

Discuter de l'impact de COVID-19 sur les Directives Réglementaires récentes (IFRS 9)

IFRS 9 Challenges in View of COVID-19: Impact on Provisions and Associated Regulatory Guidance

Agenda

1. COVID-19 Impact Benchmark Study
2. Implications and Challenges of the Regulatory Guidance
3. Forecasting Future Period Provisions to Identify Vulnerabilities in Portfolio Segments

COVID-19 Impact on IFRS 9 Provisions

- » COVID-19 is having an unprecedented impact since the Great Depression on global public health, healthcare systems, and economy**
- » Since the outbreak, the credit risk faced by lending institutions around the world has increased significantly, as evidenced in this and other Moody's studies** for various asset classes. Major banks have reported much higher loss allowances in 2020Q1 than 2019Q4
- » Due to the extraordinary and uncertain nature of the current environment it is critical to have a timely and unbiased assessment of expected losses for credit portfolios
 - » We provide COVID-19 impact results on IFRS 9 loss allowances for benchmark commercial and industrial (C&I) portfolios consisting of the European, Middle-Eastern, and North American exposures
 - » We compare IFRS 9 loss allowances as of 2019Q4 (pre-COVID-19 crisis) with 2020Q1 levels under commonly used macroeconomic scenarios
 - » In addition, we illustrate how current capital market information can be incorporated in impairment assessment, in addition to macroeconomic forecasts

** See <http://www.moodys.com/coronavirus> for a comprehensive credit risk research library related to the COVID-19 outbreak.

Baseline and Alternative Scenarios

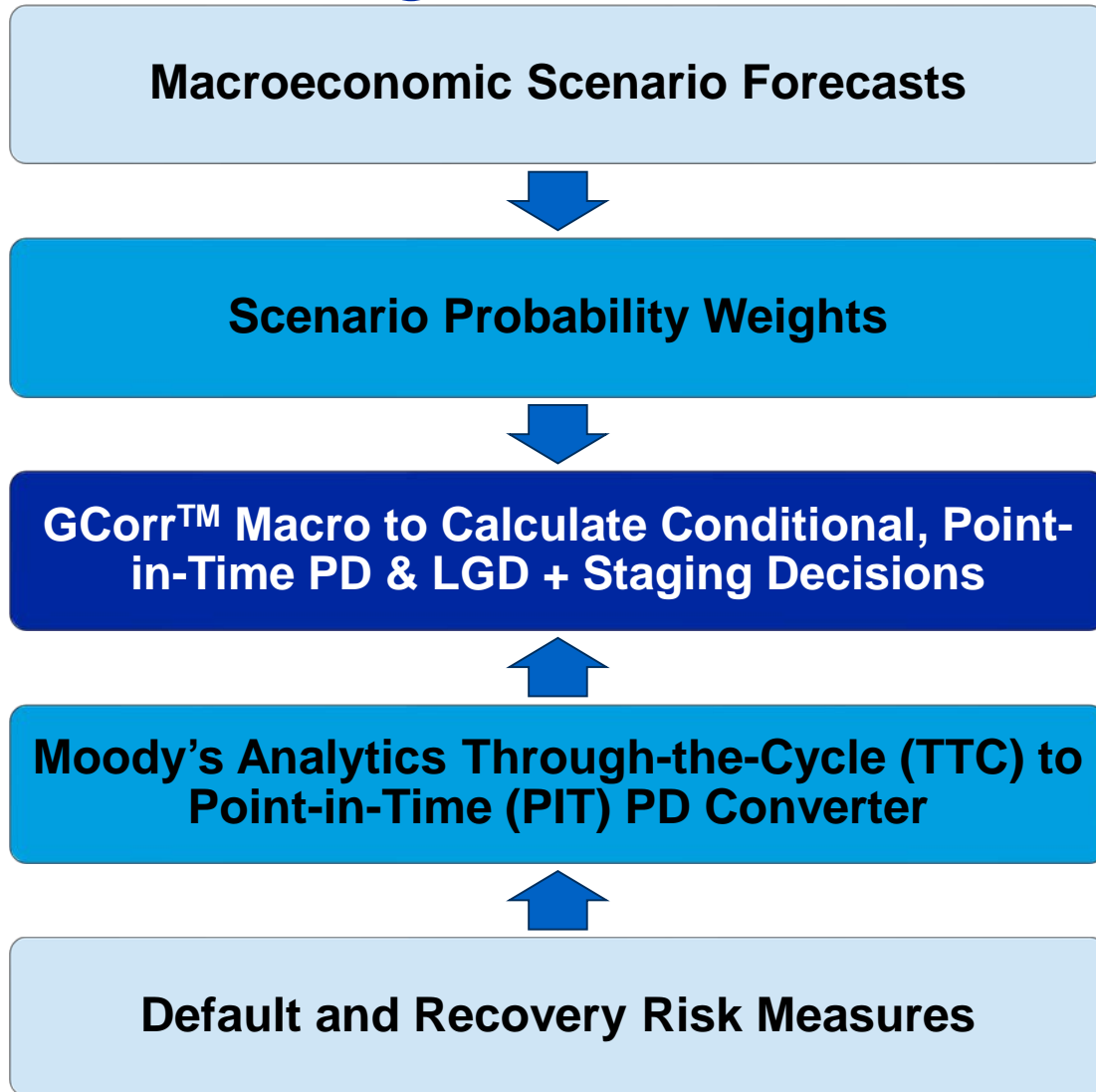
Moody's Analytics May Forecasts (Released on 18 May, 2020)

Key Aspects	S1 (Upside*)	Baseline	S3 (Downside**)
Quarantine Measure End	Mid Q2 2020	End of Q2 2020	Mid Q3 2020
Global Recession	Mild	Moderate	Severe
Global GDP Growth in 2020 and 2021	-0.9% and 6.1%	-4.2% and 4.3%	-6.5% and 0.4%
Global Unemployment Rate in 2020 and 2021	6.14% and 5.91%	6.33% and 6.35%	7.07% and 8.14%
Brexit Process	Efficient	Moderate	Protracted
Oil Price in 2020 and 2021	\$38 and \$60	\$33 and \$55	\$20 and \$24

* 10% probability that the economy will perform better

** 10% probability that the economy will perform worse

Modeling Framework



- » Forecasts of GDP growth, unemployment rate, equity price index, oil price, etc.
- » 3 scenarios: baseline, upside (S1), and downside (S3)

- » 40% baseline, 30% upside (S1), 30% downside (S3)

$$\times \boxed{\text{Exposure at Default}} \times \boxed{\text{Discount Factor}} = \boxed{\text{Expected Credit Loss}}$$

- » Produce PIT PD term structures; the underlying PIT PDs are from Moody's Analytics CreditEdge™ Expected Default Frequency (EDF)

- » Through-the-Cycle PD, or external or internal rating
- » LGD (assumed=40%)

Benchmarking Methodology

- » In this benchmarking study, we calculate Expected Credit Losses (ECLs) of the same portfolios on two reporting dates:
 - » 31 Dec, 2019 ECLs based on Moody's Analytics December 2019 economic forecasts
 - » 31 Mar, 2020 ECLs based on Moody's Analytics May 2020 economic forecasts
- » Comparing the two sets of results enables an assessment of COVID-19's impact on the benchmark portfolios, and segments within
- » Note, however, some information used in our models is from time periods before COVID-19 became the dominant concern in public health and future of the economy
- » We caution that our analyses are based on diversified benchmark portfolios and Moody's Analytics economic scenario forecasts; individual organizations may observe very different results

C&I Benchmark Portfolios

Portfolio	Outstanding Balance (% of balance)		Year to Maturity (years)	Main Industries (% of balance)
	Investment Grade	High Yield		
Europe	78%	22%	2.75	Bank and Savings & Loans (43%) Business Services (15%) Consumer Products Retail/Wholesale (5%) Agriculture (4%)
Middle East	52%	48%	2.50	Bank and Savings & Loans (18%) Construction (16%) Consumer Services (9%) Utilities NEC (9%)
North America	52%	48%	2.50	Bank and Savings & Loans (21%) Oil Refining (6%) Telephone (5%) Utilities, Gas (5%)

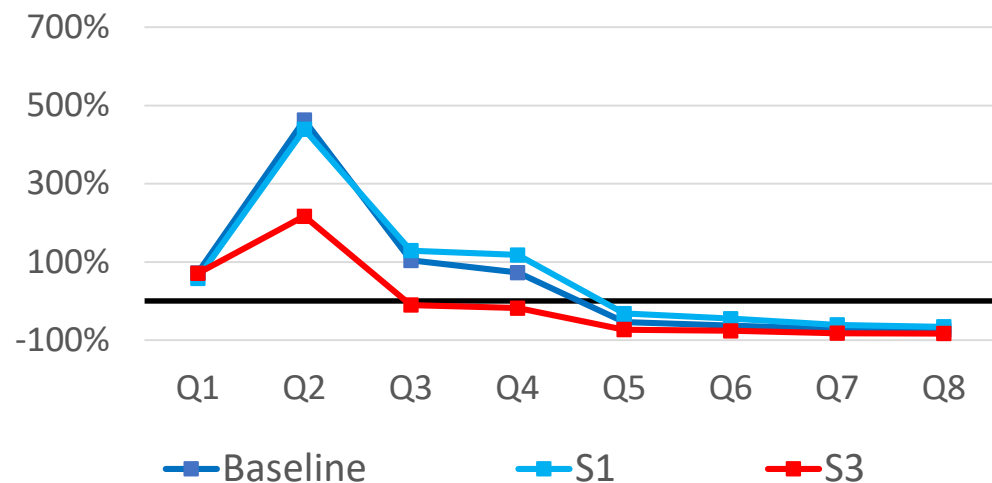
- » Loss given default (LGD) is assumed to be 40%
- » Due to the lack of information of credit quality at origination, a simple absolute threshold is used in stage allocation – probability weighted PDs are mapped to Moody's rating, and B1 or worse are assigned stage 2

Q1

Expected Credit Losses from 2019Q4 to 2020Q1

Portfolio	ECL % Change from 2019 December Scenarios to 2020 May Scenarios			
	Baseline	S1	S3	Scenario Weighted
Europe	87%	101%	14%	51%
Middle East	19%	33%	3%	15%
North America	63%	130%	8%	45%

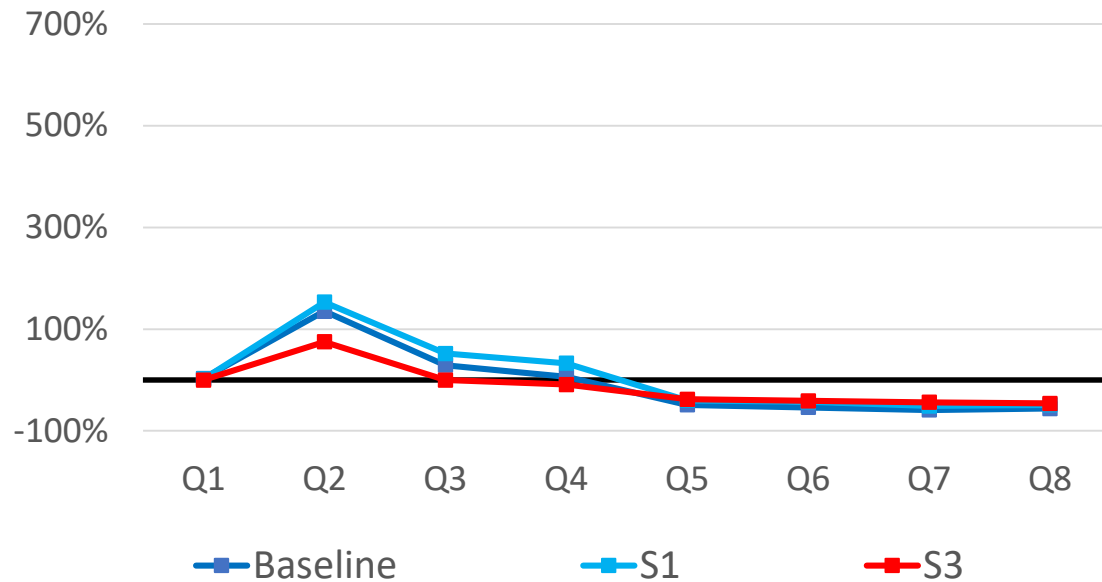
Changes in ECL Term Structures – European



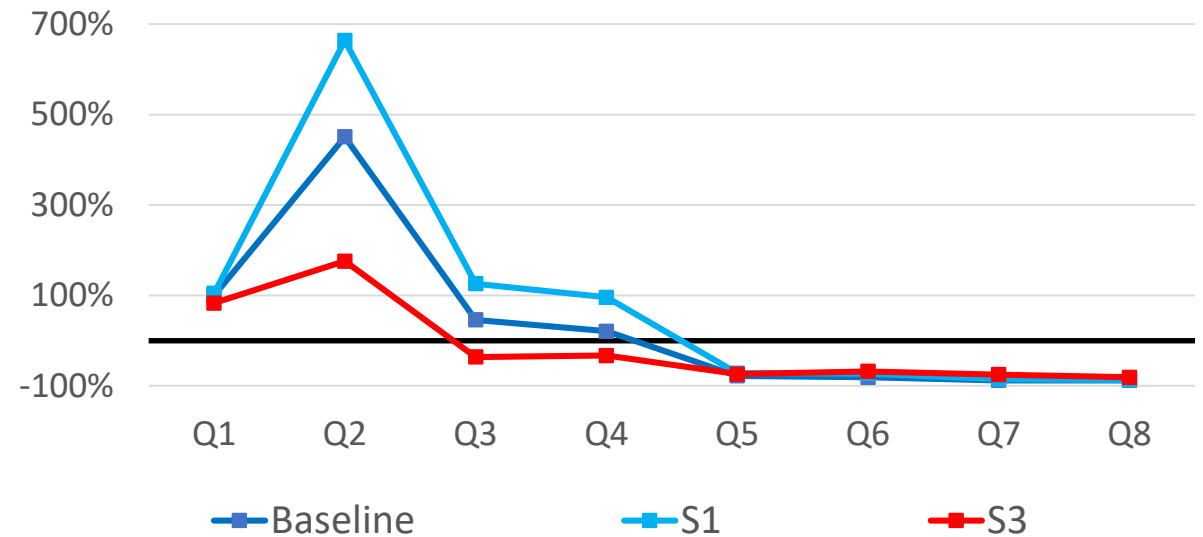
- » Results under May scenarios are higher than those under December scenarios, mainly driven by the significant near-term stress from COVID-19 in the relevant MEVs used in the model
- » Results of the S3 scenario increased not as much as other scenarios, driven by the strong recovery under the May S3 scenario in later quarters.
- » ECLs under the May scenarios are higher in the first few quarters, reflecting the near-term stress. The recovery results in lower expected losses in later quarters

ECL Changes from 2019Q4 to 2020Q1

Changes in ECL Term Structures – Middle East



Changes in ECL Term Structures – North America



- » ECL term structures for Middle East and North America under May scenarios share the similar pattern with those for Europe
- » Due to the timing of COVID-19 spread across the globe, Middle East has experienced lower impact in its portfolio ECL than other regions

COVID-19's Impact on Different Countries

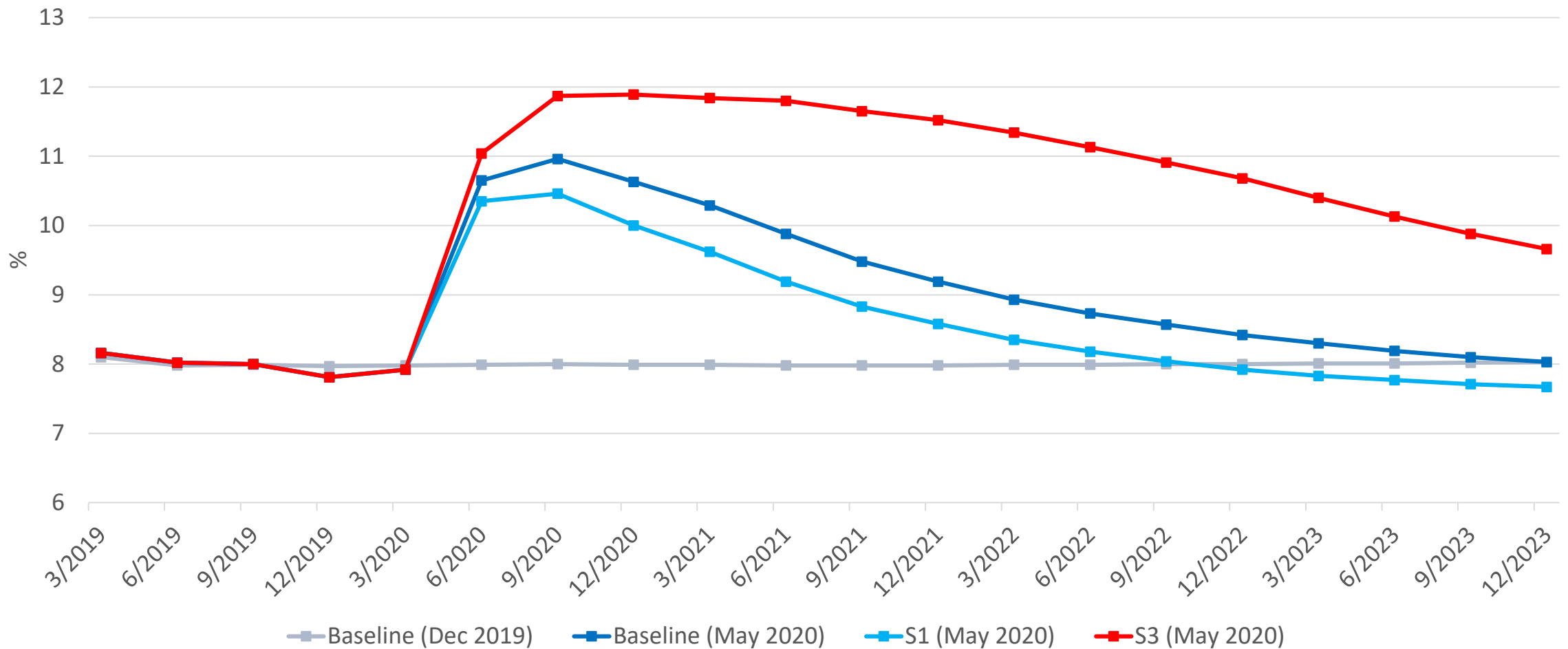
Europe	ECL % Change from 2019 December Scenarios to 2020 May Scenarios			
	Baseline	S1	S3	Scenario Weighted
Spain	559%	665%	152%	311%
Italy	383%	444%	133%	234%
France	345%	320%	134%	214%
Germany	220%	242%	103%	157%
United Kingdom	157%	323%	56%	121%

Middle East	ECL % Change from 2019 December Scenarios to 2020 May Scenarios			
	Baseline	S1	S3	Scenario Weighted
Kuwait	60%	94%	47%	60%
Egypt	58%	85%	25%	49%
Turkey	23%	24%	3%	15%

- » Due to the timing of the COVID-19 spread across the globe, Middle Eastern countries have experienced lower impact in their ECL than other regions

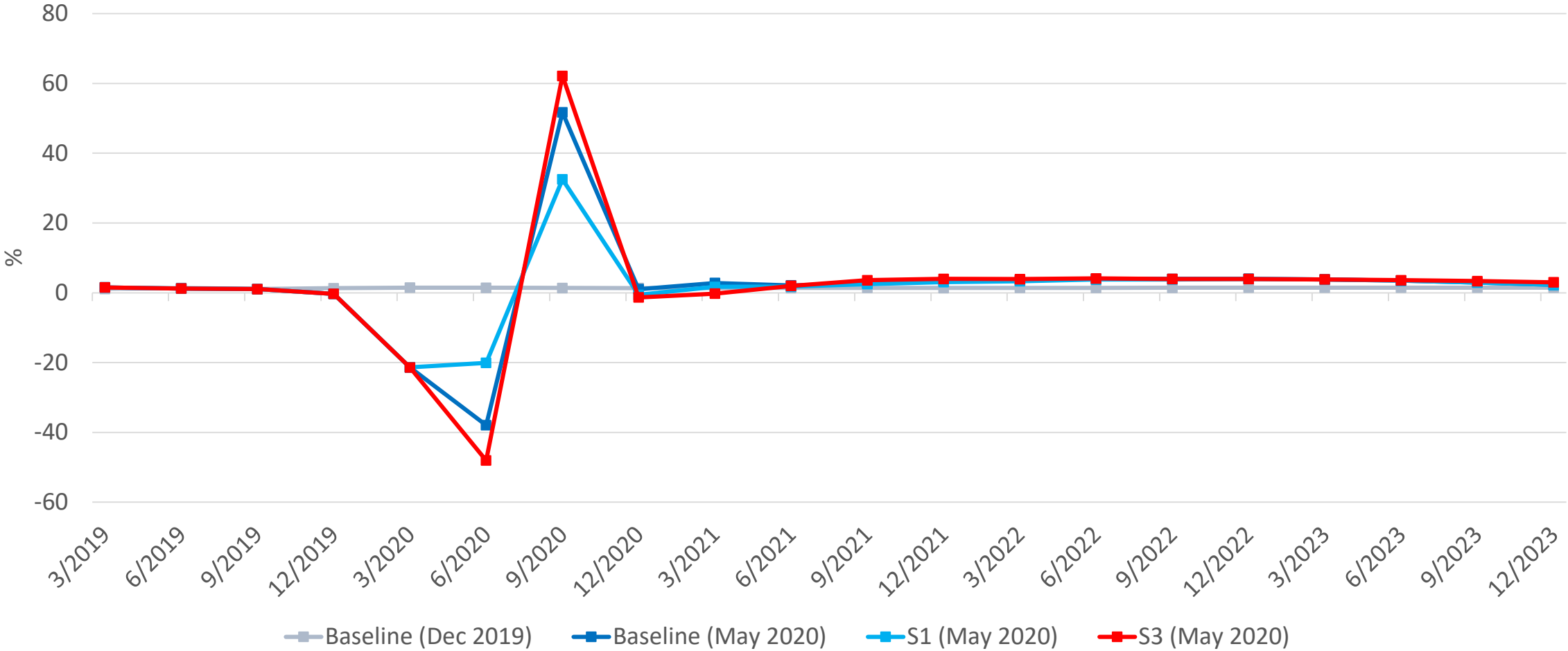
Eurozone, Macroeconomic Variable Projections

Moody's Analytics Forecasts of Unemployment Rate



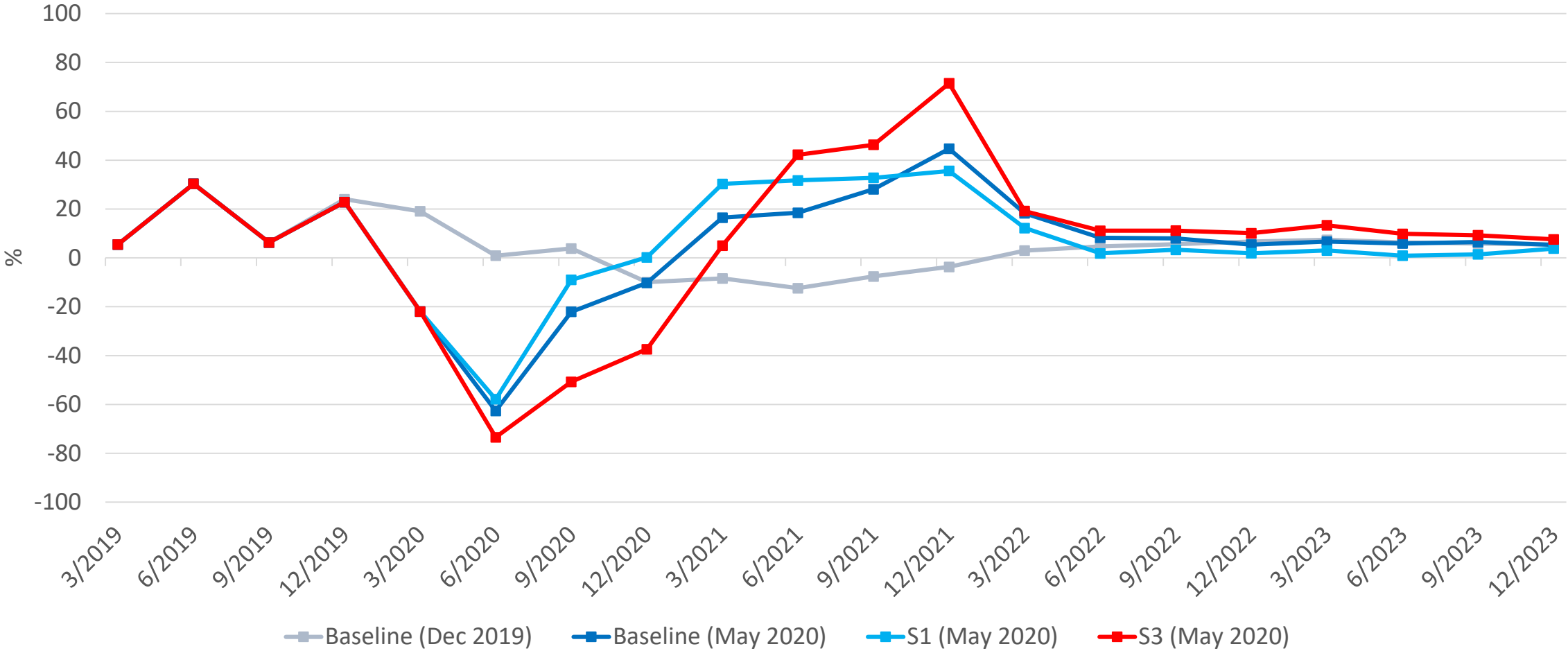
France, Macroeconomic Variable Projections

Moody's Analytics Forecasts of GDP Annualized Growth



France, Macroeconomic Variable Projections

Moody's Analytics Forecasts of Equity Index Annualized Growth



Incorporating More Current Market Condition

- » One of the modeling components in generating the results under May scenarios so far – the unconditional PDs from Moody's rating to PIT PD converter – uses market information up to Dec 2019
- » To incorporate more current market information, we create a new version of the converter using EDFs up to March 31, 2020, and compare with the previous results (i.e., same scenarios, different unconditional PDs)

Region	Europe	Middle East	North America
Scenario Weighted ECL Change	211%	127%	207%

Most Affected Industries	Scenario Weighted ECL Change
Air Transportation	311%
Hotels & Restaurant	233%
Entertainment & Leisure	195%
Oil, Gas & Coal Exploration/Production	195%
Aerospace & Defense	183%
Transportation	181%
Apparel & Shoes	176%
Utilities, Gas	175%
Broadcast Media	174%
Oil Refining	172%

Least Affected Industries	Scenario Weighted ECL Change
Finance, NEC	31%
Security Brokers & Dealers	37%
Real Estate	38%
Insurance – Property/Casualty/Health	47%
Lessors	55%
Investment Management	64%
Insurance - Life	69%
Real Estate Investments Trust	69%
Utilities, Electric	72%
Mining	77%

Regulatory Guidance

Additional Regulatory Responses: IFRS 9

BoE/PRA

- ‘Our expectation is that eligibility for, and use of, the UK government’s policy on the extension of payment holidays should not automatically, other things being equal, result in the loans involved being moved into Stage 2 or Stage 3 for the purposes of calculating ECL or trigger a default under the EU Capital Requirements Regulation (CRR).’

ECB/EBA

- ‘The EBA calls for **flexibility and pragmatism** in the application of the prudential framework and clarifies that, in case of debt moratoria, there is no automatic classification in default, forborne, or IFRS 9 status.’

BCBS

- SICR assessment: relief measures, granted either by public authorities, or by banks on a voluntary basis, should not automatically result in exposures moving from a 12-month ECL to a lifetime ECL measurement.
- Where banks are able to develop forecasts based on reasonable and supportable information, ECL estimates should reflect the mitigating effect of the significant economic support and payment relief measures.
- While estimating ECL, banks should not apply the standard **mechanistically** and should use the **flexibility** inherent in IFRS 9, for example to give due weight to long-term economic trends.

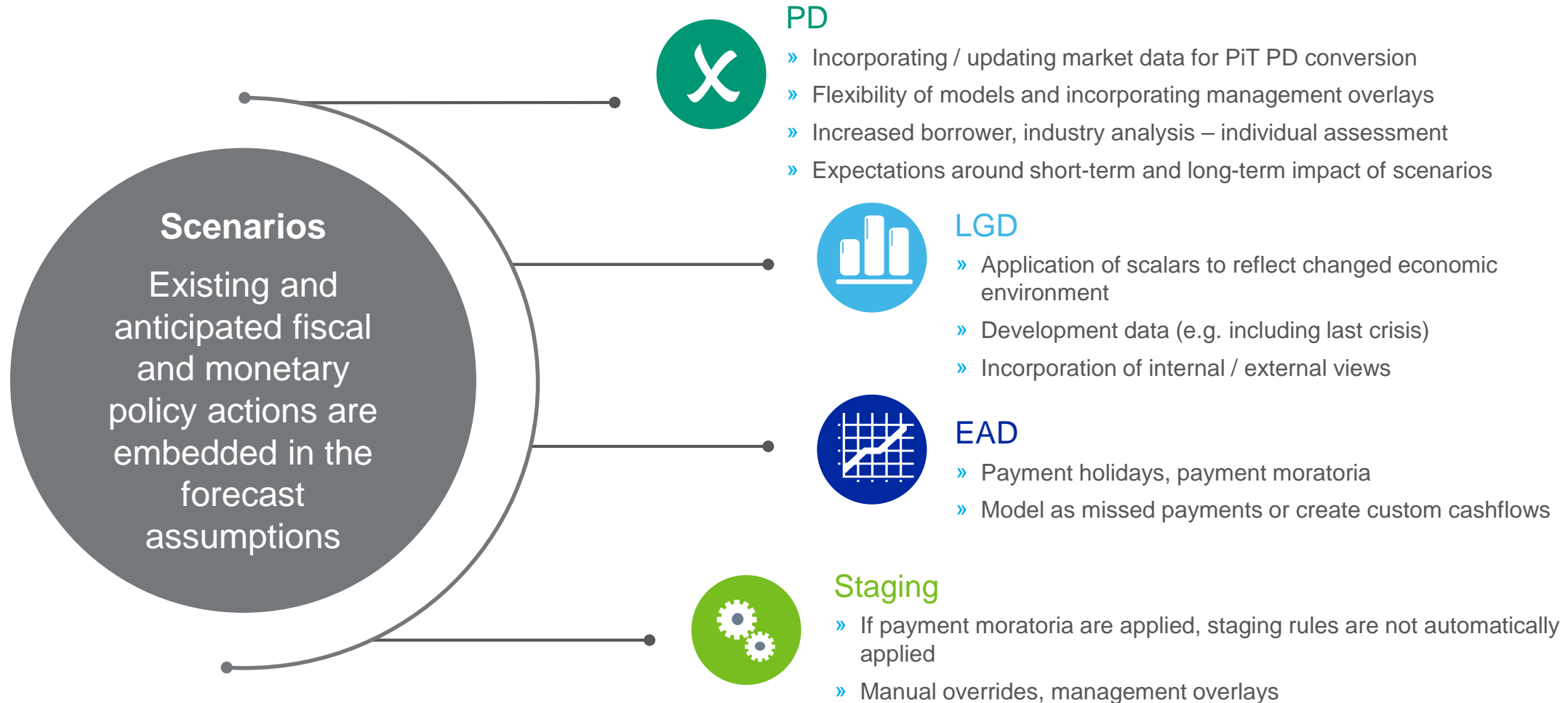
CBUAE

- SICR assessment: Categorization of exposures into groups based on impact of COVID-19 crisis to determine if “BAU” staging criteria should be applied.
- Due to the high degree of uncertainty surrounding the economic consequences of the COVID-19 crisis, institutions are not expected to incorporate the updated forecasts into ECL until September 1, 2020.
- Institutions are not required to update model parameters to account for this crisis, instead they are required to adjust inputs, critically assess model outputs and apply judgmental overlay if needed.
- Institutions have the option to employ add-ons at portfolio or product level to holistically reflect changes in the economic environment.

Q2

Common Questions

Incorporating Regulatory Guidance in IFRS 9 models



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Q3

Managing Financial Resources in a Crisis

Challenges for Financial Resource Management in times of emerging and evolving stress

Challenges

- » COVID-19 resulted in heightened and more frequent analysis and reporting
- » Constantly scanning evolution of risks and effects of multiple assumptions
- » Uncertainty due to evolving nature of crisis, responses from governments and regulators
- » Regular, timely, comprehensive forecasting information on evolving assumptions
- » Significant responsibility on analytical and reporting groups, (e.g. risk and finance) to produce forecasts and analyses

Needs

Robust forecasting capabilities in business as usual conditions to meet demands during crisis:

- » Forecasting analytics for core financial performance metrics (e.g. IFRS 9)
- » Assessment at granular level to identifying vulnerabilities
- » Structured and controlled forecasting process, minimized manual hand-offs
- » Timely analysis, speed-to-market and flexibility to analyze evolving situations

Implementation des normes IFRS9

Eric Leman, Directeur, Moody's Analytics

Juin, 2020

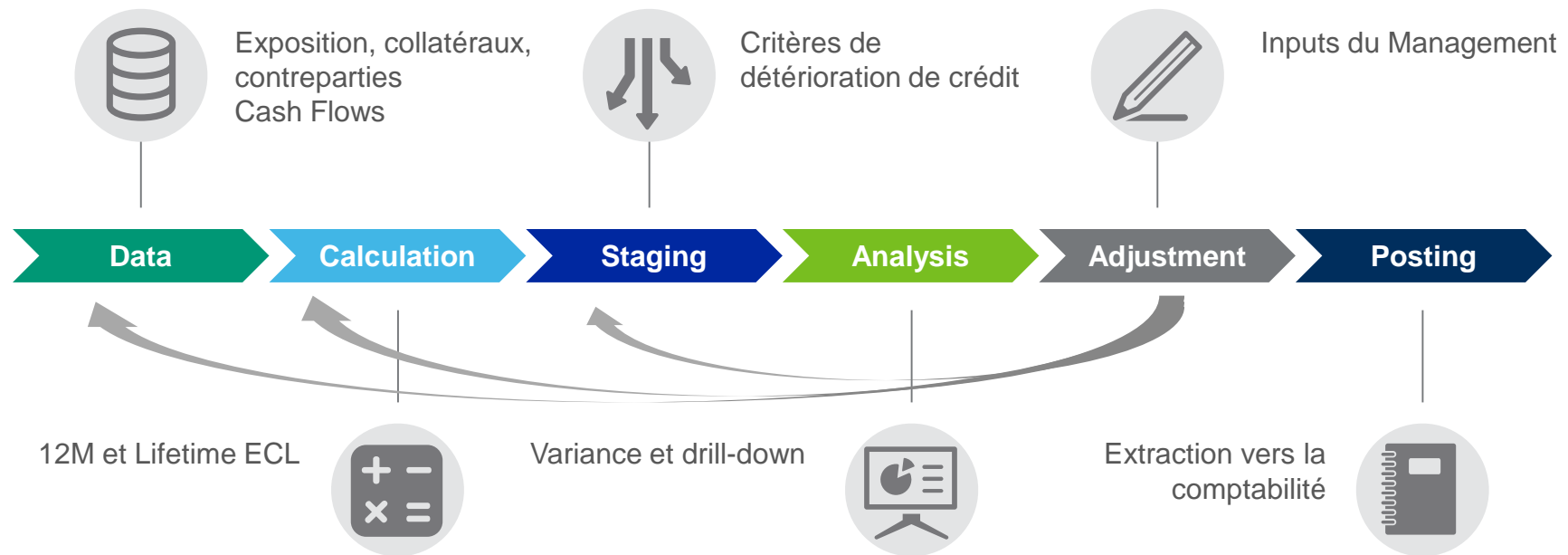
Challenges

- » Les principaux challenges rencontrés par les institutions financières sont:
 - La récolte de données granulaires et complètes (sur les portefeuilles et les contreparties) avec une bonne qualité et dans une base de données robuste
 - La possibilité d'utiliser différents modèles sur ces mêmes données
 - Les ajustements sur les résultats, avec un process d'approbation et une piste d'audit
 - L'analyse des résultats, pour les remises comptables et l'étude de variance
 - La connection au système comptable (General Ledger)



Le workflow du calcul IFRS9

Le process de calcul des dépréciations



Le modèle de données doit se calquer au bilan de la banque

The screenshot displays the RiskConfidence application interface. On the left is a navigation sidebar with sections like 'Chart of Accounts', 'Data & Settings', 'Process', and 'Results'. The main area is titled 'Chart of Accounts' and shows a tree view of account categories. The 'Corporate' category is highlighted, and a blue box with the text 'Structure du bilan' points to it. To the right, the 'Details: GL/Assets/Fixed Income/Corporate' section shows fields for Name, Description, Account Type, and Instrument Type. Below this is a table with columns for Contract Reference, Issuer, Currency, Nominal, Rate Type, Interest Rate, Reference Curve, Spread, and Callable. The table contains 2516 rows of data.

Navigation search: All Accounts

Chart of Accounts

Number of accounts: 176

Display Tree Display List

Details: GL/Assets/Fixed Income/Corporate

Name: Corporate Account Type: Asset

Description: Corporate Instrument Type: BOND

Characteristics Deals New Volume Accounting FTP Credit Spread Volatility Credit Loss External Providers

2516 rows

Contract Reference	Issuer	Currency	Nominal	Rate Type	Interest Rate	Reference Curve	Spread	Callable
IT000_AT0000272521_1997/07/15_01	GLEIN_67296	ATS	724,637.6811594203	FIXED	6.71			no
IT000_XS1263964576_2015/07/30_01	GLEIN_206434	EUR	10,000,000	FIXED	5.25			no
IT000_XS1109802303_2014/09/11_01	GLEIN_68018	EUR	10,000,000	FIXED	1			no
IT000_FR0012382844_2014/12/15_01	GLEIN_149483	EUR	10,000,000	FIXED	3			no
IT000_CH0265801198_2015/02/03_01	GLEIN_143503	CHF	9,320,533.134495294	FIXED	0.55			no
IT000_DE0002760980_2006/01/17_01	GLEIN_67368	EUR	10,000,000	FIXED	3.5			no
IT000_FR0012146801_2014/09/10_01	GLEIN_68746	EUR	10,000,000	FIXED	1.75			no
IT000_XS1107727007_2014/09/10_01	GLEIN_67334	EUR	10,000,000	FIXED	2.125			no
			10,000,000	FIXED	1.75			no
			10,000,000	FIXED	3.6			no
			10,000,000	FIXED	0			no
IT000_IT0003058325_2001/01/01_01	GLEIN_67692	EUR	10,000,000	FIXED	4.05			no
IT000_XS0810622935_2015/06/15_01	GLEIN_81796	EUR	5,000,000	FIXED	2.75			no
IT000_XS1316569638_2017/01/30_01	GLEIN_131320	EUR	5,000,000	FIXED	1.875			no

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L'utilisateur doit avoir accès aux données

Exemple d'un titre

The image shows a screenshot of a financial instrument data entry form. The form is divided into several sections, each with a dropdown arrow to expand it. Callouts point to specific fields in the form:

- Contract type**: Points to the Reference field (XS0222737529).
- Issuer**: Points to the Issuer field (GLEIN_68807).
- Currency**: Points to the Currency field (EUR).
- Rating**: Points to the Rating field (BBB).
- Issue date**: Points to the Issue Date field (28 Jun 2005).
- Bid & Offer price**: Points to the Bid Price field (105.6204).

Additional callouts include:

- More fields with information about coupon, amortizing, etc**: Points to the Coupons section, which includes fields for Coupon Nature (Vanilla), Rate Type (FIXED), Interest Rate (%), Spread, Accrued Interest, and Amortizing details.

The form contains the following data:

Field	Value
Reference	XS0222737529
Description	ITALY GOVT INT 0 06/28/21
Type	Government
Fund	
Issuer	GLEIN_68807
Import Source	G
Tenor Based Frequ...	<input type="checkbox"/>
Currency	EUR
Discount Curve	EUR-IBOR
Guarantor	
Qualifying	
Rating Agency	S&P
Rating	BBB
Senior/Subordinate	
Import Cash Flows	No Import
Issue Date	28 Jun 2005
Maturity Date	28 Jun 2021
IRR Position Date	
Calc Day Conventi...	
Pay Day Convention	
National Market	EU
Price Indicator	Percentage
Quoted	Quoted
Clean/Dirty	Clean Price
Bid Price	105.6204
Offer Price	105.6204
Unity Nominal	1
Yield	

Les contreparties et leurs notations

Counterpart...: DE_CORP Counterpart...:
Description: Corporate Germany Long Descri...:
▼ Main Characteristics
Rating Method: Entity Type: M_CORP
Status: Economic S...:
Hierarchy: Industry Se...: Materials
▼ Other Risk Characteristics
Risk Country: DE
Defaulted: Default Date: 30
Forbearance...: 30
Probation P...: Forbearance...: 30

Pays, secteur économique d'où dérivent les modèles

Information sur les défauts et moratoires

Hiérarchie des contreparties



Financials Credit Ratings External Cod

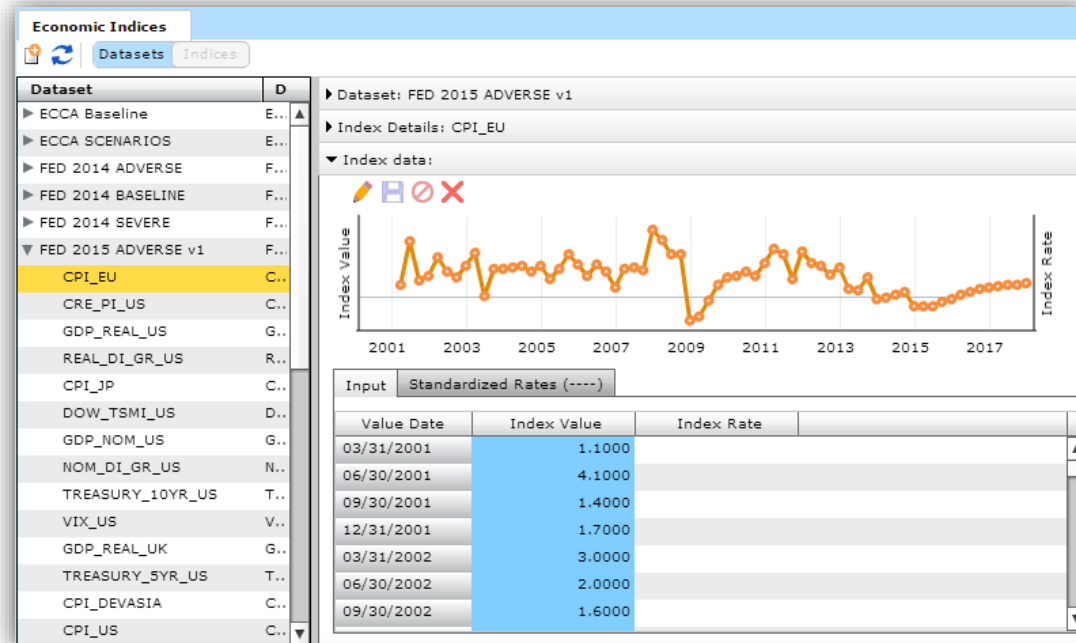
er contains Enter a valu

<input type="checkbox"/>	Agency	Long Term Rating
<input type="checkbox"/>	INTERNAL_2	2
<input checked="" type="checkbox"/>	INTERNAL	3

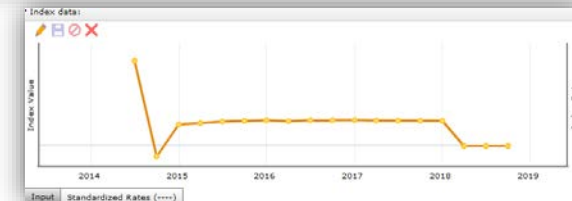
VARIABLES Macro-économiques

Importer les scénarios macro-économiques

- » Sur autant d'indices et time-series requis par les modèles.
- » Les indices peuvent être transformés par les utilisateurs ou créés par des formules



```
eco_index_value(vd) =  
((eco_index_value("DOW_TSMI_US", vd) - eco_index_value("DOW_TSMI_US", vd-3M))  
/eco_index_value("DOW_TSMI_US", vd-3M)) * 100
```



EAD: Utilisation des Cash flow

- » Les cash flows contractuels sont d'abord générés
- » Ils peuvent être complétés de modèles comportementaux (remboursements anticipés, tirages et utilisation des lignes revolving et cartes de crédit)

ReF...: deal_01

Contract Type: RRE_LOAN Dealbook: L_LOAN

Count...: Miss 001

Family: Excluded from ...

Import Source: Transferred:

Leveraged Loan:

FDW Netting A...: Auto Allocation Excluded:

Participation Flag: Acquisition Date:

Terms Last Mo...:

Characteristics

Type: Interest Type:

Origination Date: National Family:

Trade Date: Effective Yield: 1.00000

Value Date: 31 Dec 2015 Excluded from ...

Maturity Date: 30 Sep 2016

Balloon Date: Import Cash Fl: No Import

Nominal: 100,000.00 Fees:

Outstanding: 100,000.00 Outstanding N...:

Periodicity: Monthly Fair Value Adju...:

Compound Per...: Currency: EUR

Capitalization ...: Discount Curve: EURIBOR

Rate Type: FIXED Client interest rate type

Reference Curve:

Curve Tenor:

Broken Period: Rate: 3.5

Amortizing

Repayment Type:

Method: Linear Periodicity: Monthly Ex: monthly amortizing

First Amort. Date: Amount: Ex: Linear amortizing

Maturity

Effective Interest Rate (EIR)

Outstanding

Ex: monthly interest cash-flows

Client interest rate type

Ex: monthly amortizing

Ex: Linear amortizing

Age of Deal (months)					
	(1, 6]	(6, 12]	(12, 18]	(18, 24]	(24, 30]
Refinancing Spread (bps)					
(-100.0, -50.0]	1.0000	1.0000	1.0000	1.0000	1.0000
(-50.0, 0.0]	2.0000	2.0000	2.0000	2.0000	2.0000
(0.0, 50.0]	5.0000	6.0000	7.0000	8.0000	9.0000
(50.0, 100.0]	10.0000	11.0000	13.0000	15.0000	17.0000
(100.0, 200.0]	13.0000	14.0000	16.0000	18.0000	18.0000
(200.0, 500.0]	30.0000	30.0000	35.0000	40.0000	40.0000

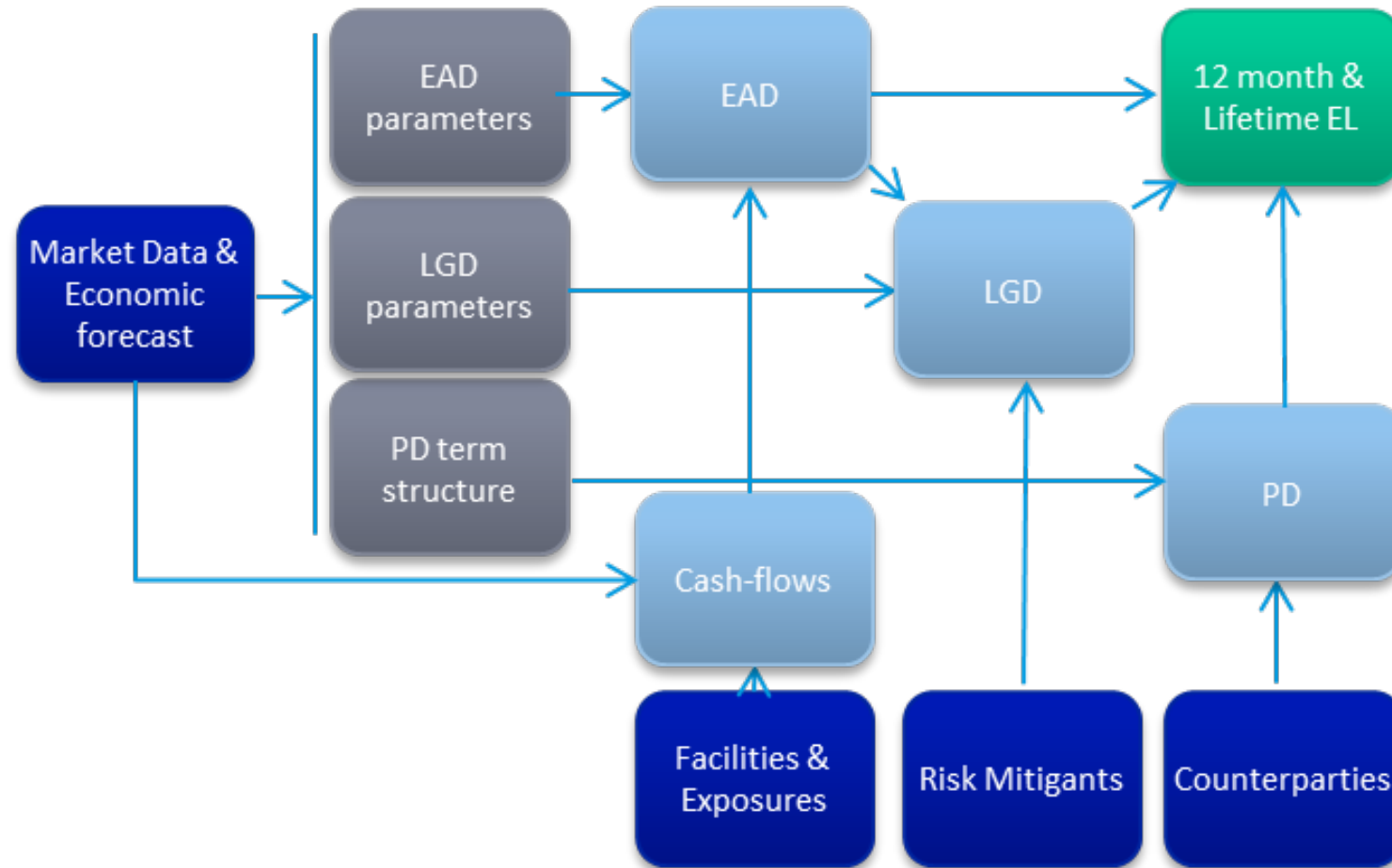
Cash Flow Credit Loss Cash Flow Dimensions Deal Re

Cf Type is null + Go Clear

Contract Reference	Maturity	Amount	Amount Type	Rate	Outstanding
deal_01	30 Apr 2016	16,666.67	N		0 100,000
deal_01	30 Apr 2016	297.26	I	3.5	100,000
deal_01	30 May 2016	16,666.67	N		0 83,333.33
deal_01	30 May 2016	239.73	I	3.5	83,333.33
deal_01	30 Jun 2016	198.17	I	3.5	66,666.67
deal_01	30 Jun 2016	16,666.67	N		0 66,666.67
deal_01	30 Jul 2016	16,666.67	N		0 50,000
deal_01	30 Jul 2016	143.84	I	3.5	50,000
deal_01	30 Aug 2016	16,666.67	N		0 33,333.33
deal_01	30 Aug 2016	99.09	I	3.5	33,333.33
deal_01	30 Sep 2016	49.54	I	3.5	16,666.67
deal_01	30 Sep 2016	16,666.67	N		0 16,666.67

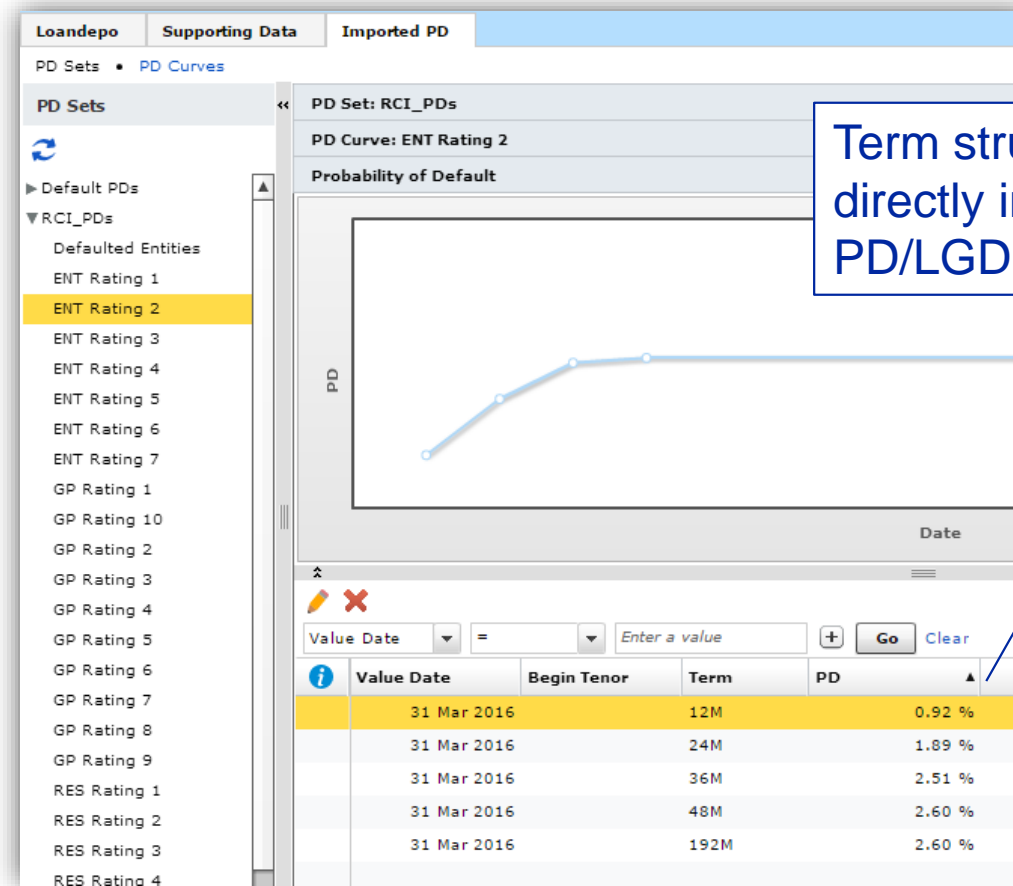
Cash flows générés

La flexibilité sur l'utilisation des modèles est primordiale



PD & LGD Term Structures

Les données peuvent être importées...



Term structures can be directly imported for PD/LGD

...ou créées dans le système

Une solution flexible pour que les banques calculent la LGD à des dates futures selon leurs propres modèles..

- » L'éditeur de formule prend en entrée l'allocation des garanties et les cash flows
- » Calcule LGD transaction par transaction, mais plusieurs instruments peuvent partager la même formule

Formula Builder

Check Syntax

Formula Name: Basic LGD Formula Type: Loss Given Default Formu

Description: Test IFRS9 case

Formula: deal.ead(dt)-sum(deal.collateral.assigned_amt *eco_index_value(deal.collateral.attribut

Status: Valid

```
$a = case: when deal.used_amount(dt) + deal.ccf*deal.available_amount(dt) < 0 then 1.1  
when deal.used_amount(dt) + deal.ccf*deal.available_amount(dt) > 0 then 2.2  
else 100.9 endcase;  
  
$b = case: when deal.used_amount(dt) + deal.ccf*deal.available_amount(dt) > 0 then 1.1  
when deal.used_amount(dt) + deal.ccf*deal.available_amount(dt) < 0 then 2.2  
else 100.9 endcase;  
  
$c = 2;  
  
ta * tr
```

- » Peut être construit pour une modélisation LGD plus complexe:
 - à quelle date LGD doit-il être généré: l'utilisateur définit les dates de segmentation lors du paramétrage
 - comment prévoir EAD: $deal.end_balance + 3 * deal.accrued_interest; deal.ead(dt-9M)$
 - comment prévoir la valeur future des garanties: différentes garanties prennent un indice économique différent
 - quelles garanties inclure dans le calcul: $if deal.collateral.maturity \geq dt$

Les règles de *stagings* doivent être claires

Easy definition of rules. For example, based on a rating downgrade

The screenshot displays a decision tree configuration interface. On the left, a decision tree is shown for 'Stage Allocation v1'. The tree starts with 'Step 1', which branches into 'False: Step 2' and 'True: Stage 3'. 'Step 2' further branches into 'False: Step 10' and 'True: Step 3'. 'Step 10' is highlighted with a yellow box and a callout box containing the text: 'NON-RETAIL: 1 notches downgrade or rating B or below'. Below this, the tree continues to 'False: Stage 1' and 'True: Stage 2'.

On the right, a table lists the steps and their criteria:

Step ...	Description	Criteria	True Stage	False Stage	False Step
1	Is DEFAULTED ?	deal.rating(...	Stage 3		2
2	Is RETAIL ?	deal.contract_type in (...			10
3	RETAIL: 2 notch...	deal.rating(...	Stage 2	Stage 1	
10	NON-RETAIL: 1 n...	deal.rating(...	Stage 2	Stage 1	

Below the table, the 'Definition for Criteria Expression' for Step 10 is shown:

Step Number: 10

Criteria: `deal.rating(agency,"INTERNAL_BIL",long,RD) in ("B") or (1 <= deal.rating_order(agency,"INTERNAL_BIL",long,RD) - deal.rating_order(agency,"INTERNAL_BIL",long,RD-1m))`

Description: NON-RETAIL: 1 notches downgrade or rating B or below

Status: Valid

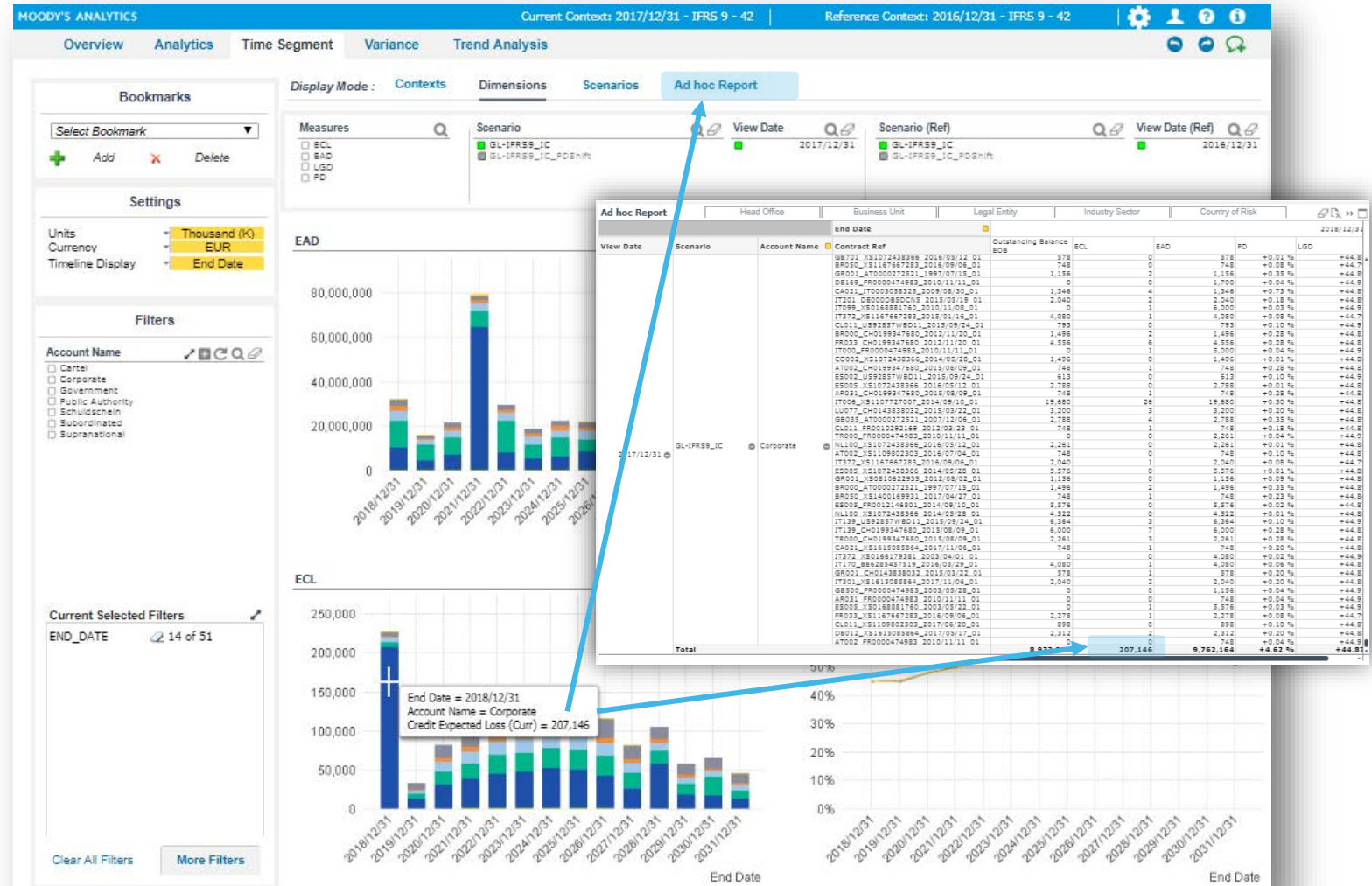
If True Action: Action: Stage, Stage Acti...: Stage 2, Next Step:

If False Action: Action: Stage, Stage Acti...: Stage 1, Next Step:

Decision tree defined for the stage allocation rules

Drill-down sur les résultats granulaires

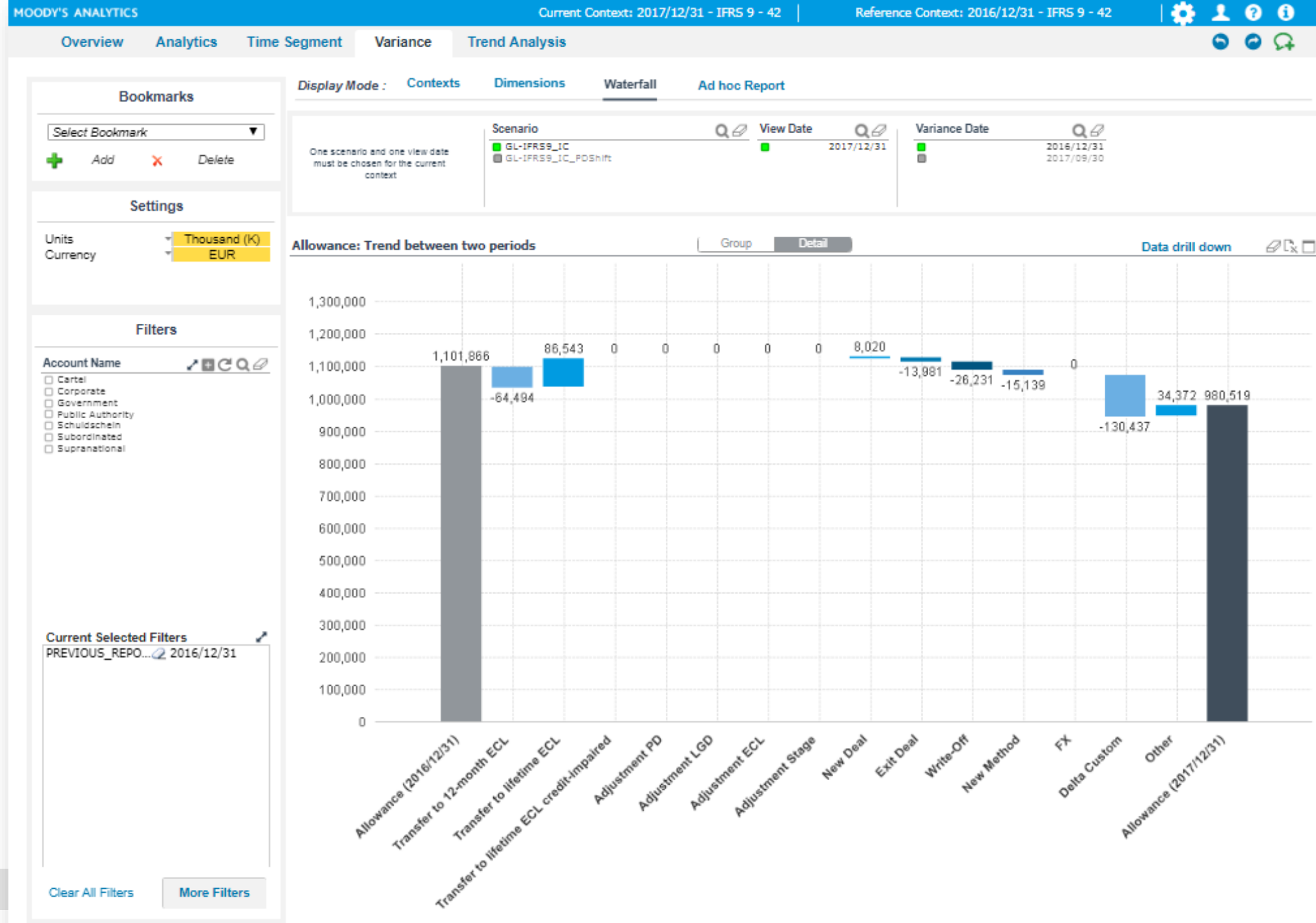
- » Utilisation de toutes les dimensions pour le drill down
- » Création de tables pivot



Comprendre la variance d'une date à une autre

Changement d'ECL entre 2 périodes, expliqué par les 'drivers':

- » Changement de stage,
- » Nouveau business
- » ...



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