Credit Risk and its impact on regulations and technical architecture

Ayan Sagynbek kyzy
Sell-side Valuations, Risk and Regulations solutions specialist at Bloomberg

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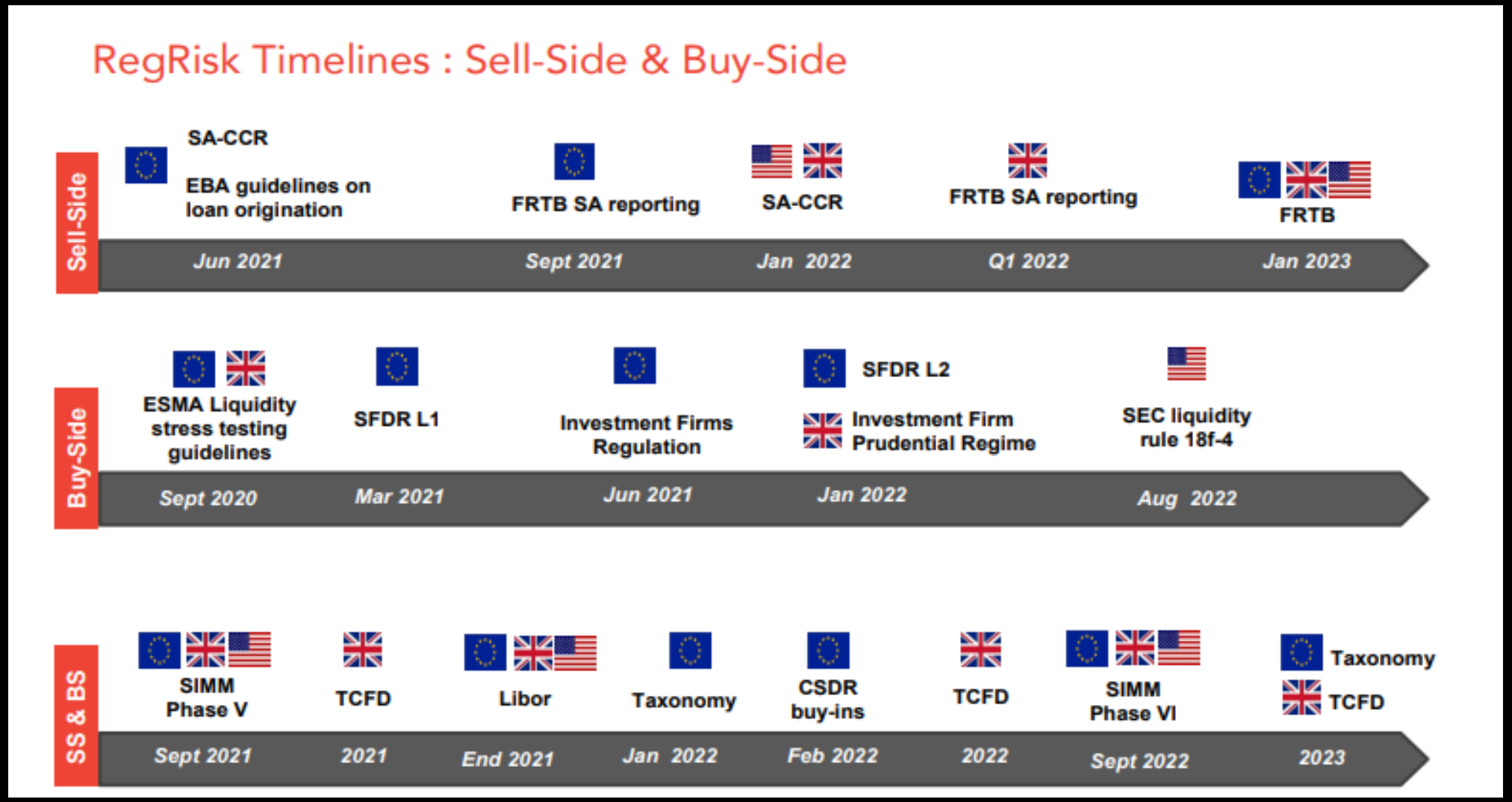
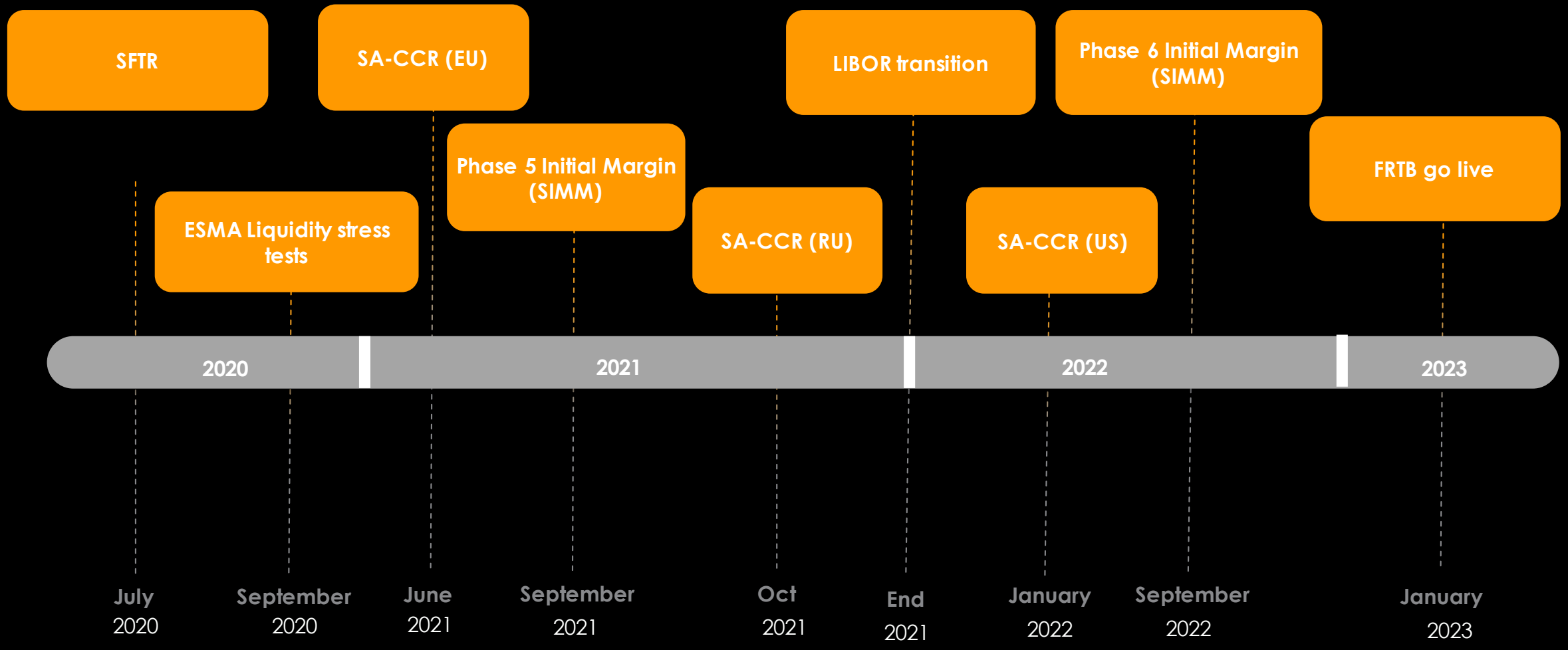
Regulatory Risk Global Deadlines



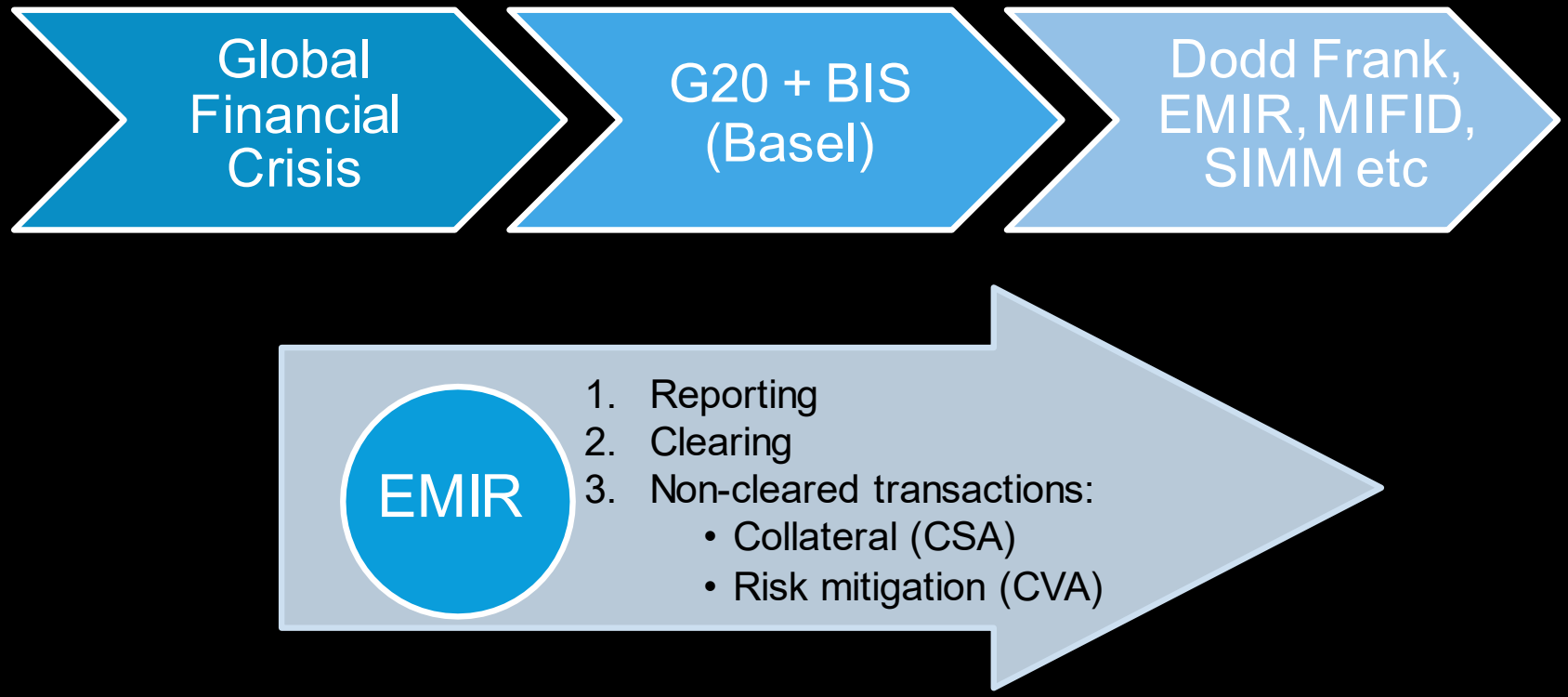
New Regulatory Timeline (Sell-side)



Agenda

- Timeline of the changes in the Global and Russian Federation regulation:
  - Credit Risk:
    - IFRS 13 & 9 Reporting and Analytics, SA-CCR, Clearing & Collateral management & SIMM, PRIIPs
  - Operational and Pricing Model Risks:
    - IPV, Libor Transition
  - Climate Risk:
    - Banking Regulations forming, ESG Factoring, Stress-testing
- Impact of such changes on business and workflows
- Bloomberg Solutions

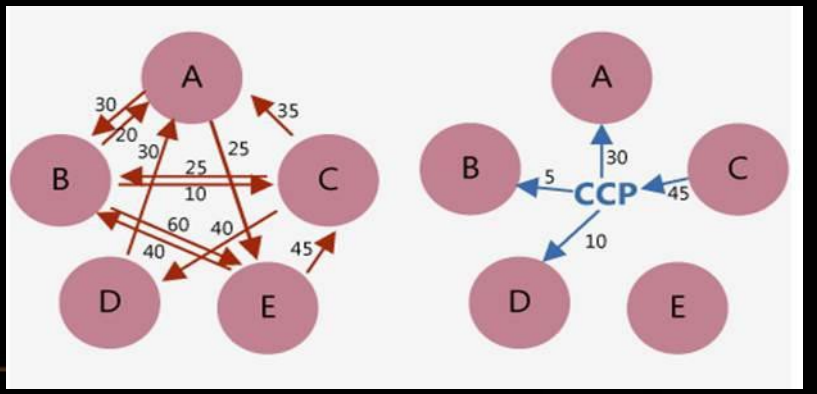
Credit Risk: Derivatives transactions (post-GFC crisis)



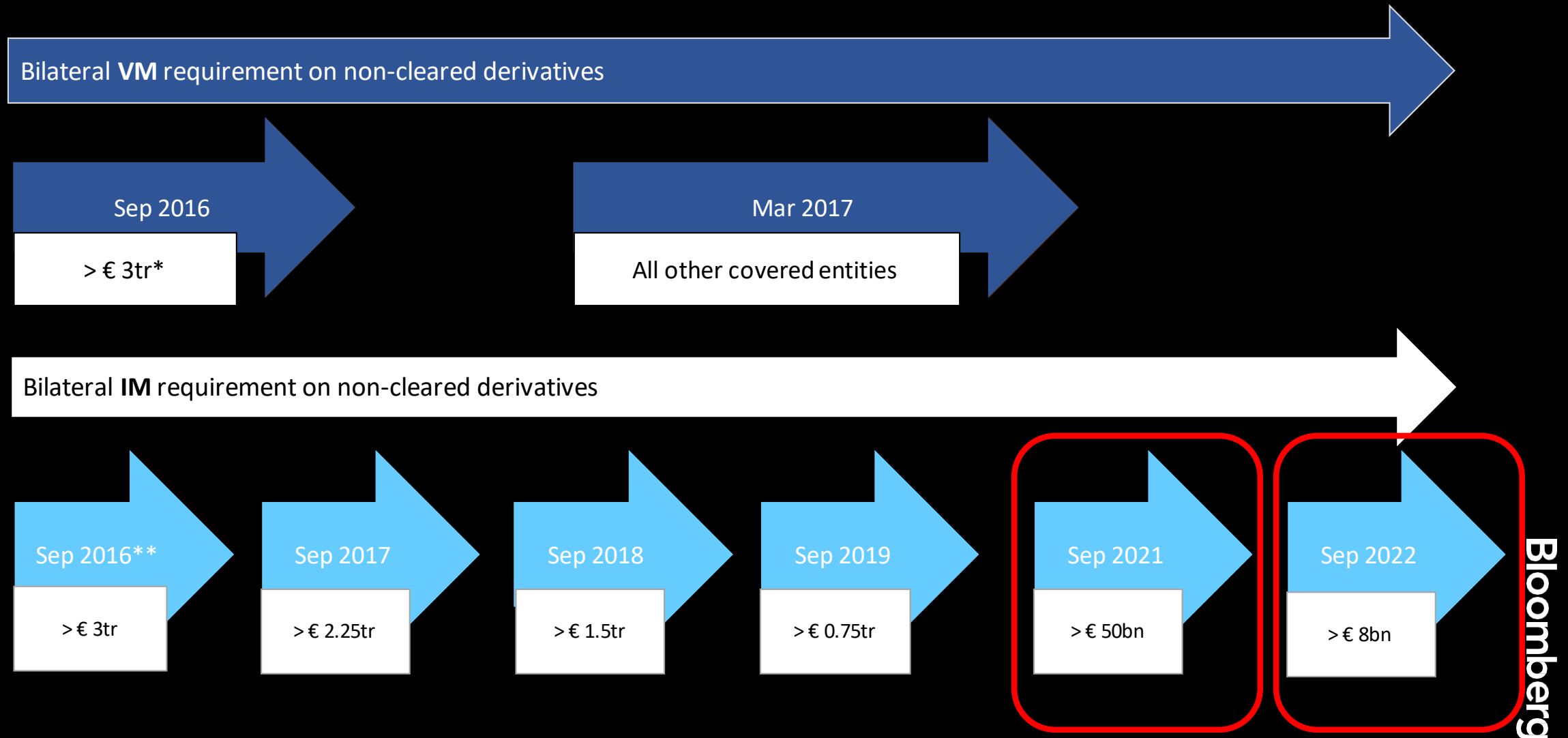
Credit Risk: Clearing & Collateral management & SIMM

- Non-regulatory Clearing globally is driven by the following benefits:
  - netting and capital benefits (exposure to just one CCP)
  - the desire of counterparties to mitigate credit risk and settlement risk and, in the case of banks, to reduce capital held against such trades
    - In Russia clearing may sometimes be deemed a more expensive option than bilateral, however, the benefits above as well as the desire to trade with foreign counterparties and lock more favourable rates may outweigh the costs in long term

  - And, of course, the rollout of margining requirements for non-cleared derivatives (SIMM) is also one of the key drivers to move into clearing



Margining – Initial Margin Mandatory Deadlines



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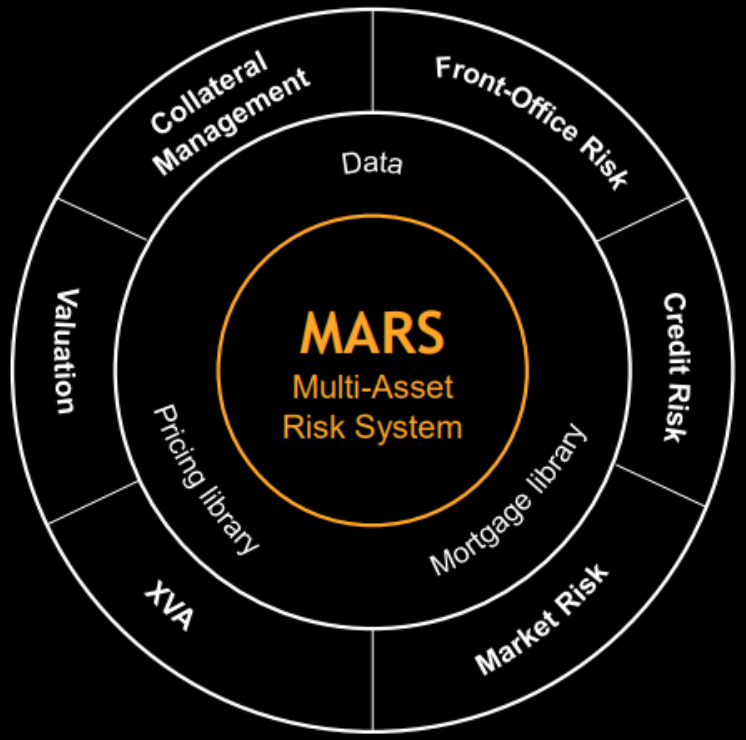
April 2020 Revisions

BCBS: Basel Committee on Banking Supervision

IOSCO: International Organization of Securities Commissions

Multi-Asset Risk System ("MARS") – A Suite of Integrated and Scalable Solutions



- **Help front-office, risk and collateral professionals to analyse their trading and investment Portfolios, mitigate risk and prepare for the unexpected.**

  Powered by Bloomberg's world class:

  - Pricing library
  - Mortgage cash flow engine, and
  - Market data

  Consistent and consolidated platform for:
  - Valuation of derivatives
  - Front office risk (incl. product life cycle analysis)

- **- Credit Risk**
  - Counterparty risk and
  - Collateral management

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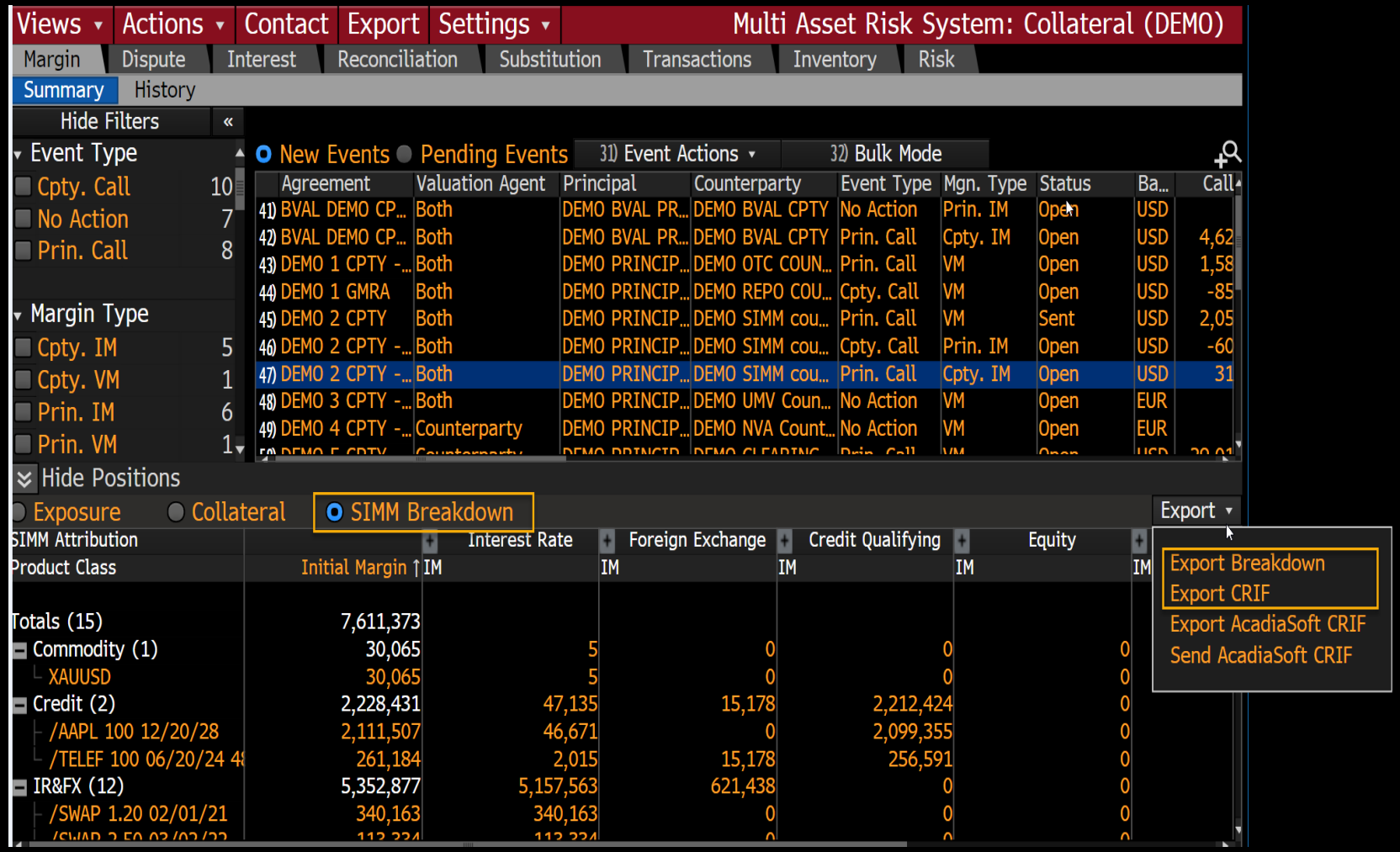
Bloomberg Collateral – Margin Blotter



- Manage Daily Margin Events (Margin Calls, Disputes, Interest and Substitutions)
- Direct access to real-time trade and market data
- Automated messaging via AcadiaSoft MarginSphere
- Dispute Management
- Interest Management
- Audit Trail
- Reconciliation
- Liquidity Shortfall analysis
- Transparency into SIMM breakdown, CRIF file to SFTP
- Auto-send CRIF to AcadiaSoft Initial Margin Exposure Manager for SIMM reconciliation

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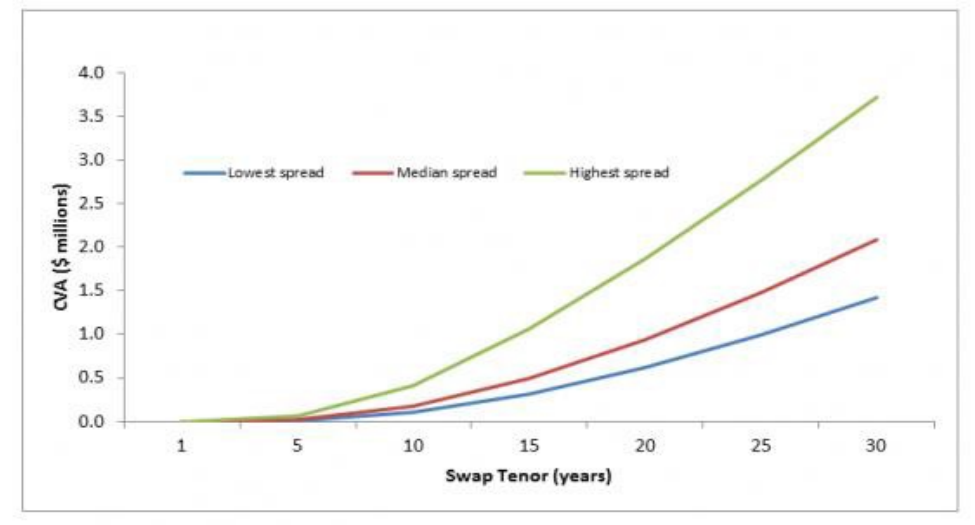
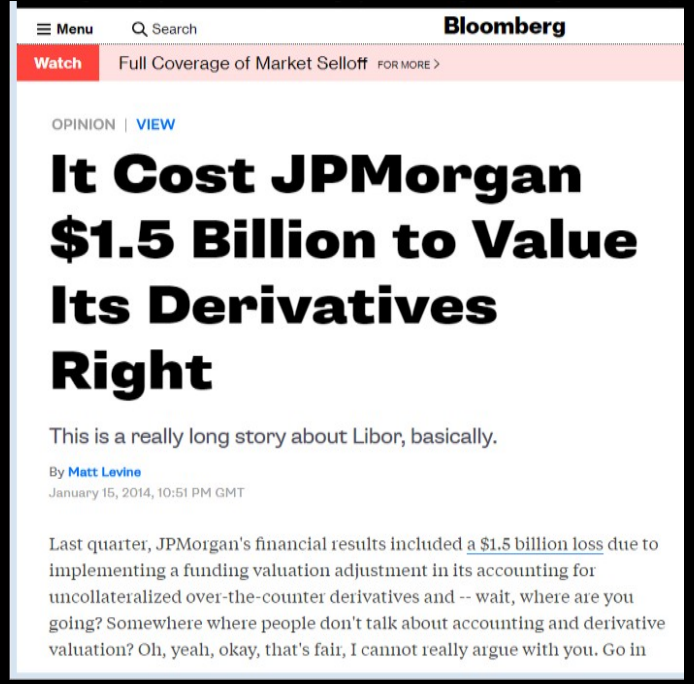
Non cleared transactions (two types)

1. Non-collaterised: XVA = CVA + Additional charges (FVA, KVA)
   - Accounting standards, US 2007 and IFRS 13: True MTM must incorporate the possibility of losses due to default
   - Quoted Price transparency
   - Portfolio optimisation, Income Statement gains
2. Collaterised: XVA + Posting Collateral (CSA, SIMM)

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OPINION | VIEW

It Cost JPMorgan $1.5 Billion to Value Its Derivatives Right

This is a really long story about Libor, basically.

By Matt Levine
January 15, 2014, 10:51 PM GMT

Last quarter, JPMorgan's financial results included a $1.5 billion loss due to implementing a funding valuation adjustment in its accounting for uncollateralized over-the-counter derivatives and -- wait, where are you going? Somewhere where people don't talk about accounting and derivative valuation? Oh, yeah, okay, that's fair, I cannot really argue with you. Go in

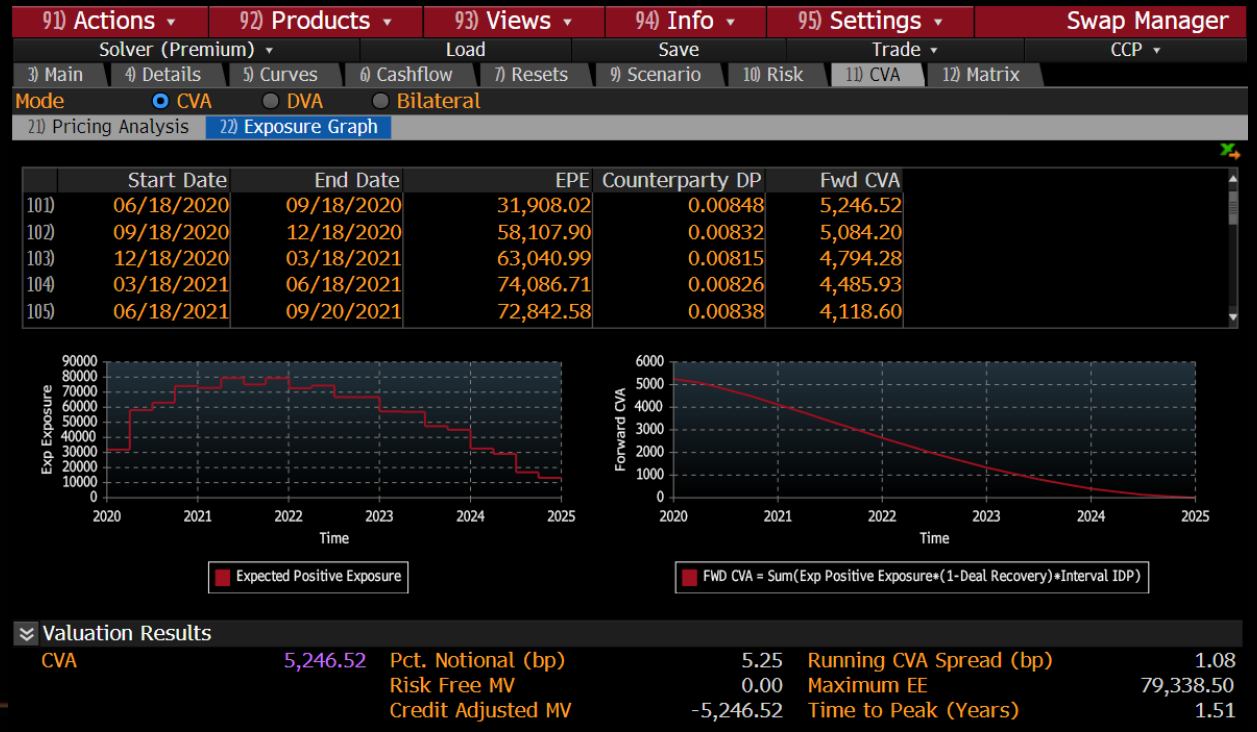
Credit Risk: IFRS 13 Reporting for Derivatives

- IFRS 13: CVA's to be included in mark-to-market reporting for OTC derivatives
  - Mainly a formality, tick-the-box exercise: Monthly or quarterly calculations for financial reporting
  - Can also be part of front office activities (pre-trading quoting) and risk management (PFE limits). However, XVA trading is not yet widely practiced in Russia, EE and Balkans, despite being a must in Western Europe and Middle East
  - Regardless, this introduces the practice of estimation of CVA as it affects company financial statements, and therefore needs to have an appropriate methodology

Traditional CVA approximation calculations drawbacks

- Analytic approach, not Monte Carlo simulations. Limited Deal types support
- Single Deal exposure, not Portfolio Level
- No Potential Netting, Collateral and Capital benefits
- No Credit Provisions (Mandatory or Optional)

- All of these challenges can be addressed with MARS XVA enterprise solution



SWPM<GO>

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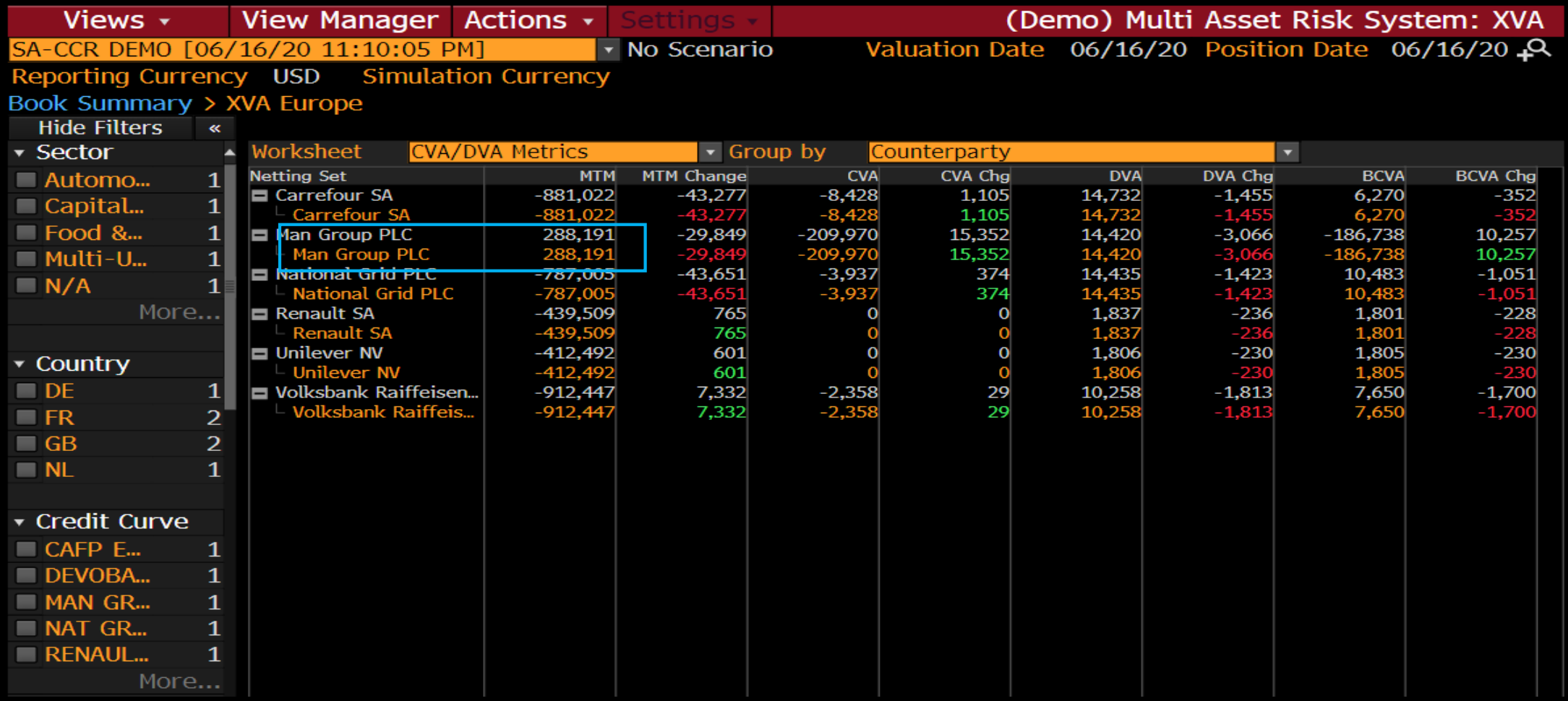
Multi Asset Risk System: XVA



Netting Set	MTM	MTM Change	CVA	CVA Chg	DVA	DVA Chg	BCVA	BCVA Chg
Carrefour SA	-881,022	-43,277	-8,428	1,105	14,732	-1,455	6,270	-352
Carrefour SA	-881,022	-43,277	-8,428	1,105	14,732	-1,455	6,270	-352
Man Group PLC	288,191	-29,849	-209,970	15,352	14,420	-3,066	-186,738	10,257
Man Group PLC	288,191	-29,849	-209,970	15,352	14,420	-3,066	-186,738	10,257
National Grid PLC	-787,005	-43,651	-3,937	374	14,435	-1,423	10,483	-1,051
National Grid PLC	-787,005	-43,651	-3,937	374	14,435	-1,423	10,483	-1,051
Renault SA	-439,509	765	0	0	1,837	-236	1,801	-228
Renault SA	-439,509	765	0	0	1,837	-236	1,801	-228
Unilever NV	-412,492	601	0	0	1,806	-230	1,805	-230
Unilever NV	-412,492	601	0	0	1,806	-230	1,805	-230
Volksbank Raiffeisen...	-912,447	7,332	-2,358	29	10,258	-1,813	7,650	-1,700
Volksbank Raiffeis...	-912,447	7,332	-2,358	29	10,258	-1,813	7,650	-1,700

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Credit Risk: IFRS 9 Reporting for Loans

- IFRS 9: Sell-side banks now need to define internal IFRS 9 benchmarks, including hedge accounting and credit worthiness, which includes:
  - Accounting not only for occurred (past), but expected credit losses: ECL, CECL
  - Not only downside is considered, but also upside: positive macro scenarios
  - Stress tests: loans specific scenarios -> to see and stress-test PDs and LGDs for the entire term structure of the loan:
    - if a credit quality of a loan deteriorates (move from Pillar 1 to Pillar 3):
      - Pillar 1 (PD up to 1y)
      - Pillar 2
      - Pillar 3 -> non performing loan -> PDs and LGDs for the entire term of the loan and macroeconomic scenarios

MARS Credit Risk – Example – Automobile Manufacturers

No scenario:

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MARS Credit Risk – Example – Powerful, Flexible Scenarios

Example Scenario

Scenario Details

Name: CreditRisk Sample 1

Summary | Settings | IR | Equity | Comdty | Inflation | Credit | FX

Credit Risk	
Public Banks	
Market Cap	Decreases by 15%
Price Volatility	Increases by 10%
Long-Term Debt	Increases by 10%
Public Non-Bank Financials	
Market Cap	Decreases by 10%
Price Volatility	Increases by 10%
Public Non-Financials	
Market Cap	Decreases by 25%
Price Volatility	Increases by 33%
Long-Term Debt	Increases by 10%
Private Banks	
Tier 1 Ratio	Decreases by 5%
Non-Performing Loans	Increases by 5%
Tangible Equity to Assets	Decreases by 5%
Return on Assets	Decreases by 5%
Private Non-Financials	
Current liabilities	Increases by 10%
Total Liabilities	Increases by 10%
Book Equity	Decreases by 10%
Cash	Decreases by 10%

Result

Views | Actions | Export | Settings — Multi Asset Risk System: Credit Risk

CREDIT RISK [Demo] 04/23/21

Positions | Credit Risk

Scenario: CreditRisk Sample 1 Eval Date: 23-Apr-2021 12:28 Run Scenario

Group by: Ult Parent & Issuer Report Eval Date: 23-Apr-2021 Report: CreditRisk Sample 1

Issuer	Position	LGD	Rec Rate	Model ...	Default Probability (DP) 6M	1Y ↓	3Y	5Y	10Y	20Y
Renault SA	4,000	.07	.93	166	.032	.0576	.1045	.1268	.2266	.4202
Renault SA	4,000	.07	.93	166	.032	.0576	.1045	.1268	.2266	.4202
Faurecia SE	17.029	.00	.00	147	.0152	.0345	.0826	.1073	.1951	.3655
Faurecia SE	17.029	.00	.00	147	.0152	.0345	.0826	.1073	.1951	.3655
Ford Motor Co	4,000	.53	.47	275	.0136	.0297	.0681	.0884	.1611	.2937
Ford Motor Co	4,000	.53	.47	275	.0136	.0297	.0681	.0884	.1611	.2937
General Motors Co	4,000	.52	.48	240	.0081	.0206	.0569	.0774	.1412	.2517
General Motors Co	4,000	.52	.48	240	.0081	.0206	.0569	.0774	.1412	.2517
Daimler AG	4,000	.07	.93	116	.0038	.0121	.0428	.062	.1149	.2153
Daimler AG	4,000	.07	.93	116	.0038	.0121	.0428	.062	.1149	.2153
Stellantis NV	3,000	.51	.49	156	.0016	.0066	.0325	.0507	.0971	.2147
Stellantis NV	3,000	.51	.49	156	.0016	.0066	.0325	.0507	.0971	.2147

Issuer Details

Security Name ↑	Position	LGD	Rec Rate	Cost Price	Model CDS	Details Credit Grade	ECL ECL 1Y	DPs 3M
RENAUL 1 11/28/25	1,000	.07	.93	92.71	166	HY5	364.01	.0161
RENAUL 1 ¼ 06/24/25	1,000	.07	.93	92.9	166	HY5	364.9	.0161
RENAUL 1 ⅛ 10/04/27	1,000	.07	.93	88.26	166	HY5	347.13	.0161
Renault SA	1,000	--	--	25.23	166	HY5	--	.0161

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Credit Risk

- Standard Approach for Counterparty Credit Risk (SA-CCR, 754_P),
  - RWA's: regulatory capital to cover counterparty credit risk in OTC derivatives

June 2021

European Union

Hong Kong

Oct 2021

Russian Federation

Jan 2022

United Kingdom

United States

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SA-CCR: High Level Overview

754-P Regulation:

$$\text{ВРС} = \alpha \times (\text{ВТР} + \text{ВПР})$$

SA-CCR Basel recommendation:

$$EAD = alpha * (RC + Multiplier * Add\text{-}on)$$

Replacement Cost

current exposure:

- non-margined
- margined

PFE

Multiplier: [5%, 100%]

- Accounts for negative FV and over-collaterisation

Add-On: potential future increase of current exposure:

- non-margined: 1Y
- margined: margin period of risk

$$\text{ВТР} = \max(\text{СС} - \text{ЧО}; 0)$$

$$\text{ВТР} = \max(\text{СС} - \text{ВМ} - \text{ЧО}; \text{М}_{\text{пор}} + \text{СП}_{\min} - \text{ЧО}; 0)$$

$$RC = \max(FV - NICA; 0)$$

$$RC = \max(FV - VM - NICA; TH + MTA - NICA; 0)$$

Implementing SA-CCR: Challenges and Impacts

Implementation Timeline

Use of SA-CCR mandated in certain jurisdictions already. Being phased in globally between now and 2022. There is a tight timeline for compliance.

Calculation Complexity

Calculating SA-CCR requires complex aggregation of position level metadata

Increased Capital Charges

While SA-CCR is intended to be more risk sensitive than its predecessor, regulatory capital requirements for counterparty credit risk will in general be increased.

Pricing

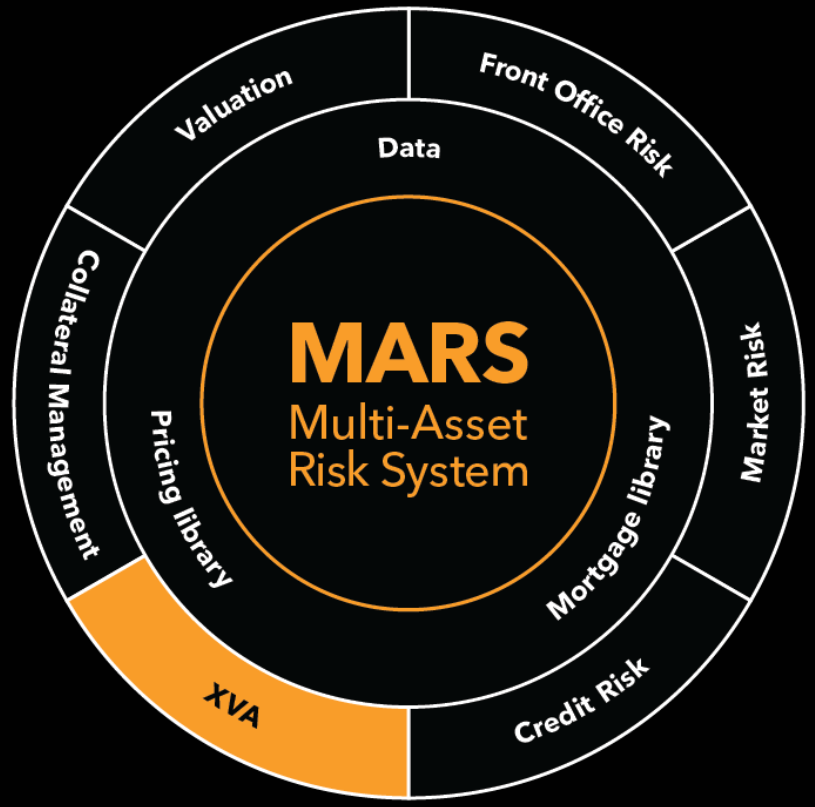
As regulatory capital requirements have increased it has become more important to quantify these costs pre-trade

MARS XVA and SA-CCR

MARS XVA delivers:

- **SA- CCR based EAD for bilaterally traded and centrally cleared OTC derivatives** is calculated within MARS XVA and used to calculate **the associated capital requirement at the netting set level**
- **Expected SA-CCR capital requirements not just today but at future dates** as well. MARS XVA uses these profiles as the **basis of a Capital Valuation Adjustment (KVA)**

Comply with the regulatory reporting requirements today and also calculate the expected lifetime cost, both end of day and pre-trade



MARS XVA: SA-CCR Summary

Exposure at Default (EAD) , RWA and Capital requirement calculations based on SA-CCR

Drill-down to asset class level contributions to PFE add-on

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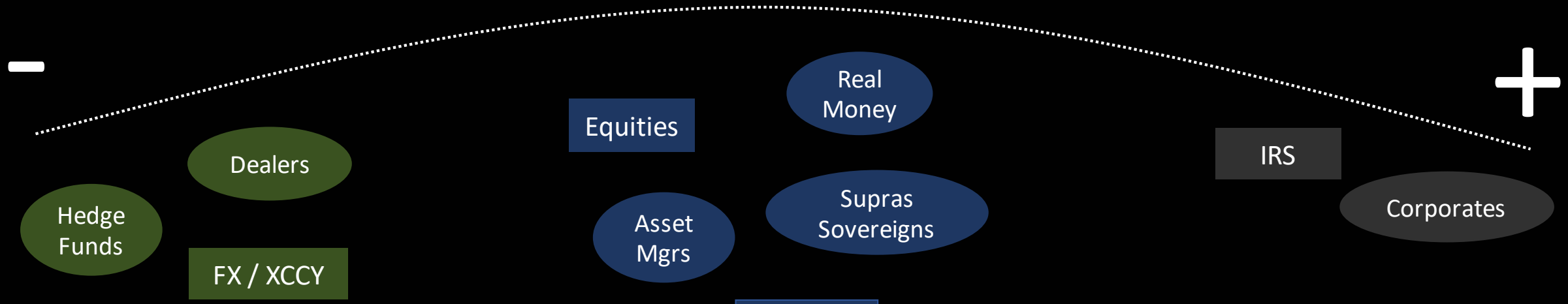
Implementing SA-CCR: Impact on Capital Charges



- Listed/Cleared/Collateralised
- High volume, offsets
- Short-dated
- Safe cpty

- Under/uncollateralised
- Directional
- Long dated
- Risky underlying

Credit Risk: PRIIPs

The EU Commission has adopted a Delegated Regulation which amends the regulatory technical standards (RTS) set out in Delegated Regulation (EU) 2017/653 on the presentation and contents of the Packaged Retail and Insurance-based Investment Products (PRIIPs) key information document (KID).

Under the PRIIPs Regulation, KIDs are provided to private investors when they purchase certain investment products, to ensure they have sufficient information to understand and compare products.

The new regulation introduces amendments to the:

- underpinning methodology and presentation of performance scenarios in KIDs;
- the presentation of costs and the methodology for the calculation of summary cost indicators;
- the presentation and content of information on past performance;
- the presentation of costs by PRIIPs offering a range of options for investment; and
- the alignment of the transitional arrangement for PRIIP manufacturers offering units of funds referred to in Article 32 of the PRIIPs Regulation as underlying investment options with the prolonged transitional arrangement set out in Article 32.

In terms of next steps, EU legislators need to sign off on the detailed measures before they come into force in July 2022.

PRIIPs KID

- **Background**
  - The **Packaged Retail and Insurance-based Investment Products (PRIIPs)** Regulation aims to enhance investor protection and improve confidence in financial markets.
  - It came into effective in **January 2018** and impacts any firm selling financial products to "retail" investors within the European Union.
  - The PRIIPs Regulation aims to place retail structured products and other packaged products providing the same economic exposure to investors on a level playing field by **increasing their transparency and comparability**.
  - PRIIPs manufacturer are required to provide a **Key Investor Document (KID)** summarizing risks, performance and costs of the financial product in question.

- **Scope PRIIPs**
  - Securities with embedded derivatives, derivatives, structured notes (including those issued by SPVs), Alternative investment funds (AIFs), Insurance-based investment products, UCITS (transitional period ends 2019, currently under KIID regime)

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PRIIPs and MiFID II

- **Both require pre-sale disclosure "in good time" before the sale of a product, fund or service.**

  - PRIIPs applies to funds and products marketed to retail investors and is about producing and issuing a standardised pre-sale document

  - MiFID II is more extensive: it covers both retail and institutional investors as well as the services provided around the products such as distribution/advice, discretionary management, trading, research and ongoing reporting

  - MiFID II places ongoing responsibility on advisers and distributors

  - Fund managers transaction cost calculation: PRIIPs calculation includes the impact of any price moves between an order being given to the broker and being fulfilled (slippage cost).

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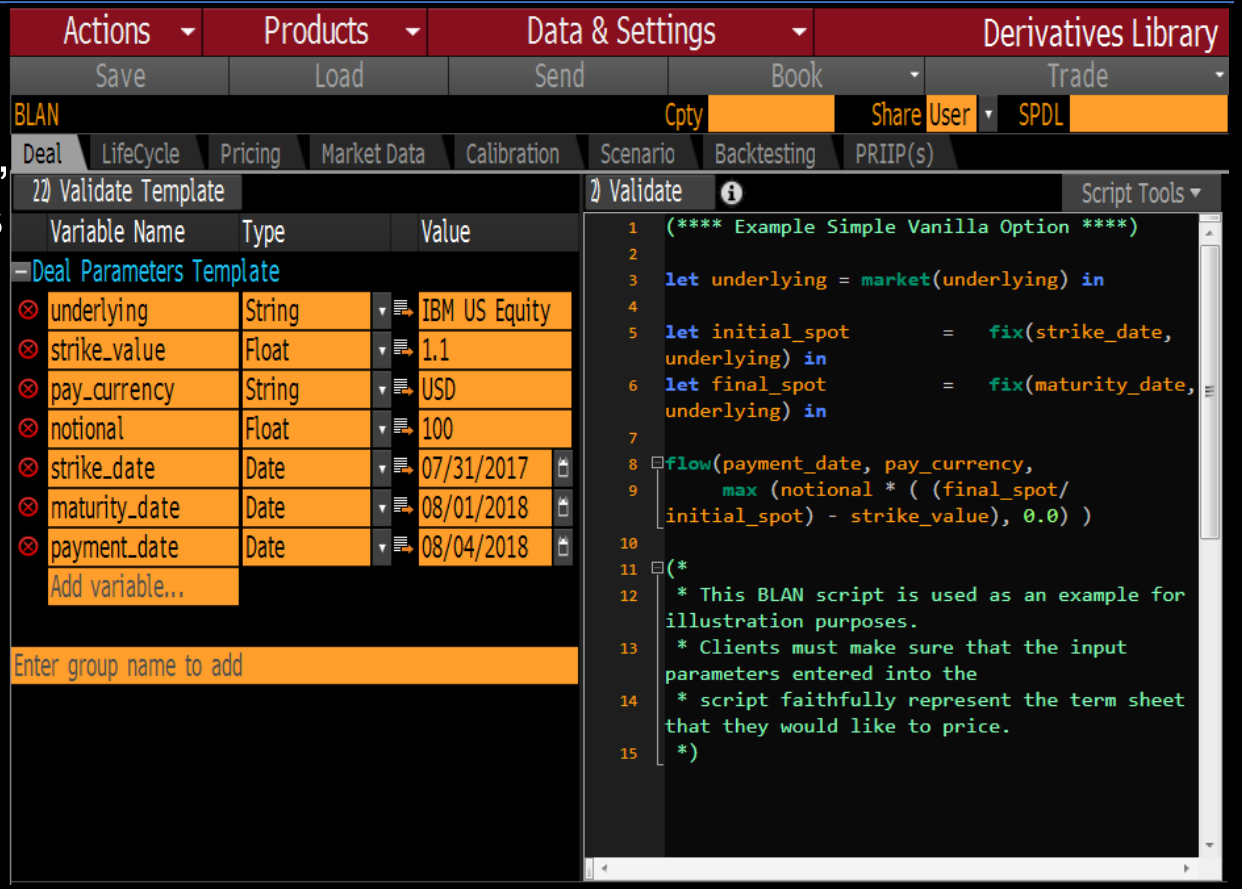
Derivative Library ("DLIB") Overview

- Comprehensive platform to structure, distribute, price and manage derivatives, structured notes and dynamic strategies
- Offers unlimited coverage from simple, vanilla products to the most complex structures
- Cross-Asset Class coverage for Equity, Interest Rates, FX and Credit



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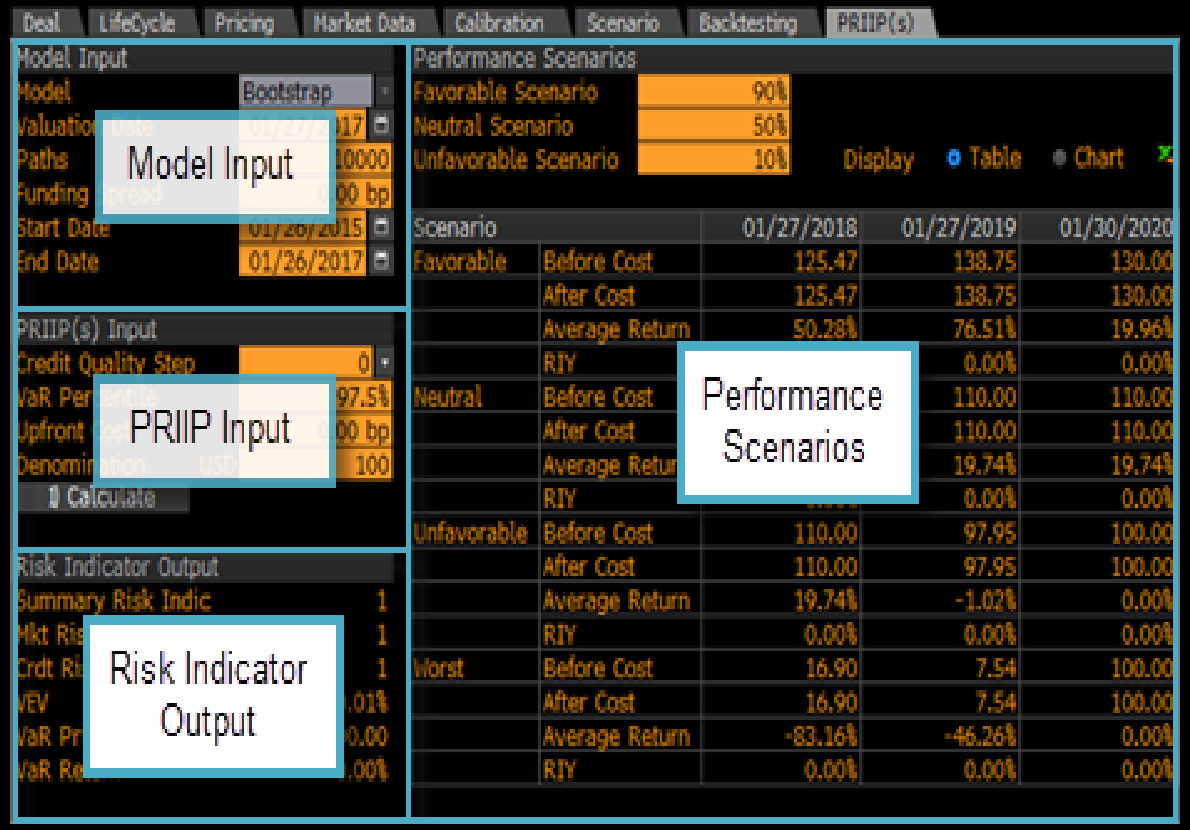
PRIIPs Indicators in DLIB

- Generates the required PRIIPs risk indicators and performance scenarios including structured products, OTC derivatives and funds.
  - Market Risk Measure (MRM)
  - Credit Risk Measure (CRM)
  - Summary Risk Indicator (SRI)
  - Intermediary Performance Scenarios
  - Reduction In Yield (RIY)
- Implements regulatory requirement of Bootstrap VaR Monte Carlo Simulation with Bloomberg fixing sources and using principal component analysis (PCA) for interest rates following the Regulatory Technical Standard ("RTS") issued by the European Securities and Markets Authority ("ESMA")



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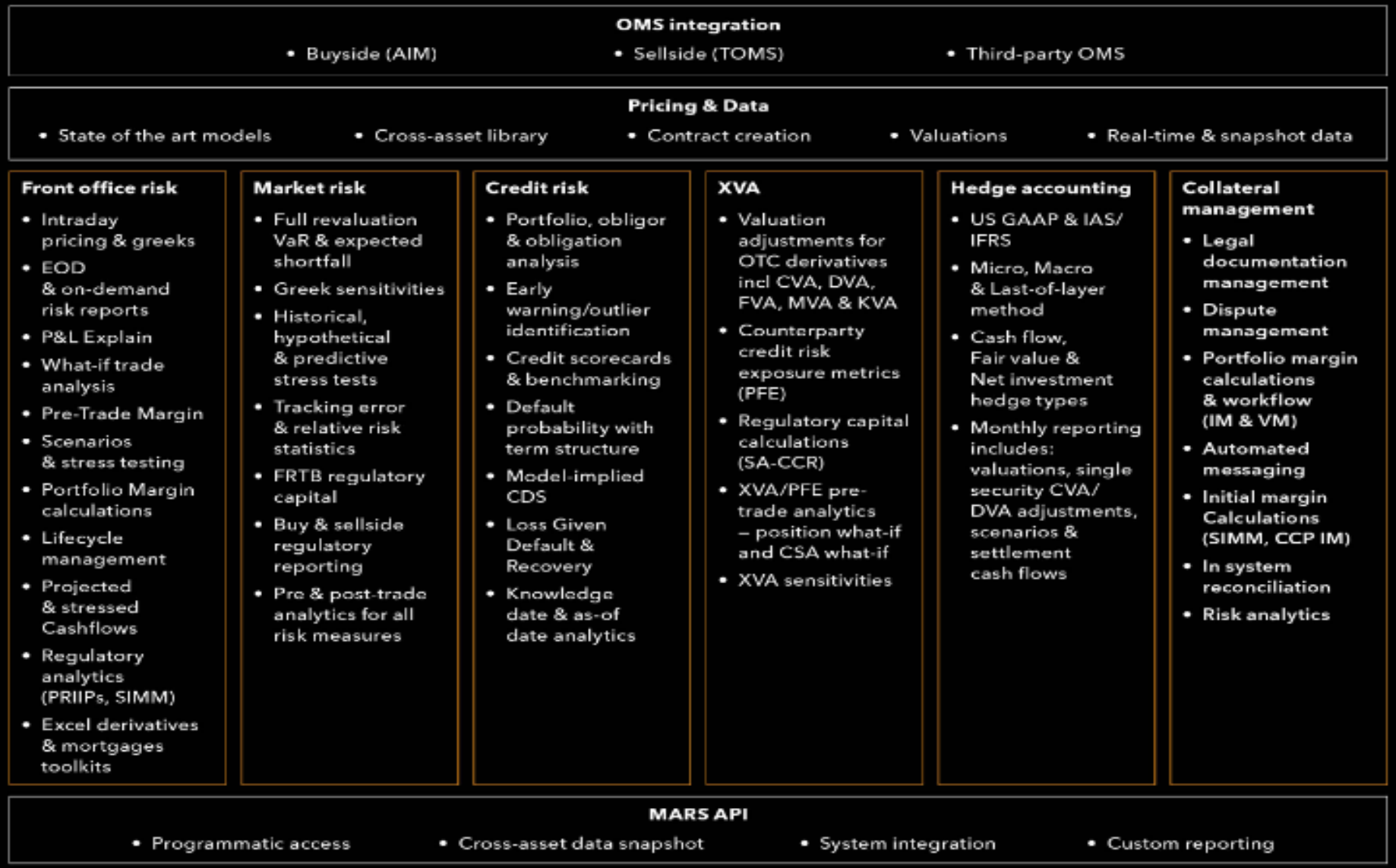
Bloomberg Risk Solutions (RISK <GO> on the terminal OR bloomberg.com/risk)



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Market Risk

- Basel 2 & 2.5, ICAAP frameworks
- Fundamental Review of the Trading Book (FRTB)
  - Only entities with Trading Book Size > Threshold
  - Will only come to Russia potentially post 2022-2023
- Standard Approach of CVA (SA-CVA)

Market Risk: FRTB

1) Proxy Table | 2) What-if | 3) Permission | Bloomberg Risk Management

FRTB Demo Status Flash

Run Date: Oct 19 2021 Positions: Oct 19 2021

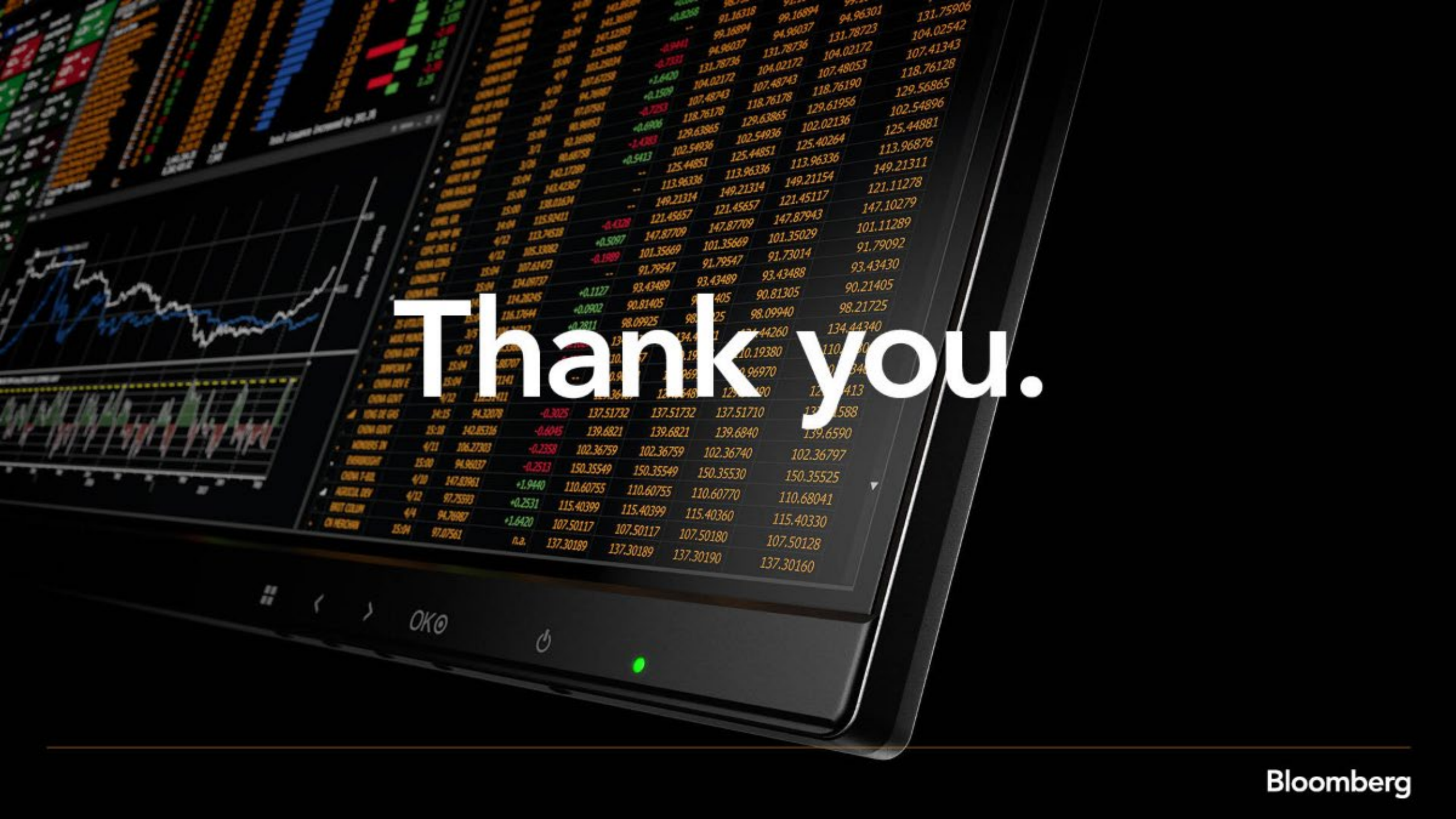
Total Capital C... Business Unit Firm ← M

Stat As Noted Breakdown By Firm LOW Position View in USD Absolute

Firm Hierarchy	Total Charge	DRC	RRAO	SBM	GIRR Total	FX Total	CSR Total	CSR SEC Total	EQ Tot
Portfolio	6,530,483	430,906	0	6,099,577	1,718,534	619,751	620,770	--	3,14(
Fixed Income	3,805,917	424,927	0	3,380,989	1,718,534	1,041,686	620,770	--	
Muni	905,882	221,961	0	683,921	214,632	257,906	184,268	--	
Credit	1,311,660	202,966	0	1,108,694	239,057	479,781	389,857	--	
Govt/Agency/IRD	2,975,745	40,423	0	2,935,323	1,637,017	1,043,997	254,309	--	
London	1,428,556	24,887	0	1,403,670	1,323,321	37,744	42,605	--	
/SWAP FLFL 04/22/23	1,446,949	0	0	1,446,949	1,321,054	125,895	--	--	
UKT 4 ¼ 12/07/27	297,873	24,887	0	272,986	65,495	163,638	42,605	--	
Asia	882,787	0	0	882,787	841,019	41,768	--	--	
NY	1,754,937	15,536	0	1,739,401	455,775	1,041,349	242,276	--	
ABS	50,962	0	0	50,962	30,784	--	19,879	--	
Currency	554,177	0	0	554,177	--	554,163	--	--	
Cash	554,177	0	0	554,177	--	554,163	--	--	
EQUITY	3,163,410	5,979	0	3,157,432	--	16,910	--	--	3,14(

Climate Risk

- New/on-going ECB and Bank of England scenario requirements.
- COP26 (November, Glasgow) - emission reduction pledges expected by COP26 (from governments, financial institutions, and companies) including interim targets and accountability mechanisms (e.g., annual reporting on progress).
- By June 2022, The IFRS's International Sustainability Standards Board completes its sustainability accounting standards based on TCFD, for adoption by jurisdictions globally.
- 2 Types of Risks: Physical and Transition Risk (please join David Croen's presentation tomorrow).



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