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Executive Summary

- In this document we present the revised Standardised Approach for Counterparty Credit Risk (**SA-CCR**) in terms of methodological framework and potential implementation challenges.

- The **SA-CCR** has been designed by the Basel Committee in order to replace the Current Exposure Method (CEM) and the Standardised Approach (SA) for CCR and introduces several enhancements in terms of **risk sensitiveness** and **risk mitigants recognition**, in line with the main purpose of the *"advanced"* standardised methods within the reformed Basel III framework (in *Annex* a useful comparison).

- **Main challenges** for SA-CCR implementation may be related to **data governance** and **primary risk factors definition.**

- On the first challenge, banks need to improve their data framework in order to collect all the information at both trade and collateral levels.

- Instead **synergies** can be identified for the risk factors mapping with the *Sensitivity-based Method* of the revised market risk framework (i.e. **FRTB-SBM**).

- **SA-CCR implementation roadmap** for **European banks** has been finalized on June 2019 with the official publication of **CCR2** and it identifies on **June 28th 2021** the **implementation deadline**.
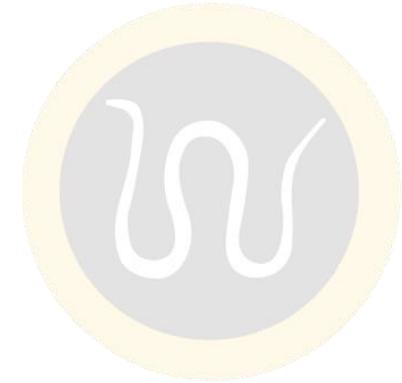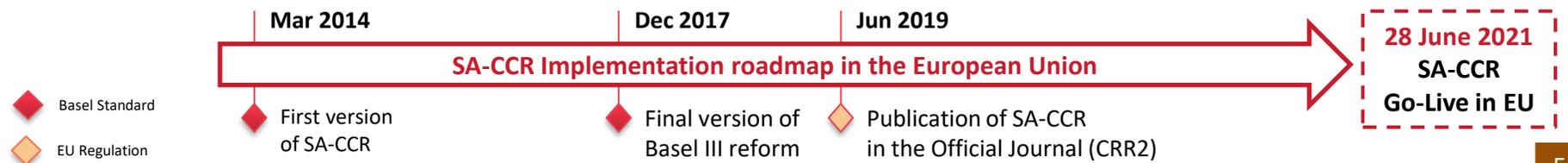
At a Glance

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Overview

Overview 1/2

Under **Pillar I**, the **Standardized Approach for measuring Counterparty Credit Risk Exposures** (i.e. **SA-CCR**) is a significant development designed to replace the Current Exposure Method (i.e. CEM) and Standardised Method (i.e. SM) in order to calculate the *Exposure At Default* (i.e. **EAD**).
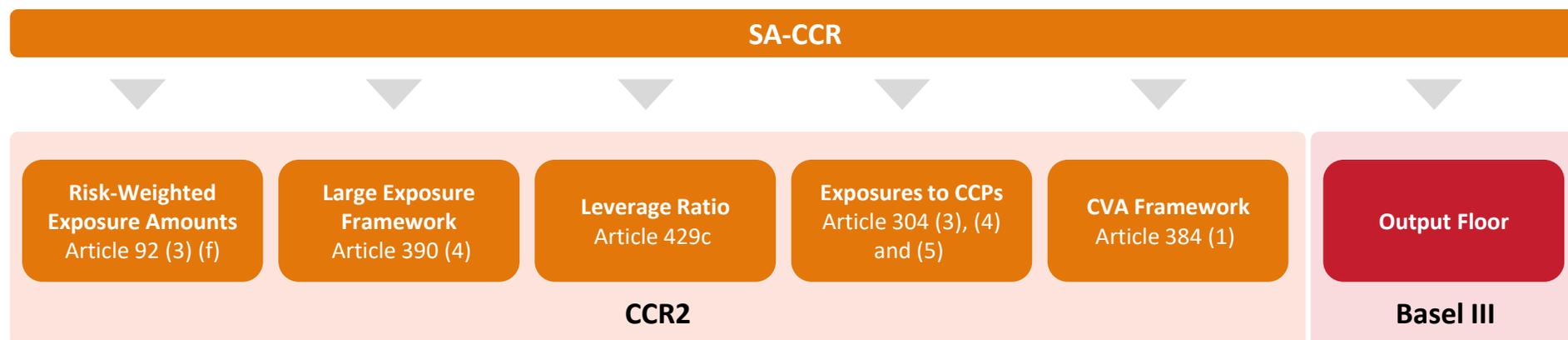
Scope	Object
■ OTC derivatives ■ Exchange-traded derivatives ■ Long settlement transactions	**EAD=α(RC+PFE)** ■ α = 1.4 as for IMM ■ RC: **replacement cost** ■ PFE=Multiplier*Add-on^{Aggr} is the **potential future exposure** The Add-on is calculated for each asset class (interest rate, foreign exchange, credit, equity, commodity and *other risks*[1]) and it hinges on the concept of *hedging set*, i.e. "*a set of transactions within a single netting set within which partial or full offsetting is recognised for the purpose of calculating the PFE add-on*". The RC and PFE are calculated differently for margined and unmargined netting sets. *[1] proposed in CRR2*

Main References and Milestones

- **BCBS d279**: *The standardised approach for measuring counterparty credit risk exposures* (March 2014)
- **BCBS d424**: *Basel 3 finalising post-crisis reforms* (Dec 2017)
- **BCBS d438**: *FAQ on the Basel III standardised approach for measuring counterparty credit risk exposures* (March 2018)
- **EBA/CP/2019/03**: Draft EBA RTS on SA-CCR under CRR2 (May 2019)
- **Regulation EU 2019/876**: CRR2 (May-June 2019)

Mar 2014	Dec 2017	Jun 2019	28 June 2021
		SA-CCR Implementation roadmap in the European Union	**SA-CCR Go-Live in EU**
First version of SA-CCR	Final version of Basel III reform	Publication of SA-CCR in the Official Journal (CRR2)	

◆ Basel Standard

◇ EU Regulation

The **SA-CCR framework** has an **impact** on banks with IMM approval, banks without IMM (NO-IMM approval) and also in other measures that are not related to IMM approval.

SA-CCR

Risk-Weighted Exposure Amounts Article 92 (3) (f)	Large Exposure Framework Article 390 (4)	Leverage Ratio Article 429c	Exposures to CCPs Article 304 (3), (4) and (5)	CVA Framework Article 384 (1)	Output Floor

CCR2 — (Risk-Weighted Exposure Amounts, Large Exposure Framework, Leverage Ratio, Exposures to CCPs, CVA Framework)

Basel III — (Output Floor)

Impacts on IMM Banks:

- "*Only under exceptional circumstances or for immaterial exposures can a bank revert to the standardized approach for counterparty credit risk for all or part of its exposure*".
- The **output floor** limits the capital requirements calculated using internal models to 72.5% of the RWA computed by SA-CCR.
- The SA-CCR's EAD will be used to calculate a **portfolio own funds requirements for CVA risk** for each counterparty.

Impacts on No-IMM Banks:

- The exposures arising from OTC Derivatives, Exchange Traded Derivatives and Long Settlement Transactions is calculated through SA-CCR methodology.
- The SA-CCR's EAD will be used to calculate a portfolio own funds requirements for CVA risk for each counterparty.

Impacts on other measures:

- *Large exposures frameworks*: the Basel Committee, defining the exposure measure, established that the **EAD of OTC derivatives of banking and trading books is calculated according to SA-CCR**.
- *Leverage ratio:* the **derivatives exposures** of denominator of mentioned ratio will be retrieved by SA-CCR framework.
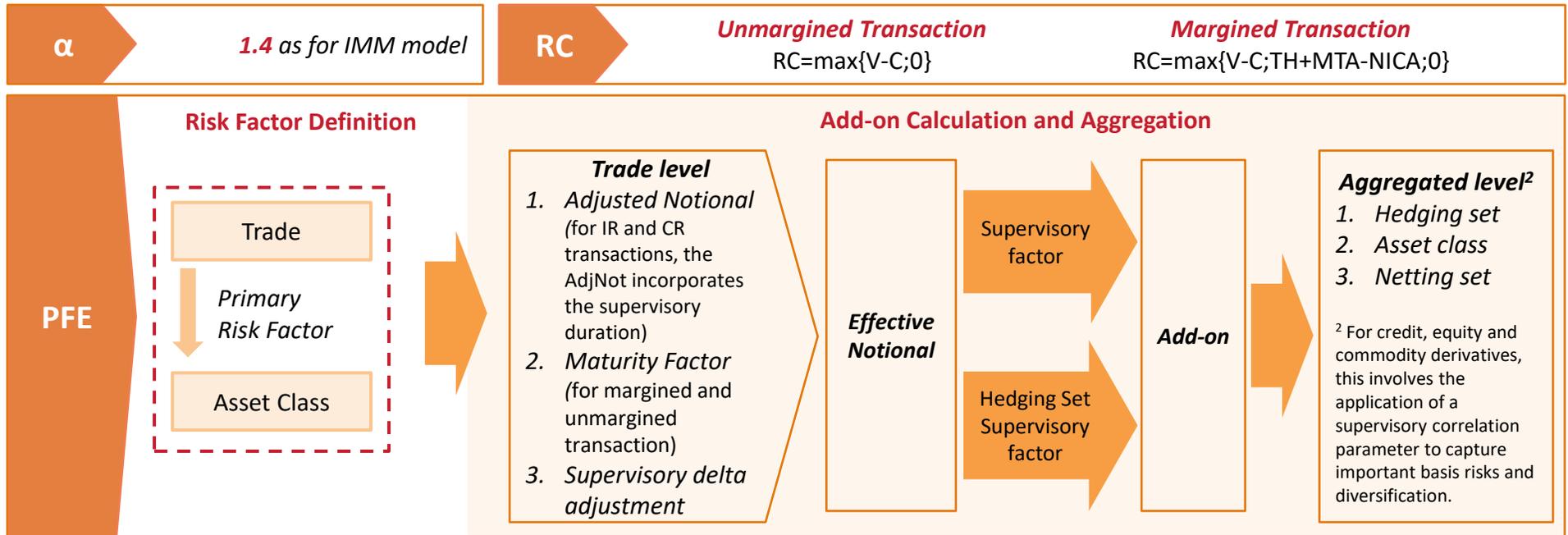
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Methodological Framework
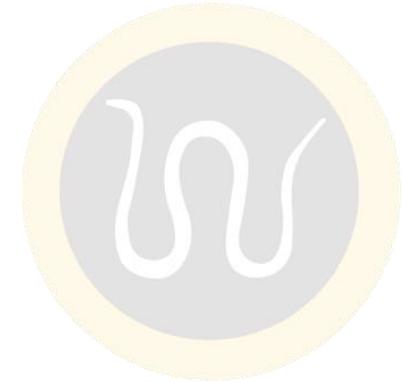
Methodological Framework 1/2

General Framework

The **SA-CCR framework** implies the calculation of EAD in a more *risk-sensitive* way: **EAD=α(RC+PFE)= α[RC+(multiplier • ΣAddOn)]**

α	1.4 *as for IMM model*	RC	**Unmargined Transaction** RC=max{V-C;0}	**Margined Transaction** RC=max{V-C;TH+MTA-NICA;0}

PFE

Risk Factor Definition

- Trade
- *Primary Risk Factor*
- Asset Class

Add-on Calculation and Aggregation

Trade level
1. *Adjusted Notional* (for IR and CR transactions, the AdjNot incorporates the supervisory duration)
2. *Maturity Factor* (for margined and unmargined transaction)
3. *Supervisory delta adjustment*

Effective Notional

Supervisory factor

Hedging Set Supervisory factor

Add-on

Aggregated level[2]
1. *Hedging set*
2. *Asset class*
3. *Netting set*

[2] For credit, equity and commodity derivatives, this involves the application of a supervisory correlation parameter to capture important basis risks and diversification.

For **smaller banks** with derivative business equal or below both thresholds i) 10% of total asset and ii) 300 million €, there is the possibility to implement a **"simplified" version of SA-CCR**.

EAD=α(RC+PFE)= α(RC+ΣAddOn)

Where:
- RC $_{\text{Unmargined Transaction}}$=max{V;0}
- RC $_{\text{Margined Transaction}}$=max{TH+MTA;0}

Respect to "full" SA-CCR, supervisory delta, supervisory duration, maturity factor and the effective notional amount of hedging set are calculated with dedicated rules. Finally, also the Addon of a hedging set of commodity, credit and equity risk categories are equal to the sum of absolute values of add-on for the related reference entity.

Methodological Framework 2/2

Enhancements over CEM

SA-CCR methodological framework is more *risk-sensitive* than CEM and recognizes benefits of risk mitigants like netting and collateralization. Main improvements over CEM are identified in *Risk Sensitivity, Netting and Collateral recognition*.

Risk Sensitivities

- Each derivatives transactions should be **mapped** in one of the following risk categories (Interest Rate, Credit, Forex, Commodity, Equity and Others) leveraging on the **primary risk driver**.
- Primary risk driver is the most material risk driver of the transaction and should be assessed using a **three steps approach**:
  1. **Qualitative** approach based on EBA map
  2. **Quantitative** approach based on **sensitivities** or other quantitative input
  3. **Fallback** approach

Netting Recognition

- With respect to CEM methodology there is a **much more extensive recognition of netting effect** across different transactions.
- The most significant impact of netting recognition would be on **cleared transactions**, since the subtle goal of the regulator is to **stimulate the usage of cleared derivative to reduce risk**.

Collateral Recognition

- **Collateral positions** are better recognized in SA-CCR methodology.
- The intention of the regulator is to **penalize unmargined trade** and thus promote the transition to margined or, even better, cleared trades.
- It can be seen in the different formula set of weights applied between unmargined and margined transactions (see Annex for more details).

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SA-CCR PFE Calculation

SA-CCR PFE Calculation 1/3

Risk Factors Definition

The definition of **primary Risk Factors** in order to properly classified trades in related asset classes can be summarized in **3 main steps**.

Qualitative Approach

- Many derivative transactions have a single risk driver or several risk drivers referring unambiguously to the same risk category.
- Furthermore we can have structured products related to a single asset class.
- A list of criteria to be fulfilled for a derivative to be considered as having a **clearly identifiable single risk driver** could be developed.

EBA proposes a list to map the transaction to the risk category according to the primary risk factor

1

Quantitative Approach

- When the qualitative approach fails, the **sensitivities** and **underlying volatility** must be taken into account in order to identify the **primary risk driver** and map each transaction to one or more risk categories.
- **EBA** defines a **3 steps-approach**:
  1. Qualitative identification of all the risk drivers of the transaction
  2. Assessment of the materiality of each risk driver of the transaction through the comparison of all sensitivities and volatility
  3. Identification of the most material among these material risk drivers

Potential synergies with FRTB-SBM

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Fallback

- When the previous step fails (e.g. when the sensitivities are not available), the presumption is that **all identified risk factors would be deemed material**.
- Therefore we have **the allocation of the transaction to each of the risk categories corresponding to all its risk factors.**

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Metrics Computation

Adjusted Notional (AdjN)			
Interest rate and Credit derivatives	**Foreign exchange derivatives**	**Commodity and equity derivatives**	**Other Risk**
It is the product of the trade notional amount, converted to the domestic currency, and the supervisory duration (SDur): $$SDur = \frac{\exp(-0.05 \cdot S_i) - \exp(-0.05 \cdot E_i)}{0.05}$$ Where S_i e E_i are start and end date.	It is the notional of the foreign ccy leg of the contract converted to the domestic ccy. If both legs of FX derivatives are denominated in currencies other than the domestic currency, the notional amount of each leg is converted to the domestic currency and the leg with the larger domestic currency value is the adjusted notional amount.	It is the product of the current price of one unit of the stock or commodity and the number of units referenced by the trade.	Based on the nature and characteristics of the underlying instrument of the transaction, the most appropriate method among the rules proposed for the other asset classes.

Maturity Factor (MF)	
Unmarged transaction	**Marged transaction**
$$MF_{Unmarged} = \sqrt{\min\{M, 1year\}/1year} \text{ where } M > 10 \, bd$$	$$MF_{Marged} = \frac{3}{2}\sqrt{\text{MPOR}/1year}$$ Where: • MPOR=F-N+1 is the **Margin Period of Risk** • F is the minimum MPOR • N is periodicity of margining.

Supervisory Delta (SD)	Supervisory Parameters
It is applied to the adjusted notional amount to reflect the direction of the transaction and its non-linearity. It is +1 for long derivatives (that are not options or CDO tranches) in the primary risk factor; -1 otherwise.	Supervisory Factor (SF), hedging set supervisory factor (ξ), correlation (SC) and option volatility. Additional parameters prescribed in CRR2.

Metrics Aggregation

|	
Interest Rate Derivatives	**Trade level aggregation** of the *effective notional*: for each hedging set *j* (i.e. ccy), ***full offsetting benefit is recognized within maturity buckets k*** (i.e. *maturity* < 1 year, 1 year < *maturity* < 5 years, *maturity* > 5 years): $D_{jk} = \sum_{trades} SD \cdot AdjN \cdot MF$
	Bucket aggregation of the *effective notional*: for each hedging set *j*, ***partial offsetting benefit is recognized across buckets k = 1,...,3***: $$\text{EffectiveNotional}_j = \left[(D_{j1})^2 + (D_{j2})^2 + (D_{j3})^2 + 1.4 \cdot D_{j1} \cdot D_{j2} + 1.4 \cdot D_{j2} \cdot D_{j3} + 0.6 \cdot D_{j1} \cdot D_{j3} \right]^{1/2}$$
	The **hedging set add-on** is calculated as: $\text{AddOn}_j = \xi_j \cdot SF_j \cdot \text{EffectiveNotional}_j$. The **asset class add-on** is obtained by summing hedging set add-ons.
Foreign Exchange Derivatives	The *effective notional* is calculated for each hedging set *j* (i.e. ccy pair) with the following formula: $D_j = \sum_{trades} SD \cdot AdjN \cdot MF$. The **hedging set add-on** is calculated as: $\text{AddOn}_j = \xi_j \cdot SF_j \cdot |D_j|$
	The **asset class add-on** is obtained by summing hedging set add-ons.
Credit and Equity Derivatives	The *effective notional* is calculated for each hedging set *j* (i.e. entity/index) with the following formula: $D_j = \sum_{trades} SD \cdot AdjN \cdot MF$. The **hedging set add-on** is calculated as: $\text{AddOn}_j = SF \cdot D_j$
	The **asset class add-on** is given by the following formula, which recognizes ***(full) offsetting benefit only for the systematic component***: $$\text{AddOn} = \xi_j \left[\left(\sum_j \rho_j \cdot \text{AddOn}_j \right)^2 + \sum_j (1 - \rho_j^2) \cdot (\text{AddOn}_j)^2 \right]^{\frac{1}{2}}$$ where the first term is the *systematic component* and the second one is the *idiosyncratic component*
Commodity Derivatives	The *effective notional* is calculated for each commodity type *k* in an hedging set *j* with the following formula: $D_k = \sum_{trades} SD \cdot AdjN \cdot MF$. The **commodity type add-on** is calculated as: $\text{AddOn}_{j,k} = SF_{j,k} \cdot D_k$ recognizing ***partial offsetting benefits within the same type of commodities***: $$\text{AddOn}_j = \xi_j \left[\left(\rho_j \sum_k \text{AddOn}_{kj} \right)^2 + (1 - \rho_j^2) \sum_k (\text{AddOn}_{kj})^2 \right]^{\frac{1}{2}}$$
	The **asset class add-on** is obtained by summing hedging set add-ons.
Derivatives of Other Risk	The *effective notional* is calculated for each hedging set *j* with the following formula: $D_j = \sum SD \cdot AdjN \cdot MF$. The **other risk type add-on** is calculated as: $\text{AddOn}_j = SF_j \cdot D_j \cdot \xi_j$ recognizing ***full offsetting benefits for derivatives referring to the same primary risk factor***.
	The **asset class add-on** is obtained by summing hedging set add-ons.

Additionally, **basis** and **volatility transactions** must be treated within separate hedging sets with modified supervisory factors (multiplied by one-half and five respectively).

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Challenges
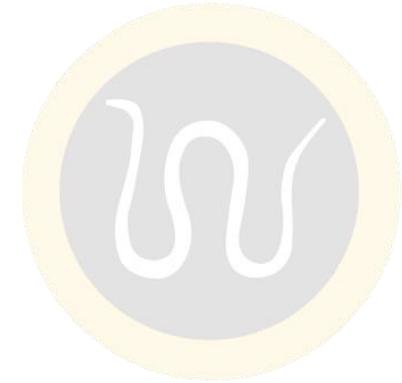
Challenges 1/2

Data Governance

The first potential challenge of SA-CCR implementation is then to **retrieve the required data at both transaction and collateral levels**.

Transaction Level

- Retrieve the relevant **trade information** from several Front Office systems: the Bank should deeply analyse the available data and activate all the streams for the **missing data**, considering the complexity of the Front-to-Risk chain and the several legal entities involved.

- This is performed with the following steps:
    1. Perform a gap analysis using available data
    2. Require the missing data in the available reports

- Alignment of transaction information delivered by several streams with the SA-CCR's requirements, considering the impact of all Bank's present and future projects, i.e.:
    - IT enhancement
    - Implementation of new products projects
    - Regulatory changes

Collateral Level

- In order to recognize the effect of collateral banks has to **collect information on different aspects of an agreement**, such as *Threshold*, *Minimum Transfer Amount* and *Re-margining Period*

- Ideally must be done for **all bank's collateral positions**

- Criticalities could arise with businesses with poor data quality or scarce information (i.e. *collateralization of small retail ETD business*)

- The correct representation of collateral in the SA-CCR implementation is crucial in order to maximize the risk mitigation effect of collateral. This is why banks should focus on improve the efficiently of data collection regarding collateral and don't allow too many conservative assumption to water down their beneficial effects.

Challenges 2/2

Mapping in Risk Categories

The second potential challenge of SA-CCR implementation is the **mapping of derivative transactions to Risk Categories**.
In case the recognition of the primary risk factor fails qualitatively, the materiality of the risk driver can be assessed through **sensitivities**: in this situation, the **revised minimum capital requirements for market risk** (i.e. **FRTB**) can be extremely useful in their *sensitivity-based method*.

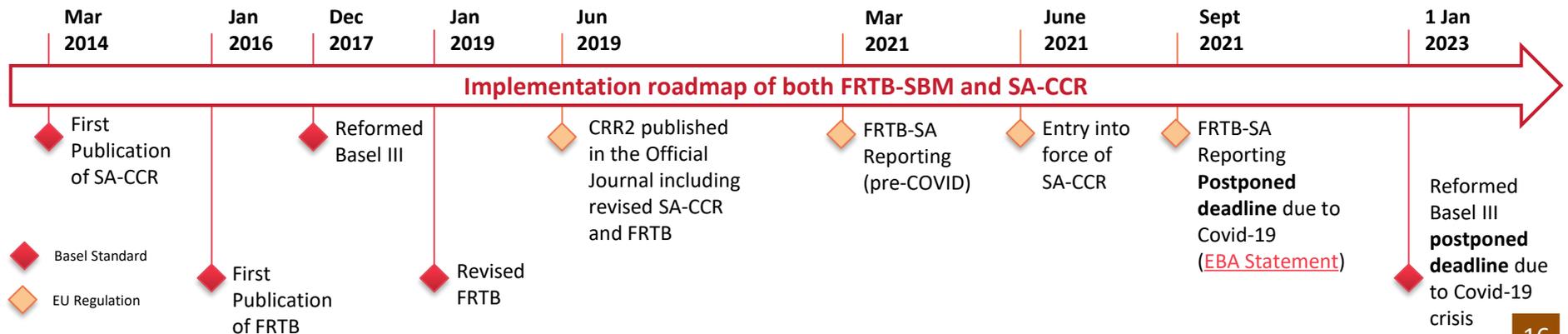### Potential synergies between FRTB-SBM and SA-CCR frameworks

1. **Scope.**
   FRTB includes all financial instruments in the trading book, FX and commodities. Thus the **FRTB-SBM perimeter > SA-CCR perimeter** and all the sensitivities produced under FRTB-SBM covers the SA-CCR perimeter.

2. **Methodology.**
   FRTB-SBM Risk Classes are Generalized Interest Rate, Credit (Non Sec, Sec non-CTP and Sec CTP), Forex, Equity and Commodity and are perfectly comparable with SA-CCR framework. Thus **the sensitivities produces under the FRTB-SBM can be used for SA-CCR primary risk factors definition**.

3. **Implementation Timeline.**
   In the reformed Basel III roadmap, both SA-CCR and FRTB have the **same implementation deadlines**.

Implementation roadmap of both FRTB-SBM and SA-CCR

Mar 2014	Jan 2016	Dec 2017	Jan 2019	Jun 2019	Mar 2021	June 2021	Sept 2021	1 Jan 2023
First Publication of SA-CCR	First Publication of FRTB	Reformed Basel III / Revised FRTB		CRR2 published in the Official Journal including revised SA-CCR and FRTB	FRTB-SA Reporting (pre-COVID)	Entry into force of SA-CCR	FRTB-SA Reporting **Postponed deadline** due to Covid-19 (EBA Statement)	Reformed Basel III **postponed deadline** due to Covid-19 crisis

◆ Basel Standard
◆ EU Regulation

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Annex - Regulatory Comparison

Regulatory Comparison 1/2

Risk Factor Definition

Risk Type	SIMM	FRTB-SBM	SA-CVA
Interest Rate	• *Curve Type*: zero curve, inflation or basis • *Tenor* (vertex for sensitivity granularity) • 12 verteces + Inflation + CCS basis • *Currency* for bucket allocation	• *Curve Type*: zero curve, inflation or basis • *Tenor* (vertex for sensitivity granularity) • 10 verteces + Inflation + CCS basis • *Currency* for bucket allocation	• *Curve Type*: zero curve, inflation • *Tenor* (vertex for sensitivity granularity) • 5 verteces (only for 7 ccy) + Inflation • *Currency* for bucket allocation

Credit	**Credit Qualifying(no-sec + sec CTP):**
	• issuer/seniority pair
	• 5 verteces
	• 12 buckets + residual
	   o *Issuer (no-sec) / Underlying Issuer (sec) Credit Quality*: IG or HY/NR
	   o *Issuer (no-sec) / Underlying Issuer (sec) Sector*
	
	Credit Not-Qualifying (sec no-CTP)
	• issuer/tranche pair
	• 5 verteces
	• 2 buckets + residual
	   o Tranche Credit Quality: IG or HY/NR
	   o Possible Tranche Sector: RMBS or CMBS
		CSR (no-securitisation):
		• issuer
		• 5 verteces
		• 16 buckets
		   o *Issuer Credit Quality*: IG or HY
		   o *Issuer Sector*: Industry Sector
		CSR (securitisation CTP):
		• underlying issuer
		• 5 verteces
		• same buckets of CSR no-sec for underlying issuer
		CSR (Securitisation no-CTP):
		• tranche
		• 5 verteces
		• 25 buckets
		   o Tranche Credit Quality: IG or HY/NR
		   o Tranche Sector: RMBS, ABS, CMBS,CLO
			Counterparty credit spread
			• issuer
			• 5 verteces
			• 7 buckets
			   o *Issuer Credit Quality*: IG or HY
			   o *Issuer Sector*: Industry Sector
			
			Reference credit spread
			• underlying issuer
			• 15 buckets
			   o *Issuer Credit Quality*: IG or HY
			   o *Issuer Sector*: Industry Sector

Equity	• *Equity price*
	• 10 buckets + "Indexes, ETFs, Funds"+"Volatility Indeces"
	   o *Market Cap*: Large or Small
	   o *Economy*: Emerging or Advanced
	   o *Sector*
		• *Equity price* and *Equity Repo rate*
		• 10 buckets + Other sector
		   o *Market Cap*: Large or Small
		   o *Economy*: Emerging or Advanced
		   o *Sector*
			• *Equity price*
			• 11 buckets
			   o *Market Cap*: Large or Small
			   o *Economy*: Emerging or Advanced
			   o *Sector*

Commodity	• *Commodity price*
	• 16 buckets + "Indeces"
	   o Commodity Typology
		• *Commodity price*
		• *Contract grade*
		• *Delivery location*
		• 11 verteces for instrument maturity
		• 11 buckets
		   o Commodity Typology
			• *Commodity price*
			• 11 buckets
			   o Commodity Typology

Forex	• All *ccy pair* with reporting ccy	• All *ccy pair* with reporting ccy	• All *ccy pair* with reporting ccy

Regulatory Comparison 2/2

Metrics Computation

| Risk Type	SIMM	FRTB-SBM	SA-CVA
Delta Metrics			
Interest Rate	• Additive bump 1bp • Forward, backward, central, smaller shock difference • Rescale for bump only in smaller shock difference	• Additive bump 1bp • Only forward difference • Rescale for bump	• Additive bump 1bp or less • Absolute difference • Rescale for bump
Credit	• Additive bump 1bp • Forward, backward, central, smaller shock difference • Rescale for bump only in smaller shock difference	• Additive bump 1bp • Only forward difference • Rescale for bump	• Additive bump 1bp or less • Absolute difference • Rescale for bump

Equity	• Factor bump 1bp
	• Forward, backward, central, smaller shock difference
	• Rescale for bump only in smaller shock difference
		• **Equity spot**
		  ○ Factor bump 1%
		  ○ Only forward difference
		  ○ Rescale for bump
		• **Equity repo rate**
		  ○ Additive bump 1bp
		  ○ Only forward difference
		  ○ Rescale for bump
			• Factor bump 1% or less
			• Absolute difference
			• Rescale for bump

Commodity	• Factor bump 1bp • Forward, backward, central, smaller shock difference • Rescale for bump only in smaller shock difference	• Factor bump 1% • Only forward difference • Rescale for bump	• Factor bump 1% or less • Absolute difference • Rescale for bump
Forex	• Factor bump 1bp • Forward, backward, central, smaller shock difference • Rescale for bump only in smaller shock difference	• Factor bump 1% • Only forward difference • Rescale for bump	• Factor bump 1% or less • Absolute difference • Rescale for bump
Vega Metrics			
All	• Methodology and bump given	• Methodology and bump given	• Methodology and bump given
Curvature Metrics			
All	• Based on volatility	• Based on direct bump of risk factor and scaled with delta	• No Curvature

Company Profile

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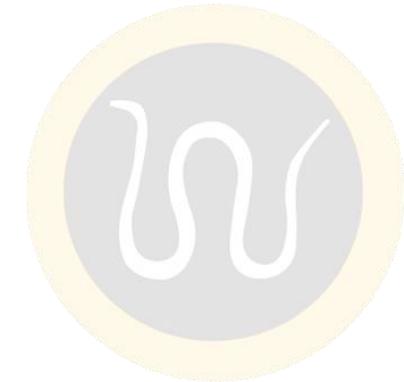
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