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Introduction

EBA guidelines on Interest Rate Risk in the Banking Book (IRRBB) are designed to help EU banks effectively manage their interest rate risk and maintain a stable earnings stream. EBA also requires the credit spread risk from the banking book (CSRBB). Banks can effectively manage their exposure to interest rates and spread risks by implementing a comprehensive IRRBB and CSRBB management framework that includes: regular stress testing, sensitivity analysis, effective hedging strategies, and appropriate governance and risk management structures. Under those frameworks, banks must regularly monitor and report interest rates and credit spread risk metrics.

EBA's updated guidelines for IRBB and CSRBB

The EBA released updated guidelines for IRRBB and CSRBB in October 2022. The refreshed guidelines underlined the increased regulatory focus on both risks. There was continuity with the 2018 versions, but also included new aspects including identifying non-satisfactory internal models for IRRBB management[1]. With market volatility as it is, the need to be stressing books has been rising and this directive from the regulator cements that.

Specifically, the EBA guidelines require banks to:

1. Establish a comprehensive IRRBB management framework that covers all interest rate-sensitive measures applied to portfolios and accounts of loans, deposits, trading activities, and derivatives placed on off-balance-sheet portfolios.

2. Establish an appropriate governance structure, including an independent risk management function, a risk committee, and a board of directors that oversees IRRBB activities.

3. Establish and maintain an appropriate risk appetite for interest rate risk and to set limits on exposure to this risk.

EBA also expects financial institutions to consider the credit spread risk in the banking book (CSRBB). The CSRBB considers the risk arising from changes in non-trading book instruments' credit spread, such as loans and deposits.

The are two main elements in capturing CSRBB:

1. The changes in the market price of credit risk are driven by the idiosyncratic credit spread and defining the credit risk premium required by market participants and are applied to the financial instruments' level.
2. The changes in the "market liquidity spread" are driven by the willingness of the counterparties to fulfil their credit obligations. Thus, it defines the liquidity premium expressed by the market participants.

CSRBB can significantly impact a bank's earnings and capital adequacy, particularly in the event of a sharp and unexpected widening of credit spreads. Banks must therefore measure and manage CSRBB as part of their overall interest rate risk management framework.

IRRBB and CSRBB measure the Economic Value (EV) measures and Net interest income (NII) measures plus market value changes, applied in the context of the sensitivity analysis. The IRRBB refers to changes in interest rates, and the CSRBB to changes in market credit/liquidity spreads. Banks may also perform and report the Economic value of equity (EVE) and the measure of EV where the cash flows reference to the equity are excluded.

Banks must reconsider their existing IRRBB and CSRBB management framework and ensure they have a comprehensive basis that includes policies, procedures, risk limits and covers all sources of interest rate risk.

EBA Stress test guidelines

The EBA guidelines require banks to perform regular stress tests to assess the impact of different scenarios on their balance sheet, including both parallel and non-parallel interest rate shocks. The stress tests should be based on a range of economic scenarios and include an assessment of the impact of changes in customer behaviour, such as prepayments or withdrawals.

The analysis must be performed in both Run-off and Dynamic balance. Thus, financial contracts in both on- and off-balance-sheet accounts are incorporated into future business strategies and consistently adjusted for the relevant scenario.
The EBA guidelines also require banks to have appropriate hedging strategies in place to manage their interest rate risk. These strategies should be regularly reviewed and updated to ensure that they remain effective in mitigating the bank's exposure to interest rate risk.

[1] Guidelines on IRRBB and CSRBB | European Banking Authority (europa.eu)

Supervisors expect the banks to identify all underlying risk factors impacting interest rates and to conduct stress testing to assess their resilience to adverse interest rate scenarios. In this context, banks must develop a comprehensive IRRBB management framework that includes policies, procedures, and risk limits which covers all sources of interest rate risk in the banking book.

Cases in line with the EBA approach

Taking all the guidelines into account, let's speak through some cases which have been assumed for a typical bank's requirements.

Let's assume a financial credit institution has a significant portion of its balance sheet invested in:

- long-term, fixed and variable-rate loans
- short-term fixed and floating-rate deposit loans

The asset classes are exposed and thus sensitive to both interest rates and credit spreads. The deposits are exposed to interest rates and behaviour risk driven by the interest rates. The main scenarios are the interest rates rising, where the bank experiences a significant impact on net interest income and economic value in the non-trading book activities.

Performing stress and sensitivity analysis

Case 1: the bank performs deterministic shocks on IR and CS-sensitive products to perform Interest rate risk (IRRBB), and Credit spread risk (CSRBB) analysis.

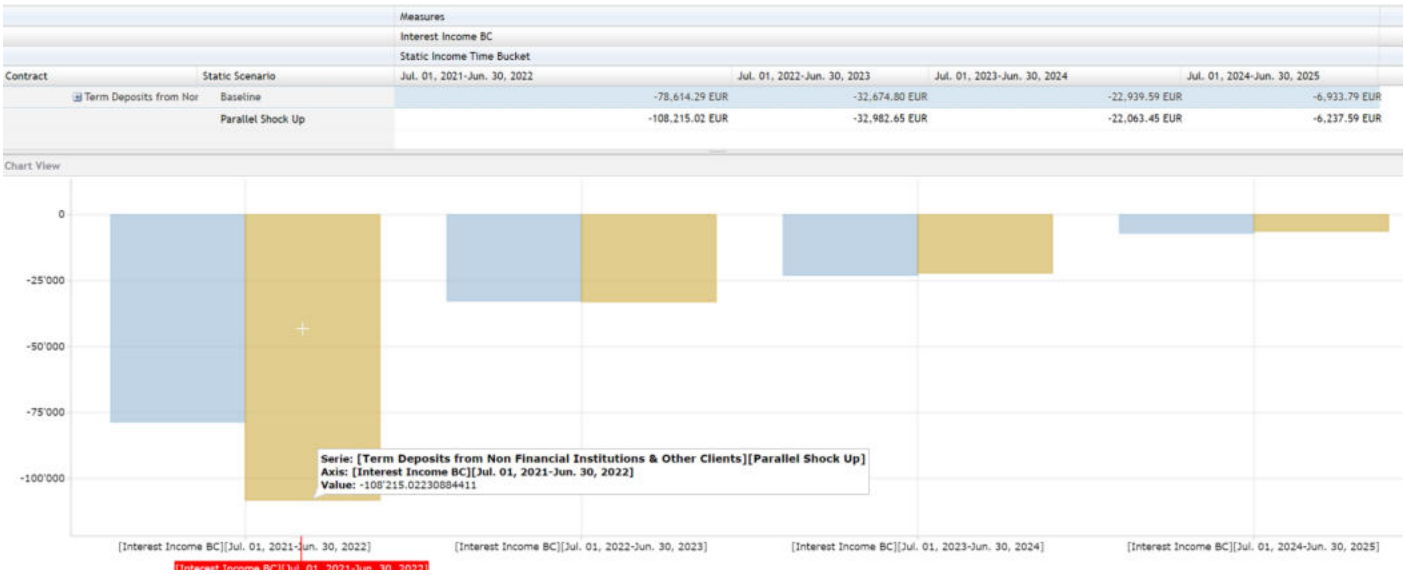
Figure 1

	Static Scenario			
	Base Case	Interest and Credit Spread shock	Credit Spread Shock	Interest Rate Shock
	Measures	Measures	Measures	Measures
Contract	NPV BC	NPV BC	NPV BC	NPV BC
Floating Mortgages	1,033,100.63 EUR	1,018,434.20 EUR	1,026,531.79 EUR	1,024,881.42 EUR
Mortgage 2 (Credit) Unsecured Lending to Corporate	515,982.78 EUR	505,435.63 EUR	509,413.94 EUR	511,882.85 EUR
Mortgage 1 Unsecured Lending to Corporate	517,117.85 EUR	512,998.57 EUR	517,117.85 EUR	512,998.57 EUR

The output of this analysis is illustrated in figure 1 above, where the shocks on the sample contracts mortgage portfolio are broken down into the interest rate and the credit spread impact.

Case 2: Based on a static run-off strategy, the bank has to perform transactional deposit and accounts sensitivity analysis to behaviour risk that is sensitive to the IR and CS risk factors.

Figure 2



As can be seen in figure 2, under the parallel shock-up scenario, the increase in the interest rates triggers an increase in interest expenses in the short run. However, the depositors are running off to other asset classes with higher yields, paying back the outstanding loans and returning the interest expenses to balance.

Case 3: Performing and reporting net interest income measures within a given time horizon resulting from the movements of IR (IRRBB) and credit spreads (CSRBB).

Figure 3

		Static Income Time Bucket			
		Jul. 01, 2021-Jun. 30, 2022	Jul. 01, 2022-Jun. 30, 2023	Jul. 01, 2023-Jun. 30, 2024	Jul. 01, 2024-Jun. 30, 2025
		Measures	Measures	Measures	Measures
Contractual Term	Static Scenario	Interest Income BC	Interest Income BC	Interest Income BC	Interest Income BC
> 2-Year Tenor	Baseline	2,233,636.76 EUR	1,959,353.08 EUR	1,371,261.72 EUR	1,048,477.78 EUR
	Parallel Shock Up	2,580,612.83 EUR	2,535,897.47 EUR	1,944,150.91 EUR	1,467,639.22 EUR
	Parallel Shock Down	2,173,784.10 EUR	1,839,875.33 EUR	1,459,231.94 EUR	1,230,333.88 EUR
	Steepener Shock	2,289,109.87 EUR	1,978,862.45 EUR	1,547,581.20 EUR	1,270,302.99 EUR
	Flattener Shock	2,510,544.91 EUR	2,427,690.29 EUR	1,851,248.61 EUR	1,394,804.79 EUR
		2,590,152.36 EUR	2,558,141.33 EUR	1,945,006.01 EUR	1,446,671.42 EUR

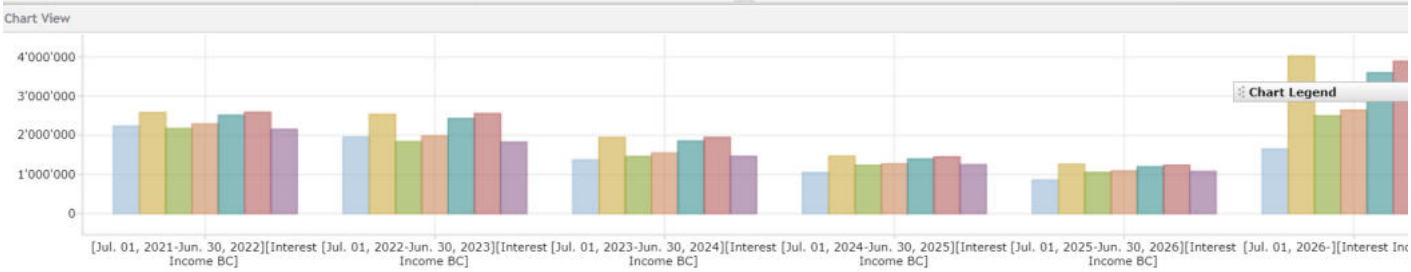


Figure 3 illustrates the evolution of the impact of the interest rate shocks per scenario on the medium-term contracts in the banking book. The bank has to report, over calculation time steps, the effects of shock scenarios on the interest income.

Case 4: Bank is performing and reporting sensitivity GAPs under different terms and the underlying interest rate risk factors, as illustrated in figures 4 and 5.

Figure 4

	Sens. GAP TBS					
	1D	1M	6M	9M	1Y	4Y
	Measures	Measures	Measures	Measures	Measures	Measures
Interest Rate Risk Factor	Gap Value BC	Gap Value BC	Gap Value BC	Gap Value BC	Gap Value BC	Gap Value BC
EUR.LIBOR	1,384,809.94 EUR	2,349,124.81 EUR	1,604,007.13 EUR	-187,580.76 EUR	-73,408.89 EUR	-642,754.18 EUR
EUR.SWA	-438,568.24 EUR	-1,097,700.72 EUR	913,977.65 EUR	1,612,054.72 EUR	2,588,033.87 EUR	-117,219.16 EUR
EURIBOR	1,101,784.54 EUR	247,127.04 EUR	1,474,952.24 EUR	-134,031.32 EUR	2,542,135.28 EUR	-248,579.85 EUR
USD.GOV	-0.15 EUR	-4.48 EUR	96,778.35 EUR	100,569.02 EUR	259,296.13 EUR	45,118.24 EUR
USD.LIBOR	-29.21 EUR	-848.64 EUR	-74,334.06 EUR	-72,237.86 EUR	-124,304.74 EUR	

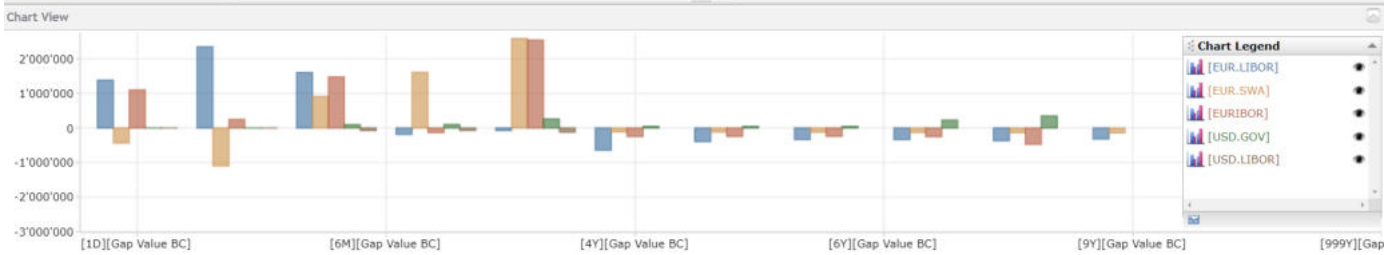


Figure 4 illustrates the sensitivity GAP reports driven by the Parallel shock scenario.

Figure 5

	Sens. GAP TBS					
	1D	1M	6M	9M	1Y	4Y
	Measures	Measures	Measures	Measures	Measures	Measures
Interest Rate Risk Factor	Gap Value BC	Gap Value BC	Gap Value BC	Gap Value BC	Gap Value BC	Gap Value BC
EUR.LIBOR	1,385,165.42 EUR	2,329,008.71 EUR	1,579,160.23 EUR	-186,447.68 EUR	-41,404.82 EUR	-542,082.03 EUR
EUR.SWA	-461,278.28 EUR	-1,124,427.83 EUR	897,479.73 EUR	1,626,574.72 EUR	2,539,026.02 EUR	-92,692.72 EUR
EURIBOR	1,102,056.15 EUR	238,780.89 EUR	1,435,185.97 EUR	-158,537.65 EUR	2,521,713.67 EUR	-209,812.12 EUR
USD.GOV	-0.15 EUR	-4.40 EUR	-30,639.27 EUR	-22,235.82 EUR	-50,600.78 EUR	52,649.41 EUR
USD.LIBOR	-29.28 EUR	-848.33 EUR	38,360.92 EUR	35,027.54 EUR	176,478.78 EUR	

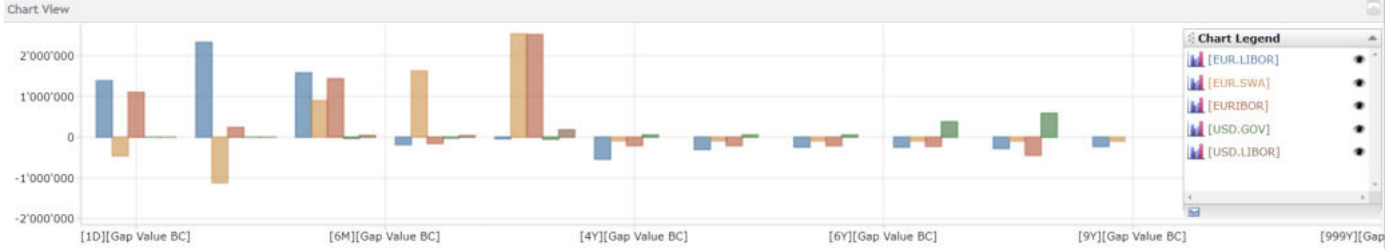
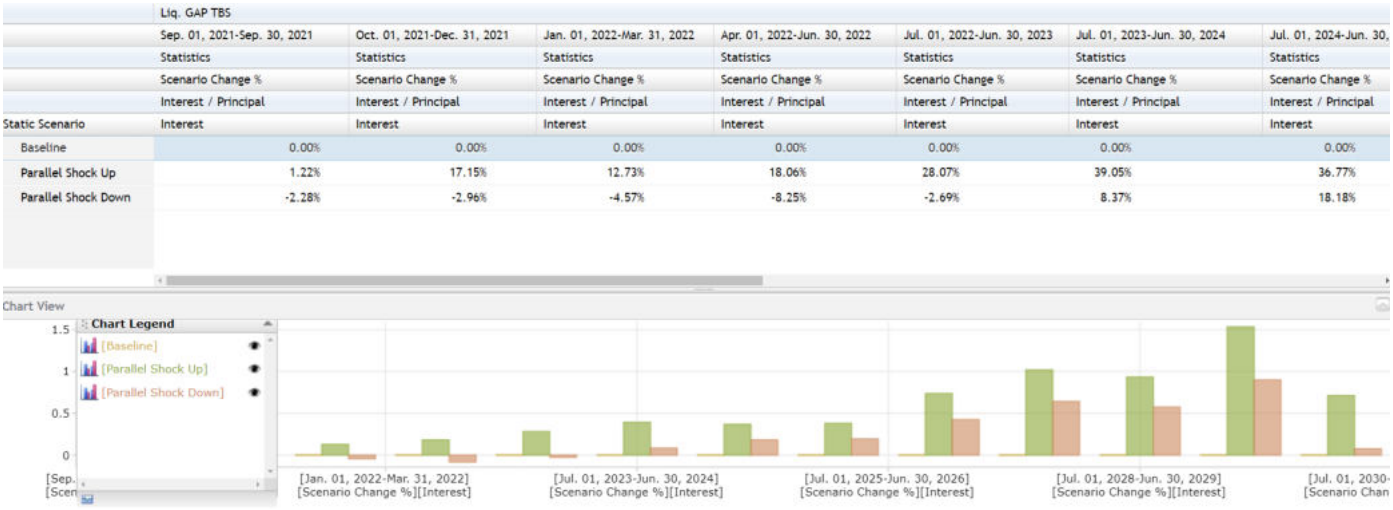


Figure 5 illustrates the sensitivity GAP reports driven by the Parallel shock-down scenario.

Case 5: In this case, the bank has to evaluate the cash flows that are conditional and unconditional to interest rate (IR) movements. Figure 6 illustrates the contribution of parallel interest rate up vs parallel interest rate down. As expected, the shock up over time contributes much more to the shock down.

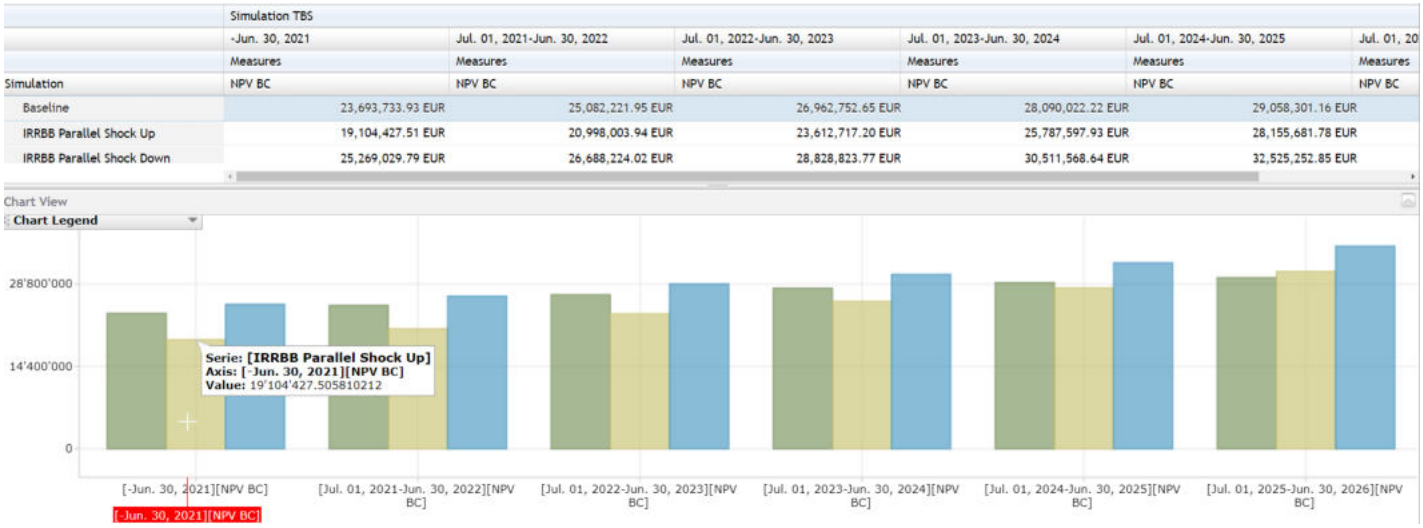
Figure 6



	Liq. GAP TBS						
	Sep. 01, 2021-Sep. 30, 2021	Oct. 01, 2021-Dec. 31, 2021	Jan. 01, 2022-Mar. 31, 2022	Apr. 01, 2022-Jun. 30, 2022	Jul. 01, 2022-Jun. 30, 2023	Jul. 01, 2023-Jun. 30, 2024	Jul. 01, 2024-Jun. 30,
	Statistics	Statistics	Statistics	Statistics	Statistics	Statistics	Statistics
	Scenario Change %	Scenario Change %	Scenario Change %	Scenario Change %	Scenario Change %	Scenario Change %	Scenario Change %
	Interest / Principal	Interest / Principal	Interest / Principal	Interest / Principal	Interest / Principal	Interest / Principal	Interest / Principal
Static Scenario	Interest	Interest	Interest	Interest	Interest	Interest	Interest
Baseline	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
Parallel Shock Up	1.22%	17.15%	12.73%	18.06%	28.07%	39.05%	36.77%
Parallel Shock Down	-2.28%	-2.96%	-4.57%	-8.25%	-2.69%	8.37%	18.18%

Case 6: In the dynamic balance sheet, the bank applies strategies for future business expectations and performs Economic value (EV) and Economic value of equity (EVE) measures.
In the analysis and the report illustrated in figure 7, the first time bucket, one can see the impact of the scenarios in the banking book on balancing accounts. The evolution of the economic value (i.e. dynamic balance sheet) is shown through all simulation time buckets under all three selected scenarios - the baseline, the parallel shock up and the parallel shock down.

Figure 7



	Simulation TBS					
	-Jun. 30, 2021	Jul. 01, 2021-Jun. 30, 2022	Jul. 01, 2022-Jun. 30, 2023	Jul. 01, 2023-Jun. 30, 2024	Jul. 01, 2024-Jun. 30, 2025	Jul. 01, 20
	Measures	Measures	Measures	Measures	Measures	Measures
Simulation	NPV BC	NPV BC	NPV BC	NPV BC	NPV BC	NPV BC
Baseline	23,693,733.93 EUR	25,082,221.95 EUR	26,962,752.65 EUR	28,090,022.22 EUR	29,058,301.16 EUR	
IRRBB Parallel Shock Up	19,104,427.51 EUR	20,998,003.94 EUR	23,612,717.20 EUR	25,787,597.93 EUR	28,155,681.78 EUR	
IRRBB Parallel Shock Down	25,269,029.79 EUR	26,688,224.02 EUR	28,828,823.77 EUR	30,511,568.64 EUR	32,525,252.85 EUR	

As we can see in the above case, interest and spreads significantly impact the Interest income under sensitivity and stress analysis. Thus, banks must perform scenarios and strategies per the EBA expectations. The reports illustrate some of the typical results that the Bank should be able to report.

Conclusion

Even though risk managers have an ever-growing catalogue of priorities, the requirements from the EBA and BCBS on IRRBB and CSRBB should be high on that list. By setting up robust frameworks, a bank can remain compliant, optimized and organized. And of course, interest rates do not only affect IRRBB, but all risk types, including credit and behaviour risks, impacting value liquidity and P&L. A bank should be looking at risks holistically in order to drive a unified risk management strategy across the portfolio, while stress testing and scenario analysis shouldn't be static. The need to look ahead is paramount, where IRRBB and CSRBB should be measured and managed over the evolution of the markets and future portfolios.
Therefore, regulatory obligations aside, the analysis gained from thorough stressing and scenario building, can be priceless in understanding exactly how interest rates will affect banks' bottom lines.