МСФО 9. ГЛОБАЛЬНЫЙ ОПЫТ И РОССИЙСКИЕ РЕАЛИИ

24 НОЯБРЯ 2016
МСФО 9 ГЛОБАЛЬНЫЕ ИЗМЕНЕНИЯ

Почему важна отчетность по МСФО?

Не только для внешнего пользователя

Сложности при переходе

Forward-looking МСФО 9 vs Базель 2

МСФО 9 – повод отладить многие процессы

Быстро реагировать

Не утонуть в рутине

Три стадии обесценения
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<tr>
<td>Светлана Белоус</td>
<td>Руководитель Практики управления рисками, SAS Россия / СНГ</td>
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<tr>
<td>Рензо Траверсини</td>
<td>Директор центра компетенции SAS по управлению рисками в регионе EMEA/AP</td>
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<tr>
<td>Мартим Роша</td>
<td>Директор по бизнес-решениям центра компетенции SAS по управлению рисками в регионе EMEA/AP</td>
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<tr>
<td>Михаэль Куниш</td>
<td>Партнер Практики по управлению финансовыми рисками KPMG</td>
</tr>
<tr>
<td>Виталий Украинский</td>
<td>Старший менеджер Практики по управлению финансовыми рисками, KPMG</td>
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ADDRESSING THE IFRS9 STANDARD WITH SAS® EXPECTED CREDIT LOSS

RENZO TRAVERSINI, MARTIM ROCHA
RISK BUSINESS CONSULTING – RQS DIVISION
NOVEMBER 2016
Welcome!

- Martim Rocha, Director, EMEA Risk Business Consulting, Global IFRS9 leader
- Renzo Traversini, Senior Director, EMEA Risk Business Consulting
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RISK MANAGEMENT IS A CORE STRENGTH AND TOP FOCUS AREA

Acknowledged leader in Risk Management Solutions

Deployed in 50+ countries by 1,400+ organizations

Top 3 vendor for the 7th consecutive year (2016)

Ranked as a category leader for:

- Risk Data Aggregation and Reporting (2016)
- Credit Risk Analytics Solutions (2014)
- Solvency II Solutions (2014)
PRIORITY RISK SOLUTION OVERVIEW

1. Stress Testing
   End-to-end solution to manage models, implementation, and orchestration

2. IFRS 9 / CECL
   Open framework to deliver comprehensive results for financial reporting

3. Model Risk Management
   Model governance platform to manage, analyze and report on model lifecycle

4. Regulatory Risk Management
   Integrated platform for RWA and Liquidity Risk calculations and reporting

5. Risk Data Aggregation and Reporting
   Comprehensive data management, analytics, reporting and governance

6. Credit Scoring
   Industry leading platform to build and monitor credit scorecards

7. Insurance Risk
   Platform designed to provide risk, solvency and profitability reporting
PRIORITY RISK SOLUTION OVERVIEW

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AGENDA

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4. Closing remarks
IFRS 9 OVERVIEW  WHAT IS IT?

• IFRS9 provides guidance for accounting of financial instruments and comprises three components:
  • classification & measurement: defines which valuation approach should be used for which balance sheet items
  • hedge accounting: redefines requirements that allow the use of hedge accounting
  • impairment calculations for allowances: moves from incurred loss (IAS39) to expected credit loss (IFRS9) “backward looking” vs. “forward looking”

• Expected to have an impact on income and capital ratios
• Principles based guideline creates uncertainty/debate around impairment rules
IFRS 9 / CECL introduce significant complexities and uncertainties:

- Required enhancements to models and processes
- Interpretation of principle-based standards
- Potential hits to income and capital
- Earnings volatility

Necessitates coordination of work efforts in a highly controlled transparent environment:

- Model development
- Model execution & exploration
- Production & workflow
- Reporting & analytics
IFRS 9 OVERVIEW

NEW REQUIREMENTS / NEW CHALLENGES

Data Collection

- New Information
- Individual Account Level
- Forecasts / Historical
- Segmentation
- Individual Asset Level

- Massive Amount Data
- More Granular Data

Forward Looking Calculations

- Financial Impact
- Increased Measurement complexity
- Additional Data Collection
- More Risk Models

- New Analytical Models

Governance

- Documentation
- Governance
- Change Control
- Regulatory Capital forecast
- Model Management

- New Control Framework

Audit Preparation

One of the most challenging areas of an IFRS 9 implementation will be aligning the banks interpretation with what is deemed acceptable by the auditor and regulator.

- Risk and Finance Integration
OVERVIEW OF PRINCIPLES

- 1 - Governance
- 2 - Data & IT Architecture
- 3 - Accuracy & Integrity
- 4 - Completeness
- 5 - Timeliness
- 6 - Adaptability
- 7 - Accuracy
- 8 - Comprehensiveness
- 9 - Clarity & Usefulness
- 10 - Frequency
- 11 - Distribution
- 12 - Review
- 13 - Remedial Actions & Supervisory Measures
- 14 - Home/Host Cooperation
• Change to data collection
  • Incurred loss -> expected loss
• Change to data granularity
  • Time granularity
  • Loss level data granularity
• Missing historical data e.g. origination PD or rating grade
IFRS 9 DATA  DATA DISPARATENESS

- Multiple data sources
  - Across business units
  - Risk and finance
- Data technology, data definition and governance
- Multi-entity - jurisdiction
IFRS 9 DATA  DATA TIMELINESS

• Data readiness – model development (leading to compliance)
• Data timeliness – ongoing concern
  • Meeting disclosure timeline
  • An illustration
IFRS9 ROUNDTABLE  AUDITING CHALLENGES

- Ability to track results back to source data
  - Results DataMart should hold intermediate results
  - ECL per Assets + PD, LGD, EAD, Exposure, Maturity date, Origination PD,
    Reference to Model(s) used, Adjustments, ….
  - Hold a calculation log that identifies Data Sources, Models used, intermediate results,
    Final results
  - System capable to execute drill-to-detail
### IFRS 9

#### MOVING FROM BACKWARD LOOKING TO FORWARD LOOKING

<table>
<thead>
<tr>
<th>IFRS 9 Impairment Modelling Key Questions</th>
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<tr>
<td><strong>Capturing empirical term-structure shapes</strong></td>
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<tr>
<td><strong>Macroeconomic sensitivity</strong></td>
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<tr>
<td><strong>Calibration of consistent lifetime macroeconomic sensitivity (duration vs. state transition models)</strong></td>
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<tr>
<td><strong>Model validation</strong></td>
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<table>
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<tr>
<th>IAS 39 Impairment &amp; Basel Models</th>
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<tr>
<td><strong>Incurred loss approach</strong></td>
</tr>
<tr>
<td>Loss only recognised when a trigger event occurs, including observed and not-observed.</td>
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<tr>
<td><strong>Modelled outcome</strong></td>
</tr>
<tr>
<td>Impairment is calculated as the expected credit losses modelled over 12 months.</td>
</tr>
<tr>
<td><strong>Capital models</strong></td>
</tr>
<tr>
<td>TTC PD/LGD/EAD model calibrations:</td>
</tr>
<tr>
<td>• exclude macroeconomic data;</td>
</tr>
<tr>
<td>• are calibrated to a single time period (one year); and</td>
</tr>
<tr>
<td>• the default definition aligns to the Internal Ratings Based (IRB) capital framework (for IRB institutions).</td>
</tr>
<tr>
<td>• TTC adjustments.</td>
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<table>
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<th>IFRS 9 Impairment &amp; ST Models</th>
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</thead>
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<tr>
<td><strong>Expected loss approach</strong></td>
</tr>
<tr>
<td>Expected losses accounted for at recognition, or observation to include forward looking expectation.</td>
</tr>
<tr>
<td><strong>Modelled outcome</strong></td>
</tr>
<tr>
<td>Impairment is calculated as expected credit losses modelled:</td>
</tr>
<tr>
<td>• over 12 months for stage 1; and</td>
</tr>
<tr>
<td>• over lifetime for stage 2 and 3.</td>
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<tr>
<td><strong>Forward looking models</strong></td>
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<tr>
<td>PIT PD/LGD/EAD model calibrations:</td>
</tr>
<tr>
<td>• include macroeconomic data;</td>
</tr>
<tr>
<td>• are calibrated to multiple time periods; and</td>
</tr>
<tr>
<td>• the default definition is consistent with IFRS 9 requirements.</td>
</tr>
<tr>
<td>• Calibrated to the average of all possible outcomes.</td>
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### IFRS 9 MODEL APPROACHES

#### Lifetime Expected Loss Modelling Components

LEL can be expressed as an analytical formula reflecting time dependent credit risk metrics which have a Forward in Time nature.

\[
LEL = \sum_{t=1}^{T} SR_{t-1} \cdot PD_{t} \cdot LGD_{t} \cdot EAD_{t} \cdot \frac{1}{(1+r)^t}
\]

- **PD\(_k\)** Probability of Default: Conditional PD event forecast to occur in period \(k\), subject to surviving to the start of the period.
- **SR\(_{k-1}\)** Survival Rate: Cumulative SR (probability of an account entering period \(k\)) forecast to the period \(k-1\), based on forecast default rates, adjusted for repayment and prepayment behaviour.
- **LGD\(_k\)** Loss Given Default: LGD (economic loss) forecast to occur if an account is in default at the beginning of (or during) period \(k\), based on future recovery profile (including collateral value).
- **EAD\(_k\)** Exposure at Default: EAD forecast to occur if an account is in default at the beginning of (or during) period \(k\), based on modelled adjustments to current balance and limit.
- **r** Effective Interest Rate (EIR): EIR at origination used to discount future expected losses to a current value.

#### Model Approach options

Each of the components can be modelled using a series of techniques. The main groups are summarised below. A macroeconomic expectations mechanism can be included in each.

- **Simple IRB adjustment model**
  - Extrapolate long run IRB model outputs to calculate metrics post adjustment to the year-1 for macroeconomic forecasts

- **Hazard /Duration analysis**
  - Calibrate a Hazard function for risk segments which are demonstrated to be predictive across a multi year period

- **Markov state transition**
  - Create Markov Chain for each risk status (e.g. grade) over a multi year period

- **Dynamic state transition**
  - State transition models with past state dependence e.g., delinquency path & rating history

- **Market implied /Fair Value**
  - Extrapolate default and loss risk based on publically available market data e.g. CDS spreads

#### Model Approach selection

Model(s) selection for design and build is based on an assessment of:

- **Portfolio priorities**
  - Identify key features or characteristics of the portfolio (e.g. default volumes, data availability and homogeneity in time) to prioritise the modelling choice per portfolio for each model.

- **Modelling Risks**
  - Assess modelling risks which will need to be mitigated and understood during design, build and implementation, comparing versus existing model governance frameworks.
## IFRS 9 MODEL FRAMEWORK

<table>
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<tr>
<th>Modeling framework need to handle many important factors like:</th>
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<tr>
<td>Competing risks of prepayment and default</td>
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<tr>
<td>Delinquencies, Rating momentum (&quot;non-Markov&quot;)</td>
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<tr>
<td>Static, Economic, Path-dependent variables: Importance</td>
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<tr>
<td>Collateral, LTV, LGD</td>
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<tr>
<td>Loan dynamics and cash flow projections</td>
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<tr>
<td>Custom measures IFRS9 ECL</td>
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<tr>
<td>Model granularity</td>
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**IFRS 9**  RETAIL & CORPORATE MODEL APPROACHES

**Simple IRB adjustment model**  
Extrapolate long run IRB model outputs to calculate metrics post adjustment to the year-1 for macroeconomic forecasts.

**Hazard /Duration analysis**  
Calibrate a Hazard function for risk segments which are demonstrated to be predictive across a multi year period.

**Markov state transition**  
Create Markov Chain for each risk status (e.g., grade) over a multi year period.

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State transition models with past state dependence e.g., delinquency path & rating history.

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---

### Example of Unrounded Rating Grade Thresholds Using the Transition/Probabilities of the Standard and Poor’s Rating Grade Scale

- **Logistic Model**
- **Proportional Hazard**
- **Mean**
- **Fractional Logit**
- **Base case**

---

**PrepayDollars**

**principal interest**

**Prepay interest**

**At Risk PMT**

**Default**

**Severity Loss**

**defaultDollars**

---

**FIGURE 4.2** Example of Unrounded Rating Grade Thresholds Using the Transition/Probabilities of the Standard and Poor’s Rating Grade Scale.
IFRS 9  MULTIPLE SCENARIOS & UNBIASED ESTIMATION

(a) Method 1: using a single forward-looking economic scenario that represents the most likely scenario from all the scenarios considered.

(b) Method 2: using a single forward-looking economic scenario that represents the weighted-average of all the scenarios considered, weighted by likelihood of occurrence for each scenario.

(c) Method 3: taking the weighted average of the credit loss determined for each of the scenarios, weighted by the likelihood of occurrence of each scenario, and

(d) Method 4: using the scenario that is the most likely scenario (as in Method 1) and then applying an ‘overlay’ adjustment to that expected credit loss to reflect the less likely scenarios.

✓ Single scenario vs. Multiple scenarios
✓ Unbiased estimation & Non-linearity
Stage Attribution - Example

The dashboard report provides information on the contribution of each category of variables to the ending impairment value. Each time period relies on the behavior of up to 11 factors within each period.

Filter Selection
- Period: 31-Dec-2015 to 30-Jun-2016
- Position: Commercial
- Status: Relied
Figure 4 Impairment waterfall analysis example
IFRS 9

IMPAIRMENT FORECASTING

- Forecast of Forecast
- Conditional scenario
- New Business Assumptions
- Forecasted ECL & Incurred
SAS ECL SOLUTION  DEMO STEPS

• Data and process orchestration
• Structured modelling
• Structured model execution
• Result consolidation, analysis and reporting
SAS Expected Credit Loss – Functional Architecture

Web User Interface

Input Data Sources

On-demand reports

Process orchestration and coordination - Workflow engine

Audit reports
SAS Expected Credit Loss – Functional Architecture

Web User Interface

- On-demand reports
- Process orchestration and coordination - Workflow engine
- Audit reports

Model execution library

- Models
- Model groups

Model building and deployment – construction and management of complex models

Models

UDL – ECL methodologies (templates)
SAS Expected Credit Loss – Functional Architecture

- Web User Interface
  - On-demand reports
- Process orchestration and coordination - Workflow engine
- Model building and deployment – construction and management of complex models
  - Models
  - Model groups
  - Model execution library
  - UDL – ECL methodologies (templates)
- Input Data Sources
- Data Management
- Scalable, In-Memory Risk Engine – model execution
- Audit reports
**ECL MODELLING**  
**SAS APPROACH – EXECUTION & ANALYSIS**

\[ ECL \text{ Calculation task def} = \{ \text{Input Portfolio, Scenarios, Model Groups, Calculation Methods, Output Vars} \} \]

Quickly Create & Test New Scenarios

Model Execution Environment

Review & Analyze Results

---

Input

**Portfolio Engine**

Output

Quickly Create & Test New Scenarios

Model Execution Environment

Review & Analyze Results
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Settlement consolidation and reporting

Balance Sheet, Income statement (templates)

Capital planning (templates)

Legal entity structures and hierarchies

Financial rules

Overlays, overrides

Audit reports

Regulatory and financial account reports

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SAS FOR EXPECTED CREDIT LOSS

WORLDWIDE COVERAGE

BMO Bank of Montreal

Swedbank

Banco de Colombia

The Coventry

TLC not PLC

Standard Chartered
IFRS9 IMPLEMENTATION

AGILE IMPLEMENTATION APPROACH (ILLUSTRATION)

**Release 1**

1. **Review and validate install** SAS products in the defined environments (SAS activities).
2. **Define Data Model** - SAS solution has a pre-defined model (DDS) that will be the basis for the solution development. We believe that for a IFRS 9 implementation, the tables Financial account, Counterparty, collateral and Risk factors mapping will be the priority.
3. **Define standard rules** definition and terminology of processes, model, ETL, GL Recon.
4. **Implement** Lifetime Expected Loss Models for one portfolio in SAS MIP
5. Define roles, stakeholders and control workflows for review and adjustments
6. **Define Staging and allocation rules**

**Release 2**

The second release will focus on accommodating improvements identified for the first release in order to get a stable end to end solution.

1. **Implement** Lifetime Expected Loss Models for all other portfolios in SAS MIP
2. Integrate outputs from LEL models to RFW for Impairment PMAs, governance and controls workflows and comprehensive IFRS 9 reporting.
3. **Testing and Re-Runs**
4. User acceptance tests and identification of defects.

**Release 3**

The third release would focus on finalization of the models, disclosure reports and rollout.

- Identified changes that will come from the closure of the first sprint should be accommodated under the second sprint.
- Increase the completeness of the End to End Solution developed in Sprint 1.
- **Prepare training documentation** support on the following subjects: SAS components of the IFRS 9 Solution (MIP, BRM, Workbench and VA), LEL Models developed, Stage Triggers configured and configuration methods, workflow configured, Reporting developed.
• Comprehensive description of customer environment and plan
• Guides development of BRD and FSD
• Informs detailed implementation plan
IFRS9 DEPLOYMENT ASSESSMENT WORKSHOP

• Planning
• Model Governance
• Data and Data Flow
• Retail and Wholesale Models
• Computation Logic
• Stage Allocation Rules
• Controls
• Reporting
• IFRS9 Workflow
• Non-Functional Requirements
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SAS FOR EXPECTED CREDIT LOSS (IFRS9/CECL)

KEY BENEFITS

• Short developing time – UI to bring models together (point-click, templates, structure)
• Shorten lead time for model implementation
• Simulation environment to study and anticipate impacts
• A ready to use modernized risk platform for efficiency and performance
• Better controlling of the process (IT & Business side)
• An End-to End solution covering: Data Management, Simulation, Modelling, Reporting, Governance
• White-Box solution
• Leverage on skilled SAS competence
• Solution license advantage for system expansion
THANK YOU