Managing Global Risk:
How to Measure & Mitigate Risk in a Volatile Environment

Presented by: **Mark Regenhardt, Managing Director**
Marsh Credit Specialties

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Castleton Commodities International LLC

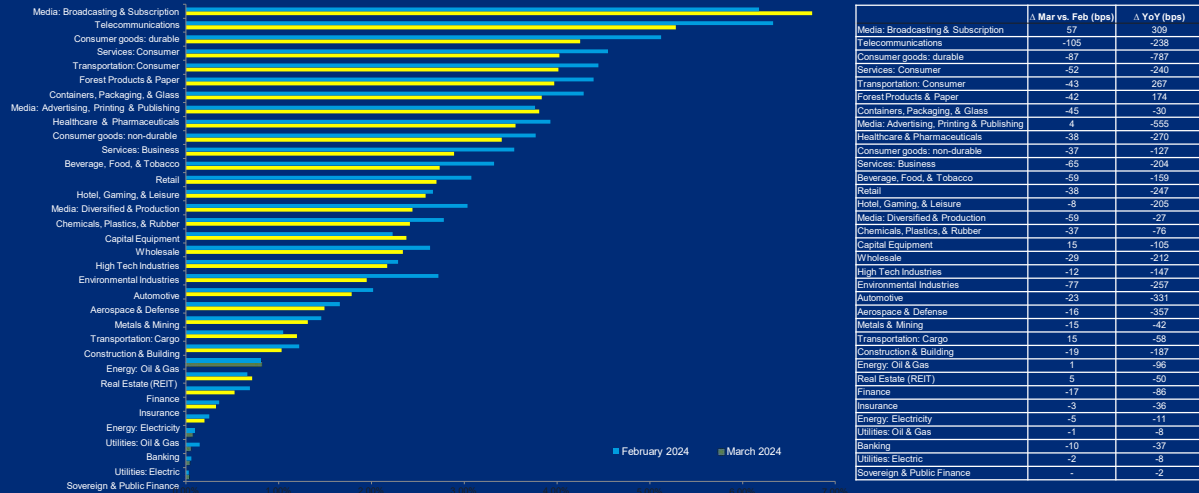**Date: June 12, 2024**

Session: #33063

Agenda

- Market Update

- Managing Risk- a Corporate Perspective

- Risk Finance Optimization

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1

2

Credit Market

Industry 1-Year Default Rate Forecasts – US (Moody's)

Default expectations have fallen from last month, and the forecasts are now lower than they were at this time last year for most sectors. Media: Broadcasting & Sub. now has the highest forecast at 6.75% (up from 6.18% last month and up from 3.66% YoY), followed by Telecommunication at 5.28% (down from 6.33% last month and down from 7.66% YoY). Media: Broadcasting & Sub. and Transportation: Consumer are the 2 sectors with the highest default expectation increase since last year.
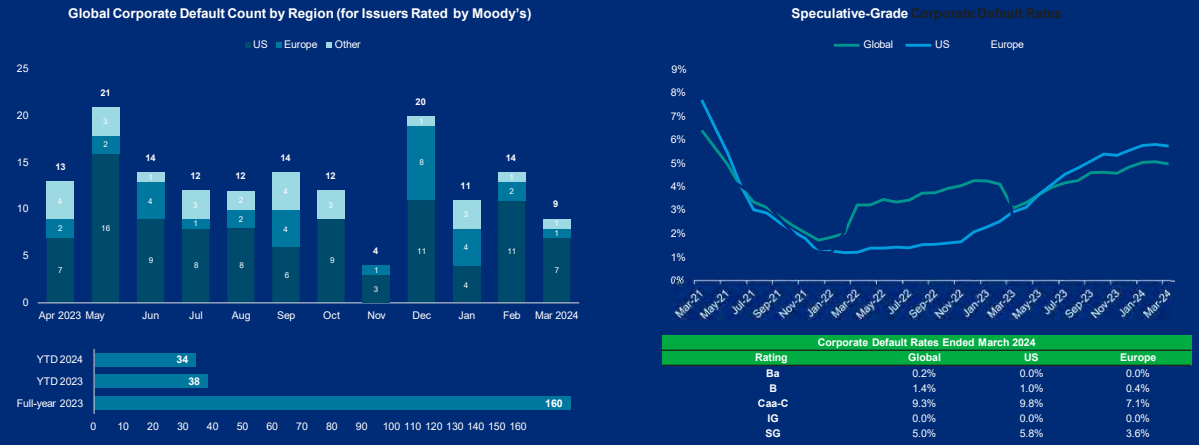
	Δ Mar vs. Feb (bps)	Δ YoY (bps)
Media: Broadcasting & Subscription	57	309
Telecommunications	-105	-238
Consumer goods: durable	-87	-787
Services: Consumer	-52	-240
Transportation: Consumer	-43	267
Forest Products & Paper	-42	174
Containers, Packaging, & Glass	-45	-30
Media: Advertising, Printing & Publishing	4	-555
Healthcare & Pharmaceuticals	-38	-270
Consumer goods: non-durable	-37	-127
Services: Business	-65	-204
Beverage, Food, & Tobacco	-59	-159
Retail	-38	-247
Hotel, Gaming, & Leisure	-8	-205
Media: Diversified & Production	-59	-27
Chemicals, Plastics, & Rubber	-37	-76
Capital Equipment	15	-105
Wholesale	-29	-212
High Tech Industries	-12	-147
Environmental Industries	-77	-257
Automotive	-23	-331
Aerospace & Defense	-16	-357
Metals & Mining	-15	-42
Transportation: Cargo	15	-58
Construction & Building	-19	-187
Energy: Oil & Gas	1	-96
Real Estate (REIT)	5	-50
Finance	-17	-86
Insurance	-3	-36
Energy: Electricity	-5	-11
Utilities: Oil & Gas	-1	-8
Banking	-10	-37
Utilities: Electric	-2	-8
Sovereign & Public Finance	-	-2

February 2024 March 2024

Source: Moody's Investors Service February & March 2024 Default Reports

Credit Market

Global Corporate Default Count (Moody's

Four out of the nine defaults in March came from the telecommunication sector and all 4 from the US. Moody's anticipates a resurgence in defaults reaching double digits in April due to several issuers either filing for bankruptcy, missed debt payments or indicated their intention to complete a debt restructuring (meeting Moody's criteria for a distressed exchange). April's rebound will likely be more gradual than December's. Distressed exchanges have constituted over half of this year's defaults, a trend Moody's foresees persisting.

Global Corporate Default Count by Region (for Issuers Rated by Moody's)

US Europe Other

		Apr 2023	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar 2024
Total		13	21	14	12	12	14	12	4	20	11	14	9

YTD 2024: 34
YTD 2023: 38
Full-year 2023: 160

Speculative-Grade Corporate Default Rates

Global US Europe

Corporate Default Rates Ended March 2024			
Rating	Global	US	Europe
Ba	0.2%	0.0%	0.0%
B	1.4%	1.0%	0.4%
Caa-C	9.3%	9.8%	7.1%
IG	0.0%	0.0%	0.0%
SG	5.0%	5.8%	3.6%

*Distr*obligation's original promise and 2) the exchange has the effect of allowing the issuer to avoid a likely *essed exchange Moody's definition:* whereby 1) an issuer offers creditors a new or restructured debt, or a new package of securities, cash or assets, that amount to a diminished value relative to the debt eventual default

Source: Moody's March 2024 Default Report

2

Credit Market

Rating Actions – Sovereign, Financial, and Nonfinancial Corporate (S&P)

As sentiment improved and economic growth exceeded expectations, rating actions became more positive in March. The number of upgrades rose by 44% in March, reaching its highest in a year and although downgrades also increased, the pace was slower at a rate of 23%. While credit trends have broadly improved recently, escalating geopolitical tension and inflation – potentially fueled even more now by rising tensions on Middle East shipping lanes and the collapse of Baltimore's bridge – could pose renewed challenges to credit if rising uncertainty leads to higher funding costs. Recent geopolitical developments and a potential shift in US monetary policy, which would also affect emerging markets, could cause financing conditions to turn more challenging in the near-term future.

Monthly Rating Actions*

Rating Actions by category in March
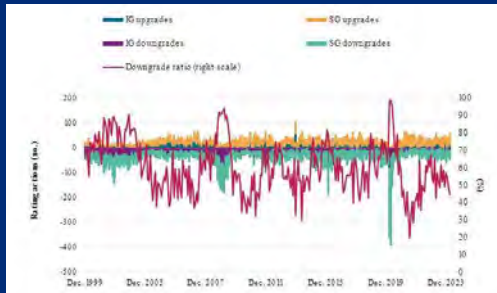
*Includes sovereign, financial, and nonfinancial corporate upgrades and downgrades globally.
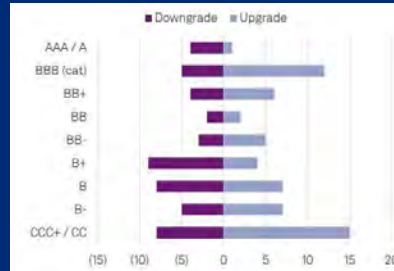
Source: S&P Global Ratings, April 2024

Global Credit Strategy

Country Risk
- War, revolutions, insurections
- Currency Inconvertibility
- Natural disasters
- Sanctions
- Terrorism

Risk Mitigation
- Letters of Credit
- Parent Guarantees
- Factoring A/R Sale
- Credit Insurance
- Captives

Credit Risk
- Payment Terms
- Payment Experience
- Past Dues
- Size of Exposure
- Loss History/Frequency

Setting the Limit
- Global or Individual?
- Parent / Child
- Evaluation Period
- Monitoring

Financial Analysis
- Financial Statements
- Cash Flow
- Profitability
- Ratios
- Debt & Net Worth
- Currency

Customer Identification
- Legal Entity vs Branch
- Locations
- Credit Bureaus

Information
- Credit bureau
- Rating Agencies
- Insurers
- Banks

Legal Environment
- Protections
- Bankruptcy Law
- Enforceability

RFO

Credit Strategy

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3

RFO / Benchmark Modelling

1. **What does it do?**

2. **How does it work?**

3. **Why companies are interested**
   - Real-life examples

4. **What does the future look like?**

An analytical look at the global A/R portfolio, risk exposure and tolerance, losses, industry and country data, economic cost of risk, and other variables as part of **developing a model to determine the most appropriate risk financing structures for maximum efficiency**.

Real-life examples from a variety of industry sectors, including *machinery and equipment, metals, chemicals, agriculture, food and consumer goods.*

One solution does not fit all.

What does it do?

1

What does it do?

Risk Finance Optimization (RFO) and MiCredit Benchmarking

- Provides a fact-based data driven **Analytical review** of a company's Global A/R.
- It cross-references this with the Companies **Financial Statement** of accounts & pulls into the equation, the cost of capital / risk tolerance and Risk bearing capacity level.
- It shows the 'tipping point' for whether a company retains their **Total Cost of Risk (TCR)** on its own Balance-sheet or transfers it to a 3rd Party
- If a company utilizes Insurance, it provides a clear auditable-trail for Optimum policy structure and pricing and provides a **'Price to beat'** – if the Insurance market's price is lower, then your program is optimised
- MiCredit is a **Data library for Credit Insured business** with over 6,000 clients and $1 trillion credit limits. It provides 'live' daily feeds enabling real-life Benchmarking for Pricing / Risk appetite / program structure information – allowing guidance for companies trading in different Industry sectors; Global, Regional or local market guidance to the best solutions.

THIRD PARTY CAPITAL
Cost of Capital
Expenses & Profit Margin
Expected Losses

Trade-off Analysis

YOUR CAPITAL
Opportunity Cost
Budgeted Losses

| REAR-VIEW MIRROR | PAST | FUTURE PREDICTIVE | FUTURE | FRONT WINDOW |

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5

How does it work?

2

How does it work?

Risk Finance Optimization (RFO)

Global A/R Review
- Risk mapping
- Customer profiling
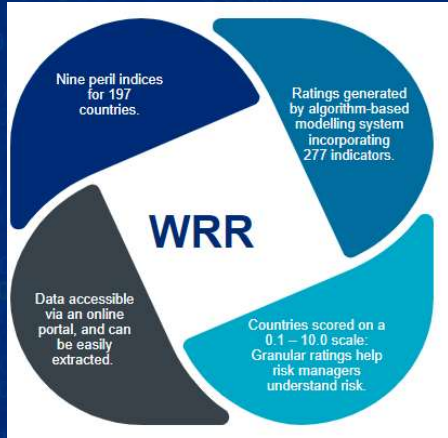- Sector risk
- Country risk
- PRI
- Loss Banding

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Financial Accounts
- Bad debt provision
- Risk tolerance (retained loss)
- Weighted average cost of capital
- Risk bearing capacity level
- **Key Performance Indicator (KPI) Selection**
  - Segment Income Statement
    - Net Sales
    - Profit Before Interest, Tax, Amortization and Depreciation (EBITDA)
  - Segment Cash Flow Statement
    - Cash & Cash Equivalents
  - Segment Balance Sheet
    - Total Equity
  - Calculated Risk Tolerance range
    - Assigned weights to each KPI shown in table below

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6

12

World Risk Review

Country / Political / Business Risks

Nine peril indices for 197 countries.

Ratings generated by algorithm-based modelling system incorporating 277 indicators.

WRR

Data accessible via an online portal, and can be easily extracted.

Countries scored on a 0.1 – 10.0 scale: Granular ratings help risk managers understand risk.

Weighted Risk Scoring

Country	Security environment			Trading environment			Investment environment		
	Strikes, riots and civil commotion	Terrorism	War and civil war	Country economic risk	Currency inconvertibility and transfer risk	Sovereign credit risk	Expropriation	Contractual agreement repudiation	Legal and regulatory risk
Argentina	6.4	2.7	1.9	6.7	7.0	9.9	5.5	5.8	5.1
Azerbaijan	4.6	2.9	5.5	5.8	5.6	4.8	5.3	4.2	5.4
Brazil	5.8	2.5	2.3	4.7	4.5	5.3	2.9	4.6	4.7
Canada	4.4	2.9	1.3	4.1	1.4	0.9	1.0	3.3	2.3
Egypt	5.7	7.1	4.8	4.8	5.2	6.1	4.5	5.2	6.2
India	6.3	5.9	4.6	4.7	4.2	4.0	3.0	4.8	5.4
Indonesia	5.6	5.0	4.0	4.9	4.1	4.1	5.3	5.2	5.9
Iraq	6.3	8.7	6.9	6.0	5.9	6.2	6.6	6.9	7.4
Mexico	6.0	4.0	2.9	4.0	3.1	3.7	4.2	6.3	5.0
Myanmar	6.0	5.3	5.4	5.6	5.8	6.0	5.7	5.5	6.8
South Africa	7.1	2.8	2.3	5.5	4.0	4.9	6.2	4.9	4.7
South Sudan	5.0	6.5	6.9	7.8	7.5	7.8	7.3	9.3	7.9
Sudan	6.5	5.3	5.9	8.3	7.0	8.3	5.5	7.1	7.1
Suriname	4.3	2.1	3.0	6.6	5.1	6.8	3.9	5.7	6.4
Turkmenistan	4.8	3.0	3.1	6.2	7.1	5.7	6.2	6.3	7.2
Weighting¹	**10%**	**15%**	**10%**	**5%**	**10%**	**10%**	**10%**	**15%**	**15%**

Low risk 0.1–2.0   2.1–4.0   4.1–6.0   6.1–8.0   8.1–10.0   High risk

BUSINESS DEFAULTING RISK	A1	A2	A3	A4	B	C	D	E
	VERY LOW	LOW	SATISFACTORY	REASONABLE	FAIRLY HIGH	HIGH	VERY HIGH	EXTREME

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13

Industry Sector Ratings

Live Feeds from Multiple Insurers

Independent Average Sector Rating

Low risk   Medium risk   High risk   Very high risk

agri-food, ICT*, textile-clothing, Upgrade
automotive, metals, transport, Downgrade
chemical, paper, wood
construction, pharmaceuticals
energy, retail

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14
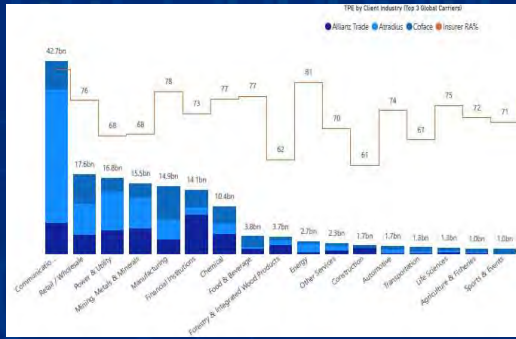
Customer / Buyer Ratings

Average Customer Ratings

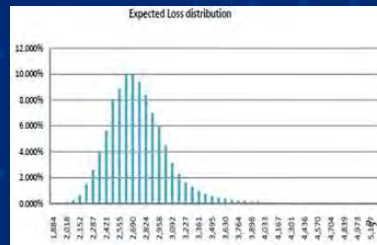## Multiple Insurer Ratings

Average Rating

15

Other Factors

Other Factors – Aging / Loss History / Bankruptcy

Actual Loss Experience

A/R Aging Risk
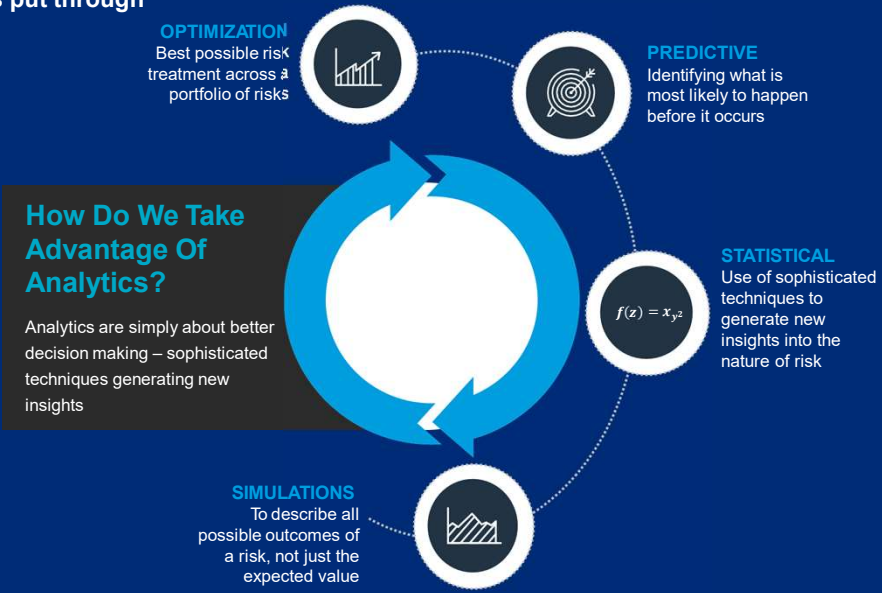

Bankruptcy Risk

8

16

Data, Analytics & Technology

What your data is put through

OPTIMIZATION
Best possible risk treatment across a portfolio of risks

PREDICTIVE
Identifying what is most likely to happen before it occurs

STATISTICAL
Use of sophisticated techniques to generate new insights into the nature of risk

$$f(z) = x_{y^2}$$

SIMULATIONS
To describe all possible outcomes of a risk, not just the expected value

How Do We Take Advantage Of Analytics?

Analytics are simply about better decision making – sophisticated techniques generating new insights

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17

Our Three-stage Approach To Trade Credit Analytics

1. RISK IDENTIFICATION	We identify your risk by: • Risk Mapping. • Credit Limit Profiling. • Claims Bandings.	
2. LOSS PROJECTIONS	We have developed two proprietary Trade Credit analytics tools to help you to understand your loss potential: • Frequency Model: Probability of Default. • Severity Model: Loss Given Default.	
3. ECONOMIC COST OF RISK (ECOR)	• Insurance programme optimisation to create the financially most efficient blend of risk retention and risk transfer. • The programme with the lowest ECoR is the optimum structure.	

9

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18

RFO - Analytics Platform

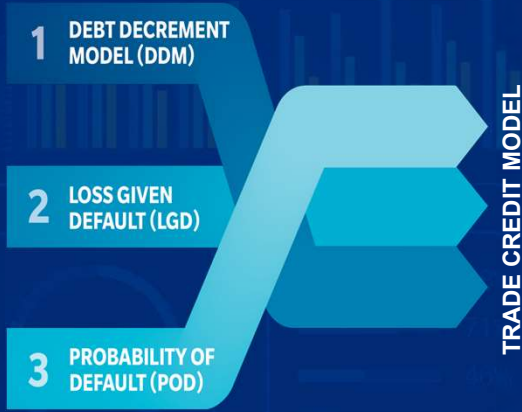# Data Analytics – Introducing Finance

We consider insurance as a source of capital which can be used to help manage and mitigate volatility and recommend that insurance is viewed in a capital context, alongside other sources of capital available to you to finance insurable losses e.g., lines of credit and cash.
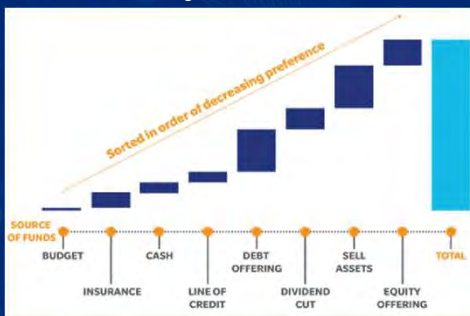
By using your Weighted Average Cost of Capital ('WACC') we can calculate:
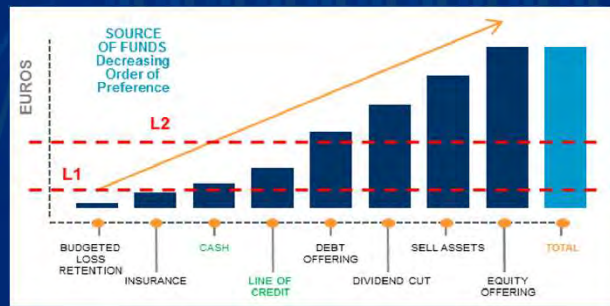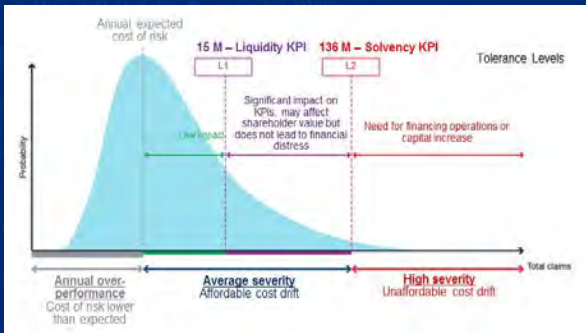
The cost of keeping insurance risk on your own balance sheet i.e., how much it would cost to fund losses using your own capital.

We call this the Implied Risk Charge ('IRC').

1 DEBT DECREMENT MODEL (DDM)

2 LOSS GIVEN DEFAULT (LGD)

3 PROBABILITY OF DEFAULT (POD)

TRADE CREDIT MODEL

Risk Tolerance and Testing

Reviewing over a 25 year + cycle – shock events

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21

The Tipping Point

- **Self-Insure**
  – Keep on Own Balance sheet

  OR

- **Pass risk off to a Third-Party**
  – G'tees / LC's / Collateral / Captive or Insurance

THIRD PARTY CAPITAL
Cost of Capital
Expenses & Profit Margin
Expected Losses

Trade-off Analysis

YOUR CAPITAL
Opportunity Cost
Budgeted Losses

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22

11

Global Manufacturer

Global A/R + Inventory – Questioning "Retain risk or transfer"?

NQL = Non-qualifying Loss
EEL = Each & Every Loss
AFL = Aggregate First Loss

MFG AR Cover	Uninsured	Option 1 EEL $5k Indemnity 90% Assumed Premium Rate 0.1%	Option 2 AFL $2,5m Indemnity 90% Premium Rate to beat 0.08%	Option 3 AFL $5m Indemnity 90% Premium Rate to beat 0.06%
Market Premium (MP) Price to beat for Options 2,3		6,000,000	4,532,445	3,845,441
Average Retained Loss (AR)	6,760,442	1,470,383	2,937,938	3,624,942
TCOR (=AR+MP)	6,760,442	7,470,383	7,470,383	7,470,383
Average Transferred Loss		5,290,058	3,822,504	3,135,500

MFG AR + Inventory Cover	Uninsured	Option 1 EEL $5k Indemnity 90% Assumed Premium Rate 0.1%	Option 2 AFL $2.5m Indemnity 90% Premium Rate to beat 0.08%	Option 3 AFL $5m Indemnity 90% Premium Rate to beat 0.06%
Market Premium (MP) Price to beat for Options 2,3		13,889,959	11,389,959	8,889,959
Average Retained Loss (AR)	24.184.908	5,754,085	8,254,085	10,754,085
TCOR (=AR+MP)	24.184.908	19,644,043	19,644,043	19,644,043
Average Transferred Loss		18,430,823	15,930,823	13,430,823

1. We estimate Market Premium for Option 1.
2. We keep TCoR static (compared to Option 1 program).
3. The premiums for the options become the price to beat. If the broker can beat that price, the TCoR becomes more efficient.

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Introducing Global Benchmarking

Policy Types / Premium Rates / Risk Appetite - Trends

Peer Group Data

MiCredit
is Marsh Trade Credit's internal placement and policy analytics tool

Benchmarking data
Uses our Trade Credit global benchmarking data to provide:

Key reporting and analytics, including policy benchmarking.

Buyer intelligence who buys what limits and where.
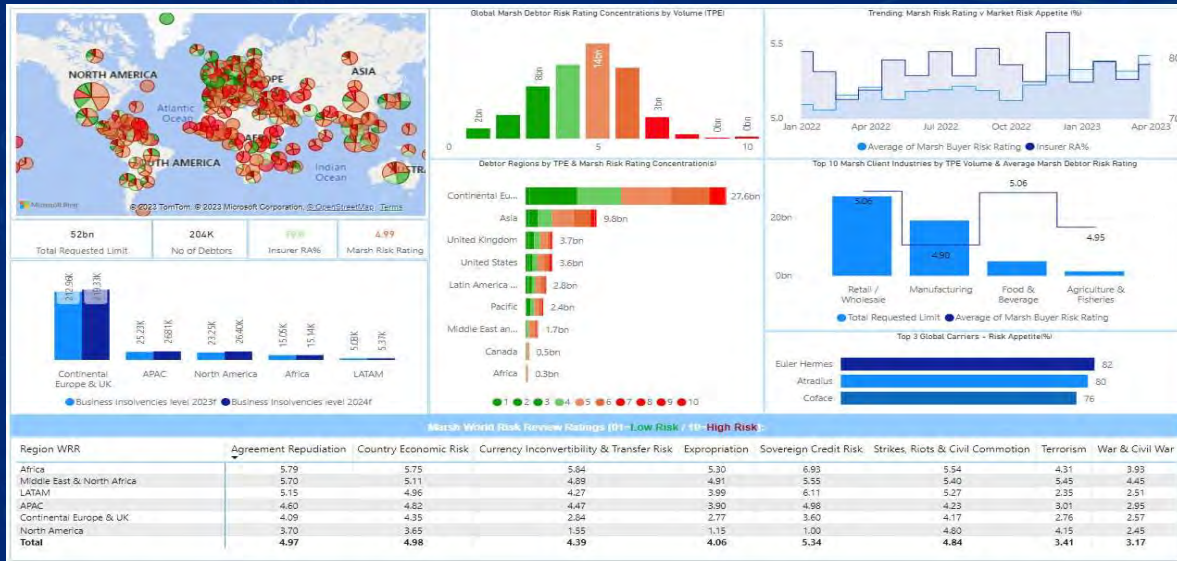
Trending and insurer performance metrics.

Digital
Unique Web-based platform.

DATA ANALYTICS

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24

12

Credit Scorecard (Buyer & Pol Risks) - MiCredit Benchmarking

Multiple Industry Sectors – North America

Total Potential Global Exposure & Risk Concentrations Scorecard : USA & Canada Client Region

13

Why people are interested?

Sector examples:

machinery and equipment, metals, chemicals, agriculture, food and consumer goods.

3

Machinery & Equipment
Case Study – Global/Regional Optimization – Dealers / Fleet / Parts - Future EV Portfolio

- Global HQ wanted to create Global efficiency
- No consistency – on or off-balance sheet.
- 32 Policies but this covered about 35% of their business

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28

Machinery & Equipment Case Study – Global Multinational
Transition from Whole Turnover to Excess of Loss (XOL)

Global ABC Today	Global ABC Tomorrow
- **Global Sales = $18.9B**	- **Global Sales = $20.5B**
- **Premium (0.0475%) : $9.2m**	- **Fixed Premium : $3.7m**
- Deductibles $10k-$25k APAC. Europe & N. America $1mAFL	- Deductible AFL or future Captive $7.5m
- Discretionary Limit $25 - $250k	- DCL = $2m to $7.5m
- Maximum Liability variable c $250m	- Maximum Liability $150m (Higher by endorsement)
- 5 year Loss Ratio < 20%	- 5 year Loss Ratio < 20%
- Approx. $450m of Open risk - Most limits Cancellable	- Potential to close ALL Open risk - All limits Non-cancellable

Different ways forward

Whole Turnover
- Business as usual
- Simplified administration
- Increased Group control
- **No major improvement on Open risk**
- **Some cost savings**

Excess of Loss
- Underwriting power internally
- Simplified administration
- Increased Group control
- **Dramatic reduction of Open risk**
- **Major cost savings**

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29

Agriculture Business – Appetite low in challenging markets
Hedging the Risk in the Most Optimized Way

Global / Regional Risk appetite

New coverage options

- 22% Premium savings in year 1
- Unlocked €80,000,000 additional capacity
- Reduced Top-up Insurance costs of 15%
- Supported capital release target of circa €200,000,000
- Simplified program supporting savings in sales, general and admin costs
- See opposite - 79% of insured portfolio reflects an enhanced cover position

Benefits for Agri-business

Auto-reinsurance – a product designed by Marsh to help increase the overall Marsh client's coverage with their underlying Primary Insurer.

Reverse Surety protection – Accessing the Surety market to gain significant coverage to help address concentration risks

Dual/parallel Insurance –a pre-packaged product with upfront agreed policy wordings that allows Clients to increase coverage in line with commodity price increases

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30

15

Agriculture – Market Concentrations

Sample of Active Insurers – Globally – Helps Guide Where to 'Unlock' Capacity

Hot Spots

- **LATAM** – Brazil / Colombia / Argentina / Mexico
- **Central Eastern Europe** – Poland
- **CIS** – Ukraine / Russia / Kazakhstan
- **Middle East**
- **Africa** – Morocco / Egypt + Sub-Saharan
- **South East Asia**
- **Concentrated risks in Western Europe & USA**

		RA% Pre-Marsh Engagement	RA% Post-Marsh Engagement	% Reduction in Xx's Uninsured AR's
APAC	Thailand	78%	84% (+6%)	-50%
	Philippines	72%	76% (+4%)	-22%
	Indonesia	79%	84% (+5%)	-45%
EMEA	Iberia	77%	85% (+8%)	-62%
	Poland	75%	80% (+5%)	-33%
	South Africa	78%	85% (+7%)	-58%
	Baltics	70%	76% (+6%)	-30%
LATAM	Panama	57%	61% (+4%)	-12%
	Chile	52%	60% (+8%)	-21%

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31

Chemicals

Case Study – Excess of loss and Captive Feasibility

- Client Insured in 60% of their markets only
- Wanted to visualize the most optimized policy structure where the loss record was sub- 20%

- A Full RFO was conducted for both the existing Insured business but also the 'uninsured' parts
- The data output demonstrated where to place the retention levels and improved pricing and cover

Potential Risk Retention Models

	Deductible	Captive P.O.	Captive AGG.
France	50.000	200.000	2.000.000
Italy	100.000	250.000	1.500.000
Germany	5.000	200.000	500.000
Spain	150.000	300.000	1.000.000
LATAM	15.000	200.000	1.000.000
USA	75.000	250.000	1.500.000
		Total Captive Aggregate	7.500.000

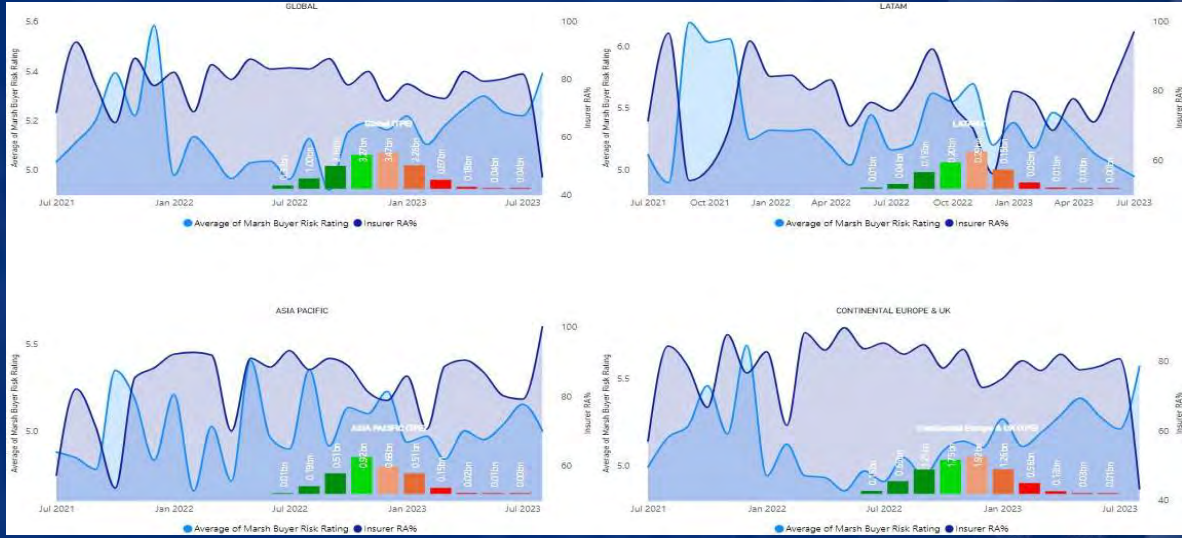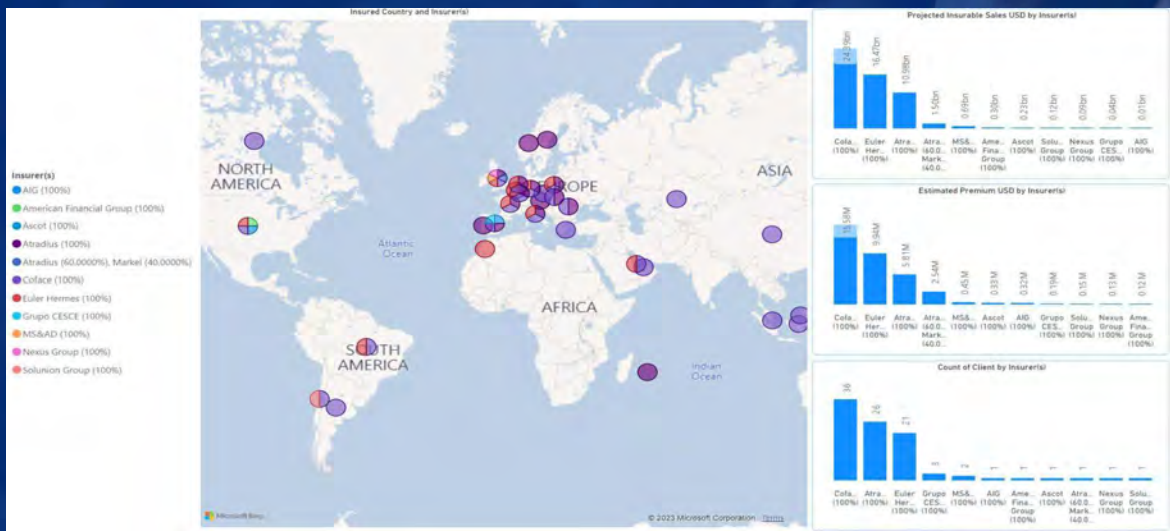**Proportional**   **Excess of Loss (XOL)**   **Top-up**

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16

32

Chemicals – Tracking regional 'trending'

Not all regions risk profiles are alike….

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33

Metals - Benchmarking

Global Insurer's Active Across Metals & Minerals Portfolio

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34

Food & Beverage - Benchmarking
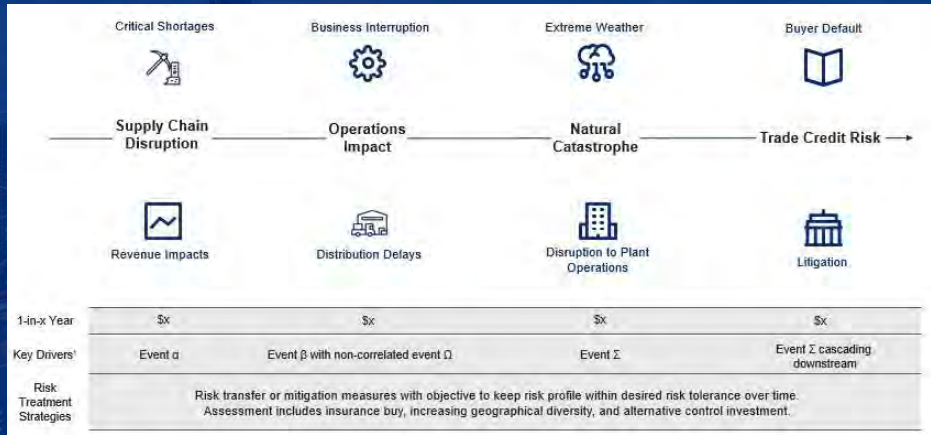### Average Risk Appetite by Region & Top Three Global Carriers

What does the future look like for this modelling?
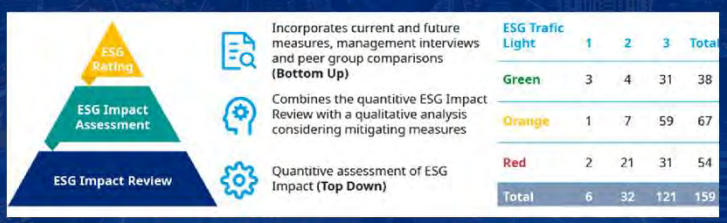
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18

Future Add-Ons
Limitless Possibility…

- Sustainability Scorecard. Coming soon – ESG Rating
- Supply Chain Disruption / Business Interruption
- Fraud / Cyber Risk
- Security – Energy and Food

	Critical Shortages	Business Interruption	Extreme Weather	Buyer Default
	Supply Chain Disruption	Operations Impact	Natural Catastrophe	Trade Credit Risk →
	Revenue Impacts	Distribution Delays	Disruption to Plant Operations	Litigation
1-in-x Year	$x	$x	$x	$x
Key Drivers¹	Event α	Event β with non-correlated event Ω	Event Σ	Event Σ cascading downstream
Risk Treatment Strategies	Risk transfer or mitigation measures with objective to keep risk profile within desired risk tolerance over time. Assessment includes insurance buy, increasing geographical diversity, and alternative control investment.			

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37

ESG – Sustainable Value Chain
Sustainable-Linked Trade Credit Helping Clients

Benefit to Client

Introduce a Marsh ESG Trade Credit Classification and ESG Buyer/supplier Grading to your Credit Risk Team.

Improve Credit limit capacity using Score-card grades and provide additional Credit certainty to Key buyers

Help Monetize your Supplier Rating scheme – to support your Partnership with your supplier (e.g. Leveraging Fertilizer distribution)

ESG Trafic Light	1	2	3	Total
Green	3	4	31	38
Orange	1	7	59	67
Red	2	21	31	54
Total	6	32	121	159

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38

19

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Q&A

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A business of Marsh McLennan