

Credit Risk Management During and After Covid-19

XVI Russia Risk Conference



Agenda

Introduction to Multi-Asset Risk System (MARS)

Current Credit Markets and Themes

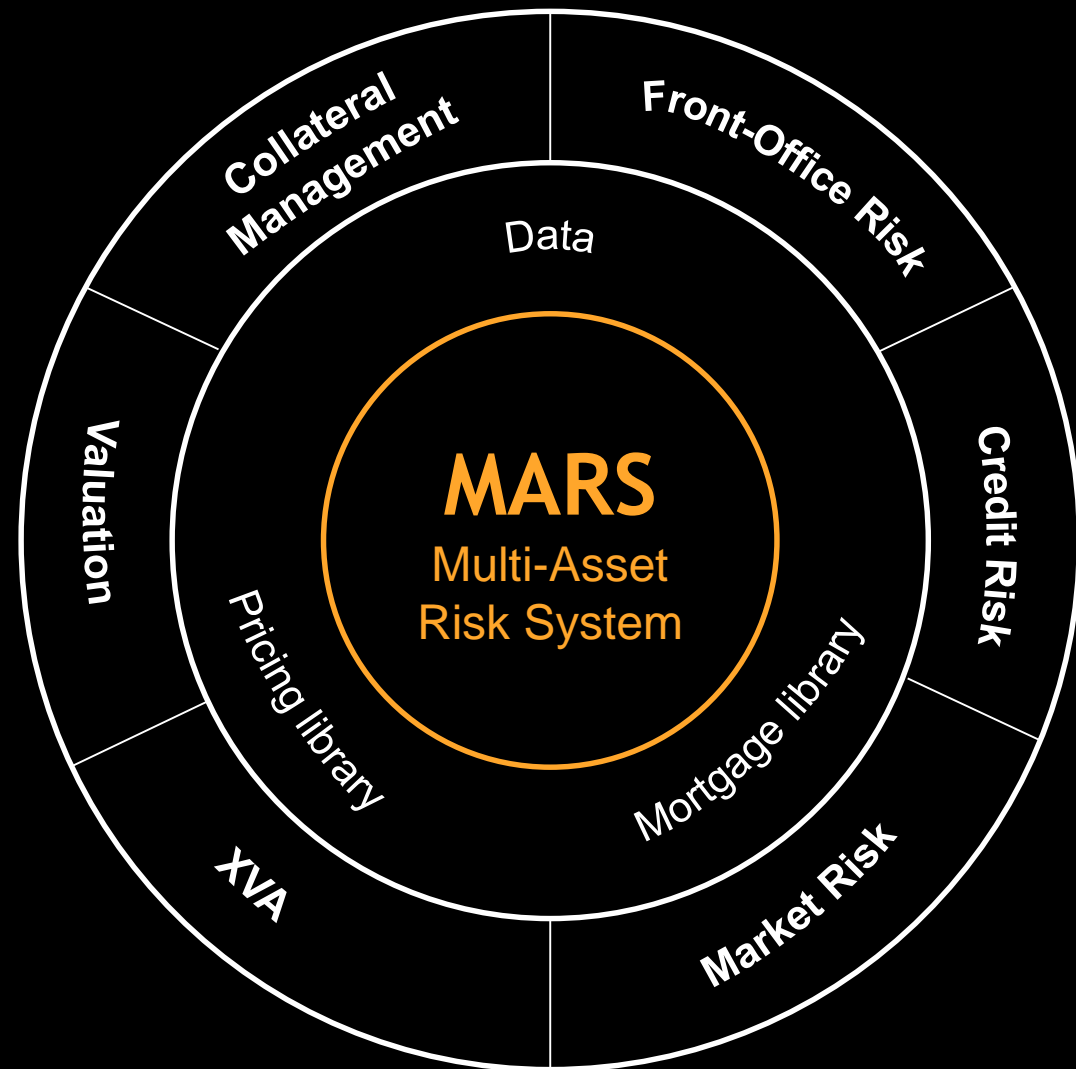
MARS Credit Risk Overview and Applications

Summary

Introduction to Multi-Asset Risk System (MARS)

MARS

A Suite of Integrated and Scalable Solutions



Help front-office, risk and collateral professionals to analyse their trading and banking books, mitigate risk and prepare for the unexpected.

Powered by Bloomberg's world class:

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

Consistent and consolidated platform for:

- Front Office risk (incl. product life cycle analysis)
- Market Risk
- Credit Risk
- Counterparty Risk
- Hedge Accounting, and
- Collateral management

Bloomberg Awards



Credit Risk Management
Category leader
Bloomberg

2018

Front Office Risk
Management
Category leader
Bloomberg

2018

Chartis RiskTech Annual Risk
Provider Rankings
Bloomberg

2019



Bloomberg
Pricing and analytics,
structured products
and cross-asset



Bloomberg
Collateral management
and optimisation
product of the year



SRP Nordics
Best Technology Provider
2015, 2019

SRP Europe
Best Technology Provider
2014-2019
Best Pricing & Analytics
Provider
2019

SRP Americas
Best Technology Provider
2014, 2015, 2017-19
Best Pricing & Risk
Provider
2018-19

SRP Asia
Best Technology Provider
2014, 2015, 2017
Best Pricing & Analytics
Provider
2016

Current Credit Markets and Themes



Why focus on credit risk now?

Economic malaise – weaker oil prices, soft demand, and Covid-19

Volatile credit spreads since mid-February

BBB-BB +62-380bp, B +380bp; CCC +750bp

\$16.3tn of negative yielding bonds

Record balance sheets (Fed \$7.2tn, ECB \$8.1tn)

Moral hazard

High bond issue volume, elevated stress

Especially for lower grade loans/bonds, certain sectors

\$1.8tn US IG / €2.2tn EU YTD, but 200+ defaults YTD

Higher volatilities, lower correlations, lower recoveries

Economic cycle slowdowns

GDP 3Q / 2Q yoy: US -2.9% / -9.0%, EU -4.3% / -18.9%

Global commentary

“I’ve been investing for over 50 years, I don’t remember a time when I’ve seen such volatility as we see today.”

**- Henry Kravis, KKR & Co.
10/30/2020**

“The euro-area economic recovery is losing momentum more rapidly than expected. We agreed that it was necessary to take action ... at our next Governing Council meeting”

**- Christine Lagarde, ECB
10/29/2020**

“The sober realities of the economic situation will become more apparent. We are still a long way from normalization and the surge in the virus cases means social distancing and all its related economic implications are here to stay.”

**- Brian Coulton, Fitch
10/29/2020**

“We are recovering, but to a different economy... My sense is that we will need to do more and that Congress will need to do more.”

**- Jerome Powell, Chair, Federal Reserve
11/12/2020**

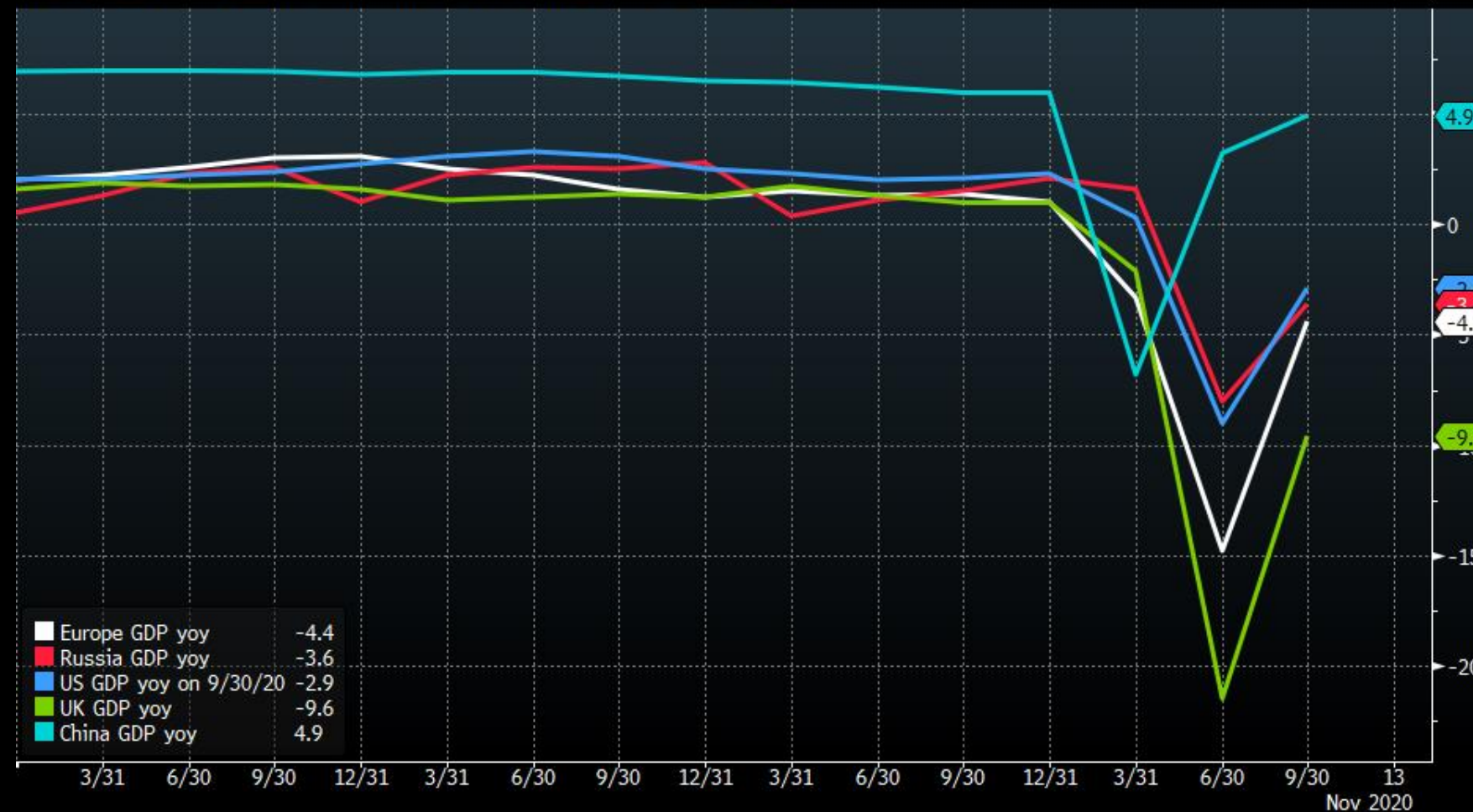
“Uncertainty remains high, and investor risk sentiment could shift swiftly should the economic recovery prove less promising or progress on containing the virus disappoint. Some segments of the economy, such as energy as well as travel and hospitality, are particularly vulnerable to a prolonged pandemic.”

**- Federal Reserve, Financial Stability Report
11/9/2020**

Covid-19 impacting growth (second / third wave?)

Sagging

Will GDP recoveries take hold? Is this a 'V' or a 'W'?



Source: Bloomberg

EUGNEMUY Index (Euro Area Gross Domestic Product Chained 2010 Prices YoY) GDP Yo Copyright© 2020 Bloomberg Finance L.P. 13-Nov-2020 08:20:13

GDP Estimates

	2020E	2021E	2022E
Europe	-7.7%	+5.0%	+2.9%
Russia	-4.0%	+3.0%	+2.3%
US	-3.9%	+3.7%	+2.8%
UK	-10.1%	+5.5%	+3.0%
China	+2.0%	+8.0%	+5.4%

Source: Bloomberg

Economic downtrend particularly strong in Europe

Crash in Economic Activity

Alternative, high-frequency data show downtrend particularly strong in Europe



Source: Bloomberg Economics, Google, Moovitapp.com, German Statistical Office, BloombergNEF, Indeed.com, Shoppertrak.com, Opportunity Insights
Note: Jan. 8 = 100

Bloomberg

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Ruble impacted by Covid-19 and weaker oil prices

Covid-19 factors: consumer stockpiling, supply-chain disruptions and ruble depreciation
May pose challenges to credit stabilization and rate normalization

Ruble and Oil

Currency weakens first amid oil price war, now COVID?



2020 YTD

- RUB -20% vs USD
- Brent -35%

Source: Bloomberg

RUB Curncy (Russian Ruble SPOT (TOM)) Ruble and Oil Daily 11MAR2019-13NOV2020 Copyright© 2020 Bloomberg Finance L.P. 13-Nov-2020 07:47:36

Russia Covid-19 loan restructurings

Central Bank of Russia: RUB 6tn in loan restructurings Jan-Jun 2020 on Covid19

- 4.5tn, or 10% of the portfolio of loans to large companies
- 0.75tn, or 4% of the retail loan portfolio
- 0.75tn, or 15% of the portfolio of loans to small and medium-sized businesses
- While seen as “less harsh” than the 2014-15 crisis, second wave is seen as main risk

Reduced loan demand observed

“We lend a little bit here and there, refinancing these and adding to those but it’s like the work of a tailor who’s constantly altering suits. Even those who are in a difficult situation don’t ask for much money.”

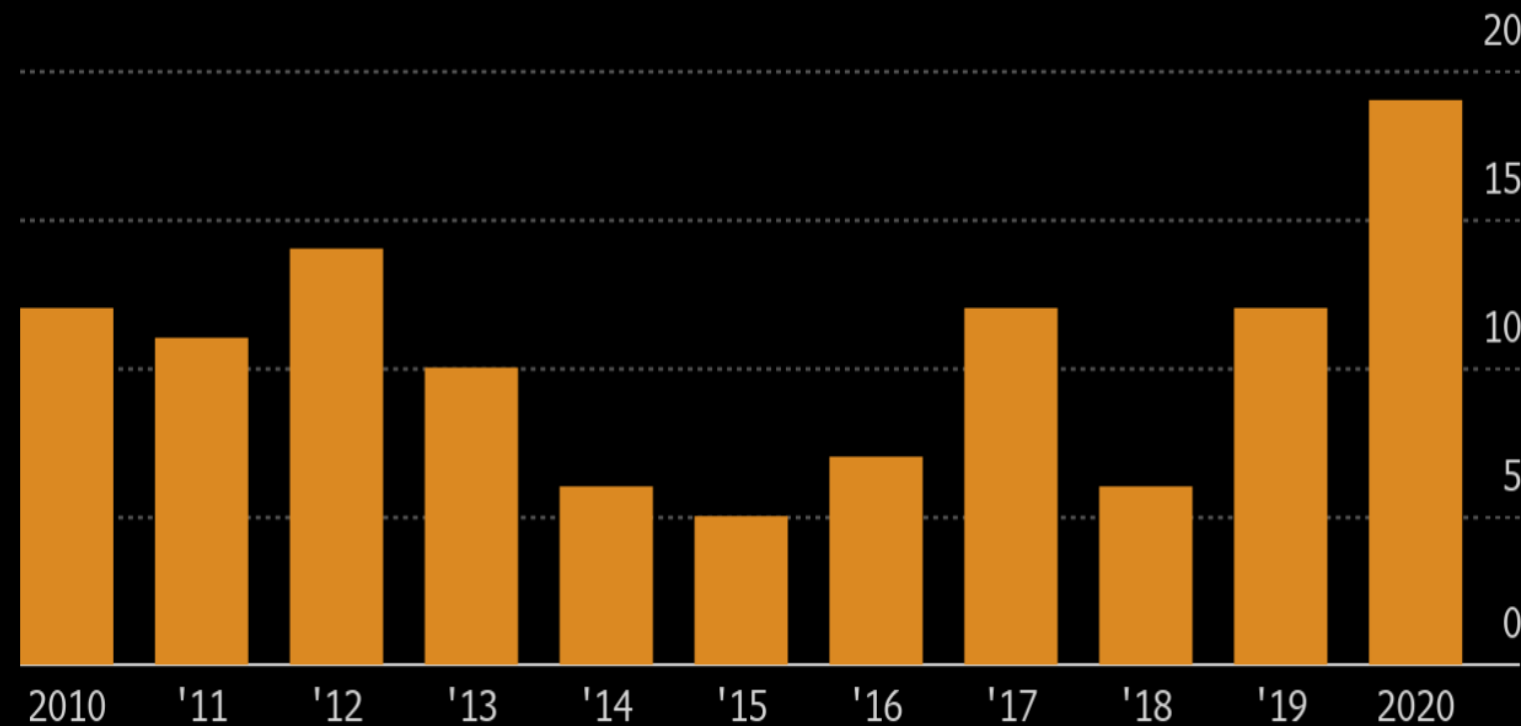
-- Alfa-Bank JSC Chief Financial Officer Alexei Tchoukhlov, Bloomberg, 05 November 2020

<https://blinks.bloomberg.com/news/stories/QJ6EQKT0G1KW>

Covid-19 triggered the most CDS events since 2009

Cashing In

Number of CDS auctions rises to highest since 2009



Source: Creditex and IHS Markit

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CDS Auctions	2020	2009
Market Size	\$11tn	\$34tn
CDS Auctions	19	45
Median Bond Recovery	9.2	15.5

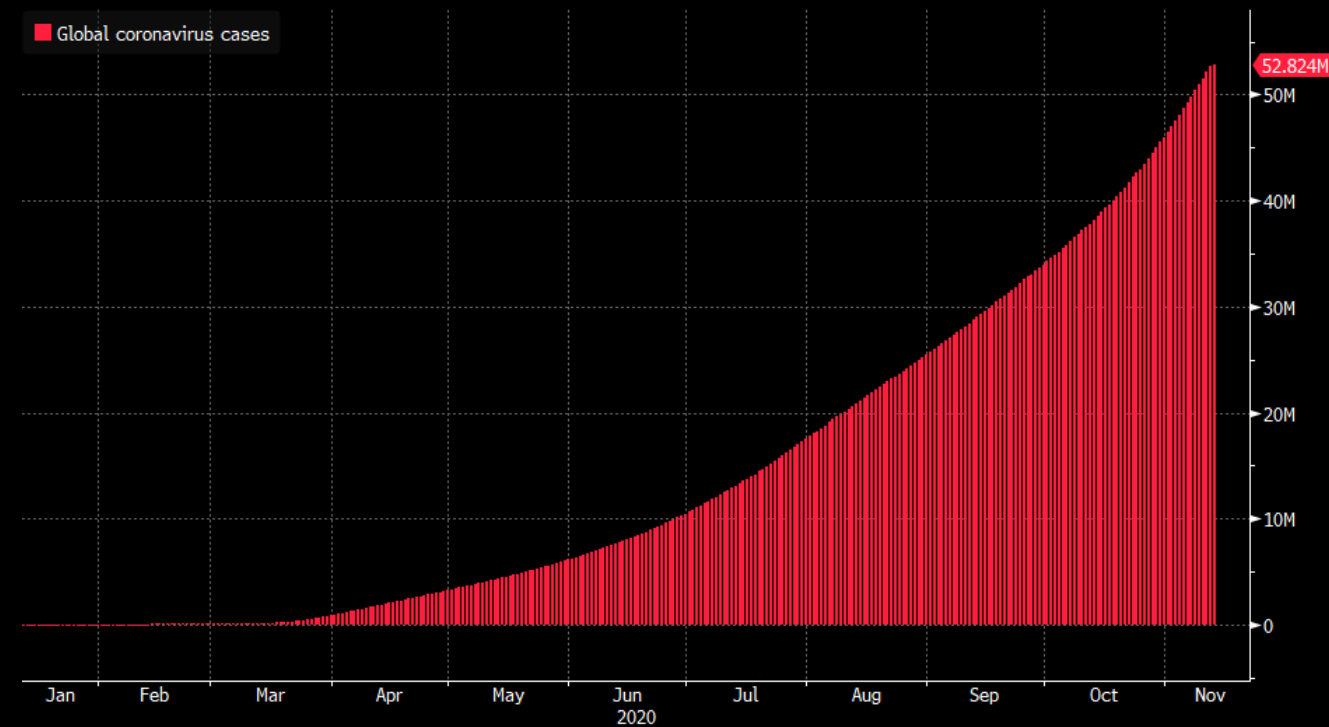
Source: CreditEx, Bloomberg analysis

Covid-19 impacting leverage

Global debt to GDP estimated at ~265% by year-end 2020

Cases Proliferate

Covid-19 pandemic shows no sign of slowing as infections top 52 million

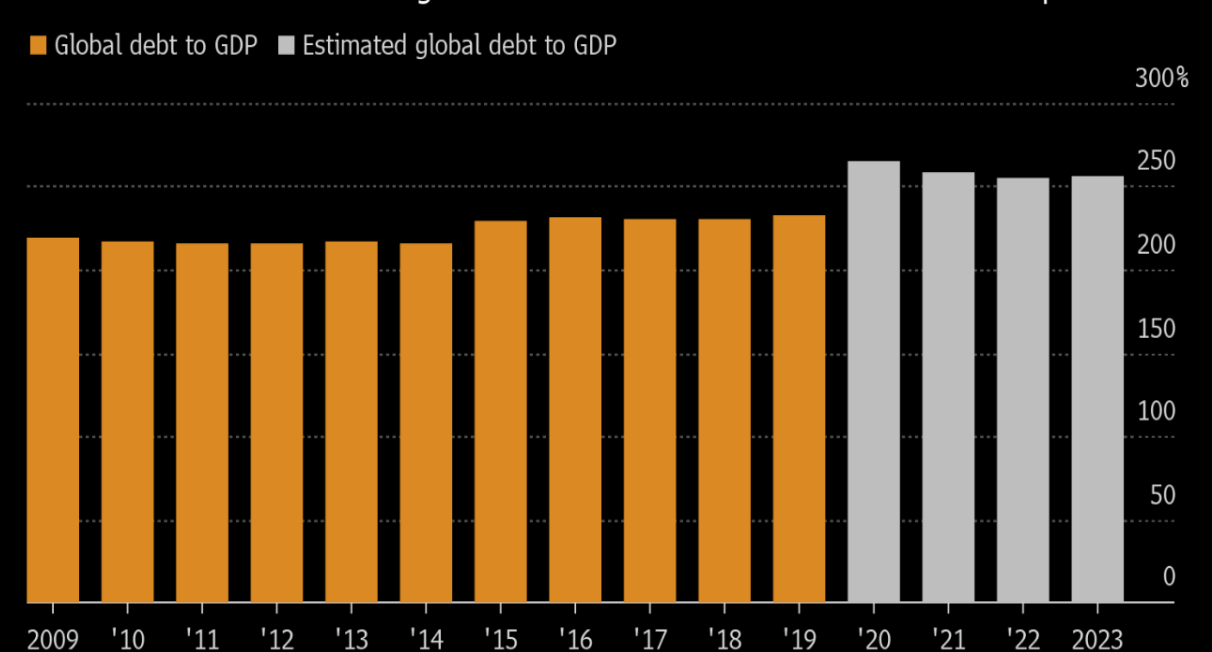


Source: Bloomberg

NCOVCASE Index (Coronavirus (2019-nCoV) Globally Confirmed Cases) total covid-19 Copyright© 2020 Bloomberg Finance L.P. 13-Nov-2020 07:18:03

Record Leverage

Global debt to GDP set to surge to a record in 2020 due to the coronavirus pandemic



Source: S&P Global Ratings

Note: Global debt includes outstanding government, corporate and household debt

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Volatile spreads

Lagging

Lower grade junk bonds struggle to recover versus higher grade



Source: Bloomberg Barclays indices

BCBAOAS Index (Bloomberg Barclays Ba US High Yield Average OAS) Sub-IG OAS by ra

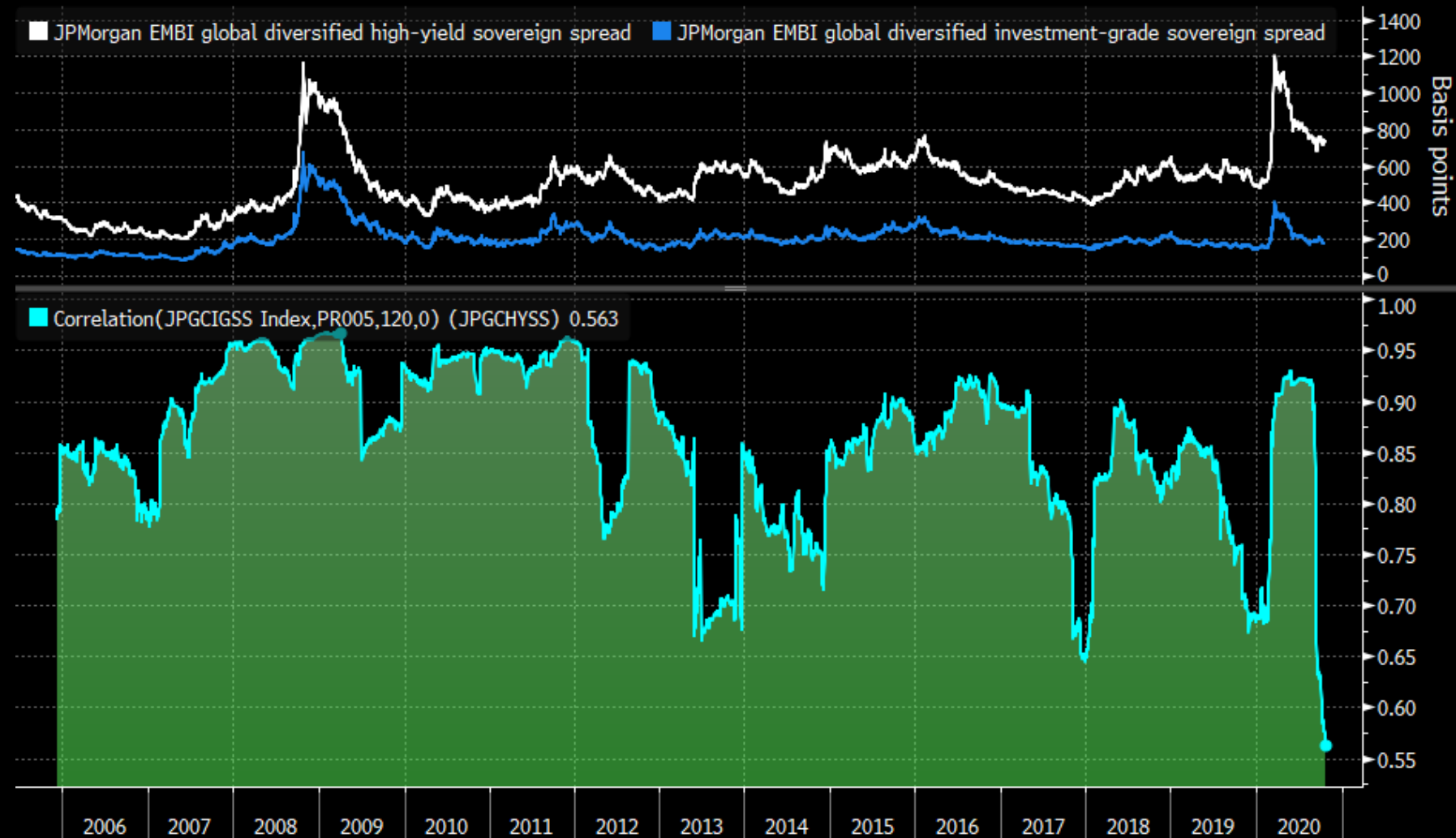
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Correlations diverging

Divergent?

Correlation reduced between high-yield and high-grade risk spreads



Source: JPMorgan Chase, Bloomberg

JPGCHYSS Index (J.P. Morgan EMBI Global Diversified HY Sovereign Spread) HY vs I

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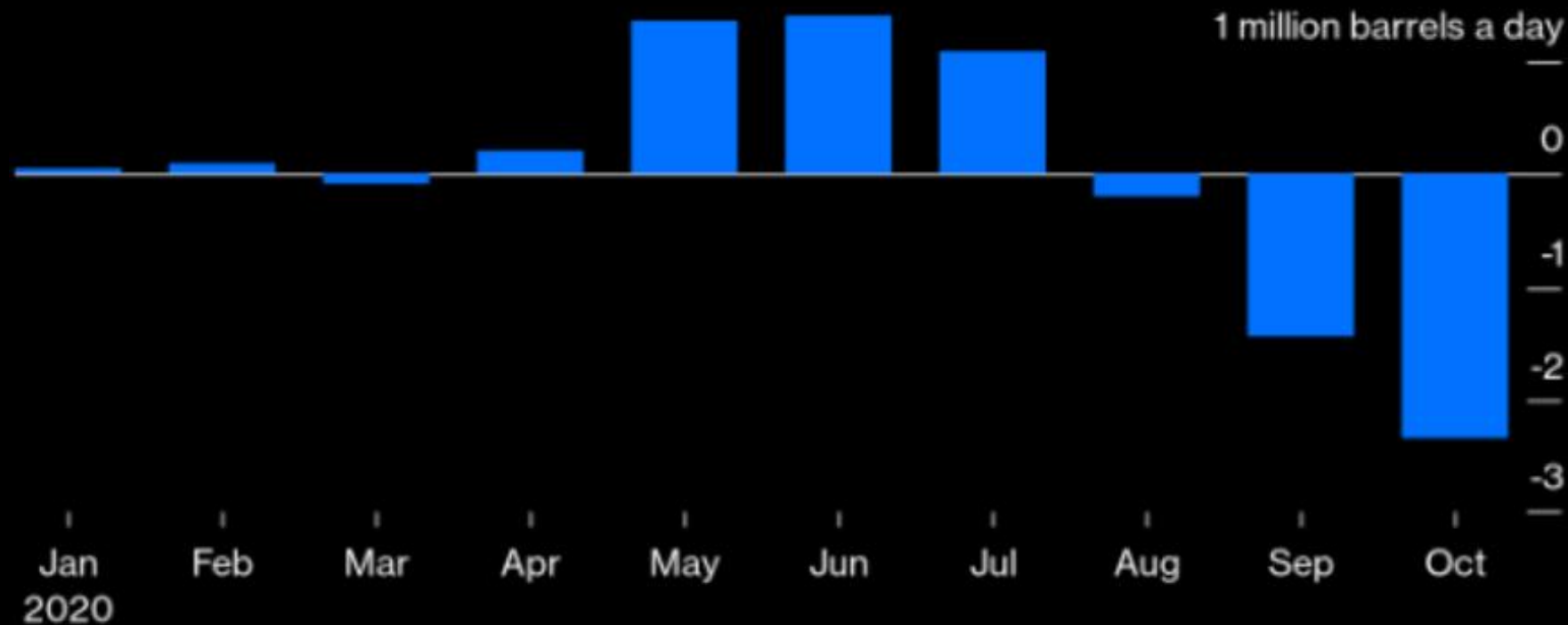
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OPEC continues to reduce demand estimates

Faltering Expectations

OPEC's assessment of how much of its crude the world needs this quarter has slumped on weaker demand and stronger supply

■ Change in the world's need for OPEC crude in 4Q20 compared with Dec-2019 assessment



Source: Organization of Petroleum Exporting Countries
Note: The x-axis shows the month the forecast was published

BloombergOpinion

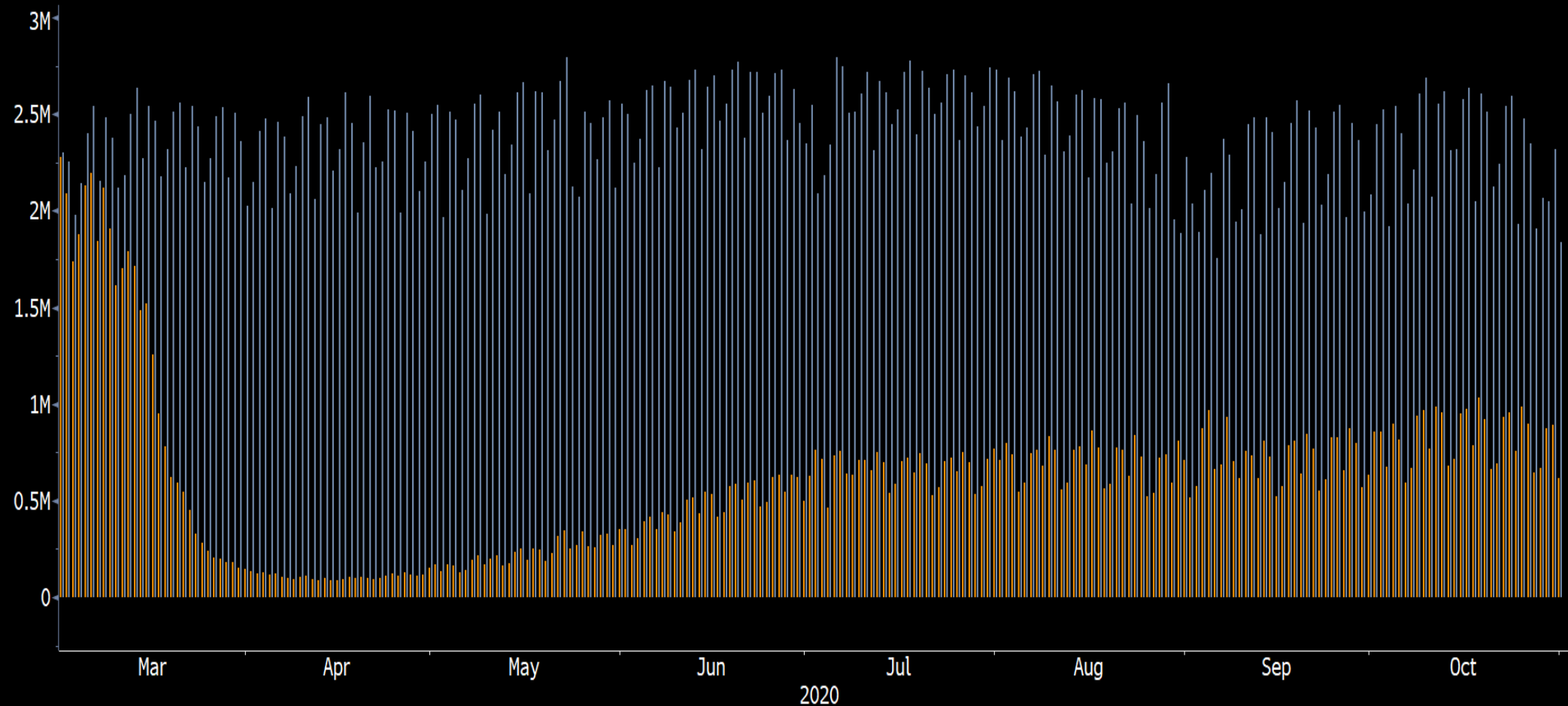
Lower:

- Demand
- Production
- Prices

Travel is depressed; may not recover for 2-4 years

Air travel is -64% yoy, levels last seen in 1984

TSA Traveler Throughput
Passenger Volume vs Year Ago



Source: TSA
TSATPCY Index (US TSA Checkpoint Numbers Total Traveler Throughput) TSA Travell

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COVID-19 and other factors are driving credit deterioration

Energy / Oil and Gas

Oasis (9/30/20, \$2.27bn), Valaris (8/19/20, \$7.8bn), Chaparral (8/16/20, \$0.95bn), Noble Corp (7/31/20, \$4.6bn), Denbury Resources (7/30/20, \$3.1bn), California Resources (7/20/2020, \$6.1bn). Chesapeake Energy (6/28/20, \$11.8bn), Hornbeck (5/19/20, \$1.5bn), Diamond Offshore (4/26/20, \$2.6bn), Whiting (4/1/20, \$3.6bn), Pioneer (3/1/20, \$689mm), McDermott (1/21/20, \$9.9bn), Sanchez (8/11/19, \$2.2bn)

Retail

Tailored Brands (8/2/20, \$2.8bn), Ascena (7/23/20, \$12.5bn), CEC Entertainment (6/24/20, \$1.7bn), Centric (5/18/20, \$2.0bn), JCPenney (5/15/20, \$8.0bn), Neiman Marcus (5/7/20, \$8.0bn), J. Crew (5/4/20, \$1.6bn)

Other Recent Examples

Mallinckrodt (10/12/20, \$8.7bn), Garrett Motion (9/20/20, \$4.2bn), Aeromexico (6/30/20, \$7.9bn), Latam Airlines (5/26/20, \$18bn), Hertz (5/22/20, \$24.4bn), Avianca (5/10/20, \$7.3bn), Frontier Comm (4/15/20, \$21.9bn), Intelsat (5/13/20, \$14.6bn), McClatchy (2/13/20, \$946mn), Dean Foods (11/12/19, \$2.2bn). Airlines receiving rescue financing include e.g., Lufthansa, Norwegian Air Shuttle, South African Airways

What does this mean for practitioners?

Automate risk monitoring processes

- Daily, not quarterly
- Triage and escalation
- Quantitative and Qualitative

Standardize

- Calculations, Estimates
- Data Sources / Data Storage – simplify and centralize

Increase

- Transparency
- Frequency – reduce manual efforts
- Interactions among teams

Integrate analytics and data into workflow

MARS Credit Risk Overview and Applications



Overview

Portfolio Credit Analytics

Default risk (Point-in-Time PD 3mo – 20yr) and Model-Implied CDS
Loss Given Default (and recovery), and support for accounting requirements
Parameter scenarios

Extensive Coverage

Over 400,000 companies globally, updated daily
Over 100 sovereigns
Private companies in your portfolio

Flexible Delivery, Reporting and Retrieval

API, UI for trader / risk manager / finance users
Knowledge Date / As-of Date

Value propositions – trading / risk management

Use Case	Description	How MARS Credit Risk can help
Early Warning	PD / CDS changes, trends, comparables	Daily credit analytics, for over 400k private and public firms, and 115 countries
Outlier Identification	Trends, exposures outside comfort zones	Analytics time series, peer comparisons
Fiduciary Activities	Underwriting, syndication, client communications	Dynamic, comparable measures
Screening / Monitoring	Comparative evaluation and assessment of credit quality across portfolio(s)	Standardized and comparable quantitative and dynamic measures
Benchmarking	Risk management, comparative evaluation, capital pricing	PD, LGD, CDS quantification
Model Validation	Comparison to third party models supports internal evaluation	Point in time PD with term structures, CDS and other analytics, available on a current and historical basis.

MARS Credit Risk – Sample View -- Investments

Multi Asset Risk System: Credit Risk											
Views ▾		Actions ▾		Export ▾		Settings ▾					
CREDIT RISK [Demo]		11/08/20									
Positions		Credit Risk									
Group by Ult Parent & Issuer		Report Eval Date 08-Nov-2020		Eval Date 08-Nov-2020							
					Default Probability (DP)						
Issuer	Position	LGD	Rec Rate	Model...	6M	1Y ↓	3Y	5Y	10Y	20Y	
[-] Renault SA	4,000	.07	.93	147	.0079	.0157	.0344	.0453	.0883	.2012	
└ Renault SA	4,000	.07	.93	147	.0079	.0157	.0344	.0453	.0883	.2012	
[-] Fiat Chrysler Automobiles NV	3,000	.58	.42	167	.0047	.0115	.0323	.0447	.0874	.1993	
└ Fiat Chrysler Automobiles NV	3,000	.58	.42	167	.0047	.0115	.0323	.0447	.0874	.1993	
[-] Ford Motor Co	4,000	.59	.41	214	.0024	.0072	.0271	.0399	.0793	.182	
└ Ford Motor Co	4,000	.59	.41	214	.0024	.0072	.0271	.0399	.0793	.182	
[-] General Motors Co	4,000	.59	.41	193	.0019	.006	.0232	.0348	.0708	.1637	
└ General Motors Co	4,000	.59	.41	193	.0019	.006	.0232	.0348	.0708	.1637	
[-] Daimler AG	4,000	.07	.93	102	.0014	.0045	.0177	.0273	.0582	.1371	
└ Daimler AG	4,000	.07	.93	102	.0014	.0045	.0177	.0273	.0582	.1371	
⌵ Issuer Details											
				Details			ECL		DPs		
Security Name	Position	LGD	Rec Rate	Cost Price	Model CDS	Credit Grade	ECL 1Y		3M		
FCAIM 3 3/4 03/29/24	1,000	.58	.42	106	167	HY2	7.03		.0018		
FCAIM 5 1/4 04/15/23	1,000	.58	.42	104.57	167	HY2	6.86		.0018		
Fiat Chrysler Autom...	1,000	--	--	9.13	167	HY2	--		.0018		

MARS Credit Risk – Sample View – Banks

Multi Asset Risk System: Credit Risk										
Views ▾		Actions ▾		Export ▾		Settings ▾				
RUSSIA BANKS [Owned]		11/08/20								
Positions		Credit Risk								
Group by Ult Parent & Issuer		Report Eval Date 08-Nov-2020			Eval Date 08-Nov-2020					
Issuer	Position	LGD	Rec...	Model...	Default Probability (DP)					
					6M	1Y ↓	3Y	5Y	10Y	20Y
[-] Bank St Petersburg PJSC	1,000	.00	.00	183	.0017	.0049	.017	.0263	.0563	.1337
└ Bank St Petersburg PJSC	1,000	.00	.00	183	.0017	.0049	.017	.0263	.0563	.1337
[-] Kuznetskiy Bank PJSC	1,000	.00	.00	178	.0011	.0037	.0156	.025	.0538	.1291
└ Kuznetskiy Bank PJSC	1,000	.00	.00	178	.0011	.0037	.0156	.025	.0538	.1291
[-] Blendiser Corp Ltd	1,000	.00	.00	175	.0009	.003	.0136	.0227	.0496	.1215
└ Credit Bank of Moscow PJSC	1,000	.00	.00	175	.0009	.003	.0136	.0227	.0496	.1215
[-] Russian Federation	2,000	.00	.00	170	.0009	.0028	.0129	.022	.0482	.1189
└ VTB Bank PJSC	1,000	.00	.00	183	.0016	.0046	.0165	.0258	.0553	.1319
└ Sberbank of Russia PJSC	1,000	.00	.00	157	.0002	.0009	.0094	.0181	.0411	.106
[-] Societe Generale SA	1,000	.00	.00	171	.0006	.0024	.0137	.0229	.0499	.122
└ Rosbank PJSC	1,000	.00	.00	171	.0006	.0024	.0137	.0229	.0499	.122
[-] UralSib Bank PJSC	1,000	.00	.00	163	.0003	.0013	.0108	.0194	.0435	.1103
└ UralSib Bank PJSC	1,000	.00	.00	163	.0003	.0013	.0108	.0194	.0435	.1103
[-] Alcor Holding Group OOO	1,000	.00	.00	152	.0001	.0007	.0091	.018	.0408	.1055
└ Avangard Bank PJSC	1,000	.00	.00	152	.0001	.0007	.0091	.018	.0408	.1055

MARS Credit Risk – API Reporting / Archival

Computation of Default Risk and Related Analytics

- Default Probability (Point in Time) and with Term Structure (3 months – 20 years)
- Model-Implied CDS Spread
- Expected Credit Loss (1 year and Lifetime), ECL Stage, Exposure at Default
- Knowledge Date and As-of Date functionality

Reports available via API

- Callable via many program environments
- Can be automated, ad-hoc and to a batch process (as frequent as daily)

Archived Reporting / Retrieval

- Specific archived reports
- List of archived reports for further use
- Supports documentation / audit needs

Leverage MARS API to integrate analytics into your workflow

Versatility

- Code language agnostic customized workflow
- Dynamic generation of pricing / risk outputs with derived analytics

Flexibility

- Call on demand pricing / risk analytics of post and pre-trades
- Customized reporting
- Apply diverse stress scenarios of market data

API Example – Credit Risk Dashboard

	-14.0	-13.0	-12.0	-11.0	-10.0	-9.0	-8.0	-7.0	-6.0	-5.0	-4.0	-3.0	-2.0	-1.0	-0.0	1.0	2.0
BICS_LEVEL_1_SECTOR_NAME																	
Communications					1				5	9	10	6	17	15	2	1	1
Consumer Discretionary					3	8	10	8	20	21	17	16	19	10	3		
Consumer Staples			1		1		3		1	2	6	4	7	1	2	3	
Energy				1	1	5	8	4	11	8	12	21	12	18	6		
Financials	1	2	2	1	5	5	5	5	8	3	10	4	6	13	2	1	
Health Care								1	2	7	4	4	3	2	3	1	
Industrials					1	2	1	7	8	7	16	11	9	2	4		
Materials							2	6	9	12	15	18	15	10	1	1	
NA																	
Technology			1					2	5	7	8	9	4	3	1		
Utilities					1	1	1	2	2	2	5		1	1			

API Example – Sector Drilldowns

	ISSUER	-6.0	-5.0	-4.0	-3.0	-2.0	-1.0	-0.0	1.0
0	Axis Bank Ltd/Dubai	1							
1	Axis Bank Ltd	1							
2	HDFC Bank Ltd		1						
3	Kotak Mahindra Bank Ltd		1						
4	Housing Development Finance Corp Ltd			1					
5	ICICI Bank Ltd			1					
6	ICICI Bank Ltd/Dubai			1					
7	State Bank of India				1				
8	IndusInd Bank Ltd				1				
9	Bank of Baroda					1			
10	IDBI Bank Ltd						1		
11	Yes Bank Ltd						1		
12	GRUH Finance Ltd						1		
13	Punjab National Bank							1	
14	Bank of India							1	
15	Canara Bank							1	
16	Union Bank of India								1
17	Indian Overseas Bank								1

	-6.0	-5.0	-4.0	-3.0	-2.0	-1.0	-0.0	1.0
RSK_BB_ISSUER_DEFAULT_1								
IG6		1						
IG7		1						
IG8			1					
IG9			2			1	1	1
IG10				2			1	
HY1	2			1			1	
HY2					1	1		1
HY4						1		

	-6.0	-5.0	-4.0	-3.0	-2.0	-1.0	-0.0	1.0	NA
COUNTRY_FULL_NAME									
INDIA	2	2	3	3	1	3	3	2	1

API Example – Company / Country Drilldowns

	ISSUER	-14.0	-13.0	-12.0	-11.0	1.0	2.0	3.0	4.0
0	Ladder Capital Finance Holdings LLLP / Ladder ...	1							
1	RHP Hotel Properties LP / RHP Finance Corp		1						
2	Outfront Media Capital LLC / Outfront Media Ca...		1						
3	Performance Food Group Inc		1						
4	Ryman Hospitality Properties Inc		1						
5	Starwood Property Trust Inc			1					
6	US Foods Inc			1					
7	Apollo Investment Corp			1					
8	Sabre GLBL Inc			1					
9	Fortress Transportation and Infrastructure Inv...				1				
10	Moss Creek Resources Holdings Inc					1			
11	Pactiv LLC					1			
12	Rayonier AM Products Inc					1			
13	Antero Resources Corp					1			
14	Range Resources Corp					1			
15	EQT Corp					1			
16	Reynolds Group Issuer Inc / Reynolds Group Iss...					1			
17	Advanz Pharma Corp Ltd						1		
18	ARD Finance SA							1	
19	Urban One Inc								1

	-14.0	-13.0	-12.0	-11.0	-10.0	-9.0	-8.0	-7.0	-6.0	-5.0	-4.0	-3.0	-2.0	-1.0	-0.0	1.0	2.0	3.0	4.0
COUNTRY_FULL_NAME																			
AUSTRALIA											1	3	1						
AUSTRIA												2							
BERMUDA							1	1	1			1	1						
BRITAIN							1		1	1		3	7	3	1				
BRITISH VIRGIN												2							
CANADA					1	3	3	4	1	2	8	4	8	3	2				
CAYMAN ISLANDS									1		1	2	7	3	1				
DENMARK													2						
FINLAND											1								
FRANCE									1	1			1						
GERMANY														1	2				
IRELAND									2	1			2	1					
ITALY											1		1	1					
JERSEY											2		1					1	
LIBERIA					1														
LUXEMBOURG									1	2	4	5	3	1	3				1
MARSHALL ISLAND											1		1		1				
MULT					1			1		1		2	2	2	1				
NETHERLANDS							1	1	2	2		4	1	3	1				
NORWAY										1									
PANAMA					1														
SINGAPORE										1			1						
SPAIN																			
SWEDEN										1	1								
UNITED STATES	1	4	4	4	17	36	33	40	65	72	60	61	93	75	16	14			1

Summary



What can be done now?

CHALLENGE	BLOOMBERG SOLUTIONS
Automate Credit Risk Monitoring <ul style="list-style-type: none">• Daily• Triage and escalation• Quantitative and Qualitative	MARS Credit Risk <ul style="list-style-type: none">• Enterprise-wide• API reporting• Early warning, trend and correlation analyses
Standardize Assessments <ul style="list-style-type: none">• Calculations, Estimates• Data Sources / Data Storage – simplify and centralize	MARS Credit Risk <ul style="list-style-type: none">• PD, model-implied CDS, LGD• One source for reliable analytics and data• Augment data warehouse
Increase <ul style="list-style-type: none">• Transparency• Frequency – reduce manual efforts• Interactions among teams	MARS Credit Risk <ul style="list-style-type: none">• Analytics and sources• Enable data analysis• Support analytics/data sharing

→ Integrate Analytics and Data into Workflow ←

Bloomberg Risk Solutions (RISK <GO> or www.bloomberg.com/risk)

Questions?

