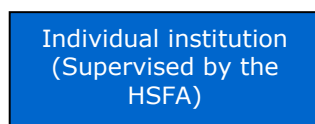
<sup>83</sup> A plan/actual comparison.



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>84</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.

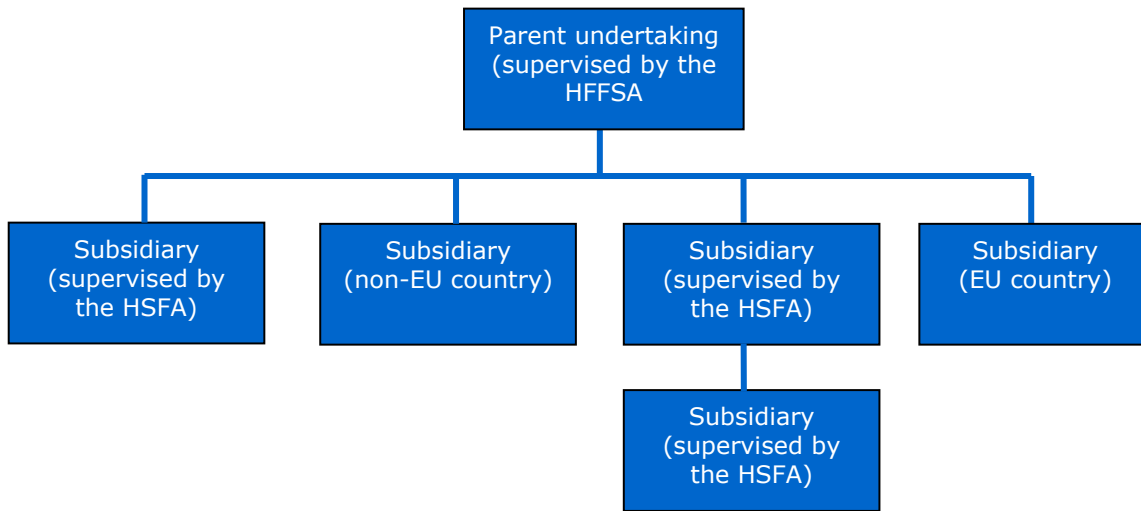
### 2.1. The group's EU-level parent undertaking has a seat in Hungary

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>85</sup>.

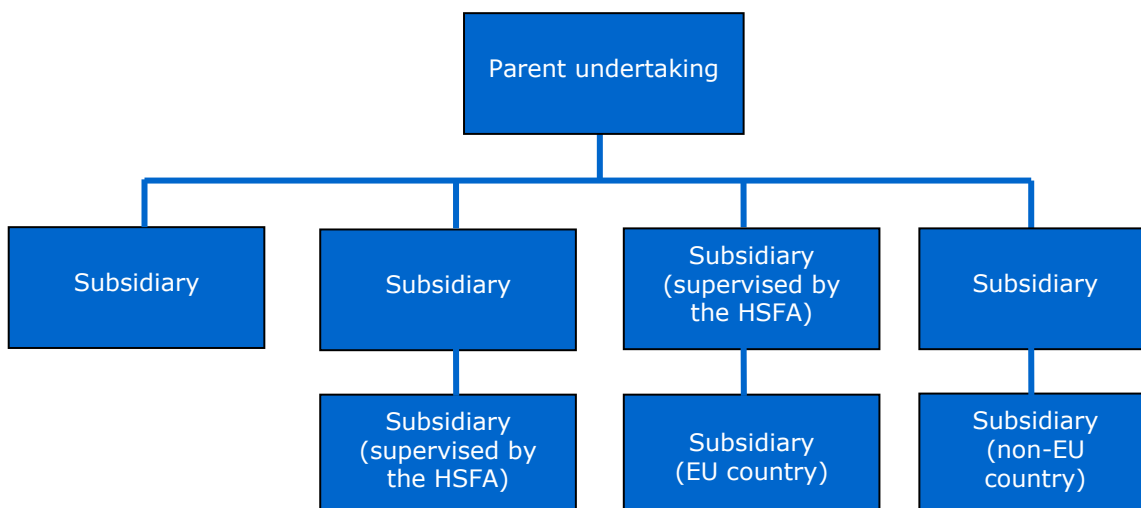
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<sup>84</sup> 2006/48/EC, Article 68 (2)

<sup>85</sup> 2006/48/EC, Article 71 (1)



If the group's EU-level parent undertaking has a seat in a country other than Hungary<sup>86</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>86</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.

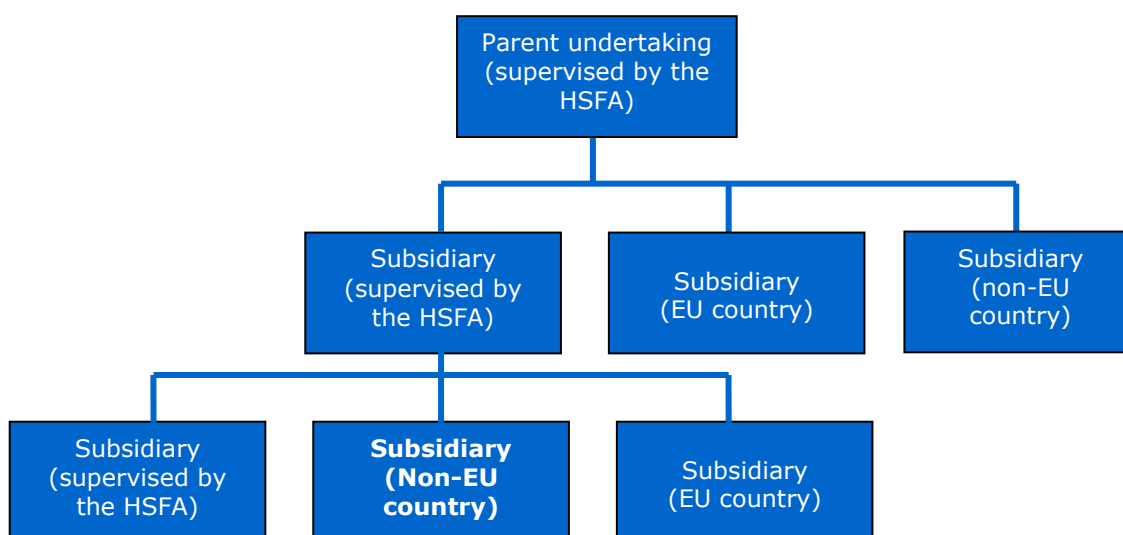


### The relation between EU-level and member state-level consolidated SREPs

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 solo institution 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>87</sup>.



### Cooperation with other supervisory authorities within the European Union (group SREP)

Like the validation process, the supervisory review and evaluation (ICAAP, RAS, SREP) of international 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. Cooperation is implemented through the establishment and operation of the supervisory colleges of international banking groups for which a dedicated CEBS guideline has been issued.<sup>88</sup> Supervisory colleges are led by the consolidating supervisor and consist of the supervisory authorities of group members that are subject to consolidation (in line with the operating structure of the cross-border banking group). Furthermore, the consolidating supervisory authority may also decide to invite the national supervisors of significant

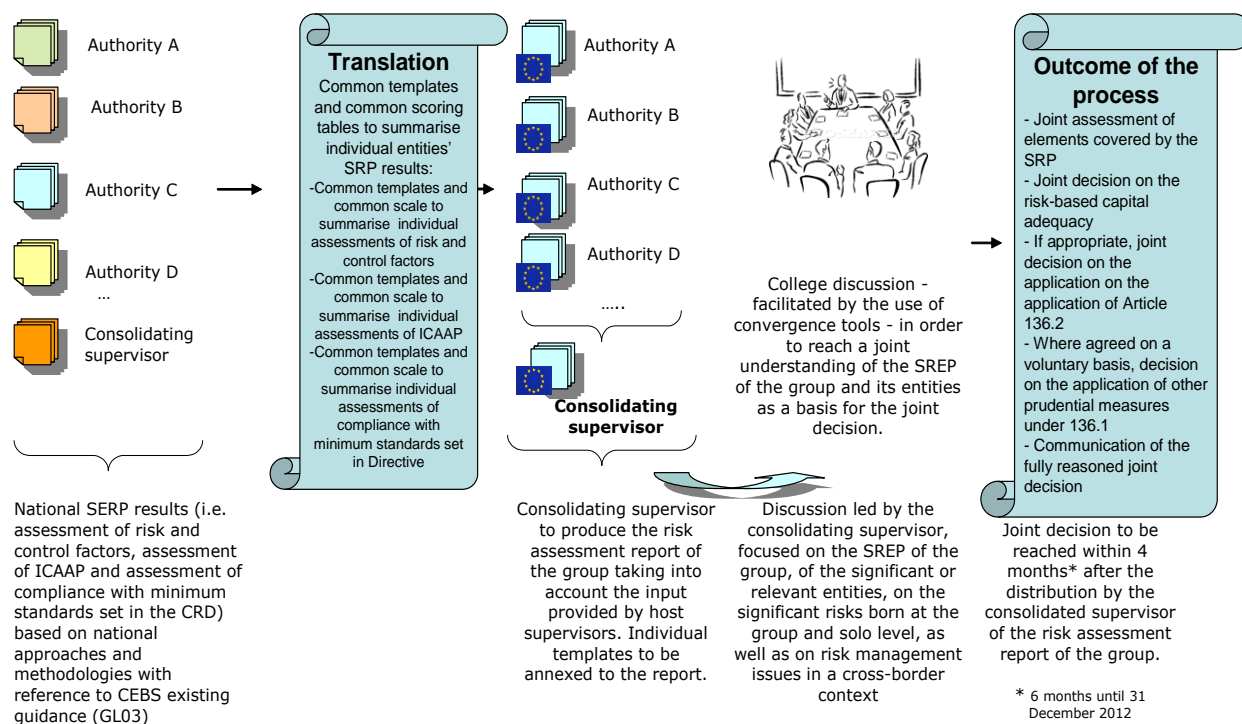
<sup>87</sup> 2006/48/EC Article 73 (2)

<sup>88</sup> CEBS guidelines for Operational Functioning of Colleges GL 34

subsidiaries, supervisors of non-EU countries and non-banking (e.g. insurance) supervisors to join the college.

The national supervisor members of the supervisory colleges of cross-border banking groups review the ICAAP of individual banking group members, assess their risks (using the respective national risk assessment methodologies) and check their compliance with the CRD requirements. Host supervisors submit a report to the consolidating supervisor outlining the ICAAP SREP they performed, the resulting risk scores and their assessment of compliance with CRD requirements. The consolidating supervisor should generate a reporting template with standardized format, contents and scoring principles and require its application from college member supervisors. The CEBS GL 39 document<sup>89</sup> is designed to assist this process by providing guidance on the format, content and assessment of reporting templates to be used by the colleges. Supervisory college members jointly analyse the risks, risk management and capital requirement of the banking group and its relevant members, identify their risks and assess risk controls (on an individual, sub-consolidated and consolidated level) then make a joint decision on risk-based capital adequacy.

The chart below shows the process for the joint assessment and decision on the risk-based capital adequacy of banking groups to be performed in the supervisory colleges of banking groups:



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

<sup>89</sup> CEBS guidelines for Joint Assessment of the elements covered by the supervisory review and evaluation process (SREP) and the joint decision regarding the capital adequacy of cross border groups GL 39



- 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 HFSA 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?
- 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>90</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 HFSA as host supervisor can initiate the setting of a mandatory capital add-on based on Pillar 2 provisions<sup>91</sup>.

Based on guidance received from the consolidating supervisor that leads the college, the national supervisors simultaneously request the submission of the ICAAPs prepared by the members of cross-border banking group. Using their own national risk analysis methodology, each national supervisor reviews the ICAAP submitted by the institution, assesses inherent risks and risk control processes and reviews the institution's capital adequacy with regards to CRD requirements. As common interpretation and comparison is required within the college, member supervisors produce assessment reports with standardized format and contents (on solo, sub-consolidated and consolidated levels) for the consolidating supervisor in which they also provide scores on a scale of 1 through 4.

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<sup>90</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>91</sup> Based on the Act on Credit Institutions and the Act on Capital Markets



## 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.

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>92</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.

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.

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.

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 internal capital requirement calculation

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

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<sup>92</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.





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.

- 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.



## 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. Disclosure and transparency<sup>93</sup>

As a supplement to the first two pillars, Pillar 3 aims at compliance with the disclosure requirement.<sup>94</sup>

The aim of disclosure is to enable market players to understand that the given institution has sufficient internal capital for its current and future activities, i.e. to be present during the operation of the institutions as a sort of a regulator of publicity. Since the most efficient method for gaining and maintaining consumer trust, and indirectly it forces the institution to demonstrate a reasonable risk assumption behaviour. The significance of the 3<sup>rd</sup> pillar is also indicated by the fact that the competent authorities acknowledge developed methods requiring permits only if the credit institutions disclose the information thereof to the general public. Consequently, the range of information to be disclosed is wide.<sup>95</sup>

### The basic requirements of disclosure:

- 1) So that the market players could obtain adequate information, the institutions must disclose their risk profiles, their risk management procedures, and capital positions.
- 2) The credit institutions must disclose the information specified by law on an individual and consolidated basis alike.
- 3) The institutions must possess regulations to ensure compliance with the disclosure requirements.
- 4) Disclosure must be made at least once a year.
- 5) The institutions must evaluate the accuracy of their disclosures (including the frequency of disclosures, data checking, and whether the disclosures provide market players with comprehensive information on the institution's risk profile.)
- 6) Within the framework of disclosure the institution may disclose the information on its own website, or on the HFSA's website, if the HFSA provides such service for compliance with disclosure obligations specified by law.
- 7) The disclosed information must be clear, accurate, up-to-date and material.

### Among other things, disclosure must extend to the following:

- a) principles and strategy pertaining to the internal capital adequacy assessment (including the strategies and processes pertaining to the management of individual risks);
- b) the structural and organisational set-up of the relevant risk management function or other adequate provisions;
- c) the scope and nature of risk reporting and assessing systems;
- d) strategies and processes for the monitoring of tools used for risk mitigation and hedging;
- e) the major characteristics of all solvency capital elements and their components (compliance with the legal requirements);

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<sup>93</sup> CRD Chapter 5

<sup>94</sup> Government Decree 234/2007. (IX. 4.) on compliance with the disclosure requirement of credit institutions; Government Decree 164/2008. (VI. 27.) on the public disclosure of information relating to risk taking and risk management by investment firms

<sup>95</sup> Annex XII to the CRD: Technical criteria on transparency and disclosure



- f) summary on that method that the institution uses to check whether there is adequate internal capital for the current and future activities.

### **Disclosure requirement related to internal governance<sup>96</sup>**

The transparency requirement pertaining to internal governance means that market players should possess adequate information to determine whether the managing bodies fulfil their roles efficiently in the management of the institution. To this end the institutions must disclose material and comprehensive information on internal management.

Institutions must disclose the following information in connection with their internal management:

- the organisational structure and policy of management (including the objectives), the structure and organisation of the managing bodies, the institution's system of incentives and remuneration;
- the objective, nature, extent and economic content of transactions carried out with subsidiaries and affiliates, and an explanation of how this affects the institution;
- the methods used to determine the business and risk strategies, and the factors that are taken into account;
- the framework of internal control, and the organisation and major tasks of these control functions, and the method used by the management to monitor these activities.

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<sup>96</sup> EBA Guidelines on Internal Governance (GL44)



## X. List of Documents

In the course of the supervisory review, institutions are required to present the ICAAP they are using. The official ICAAP documentation submitted to the HFSA must always include the presentation of implemented methods that have been approved by top management.

In order to enable an accurate assessment, the data in the submitted documentation must always reflect the latest information. In a contrary case (i.e. if it has no access to updated figures and methodologies), the HFSA will have no choice but to apply additional conservatism when forming an opinion on the capital adequacy of the institution.

This chapter only provides suggestions regarding the chapters to be considered for inclusion in the submission. Both the format and the contents of the document are for the institution to decide on. However, when compiling the documentation, institutions must bear in mind that they have to present and defend their capital calculation methods and results. It is a supervisory expectation regarding the submitted document that it cites all arguments for defending the calculations of the institution.

### Summary:

- Presentation of institution-specific and group-level risk strategy as a separate document (The elements are detailed in chapter III.1. The documentation of the ICAAP must sufficiently present the organisational, governance and supervisory functions of risk management along with the related internal audit mechanisms.).
- Brief presentation of the major activities/business lines of the institution/group. In case of groups, it should be specified which group members are covered by the ICAAP.
- Overview of the applied internal capital calculation approaches and the potential changes thereof.
- Documentation of a use test. The institution must present the areas where it uses the results of the ICAAP. This presentation can impact substantially the supervisory assessment of the reliability of capital calculations.
- The relation between ICAAP results and available capital.
- Evaluation of the compliance of the institution's risk management methods.
- Presentation of the institution's internal self assessment (GAP analysis) and the resulting action plans, presentation of the results of annual ICAAP revisions.
- Brief assessment of the institution's material risks, presentation of changes since the previous assessment.
- Time of the capital adequacy assessment exercise, specification of group members that it covered, name of persons who performed and 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,
- If Pillar 1 and Pillar 2 capital requirements are different, differences must be reconciled in a detailed, itemised manner,
- 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).

As a requirement concerning the submitted documentation, the general methodology section (theory, models, etc.) and the specific numeric results (capital figures, model parameters etc.) must not be separated for such separation would cause difficulties in the assessment of quantitative results and the examination of capital adequacy. The document must present in detail how the capital requirement of a specific risk type was calculated. The HFSA is only able to evaluate the relevant risk capital requirement in the light of the applied models. Without knowing these models, the HFSA has no choice but to have reservations regarding the presented numeric results. In case the institution covers a certain risk type by way of processes (and not capital), it is required to support this decision with convincing arguments (e.g. strategy and reputation risks may belong here).

#### **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 (on advance notification) except if the ICAAP mechanisms underwent material changes. If so, the HFSA must be informed of the major changes.



## **Annexes:**

Annex 1: Documents of international organizations

Annex 2: Related HFSA documents (recommendations and methodological guidelines)

Annex 3: “Internal model to be applied for calculating foreign exchange rate risk”



## Documents of international organizations

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

<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2006:177:0001:0001:EN:PDF>

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

Guidelines on the Application of the Supervisory Review Process under Pillar 2 (25 January, 006) CEBS GL 03 revised

<http://www.eba.europa.eu/getdoc/00ec6db3-bb41-467c-acb9-8e271f617675/GL03.aspx>

CEBS guidelines are available at the following URL:

<http://www.c-eps.org/Publications/Standards-Guidelines.aspx>

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

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

Technical aspects of stress testing (14 December 2006) CP12

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

“Guidelines on remuneration policies and practices” CP23

“CEBS Principles for Risk Management” CP 24

“CEBS Guidelines on the management of concentration risk under the supervisory review process” (2 September 2010) CP 31

“Guidelines for the operational functioning of colleges” CP34

“Guidelines on the Management of operational risk market-related activities” (CP35)

“Guidelines on Remuneration Policies and Practices” CP42

“Guidelines for Joint Assessment of the elements covered by the supervisory review and evaluation process (SREP) and the joint decision regarding the capital adequacy of cross border groups” CP 39

CEBS’s position paper on the recognition of diversification benefits under Pillar 2

“CEBS revised guideline on stress testing” CP 32





“Guidelines on liquidity buffers” CP28

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)



## **Related HFSA documents (recommendations and methodology guidelines)**

### *Recommendations:*

Recommendation No. 6/2012. (IV.17.) on the management of incremental exposures within the framework of the interpretation of the high-risk assumption rules

Recommendation No. 1/2012. (I. I6.) on the management of risks that arise during trading activities

Recommendation No. 3/2011. (VIII. 04.) on the application of the remuneration policy

Recommendation No. 2/2011. (VII. 20.) on the interpretation of the revised regulation on high-risk assumption  
Recommendation No. 1/2010 (19 Jan.) on the application of a remuneration policy

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 Emerging 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:*

Methodology Guidelines No. 6/2010 on the measurement and management of liquidity risk

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