EBA REPORT
RESULTS FROM THE 2024 MARKET RISK BENCHMARKING EXERCISE – PART 2 - FRTB ASA

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Contents

List of figures and tables

Figures

Tables

Abbreviations

APR	all price risk
CA	competent authority
CDS	credit default swap
CO	commodities
CRD	Capital Requirements Directive
CRR	Capital Requirements Regulation
CS	credit spread
CS01	credit spread value of 1 basis point changes
CTP	correlation trading portfolio
CV	coefficient of variation
EBA	European Banking Authority
EQ	equity
ES	expected shortfall
EU	European Union
FRTB	fundamental review of the trading book
FX	foreign exchange
HPE	hypothetical portfolio exercise
HS	historical simulation
IMV	initial market valuation
IQD	interquartile dispersion
IR	interest rates
IRC	incremental risk charge
IT	information technology
ITS	implementing technical standards
LGD	loss given default
MC	Monte Carlo
MR	market risk
MRWA	market-risk-weighted asset
OFR	Own Funds Requirements
P&L	profit and loss
PD	probability of default
Q&A	question and answer
RTS	regulatory technical standards
RWA	risk-weighted asset
sVaR	stressed value at risk
SBM	Sensitivities Based Method
VaR	value at risk

1. Executive summary

1. The 2024 benchmarking exercise is the third year of the SBM sensitivities and Own Funds Requirements (OFR) data collection. It is also the first year that EBA collects ASA DRC and RRAO data. Therefore, given the volume of information to be shared and the importance of the ASA methodology within the FRTB implementation, a separate market risk benchmarking Report is provided to expand the findings of the IMA benchmarking report.

2. The data FRTB ASA collection revealed to be quite valuable for assessing and understanding differences at a very granular level; still, a concise representation is not yet available. For this reason, this Report focuses mainly on the analysis of the SBM OFR and provides examples as guidance on how sensitivities have been provided at the portfolio level.

3. Section 2.1 shows that the SBM OFR data submitted by the banks was quite complete. As expected, the SBM OFR dispersion is generally lower than the dispersion for the IMA Risk Measures (VaR and SVaR), as shown in Figure 32. This is an expected result since standardised measures are supposed to be quite consistent (almost identical theoretically, apart from minor differences that may result from differences in market data and valuation approaches). On the other hand, there are portfolios where the IQD is higher for the SBM measures than for the VaR measures (see Figure 4). For those portfolios, the implementation of SBM may be challenging for some banks or there may be degrees of freedom in the regulatory methodology..

4. In any case, the table below shows that the IQD of the SBM OFR decreased over the last three exercises, 11% on average in 2024, vs. 13% in 2023 and 16% in 2022, showing improvements in the data submission and SBM implementation.

Table 1: Average Interquartile dispersion by Asset Classes – SBM OFR

	Interquartile range 2024 exercise	Interquartile range 2023 exercise	Interquartile range 2022 exercise
Equity	12%	13%	17%
IR	8%	8%	11%
FX	2%	5%	2%
Commodity	20%	20%	26%
Credit spreads	14%	18%	22%
CTP			

5. Finally, the level of detail in the SBM OFR submission allows the supervisors to clearly define which are the asset class and risk class components of the OFR (see Figure 5 and Figure 6), and this allows them to identify areas of potential problems in the application of the standardised methodology.

6. In section 2.3, the report provides a more detailed representation of the different risk component of the SBM OFR. From there it is clear that as expected the IR component is the most consistently provided, and same level of inconsistency in the data submission are present for the (non-ACPR) CS and FX components.

7. Section 2.4 provides some examples of the sensitivities for some portfolios in the different asset classes. Based on these sensitivities, in section 2.5, three issues are examined: the Fx sensitivity submissions, the bucketing and the aggregation formula. The Fx component is the element that causes the most variability in the benchmarking OFR. Fortunately, this is due to inconsistent implementation of a benchmarking requirement, rather than an actual implementation issue of the FRTB ASA. Ways to alleviate this issue will be inspected in future exercises. On the other hand, the bucketing issue is not a general problem but is often seen in the case of specific outlier submissions.

8. The last issue, the aggregation formula, is examined in section 2.6. The 2024 exercise also marks the first year that the validation instruments/portfolio for the SBM methodology were introduced by the new Annex 10 of the benchmarking ITS. Unfortunately, only a small number of banks complied with these new requirements. Nonetheless, although with few submissions, it seems clear that even the aggregation formula of the ASA FRTB can cause some dispersion, especially for the Delta and Curvature components.

9. The report closes with the new part of the FRTB ASA data collection: DRC and RRAO. These components seem to be computed in a sufficiently consistent manner, but due to the inconsistency in the data submission (i.e. some banks reported the same data, others did not, for the same portfolios), this would inevitably increase the dispersion of the total ASA OFR. A review of this matter will benefit future exercises, where a more consistent reading of the ITS requirements will be achieved.

2. FRTB-ASA

10. Since the ITS 2022, the benchmarking exercise introduced the sensitivities-based method (SBM) component of the alternative standardised approach (ASA)/FRTB SA to the EBA Benchmarking exercise.

11. The ITS 2022 required banks to submit granular sensitivity data and aggregated OFR computed using SBM. The submission requirements remained the same for the 2023 exercise. In the 2024 exercise, the data collection was extended to the DRC and RRAO components of the ASA methodology.

12. The high granularity of data submissions for the sensitivities, although it has benefited the analysis of the results by CAs in various ways, does not allow, for the moment, a concise graphical representation of the data, therefore, this report focuses more on the representation of the ASA OFR aggregated data. However, the report presents some observations on the granular data, that should be useful also at the sensitivities level.

2.1 Assessment of completeness of SBM OFR submissions

13. Overall, the submission rate for new SBM OFR data is considered broadly adequate and fairly high. Figure 1 shows the total number of SBM OFR submissions per portfolio. Overall, it can be concluded that, for each portfolio, SBM OFR figures were reported whenever the traditional risk measures (e.g., VaR or SVaR) ware also reported.

14. Very few banks drive the discrepancy between the number of submissions for IMA and SBM.

Figure 1: SBM OFR total submissions by portfolio

Number of Submitted SBM-OFR by Portfolio

Source: C 120.06
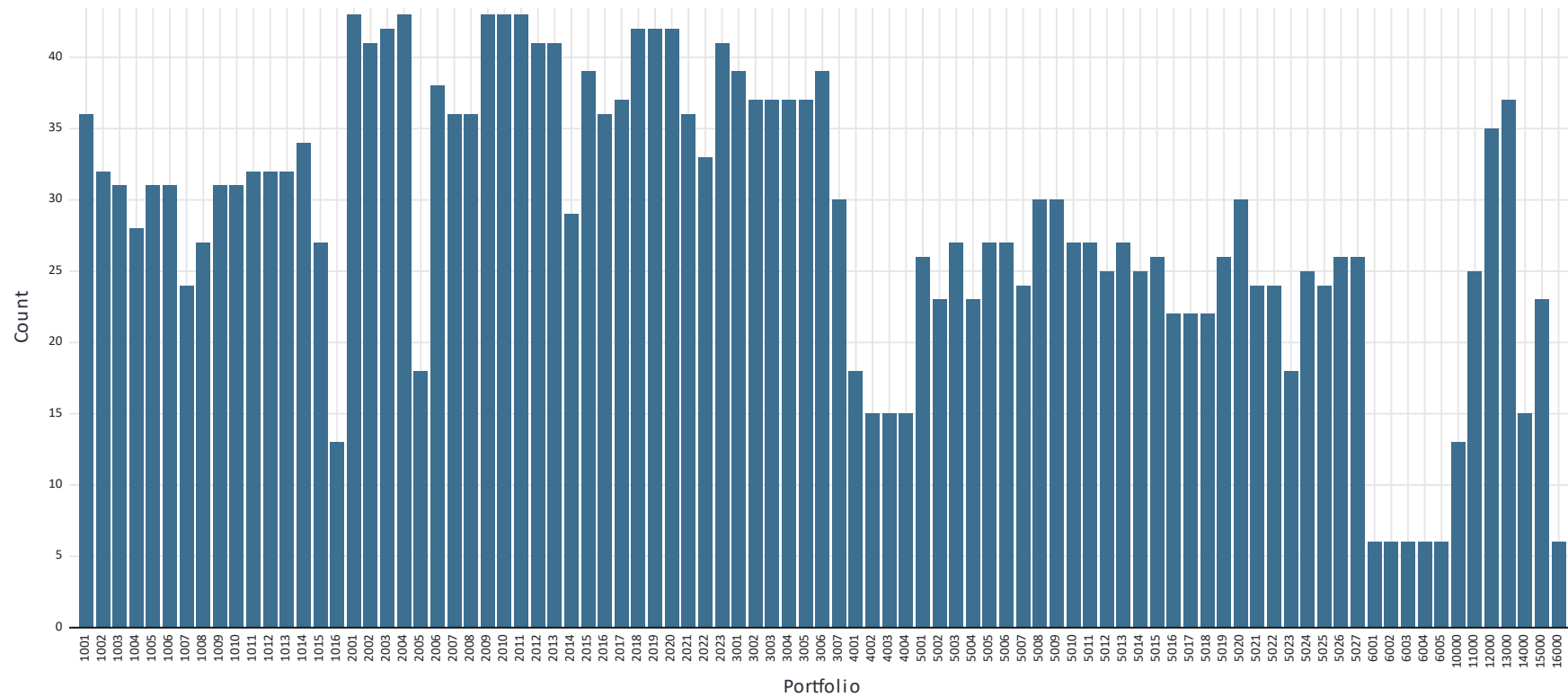
15. This is also confirmed in Figure 23, which presents the differences in the numbers of submissions between the SBM OFR and the IMA OFR by portfolio. Almost all institutions that have submitted data for IMA, have also submitted figures for SBM. However, there are also institutions that have submitted SBM OFRs but no IMA figures for certain portfolios.

2.2   SBM Variation within Portfolios

16. As for the other risk measures, dispersion is a very important factor to consider and monitor in the benchmarking process for OFR-SBM. Averaged statistics of dispersion can be seen in Table 1, while detailed figures for SBM OFR, such as benchmarking of the sample, quantiles of the distribution and IQD figures by portfolios, are reported in Table 3.

17. Figure 2 illustrates the variation of SBM-OFR by portfolios, where outliers are highlighted by applying the EBA market risk outlier definition[1] (median +/- two times truncated standard deviation).

18. Of course, other definitions of outliers are possible. For instance, the industry applies a simpler outlier definition[2] in its benchmarking exercise (see Figure 24). Alternatively, the Median Absolute Deviation, i.e., MAD[3] concept could be applied (see Figure 25) or the traditional boxplot outlier definition[4] (see Figure 26).

19. To achieve a harmonious appearance, all portfolio-OFRs are standardised by the respective portfolio median, and the ordinate is log-2-transformed. In addition, the standardised OFR are top-coded at 1,600%. In Figure 2, Figure 24 and Figure 25, the cyan bars represent the standardised Interquartile Range of the respective portfolio, i.e. the distance between the ratio of the respective portfolio's first quartile to its median and the ratio of the third quartile to the portfolio's median. In all figures only portfolios are included for which at least 10 OFR observations are available.

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[1] EBA Outliers are defined as values outside the interval [ex − 2 · TSD, ex + 2 · TSD]. Where "ex" is the median of portfolio-OFRs., and TSD (truncated standard deviation) is the standard deviation of the portfolio-OFRs between the 5-th and the 95-th percentile.

[2] (50%-150% outlier definition) - Industry outliers are defined as values outside the interval [0.5 · ex, 1.5 · ex], where ex is the median of portfolio-OFRs.

[3] Median Absolute Deviation (MAD) defines outliers as values outside the interval [ex − 2 ·MAD, ex + 2 ·MAD], where MAD is the Median Absolute Deviation, i.e., MAD = median(|xi − ex|), where xi are the OFR observations of the respective portfolio and ex is their median.

[4] Outliers are defined as values outside the interval [Q25 − 1.5 · IQR, Q75 + 1.5 · IQR]. IQR is the Interquartile Range, i.e., IQR = Q75 − Q25.

Figure 2: SBM OFR variation within portfolios (EBA outliers' definition)

SBM OFR variation within portfolios

Outliers according to the truncated standard deviation definition.

All values standardised with the resp. median and topcoded at 1,600%.

Portfolios with less then 10 observations excluded. Source: C 120.06

Legend: ● outlier ● not outlier ▬ Inter-quartile range
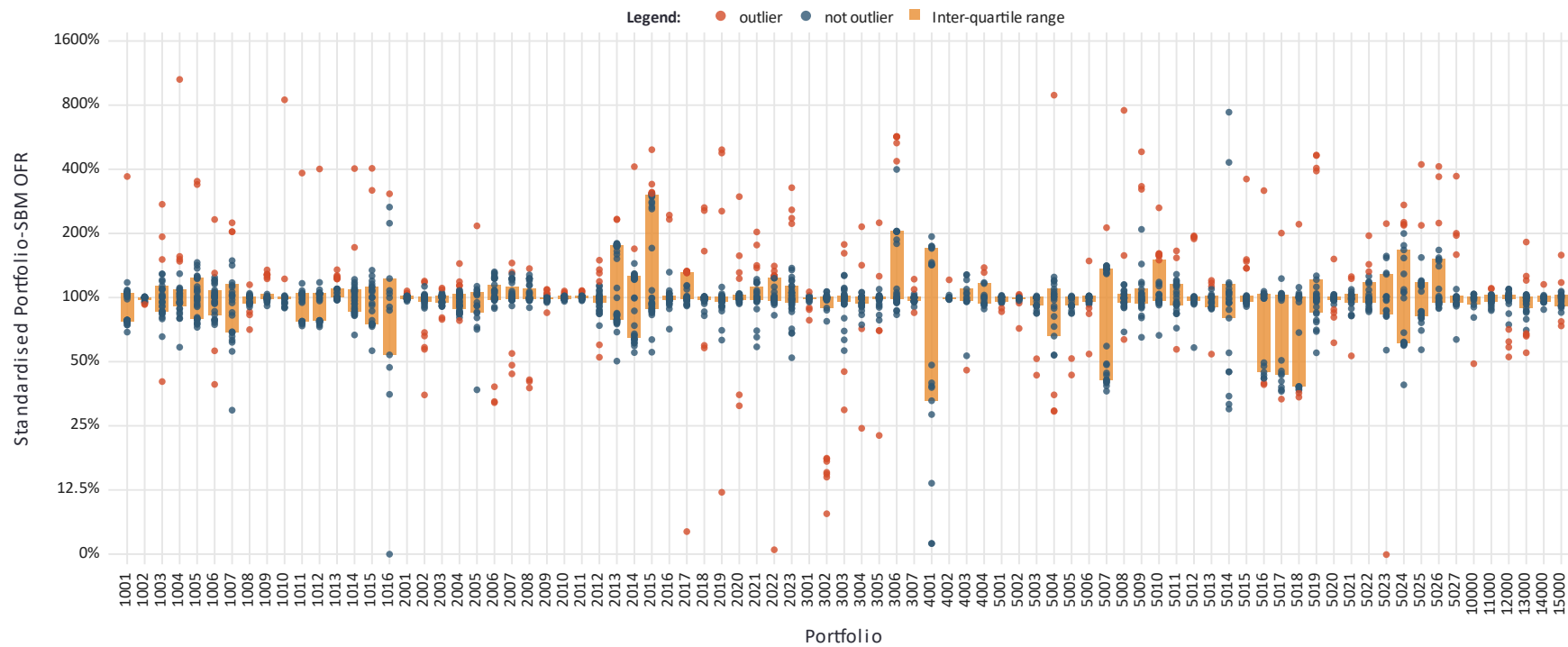
20. Figure 2 shows that for about half of the portfolios the reported OFR values are concentrated around the respective median. However, there are also several portfolios where a large dispersion is apparent, often in the form of clusters of observations. The varying dispersion can be observed more clearly in Figure 3, which depicts the standardised Interquartile Ranges in percentage points. While for 54 portfolios the standardised Interquartile Range amounts to less than 25 percentage points, 6 portfolios show values larger than 100 percentage points. This marking a substantial decrease in dispersion compared to the previous exercise where 49 portfolios the standardised Interquartile Range amounts to less than 25 percentage points, 9 portfolios show values larger than 100 percentage points.

21. Figure 27, Figure 28, Figure 29, Figure 30, and Figure 31 illustrate the variations of SBM-OFR-components attributable to different risk classes, where each risk class portfolio with less than 5 observations have been excluded in the representation. Apparently, large dispersion is persistent even on the more granular risk-class level.

22. Figure 4 compares the IQDs of SBM OFR and the VaR by portfolio. As might be expected from a standardised approach, the IQDs of VaR are larger than those of SBM OFR for many portfolios. Nevertheless, there are several portfolios for which the opposite holds.

Figure 3: SBM OFR variation within portfolios: Interquartile Range

SBM OFR variation within portfolios: Interquartile Range

Portfolios with less then 10 observations excluded. Source: C 120.06
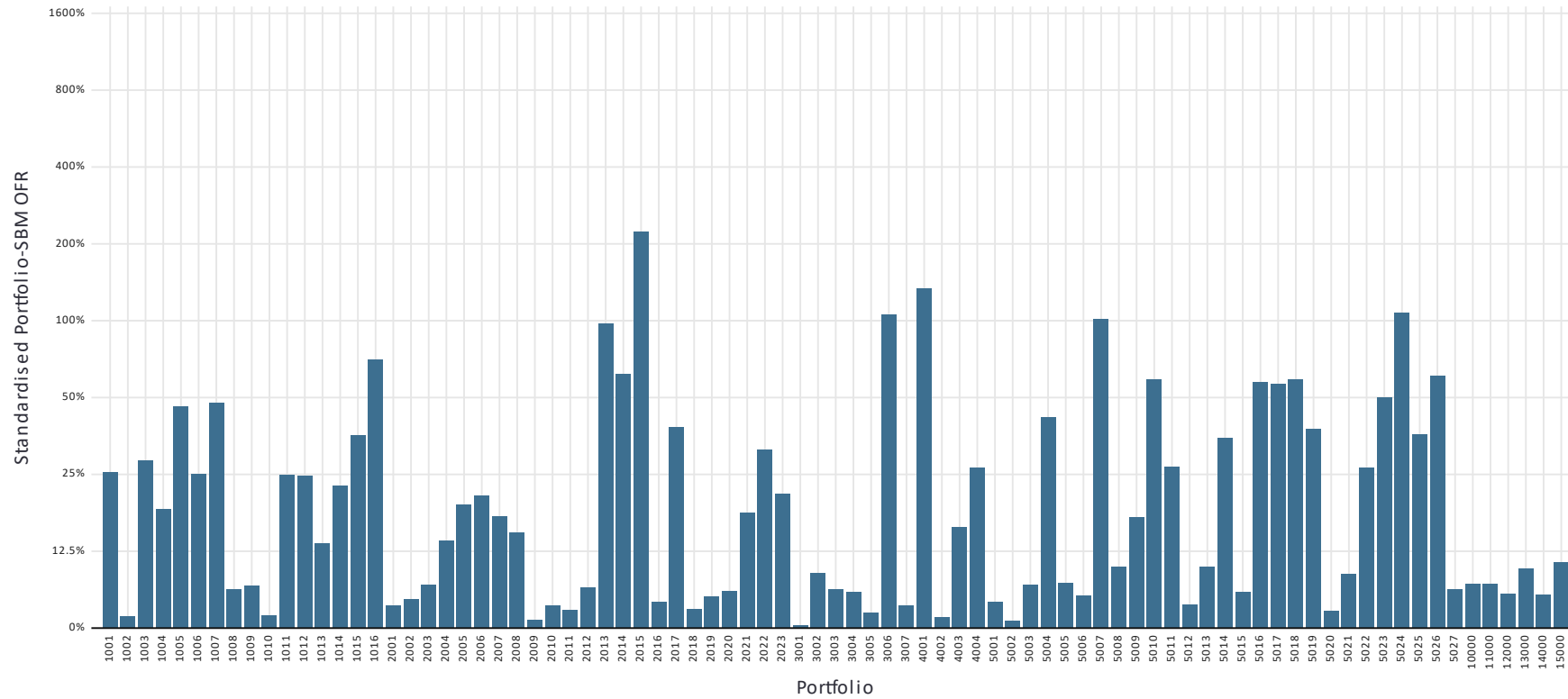
Figure 4: SBM OFR and VaR variation within portfolios: Interquartile Dispersion (IQD)

SBM OFR and VaR variation within portfolios: Interquartile Dispersion (IQD)

Portfolios with less then 10 observations excluded. Source: C 107.02, C 120.06

■ SBM OFR   ■ VaR
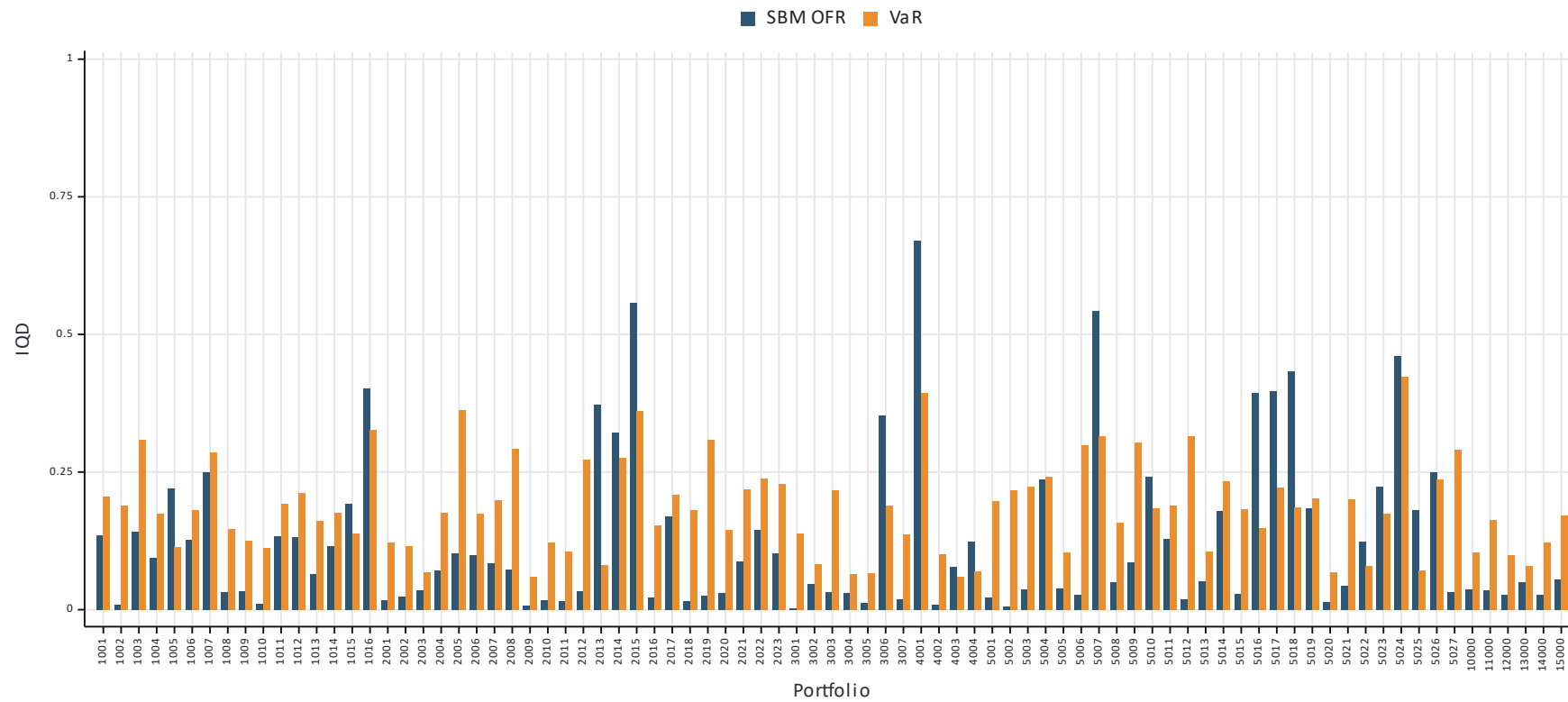
23. A similar comparison, but also considering the IQDs of the SVaR can be seen in Figure 32. This comparison can be seen more clearly, when split by asset classes, as shown in Figure 34, Figure 35, Figure 36, Figure 37 and Figure 38.

24. Finally, a comparison of the dispersion of SBM OFR against VaR is informative for banks and supervisors. In general, a very low dispersion is expected for the SBM measure owing to the standardised nature of the calculation, so an increased dispersion of SBM – possibly even exceeding the dispersion observed for VaR – warrants increased attention. Figure 33 highlights several cases where IQD Ratio of SBM-OFR to VaR unexpectedly exceeds 1.

2.3 Comparison of SBM OFR by portfolio across risk class/component

25. Aside from the dispersion of the portfolio OFR, as presented in the previous section, the collected data allows the EBA and the supervisors to analyse the actual composition of the OFR, splitting each instrument and portfolio by the risk class and components (Delta, Curvature, Vega). In this context, it should be noted that under the SBM, total OFR are calculated as the simple sum of OFR across the relevant risk classes and components.

26. Looking at single portfolios, it appears that the reported risk classes are to some degree heterogeneous across submissions, and this possibly reflects different interpretations of the ASA rules for modelling of these instruments.

27. This is shown in Figure 5, where the frequency of SBM submission by risk classes relative to the total number of submissions per portfolio is shown. The plot shows the relative frequency of banks who reported a non-zero figure in each risk class for the given portfolio with respect to the total number of submissions.

28. Most banks reported values in the same risk category in line with the expectation according to the asset class of the portfolio (e.g., for EQ portfolios, EQ risk expected). Nonetheless, for some EQ portfolios, not all banks submitted an EQ risk component. Interest rate risk is present across all portfolios with many banks submitting OFR relating to interest rate risk for all portfolios.

29. Some banks reported additional FX components for some portfolios (portfolios 2001 and 2006-2009, which are just EUR IRS), where their reporting currency should be just Euro.

30. The plot does not necessarily allow for concluding whether deviating submissions are wrong but identifies portfolios where bank-specific investigations are meaningful.

Figure 5: Frequency of SBM risk classes relative to the total number of submissions per portfolio

31.The frequency analysis was also carried out on ASA component level, i.e. Delta, Vega and Curvature. Figure 6 presents the frequency of SBM risk component relative to total number of submissions per portfolio.

32.Not surprisingly, most banks reported values in the same risk component. As expected, Delta risk for at least one risk class was reported by all banks in nearly all portfolios.

33.But differences are recognisable with respect to the other risk components.

34.The chart in Figure 6 does not immediately allow for the conclusion of whether deviating submissions are wrong but indicates portfolios where bank specific investigations are meaningful. Justified deviations may result from the use of methodological alternatives available to banks after supervisory approval (e.g., the inclusion of linear instruments in Curvature calculation).

Figure 6: Frequency of SBM risk component relative to the total number of submissions per portfolio
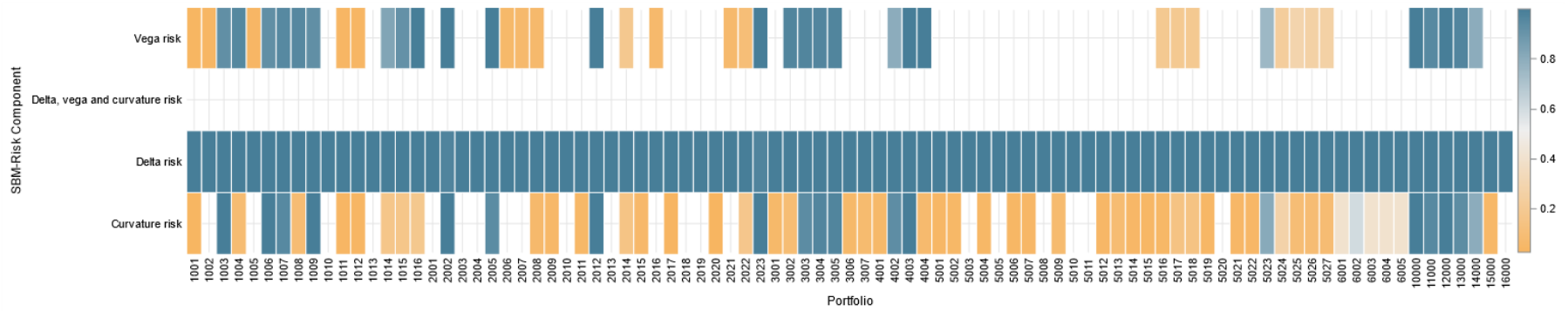
35. An overlapping of these two previous analyses can be seen in Figure 39, where the frequency of SBM risk component within SBM risk classes relative to the total number of submissions per portfolio is represented.

36. Within GIRR, delta risk is reported for nearly all portfolios, while only in some cases additionally Vega and Curvature risk are reported. From this analysis we can see that within EQ, some banks reported risk components for interest rate risk.

37. Most banks reported values in the same risk category in line with expectations (e.g., for EQ Portfolios, Delta-EQ risk is expected).

38. Additional FX components for some portfolios (2001 and 2005-2009, EUR IR) mentioned above fall within Delta risk.

39. The data submitted allow the EBA and the supervisor to understand, for each portfolio, which scenario is the one that maximises the SBM-OFR, and hence is the relevant scenario to determine the OFR. The conclusions drawn from the data is, that the relevant scenario varies across the banks.

40. This is represented in Figure 7. For most portfolios, the high or low correlation scenario leads to the highest OFR. Very rarely the medium correlation scenario yields the highest OFR. For none of the portfolios the same scenario is chosen across all banks. Due to the simplicity of the calculation, it can be expected that the implementation of the correlation scenario logic is not a driver of variability. Instead, the fact that differing correlation scenarios are observed for the same portfolio may result from differences in the portfolio's interpretation, the risk classes and components considered, or the regulatory buckets that risk factors that have been allocated.

41. Nonetheless, as shown in the Figure 40 – where the median OFR per correlation scenario is represented - only in some portfolios there is a significant difference in OFR with respect to scenario (for instance, portfolios 2010, 3001, 4001, 5003, 5005). Therefore, the impact of correlation scenarios is limited for submitted median OFR in most cases. It should be noted that the impact of the correlation scenario follows the design of the EBA hypothetical portfolio and is not indicative of impacts that can be observed for real trading portfolios.

Figure 7: Relative frequency of OFR relevant scenario
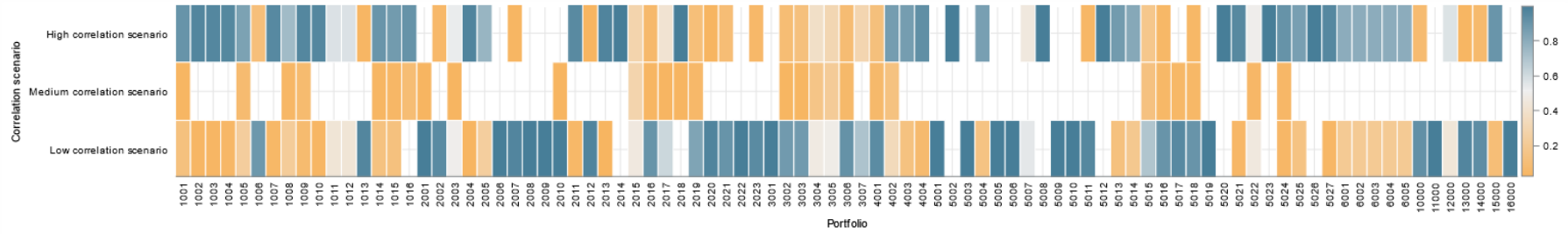
2.4 Sensitivities of SBM OFR by portfolio across risk class/component

42. Even if only an aggregated representation of the sensitivities submitted is not provided, it is nonetheless possible to make a series of observations on the same specific portfolios, which could be considered sufficiently general, and provide some useful guidance for banks and competent authorities.

43. The 2024 exercise provides the submission of two set of sensitivities, one at the IMV submission, and one at Risk measures submissions. The observations provided here reflects the sensitivities provided by the banks at Risk Measures submission reference date, which are generally of better quality (more homogenous results) that the sensitivities observed at the IMV references dates; this means that on average, the control and resubmission of the data during the exercise was beneficial for the better understanding and representation of the data.

44. In the following, a series of observations, for low dispersion portfolios and high dispersion portfolios will be provided, separately by assets classes, with particular attention to high IQD OFR portfolios. It should be recalled that the aggregated representations of all sensitivities were reported by EBA to the competent authorities, which should pay great attention to them, especially in the cases where the bank report sensitivities very divergent from the benchmark observed.

2.4.1   Equity portfolios sensitivities submission

45. In the following we will provide some observation for the sensitivities provided for portfolio 1010 and 1014.

46. Portfolio 1010 – is composed of three futures (instruments 106 – 107 – 108). IQD of this portfolio is extremely low (1% - ASA OFR) compared to the average IQD of the equity asset class (12%).

47. In Figure 8 we can see that the sensitivities provided are quite homogenous. Equity delta spot sensitivities and Equity delta repo are between 0% and 8% IQD. IR sensitivities is also fairly aligned. Significant dispersion is reported for FX delta, but with limited impact on the overall dispersion for SBM OFR in this portfolio.

48. On the contrary, for portfolio 1014 (Figure 9), the dispersion in SBM OFR is slightly higher (11% IQD). The portfolio is composed solely of an option on EURO STOXX 50 (instrument 119).

49. It should be noticed that on average the Equity delta sensitivity is convergent, especially for banks that decided to opt to represent the index with a single index sensitivity in bucket 12 (2% IQD); the banks that look through the index on the single constituents, provided generally more dispersed results. The volatility sensitivity and interest rates sensitivities present some level of dispersion but improved since last year on the same product (IQD between 4 and 8%). The different approach concerning the index implies some level of dispersion in OFR.

Figure 8: Portfolio 1010 – Sensitivities snapshot

Table	Group	Portfolio	Instrument	RiskFactor	Bucket	Additional Identifier	Min	Max	Ave	STDev	MAD (median absolute deviation)	Coefficient of variation (STDev/Ave)	Num obs.	5th	10th	25th	50th (Median)	75th	90th	95th	STDev_trunc	-2 STDev_trunc	+2 STDev_trunc	Interquantile range
C 120.01	Equity	1010	106	EQ_D_REPO	8	[All]	5,550	7,143	6,794	480	55	7.07%	22	5,550	5,979	6,883	7,007	7,055	7,125	7,143	2,116	2,775	11,240	1%
C 120.01	Equity	1010	106	EQ_D_SPOT	8	[All]	-17,899	-14,906	-16,947	1,189	271	7.01%	30	-17,891	-17,876	-17,861	-17,501	-15,253	-15,172	-14,928	3,379	-24,258	-10,744	8%
C 120.01	Equity	1010	106	FX_D	GBP	[All]	-31,398	54,119	-4,676	18,834	9,072	402.79%	19	-31,398	-17,342	-17,196	-488	1,326	18,891	54,119	73,139	-146,767	145,790	117%
C 120.01	Equity	1010	106	GIRR_D	GBP	[All]	-7,289	-5,866	-6,690	484	184	7.24%	29	-7,261	-7,150	-7,016	-6,882	-6,111	-5,885	-5,877	3,384	-13,650	-113	7%
C 120.01	Equity	1010	107	EQ_D_REPO	8	[All]	46,900	49,633	48,856	665	143	1.36%	22	47,207	47,710	48,841	49,035	49,187	49,345	49,517	10,933	27,169	70,901	0%
C 120.01	Equity	1010	107	EQ_D_SPOT	8	[All]	-123,033	-119,537	-122,466	780	205	0.64%	31	-123,017	-122,952	-122,877	-122,650	-122,542	-121,730	-120,763	1,598	-125,847	-119,453	0%
C 120.01	Equity	1010	107	GIRR_D	EUR	[All]	-50,618	-39,337	-48,449	1,986	218	4.10%	30	-49,502	-49,500	-49,224	-49,059	-48,301	-47,200	-46,699	9,260	-67,579	-30,539	1%
C 120.01	Equity	1010	108	EQ_D_REPO	8	[All]	50,997	55,077	53,816	1,182	265	2.20%	22	51,290	51,842	53,366	54,250	54,532	54,682	54,888	12,072	30,106	78,394	1%
C 120.01	Equity	1010	108	EQ_D_SPOT	8	[All]	-137,133	-129,825	-136,229	1,481	141	1.09%	31	-137,100	-137,007	-136,841	-136,622	-136,570	-134,976	-134,639	3,609	-143,840	-129,404	0%
C 120.01	Equity	1010	108	GIRR_D	EUR	[All]	-56,233	-43,990	-53,678	2,153	272	4.01%	30	-55,100	-55,079	-54,563	-54,223	-53,602	-51,900	-51,475	9,939	-74,102	-34,344	1%

Figure 9: Portfolio 1014 – Sensitivities snapshot

Table	Group	Portfolio	Instrument	RiskFactor	Bucket	Additional Identifier	Min	Max	Ave	STDev	MAD (median absolute deviation)	Coefficient of variation (STDev/Ave)	Num obs.	5th	10th	25th	50th (Median)	75th	90th	95th	STDev_trunc	-2 STDev_trunc	+2 STDev_trunc	Interquantile range
C 120.01	Equity	1014	119	EQ_CD	12	[All]	-322,139	-182,325	-217,556	35,191	3,288	16.18%	15	-322,139	-253,044	-213,000	-203,962	-200,640	-200,069	-182,325	100,937	-405,837	-2,088	3%
C 120.01	Equity	1014	119	EQ_CD	5	[All]	-32,312	12,758	-5,700	9,776	2,252	171.52%	16	-32,312	-10,722	-8,379	-6,538	-1,917	5,998	12,758	16,479	-39,496	26,419	63%
C 120.01	Equity	1014	119	EQ_CD	6	[All]	-18,979	4,162	-4,910	6,001	1,716	122.23%	16	-18,979	-12,411	-6,227	-4,728	-627	2,942	4,162	14,783	-34,294	24,837	82%
C 120.01	Equity	1014	119	EQ_CD	7	[All]	-15,976	3,507	-5,418	5,989	4,713	110.53%	16	-15,976	-14,355	-9,736	-4,025	-3,267	2,675	3,507	7,821	-19,666	11,617	50%
C 120.01	Equity	1014	119	EQ_CD	8	[All]	-77,399	31,906	-20,081	26,733	9,179	133.13%	16	-77,399	-38,498	-32,407	-30,245	-10,798	17,860	31,906	53,677	-137,600	77,110	50%
C 120.01	Equity	1014	119	EQ_CU	12	[All]	-99,337	-26,846	-83,864	20,812	5,394	24.82%	15	-99,337	-97,175	-96,767	-91,000	-84,297	-50,993	-26,846	173,884	-438,769	256,769	7%
C 120.01	Equity	1014	119	EQ_CU	5	[All]	-8,356	21,221	-1,332	8,442	2,774	633.65%	16	-8,356	-8,173	-7,213	-5,389	3,653	10,510	21,221	78,146	-161,681	150,903	305%
C 120.01	Equity	1014	119	EQ_CU	6	[All]	-10,120	10,983	-2,362	5,524	3,009	233.85%	16	-10,120	-10,042	-5,781	-3,342	434	3,879	10,983	77,627	-158,596	151,911	116%
C 120.01	Equity	1014	119	EQ_CU	7	[All]	-21,750	7,572	-3,300	6,766	3,535	205.06%	16	-21,750	-9,230	-5,437	-3,174	2,145	3,202	7,572	22,499	-48,171	41,824	230%
C 120.01	Equity	1014	119	EQ_CU	8	[All]	-27,788	25,828	-9,495	19,509	14,540	205.46%	16	-27,788	-27,059	-26,166	-11,569	12,194	22,401	25,828	272,974	-557,518	534,379	275%
C 120.01	Equity	1014	119	EQ_D_REPO	12	[All]	-1,557,205	-1,412,584	-1,457,148	39,641	2,992	2.72%	13	-1,557,205	-1,504,567	-1,452,349	-1,443,792	-1,441,984	-1,436,309	-1,412,584	1,077,933	-3,599,657	712,073	0%
C 120.01	Equity	1014	119	EQ_D_SPOT	12	[All]	3,502,000	4,181,779	3,679,795	190,885	20,210	5.19%	17	3,502,000	3,559,016	3,584,860	3,614,548	3,728,079	4,011,400	4,181,779	384,993	2,844,561	4,384,534	2%
C 120.01	Equity	1014	119	EQ_D_SPOT	5	[All]	856,217	1,604,554	1,215,366	181,019	109,432	14.89%	16	856,217	980,756	1,101,109	1,189,575	1,332,527	1,370,327	1,604,554	244,026	701,524	1,677,627	10%
C 120.01	Equity	1014	119	EQ_D_SPOT	6	[All]	294,765	910,185	681,616	166,913	90,347	24.49%	16	294,765	458,933	631,137	702,782	770,365	846,110	910,185	248,264	206,254	1,199,310	10%
C 120.01	Equity	1014	119	EQ_D_SPOT	7	[All]	171,801	970,483	482,170	241,729	34,681	50.13%	16	171,801	319,313	339,379	383,637	580,834	962,956	970,483	435,670	-487,704	1,254,977	26%
C 120.01	Equity	1014	119	EQ_D_SPOT	8	[All]	880,991	1,399,553	1,206,054	170,972	81,455	14.18%	16	880,991	905,668	1,162,352	1,275,008	1,322,798	1,382,151	1,399,553	220,784	833,440	1,716,576	6%
C 120.01	Equity	1014	119	EQ_V	12	[All]	92,863	140,000	119,238	12,928	5,758	10.84%	23	98,114	103,657	112,506	116,621	132,678	137,305	139,801	13,731	89,158	144,084	8%
C 120.01	Equity	1014	119	GIRR_D	EUR	[All]	1,196,272	1,531,801	1,309,042	77,427	35,677	5.91%	34	1,227,537	1,236,109	1,250,948	1,285,913	1,342,987	1,415,886	1,485,273	243,600	798,714	1,773,112	4%

2.4.2 IR portfolios sensitivities submission

50. In the following we will provide some observation for the sensitivities provided for portfolio 2010 and 2013.

51. Portfolio 2010 – is composed of 2 IRS (instruments 201 –219). IQD of this portfolio is extremely low (2% - SBM OFR) compared to the average of the IR asset class (8%).

52. From the figures (Figure 10) we can see (only for instrument 201 and 219) that the most relevant interest rate delta sensitivities are homogeneous (8%) for instruments 201, but much less (20%) for instrument 219. The magnitude of the 201 sensitivity justifies indeed the low dispersion of OFR for this portfolio.

53. On the contrary, for portfolio 2013 (Figure 11), the SBM OFR is substantially higher (37% IQD). The portfolio is composed solely of an UK Gov Bond (instrument 213).

54. It should be noticed that on average the IR delta sensitivity is fairly convergent (2% IQD); but the credit spread component exhibits problem of bucketing, since banks's submission are split between bucket 1 and bucket 2, with the majority of banks picking the latter. The FX component was not also considered by 14 out of 41 providers of the data of this portfolio. The difference in the treatment the FX component, and the different bucketing choice are the cause of the OFR dispersion.

Figure 10: Portfolio 2010 – Sensitivities snapshot

Table	Group	Portfolio	Instrument	RiskFactor	Bucket	Additional Identifier	Min	Max	Ave	STDev	MAD (median absolute deviation)	Coefficient of variation (STDev/Ave)	Num obs.	5th	10th	25th	50th (Median)	75th	90th	95th	STDev_trunc	-2 STDev_trunc	+2 STDev_trunc	Interquantile range
C 120.01	Interest Rate	2010	201 GIRR_D		EUR	[All]	-307,405,494	-175,602,420	-258,815,214	37,823,100	6,070,782	14.61%	43	-307,249,021	-305,414,228	-297,260,905	-257,119,200	-254,594,480	-176,068,000	-175,692,768	40,810,614	-338,740,428	-175,497,972	8%
C 120.01	Interest Rate	2010	219 GIRR_D		EUR	[All]	12,764,061	26,353,526	20,248,834	4,592,103	4,231,219	22.68%	43	13,101,693	13,172,389	17,116,026	21,249,708	25,480,927	25,910,952	26,335,630	4,443,086	12,363,536	30,135,880	20%

Figure 11: Portfolio 2013 – Sensitivities snapshot

Table	Group	Portfolio	Instrument	RiskFactor	Bucket	Additional Identifier	Min	Max	Ave	STDev	MAD (median absolute deviation)	Coefficient of variation (STDev/Ave)	Num obs.	5th	10th	25th	50th (Median)	75th	90th	95th	STDev_trunc	-2 STDev_trunc	+2 STDev_trunc	Interquantile range
C 120.01	Interest Rate	2013	213 CSR_NON_SEC_D_DEBT		1	[All]	-7,718,553	-7,076,606	-7,331,889	217,826	80,123	2.97%	7	-7,718,553	-7,718,553	-7,342,400	-7,336,025	-7,182,154	-7,076,606	-7,076,606	432,692	-8,201,408	-6,470,642	1%
C 120.01	Interest Rate	2013	213 CSR_NON_SEC_D_DEBT		2	[All]	-8,741,911	-7,018,835	-7,360,967	409,949	130,964	5.57%	31	-8,599,616	-7,635,300	-7,414,761	-7,264,476	-7,105,226	-7,028,330	-7,022,500	809,210	-8,882,896	-5,646,056	2%
C 120.01	Interest Rate	2013	213 FX_D		GBP	[All]	949,245	1,079,941	1,028,974	23,630	2,006	2.30%	28	949,245	1,024,963	1,026,705	1,026,692	1,031,677	1,049,957	1,079,941	488,329	50,035	2,003,350	0%
C 120.01	Interest Rate	2013	213 GIRR_D		GBP	[All]	-7,579,926	-7,017,686	-7,165,119	157,738	81,794	2.20%	41	-7,558,060	-7,337,026	-7,316,855	-7,149,973	-7,031,856	-7,020,032	-7,018,035	260,385	-7,670,743	-6,629,203	2%

2.4.3   FX portfolios sensitivities submission

55. The FX asset class has a remarkably high level of consistency, with an average IQD for the asset class at 2%. Nonetheless, in the following we will provide some observation for the sensitivities provided for portfolio 3003.

56. Portfolio 3003 – is composed of three Call option on EUR/USD (instruments 304 – 305 - 306). The IQD of this portfolio is close to the IQD of the asset class (3% - SBM OFR).

57. From Figure 12 we can see (for instrument 306 - ATM call - for simplicity) that the most relevant sensitivities, FX rate delta (18% IQD), FX volatilities (IQD 21%), and USD IR delta are homogeneous (20% of IQD). Very noticeable is the dispersion in the IR delta EUR sensitivities side, with 81% IQD. The small number of submissions of this component (only 6 submissions) does not impact the level of dispersion of OFR for this portfolio.

Figure 12: Portfolio 3003 – Sensitivities snapshot

Table	Group	Portfolio	Instrument	RiskFactor	Bucket	Additional Identifier	Other stats							Percentiles							STDev_trunc	Extreme Values range (w.r.t. median)²		Interquantile range
							Min	Max	Ave	STDev	MAD (median absolute deviation)	Coefficient of variation (STDev/Ave)	Num obs.	5th	10th	25th	50th (Median)	75th	90th	95th		-2 STDev_trunc	+2 STDev_trunc	
C 120.01	FX	3003	306	FX_CD	EUR	[All]	249,771	1,224,374	761,523	317,690	112,277	41.72%	6	249,771	249,771	652,782	782,438	877,336	1,224,374	1,224,374	317,690	147,058	1,417,818	15%
C 120.01	FX	3003	306	FX_CD	USD	[All]	-641,343	827,300	399,948	334,751	136,434	83.70%	29	-479,160	192,000	380,789	464,025	600,460	703,792	708,721	637,894	-811,762	1,739,813	22%
C 120.01	FX	3003	306	FX_CU	EUR	[All]	148,737	566,756	324,190	163,410	108,910	50.41%	6	148,737	148,737	207,036	261,491	382,474	566,756	566,756	895,408	-1,529,326	2,052,308	30%
C 120.01	FX	3003	306	FX_CU	USD	[All]	253,253	1,167,317	790,318	240,031	164,440	30.37%	30	385,738	508,323	667,959	723,222	1,036,376	1,142,157	1,144,461	547,619	-372,015	1,818,459	22%
C 120.01	FX	3003	306	FX_D	EUR	[All]	-21,617,640	11,460,065	-10,155,256	12,696,088	7,418,597	125.02%	6	-21,617,640	-21,617,640	-20,906,896	-13,843,671	-2,179,724	11,460,065	11,460,065	12,696,088	-39,235,846	11,548,504	81%
C 120.01	FX	3003	306	FX_D	USD	[All]	6,583,212	19,916,399	14,908,174	3,731,424	1,326,883	25.03%	33	6,595,502	11,978,495	12,944,813	13,225,170	18,795,084	19,817,174	19,886,409	5,174,554	2,876,063	23,574,278	18%
C 120.01	FX	3003	306	FX_V	EUR_USD	[All]	-570,674	-181,562	-419,769	117,922	35,850	28.09%	28	-568,085	-560,688	-549,580	-390,921	-357,645	-209,169	-189,391	108,746	-608,413	-173,429	21%
C 120.01	FX	3003	306	GIRR_CD	EUR	[All]	2,201	7,123	5,208	1,930	1,202	37.05%	6	2,201	2,201	4,501	5,211	6,294	7,123	7,123	353,295	-701,379	711,801	17%
C 120.01	FX	3003	306	GIRR_CD	USD	[All]	3,437	5,676	4,823	853	364	17.68%	6	3,437	3,437	4,742	4,845	5,312	5,676	5,676	2,083	680	9,010	6%
C 120.01	FX	3003	306	GIRR_CU	EUR	[All]	4,227	7,143	5,678	1,304	1,127	22.97%	7	4,227	4,227	4,453	4,854	6,708	7,143	7,143	210,338	-415,823	425,530	20%
C 120.01	FX	3003	306	GIRR_CU	USD	[All]	-10	5,152	3,240	1,721	1,060	53.13%	7	-10	-10	2,275	3,334	4,556	5,152	5,152	1,721	-108	6,777	33%
C 120.01	FX	3003	306	GIRR_D	EUR	[All]	418,400	13,301,767	8,799,109	4,104,721	957,568	46.65%	37	428,136	522,734	8,382,157	8,815,181	12,934,162	13,249,701	13,290,231	4,286,978	241,224	17,389,138	21%
C 120.01	FX	3003	306	GIRR_D	USD	[All]	-12,641,784	-3,954,405	-9,665,466	2,233,963	336,989	23.11%	34	-12,635,469	-12,532,275	-12,387,608	-8,442,405	-8,318,800	-8,113,302	-7,513,913	2,783,532	-14,009,469	-2,875,340	20%
C 120.01	FX	3003	306	GIRR_D_CRO_USD	EUR	[All]	3,953,992	13,460,689	10,480,247	2,657,772	3,268,474	25.36%	19	3,953,992	8,329,156	8,746,715	8,966,134	13,210,529	13,309,049	13,460,689	2,657,772	3,650,589	14,281,678	20%

2.4.4 Commodities portfolios sensitivities submission

58. In the following we will provide some observation for the sensitivities provided for portfolio 4001. Portfolio 4001 – is composed of two Call options on Gold (instruments 401- 402). The IQD of this portfolio is the highest in the asset class (67% - SBM OFR) compared to the average of the CO asset class (20% - the set of portfolios is limited and 4001 is the only one with substantial dispersion).

59. From the Figure 13 we can see (for instrument 401- 6 months call on gold) that the most relevant sensitivities, Commodity delta (14% IQD) are relatively homogeneous, but for instruments 402 (same option, opposite direction, with 12 month expiry) the IQD of the commodity delta component is quite significant (50%); moreover, the FX delta component (in a very divergent manner – above 100% IQD).This difference in the sensitivities representation explain the higher level of dispersion of OFR for this portfolio.

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Figure 13: Portfolio 4001 – Sensitivities snapshot

Table	Group	Portfolio	Instrument	RiskFactor	Bucket	Additional Identifier	Min	Max	Ave	STDev	MAD (median absolute deviation)	Coefficient of variation (STDev/Ave)	Num obs.	5th	10th	25th	50th (Median)	75th	90th	95th	STDev_trunc	-2 STDev_trunc	+2 STDev_trunc	interquantile range
C 120.01	Commodities	4001	401	CM_D	7	[All]	14,115,722	28,279,143	24,700,556	5,310,742	529,424	21.50%	16	14,115,722	14,118,181	21,181,650	27,360,332	28,101,425	28,225,714	28,279,143	9,477,330	8,405,672	46,314,991	14%
C 120.01	Commodities	4001	401	FX_D	USD	[All]	-14,118,176	1,181,683	-847,422	4,440,455	470,064	524.00%	12	-14,118,176	-815,682	-83,876	346,196	932,887	940,430	1,181,683	8,464,104	-16,582,012	17,274,404	120%
C 120.01	Commodities	4001	401	GIRR_D	EUR	[All]	-18,421	263	-4,603	9,214	239	200.20%	5	-18,421	-18,421	-9,318	-215	113	263	263	45,056	-90,327	89,896	102%
C 120.01	Commodities	4001	401	GIRR_D	USD	[All]	-144,284	3,836,839	1,777,686	1,602,752	1,274,085	90.16%	16	-144,284	-132,872	-77,869	2,244,200	3,237,286	3,585,822	3,836,839	1,602,752	-961,303	5,449,704	105%
C 120.01	Commodities	4001	402	CM_D	7	[All]	-21,211,642	-7,036,448	-16,263,566	6,168,722	601,213	37.93%	16	-21,211,642	-21,172,622	-21,076,980	-20,334,289	-7,059,863	-7,053,342	-7,036,448	7,215,406	-34,765,100	-5,903,477	50%
C 120.01	Commodities	4001	402	FX_D	USD	[All]	-767,986	7,053,340	355,214	2,263,746	446,733	637.29%	12	-767,986	-688,234	-671,806	-216,373	49,664	635,419	7,053,340	5,917,138	-12,050,648	11,617,903	116%
C 120.01	Commodities	4001	402	GIRR_D	EUR	[All]	167	66,880	19,824	31,683	5,082	159.82%	5	167	167	1,042	10,332	38,606	66,880	66,880	170,024	-329,717	350,381	95%
C 120.01	Commodities	4001	402	GIRR_D	USD	[All]	-12,849,576	448,758	-5,955,345	5,654,565	6,313,204	94.95%	16	-12,849,576	-12,764,925	-12,285,051	-6,274,541	276,980	435,068	448,758	5,654,565	-17,583,671	5,034,589	105%

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2.4.5   Credit spread portfolios sensitivities submission

60. In the following we will provide some observation for the sensitivities provide for portfolio 5017.

61. Portfolio 5017– is composed of a long Brazilian Gov Bond and a long CDS position (instruments 216- 505). The IQD of this portfolio is the highest in the asset class (39% - SBM OFR) compared to the average of the CS asset class (14%).

62. From Figure 14 we can see that for the bond (instrument 216), the most relevant sensitivities are consistently reported. The IR delta sensitivity is consistently computed reported (IQD 1%), as well as the credit spread delta sensitivity (3% IQD). The FX delta component is represented in also very consistent (0% of IQD) but provided only by 18 institutions.

63. Similar, for instrument 505 (CSD) the main sensitivity (delta CDS) is well represented with a 0% IQD, as long as IR sensitivity (4% IQD) and Fx delta sensitivity (2% IQD). But as for the instruments 216, only 15 institutions considered the Fx sensitivity, underlining an inconsistent treatment of this risk factor.

64. These substantial differences in considering the Fx component of the OFR explain the higher level of dispersion of OFR for this portfolio.

Figure 14: Portfolio 5017 – Sensitivities snapshot

Table	Group	Portfolio	Instrument	RiskFactor	Bucket	Additional Identifier	Other stats							Percentiles							Extreme Values range (w.r.t. median)[a]			
							Min	Max	Ave	STDev	MAD (median absolute deviation)	Coefficient of variation (STDev/Ave)	Num obs.	5th	10th	25th	50th (Median)	75th	90th	95th	STDev_trunc	-2 STDev_trunc	+2 STDev_trunc	Interquantile range
C 120.01	Credit Spread	5017	216	CSR_NON_SEC_CD	11	[All]	-10,603	105,518	13,637	51,380	2,052	376.78%	6	-10,603	-10,603	-10,603	-9,577	-7,578	105,518	105,518	593,665	-1,196,906	1,177,753	17%
C 120.01	Credit Spread	5017	216	CSR_NON_SEC_CU	11	[All]	-18,919	7,570	-9,306	9,727	5,480	104.53%	7	-18,919	-18,919	-18,919	-8,046	-7,958	7,570	7,570	315,523	-639,093	623,000	41%
C 120.01	Credit Spread	5017	216	CSR_NON_SEC_D_DEBT	11	[All]	-11,672,016	-7,998,558	-10,506,896	762,238	220,173	7.25%	24	-11,672,016	-11,089,207	-10,908,000	-10,510,889	-10,180,883	-9,679,143	-7,998,558	2,804,810	-16,120,508	-4,901,269	3%
C 120.01	Credit Spread	5017	216	FX_D	USD	[All]	976,092	3,052,291	2,512,074	864,829	13,522	34.43%	18	976,092	992,237	2,940,121	2,945,480	2,960,400	2,973,552	3,052,291	1,356,966	231,548	5,659,412	0%
C 120.01	Credit Spread	5017	216	GIRR_CD	USD	[All]	-7,961	-2,690	-3,891	2,024	459	52.03%	7	-7,961	-7,961	-3,643	-3,165	-2,722	-2,690	-2,690	3,421	-10,006	3,677	14%
C 120.01	Credit Spread	5017	216	GIRR_CU	USD	[All]	-3,464	1,961	-1,842	1,875	952	101.76%	8	-3,464	-3,464	-3,142	-2,190	-925	1,961	1,961	2,569	-7,329	2,949	55%
C 120.01	Credit Spread	5017	216	GIRR_D	USD	[All]	-11,194,024	-6,868,160	-10,202,909	806,511	167,742	7.90%	29	-10,744,971	-10,637,881	-10,537,424	-10,253,748	-10,226,163	-9,885,645	-9,712,006	2,884,564	-16,022,875	-4,484,620	1%
C 120.01	Credit Spread	5017	216	GIRR_V	USD	[All]	-4,828	-2,512	-3,783	954	466	25.23%	5	-4,828	-4,828	-4,362	-3,896	-3,204	-2,512	-2,512	5,591	-15,079	7,286	15%
C 120.01	Credit Spread	5017	505	CSR_NON_SEC_D_CDS	11	[All]	11,890,776	13,015,259	12,869,963	244,095	19,991	1.90%	21	11,890,776	12,741,745	12,893,393	12,931,423	12,955,601	12,977,511	13,015,259	814,763	11,301,897	14,560,948	0%
C 120.01	Credit Spread	5017	505	FX_D	USD	[All]	-32,419	49,828	36,053	25,067	1,188	69.53%	15	-32,419	-4,761	45,707	45,919	47,131	47,219	49,828	48,128	-50,338	142,175	2%
C 120.01	Credit Spread	5017	505	GIRR_D	USD	[All]	-244,831	-97,469	-138,825	45,533	3,417	32.80%	23	-244,831	-240,006	-129,064	-122,155	-118,503	-115,029	-97,469	61,492	-245,140	829	4%

2.5 Issues on SBM OFR data submission to be considered by supervisors

65. In the previous section some inconsistencies on the sensitivities data submission were highlighted. In this section we highlight some issues where competent authorities should pay great attention in order to foster a harmonized practice in the ASA implementation.

66. Competent authorities should consider the following issues when reviewing the ASA submission at the level of single bank participating.

a) FX component in non FX asset classes instruments/portfolios.

b) Bucketing

c) Aggregation formula

d) SBM, DRC and RRAO provisions applied.

a. FX component in non-FX asset classes instruments/portfolios.

67. As shown in section 6.4, many portfolios with high dispersion contain FX risks in the Banks submissions, which was not considered by a plurality of subjects in the exercise.

68. Let us consider for instance portfolio 2014 (IQD 37%), with instruments 215-216-217 (3 Bond in USD – US, Brazil, and Mexican Government bond). For simplicity let us restrict the view to the US Gov Bond (215). We can see immediately that a considerable number of banks did not submit the FX component, in line with the instructions of Annex 2 of the RTS. Among the ones that reported the delta Fx, there is a significant cluster of observations centered around -1.6M, but at least 50% of the banks reporting the FX delta component reported some different figures.

Figure 15: Portfolio 2014 Instruments 215 – Sensitivities snapshot

							Other stats		
RiskFactor	Bucket	Additional Identifier	Min	Max	Ave	STDev	MAD (median absolute deviation)	Coefficient of variation (STDev/Ave)	Num obs.
CSR_NON_SEC_D_DEBT	2	[All]	5,948,110	11,887,922	10,128,382	1,504,101	200,813	14.85%	34
FX_D	USD	[All]	-1,885,776	26,772	-932,453	773,525	418,799	82.96%	25
GIRR_D	USD	[All]	6,636,304	11,887,923	10,414,811	811,469	138,166	7.79%	40

				Percentiles							Extreme Values range (w.r.t. median)[3]			
Instrument	RiskFactor	Bucket	Additional Identifier	5th	10th	25th	50th (Median)	75th	90th	95th	STDev_trunc	-2 STDev_trunc	+2 STDev_trunc	Interquartile range
215	CSR_NON_SEC_D_DEBT	2	[All]	6,324,053	6,699,675	10,292,163	10,406,437	10,710,675	10,825,515	11,887,200	2,503,583	5,399,270	15,413,603	2%
215	FX_D	USD	[All]	-1,653,130	-1,627,994	-1,626,625	-827,523	-22,732	-12,654	-11,973	763,172	-2,353,867	698,821	97%
215	GIRR_D	USD	[All]	10,035,094	10,281,886	10,397,466	10,398,405	10,694,116	10,754,588	11,097,680	2,413,033	5,572,339	15,224,470	1%

69. Portfolios with higher IQD in SBM, as shown in the following table, compared to the VaR IQD, are usually associated with issue linked to the FX component.

Figure 16: SBM vs VaR Main Stats and IQDs compared

	Port. ID	SBM 25th	SBM 50th (Median)	SBM 75th	SBM Interquantile range		VaR Interquantile range	VaR 25th	VaR 50th (Median)	VaR 75th
Equity	1001	723,008	885,434	950,922	14%	-3%	16%	316,826	428,223	455,348
	1002	1,302,652	1,304,779	1,310,211	0%	-10%	11%	220,564	263,110	279,429
	1003	8,466	9,541	10,800	12%	-17%	29%	1,080	1,573	2,040
	1004	11,116	12,164	12,979	9%	-8%	17%	1,180	1,319	1,518
	1005	116,167,684	138,885,913	179,446,740	21%	13%	9%	53,644,457	56,225,640	66,910,973
	1006	15,116	16,927	18,457	10%	-4%	14%	2,475	2,852	3,501
	1007	64,887	89,343	97,255	20%	-5%	25%	10,573	15,854	19,021
	1008	71,558	74,341	75,745	3%	-9%	11%	18,027	20,481	21,444
	1009	102,485	104,098	104,432	1%	-6%	7%	51,724	56,865	61,455
	1010	108,779	110,012	110,337	1%	-8%	9%	29,698	32,312	37,911
	1011	696,768	860,099	909,912	13%	-2%	16%	295,495	399,179	429,666
	1012	676,857	830,646	883,460	13%	-3%	16%	281,951	381,693	401,639
	1013	104,492	104,753	106,875	3%	-6%	9%	53,609	58,528	64,976
	1014	661,024	741,588	819,743	11%	-4%	15%	194,090	219,141	256,550
	1015	635,081	800,252	893,923	17%	3%	14%	149,992	182,399	189,856
	1016	332,687	620,048	779,988	40%	6%	34%	141,491	174,205	261,908
Interest Rate	2001	336,660	340,221	349,001	2%	-7%	9%	182,360	195,285	217,941
	2002	562,594	571,797	582,335	2%	-10%	12%	161,211	179,177	196,702
	2003	33,777	35,044	36,069	3%	-2%	6%	25,440	27,466	28,666
	2004	160,000	175,056	181,968	8%	-9%	17%	92,761	111,677	129,790
	2005	442,746	502,644	533,714	9%	-31%	41%	18,968	31,061	44,863
	2006	146,823	148,129	192,000	13%	-2%	15%	24,578	30,337	35,122
	2007	280,696	283,674	312,761	5%	-6%	11%	68,398	79,315	89,355
	2008	289,787	292,405	334,222	7%	-16%	23%	63,192	81,113	107,676
	2009	366,527	368,541	369,103	0%	-5%	5%	187,348	199,430	210,988
	2010	302,994	306,199	314,101	2%	-7%	9%	164,124	175,759	196,147
	2011	699,450	704,433	720,217	1%	-8%	9%	383,378	404,835	463,312
	2012	453,382	473,789	482,293	3%	-10%	13%	67,717	78,474	89,453
	2013	90,506	109,883	198,223	37%	31%	6%	39,580	42,501	46,354
	2014	125,093	184,291	242,137	32%	12%	20%	33,033	43,679	52,602
	2015	32,600	36,106	102,200	52%	24%	28%	7,627	11,886	14,518
	2016	265,752	271,476	274,448	2%	-8%	10%	109,387	120,093	133,919
	2017	530,365	539,428	539,478	1%	-11%	12%	25,898	29,015	32,799
	2018	55,791	56,757	57,279	1%	-7%	8%	22,296	24,116	29,581
	2019	23,022	23,755	24,003	2%	-23%	25%	8,876	11,341	16,562
	2020	44,607	45,248	46,719	2%	-9%	11%	38,310	42,957	49,384
	2021	108,199	110,446	115,374	3%	-8%	11%	33,274	37,977	41,477
	2022	520,812	534,769	543,305	2%	-24%	26%	165,615	204,938	303,950
	2023	206,612	216,046	233,278	6%	-11%	17%	32,192	38,432	44,785
FX	3001	1,194,752	1,195,599	1,199,032	0%	-11%	11%	400,036	486,605	522,814
	3002	978,359	987,404	1,004,065	1%	-5%	6%	315,735	328,359	348,018
	3003	597,406	614,042	629,359	3%	-13%	15%	104,274	130,161	139,719
	3004	1,422,104	1,488,019	1,507,562	3%	-5%	5%	424,339	459,882	479,814
	3005	1,455,656	1,471,513	1,487,510	1%	-4%	5%	354,633	372,581	395,015
	3006	246,752	249,707	284,959	5%	-7%	12%	14,720	16,954	18,262
	3007	1,054,147	1,083,087	1,090,534	2%	-5%	6%	481,231	529,779	560,675
Commodities	4001	48,700	139,509	247,066	67%	31%	36%	14,774	22,124	31,507
	4002	812,459	820,213	825,736	1%	-7%	8%	334,002	366,008	388,837
	4003	2,026,820	2,079,899	2,363,708	8%	1%	7%	502,594	532,285	579,480
	4004	1,707,285	1,791,528	1,827,767	3%	-4%	7%	318,144	327,202	366,425
Credit Spread	5001	35,975	36,654	37,220	2%	-14%	16%	4,997	6,815	7,992
	5002	102,120	102,799	103,100	1%	-20%	21%	18,604	23,120	25,698
	5003	75,721	80,392	81,128	3%	-14%	17%	3,512	3,947	4,974
	5004	2,682	3,133	3,568	22%	-1%	23%	7,403	10,171	11,642
	5005	189,278	200,917	202,832	3%	-6%	9%	4,090	4,531	4,946
	5006	250,947	257,812	262,953	2%	-24%	26%	5,074	7,245	8,671
	5007	49,684	115,317	167,376	54%	24%	30%	28,676	39,191	53,435
	5008	412,448	429,549	449,344	4%	-7%	11%	61,816	69,646	79,040
	5009	43,851	46,159	49,481	5%	-14%	19%	6,245	7,642	9,182
	5010	58,528	60,268	63,025	12%	1%	11%	16,459	20,035	20,711
	5011	222,714	236,192	283,036	13%	5%	7%	31,463	35,412	36,543
	5012	68,907	71,176	71,562	2%	-22%	24%	2,171	3,014	3,554
	5013	157,866	170,312	173,558	5%	-3%	8%	14,324	15,232	16,673
	5014	392	684	748	31%	16%	15%	3,518	3,999	4,775
	5015	37,095	38,477	38,591	3%	-8%	11%	20,439	23,284	24,728
	5016	84,303	173,922	184,526	40%	25%	15%	32,417	41,509	49,094
	5017	78,973	174,463	180,662	41%	21%	20%	20,341	23,894	30,454
	5018	134,546	332,455	339,017	43%	26%	18%	49,071	59,055	70,391
	5019	5,263	5,996	6,171	15%	-3%	18%	8,967	9,962	12,305
	5020	427,877	430,840	435,647	1%	-4%	5%	158,743	167,799	176,460
	5021	230,403	238,782	249,414	4%	-12%	16%	19,247	23,106	25,752
	5022	319,881	333,004	351,840	5%	-2%	7%	147,528	161,250	170,251
	5023	571,288	653,693	773,936	15%	-2%	17%	54,742	62,965	77,294
	5024	268,371	416,848	472,644	28%	-11%	39%	24,048	37,036	56,497
	5025	255,382	300,675	367,819	18%	12%	6%	48,229	52,141	54,948
	5026	105,440	110,024	164,609	22%	5%	16%	23,569	27,844	35,191
	5027	97,238	101,872	102,973	3%	-12%	15%	16,395	19,121	21,436

70. It is understood that this inconsistent reporting of the Fx component is triggered by different application of instruction "kk[5]" of Annex 2.

71. Let examine for example CS portfolios (e.g. 5016 – 5018 – USD instruments to be reported in USD). We can ask if the CS component should be reported or not. The instruction "kk" is there in order to provide "clean" result (i.e. excluding the FX component on what is not FX asset class). Nonetheless some banks consider these positions as having intrinsically an fx component. Banks that report in accordance with the instructions exclude the Fx component in these cases, yet this is not done in many cases.

72. Banks, that do not comply with the instruction, have potentially some system that compute the Fx sensitivities when booking the instruments, and then banks have some complications in disentangle the Fx sensitivities submission from the rest of the sensitivities provided.

73. Figures 16 below show the IQD of the CS portfolios. Figure 17, on the other hand, show the IQD of only the delta CS Risk component. This is the most significant component of the OFR, once we exclude the Fx component for those banks that report it. It is easy to see how much the dispersion for the CS component is lower, once considered alone. In practice, this requirement, i.e. to exclude the Fx component, which is done to enhance the comparability of the results, has the opposite effect to artificially increasing it.

74. Past consultation on this matter, received the feedback from the stakeholders that the requirement should stay, so that comparability is prioritized. Nonetheless, the facts show the opposite.

75. As an alternative, for the future exercise the OFR by correlation scenarios (template 120.02), which are provided for risk classes, submitted by banks can be recomputed by EBA(summing risk class OFR excluding FX), so that to have more homogeneous results.

76. In summary, based on the above analysis, it appears that the divergent interpretation of the 'kk' instruction artificially inflates the dispersion for some of the non-FX portfolios. This effect would not be present in a real-world implementation of the ASA, where banks can be expected to correctly account for FX translation risk.

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[5] Kk "The risk measures of the portfolios shall be calculated in the same currency of the portfolio currency, not including any FX Risk, also related to the reporting currency of the institutions. The FX Risk shall be considered only when intrinsically included in the instruments. Where both reporting and portfolio currency results are reported as part of the exercise, for the ASA figures, results calculated in the reporting currency of the institution shall be translated into the EBA portfolio currency by spot conversion using the ECB spot exchange rate associated with the date of the calculation. The translation into the EBA portfolio currency does not imply a change in the FX risk factors."

Figure 17: Subset of CS portfolios, main stats and IQDs

Portfolio	Other stats							Percentiles							Extreme Values range (w.r.t. median)²			Interquantile range
	Min	Max	Ave	STDev	MAD (median absolute deviation)	Coefficient of variation (STDev/Ave)	Num obs.	5th	10th	25th	50th (Median)	75th	90th	95th	STDev_trunc	-2 STDev_trunc	+2 STDev_trunc	
5001	35,170	38,117	36,608	824	670	2.25%	26	35,435	35,518	35,975	36,654	37,220	37,538	37,708	950	34,754	38,554	2%
5002	100,388	104,743	102,660	991	492	0.97%	23	100,388	100,781	102,120	102,799	103,100	103,764	104,743	1,591	99,617	105,981	0%
5003	70,670	82,930	78,468	3,634	898	4.63%	27	70,873	72,440	75,721	80,392	81,128	81,352	81,830	8,012	64,369	96,415	3%
5004	1,735	4,155	3,093	699	377	22.59%	23	1,735	1,739	2,682	3,133	3,568	3,994	4,155	901	1,332	4,935	14%
5005	176,535	207,242	196,192	9,155	2,607	4.67%	27	177,153	181,075	189,278	200,917	202,832	203,874	204,646	20,023	160,871	240,962	3%
5006	244,863	266,061	256,807	6,315	5,179	2.46%	27	246,737	249,045	250,947	257,812	262,953	265,932	265,958	9,363	239,087	276,538	2%
5007	44,589	173,185	107,092	58,903	27,429	55.00%	24	46,974	48,240	49,684	115,317	167,376	172,870	172,999	58,654	-1,991	232,625	54%
5008	315,807	518,658	430,672	39,378	16,949	9.14%	30	396,254	397,909	412,448	429,549	449,344	480,321	518,132	66,003	297,542	561,555	4%
5009	32,000	98,695	48,690	12,119	2,577	24.89%	30	38,985	39,718	43,851	46,159	49,481	57,520	70,586	30,838	-15,517	107,835	6%
5010	42,712	75,176	60,761	6,870	1,165	11.31%	27	49,809	57,304	58,528	60,268	63,025	72,449	74,334	17,405	25,459	95,077	4%
5011	180,651	323,255	248,642	38,095	25,544	15.32%	27	207,060	207,286	222,714	236,192	283,036	297,586	301,734	46,088	144,016	328,368	12%
5012	43,642	72,871	69,334	6,073	728	8.76%	25	67,651	68,131	68,907	71,176	71,562	71,822	72,758	23,303	24,569	117,782	2%
5013	155,527	193,979	167,237	9,549	7,968	5.71%	27	156,744	156,903	157,866	170,312	173,558	175,191	179,483	14,092	142,129	198,495	5%
5014	217	5,189	904	1,110	104	122.73%	25	230	251	392	684	748	848	3,048	7,757	-14,831	16,198	31%
5015	35,911	39,952	38,012	1,080	780	2.84%	26	36,537	36,710	37,095	38,477	38,591	39,391	39,619	7,928	22,620	54,333	2%
5016	75,886	191,939	148,954	48,317	11,461	32.44%	22	75,886	76,010	84,303	173,922	184,526	185,996	191,939	50,023	73,875	273,968	37%
5017	67,392	227,296	140,393	55,180	12,275	39.30%	22	67,858	69,298	78,973	174,463	180,662	186,739	207,332	55,180	64,103	284,823	39%
5018	129,940	387,877	271,173	99,888	12,992	36.84%	22	129,940	131,367	134,546	332,455	339,017	357,238	387,877	102,479	127,497	537,413	43%
5019	3,436	8,073	5,792	1,063	542	18.36%	26	4,431	4,504	5,263	5,996	6,171	7,038	7,712	8,064	-10,131	22,124	8%
5020	409,365	454,804	432,566	9,883	4,942	2.28%	30	422,551	422,682	427,877	430,840	435,647	447,718	453,815	19,346	392,147	469,532	1%
5021	205,274	270,821	237,321	17,247	9,821	7.27%	24	205,964	207,484	230,403	238,782	249,414	252,872	262,235	23,002	192,778	284,786	4%
5022	297,340	446,602	343,851	42,800	19,023	12.45%	24	302,092	302,870	319,881	333,004	351,840	415,724	417,184	58,615	215,774	450,234	5%
5023	383,561	1,068,425	689,134	188,710	74,644	27.38%	17	383,561	552,835	571,288	653,693	773,936	1,050,189	1,068,425	268,225	117,243	1,190,143	15%
5024	171,571	839,118	406,755	197,593	30,058	48.58%	25	262,564	265,400	268,371	416,848	472,644	729,451	758,815	260,922	-104,996	938,693	28%
5025	179,479	490,785	307,602	72,846	53,635	23.68%	24	224,611	242,856	255,382	300,675	367,819	379,088	382,311	103,178	94,319	507,030	18%
5026	101,044	192,399	125,844	31,715	4,327	25.20%	26	101,730	103,917	105,440	110,024	164,609	176,221	179,295	70,672	-31,321	251,369	22%
5027	68,971	116,000	99,943	8,092	1,770	8.10%	26	95,365	96,821	97,238	101,872	102,973	104,426	104,544	31,563	38,745	164,999	3%

Figure 18: Subset of CS portfolios, main stats and IQDs – Delta Risk CSR components

	Risk Class	Component	Corr. Scenario	Min	Max	Ave	STDev	MAD (median absolute deviation)	Coefficient of variation (STDev/Ave)	Num obs.	5th	10th	25th	50th (Median)	75th	90th	95th	STDev_trunc	-2 STDev_trunc	+2 STDev_trunc	Interquantile range
5001	Credit spread risk.Non-securitisations CSR	Delta risk	High correlation scenario	32,417	33,073	32,708	159	137	0.49%	22	32,417	32,484	32,589	32,677	32,840	32,852	33,073	255	32,167	33,186	0%
5002	Credit spread risk.Non-securitisations CSR	Delta risk	High correlation scenario	100,107	101,830	101,175	549	480	0.54%	22	100,125	100,344	100,825	101,088	101,668	101,782	101,809	1,052	98,984	103,192	0%
5003	Credit spread risk.Non-securitisations CSR	Delta risk	High correlation scenario	51,379	56,862	55,239	1,853	510	3.35%	24	51,590	52,299	53,827	56,234	56,647	56,800	56,802	4,490	47,253	65,215	3%
5004	Credit spread risk.Non-securitisations CSR	Delta risk	High correlation scenario	506	715	566	66	20	11.60%	22	510	517	524	545	564	692	705	496	-448	1,537	4%
5005	Credit spread risk.Non-securitisations CSR	Delta risk	High correlation scenario	128,634	142,959	138,372	4,712	1,124	3.41%	24	129,114	130,979	134,840	140,876	141,927	142,199	142,204	11,223	118,431	163,322	3%
5006	Credit spread risk.Non-securitisations CSR	Delta risk	High correlation scenario	213,790	245,565	233,542	8,163	1,226	3.50%	23	221,376	228,998	229,530	230,573	242,642	245,497	245,539	12,167	206,240	254,907	3%
5007	Credit spread risk.Non-securitisations CSR	Delta risk	High correlation scenario	6,744	17,966	12,025	2,757	1,111	22.92%	23	6,968	7,227	11,299	12,543	13,188	15,007	16,647	3,181	6,181	18,904	8%
5008	Credit spread risk.Non-securitisations CSR	Delta risk	High correlation scenario	284,512	349,951	310,752	16,024	5,811	5.16%	28	288,211	290,434	300,211	309,818	315,011	335,339	343,077	38,236	233,346	386,290	2%
5009	Credit spread risk.Non-securitisations CSR	Delta risk	High correlation scenario	20,775	57,192	34,235	6,174	1,100	18.03%	26	25,588	30,578	32,840	34,438	35,353	35,697	38,353	26,401	-18,364	87,241	4%
5010	Credit spread risk.Non-securitisations CSR	Delta risk	High correlation scenario	11,004	43,111	24,112	6,144	1,643	25.48%	23	11,004	20,946	21,809	24,491	25,289	29,509	43,111	18,938	-13,386	62,368	7%
5011	Credit spread risk.Non-securitisations CSR	Delta risk	High correlation scenario	61,530	230,774	160,003	57,718	32,821	36.07%	23	104,011	106,888	111,337	146,854	219,724	227,749	229,923	54,681	37,492	256,216	33%
5012	Credit spread risk.Non-securitisations CSR	Delta risk	High correlation scenario	39,586	69,117	66,448	6,342	330	9.54%	23	53,304	67,052	67,468	67,981	68,212	68,280	68,722	20,423	27,135	108,828	1%
5013	Credit spread risk.Non-securitisations CSR	Delta risk	High correlation scenario	148,949	170,577	158,637	7,935	7,990	5.00%	25	149,038	149,286	149,952	162,210	165,680	167,287	170,517	10,732	140,746	183,673	5%
5014	Credit spread risk.Non-securitisations CSR	Delta risk	High correlation scenario	57	174	126	27	4	21.69%	23	70	92	120	126	129	169	173	7,205	-14,284	14,535	4%
5015	Credit spread risk.Non-securitisations CSR	Delta risk	High correlation scenario	1,300	3,866	2,001	609	350	30.43%	22	1,304	1,349	1,574	1,931	2,248	2,706	3,286	4,169	-6,407	10,269	18%
5016	Credit spread risk.Non-securitisations CSR	Delta risk	High correlation scenario	15,154	22,135	19,194	2,097	1,685	10.93%	22	15,631	16,440	17,731	19,029	20,919	21,982	22,079	2,097	14,835	23,224	8%
5017	Credit spread risk.Non-securitisations CSR	Delta risk	High correlation scenario	26,197	36,782	29,545	2,730	1,618	9.24%	22	26,197	26,456	27,517	29,357	30,666	33,344	36,782	3,770	21,816	36,898	5%
5018	Credit spread risk.Non-securitisations CSR	Delta risk	High correlation scenario	28,503	35,880	31,379	1,850	1,221	5.90%	22	28,503	29,637	29,930	30,911	32,586	33,713	35,880	3,257	24,397	37,426	4%
5019	Credit spread risk.Non-securitisations CSR	Delta risk	High correlation scenario	1,300	3,866	1,994	611	350	30.62%	22	1,304	1,349	1,574	1,931	2,248	2,706	3,286	4,171	-6,411	10,273	18%
5020	Credit spread risk.Non-securitisations CSR	Delta risk	High correlation scenario	131,067	166,613	145,517	5,879	2,220	4.04%	27	141,387	142,825	143,074	145,316	147,381	147,732	151,163	11,505	122,306	168,326	1%
5021	Credit spread risk.Non-securitisations CSR	Delta risk	High correlation scenario	167,902	202,697	185,394	7,675	2,886	4.14%	23	167,902	175,118	183,003	186,042	187,274	197,024	202,697	15,046	155,951	216,133	1%
5022	Credit spread risk.Non-securitisations CSR	Delta risk	High correlation scenario	13,665	97,102	42,473	28,016	7,120	65.96%	22	13,665	18,874	24,345	31,547	45,863	97,102	97,102	40,052	-48,557	111,651	31%
5023	Credit spread risk.Non-securitisations CSR	Delta risk	High correlation scenario	370,032	651,822	576,863	71,021	36,110	12.31%	17	370,032	528,745	539,441	595,946	629,384	649,751	651,822	183,200	229,545	962,346	8%
5024	Credit spread risk.Non-securitisations CSR	Delta risk	High correlation scenario	135,203	835,336	374,825	212,054	77,152	56.57%	23	227,267	228,778	232,338	328,356	399,374	722,507	816,971	263,506	-198,656	855,368	26%
5025	Credit spread risk.Non-securitisations CSR	Delta risk	High correlation scenario	164,699	195,842	182,645	7,642	4,134	4.18%	23	164,807	170,814	180,512	182,761	187,806	189,983	192,926	20,873	141,014	224,508	2%
5026	Credit spread risk.Non-securitisations CSR	Delta risk	High correlation scenario	65,391	72,980	69,489	2,484	2,090	3.57%	24	65,391	65,391	67,707	71,511	71,725	72,247	72,980	28,311	14,890	128,132	3%
5027	Credit spread risk.Non-securitisations CSR	Delta risk	High correlation scenario	67,684	75,413	71,368	2,076	857	2.91%	24	67,938	68,000	70,894	71,701	72,293	73,377	74,132	2,227	67,247	76,155	1%

b. Bucketing.

77. Another issue, which does not cause high dispersion at portfolio-level but can easily be the cause of the single observation to be reported as outlier to the bank, is the bucketing of the sensitivities.

78. For example, the portfolio 1009, with the equity option 102 (Bayer), it is clear that the great majority of banks assigned to instrument (equity_delta) to bucket 5 (Consumer goods - 0.30% rw), but still a non-trivial number of banks assigned it bucket 7 (Basic material - - 0.40% rw).

Figure 19: Portfolios 1009 – instrument 102 – example of bucketing issue

RiskFactor	Bucket	Additional Identifier	Min	Max	Ave	STDev	MAD (median absolute deviation)	Coefficient of variation (STDev/Ave)	Num obs.
EQ_D_REPO	5	[All]							4
EQ_D_SPOT	5	[All]	644,600	1,299,238	993,740	257,584	322,300	25.92%	27
EQ_D_SPOT	7	[All]	968,700	1,291,768	1,097,634	175,868	750	16.02%	5
FX_D	EUR	[All]							2
GIRR_D	EUR	[All]	-14,295	-3,588	-10,093	3,792	3,537	37.57%	7
GIRR_D	USD	[All]							1
GIRR_D_CRO_USD	EUR	[All]							1

79. Here below an extract form Table 8 – Article 325ap – CRR

5	Advanced economy	Consumer goods and services, transportation and storage, administrative and support service activities, healthcare, utilities	30 %	0,30 %
6		Telecommunications, industrials	35 %	0,35 %
7		Basic materials, energy, agriculture, manufacturing, mining and quarrying	40 %	0,40 %

c. Aggregation formula

80. Assuming a correct/consistent computation of sensitivities and bucket assignment, being the ASA computed as a closed set of aggregation formulas, the OFR should be consistent. Nonetheless, even when the uncertainty regarding the value of the sensitivities and the bucketing removed, the suspicion that some inconsistencies on the aggregation formulas occur. On this regard, please see also the following Section 6.6.

d. SBM, DRC and RRAO provisions applied.

81. Setting aside dispersion due to in consistent computation of sensitivities, bucketing and aggregation formula, it is noticeable that not all the banks in the exercise applied the same provision of the whole ASA framework.

82. For example, portfolio 1007 (instrument 118 – autocallable equity option) was reported by 21 banks in terms of SBM component, by 18 banks in terms of DRC component, by 15 banks in

terms of RRAO component. This different implementation can be verified for a plurality of instruments. On this regard, please see also the following Section 6.7.

2.6 ASA SBM Validation portfolios

83. In the 2024 exercise EBA collected data concerning the aggregation formula of the SBM validation. This was implemented via the list of instruments and portfolios defined in the Annex X of the Benchmarking ITS. The instruments are different compared to the instruments in Annex V of the benchmarking ITS, since the validation instruments already provide sensitivities and buckets for banks, and it is required to provide the SBM OFR requirements based on those data.

84. These portfolios are based on an industry practice to run this control before the actual data collection of SBM data and are meant to control the correct implementation of the aggregation formula of the SBM methodology.

85. It should be noted that, this was the first data collection of this kind for the EBA Benchmarking exercise, and it was restricted only to the GIRR component of the SBM methodology.

86. From the data received it appears that and only a small number of banks reported these SBM Validation portfolios (6 out of 42). This points to an issue in the application of the requirements provided in the benchmarking ITS, which hopefully will be remediated in the following interactions.

87. The results of the data collection are examined in the figures below (Figure 20, Figure 21, Figure 22).

88. It appears from the data collected, that Delta Risk is consistently implemented in most of the cases – some inconsistencies are still noticeable in portfolios 31-41, and 54 – 56. The Vega Risk component does not exhibit any clear error, while for the curvature risk portfolio 47 exhibit some problems. It should be stressed that those results are also due to the limited number of banks participating in this part of the exercise, therefore these observations need to be checked in the future running of the benchmarking exercise.

Figure 20: SBM Validation – Delta Risk

Table	Group	Portfolio	Risk Class	Component	Corr. Scenario	Min	Max	Ave	STDev	MAD (median absolute deviation)	Coefficient of variation (STDev/Ave)	Num obs.	5th	10th	25th	50th (Median)	75th	90th	95th	STDev_trunc	-2 STDev_trunc	+2 STDev_trunc	Interquantile range
C 120.02	G	0	General interest rate risk (GIRR)	Delta risk	High correlation scenario	361	361	361	0	0	0.00%	6	361	361	361	361	361	361	361	0	361	361	0%
C 120.02	G	1	General interest rate risk (GIRR)	Delta risk	High correlation scenario	240	240	240	0	0	0.00%	6	240	240	240	240	240	240	240	0	240	240	0%
C 120.02	G	2	General interest rate risk (GIRR)	Delta risk	High correlation scenario	180	180	180	0	0	0.00%	6	180	180	180	180	180	180	180	0	180	180	0%
C 120.02	G	3	General interest rate risk (GIRR)	Delta risk	High correlation scenario	735	735	735	0	0	0.00%	6	735	735	735	735	735	735	735	19	698	773	0%
C 120.02	G	4	General interest rate risk (GIRR)	Delta risk	High correlation scenario	92	92	92	0	0	0.00%	6	92	92	92	92	92	92	92	12	69	115	0%
C 120.02	G	5	General interest rate risk (GIRR)	Delta risk	High correlation scenario	721	721	721	0	0	0.00%	6	721	721	721	721	721	721	721	123	476	967	0%
C 120.02	G	6	General interest rate risk (GIRR)	Delta risk	High correlation scenario	700	700	700	0	0	0.00%	6	700	700	700	700	700	700	700	156	388	1,012	0%
C 120.02	G	7	General interest rate risk (GIRR)	Delta risk	High correlation scenario	16	16	16	0	0	0.01%	6	16	16	16	16	16	16	16	3	9	22	0%
C 120.02	G	8	General interest rate risk (GIRR)	Delta risk	High correlation scenario	233	233	233	0	0	0.00%	6	233	233	233	233	233	233	233	52	129	337	0%
C 120.02	G	9	General interest rate risk (GIRR)	Delta risk	High correlation scenario	1,556	1,556	1,556	0	0	0.00%	6	1,556	1,556	1,556	1,556	1,556	1,556	1,556	346	863	2,248	0%
C 120.02	G	10	General interest rate risk (GIRR)	Delta risk	High correlation scenario	389	389	389	0	0	0.00%	6	389	389	389	389	389	389	389	87	216	562	0%
C 120.02	G	11	General interest rate risk (GIRR)	Delta risk	High correlation scenario	566	566	566	0	0	0.00%	5	566	566	566	566	566	566	566	105	356	775	0%
C 120.02	G	12	General interest rate risk (GIRR)	Delta risk	High correlation scenario	735	1,040	857	167	0	19.46%	5	735	735	735	735	1,040	1,040	1,040	167	402	1,069	17%
C 120.02	G	13	General interest rate risk (GIRR)	Delta risk	High correlation scenario	510	510	510	0	0	0.00%	6	510	510	510	510	510	510	510	61	388	632	0%
C 120.02	G	14	General interest rate risk (GIRR)	Delta risk	High correlation scenario	765	765	765	0	0	0.00%	6	765	765	765	765	765	765	765	92	581	949	0%
C 120.02	G	15	General interest rate risk (GIRR)	Delta risk	High correlation scenario	160	160	160	0	0	0.00%	6	160	160	160	160	160	160	160	16	127	193	0%
C 120.02	G	16	General interest rate risk (GIRR)	Delta risk	High correlation scenario	65	65	65	0	0	0.00%	6	65	65	65	65	65	65	65	2	61	69	0%
C 120.02	G	17	General interest rate risk (GIRR)	Delta risk	High correlation scenario	1,200	1,200	1,200	0	0	0.00%	6	1,200	1,200	1,200	1,200	1,200	1,200	1,200	0	1,200	1,200	0%
C 120.02	G	18	General interest rate risk (GIRR)	Delta risk	High correlation scenario	55	55	55	0	0	0.00%	6	55	55	55	55	55	55	55	2	51	59	0%
C 120.02	G	19	General interest rate risk (GIRR)	Delta risk	High correlation scenario	275	275	275	0	0	0.00%	6	275	275	275	275	275	275	275	10	255	295	0%
C 120.02	G	20	General interest rate risk (GIRR)	Delta risk	High correlation scenario	770	770	770	0	0	0.00%	6	770	770	770	770	770	770	770	29	713	827	0%
C 120.02	G	21	General interest rate risk (GIRR)	Delta risk	High correlation scenario	990	990	990	0	0	0.00%	6	990	990	990	990	990	990	990	37	917	1,063	0%
C 120.02	G	22	General interest rate risk (GIRR)	Delta risk	High correlation scenario	165	165	165	0	0	0.00%	6	165	165	165	165	165	165	165	6	153	177	0%
C 120.02	G	23	General interest rate risk (GIRR)	Delta risk	High correlation scenario	1,520	1,520	1,520	0	0	0.00%	5	1,520	1,520	1,520	1,520	1,520	1,520	1,520	0	1,520	1,520	0%
C 120.02	G	24	General interest rate risk (GIRR)	Delta risk	High correlation scenario	168	168	168	0	0	0.00%	6	168	168	168	168	168	168	168	4	159	177	0%
C 120.02	G	25	General interest rate risk (GIRR)	Delta risk	High correlation scenario	601	601	601	0	0	0.00%	6	601	601	601	601	601	601	601	0	601	601	0%
C 120.02	G	26	General interest rate risk (GIRR)	Delta risk	High correlation scenario	1,015	1,031	1,022	9	0	0.86%	6	1,015	1,015	1,015	1,023	1,031	1,031	1,031	255	512	1,534	1%
C 120.02	G	27	General interest rate risk (GIRR)	Delta risk	High correlation scenario	120	120	120	0	0	0.00%	6	120	120	120	120	120	120	120	0	120	120	0%
C 120.02	G	28	General interest rate risk (GIRR)	Delta risk	High correlation scenario	657	727	685	34	14	5.03%	6	657	657	657	671	727	727	727	34	602	740	5%
C 120.02	G	29	General interest rate risk (GIRR)	Delta risk	High correlation scenario	876	1,015	920	55	19	6.01%	6	876	876	895	907	920	1,015	1,015	222	464	1,351	1%
C 120.02	G	30	General interest rate risk (GIRR)	Delta risk	High correlation scenario	1,158	1,625	1,357	201	230	14.80%	5	1,158	1,158	1,158	1,389	1,453	1,625	1,625	201	987	1,790	11%
C 120.02	G	31	General interest rate risk (GIRR)	Delta risk	High correlation scenario							1											
C 120.02	G	32	General interest rate risk (GIRR)	Delta risk	High correlation scenario	885	1,862	1,303	396	449	30.40%	5	885	885	957	1,405	1,405	1,862	1,862	396	613	2,198	19%
C 120.02	G	33	General interest rate risk (GIRR)	Delta risk	High correlation scenario	746	4,292	2,183	1,252	634	57.34%	6	746	746	1,063	2,332	2,332	4,292	4,292	1,252	-171	4,835	37%
C 120.02	G	34	General interest rate risk (GIRR)	Delta risk	High correlation scenario	1,093	4,652	2,229	1,477	700	66.23%	5	1,093	1,093	1,093	1,793	2,516	4,652	4,652	1,477	-1,160	4,746	39%
C 120.02	G	54	General interest rate risk (GIRR)	Delta risk	High correlation scenario							4											
C 120.02	G	55	General interest rate risk (GIRR)	Delta risk	High correlation scenario	1,867	2,640	2,125	399	0	18.79%	6	1,867	1,867	1,867	1,867	2,640	2,640	2,640	399	1,068	2,665	17%
C 120.02	G	56	General interest rate risk (GIRR)	Delta risk	High correlation scenario	2	3	3	0	0	9.43%	6	2	2	2	3	3	3	3	0	2	3	9%

Figure 21: SBM Validation – Vega Risk

Table	Group	Portfolio	Risk Class	Component	Corr. Scenario	Other stats							Percentiles								Extreme Values range (w.r.t. median)²		
						Min	Max	Ave	STDev	MAD (median absolute deviation)	Coefficient of variation (STDev/Ave)	Num obs.	5th	10th	25th	50th (Median)	75th	90th	95th	STDev_trunc	-2 STDev_trunc	+2 STDev_trunc	Interquantile range
C 120.02	G	35	General interest rate risk (GIRR)	Vega risk	High correlation scenario	700	700	700	0	0	0.00%	6	700	700	700	700	700	700	700	60	581	819	0%
C 120.02	G	36	General interest rate risk (GIRR)	Vega risk	High correlation scenario	600	600	600	0	0	0.00%	6	600	600	600	600	600	600	600	51	498	702	0%
C 120.02	G	37	General interest rate risk (GIRR)	Vega risk	High correlation scenario	800	800	800	0	0	0.00%	6	800	800	800	800	800	800	800	63	674	926	0%
C 120.02	G	38	General interest rate risk (GIRR)	Vega risk	High correlation scenario	1,100	1,100	1,100	0	0	0.00%	6	1,100	1,100	1,100	1,100	1,100	1,100	1,100	162	777	1,423	0%
C 120.02	G	39	General interest rate risk (GIRR)	Vega risk	High correlation scenario	3,320	3,350	3,326	13	0	0.40%	6	3,320	3,320	3,320	3,320	3,320	3,350	3,350	74	3,172	3,469	0%
C 120.02	G	40	General interest rate risk (GIRR)	Vega risk	High correlation scenario	664	664	664	0	0	0.00%	5	664	664	664	664	664	664	664	185	294	1,035	0%
C 120.02	G	41	General interest rate risk (GIRR)	Vega risk	High correlation scenario							3											
C 120.02	G	42	General interest rate risk (GIRR)	Vega risk	High correlation scenario	500	500	500	0	0	0.00%	6	500	500	500	500	500	500	500	19	462	538	0%
C 120.02	G	43	General interest rate risk (GIRR)	Vega risk	High correlation scenario	3,417	3,446	3,423	13	0	0.38%	6	3,417	3,417	3,417	3,417	3,417	3,446	3,446	36	3,345	3,489	0%
C 120.02	G	44	General interest rate risk (GIRR)	Vega risk	High correlation scenario	423	423	423	0	0	0.00%	6	423	423	423	423	423	423	423	12	398	448	0%
C 120.02	G	45	General interest rate risk (GIRR)	Vega risk	High correlation scenario	3,543	3,550	3,545	3	0	0.10%	5	3,543	3,543	3,543	3,543	3,546	3,550	3,550	189	3,165	3,921	0%
C 120.02	G	54	General interest rate risk (GIRR)	Vega risk	High correlation scenario							4											

Figure 22: SBM Validation – Curvature Risk

Table	Group	Portfolio	Risk Class	Component	Corr. Scenario	Other stats							Percentiles							STDev_trunc	Extreme Values range (w.r.t. median)[2]		Interquantile range
						Min	Max	Ave	STDev	MAD (median absolute deviation)	Coefficient of variation (STDev/Ave)	Num obs.	5th	10th	25th	50th (Median)	75th	90th	95th		-2 STDev_trunc	+2 STDev_trunc	
C 120.02	G	46	General interest rate risk (GIRR)	Curvature risk	High correlation scenario	92,233	93,179	92,784	440	240	0.47%	6	92,233	92,233	92,233	92,939	93,179	93,179	93,179	440	92,059	93,818	1%
C 120.02	G	47	General interest rate risk (GIRR)	Curvature risk	High correlation scenario	450	1,270	827	370	310	44.80%	6	450	450	450	760	1,270	1,270	1,270	370	19	1,501	48%
C 120.02	G	48	General interest rate risk (GIRR)	Curvature risk	High correlation scenario	73,766	74,531	74,076	360	165	0.49%	6	73,766	73,766	73,766	73,931	74,531	74,531	74,531	360	73,211	74,651	1%
C 120.02	G	49	General interest rate risk (GIRR)	Curvature risk	High correlation scenario							4											
C 120.02	G	50	General interest rate risk (GIRR)	Curvature risk	High correlation scenario	92,375	93,583	93,046	550	404	0.59%	6	92,375	92,375	92,375	93,179	93,583	93,583	93,583	550	92,078	94,280	1%
C 120.02	G	51	General interest rate risk (GIRR)	Curvature risk	High correlation scenario							4											
C 120.02	G	52	General interest rate risk (GIRR)	Curvature risk	High correlation scenario							4											
C 120.02	G	53	General interest rate risk (GIRR)	Curvature risk	High correlation scenario	72,552	80,701	77,772	4,053	638	5.21%	6	72,552	72,552	72,552	80,062	80,701	80,701	80,701	4,053	71,956	88,169	5%
C 120.02	G	54	General interest rate risk (GIRR)	Curvature risk	High correlation scenario	80,062	80,701	80,382	369	319	0.46%	5	80,062	80,062	80,062	80,062	80,701	80,701	80,701	3,516	73,030	87,095	0%

2.7 ASA DRC and RRAO

89. In the 2024 exercise EBA collected also data on the two remaining component of the ASA OFR: the default risk charge (DRC) and the residual risk add on (RRAO).

90. The aggregated data for the DRC can be seen in Table 4, where we see that only 38 portfolios are in scope of the DRC component. This is expected, as the charge is computed only on instruments subject to default risk, i.e., equities and bonds, and so no observations are present in the commodity and FX asset class. Less expected is the relatively small number of observations (15) reported for those instruments, which is much lower compared to the average numbers of observations for those instruments for the SBM component (27). This implies that a substantial number of banks did not report the DRC component for these portfolios.

91. The positive observation concerning the DRC submission is the relative low dispersion (14% IQD on average) across all asset classes. More specifically, the IR instruments subject to DRC exhibit only a 3% IQD, while the IQD is higher for EQ and CS (22% and 18%), where some portfolio with substantial IQD are present (see 1014, 1015, 50015004, 5017, 5018).

92. As expected, due to the mostly vanilla nature of the instruments represented in the benchmarking portfolios, very few data were available for the RRAO, as shown in Table 5. The only portfolio with a considerable number of observations reported is portfolio 1007, containing instrument 118 – autocallable equity option. It is interesting to note that only 15 banks reported the RRAO figure for this portfolio, out of 21 that reported the SBM component (and 18 the DRC component). For this portfolio, the RRAO component submitted is very consistent (0% IQD), with very few banks diverging from the benchmark.

93. It is also interesting to note that a few banks reported RRAO for the portfolios 5026 and 5027 – respectively with instruments 533 and 534 – which are callable bonds – and the few banks that reported the figures did it in a quite consistent manner.

94. Based on these observations, we can conclude that when considered on a standalone basis, the DRC and RRAO component seems to be computed in a sufficiently consistent manner, but due to the inconsistency in the data submission (i.e. some banks reported same data other did not, for the same portfolios), this would inevitably increase the dispersion of the total ASA OFR. A review of this matter will be beneficial in the future exercises, where a more consistent reading of the ITS requirements will be achieved.

3. Conclusion

95. The 2024 exercise is the first that EBA will provide a separate report for the FRTB ASA on the market risk benchmarking exercise. The reasons for separating ASA and IMA are that the ASA data collection was enriched with the latest component of the ASA methodology (DRC and RRAO), but also with the validation portfolios data collection, so that just the shared volume of new information justifies a separate reporting of the matter. The FRTB ASA benchmarking will be even more critical in the future, where the benchmarking exercise will be extended to banks that apply the ASA methodology independently by the current requirement of having been granted permission to adopt internal models for market risk's own funds requirements.

96. One positive aspect of the ASA data collection is that the OFR computed with this methodology is already significantly more consistent than the IMA methodology. This result is not surprising given the standardised nature of the methodology, but it reassures us of the consistency in the implementation of the method.

97. A good degree of consistency is seen not only in the level of SBM OFR but also in the specific sensitivities provided.

98. The bucketing aspects and the aggregation formula clearly indicate possible improvements in the FRTB ASA application. The FX sensitivities component, while causing the most significant increase in the dispersion, seems to be more of a problem linked to the benchmarking exercise specificity than an actual FRTB ASA implementation issue.

99. For the DRC, and to a fewer extent the RRAO as well, some inconsistencies were observed in the submissions. Together with the validation portfolios, which were introduced for the first time in 2024, they represent areas of much-needed further development and investigation in future exercises.

4. Annex 1 – Additional tables

Table 2: Banks participating in the 2024 EBA MR benchmarking exercise

Country	Bank name
AT	Erste Group Bank AG
AT	Raiffeisen Bank International AG
BE	Belfius Bank
BE	KBC Groep
DE	COMMERZBANK Aktiengesellschaft
DE	Citigroup Global Markets Europe AG
DE	DEUTSCHE BANK AKTIENGESELLSCHAFT
DE	DZ BANK AG Deutsche Zentral-Genossenschaftsbank, Frankfurt am Main
DE	DekaBank Deutsche Girozentrale
DE	Goldman Sachs Bank Europe SE
DE	Landesbank Baden-Württemberg
DE	Landesbank Hessen-Thüringen Girozentrale
DE	Morgan Stanley Europe Holding SE
DE	Nomura Financial Products Europe GmbH
DE	Norddeutsche Landesbank - Girozentrale -
DK	Danske Bank A/S
DK	Nykredit Realkredit A/S
ES	Banco Bilbao Vizcaya Argentaria, S.A.
ES	Banco Santander, S.A.
ES	CaixaBank, S.A.
FI	Nordea Bank Abp
FR	BNP Paribas
FR	BofA Securities Europe SA
FR	Groupe BPCE
FR	Groupe Crédit Agricole
FR	HSBC Continental Europe
FR	Société générale S.A.
GR	ALPHA SERVICES AND HOLDINGS S.A.
GR	Eurobank Ergasias Services and Holdings S.A.
GR	National Bank of Greece, S.A.
IE	Barclays Bank Ireland plc
IE	Citibank Europe plc
IT	BANCO BPM SOCIETA' PER AZIONI
IT	Intesa Sanpaolo S.p.A.
IT	UNICREDIT, SOCIETA' PER AZIONI
NL	ABN AMRO Bank N.V.
NL	Coöperatieve Rabobank U.A.
NL	ING Groep N.V.
NL	NIBC Holding N.V.
NL	RBS Holdings N.V.
PT	Banco Comercial Português, SA
SE	Skandinaviska Enskilda Banken - gruppen
SE	Swedbank - Grupp

Country	AT	BE	DE	DK	ES	FI	FR	GR	IE	IT	NL	PT	SE
N.banks	2	2	11	2	3	1	6	3	2	3	5	1	2

Table 3: Instruments/portfolios underlying the HPE

Section 2: Instruments

EQUITY

101.   Long EURO STOXX 50 index (Ticker: SX5E) Futures.

Notional: equivalent to the value of the index times 1 000 EUR

Exchange: Eurex

Expiry date: June Year T

Base currency: EUR

102.   Long 10 000 BAYER (Ticker: BAYN GR) shares.

Exchange: Xetra

Base currency: EUR

103.   Short Futures BAYER (Ticker: BAYN GR).

Notional: equivalent to the value of 10 000 shares of the underlying asset

Exchange: Eurex

Expiry date: June Year T

Base currency: EUR

104.   Short Futures, STELLANTIS (Ticker: STLA FP).

Notional: equivalent to the value of 10 000 shares of the underlying asset

Exchange: Euronext

Expiry date: June Year T

Base currency: EUR

105.   Short Futures, ALLIANZ (Ticker: ALV GR).

Notional: equivalent to the value of 10 000 shares of the underlying asset

Exchange: Eurex

Expiry date: June Year T

Base currency: EUR

106.   Short Futures BARCLAYS (Ticker: BARC LN).

Notional: equivalent to the value of 10 000 shares of the underlying asset

Exchange: Eurex

Expiry date: June Year T

Base currency: GBP

107.   Short Futures DEUTSCHE BANK (Ticker: DBK GR).

Notional: equivalent to the value of 10 000 shares of the underlying asset

Exchange: Eurex

Expiry date: June Year T

Base currency: EUR

108.   Short Futures CRÉDIT AGRICOLE (Ticker: ACA FP).

Notional: equivalent to the value of 10 000 shares of the underlying asset

Exchange: Euronext

Expiry date: June Year T

Base currency: EUR

109.   Long Call Options. Underlying BAYER (Ticker: BAYN GR), ATM (1 contract = 100 shares).

Notional: equivalent to the value of 10 000 shares of the underlying asset

Expiry date: June Year T

Base currency: EUR

110.   Short Call Options. Underlying BAYER (Ticker: BAYN GR), ATM (1 contract = 100 shares).

Notional: equivalent to the value of 10 000 shares of the underlying asset

Expiry date: December Year T

Base currency: EUR

111.   Long Call Options. Underlying PFIZER (Ticker PFE US) 10% OTM, (1 contract = 100 shares).

Notional: equivalent to the value of 10 000 shares of the underlying asset

Expiry date: June Year T

Base currency: USD

112.   Long Put Options. Underlying PFIZER (Ticker PFE US) 10% OTM, (1 contract = 100 shares).

Notional: equivalent to value of 10 000 shares of the underlying asset

Expiry date: June Year T

Base currency: USD

113.   Long Call Options. Underlying BAYER (Ticker: BAYN GR), 10% OTM (1 contract = 100 shares).

Notional: equivalent to the value of 10 000 shares of the underlying asset

Expiry date: December Year T

Base currency: EUR

114.   Short Call Options. Underlying BAYER (Ticker: BAYN GR), 10% OTM (1 contract = 100 shares).

Notional: equivalent to the value of 10 000 shares of the underlying asset

Expiry date: June Year T

Base currency: EUR

115.   Long Call Options. Underlying AVIVA (Ticker: AV/LN), 10% OTM (1 contract = 100 shares).

Notional: equivalent to the value of 10 000 shares of the underlying asset

Expiry date: December Year T

Base currency: GBP

116.   Long Put Options. Underlying AVIVA (Ticker: AV/LN), 10% OTM (1 contract = 100 shares).

Notional: equivalent to the value of 10 000 shares of the underlying asset

Expiry date: December Year T

Base currency: GBP

117.   Short Futures NIKKEI 225 (Ticker NKY).

Notional: equivalent to the value of the index times 20 000 JPY

Exchange: CME

Expiry date: 8 June Year T

Base currency: JPY

118.   Auto-callable Equity product.

Long position

Booking on 'Booking date'

Notional amount ('Capital'): EUR 1 000 000

Underlying: Index EURO STOXX 50 (Ticker: SX5E)

Base currency: EUR

Maturity: 5 years
Annual Pay-out and annual observation ('Booking date + 1 year', 'Booking date + 2 years', 'Booking date + 3 years', 'Booking date + 4 years', 'Booking date + 5 years'). Pay-out occurs 10 days after reference date.

Coupon: 6%

Autocall level ('Initial value'): End of day Booking date + 1 month

Barrier coupon payment 60% of autocall level
Protection barrier: 55% of autocall level
additional details in the original ITS 2023)

119.   Long Call Options. Underlying EURO STOXX 50 index (Ticker: SX5E), ATM.

Notional: equivalent to the value of the index times 1 000 EUR

Expiry date: June Year T

Base currency: EUR

120.   Long Call Options. Underlying EURO STOXX 600 index (Ticker: SXXP), ATM.

Notional: equivalent to the value of the index times 10 000 EUR

Expiry date: June Year T

Base currency: EUR

121.   Long Call Options. Underlying VIX (CBOE), ATM.

Notional: equivalent to the value of the index times 100 000 USD

Expiry date: June Year T

Base currency: USD

IR

201.   5-year IRS EUR – Receive fixed rate and pay floating rate.

Fixed leg: receive annually

Floating rate: 3-month EURIBOR, pay quarterly

Notional: EUR 10 000 000

Roll convention and calendar: standard

Effective date as booking date (i.e. the rates to be used shall be those at the market close as of the booking date)

Maturity: September Year T+4.

Base currency: EUR

202. Two-year EUR swaption on 5-year IRS EUR – pay fixed rate and receive floating rate.

Notional: EUR 10 000 000.
The institution is the seller of the option on the swap. The counterparty of the institution buys the right to enter a swap with the institution; if the counterparty exercises its right, the counterparty shall receive the fixed rate while the institution shall receive the floating rate.
Swaption with maturity of two years (Booking date + 2 years) on IRS defined as follow:
Fixed leg - pay annually; Floating rate: 3-month EURIBOR, receive quarterly;
Notional: EUR 10 000 000; Roll convention and calendar: standard;
Effective date as booking date (i.e. the rates to be used shall be those at the market close as of the booking date)

Maturity of the underlying swap: Booking date + 7 years

Premium paid at the booking date (Booking date). Cash settled

The strike price is based on the IRS defined within this instrument

Base currency: EUR

203. 5-year IRS USD. Receive fixed rate and pay floating rate.

Fixed rate: receive annually

Floating rate: 3-month USD LIBOR rate, pay quarterly

Notional: USD 1 000 000

Roll convention and calendar: standard

Effective date as booking date (i.e. the rates to be used shall be those at the market close as of the booking date)

Maturity date: September Year T+4.

Base currency: USD

204. 2-year IRS GBP. Receive fixed rate and pay floating rate.

Fixed rate: receive annually

Floating rate: 3-month SONIA rate compounded and paid annually

Notional: GBP 10 000 000

Roll convention and calendar: standard

Effective date as booking date (i.e. the rates to be used shall be those at the market close as of the booking date)

Maturity: Booking date + 2 years

Base currency GBP

205. Collared 10y floating rate note sold by UBS.

Notional (Principal) Amount: USD 1 000 000.

Floating Rate Notes (the 'Notes') are senior unsecured obligations of UBS AG ('UBS').

Base currency USD

Interest Payment Amount

Trade and Settlement Date

Interest Payment Dates

Maturity Date

Currency

Daycount Basis

Business Day Convention

Coupon Determination

Date

206.   Long GERMANY GOVT EUR 1 000 000 (ISIN DE0001030583).

Maturity: 15 April 2033

Base currency: EUR

207.   Short GERMANY GOVT EUR 1 000 000 (ISIN DE0001135044).

Maturity: 4 July 2027

Base currency: EUR

208.   Long ITALY GOVT EUR 1 000 000 (ISIN IT0005138828).

Maturity: 15 September 2032

Base currency: EUR

209.   Long ITALY GOVT EUR 1 000 000 (ISIN IT0005210650).

Maturity: 1 December 2026

Base currency: EUR

210.   Long SPAIN GOVT EUR 1 000 000 (ISIN ES00000127A2).

Maturity: 30 July 2030

Base currency: EUR

211.   Short FRANCE GOVT EUR 1 000 000 (ISIN FR0012993103).

Maturity: 25 May 2031

Base currency: EUR

212.   Short GERMANY GOVT EUR 1 000 000 (ISIN DE0001135176).

Maturity: 4 January 2031

Base currency: EUR

213.   Long UNITED KINGDOM GOVT GBP 1 000 000 (ISIN GB0004893086).

Maturity: 7 June 2032

Base currency: GBP

214.   Long PORTUGAL GOVT EUR 1 000 000 (ISIN PTOTEXOE0024).

Maturity: 15 June 2029

Base currency: EUR

215.   Short UNITED STATES GOVT USD 1 000 000 (ISIN US9128283F58).

Maturity: 15 November 2027

Base currency USD

216.   Long BRAZIL GOVT 1 000 000 USD (ISIN US105756BZ27).

Maturity: 13 January 2028

Base currency: USD

217.   Long MEXICO GOVT 1 000 000 USD (ISIN US91087BAC46).

Maturity: 28 March 2027

Base currency USD

218.   10-year IRS EURO – Receive floating rate and pay fixed rate.

Fixed leg: pay annually

Floating rate: 3-month EURIBOR, receive quarterly

Notional: EUR 10 000 000

Roll convention and calendar: standard

Effective date as the booking date (i.e. rates to be used are those at the market close on booking date)

Maturity: Booking date + 10 years

Base currency: EUR

219.   5-year IRS EURO – Receive floating rate and pay fixed rate.

Fixed leg: pay annually

Floating rate: 6-month EURIBOR, receive every 6 months

Notional: EUR 1 000 000

Roll convention and calendar: standard

Effective date as the booking date (i.e. rates to be used are those at the market close on booking date)

Maturity: Booking date + 5 years

Base currency: EUR

220.   5-year Mark to Market (MtM) Cross Currency EUR/USD SWAP. Receive USD and pay EUR.

EUR: 3-month ESTER, pay quarterly compounded with a payment lag of 2 days

USD: 3-month SOFR , receive quarterly compounded with a payment lag of 2 days

Leg 1 – USD: Notional EUR 10 000 000 equivalent adjusted on a quarterly basis

Leg 2 – EUR: Notional EUR 10 000 000

Roll convention and calendar: standard

Effective date as booking date + 6 months

Maturity: Booking date + 5,5 years

Base currency: EUR

See also Section 5 of this Annex – Instrument additional specifications

221.   10-year IRS EURO – Receive ESTER and pay EURIBOR.

ESTER leg: receive annually

EURIBOR leg: 3-month EURIBOR + Basis, pay quarterly

Notional: EUR 10 000 000

Roll convention and calendar: standard

Effective date as booking date (i.e. the rates to be used shall be those at the market close as of the booking date)

Maturity: September Year T + 9 years

Base currency: EUR

222.   Long ITALY GOVT EUR 1 000 000 (ISIN IT0005387052).

Maturity: 15 May 2030

Base currency: EUR

223. 5-year Zero Coupon Inflation swap EUR – Receive Inflation indexed return and pay fixed rate (r).

Inflation Index: CPI (HICPxT)

Fixed leg (Pay fixed): $[(1 + r)^5 - 1]$

Rec Inflation indexed return: $[(\frac{CPI \text{ at the end (maturity) date}}{CPI \text{ at the start date}}) - 1]$

Notional: EUR 10 000 000

Base fixing date: August Year T

Final Fixing: August Year T+4

Maturity: September Year T+4

Base currency: EUR

224. Two-year EUR swaption on 5-year IRS EUR – receive fixed rate and pay floating rate.

Notional: EUR 10 000 000.
The institution is the seller of the option on the swap. The counterparty of the institution buys the right to enter a swap with the institution; if the counterparty exercises its right, the counterparty shall receive the fixed rate while the institution shall receive the floating rate.
Swaption with maturity of two years (Booking date + 2 years) on IRS defined as follow: Fixed leg- receive annually;
Floating rate: 6-month EURIBOR, pay every 6 months; Notional: EUR 10 000 000; Roll convention and calendar: standard;
Effective date as the booking date (i.e. rates to be used are those at the market close on booking date)

Maturity of the underlying swap: Booking date + 7 years

Premium paid at the booking date (Booking date). Cash settled

The strike price is based on the IRS defined within this instrument+ 100 bps

Base currency: EUR

FX
301.   6-month USD/EUR forward contract. Cash settled. Long USD – Short EUR; Notional USD 10 000 000;
EUR/USD ECB reference spot rate as of end of the booking date.

Base currency: EUR

302.   6-month EUR/GBP forward contract. Cash settled. Long EUR – Short GBP; Notional 10 000 000 GBP;
EUR/GBP ECB reference spot rate as of end of the booking date.

Base currency: EUR

303.   Long 10 000 000 USD Cash.

Cash position

Base currency: EUR

304.   Long Call option. EUR 10 000 000. Equivalent amount based on EUR/USD ECB reference spot rate as of end of the booking date.

Strike price: 110% of EUR/USD ECB reference rate as of end of the booking date

Expiry date: Booking date + 1 year

Base currency: EUR

305.   Long Call option. EUR 10 000 000. Equivalent amount based on EUR/USD ECB reference spot rate as of end of the booking date.

Strike price: 90% of EUR/USD ECB reference rate as of end of the booking date

Expiry date: Booking date + 1 year

Base currency: EUR

306.   Short Call option. EUR 10 000 000. Equivalent amount based on EUR/USD ECB reference spot rate as of end of the booking date.

Strike price: 100% of EUR/USD ECB reference rate as of end of the booking date

Expiry date: Booking date + 1 year

Base currency: EUR

307.   Short Call option. EUR 10 000 000. Equivalent amount based on EUR/GBP ECB reference spot rate as of end of the booking date.

Strike price: 110% of EUR/GBP ECB reference rate as of end of the booking date

Expiry date: Booking date + 1 year

Base currency: EUR

308.   Long Put option. EUR 10 000 000. Equivalent amount based on EUR/JPY ECB reference spot rate as of end of the booking date.

Strike price: 110% of EUR/JPY ECB reference rate as of end of the booking date

Expiry date: Booking date + 1 year

Base currency: EUR

309.   Short Put option. EUR 10 000 000. Equivalent amount based on EUR/AUD ECB reference spot rate as of end of the booking date.

Strike price: 110% of EUR/AUD ECB reference rate as of end of the booking date

Expiry date: Booking date + 1 year

Base currency: EUR

310.   6-month EUR/DKK forward contract. Cash settled. Long EUR – Short DKK; Notional EUR 10 000 000;
EUR/DKK ECB reference spot rate as of end of the booking date.

Base currency: EUR

311.   6-month EUR/BRL Non deliverable forward contract. Long EUR – Short BRL; Notional EUR 10 000 000;
EUR/BRL ECB reference spot rate as of end of the booking date.

Base currency: EUR

COMMODITIES

401.   Long 3 500 000 6-month ATM London Gold Forwards contracts (1 contract = 0.001 troy ounces, notional: 3 500 troy ounces).

Cash Settlement

Base currency: USD

402.   Short 3 500 000 12-month ATM London Gold Forwards contracts (1 contract = 0.001 troy ounces, notional: 3 500 troy ounces).

Cash Settlement

Base currency: USD

403.   Long 30 contracts of 6-month WTI Crude Oil Call option with strike equals 12-month end-of-day forward price
 on the booking date (1 contract = 1 000 barrels. Total notional 30 000 barrels).

Cash Settlement

Base currency USD

404.   Short 30 contracts of 6-month WTI Crude Oil Put option with strike equals 12-month end-of-day forward price on the booking date (1 contract = 1 000 barrels. Total notional 30 000 barrels).

Cash Settlement

Base currency USD

405.   Long Call option. 5 000 0zt of London Gold.

Strike price: ATM as of end of the booking date

Expiry date: Booking date + 18 months

Cash Settlement

Base currency: USD

CREDIT SPREAD

501.   Long (i.e. Buy protection) USD 1 000 000 CDS on PORTUGAL.

Restructuring clause: FULL

Base currency: USD

502.   Long (i.e. Buy protection) USD 1 000 000 CDS on ITALY.

Restructuring clause: FULL

Base currency: USD

503.   Short (i.e. Sell protection) USD 1 000 000 CDS on SPAIN.

Restructuring clause: FULL

Base currency: USD

504.   Long (i.e. Buy protection) USD 1 000 000 CDS on MEXICO.

Restructuring clause: FULL

Base currency: USD

505.   Long (i.e. Buy protection) USD 1 000 000 CDS on BRAZIL.

Restructuring clause: FULL

Base currency: USD

506.   Long (i.e. Buy protection) USD 1 000 000 CDS on UK.

Restructuring clause: FULL

Base currency: USD

507.   Short (i.e. Sell protection) EUR 1 000 000 CDS on Telefonica (Ticker TEF SM).

Base currency: EUR

508.   Long (i.e. Buy protection) EUR 1 000 000 CDS on Telefonica (Ticker TEF SM).

Maturity: December Year T+2

Base currency: EUR

509.   Short (i.e. Sell protection) EUR 1 000 000 CDS on Aviva (Ticker AV LN).

ISDA Definitions year 2003

Base currency: EUR

510.   Long (i.e. Buy protection) EUR 1 000 000 CDS on Aviva (Ticker AV LN).

ISDA Definitions year 2003

Maturity: December Year T+2

Base currency: EUR

511.   Short (i.e. Sell protection) EUR 1 000 000 CDS on Vodafone (Ticker VOD LN).

Base currency: EUR

512.   Short (i.e. Sell protection) EUR 1 000 000 CDS on ENI SpA (Ticker ENI IM).

Base currency: EUR

513.   Short (i.e. Sell protection) USD 1 000 000 CDS on Eli Lilly (Ticker LLY US).

Restructuring clause: No restructuring (XR14)

Base currency: USD

514.   Short (i.e. Sell protection) EUR 1 000 000 CDS on Unilever (Ticker UNA NA).

Base currency: EUR

515.   Long (i.e. Buy protection) EUR 1 000 000 CDS on Total SA (Ticker FP FP).

Base currency: EUR

516.   Long (i.e. Buy protection) EUR 1 000 000 CDS on Volkswagen Group (Ticker VOW GR).

Base currency: EUR

517.   Long position on TURKEY Govt. notes USD 1 000 000 (ISIN US900123CT57).

Maturity: 26 April 2029

Base currency: USD

518.   Long (i.e. Buy protection) USD 1 000 000 CDS on TURKEY. Effective date as booking date.

Restructuring clause: FULL

Base currency: USD

519.   Long position on Telefonica notes EUR 1 000 000 (ISIN XS1681521081).

Maturity: 12 January 2028

Base currency: EUR

520.   Long position on Volkswagen Group notes EUR 1 000 000 (ISIN XS1944390597).

Maturity: 31 July 2026

Base currency: EUR

521.   Short position Volkswagen Group notes EUR 1 000 000 (ISIN XS1944390241).

Maturity: 31 January 2024

Base currency: EUR

522.   Long position on Total SA notes EUR 1 000 000 (ISIN XS1048519679).

Maturity: 25 March 2026

Base currency: EUR

523.   Long AUSTRIA GOVT EUR 1 000 000 (ISIN AT0000A04967).

Maturity: 15 March 2037

Base currency: EUR

524.   Long (i.e. Buy protection) USD 1 000 000 CDS on AUSTRIA.

Maturity: June Year T+15

Base currency: USD

525.   Long NETHERLANDS GOVT EUR 1 000 000 (ISIN NL0013552060).

Maturity: 15 January 2040

Base currency: EUR

526.   Long (i.e. Buy protection) USD 1 000 000 CDS on NETHERLANDS.

Maturity: June Year T+20

Base currency: USD

527.   Long BELGIUM GOVT EUR 1 000 000 (ISIN BE0000348574).

Maturity: 22 June 2050

Base currency: EUR

528.   Long (i.e. Buy protection) USD 1 000 000 CDS on BELGIUM.

Maturity: June Year T+30

Base currency: USD

529.   Long (Buy protection) EUR 10 000 000 CDS on iTraxx Europe index on-the-run series.

Maturity: June Year T+5

Base currency: EUR

530.   Short Put option. EUR 10 000 000. Underlying iTraxx Europe index on-the-run series (same instrument of 529).

Strike price: ATM

Expiry date: Booking date + 1 year

Base currency: EUR

531.   Long AXA SA (callable) EUR 1 000 000 (ISIN XS1799611642).

Maturity: 28 May 2049

Base currency: EUR

532.   Long AT&T Bond (callable) USD 1 000 000 (ISIN US00206RFW79).

Maturity: 15 August 2037

Base currency: USD

533.   Long BAYER AG (callable) EUR 1 000 000 (ISIN XS2199266268).

Maturity: 06 January 2030

Base currency: EUR

534.   Long AT&T Bond (callable) EUR 1 000 000 (ISIN XS0993148856).

Maturity: 17 December 2025

Base currency: EUR

CTP

601.   Short (i.e. Sell protection) position in iTraxx Europe index on-the-run series.

Attachment point: 3%

Detachment point: 6%

Notional: EUR 5 000 000

Maturity: 5 years

Base currency: EUR

602.   Long (i.e. Buy protection) EUR 5 000 000 CDS on iTraxx Europe index most recent on-the-run series.

Maturity: June Year T+5

Base currency: EUR

Notional adj. to fully hedge CS01 of 601 with no re-hedging required

603.   Long (i.e. Buy protection) position in iTraxx Europe index on-the-run series.

Attachment point: 3%

Detachment point: 6%

Notional: EUR 5 000 000

Maturity: 5 years

Base currency: EUR

604.   Short (i.e. Sell protection) EUR 5 000 000 CDS on iTraxx Europe index most recent on-the-run series.

Maturity: June Year T+5

Base currency: EUR

Notional adj. to fully hedge CS01 of 603 with no re-hedging required

605.   Short (i.e. Sell protection) position in iTraxx Europe index on-the-run series.

Attachment point: 12%

Detachment point: 100%

Notional: EUR 5 000 000

Maturity: 5 years

Base currency: EUR

606.   Long (i.e. Buy protection) EUR 5 000 000 CDS on iTraxx Europe index most recent on-the-run series.

Maturity: June Year T+5

Base currency: EUR

Notional adj. to fully hedge CS01 of 605 with no re-hedging required

607.　　Long (i.e. Buy protection) position in iTraxx Europe index on-the-run series.

Attachment point: 12%

Detachment point: 100%

Notional: EUR 5 000 000

Maturity: 5 years

Base currency: EUR

608.　　Short (i.e. Sell protection) EUR 5 000 000 CDS on iTraxx Europe index most recent on-the-run series.

Maturity: June Year T+5

Base currency: EUR

Notional adj. to fully hedge CS01 of 607 with no re-hedging required

609.　　Short (i.e. Sell protection) position in iTraxx Europe index on-the-run series.

Attachment point: 3%

Detachment point: 6%

Notional: EUR 5 000 000

Maturity: 5 years

Base currency: EUR

Recovery rate: 40% fixed.

610.　　Long (i.e. Buy protection) EUR 5 000 000 CDS on iTraxx Europe index most recent on-the-run series.

Maturity: June Year T+5

Base currency: EUR

Notional adj. to fully hedge CS01 of 609 with no re-hedging required

Portfolio	Combination of instruments:	Currency	Portfolio	Combination of instruments:	Currency
1001	101 – 1 instrument	EUR	4001	401 – 1 instrument	USD
1002	103 – 1 instrument	EUR		402 – 1 instrument	
	104 – 1 instrument		4002	403 – 1 instrument	USD
	105 – 1 instrument			404 – 1 instrument	
1003	113 – 1 instrument	EUR	4003	401 – 1 instrument	USD
	110 – 1 instrument			404 – 1 instrument	
1004	115 – 1 instrument	GBP	4004	405 – 1 instrument	EUR
	116 – 1 instrument		5001	501 – 1 instrument	USD
1005	117 – 1 instrument	JPY		502 – 1 instrument	
1006	109 – 1 instrument	EUR		503 – 1 instrument	
	110 – 1 instrument		5002	504 – 1 instrument	USD
1007	118 – 1 instrument	EUR		505 – 1 instrument	
1008	111 – 1 instrument	USD	5003	507 – 1 instrument	EUR

	112 – 1 instrument			508 – 1 instrument	
1009	102 – 1 instrument	EUR	5004	503 – 1 instrument	USD
	114 – 1 instrument			504 – 1 instrument	
1010	106 – 1 instrument	EUR	5005	509 – 1 instrument	EUR
	107 – 1 instrument			510 – 1 instrument	
	108 – 1 instrument		5006	511 – 1 instrument	EUR
1011	101 – 1 instrument	EUR		512 – 1 instrument	
	103 – 1 instrument			514 – 1 instrument	
1012	101 – 1 instrument	EUR		515 – 1 instrument	
	103 – 1 instrument			516 – 1 instrument	
	104 – 1 instrument		5007	517 – 1 instrument	USD
1013	102– 1 instrument	EUR		518 – 1 instrument	
	104 – 1 instrument		5008	519 – 1 instrument	EUR
1014	119 – 1 instrument	EUR		520 – 1 instrument	
1015	120 – 1 instrument	EUR		522 – 1 instrument	
1016	121 – 1 instrument	EUR	5009	520 – 1 instrument	EUR
2001	201 – 1 instrument	EUR		521 – 1 instrument	
2002	202 – 1 instrument	EUR	5010	519 – 1 instrument	EUR
2003	203 – 1 instrument	USD		508 – 1 instrument	
2004	204 – 1 instrument	GBP	5011	515 – 1 instrument	EUR
2005	205 – 1 instrument	USD		522 – 1 instrument	
2006	206 – 1 instrument	EUR	5012	513 – 1 instrument	USD
	207 – 1 instrument		5013	520 – 1 instrument	EUR
2007	206 – 1 instrument	EUR		521 – 1 instrument	
	207 – 1 instrument			516 – 1 instrument	
	208 – 1 instrument		5014	506 – 1 instrument	USD
2008	206 – 1 instrument	EUR		503 – 1 instrument	
	207 – 1 instrument		5015	502 – 1 instrument	EUR
	208 – 1 instrument			209 – 1 instrument	
	209 – 1 instrument		5016	504 – 1 instrument	USD
	210 – 1 instrument			217 – 1 instrument	
	211 – 1 instrument		5017	505 – 1 instrument	USD
	212 – 1 instrument			216 – 1 instrument	
2009	201 – 1 instrument	EUR	5018	504 – 1 instrument	USD
	218 – 1 instrument			217 – 1 instrument	
2010	201 – 1 instrument	EUR		505 – 1 instrument	
	219 – 1 instrument			216 – 1 instrument	
2011	218 – 1 instrument	EUR	5019	502 – 1 instrument	EUR
	219 – 1 instrument			209 – 1 instrument	
2012	201 – 1 instrument	EUR		219 – 1 instrument	
	202 – 1 instrument		5020	523 – 1 instrument	EUR
2013	213 – 1 instrument	GBP		525 – 1 instrument	
2014	215 – 1 instrument	USD		527 – 1 instrument	
	216 – 1 instrument		5021	524 – 1 instrument	USD

Portfolio	Instrument	Currency	Portfolio	Instrument	Currency
	217 – 1 instrument			526 – 1 instrument	
2015	203 – 1 instrument	USD		528 – 1 instrument	
	215 – 1 instrument		5022	523 – 1 instrument	EUR
2016	208 – 1 instrument	EUR		524 – 1 instrument	
	209 – 1 instrument			525 – 1 instrument	
	210 – 1 instrument			526 – 1 instrument	
	214 – 1 instrument			527 – 1 instrument	
2017	220 – 1 instrument	EUR		528 – 1 instrument	
2018	209 – 1 instrument	EUR	5023	529 – 1 instrument	EUR
				530 – 1 instrument	
2019	209 – 1 instrument	EUR	5024	531 – 1 instrument	EUR
	219 – 1 instrument		5025	532 – 1 instrument	USD
2020	221 – 1 instrument	EUR	5026	533 – 1 instrument	EUR
2021	222 – 1 instrument	EUR	5027	534 – 1 instrument	EUR
2022	201 – 1 instrument	EUR	6001	601 – 1 instrument	EUR
	223 – 1 instrument			602 – 1 instrument	
2023	224 – 1 instrument	EUR	6002	603 – 1 instrument	EUR
3001	301 – 1 instrument	EUR		604 – 1 instrument	
	302 – 1 instrument		6003	605 – 1 instrument	EUR
3002	303 – 1 instrument	EUR		606 – 1 instrument	
	304 – 1 instrument		6004	607 – 1 instrument	EUR
3003	304 – 1 instrument	EUR		608 – 1 instrument	
	305 – 1 instrument		6005	609 – 1 instrument	EUR
	306 – 1 instrument			610 – 1 instrument	
3004	307 – 1 instrument	EUR			
	308 – 1 instrument				
3005	309 – 1 instrument	EUR			
3006	310 – 1 instrument	EUR			
3007	311 – 1 instrument	EUR			

Aggreg. Portfolio	Description	Combination of Individual Portfolios (individual portfolios as stated by their numbers as referred to in Section 3 of this Annex)	Base Currency
10000	ALL-IN no-CTP	1001, 1002, 1006, 1007, 1009, 2001, 2002, 2008, 2011, 3001, 3002, 3003, 3004, 4001, 4002, 5003, 5006, 5008, 5022	EUR
11000	EQUITY Cumulative	1001, 1002, 1006, 1007, 1009	EUR
12000	IR Cumulative	2001, 2002, 2008, 2011	EUR

13000	FX Cumulative	3001, 3002, 3003, 3004	EUR
14000	Commodity Cumulative	4001, 4002	USD
15000	Credit Spread cumulative	5003, 5006, 5008, 5022	EUR
16000	CTP cumulative EUR	6001, 6002	EUR

For a detailed description of the portfolios, please refer to the EBA website:

https://www.eba.europa.eu/activities/single-rulebook/regulatory-activities/supervisory-benchmarking-exercises/its-package-benchmarking-exercises

Adopted as consolidated text: Commission Implementing Regulation (EU) 2016/2070 of 14 September 2016 laying down implementing technical standards for templates, definitions and IT-solutions to be used by institutions when reporting to the European Banking Authority and to competent authorities in accordance with Article 78(2) of Directive 2013/36/EU of the European Parliament and of the Council (Text with EEA relevance)Text with EEA relevance

https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A02016R2070-20240328

Table 4: EU Statistics for SBM OFR

EU Statistics for SBM OFR

	Port. ID	Main statistics								Percentiles			
		Min	Max	Ave	STDev	STDev_trunc[1]	MAD (median absolute deviation)	Coefficient of variation (STDev/Ave)	Num obs.[2]	25th	50th (Median)	75th	Interquantile range
Equity	1001	646,823	1,093,244	835,542	123,237	120,568	143,845	15%	35	723,008	885,434	950,922	14%
	1002	1,267,639	1,321,738	1,304,862	11,668	22,314	4,086	1%	26	1,302,652	1,304,779	1,310,211	0%
	1003	6,634	13,075	9,668	1,599	2,460	846	17%	27	8,466	9,541	10,800	12%
	1004	7,455	16,689	12,029	1,744	2,743	977	15%	24	11,116	12,164	12,979	8%
	1005	106,666,900	214,892,875	147,135,944	32,652,563	70,812,812	22,772,809	22%	29	116,167,684	138,885,913	179,446,740	21%
	1006	13,351	22,254	17,204	2,531	3,037	1,530	15%	27	15,116	16,927	18,457	10%
	1007	27,794	140,847	83,566	27,213	36,984	20,295	33%	21	64,887	89,343	97,255	20%
	1008	68,956	79,286	74,081	2,668	3,553	2,082	4%	23	71,558	74,341	75,745	3%
	1009	97,380	109,770	103,431	2,389	14,944	998	2%	24	102,485	104,098	104,432	1%
	1010	101,048	113,412	108,801	3,184	6,746	926	3%	29	108,779	110,012	110,337	1%
	1011	670,072	1,050,904	820,938	110,346	108,559	67,884	13%	31	696,768	860,099	909,912	13%
	1012	641,460	1,027,339	791,994	110,182	108,403	65,087	14%	31	676,857	830,646	883,460	13%
	1013	102,596	118,981	107,325	5,671	13,240	303	5%	25	104,492	104,753	106,875	1%
	1014	525,656	952,658	745,620	97,543	134,361	79,809	13%	32	661,024	741,588	819,743	11%
	1015	469,120	1,142,150	781,938	168,246	407,127	129,418	22%	25	635,081	800,252	893,923	17%
	1016	224,137	1,696,861	702,060	455,373	563,364	179,041	65%	11	332,687	620,048	779,988	40%
Interest Rate	2001	330,569	350,160	341,465	5,894	6,683	3,552	2%	39	336,660	340,221	349,001	2%
	2002	524,702	672,673	573,792	24,623	56,831	9,544	4%	34	562,594	571,797	582,335	2%
	2003	32,642	37,549	34,893	1,345	1,345	1,099	4%	38	33,777	35,044	36,069	3%
	2004	148,009	196,135	171,415	13,399	15,024	10,984	8%	38	160,000	175,056	181,968	6%
	2005	196,494	592,437	475,361	95,244	178,923	49,518	20%	17	442,746	502,644	533,714	9%
	2006	135,627	207,706	162,680	22,580	32,289	4,339	14%	35	146,823	148,129	192,000	13%
	2007	265,537	387,872	303,494	36,314	53,546	5,291	12%	31	280,696	283,674	312,761	5%
	2008	269,719	396,544	313,269	36,796	57,426	5,664	12%	32	289,787	292,405	334,222	7%
	2009	354,711	376,407	366,946	4,824	7,773	1,349	1%	37	366,527	368,541	369,103	0%
	2010	297,512	315,144	307,319	5,307	6,024	3,198	2%	39	302,994	306,199	314,101	2%
	2011	687,852	727,000	707,820	10,861	15,239	4,377	2%	39	699,450	704,433	720,217	1%
	2012	370,913	564,170	470,602	38,685	52,089	12,082	8%	35	453,382	473,789	482,293	3%
	2013	55,601	203,170	137,830	53,661	52,399	16,203	39%	39	90,506	109,883	198,223	37%
	2014	105,549	282,881	185,018	59,988	63,567	58,494	32%	27	125,093	184,291	242,137	32%
	2015	20,784	116,338	56,326	35,881	40,494	2,314	64%	31	32,600	36,106	102,200	52%
	2016	205,095	379,821	272,816	24,265	69,997	4,835	9%	34	265,752	271,476	274,448	2%
	2017	504,972	643,631	544,145	35,178	101,366	5,980	7%	25	530,365	539,428	539,478	1%
	2018	48,830	58,118	56,243	1,814	7,013	785	3%	37	55,791	56,757	57,279	1%
	2019	15,927	27,740	23,279	1,879	6,756	574	8%	38	23,022	23,755	24,003	2%
	2020	43,117	48,325	45,562	1,403	3,770	659	3%	36	44,607	45,248	46,719	2%
	2021	68,228	142,360	111,651	15,999	23,312	2,155	14%	32	108,199	110,446	115,374	3%
	2022	462,011	702,740	551,500	61,417	86,288	12,575	11%	26	520,812	534,769	543,305	2%
	2023	115,121	316,163	220,786	39,688	75,096	15,553	18%	37	206,612	216,046	233,278	6%
FX	3001	1,157,623	1,239,331	1,196,047	12,348	26,212	1,646	1%	35	1,194,752	1,195,599	1,199,032	0%
	3002	807,000	1,084,343	986,558	49,824	314,643	12,853	5%	30	978,359	987,404	1,004,065	1%
	3003	361,512	830,669	612,606	89,966	127,240	16,635	15%	33	597,406	614,042	629,359	3%
	3004	1,176,538	1,618,851	1,462,047	83,671	166,466	22,575	6%	33	1,422,104	1,488,019	1,507,562	3%
	3005	1,215,967	1,670,305	1,461,503	75,791	143,570	15,305	5%	32	1,455,656	1,471,513	1,487,510	1%
	3006	216,931	1,001,424	324,767	161,802	409,868	9,256	50%	33	246,752	249,707	284,959	7%
	3007	1,007,629	1,147,177	1,074,916	27,580	39,475	24,511	3%	27	1,054,147	1,083,087	1,090,534	2%
Commodities	4001	2,967	272,880	137,710	103,829	103,829	94,546	75%	18	48,700	139,509	247,066	67%
	4002	809,240	856,050	821,504	11,662	60,363	6,768	1%	14	812,459	820,213	825,736	1%
	4003	1,141,296	2,834,077	2,185,217	423,778	514,318	98,127	19%	14	2,026,820	2,079,899	2,363,708	8%
	4004	1,636,607	2,219,815	1,819,230	183,501	314,963	62,896	10%	13	1,707,285	1,791,528	1,827,767	3%
Credit Spread	5001	35,170	38,117	36,608	824	950	670	2%	24	35,975	36,654	37,220	2%
	5002	100,388	104,743	102,660	991	1,591	492	1%	19	102,120	102,799	103,100	0%
	5003	70,670	82,930	78,468	3,634	8,012	898	5%	25	75,721	80,392	81,128	3%
	5004	1,735	4,155	3,093	699	901	377	23%	19	2,682	3,133	3,568	14%
	5005	176,535	207,242	196,192	9,155	20,023	2,607	5%	25	189,278	200,917	202,832	3%
	5006	244,863	266,061	256,807	6,315	9,363	5,179	3%	23	250,947	257,812	262,953	2%
	5007	44,589	173,185	107,092	58,903	58,654	27,429	55%	23	49,684	115,317	167,376	54%
	5008	315,807	518,658	430,672	39,378	66,003	16,949	9%	27	412,448	429,549	449,344	4%
	5009	32,000	98,695	48,690	12,119	30,838	2,577	25%	27	43,851	46,159	49,481	6%
	5010	42,712	75,176	60,761	6,870	17,405	1,165	11%	20	58,528	60,268	63,025	4%
	5011	180,651	323,255	248,642	38,095	46,088	25,544	15%	24	222,714	236,192	283,036	12%
	5012	43,642	72,871	69,334	6,073	23,303	728	9%	21	68,907	71,176	71,562	2%
	5013	155,527	193,979	167,237	9,549	14,092	7,968	6%	23	157,866	170,312	173,558	5%
	5014	217	5,189	904	1,110	7,757	104	123%	22	392	684	748	31%
	5015	35,911	39,952	38,012	1,080	7,928	780	3%	21	37,095	38,477	38,591	2%
	5016	75,886	191,939	148,954	48,317	50,023	11,461	32%	19	84,303	173,922	184,526	37%
	5017	67,392	227,296	140,393	55,180	55,180	12,275	39%	20	78,973	174,463	180,662	39%
	5018	129,940	387,877	271,173	99,888	102,479	12,992	37%	19	134,546	332,455	339,017	43%
	5019	3,436	8,073	5,792	1,063	8,064	542	18%	21	5,263	5,996	6,171	8%
	5020	409,365	454,804	432,566	9,883	19,346	4,942	2%	25	427,877	430,840	435,647	1%
	5021	205,274	270,821	237,321	17,247	23,002	9,821	7%	21	230,403	238,782	249,414	4%
	5022	297,340	446,602	343,851	42,800	58,615	19,023	12%	21	319,881	333,004	351,840	5%
	5023	383,561	1,068,425	689,134	188,710	268,225	74,644	27%	16	571,288	653,693	773,936	15%
	5024	171,571	839,118	406,755	197,593	260,922	30,058	49%	21	268,371	416,848	472,644	28%
	5025	179,479	490,785	307,602	72,846	103,178	53,635	24%	22	255,382	300,675	367,819	18%
	5026	101,044	192,399	125,844	31,715	70,672	4,327	25%	23	105,440	110,024	164,609	22%
	5027	68,971	116,000	99,943	8,092	31,563	1,770	8%	22	97,238	101,872	102,973	3%
CTP	6001								4				
	6002								4				
	6003								4				
	6004								4				
	6005								4				
ALL-IN no-CTP	10000	4,501,176	5,642,152	5,264,240	325,902	796,898	189,396	6%	12	5,119,818	5,302,877	5,499,996	4%
Equity Cumulative	11000	1,110,509	1,300,841	1,221,922	53,554	60,493	35,201	4%	23	1,187,738	1,230,397	1,261,775	3%
IR Cumulative	12000	830,933	1,195,870	1,064,548	71,191	122,361	24,205	7%	31	1,037,771	1,048,032	1,098,424	3%
FX Cumulative	13000	1,813,484	2,551,388	2,366,744	165,601	312,343	55,826	7%	30	2,310,000	2,417,592	2,454,323	3%
Commodity Cumulative	14000	788,726	904,720	860,502	29,607	56,808	21,275	3%	14	839,395	866,129	885,192	3%
CS Cumulative	15000	726,554	905,258	814,070	47,575	71,712	36,544	6%	19	767,918	818,454	853,103	5%
CTP Cumulative	16000												

[1] STDev trunc is the standard deviation computed excluding values below the 5th and above the 95th percentile
[2] Refers to the number of banks included in the computation of the statistics
** For the aggregated portfolios (60 to 66), banks that reported at least a missing portfolio IMV among the ones composing the aggregate are not included
  in the computation of the benchmarks for that particular aggregate portfolio.

Figure 23: Difference in total number of submissions

Differences in total number of submissions (SBM OFR vs IMA)
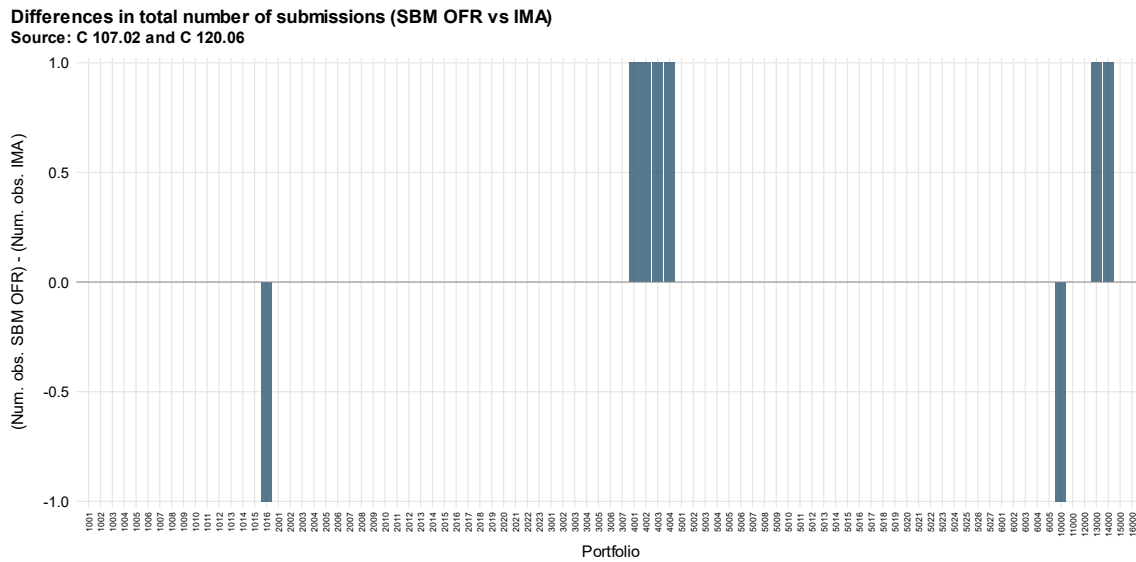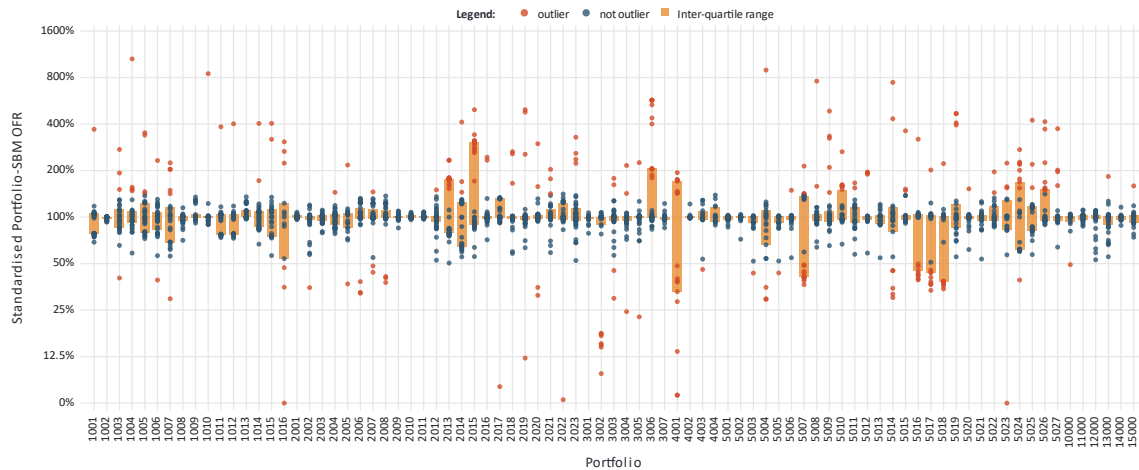Source: C 107.02 and C 120.06

Figure 24: BM OFR variation within portfolios: 50%-150%-outliers

SBM OFR variation within portfolios
Outliers according to the 50%-150%-definition.
All values standardised with the resp. median and topcoded at 1,600%.
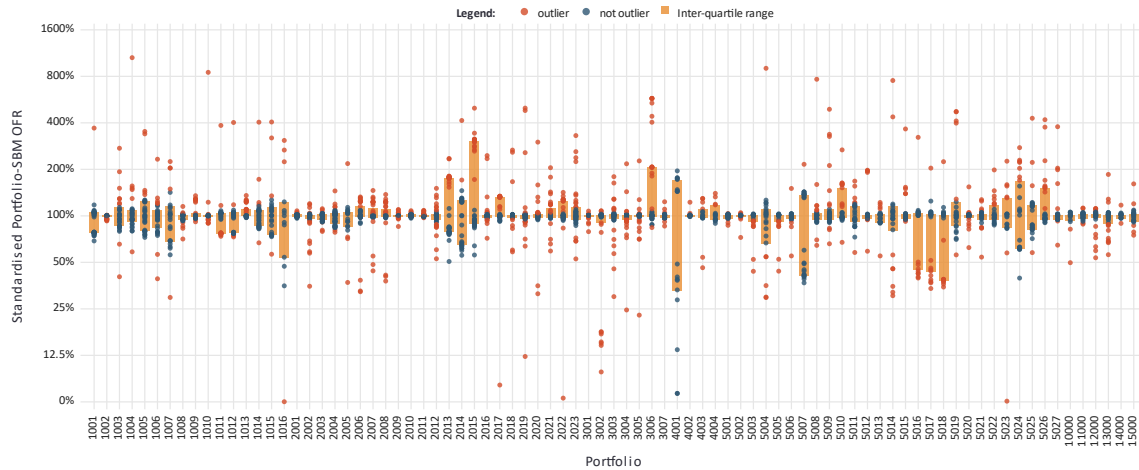Portfolios with less then 10 observations excluded. Source: C 120.06
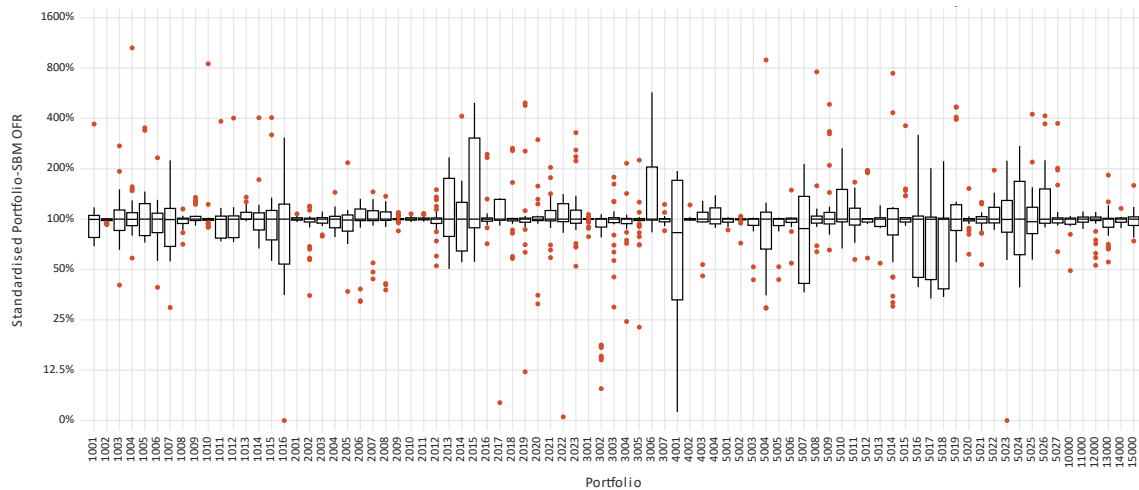

50%-150% outlier definition

• Outliers are defined as values outside the interval [0.5 · ex, 1.5 · ex].

• ex is the median of portfolio-OFRs.

Figure 25: SBM OFR variation within portfolios: MAD-outliers

SBM OFR variation within portfolios

Outliers according to the Median Absolute Deviation (MAD) definition.
All values standardised with the resp. median and topcoded at 1,600%.
Portfolios with less then 10 observations excluded. Source: C 120.06

Legend: ● outlier ● not outlier ■ Inter-quartile range

Median Absolute Deviation (MAD) outlier definition

• Outliers are defined as values outside the interval [ex − 2 ·MAD, ex + 2 ·MAD].

• MAD is the Median Absolute Deviation, i.e., MAD = median (|xi − ex|), where xi are the OFR observations of the respective portfolio and ex is their median.

Figure 26: SBM OFR variation within portfolios: Boxplots

SBM OFR variation within portfolios: Boxplots

All values standardised with the resp. median and topcoded at 1,600%.
Portfolios with less then 10 observations excluded. Source: C 120.06

Boxplots with 1.5 IQR outlier definition

• Outliers are defined as values outside the interval [Q25 − 1.5 · IQR, Q75 + 1.5 · IQR].

• IQR is the Interquartile Range, i.e., IQR = Q75 − Q25.

Figure 27: SBM OFR variation within EQ portfolio (EBA outliers' definition)

SBM OFR variation within risk class EQ
Outliers according to the truncated standard deviation definition.
All values standardised with the resp. median and topcoded at 1,600%.
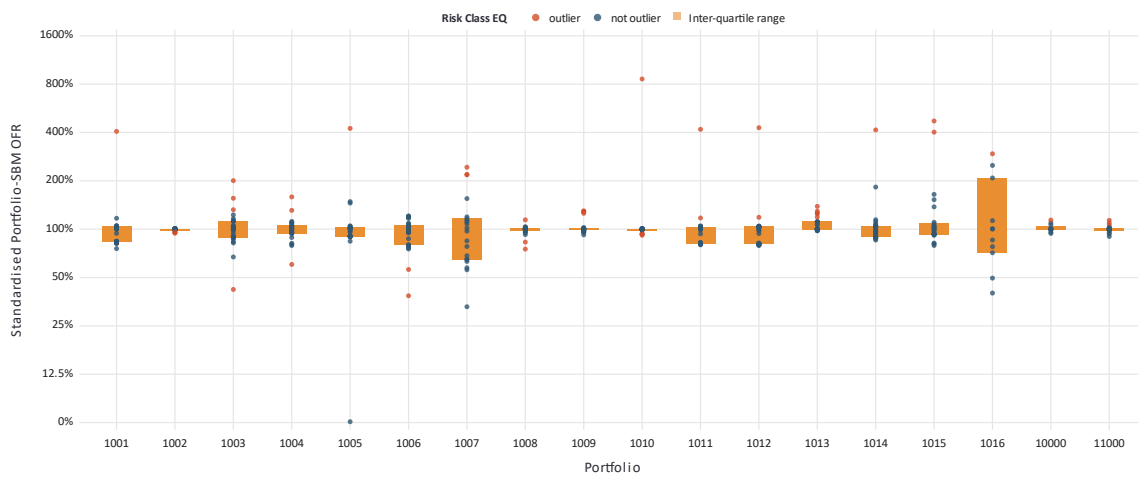Portfolios with less then 5 observations excluded. Source: C 120.02

Figure 28: SBM OFR variation within FX portfolio (EBA outliers' definition)

SBM OFR variation within risk class FX
Outliers according to the truncated standard deviation definition.
All values standardised with the resp. median and topcoded at 1,600%.
Portfolios with less then 5 observations excluded. Source: C 120.02

Figure 29: SBM OFR variation within GIRR portfolio (EBA outliers' definition)

SBM OFR variation within risk class GIRR

Outliers according to the truncated standard deviation definition.
All values standardised with the resp. median and topcoded at 1,600%.
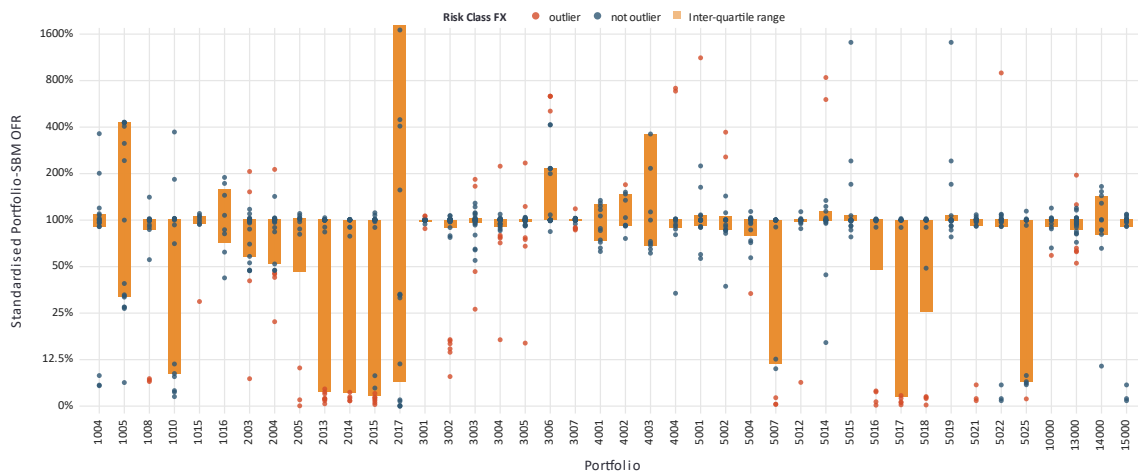Portfolios with less then 5 observations excluded. Source: C 120.02

Figure 30: SBM OFR variation within CS portfolio (EBA outliers' definition)

SBM OFR variation within risk class CSR_NON_SEC

Outliers according to the truncated standard deviation definition.
All values standardised with the resp. median and topcoded at 1,600%.
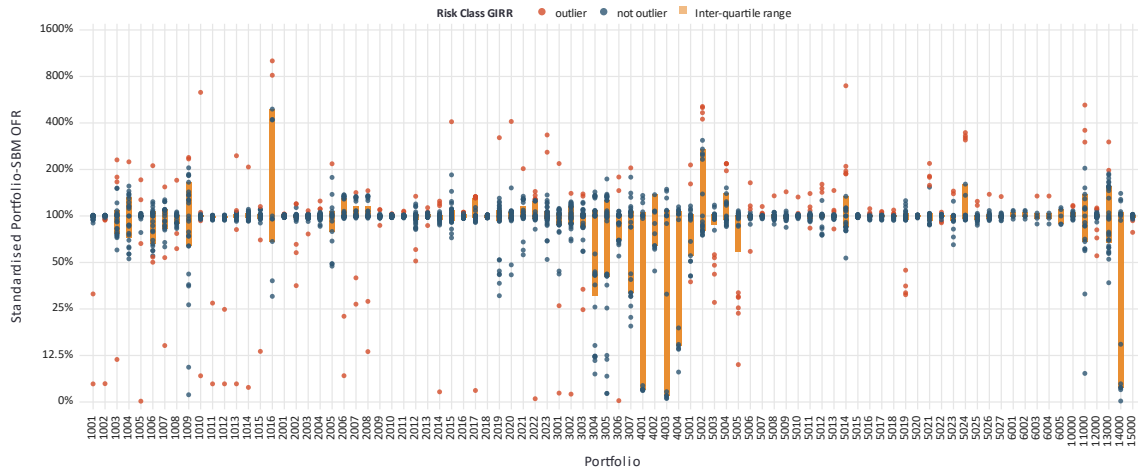Portfolios with less then 5 observations excluded. Source: C 120.02

Figure 31: SBM OFR variation within CO portfolio (EBA outliers' definition)

SBM OFR variation within risk class CM
Outliers according to the truncated standard deviation definition.
All values standardised with the resp. median and topcoded at 1,600%.
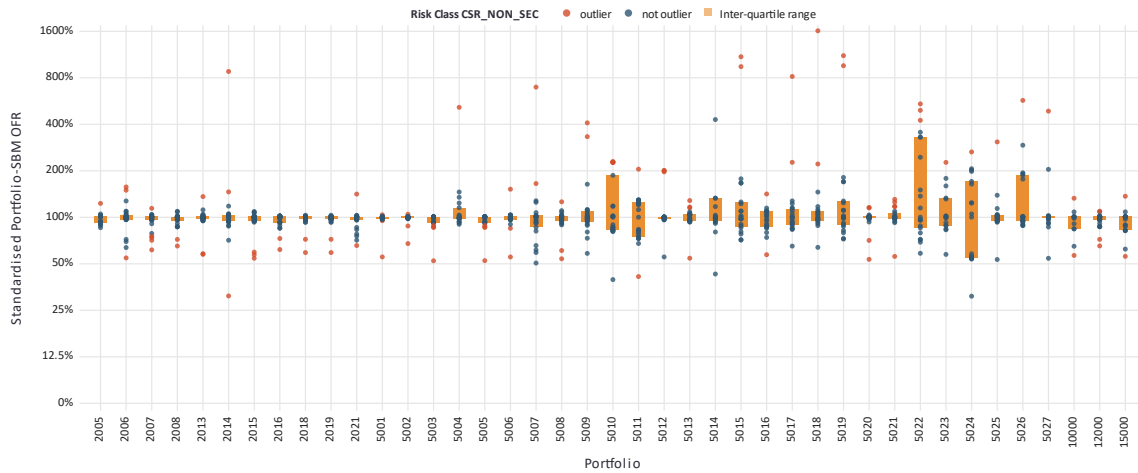Portfolios with less then 5 observations excluded. Source: C 120.02

Figure 32: SBM OFR VaR and SVaR variation within portfolios: Interquartile Dispersion (IQD)

SBM OFR, VaR, and SVaR variation within portfolios: Interquartile Dispersion (IQD)
Portfolios with less then 10 observations excluded. Source: C 107.02, C 120.06

Figure 33: IQD-Ratio of SBM-OFR to VaR

SBM OFR variation within portfolios: IQD(SBM OFR) to IQD(VaR) Ratio
Portfolios with less then 10 observations excluded. Source: C 107.02, C 120.06

Figure 34: SBM OFR VaR and SVaR variation within EQ portfolios: Interquartile Dispersion (IQD)

SBM OFR, VaR, and SVaR variation within portfolios: Interquartile Dispersion (IQD)
Portfolios with less then 10 observations excluded. Source: C 107.02, C 120.06
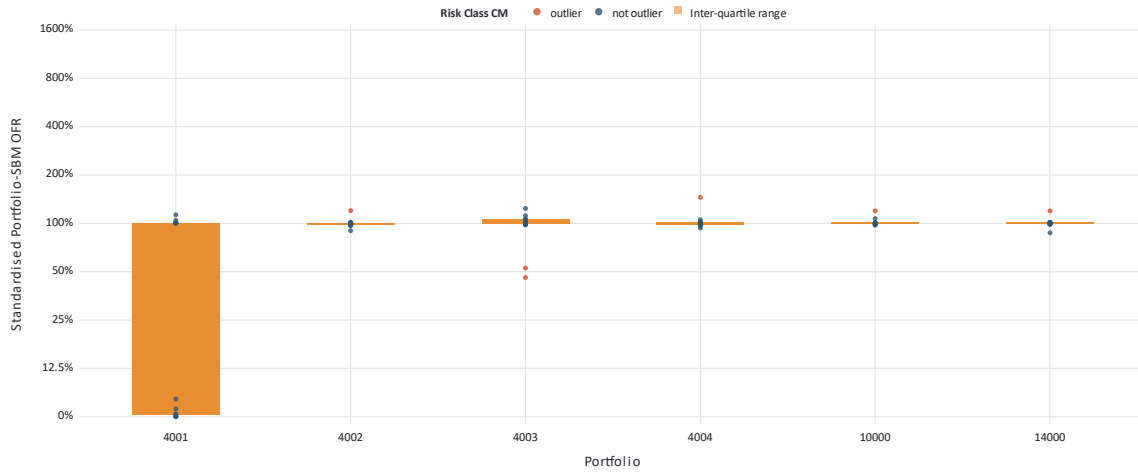

Figure 35: SBM OFR VaR and SVaR variation within IR portfolios: Interquartile Dispersion (IQD)

SBM OFR, VaR, and SVaR variation within portfolios: Interquartile Dispersion (IQD)
Portfolios with less then 10 observations excluded. Source: C 107.02, C 120.06

Figure 36: SBM OFR VaR and SVaR variation within FX portfolios: Interquartile Dispersion (IQD)

SBM OFR, VaR, and SVaR variation within portfolios: Interquartile Dispersion (IQD)
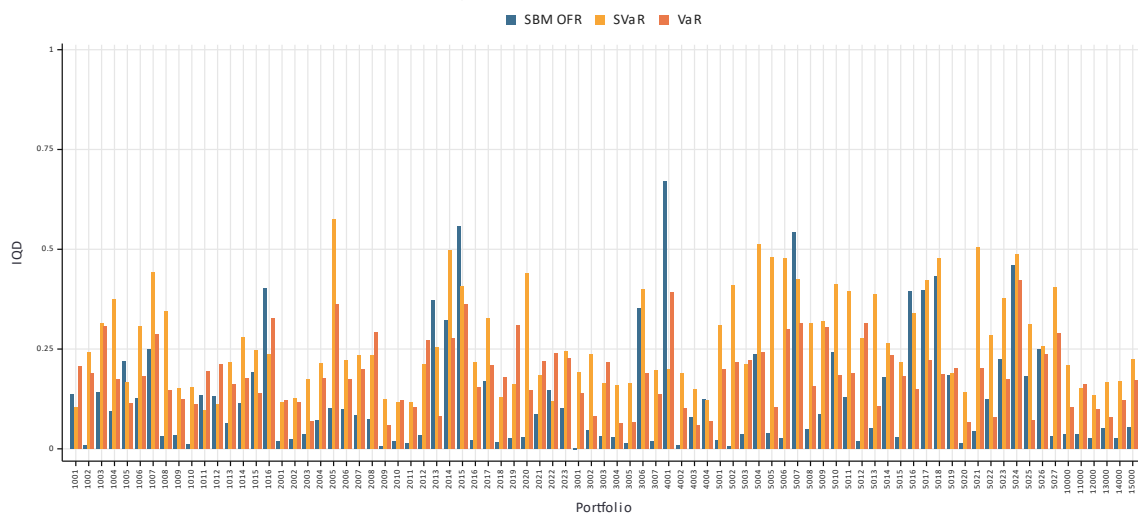Portfolios with less then 10 observations excluded. Source: C 107.02, C 120.06

Figure 37: SBM OFR VaR and SVaR variation within CO portfolios: Interquartile Dispersion (IQD)

SBM OFR, VaR, and SVaR variation within portfolios: Interquartile Dispersion (IQD)
Portfolios with less then 10 observations excluded. Source: C 107.02, C 120.06
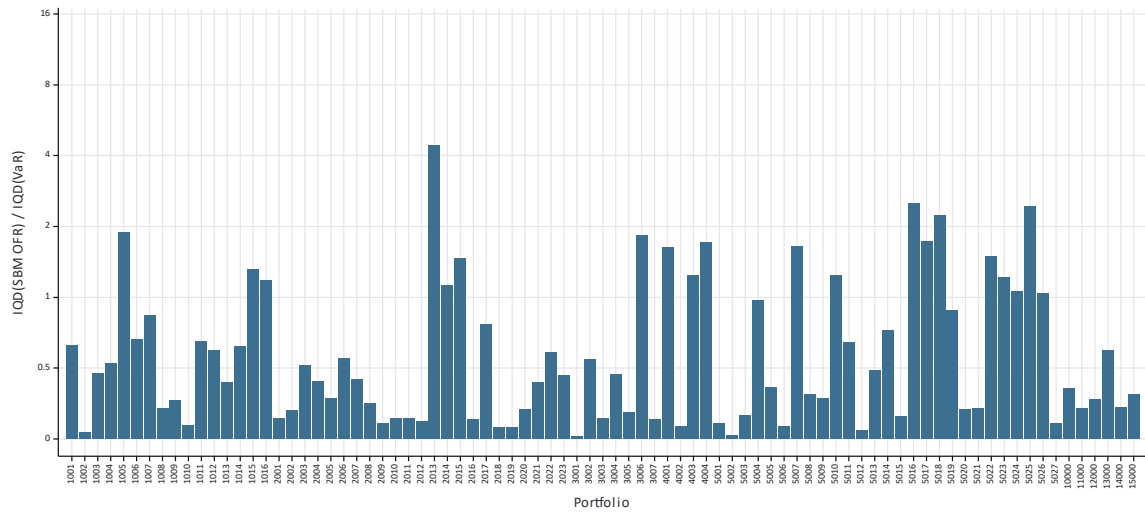
SBM OFR SVaR VaR

Figure 38: SBM OFR VaR and SVaR variation within CS portfolios: Interquartile Dispersion (IQD)

SBM OFR, VaR, and SVaR variation within portfolios: Interquartile Dispersion (IQD)
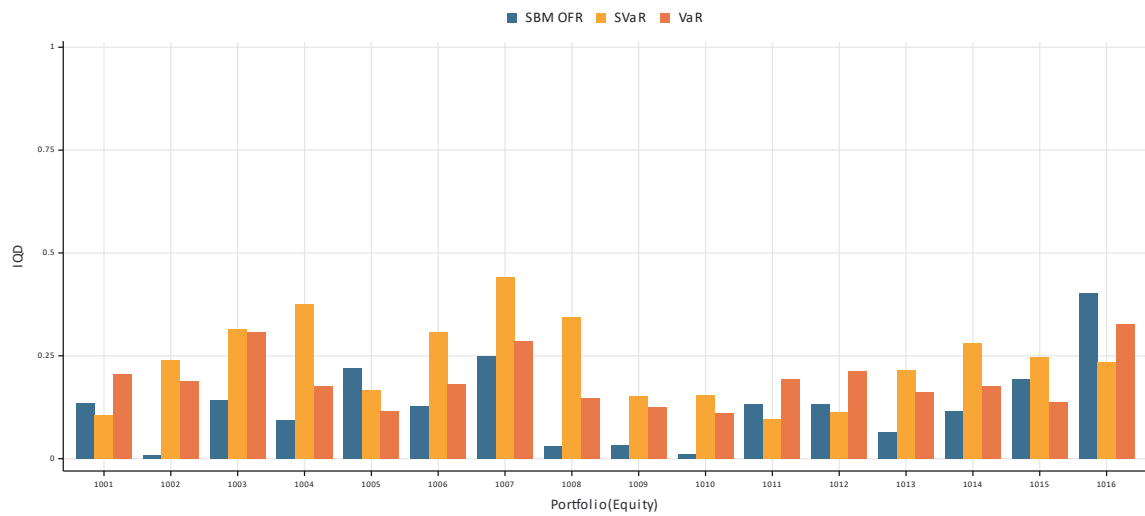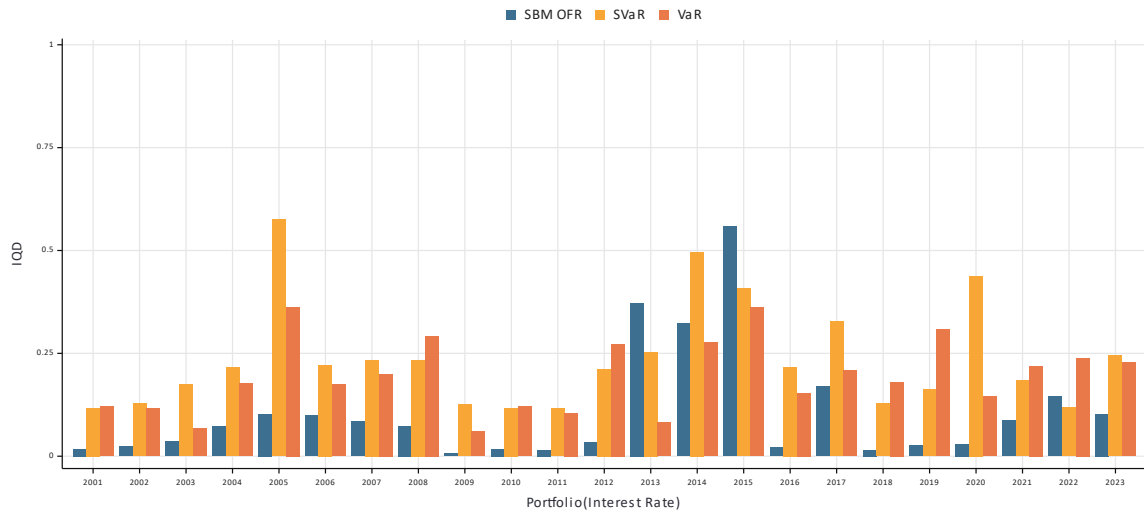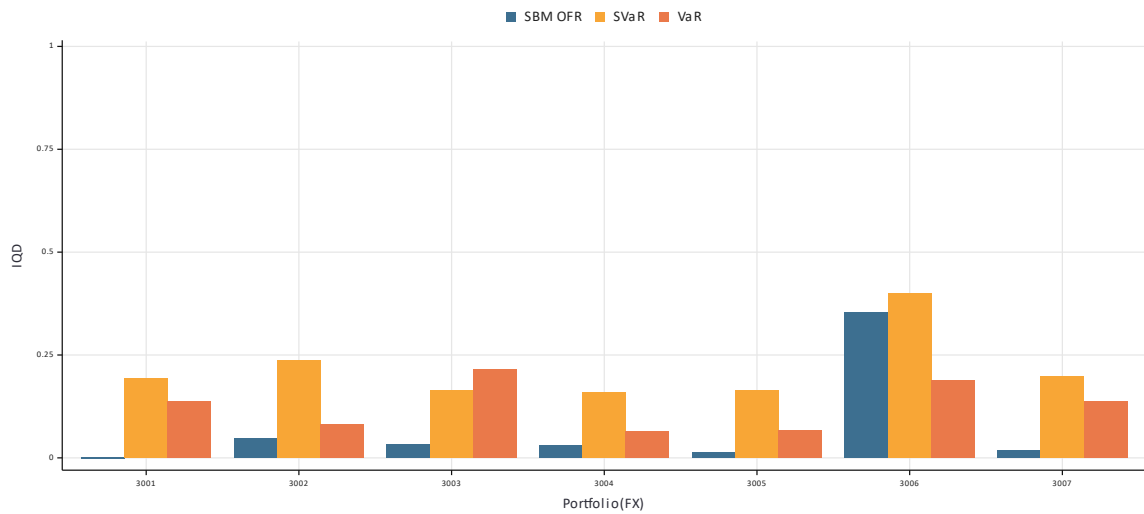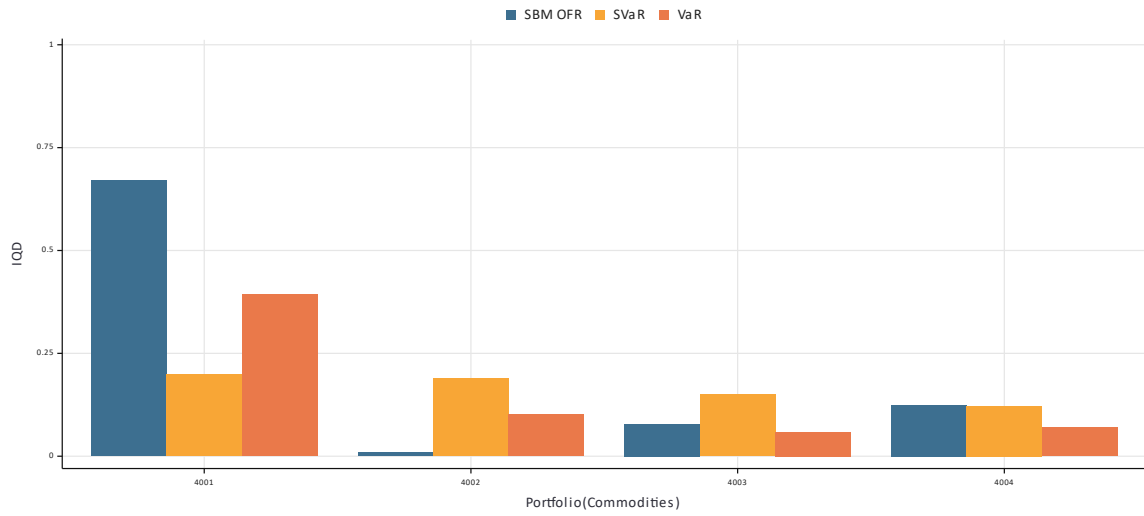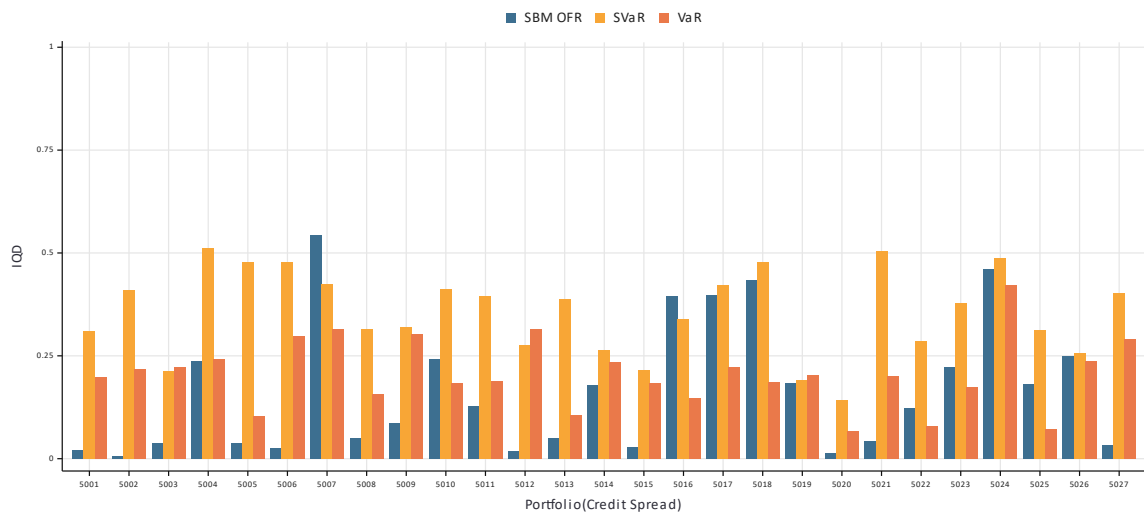Portfolios with less then 10 observations excluded. Source: C 107.02, C 120.06

SBM OFR SVaR VaR

Figure 39: Frequency of SBM risk component within SBM risk classes relative to total number of submissions per portfolio

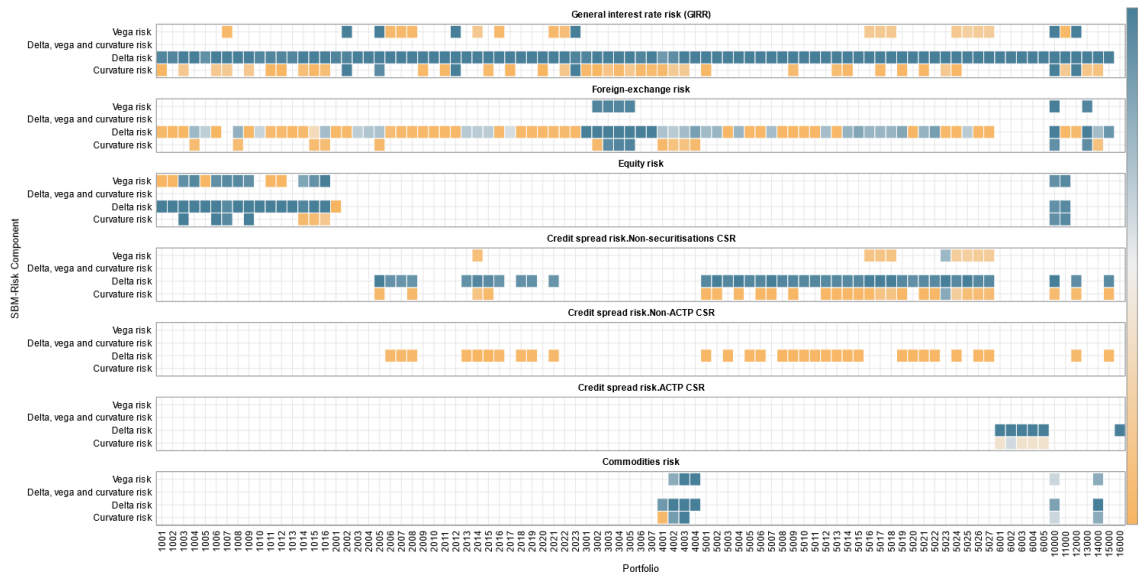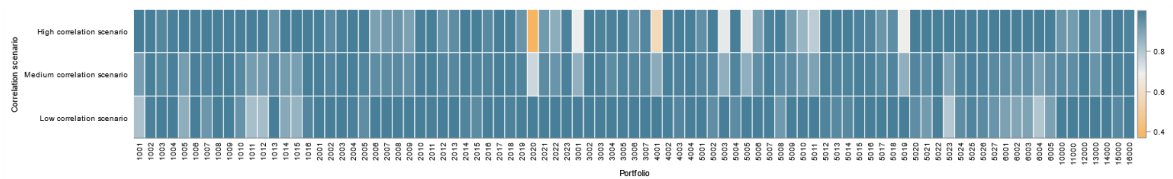**Figure 40: Median OFR per correlation scenario**

Table 5: EU Statistics for ASA - DRC OFR

EU Statistics for DRC OFR

	Port. ID	Main statistics								Percentiles			Interquantile range
		Min	Max	Ave	STDev	STDev_trunc[1]	MAD (median absolute deviation)	Coefficient of variation (STDev/Ave)	Num obs.[2]	25th	50th (Median)	75th	
Equity	1001	37,068	173,622	82,097	35,940	86,597	6,343	44%	24	63,967	73,968	78,555	10%
	1002												
	1003												
	1004												
	1005												
	1006												
	1007	1,550	60,866	11,453	14,324	51,582	2,327	125%	18	5,290	7,795	9,945	31%
	1008												
	1009	4,325	4,845	4,798	103	5,254	13	2%	24	4,806	4,826	4,834	0%
	1010												
	1011	36,755	150,794	70,865	28,964	82,670	6,149	41%	23	56,512	66,624	67,289	9%
	1012	32,493	140,174	66,581	28,145	82,110	6,138	42%	23	52,440	62,382	63,222	9%
	1013	2,143	3,082	2,505	148	4,640	18	6%	24	2,438	2,521	2,528	2%
	1014	2,946	106,595	43,542	26,151	31,225	11,409	60%	28	22,844	47,580	53,311	40%
	1015	814	85,791	38,847	28,609	31,158	21,276	74%	20	15,711	39,669	68,945	63%
	1016								3				
Interest Rate	2001												
	2002												
	2003												
	2004												
	2005	20,922	30,989	24,130	2,740	50,673	834	11%	13	22,446	23,819	25,247	6%
	2006	1,426	1,698	1,491	85	454	2	6%	8	1,465	1,467	1,469	0%
	2007	19,424	74,925	53,409	14,886	29,868	90	28%	10	52,876	58,182	58,209	5%
	2008	102,827	139,087	121,192	11,792	32,737	6,523	10%	9	117,715	117,748	129,176	5%
	2009												
	2010												
	2011												
	2012												
	2013	1,289	7,745	4,011	1,133	2,731	6	28%	20	3,889	3,907	3,910	0%
	2014	147,789	157,086	151,931	1,876	3,557	718	1%	23	150,578	152,746	152,999	1%
	2015												
	2016	61,894	187,429	140,211	41,712	41,712	1,828	30%	11	143,976	144,293	175,092	10%
	2017												
	2018	41,945	44,413	43,944	835	13,089	24	2%	11	44,104	44,389	44,404	0%
	2019	41,945	44,413	43,944	835	8,436	24	2%	11	44,104	44,275	44,404	0%
	2020												
	2021	33,746	51,742	48,829	5,923	11,598	19	12%	9	48,356	51,696	51,715	3%
	2022												
	2023												
FX	3001												
	3002												
	3003												
	3004												
	3005												
	3006												
	3007												
Commodities	4001												
	4002												
	4003												
	4004												
Credit Spread	5001	130	15,883	7,456	7,731	11,148	3,936	104%	18	134	7,942	15,595	98%
	5002												
	5003								2				
	5004	302	24,015	11,353	11,947	11,981	35	105%	19	327	11,802	23,580	97%
	5005	11	38	25	7	38	2	28%	22	23	24	27	8%
	5006	51,216	114,311	71,486	15,028	24,716	9,649	21%	23	64,871	70,004	74,972	7%
	5007	34,447	37,797	35,654	960	1,822	376	3%	18	35,110	35,433	35,817	1%
	5008	63,613	92,262	78,550	4,679	8,695	372	6%	21	78,151	78,703	78,881	0%
	5009												
	5010	19,554	19,832	19,681	108	349	93	1%	5	19,604	19,651	19,716	0%
	5011	6,879	8,254	7,775	350	526	119	5%	11	7,775	7,787	7,956	1%
	5012	23,261	23,362	23,322	25	62	9	0%	19	23,310	23,319	23,342	0%
	5013												
	5014	15,511	46,127	28,700	11,093	11,613	1,078	39%	18	21,322	23,265	44,591	35%
	5015	2,077	2,321	2,264	96	432	7	4%	6	2,242	2,307	2,318	2%
	5016												
	5017	64	1,132	542	322	588	155	59%	17	329	455	768	40%
	5018	39	735	344	212	743	103	62%	17	203	284	491	41%
	5019	2,077	2,321	2,264	96	432	7	4%	6	2,242	2,307	2,318	2%
	5020	3,241	18,889	9,691	4,614	8,328	46	48%	7	8,982	9,190	9,214	1%
	5021												
	5022								4				
	5023												
	5024	27,672	29,250	29,084	387	2,278	15	1%	18	29,164	29,229	29,243	0%
	5025	42,086	45,056	43,472	553	1,339	96	1%	18	43,383	43,409	43,591	0%
	5026	34,698	36,739	36,276	370	3,870	53	1%	22	36,275	36,319	36,381	0%
	5027	40,182	41,935	41,588	355	4,431	38	1%	22	41,648	41,681	41,725	0%
CTP	6001								3				
	6002								2				
	6003								4				
	6004								4				
	6005								2				
ALL-IN no-CTP	10000	153,974	480,990	273,797	102,241	147,456	68,190	37%	11	195,203	261,745	320,365	24%
Equity Cumulative	11000	27,319	161,241	85,027	37,277	114,346	11,090	44%	19	64,444	80,007	103,824	23%
IR Cumulative	12000	102,827	139,087	119,219	10,902	10,902	3,284	9%	8	114,542	117,820	123,556	4%
FX Cumulative	13000												
Commodity Cumulative	14000												
CS Cumulative	15000	109,468	164,387	135,976	15,899	26,871	11,783	12%	20	123,026	137,805	150,554	10%
CTP Cumulative	16000												

[1] STDev trunc is the standard deviation computed excluding values below the 5th and above the 95th percentile
[2] Refers to the number of banks included in the computation of the statistics
** For the aggregated portfolios (60 to 66), banks that reported at least a missing portfolio IMV among the ones composing the aggregate are not included
 in the computation of the benchmarks for that particular aggregate portfolio.

Table 6: EU Statistics for ASA – RRAO OFR

EU Statistics for RRAO OFR

	Port. ID	Min	Max	Ave	STDev	STDev_trunc[1]	MAD (median absolute deviation)	Coefficient of variation (STDev/Ave)	Num obs.[2]	25th	50th (Median)	75th	Interquantile range
					Main statistics						Percentiles		
Equity	1001												
	1002												
	1003												
	1004												
	1005												
	1006												
	1007	920	6,000	1,328	1,293	2,502	0	97%	15	1,000	1,000	1,000	0%
	1008												
	1009												
	1010												
	1011												
	1012												
	1013												
	1014												
	1015												
	1016								2				
Interest Rate	2001												
	2002												
	2003												
	2004												
	2005								3				
	2006												
	2007												
	2008												
	2009												
	2010												
	2011												
	2012												
	2013												
	2014								4				
	2015												
	2016												
	2017												
	2018												
	2019												
	2020												
	2021												
	2022								2				
	2023												
FX	3001												
	3002												
	3003												
	3004												
	3005												
	3006												
	3007												
Commodities	4001												
	4002												
	4003												
	4004												
Credit Spread	5001												
	5002												
	5003												
	5004												
	5005												
	5006												
	5007												
	5008												
	5009												
	5010												
	5011												
	5012												
	5013												
	5014												
	5015												
	5016								4				
	5017								4				
	5018								4				
	5019												
	5020												
	5021												
	5022												
	5023												
	5024								4				
	5025								4				
	5026	1,000	1,000	1,000	0	33	0	0%	5	1,000	1,000	1,000	0%
	5027	1,000	1,000	1,000	0	33	0	0%	5	1,000	1,000	1,000	0%
CTP	6001								4				
	6002								4				
	6003								4				
	6004								4				
	6005								4				
ALL-IN no-CTP	10000	920	11,186	2,684	4,165	7,868	0	155%	6	1,000	1,000	1,000	0%
Equity Cumulative	11000	382	1,000	952	171	1,610	0	18%	13	1,000	1,000	1,000	0%
IR Cumulative	12000												
FX Cumulative	13000												
Commodity Cumulative	14000												
CS Cumulative	15000												
CTP Cumulative	16000								2				

[1] STDev trunc is the standard deviation computed excluding values below the 5th and above the 95th percentile
[2] Refers to the number of banks included in the computation of the statistics
** For the aggregated portfolios (60 to 66), banks that reported at least a missing portfolio IMV among the ones composing the aggregate are not included in the computation of the benchmarks for that particular aggregate portfolio.

5. Annex 2 – Legal background

100.   European legislators have acknowledged the need to ensure consistency in the calculation of RWA for equivalent portfolios, and the CRR and CRD include several mandates for the EBA to deliver technical standards, guidelines and reports with the aim of reducing uncertainty and differences in the calculation of capital requirements.

101.   In this regard, Article 78 of the CRD requires the EBA to produce a benchmarking study on both credit and market risk to assist CAs in the assessment of internal models. The study should highlight potential divergences among banks or areas in which internal approaches might have the potential to underestimate their own funds requirements that are not attributable to differences in the underlying risk profiles. CAs are required to share this evidence within colleges of supervisors as appropriate and take appropriate corrective actions to overcome these drawbacks when deemed necessary. Directive (EU) 2019/878[6] of the European Parliament and of the Council of 20 May 2019 amending Capital Requirements Directive IV (CRD V) has not changed this mandate.

102.   The EBA has devoted significant effort to the analysis of the consistency of outcomes in RWA, to understand the causes of possible inconsistencies and to inform the regulatory repair process. The EBA's ongoing work on benchmarking, supervisory consistency and transparency is fundamental to restoring trust in internal models and the ways in which banks calculate asset risks.

103.   The use of internal models gives banks the opportunity to model their risks according to their business models and the risks faced by the bank itself. The introduction of a benchmarking exercise does not change this objective; rather, it helps to identify the non-risk-based variability drivers observed across institutions.

104.   This MR benchmarking exercise is an MRWA variability assessment performed over a large sample of banks (43 banks at the highest level of consolidation across 13 jurisdictions within the EU). The banks participating in this exercise are those that have been granted permission to calculate their own funds requirements using internal models for one or more of the following risk categories:

a)   general risk of equity instruments;

b)   specific risk of equity instruments;

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[6] https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32019L0878&from=EN

c) general risk of debt instruments;

d) specific risk of debt instruments;

e) foreign exchange risk;

f) commodities risk; and

g) correlation trading.

105. Pursuant to Article 362 of the CRR, the general risk of debt instruments should refer to interest rate risk. Similarly, the general risk of equity instruments refers to the change in the value of indices.

106. Banks that have approval only for the general risk of equity or debt instruments (in accordance with Article 363 of the CRR) may use a different definition of general risk (e.g., by including credit spread risk in the interest rate general risk) if they are able to demonstrate that this leads to higher RWA. Separate permission is required for each risk category. Many banks do not have permission for internal models for all risk categories, so the number of contributions for each hypothetical portfolio in this exercise varies across the sample.

107. Banks that have permission to use the internal model for calculating MR own funds requirements for one or more – but not all – of the risk categories in accordance with Article 363(1) of the CRR ('partial use') exclude certain risks or positions from the scope of the internal model approval. In this case, the own funds requirements for the risk categories outside the scope of the internal model are calculated according to the standardised approach.

108. In addition, as set out in Article 369(1)(c) of the CRR, banks should conduct validation exercises on hypothetical portfolios to test that the model is able to account for structural features. These portfolios should not be limited to the portfolios defined in this exercise; however, this exercise is a useful starting point for banks to meet this legislative requirement.

109. The assessed MR results, when provided and where applicable, are VaR, sVaR, IRC and APR figures for specific and aggregated trades. Moreover, a preliminary assessment of IMV was performed, primarily to ensure that the participating banks make uniform assumptions when entering the hypothetical trades.

110. In addition to these submissions, banks using an HS approach for VaR were requested to provide one year of P&L data for each of the individual and aggregated portfolios modelled. The objective of collecting this additional information was to employ the data vector to perform alternative calculations for VaR using, where possible, a consistent 1-year lookback period and controlling, as far as possible, for the different options that banks can apply within regulation.

Regulation (EU) 2019/876[7] of the European Parliament and of the Council of 20 May 2019 amending the Capital Requirements Regulation as regards the leverage ratio, the net stable funding ratio, requirements for own funds and eligible liabilities, counterparty credit risk, market risk, exposures to central counterparties, exposures to collective investment undertakings, large exposures, reporting and disclosure requirements (CRR II) will have a significant impact on the market risk benchmarking exercise once it is fully implemented. However, for the time being the CRR framework will be applied for the purpose of the benchmark exercise in accordance with Article 78 of the CRD.

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[7] https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32019R0876&from=EN