Moody's Analytics

Better Faster Decisions

IFRS 9 Impairment Calculation Challenges during the Pandemic – an Updated Benchmark Study

October 2020

Agenda

1. Overview of Benchmarking Methodology
2. Challenges and a Potential Solution when Applying Extreme Scenarios
3. Align Point-in-Time Credit Assessments and Baseline Scenario Forecast
4. Practical Implementation Challenges (Product Showcase)

Speakers

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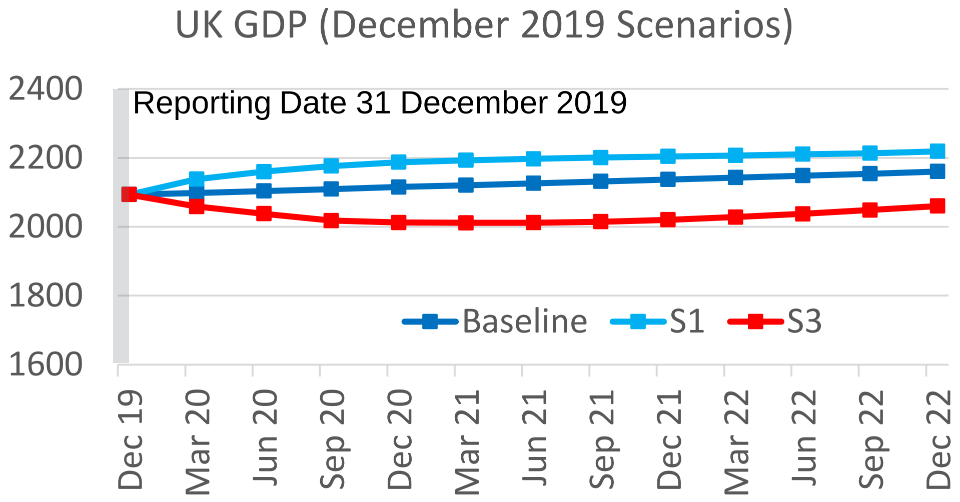
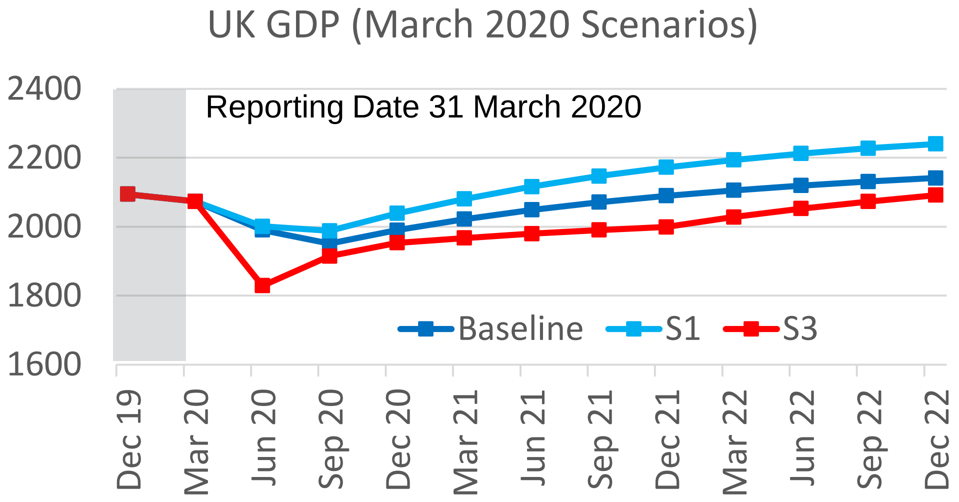
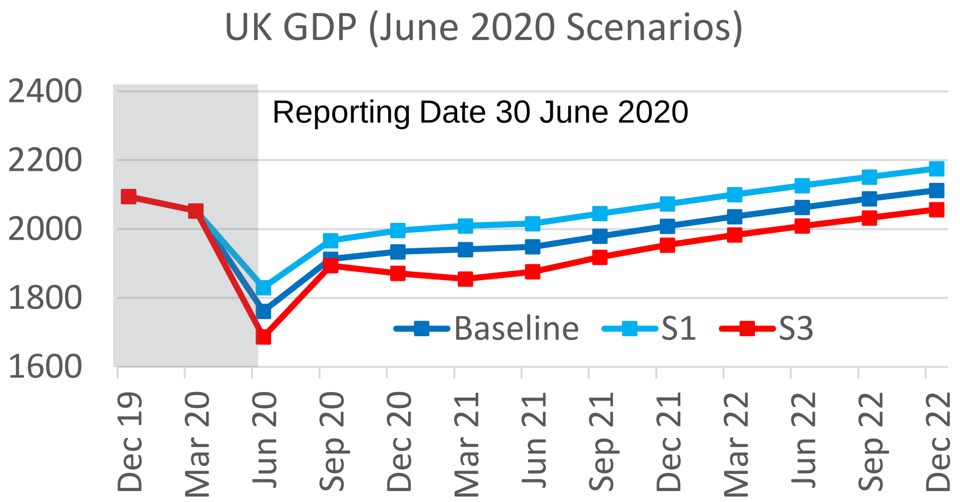
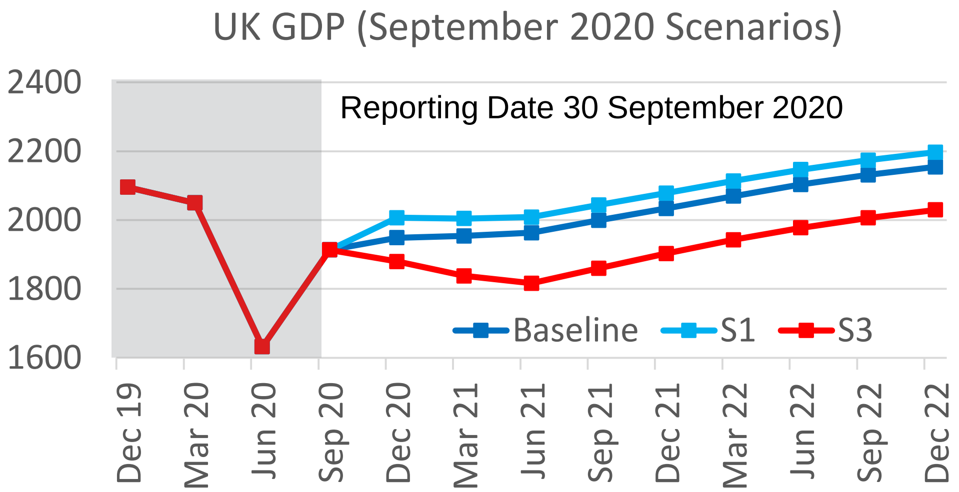
Joint work with May Jeng and Warren Xu

Evolving Macroeconomic Environment and Outlook









Modeling Framework

Macroeconomic Scenario Forecasts

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

Scenario Probability Weights

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

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

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%)

C&I Benchmark Portfolios and Their Characteristics

Portfolio	Balance Percentage		Year to Maturity (years)	Main Industries (% of balance)
	Investment Grade	High Yield		
Europe	76%	24%	2.75	Bank and Savings & Loans (44%) Business Services (14%) Agriculture (4%)
Middle East	52%	48%	2.50	Bank and Savings & Loans (18%) Construction (16%) Consumer Services (9%)
North America	52%	48%	2.50	Bank and Savings & Loans (21%) Oil Refining (6%) Telephone (5%)

» Three C&I portfolios are constructed and used in the study, reflecting the footprints of clients' portfolios

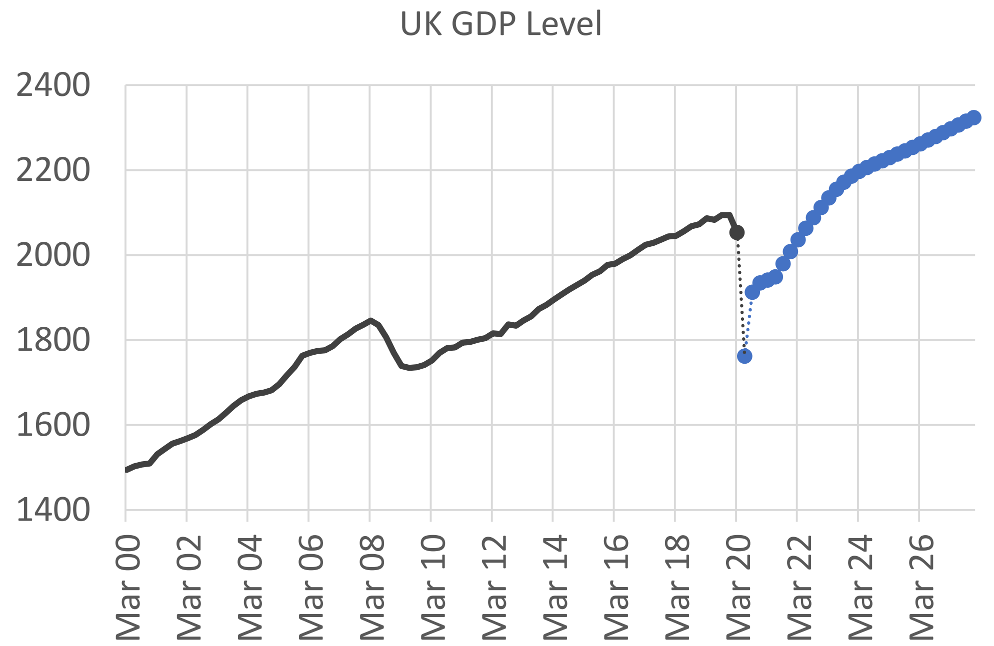
» Portfolio characteristics (such as time to maturity) are held unchanged in all the runs

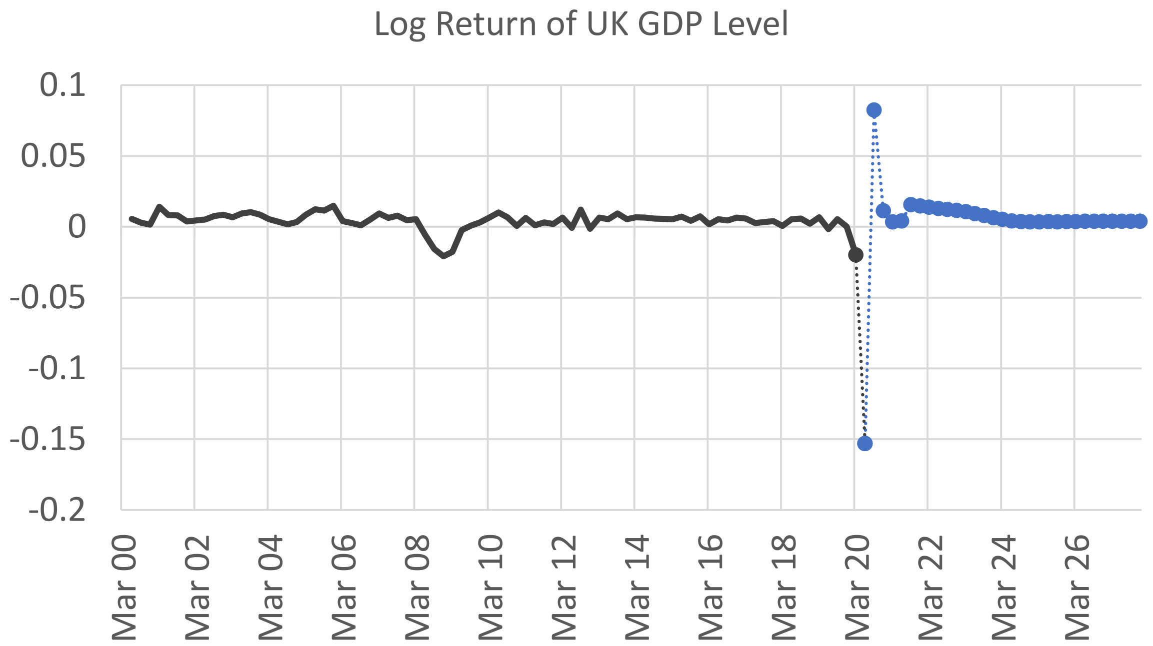
» The Middle East and North America portfolios include exposures to countries in those regions, respectively. Most of the exposures in the Europe portfolio are in European countries. However, the Europe portfolio also includes exposures to countries outside Europe, including Asia Pacific (China, Japan, Australia, Korea, India, etc.) and South America (Brazil, Chile, Argentina, etc.)

» 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 a Moody's rating, and B1 rated or worse credits are assigned to Stage 2

Recent Macroeconomic Dynamics Are Different from the Past

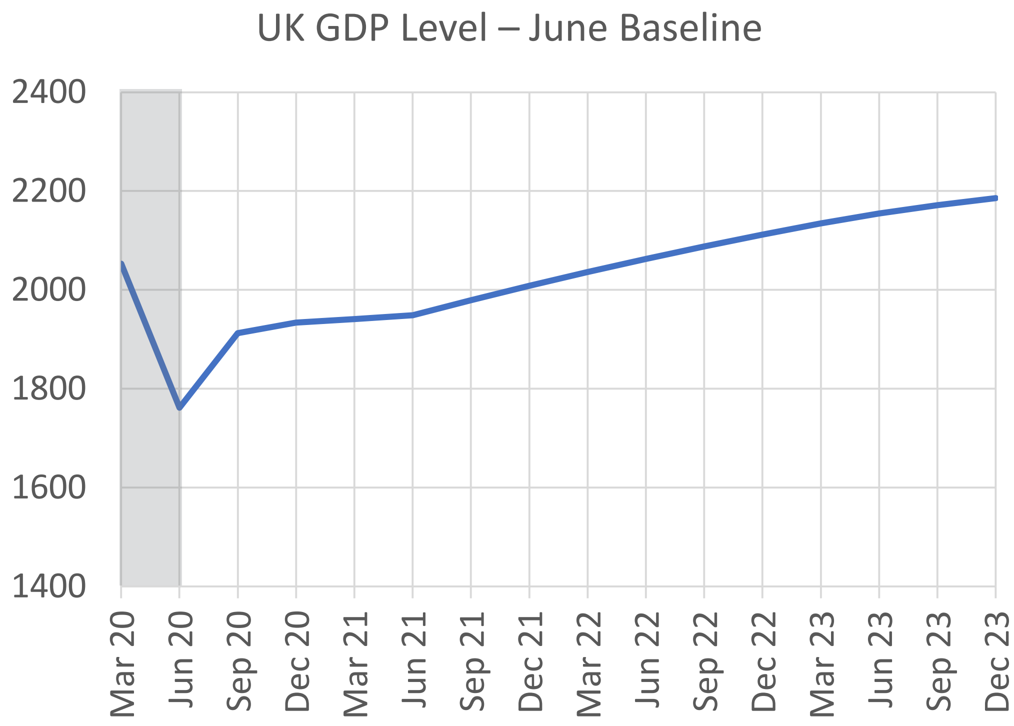
UK GDP Level in Moody's Analytics June 2020 Baseline Scenario as an Example

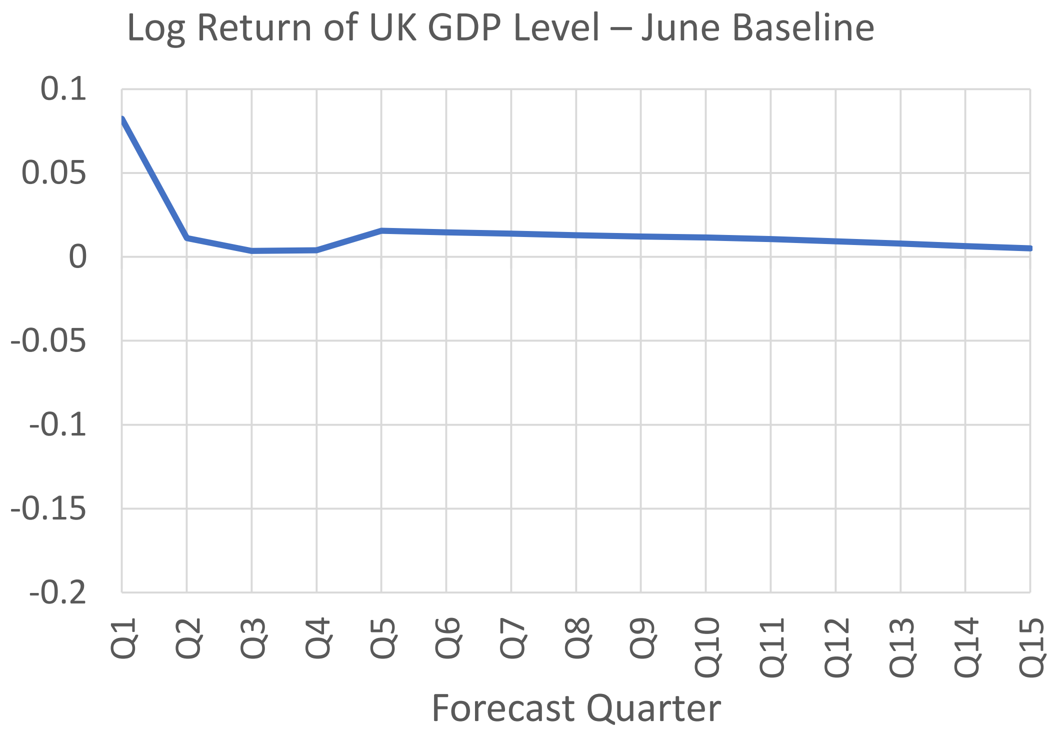




- In addition to the extremely low level reached in Q2-2020, the pace of the changes and the huge swing of the UK GDP in Q2-2020 and Q3-2020 (shown in the right chart above) are truly unprecedented in many decades. Care must be given when applying these scenarios on the GCorr Macro model that was estimated with data up to 2019

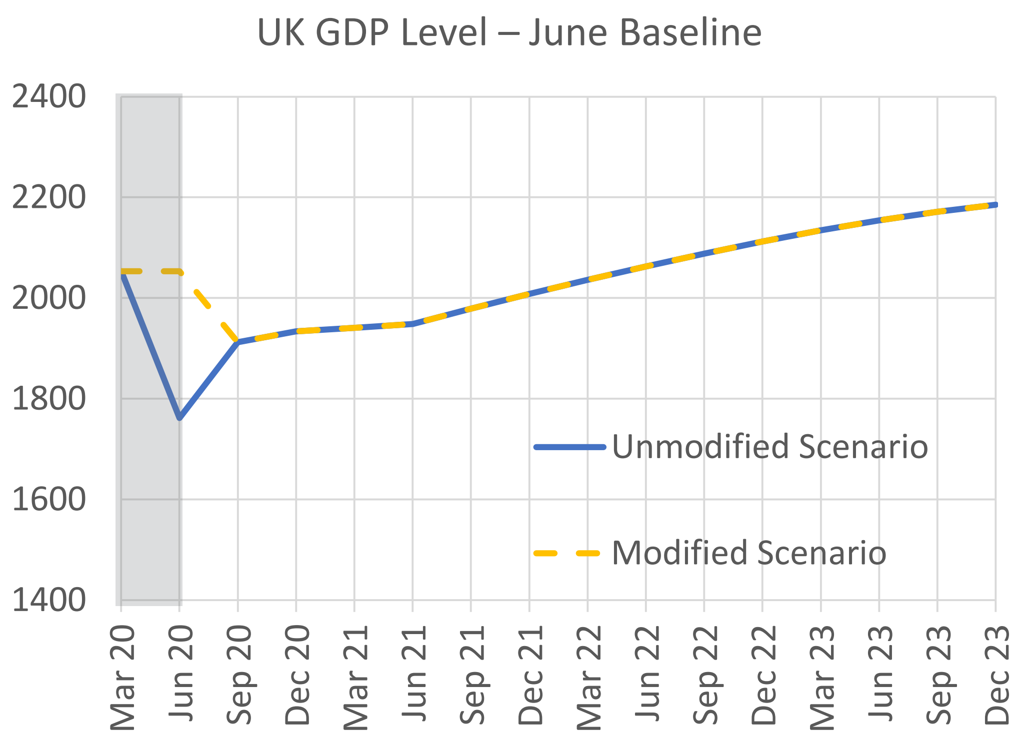
How MEVs are used in Scenario Conditioning

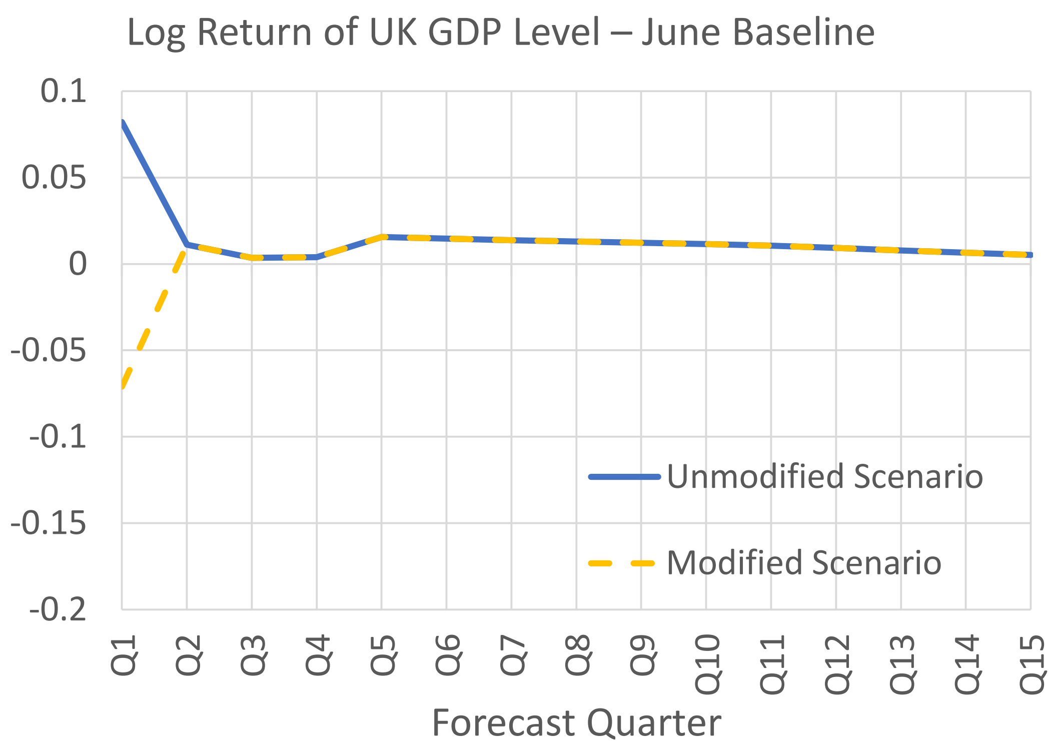




- Similar to other scenario conditioning models, GCorr Macro calculates the log return in an MEV (such as UK GDP) in each current quarter from the previous one to represent the negative or positive macroeconomic effect in that quarter. The upper right chart shows the log returns in the forecast quarters, starting from the first one corresponding to Q3-2020
- As of 30 June 2020, the UK GDP shows a large positive return (i.e., positive impact to the economy) based purely on its path in Q2- and Q3-2020. This return signals a significant improvement in the economic environment, which few people would find intuitive. Such a return calculation for Q3-2020 does not take into account the sudden and large drop of the UK GDP in Q2-2020 that still affects the economy in Q3-2020 and beyond

A Potential Solution to Q2 ECL Calculation





» To overcome the challenges in applying the GCorr Macro model on macroeconomic scenarios where MEV values exhibit truly unprecedented magnitude of change and oscillation in Q2-2020 and Q3-2020, one can incorporate the lasting impact of the severe negative shock in Q2-2020 by replacing the MEVs in Q2-2020 with their Q1-2020 values

» For example, the UK GDP of 2020Q1 is 2053. The forecasts of 2020Q2 and 2020Q3 are 1762 and 1912, respectively. The modified log return for 2020Q3 is calculated as ln(1912/2053) = -0.07 instead of ln(1912/1762) = 0.08

* The technique of replacing 2020Q2 MEVs with their values of 2020Q1 is also applied in a separate study of default risk reporting and projection by Moody's Investors Service. See "Default Trends – Global: May 2020 Default Report," available on moodys.com after registration.

IFRS 9 Impairment Benchmark Results

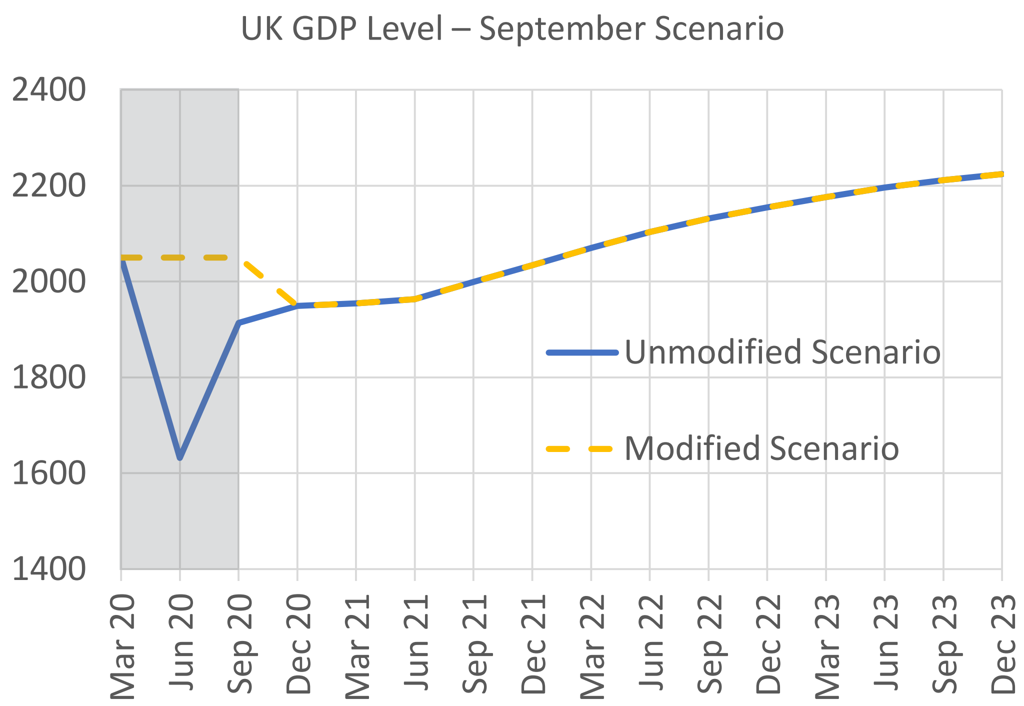
Portfolio	Analysis Run	IFRS 9 ECL Rate			One-Year ECL Rate
		S1	Baseline	S3	Baseline
Europe	Q2-2020 without Scenario Conditioning		0.58%		0.38%
	Q2-2020 – Unmodified June Scenarios	0.29%	0.30%	0.38%	0.24%
	Q2-2020 – Modified June Scenarios	0.60%	0.77%	1.28%	0.66%
Middle East	Q2-2020 without Scenario Conditioning		2.38%		1.97%
	Q2-2020 – Unmodified June Scenarios	1.72%	1.92%	3.05%	1.63%
	Q2-2020 – Modified June Scenarios	2.72%	3.15%	4.73%	2.81%
North America	Q2-2020 without Scenario Conditioning		1.48%		1.12%
	Q2-2020 – Unmodified June Scenarios	0.64%	0.87%	1.29%	0.76%
	Q2-2020 – Modified June Scenarios	1.76%	2.39%	4.30%	2.21%

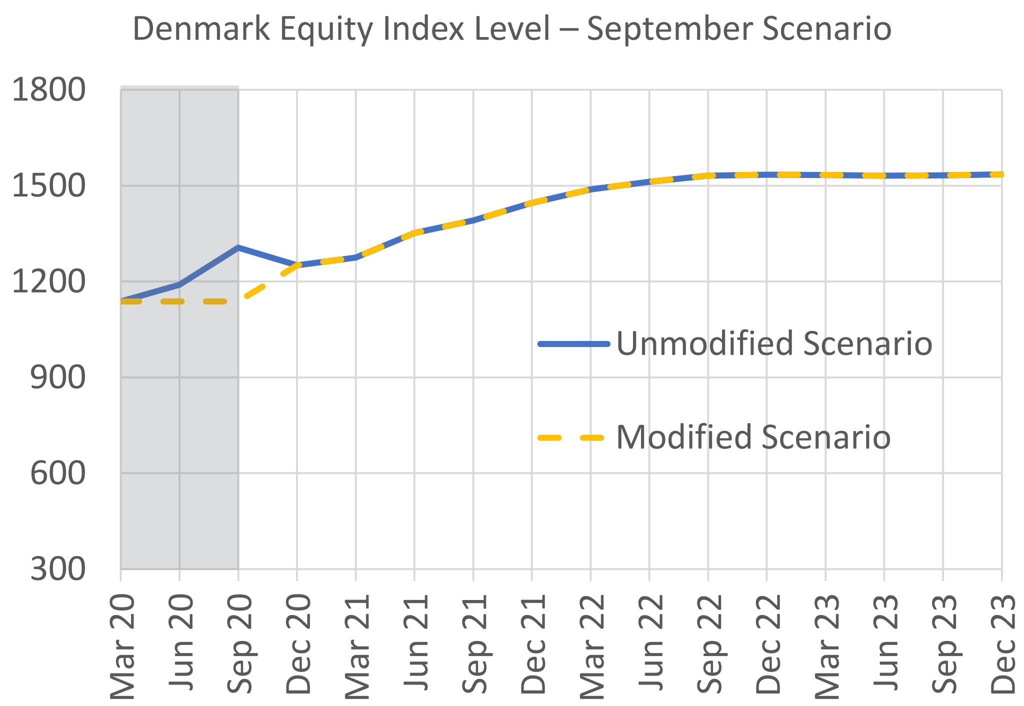
- Without scenario modification, Q2-2020 ECL rate under the June Baseline scenario is significantly lower than that before scenario conditioning
- With the simple scenario modification, the Baseline ECL rate is mildly higher than that before scenario conditioning, reflecting the common perception of economic outlook at the end of Q2-2020
- The behavior is similar in the Middle East and North America

Scenario Patterns in Sept Are More Involved than those in June

With more variation across countries and MEVs than Q2

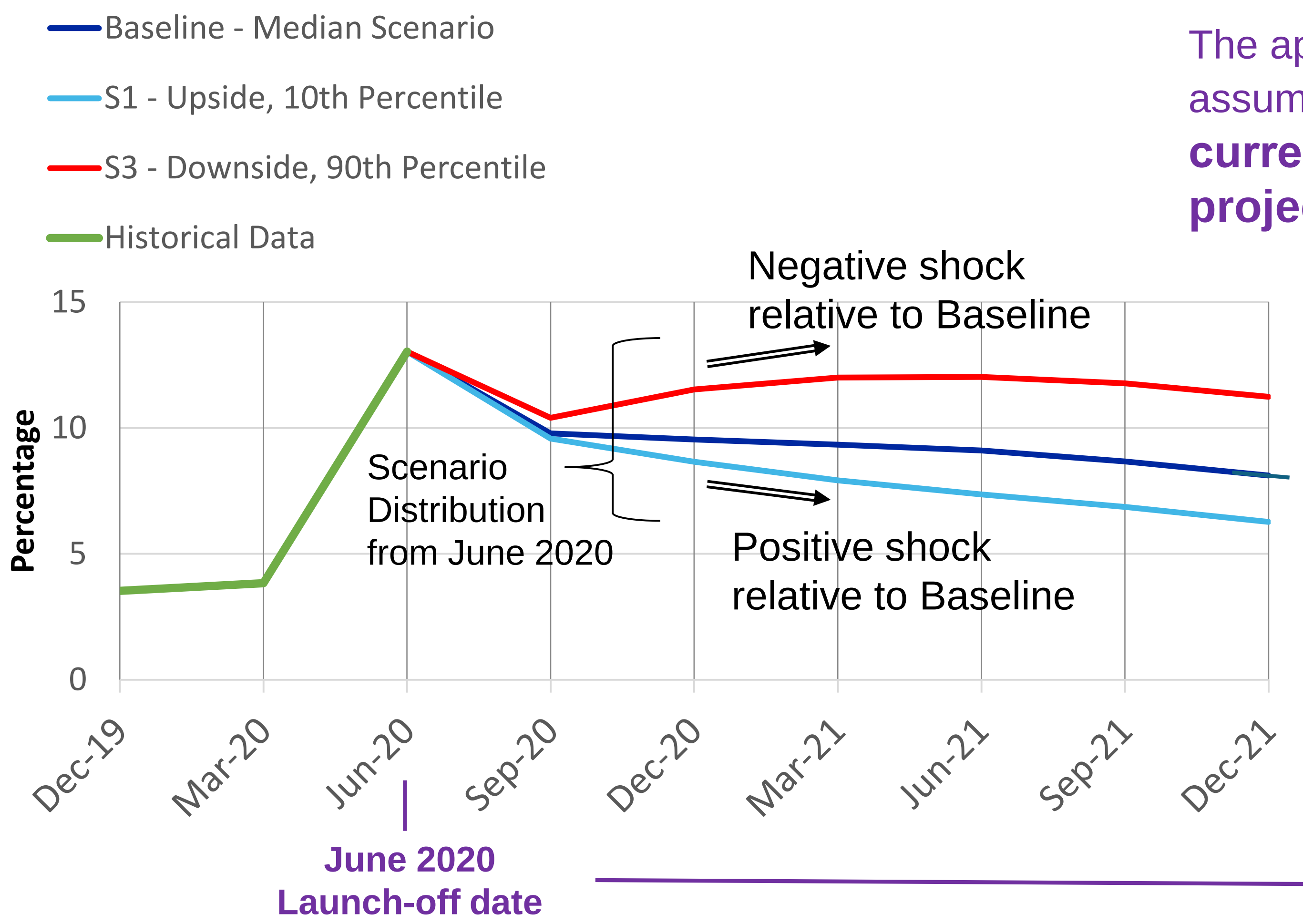
- Different from Q2 reporting, where virtually all macroeconomic variables portray a similar pattern, September scenarios call for additional ruminations in Q3 reporting
- Depending on the country and MEV set, different scenario treatments might be appropriate to true economic environment and outlook; management overlay is often necessary





Align PIT Credit Assessments with Baseline Scenario Forecast

US unemployment rate at the June 2020 launch-off date as an example



The approach aligns the conditional PDs with the assumption that **the Baseline scenario is the current market's central forward-looking projection**

PIT PD as of the Launch-off date assumes that the Baseline Scenario is the median macroeconomic scenario.

Summary and Take-away

- COVID-19 has led to unprecedented macroeconomic environment and outlook that are often out of the expected range of model inputs
- Scenario-conditioning models that are calibrated with pre-COVID data may not be able to produce sensible results when they are applied to macroeconomic forecasts showing huge changes and swings
- In some situations, a relatively simple adjustment on the timing of economic variables may help capture the sensitivities to macroeconomic factors representative of the credit environment
- The same treatment may not work as well in other situations. Aligning Point-in-Time credit assessments with Baseline scenario forecast has the potential of producing sensible and stable results even under extreme scenarios