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Better Faster Decisions

An Update to IFRS 9 ECL Benchmark: The Focus on Disclosures with COVID-19 Shock and Additional Stress Testing

March 2021

IFRS 9 ECL Benchmarking after the Peak of COVID-19 and Multi-Period ECL Forecasting

Yashan Wang, Senior Director
Quantitative Research and Modeling

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Agenda

1. IFRS 9 ECL benchmarking for Q4-2020 and Q1-2021 reporting
2. ECL forecasting under the EBA 2021 scenarios

Joint work with May Jeng, Lily Kong, and Warren Xu

Modeling Framework

Macroeconomic Scenario Forecasts

» Forecasts of GDP growth, unemployment rate, equity price index, oil price, etc.
» Moody's Analytics scenarios including baseline, upside (S1), and downside (S3); regulatory scenarios such as CCAR and EBA

Scenario Probability Weights

» Moody's preset (Baseline-40%, S1-30%, S3-30% in this study) or user input

GCorr™ Macro 2019 to Calculate Scenario-Conditioned PD & LGD

X Exposure at Default X Discount Factor = Expected Credit Loss

Moody's Analytics Through-the-Cycle (TTC) to Point-in-Time (PIT) PD Converter

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

Default and Recovery Risk Measures

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

Benchmark Portfolios and Their Characteristics

Portfolio	Balance Percentage		Year to Maturity	Top Industries (% of balance)
	Investment Grade	High Yield		
Europe	51%	49%	2.50	Bank and Savings & Loans (30%) Business Services (13%) Pharmaceuticals (5%)
Middle East	42%	58%	2.50	Bank and Savings & Loans (19%) Construction (15%) Consumer Services (9%)
North America	46%	54%	2.50	Bank and Savings & Loans (19%) Business Services (16%) Investment Management (6%)

- The portfolios are updated since the October 2020 webinar to reflect the more current information on our client base
- The Europe portfolio previously also includes a small group of exposures to other regions. Now it only has instruments in European countries
- The portfolios have more realistic credit rating distributions centered around Ba, and more balanced country weights
- Due to the lack of information of credit quality at origination, we no longer provide the IFRS 9 ECL results (after staging). Instead, we present both the one-year and lifetime ECL results

Benchmarking Methodology

» To assess how the ECL evolves since the peak of COVID-19, we conduct a sequence of analysis runs. The analysis runs are divided into two groups in the table below to separate the effect of

1. Reporting date change and scenario forecast update
2. PIT PD update

» Within each group, the new information/setting is shown in red font and boldface from the previous run

» We will first focus on the February scenario patterns and treatment in the Q1-2021 runs, then show the PIT PD impact

Group	Analysis Run	Reporting Date	First Quarter of Forecast	Moody's rating to PIT PD Converter	Moody's Analytics Scenarios
Reporting Date and Scenario Update	Q4 Run – Nov Scenarios & September PIT PD	31 December 2020	Q1-2021	Credit Market Information up to September 2020	Forecasts made in Nov 2020
	Q1 Run – Feb Scenarios & September PIT PD	**31 March 2021**	**Q2-2021**	Credit Market Information up to September 2020	**Forecasts made in Feb 2021**
PIT PD Update	Q4 Unconditional Run – September PIT PD	31 December 2020	Q1-2021	Credit Market Information up to September 2020	Unconditional
	Q1 Unconditional Run – December PIT PD	**31 March 2021**	**Q2-2021**	**Credit Market Information up to December 2020**	Unconditional

No scenario modification is used in this study. For USA, VIX is excluded in the MEV set.

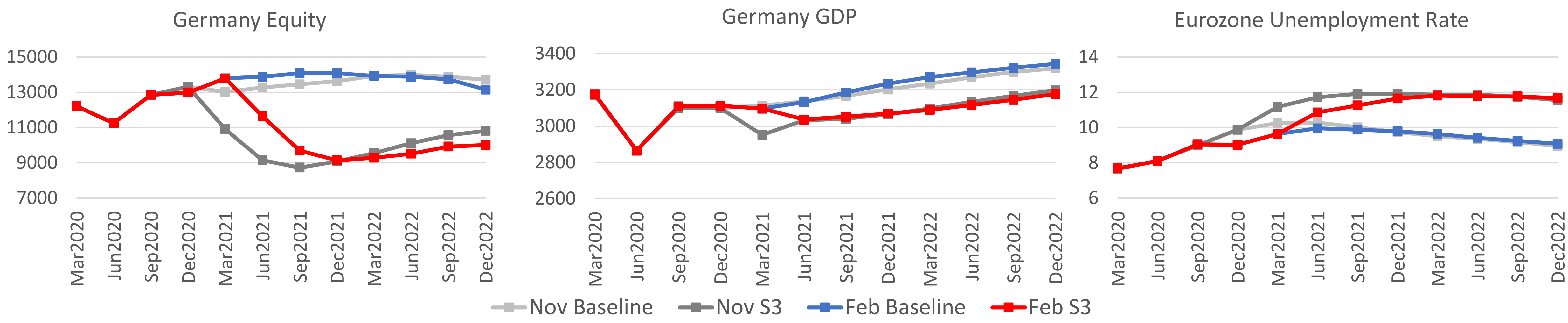
Scenario and Reporting Date Update

- To illustrate the scenario and reporting date update effect, we compare Q4-2020 and Q1-2021 runs with November and February scenario forecasts respectively, while keeping the same PIT PDs reflecting credit information up to September 2020

Portfolio	Analysis Run	Lifetime ECL Rate			One-Year ECL Rate		
		Baseline	S1	S3	Baseline	S1	S3
Europe	Q4 Run – Nov Scenarios	0.43%	0.32%	1.04%	0.33%	0.24%	0.90%
	Q1 Run – Feb Scenarios	**0.42%**	**0.33%**	**0.96%**	**0.30%**	**0.23%**	**0.78%**
Middle East	Q4 Run – Nov Scenarios	1.13%	0.97%	2.17%	0.84%	0.71%	1.67%
	Q1 Run – Feb Scenarios	**1.36%**	**1.15%**	**2.37%**	**0.98%**	**0.81%**	**1.77%**
North America	Q4 Run – Nov Scenarios	0.92%	0.52%	2.31%	0.67%	0.39%	1.98%
	Q1 Run – Feb Scenarios	**1.00%**	**0.61%**	**2.73%**	**0.70%**	**0.40%**	**2.26%**

- For Europe, the February scenarios produce ECL results very similar to the November scenarios, although there are variations among countries within Europe
- For Middle East and North America, the February scenarios are more pessimistic than the November scenarios

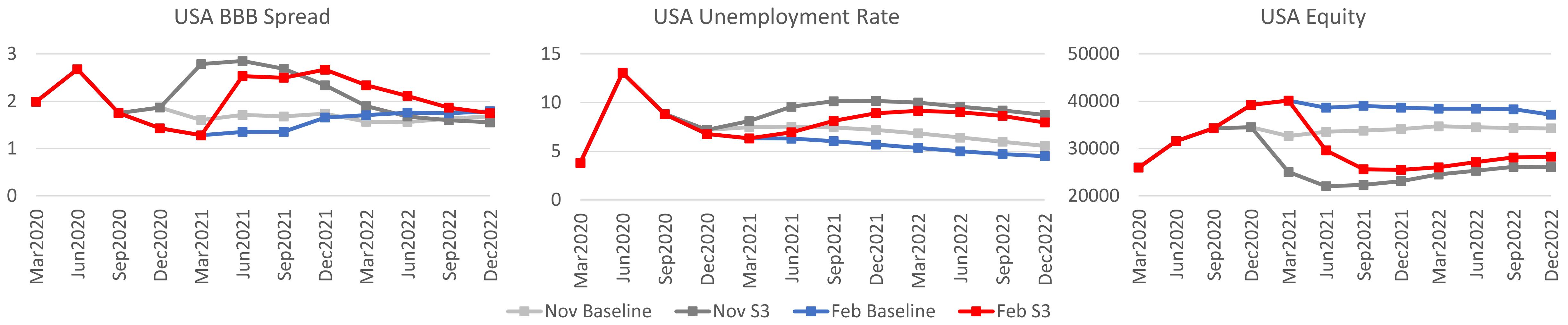
Europe Highlight – Germany



» Comparing the February baseline scenario with the November baseline forecast, the Germany equity index shows recovery instead of stress in the first quarter, the Germany GDP shows a slightly more optimistic trajectory, and the Eurozone unemployment rate shows less initial stress. The combined effect from the MEVs drives ECL slightly lower in Q1-2021 reporting than Q4-2020 reporting

» Under the S3 scenarios, the Germany equity index shows less strong recovery in the longer term in the February forecast; the other two MEVs show some differences in the near term in the February forecast from the November one, but very similar long-term trajectories. The ECL rate in Q1-2021 is slightly lower than that in Q4-2020

North America Highlight – USA



- Under the baseline scenarios, the February forecast predicts that the labor market would improve faster than the November forecast; the BBB spread portrays a relatively more pessimistic picture in February; the USA equity index has more quarters of stress in February compared with November. The combined effect drives ECL higher in Q1-2021 reporting than Q4-2020 reporting
- Under the S3 scenarios, the BBB spread and the USA equity index are more stressed in the first few forecast quarters in February for Q1-2021 reporting than in November for Q4-2020 reporting; the USA unemployment rate has different starting point but similar return patterns in November and February. The combined impact drives the Q1-2021 ECL higher than the Q4-2020 ECL

PIT PD Update

» To isolate the PIT PD impact, we compare the ECLs from the “Q4 Unconditional Run – September PIT PD” with that from those “Q1 Unconditional Run – December PIT PD,” without scenario conditioning

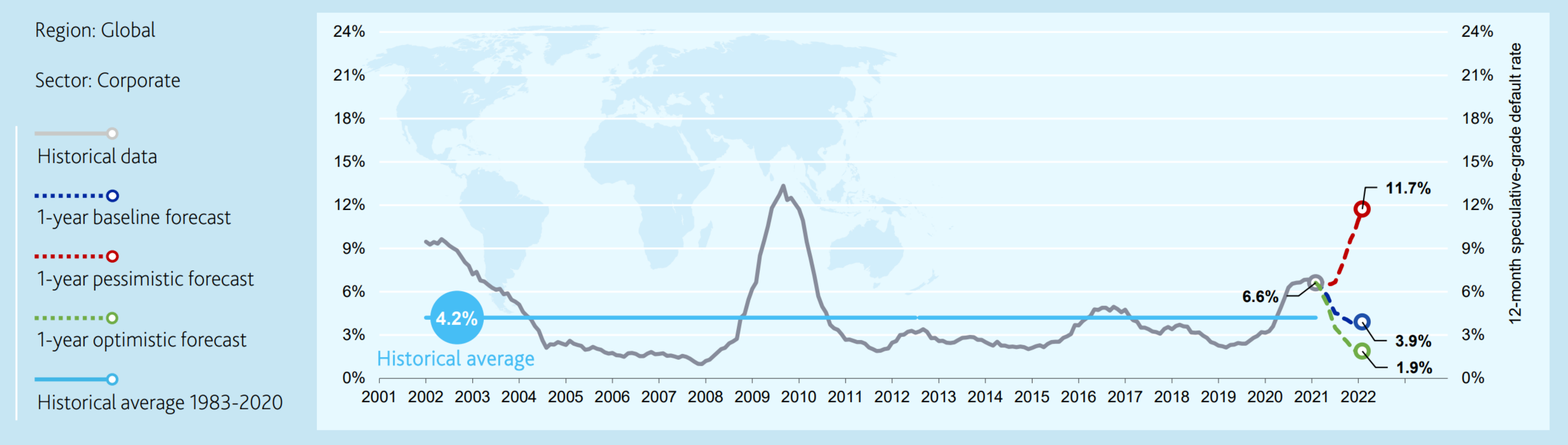
Portfolio	Analysis Run	Lifetime ECL Rate	One-Year ECL Rate
Europe	Q4 Unconditional Run – September PIT PD	0.71%	0.42%
	Q1 Unconditional Run – December PIT PD	**0.45%**	**0.24%**
Middle East	Q4 Unconditional Run – September PIT PD	1.59%	1.10%
	Q1 Unconditional Run – December PIT PD	**1.12%**	**0.72%**
North America	Q4 Unconditional Run – September PIT PD	1.09%	0.72%
	Q1 Unconditional Run – December PIT PD	**0.69%**	**0.41%**

» With the updated PIT PDs, the expected credit losses decrease by around 40% for Europe, 30% for the Middle East, and 40% for North America

Understanding the Current Credit Environment

» The decreases in PIT PDs are driven by the very strong performance of global equities in the last quarter of 2020. Moody's Analytics EDF™ model and PIT PD converter produce credit risk measures with equity value and equity volatility as main inputs. COVID-19 has caused stresses to the global economy, but not as severe as the Great Financial Crisis. The recovery since the peak of the pandemic is also much faster than the financial crisis period

» In *Default Trends – Global: February 2021 Default Report* by Moody's Investors Service (MIS), the realized trailing 12-month default rate for global speculative grade reached 6.6% at the end of 2020. However, the baseline trailing 12-month default rate is projected to fall below 4% by the end of 2021. The chart below shows the historical data and the forecasts



» Institutions may have different views on how volatile the PIT PDs of their portfolios should be, relative to the PIT PD converter output, especially for exposures to small to medium enterprises. See details on volatility dampening on Slide 13

PIT PD Update Impact on Industry Sectors

- The tables below show the relative changes in one-year and lifetime ECL from “Q4 Unconditional Run – September PIT PD” to “Q1 Unconditional Run – December PIT PD” by industry sectors
- Several industries that were hit hard at the peak of the pandemic show faster improvements and larger decreases in PIT PDs

Industries with Larger PD Decreases	Relative Change Lifetime ECL	Relative Change One-Year ECL
Hotel & Restaurants	-53%	-60%
Broadcast Media	-49%	-56%
Air Transportation	-49%	-57%
Apparel & Shoes	-46%	-53%
Entertainment & Leisure	-44%	-45%
Lessors	-44%	-51%
Oil, Gas & Coal Exploration/Production	-44%	-50%
Oil Refining	-43%	-50%

Industries with Smaller PD Decreases	Relative Change Lifetime ECL	Relative Change One-Year ECL
Utilities, Not Elsewhere Classified	-23%	-31%
Utilities, Electric	-25%	-31%
Bank and Savings & Loans	-25%	-29%
Mining	-26%	-34%
Real Estate Investment Trusts	-26%	-30%
Finance, Not Elsewhere Classified	-28%	-29%
Real Estate	-30%	-30%
Trucking	-30%	-38%

What to Expect in ECL Results in Q1-2021?

» We calculate the overall Q1-2021 ECL by combining the PIT PD and scenario updates. The table below shows the scenario weighted ECL results, using 40% weight on baseline, 30% on S1, and 30% on S3

Portfolio	Q4-2020 Lifetime	Q4-2020 1-Year	Q1-2021 Lifetime	Q1-2021 1-Year
Europe	0.58%	0.47%	0.33%	0.24%
Middle East	1.39%	1.05%	1.07%	0.75%
North America	1.22%	0.98%	0.84%	0.63%

- The scenario weighted ECL results of the Europe and North America portfolios are significantly lower in Q1-2021 than in Q4-2020. It is mainly due to the PIT PD decreases from Q4-2020 to Q1-2021
- For the Middle East portfolio, the ECL also shows a decrease, but of a smaller magnitude. The reason is that the PIT PD decrease in the Middle East portfolio is smaller than the other two regions, and the changes in the macroeconomic forecasts for the Middle East are more pronounced, partially offsetting the impact from PIT PDs
- The comparisons above are based on the benchmark portfolios used and specific assumptions on the analysis settings. Institutions may not observe the similar level of ECL changes in Q1-2021 as shown above

Controlling the PIT PD Volatility

- Some institutions may believe that the credit risks of their exposures are reflected through the public equity market only to a certain degree or are less sensitive to the movements of systematic credit risk (for example, due to smaller firm sizes). Volatility dampening is a feature available in MA impairment products that allows users to control how much the current credit market information contributes to the PIT PD converter output
- The table below shows the Q4-2020 and Q1-2021 ECL results on the benchmark portfolios after volatility dampening is applied. The dampening parameter is at 0.65 in both analyses – the preset value for SMEs. Without volatility dampening, this parameter is effectively set at 1

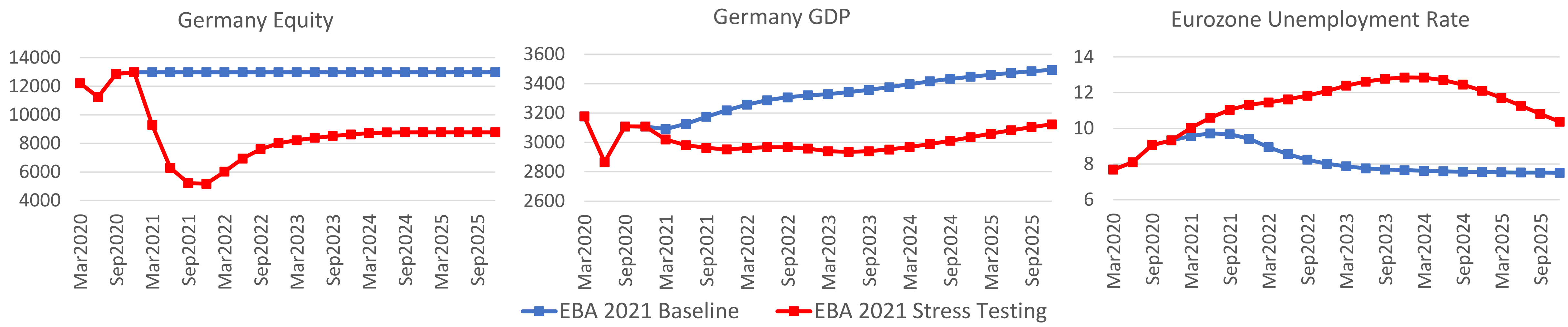
Portfolio	Q4-2020 Lifetime ECL	Q4-2020 One-Year ECL	Q1-2021 Lifetime ECL	Q1-2021 One-Year ECL
Europe	0.67%	0.55%	0.49%	0.38%
Middle East	1.35%	1.01%	1.21%	0.85%
North America	1.24%	1.01%	1.07%	0.83%

- For all three portfolios, the relative decreases in ECL from Q4-2020 to Q1-2021 are smaller compared with the decreases without volatility dampening shown on the previous slide
- Users have full control on the value of dampening parameter and can find guidance based on the average firm size and region in *Increasing The Granularity of PIT PD Volatility in The ImpairmentCalc™ PIT Converter*

ECL Forecasting under Macroeconomic Scenarios

- In addition to calculating IFRS 9 ECL for financial reporting, institutions are often interested in knowing what the ECL will be at a sequence of future reporting dates along a macroeconomic scenario
- We utilize Moody's Analytics CapitalRiskAnalyzer™ to perform ECL forecasting exercises on the same benchmark portfolios with the recently released EBA 2021 scenarios
- As in the EBA stress testing framework, we make the following assumptions
  - Static portfolios: portfolio characteristics as of a future reporting date are the same as those at time 0
  - Perfect foresight: throughout the analysis, the macroeconomic scenario is assumed to be realized as specified
- We focus on the ECL forecasts for the Europe and North America portfolios

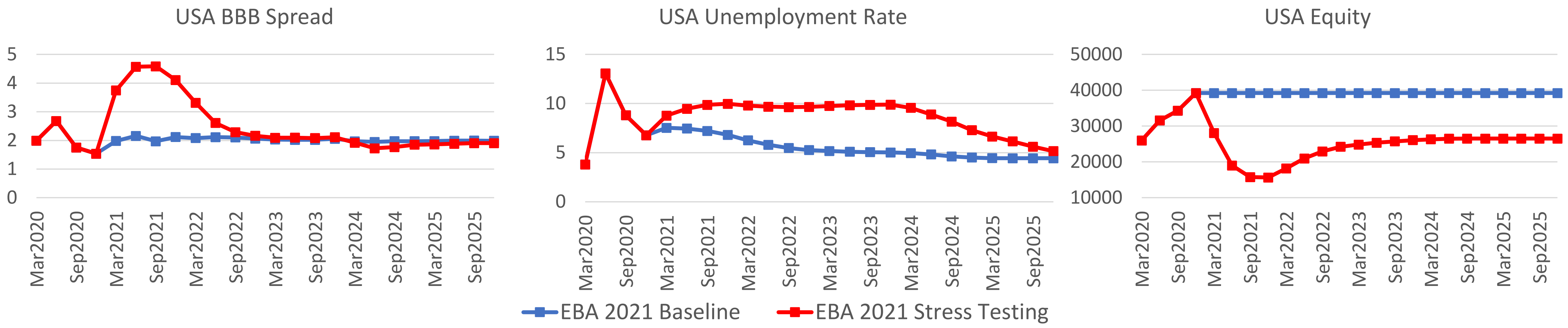
EBA 2021 Scenarios – MEVs for Germany



» Under the EBA baseline scenario, the Germany equity index stays a constant level; the Germany GDP has a continuous recovery; the Eurozone unemployment rate has a small stress in the first few quarters then recovers in the long term

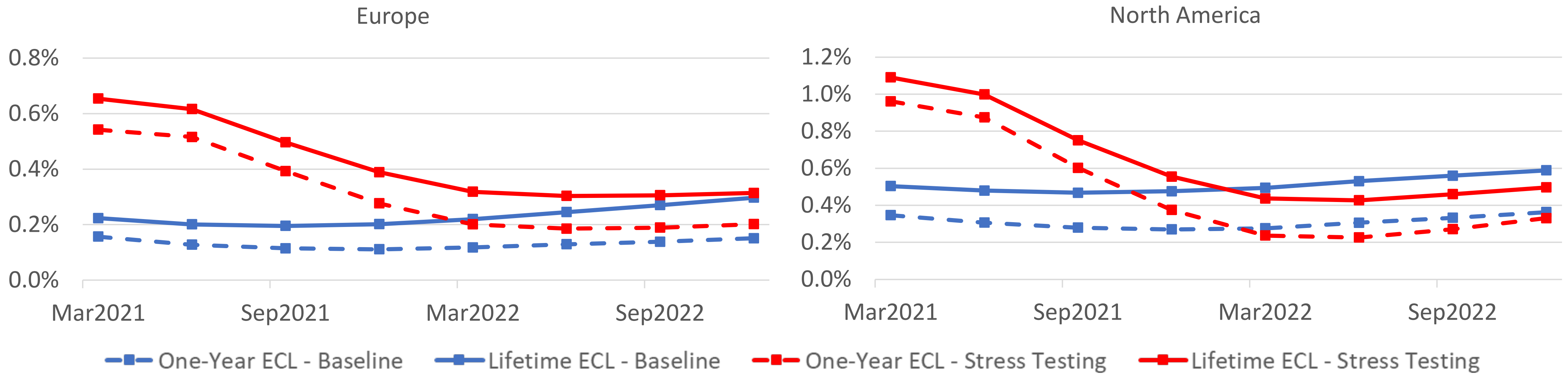
» Under the EBA stress testing scenario, the Germany equity index has a significant stress in 2021 then recovers; the Germany GDP has a stress in the following years until the end of 2023; the Eurozone unemployment rate has a continuous increase and start to decrease in mid 2024

EBA 2021 Scenarios – USA MEVs



- Under the baseline scenario, the BBB spread has a virtually constant level; the USA unemployment rate continuously decreases in the following years; the USA equity index stays constant
- Under the stress testing scenario, the BBB spread increases significantly in 2021 and recovers to the previous level in 2022; the USA unemployment rate stays at a high level until 2023; the USA equity index falls by more than half in 2021 and recovers slowly afterwards

ECL Forecasts in Q1-2021 and Onwards



- Under the EBA baseline scenario, both Europe and North America portfolios have gradually increasing one-year and lifetime ECLs, mainly due to the upward sloping shape of the PIT PD term structures and to a lesser degree the unemployment rates flattening
- Under the EBA stress testing scenario, Europe and North America portfolios have significantly higher one-year and lifetime ECL levels than the baseline counterparts, standing at each quarter of 2021. This is due to the significant stress in the MEVs in 2021, especially in the equity market. In 2022, the stress testing ECLs return to similar levels as the baseline forecasts, due to similar quarter-over-quarter changes between the two sets of scenarios

Q&A session