Internal Capital Adequacy Assessment Process (ICAAP)

METAC – USAID Regional Workshop on Basel III: Challenges and Implications

Cairo – Egypt
October 16 – 18, 2012
INTRODUCTION

• A supervisory objective is that a bank should cope with severe stress conditions

• The first answer is the regulatory capital but it is not sufficient.

• So the need to address, potential capital issues (concurrently with liquidity issues);

• Thanks to ICAAP outcomes, Banks calculate and calibrate their capital needs and resources in order to continue operations throughout a period of severely adverse conditions.
INTRODUCTION

• Basel II: a prerequisite?
• What is ICAAP?
• How does it work?
• How to assess it?
WHAT HAVE BEEN THE STEPS OF DEVELOPMENT OF SUPERVISORY METHODOLOGIES?

90’s learning phase
- Separate development of off-site and on-site methodology
- Rule based supervision
- On-site inspections after problems identified

Mid 90’s – 2006
- Risk based supervision implementation
- Systematic approach

2006 – 2007
- Basel II implementation process
- New version of overall RAS and full supervisory procedures

2008 – 2010
- Adjustment of developed methodology under Basel II concept

2010 – ..
- Convergence - Overall SREP concept completed
- RAS-ICAAP interaction
BASEL II AND III: STILL THREE PILLARS

– Pillar 1: Quantitative assessment of capital and liquidity.

– Pillar 2: Supervisory Review and Evaluation Process (SREP) and Internal control system and Internal Capital Adequacy Assessment Process (ICAAP).

– Pillar 3: Detailed public disclosure on risks and capital adequacy.
PILLAR 2

SUPERVISORY REVIEW PROCESS

ICAAP
- Identify and assess all material risks;
  identify controls to mitigate the risks
- Identify amount and quality of internal capital in relation to risk profile, strategies and business plan
- PRODUCE ICAAP NUMBER AND ASSESSMENT

SREP
- Identify, review and evaluate all risk factors and control factors/RAS
- Assess, review and evaluate the ICAAP
- Assess, review and evaluate compliance with minimum standards set in Directive
- SREP CONCLUSIONS

Supervisory evaluation of on-going compliance with minimum standards & requirements

ICAAP process/results fully satisfactory
ICAAP process/results not fully satisfactory

ICAP process/results not fully satisfactory
Whole range of available prudential measures (Art. 136)

CAPITAL
- Pilar 1 minimum regulatory capital
- Capital allocated for Pillar 2
- Specific Own funds requirement

Systems & controls
Provisioning
Restriction of business
Reduction of inherent risk

*Identify risk factors and control factors/RAS
*Assess, review and evaluate the ICAAP
Assess, review and evaluate compliance with minimum standards set in Directive

*Narrow scope supervisory review
Within the institution’s internal governance framework, the ICAAP is a process to ensure that the bank:

- Holds adequate internal capital in relation to the institution’s risk profile as well as estimates of resulting capital needs under stress conditions
- Which estimates are built upon sound risk management systems and develop them further. Adequately identify, measure, aggregate and monitor the institution’s risks.

WHAT ARE THE MAIN ICAAP EXPECTATIONS?
WHAT ARE THE RELATIONSHIPS BETWEEN ICAAP AND GOVERNANCE?

- **Corporate governance**: is a broad concept that can be described as the set of relationships between an institution, its management, its shareholders and other stakeholders.

- **Internal governance**: is a limited but crucial component of corporate governance, focusing on the internal structure and organization of an institution including risk management.

- **ICAAP**: identify amount and quality of internal capital in relation to risk profile (for all material risks) and strategies.
WHO IS RESPONSIBLE FOR THE ICAAP?

• It is the responsibility of the institution to define and develop its ICAAP.
  
  – The onus is on the institution to demonstrate, during its dialogue with its supervisor, that its internal capital assessment is comprehensive and adequate to the nature of risks posed by its business activities and its operating environment.
  
  – The framework under which an institution should develop its ICAAP is designed to be risk based.
DOES THE PRINCIPLE OF PROPORTIONALITY APPLY?

The principle of proportionality shall apply:

- Methodologies used in measuring/assessing risks and in the determination of the related internal capital
- Type and nature of stress tests
- Determination of total internal capital
- Organizational structure of the risk control system
- Scope and detail of ICAAP reporting to the Supervisor
ICAAP BUILDING BLOCKS

The new framework emphasises the importance of capital planning, but also the importance of management, and other qualitative aspects of risk management.

When assessing their capital needs, all institutions should be able to take into account the impact of economic cycles, and sensitivity to other external risks and factors.

For larger and/or more complex institutions this may mean developing an appropriately detailed and rigorous stress and scenario testing framework.
What is the overall process?

- Credit risk
  - Settlement risk
  - Residual risk
  - Other risks associated with securitisation and concentration risk
- Market risk
  - Interest rate risk arising from non-trading activities
- Operational risk
  - Liquidity risk
  - Economic and regulatory environment
- Forward capital planning
  - Business risks (earnings and costs)
  - Strategy
  - Stress test
- Correlation and diversification
- Internal capital
- Peer group comparison

Supervisory outcomes
- Prudential measures
  - Capital adjustment
  - Provisioning
  - Systems & controls
  - Business restrictions
  - Reduction of inherent risk

Key:
- Block 1
- Block 2 & 3
- Block 4
### WHAT IS THE SCOPE OF RISKS?

<table>
<thead>
<tr>
<th>Types of risks</th>
<th>EC quantitative modelling</th>
<th>EC considered as an adequate answer</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Pillar I Risks</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Credit &amp; Counterparty Risks</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Market Risks</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Operational risks</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Equity Risks</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td><strong>Additional refinements to Pillar I Risks</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>IRC/CRM/Stressed VaR</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Securitization</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td><strong>Pillar II Risks</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Concentration/Contagion Risks</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Overall IR Risks</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Funding Liquidity Risk</td>
<td>Y (partially)</td>
<td>N</td>
</tr>
<tr>
<td>Business Risk</td>
<td>Y/N</td>
<td>Y/N</td>
</tr>
<tr>
<td>Reputation/Strategic Risk</td>
<td>N</td>
<td>N</td>
</tr>
<tr>
<td>Others (Insurance,… )</td>
<td>Y/N</td>
<td>Y/N</td>
</tr>
</tbody>
</table>
ICAAP METHODOLOGIES

Multiple methods
Institutions have developed various methodologies for assessing their risk exposure and setting capital against it.

Multiple methods
The introduction of the ICAAP is not meant to suggest that existing methods, which have met the needs of institutions over the years, necessarily need to be replaced.

Multiple methods
However, all institutions should have adequate processes in place.
ICAAP METHODOLOGIES

- Regulatory capital
- Internal methodology (eg. ECM)
- Stress testing and scenario analyses
- Rating agency methodologies
- Other

Methodologies
ECONOMIC CAPITAL MEASURE : AMA EXAMPLE

- Data concerning the internal losses (classified per business area or per type of event)
- External losses Data (OrX, Fitch, Opvantage)
- Analysis of the scenarios (extreme or normal / habitual)
- Environment and internal control

Ex ante collection and processing of data

Distinction of homogeneous risk classes

Adjustments (inflationary impact)

Choices (extraordinary losses)

Quantification (e.g. Bayes networks, result sheets)
ECONOMIC CAPITAL MEASURE : AMA EXAMPLE

1. Distinction of homogeneous risk classes
   - Sources of weighted data (Bayes combination)
     - Statistical data models: 3 approaches (LDA, competence base, hybrid)
     - (allocation choice, estimate of the parameters, adjustment and independence tests, extreme data)
     - Estimate of all losses per class of homogeneous risks

2. Aggregation of the loss allocation.
   - Estimate of the level of confidence at 99.9%
   - Calculation of anticipated and exceptional losses

3. Capital requirements
   - Risk mitigation

4. Environment of the model
   - A posteriori control of the result, likelihood of the result, review of the stability model (stress-tests)
     - Procedure for the internal model’s validation, understanding of Management Use test

5. Allocation
   - Allocation method per subsidiary, business line, operational line

Regular updating of the AMA model
• Rely on a credible range of adverse scenarios, including:
  
  – Macroeconomic Stress (e.g. unemployment, real estate crash, fiscal crisis)
  
  – Market-wide Stress (e.g. disruption of interbank funding markets)
  
  – Idiosyncratic Stress (e.g. severe deterioration in firm’s own portfolios; firm-specific rating downgrade/funding issues, etc)
## CAPITAL CALCULATION

<table>
<thead>
<tr>
<th>Pillar 1</th>
<th>ICAAP Pillar 1 risks adjustment</th>
<th>ICAAP other risks</th>
<th>Stress test</th>
<th>Diversification</th>
<th>Pillar 2 Internal capital</th>
<th>Regulatory capital/ internal capital</th>
</tr>
</thead>
<tbody>
<tr>
<td>100</td>
<td>-25.7</td>
<td>+36.7</td>
<td>+20</td>
<td>-35</td>
<td>96.0</td>
<td>1.04</td>
</tr>
</tbody>
</table>


COMPARISON OF ICAAP MEASURES AND REGULATORY CAPITAL
For credit risk
A comparison to be made very carefully
  – Scope of risks differs
    (RC relates to Pillar 1 risks, whereas EC extends to Pillar 2 risks)
  – Assigned resources differ
    (RC is covered by Total capital, whereas EC is covered by Tier 1)

But which proves worthwhile
  – At the bank-wide, cross-risk level
  – At the risk-type level
ICAAP USE TEST

- The ICAAP should be embedded in the institution’s business and organisational processes, and

- not simply regarded as an add on that permits the management body (both supervisory and management functions) to ‘tick a box’ and indicate that supervisory expectations nominally have been met.
ICAAP USE TEST

DATA INPUTS AND SYSTEMS
ICAAP USE TEST

• The governance and internal control environment applied to the ECM framework
  • Involvement on the part of the senior management
  • Internal validation

• The use of ECM outputs for management purposes and capital planning
ICAAP USE TEST

• AREAS OF USE
  – CAPITAL ADEQUACY ASSESSMENT OF BUSINESS LINES,
  – CAPITAL BUDGETING, CAPITAL ALLOCATION AND INTERNAL REPORTING
  – PERFORMANCE ANALYSIS AND CREDIT PORTFOLIO MANAGEMENT WITHIN THE CORPORATE AND INVESTMENT BANKING BUSINESS LINE
  – CAPITAL PLANNING
  – CAPITAL ADEQUACY ASSESSMENT OF LEGAL ENTITIES
  – LIMIT SETTING
  – COMPENSATION
  – PRICING
  – DISCLOSURE
ICAAP STRUCTURE AND GOVERNANCE
(Example)
ICAAP ASSESSMENT

On-site missions on Economic Capital Models

The main following objectives are assigned:

• to understand the overall rationale, structure and methodology of the bank’s ECM approach;

• to assess how this framework fits into the bank-wide risk management system and how it is being used internally;

• to provide the basis for a comparison of the results of the ECM outputs and the regulatory capital requirements assessed according to Basel II, Pillar I.
ICAAP ASSESSMENT

- ECM framework is the quantitative component of a bank’s Internal Capital Adequacy Assessment Process (ICAAP).
  - Contrary to Market VaR, IRB or AMA models, supervisors’ agreement is not required for the use of EC models by a bank.
  - Nevertheless, after the on-site mission, a list of recommendations is issued by the supervisor.

- For the time being, ECM could be implemented only by a limited number of our banking groups.
MAIN CHALLENGES

- Improvements are slow, for many reasons:
  - importance of the work to be done (improvement of IT feeding circuits for instance)
  - no high priority was given until now by the banks’ top management; one of the justifications frequently invoked is the need to wait for the forthcoming changes in the regulatory framework, the detailed features of which are not yet completely finalized

- As for use-tests, EC outputs could be exploited on a limited scale inside the bank:

  => If the bank itself does not fully believe on the quality and reliability of its own figures, how can the supervisors give credence to them?
MAIN CHALLENGES : MODELLING METHODOLOGIES

- For each bank, assessing the soundness of its EC modelling and the pertinence of its EC outputs is a very difficult task, due to:
  - the multiplicity of models in use for each class of risks
  - the multiplicity of strong assumptions, more or less justified by the specificities of the bank
  - the lack of a sound control *ex post* of the performances of the EC models

- Once the shortcomings or deficiencies being pointed out, evaluating the respective bias introduced by them in EC results is an even harder task for the supervisors
MAIN CHALLENGES : COMPARISON

Comparison between banks of their respective EC estimations are also difficult, due to:

- a great diversity of EC models in use for each class of risks,
- a great diversity in the underlying assumptions
- specificities of each bank as for its clienteles, businesses…
CONCLUSION

• The bank’s ECM framework
  – still requires further work:
    • governance (clear management endorsement, validation…)
    • documentation of the overall structure and rationale
    • Usage
  – but clearly represents a very sensible ICAAP that needs consideration in the SREP context:
    • EC estimates to be considered as a valuable indication of riskiness in relative terms (over time, as well as across risk-types and business lines)
    • even though they call for conservative adjustments to cater for modelling assumptions and shortcuts, data scarcity or uncertainty
  – the role of the economic capital models will certainly increase over time, as understanding and confidence in banks’ models will increase
ANNEX 1:
PRUDENTIAL FRAMEWORK
BASEL II AND III: STILL THREE PILLARS

Pillar I Ratios
- Capital Ratios
  - Capital
    - Tier 1
    - Tier 2

Pillar II Supervisory Review Process
- Liquidity Ratios
  - LCR
  - NSFR

Pillar III Market Discipline (reporting)
- Leverage Ratios
  - Operational
    - BIA
    - Standard
    - AMA

Stressed VAR
- IRC
- VAR
- IMA
- Standard
- WWR
- CVA
- CCR
- Derivative Exposure
- EPE
- CEM
- IRB A
- IRB F
- Standard
- Stressed VAR
- IPE
- CEM
- EPE

Source: Moody’s Analytics
ANNEX 2:

JOINT ASSESSMENT OF THE ICAAP PROCESSES AND METHODOLOGIES FOR CROSS BORDER GROUPS
**COMMON TEMPLATE FOR TRANSLATING THE ICAAP PROCESS ASSESSMENT**

<table>
<thead>
<tr>
<th>Entity</th>
<th>Score</th>
<th>Explanation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall ICAAP score</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Where applicable:*

| ICAAP scope, including:                         |       |             |
| entities covered (organisational scope)         |       |             |
| risks covered                                   |       |             |

| ICAAP methodologies                             |       |             |

| Diversification assumptions\(^{25}\)            |       |             |

| Stress testing framework                        |       |             |

| ICAAP governance and internal control           |       |             |

<p>| Major deficiencies and observations             | Narrative information |
| Conclusions and explanations                    | Narrative information |</p>
<table>
<thead>
<tr>
<th>Scores</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 (&quot;Good&quot;)</td>
<td>Methodologies and processes are of good quality. They make it possible to determine a precise and accurate estimate of internal capital needs both overall and per risk factor, where applicable.</td>
</tr>
<tr>
<td>2 (&quot;Satisfactory&quot;)</td>
<td>Methodologies and processes are of satisfactory quality. They make it possible to determine an estimate of internal capital both overall and per risk factor, where applicable, which - if not precise - is conservative and prudent.</td>
</tr>
<tr>
<td>3 (&quot;Unsatisfactory&quot;)</td>
<td>Methodologies and processes are of unsatisfactory quality. They potentially underestimate the internal capital needs both overall and per risk factor, where applicable.</td>
</tr>
<tr>
<td>4 (&quot;Largely insufficient&quot;)</td>
<td>Methodologies and processes are largely insufficient. They significantly underestimate the internal capital needs both overall and per risk factor, where applicable.</td>
</tr>
</tbody>
</table>
### Summary Table of the ICAAP Process Assessment

<table>
<thead>
<tr>
<th>Entity</th>
<th>Entity X / Sub-group X</th>
<th>Entity Y / Sub-group Y</th>
<th>Entity Z / Sub-group Z</th>
<th>GROUP TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall ICAAP score</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Detailed score (where applicable):</strong></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>ICAAP scope, including:</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>entities covered (organisational scope)</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>risks covered</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ICAAP methodologies</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Diversification assumptions</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Stress testing framework</td>
<td></td>
<td></td>
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<tr>
<td>ICAAP governance and internal control</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Major deficiencies and observations</td>
<td>Narrative information</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Conclusions and explanations</td>
<td>Narrative information</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>
ANNEX 3:

DETERMINATION OF THE ADEQUATE LEVELS OF OWN FUNDS AT THE GROUP AND ENTITIES LEVELS
**COMMON TEMPLATE TO REPORT THE PRELIMINARY INDIVIDUAL RESULTS OF THE RISK-BASE CAPITAL REQUIREMENTS**

<table>
<thead>
<tr>
<th>Entity:</th>
<th>Score (1)</th>
<th>Pillar 1 regulatory capital requirements (2) (amount)</th>
<th>ICAAP capital estimate (3) (amount)</th>
<th>SREP capital estimate (4) (amount)</th>
<th>Comments and explanation / TOTALS (5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall score</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Financial position</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Risk strategy, risk tolerance/appetite, corporate and internal governance</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Credit risk</td>
<td></td>
<td>Where applicable</td>
<td>Where applicable</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Risks related to risk transfer through securitisation</td>
<td></td>
<td>Where applicable</td>
<td>Where applicable</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Market risk</td>
<td></td>
<td>Where applicable</td>
<td>Where applicable</td>
<td></td>
<td></td>
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<tr>
<td>Operational risk</td>
<td></td>
<td>Where applicable</td>
<td>Where applicable</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Concentration risk (intra- and inter-risk)</td>
<td></td>
<td>Where applicable</td>
<td>Where applicable</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Liquidity risk</td>
<td></td>
<td>Where applicable</td>
<td>Where applicable</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interest rate risk from non-trading activities</td>
<td></td>
<td>Where applicable</td>
<td>Where applicable</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other risk factors (please specify)</td>
<td></td>
<td>Where applicable</td>
<td>Where applicable</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ICAAP score</td>
<td></td>
<td>Where applicable</td>
<td>Where applicable</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Compliance with CRD requirements</td>
<td></td>
<td>Where applicable</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Effect of diversification benefits (intra- and inter-risk)</td>
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<td>Where applicable</td>
<td>Where applicable</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stress testing buffer</td>
<td></td>
<td></td>
<td>Where applicable</td>
<td>Where applicable</td>
<td></td>
</tr>
<tr>
<td>Total P1 capital requirement /ICAAP capital estimate/SREP estimate</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Either ratio or amount</td>
</tr>
<tr>
<td>Total amount of available regulatory own funds</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Either ratio or amount</td>
</tr>
<tr>
<td>Other financial resources to cover ICAAP estimates (amount)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Either ratio or amount</td>
</tr>
</tbody>
</table>
SUMMARY INFORMATION ON RISK-BASED CAPITAL ADEQUACY OF GROUP

<table>
<thead>
<tr>
<th>Available regulatory own funds (amount or %)</th>
<th>Entity X/ Sub-group X</th>
<th>Entity Y/ Sub-group Y</th>
<th>Group total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Other financial resources to cover ICAAP estimates (amount or %)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pillar 1 regulatory capital requirements (amount or %)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ICAAP capital estimates (amount or %)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SREP capital requirements (amount or %)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>