Macroeconomic Variables

The sensitivity of the ECL model with respect to potential changes in projections for key MEVs is shown in the tables below, which provides ECL impacts for Stages 1 and 2 from one sigma downward and upward shifts applied separately to each group of MEV as of December 31, 2022 and December 31, 2021. A sigma shift is a standard deviation used in statistics and probability calculations and is a measure of the dispersion of the values of a random variable. Each of these groups consists of MEVs from the same category:

– GDP growth rates: includes USA, Eurozone, Germany, Italy, Developing Asia, Emerging Markets
– Unemployment rates: includes USA, Eurozone, Germany, Italy, Japan, Spain
– Equities: S&P500, Nikkei, MSCI Asia
– Credit spreads: ITX Europe 125, High Yield Index, CDX IG, CDX High Yield, CDX Emerging Markets
– Real Estate: Commercial Real Estate Price Index
– Commodities: WTI oil price, Gold price

Although interest rates and inflation are not separately included in the MEVs above, the economic impact of these risks is adequately reflected in other macroeconomic variables, such as GDP growth rates, unemployment, equities and credit spreads as higher rates and inflation would filter through these forecasts and be included in the ECL model and sensitivity analysis below.

In addition, the sensitivity analysis only includes the impact of the aggregated MEV group (i.e. potential correlation between different MEV groups or the impact of management overlays is not taken into consideration). ECLs for Stage 3 are not affected and not reflected in the following tables as its calculation is independent of the macroeconomic scenarios.

Sensitivity impact is significantly higher as of December 31, 2022 compared to December 31, 2021, due to the overall higher level of ECL on which basis the sensitivity analysis was performed, taking into account the continued economic uncertainty from the effects of the war in Ukraine, geopolitical environment, rising interest rates and inflation as of December 31, 2022.

IFRS 9 – Sensitivities of Forward-Looking Information applied on Stage 1 and Stage 2 – Group Level

	December 31, 2022			
	Upward sensitivity		Downward sensitivity	
	Upward shift	ECL impact in € m.	Downward shift	ECL impact in € m.
GDP growth rates	1pp	(83.3)	(1)pp	101.4
Unemployment rates	(0.5)pp	(40.8)	0.5pp	58.0
Real estate prices	5%	(5.6)	(5)%	6.0
Equities	10%	(15.8)	(10)%	19.6
Credit spreads	(40)%	(37.9)	40%	42.6
Commodities[1]	10%	(14.8)	(10)%	15.6

[1] Here the sign of the shift applies to oil prices changes. Gold price changes have the opposite sign. 1pp (percentage point), e.g. GDP shifts from 3% to 4% // 1% (percentage change), e.g. Real estate price shifts from 100 to 101.

	December 31, 2021			
	Upward sensitivity		Downward sensitivity	
	Upward shift	ECL impact in € m.	Downward shift	ECL impact in € m.
GDP growth rates	1pp	(49.4)	(1)pp	55.5
Unemployment rates	(0.5)pp	(23.8)	0.5pp	25.4
Real estate prices	5%	(3.9)	(5)%	4.2
Equities	10%	(7.2)	(10)%	9.4
Credit spreads	(40)%	(20.9)	40%	23.5
Commodities	10%	(15.0)	(10)%	16.2

In the second and third quarter of 2022, the Group conducted a variety of scenarios to assess the downside impact should the cessation of Russia gas supplies to Europe lead to a sharper than expected economic slowdown and the emergence of more widespread defaults across European corporate and household exposures. Based on such factors, the Group estimated that such an event would potentially result in an additional allowance for credit losses of up to approximately 20 basis points over an 18-month period. As of yearend 2022, the Group acknowledged that the aforementioned scenario did not materialize and is no longer deemed plausible. Germany's gas storage was sufficiently filled to supply businesses and households over the winter, energy prices significantly declined, and alternate energy sources were identified.

The Group considered whether there were any other specific downside scenarios it should consider in its sensitivity analysis, but as the uncertainty related to interest rates and inflation is already included in the MEVs and the bank did not observe any specific vulnerable credit risk concentrations in its portfolios, the Group believes the one standard sigma shift provides the best information on the model's ECL sensitivity.