Enhanced Risk Management

Leverage new technologies for stress testing

ABI - Supervision, Risks & Profitability

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Enhanced Risk Management

Agenda

Stress in modern financial markets

Historical crisis and future adversities

Quantitative Risk Management framework

From regulations to predictions

Enhanced risk management

Evolution of predictive tools with modern technologies

Stress scenarios through AI’s eyes

Examples of AI-generated scenarios

Systemic Financial Crisis from the Past

An intertwined global system

- Local instabilities may impact financial markets worldwide
- Geopolitical alliances and rivalries drive trade dynamics and market trends

Economic impacts

- Market fluctuations
- Inflation and currency devaluation
- Supply chain disruptions
- Higher costs of living

Examples of historical crisis

- **1929** – “Great Depression” crisis
- **2008** – “Great Recession” crisis
- **2020** – COVID pandemic
- **2022** – Energy market crisis

Importance of regulations

- Need of international policies and coordinated emergency planning
- National regulations evolve with different speeds in different geographies

New Risks for the Future

New types of adversities are further threatening the financial stability worldwide, challenging current risk models.

- **Geopolitical Risks**
- **Climate-related Risks**
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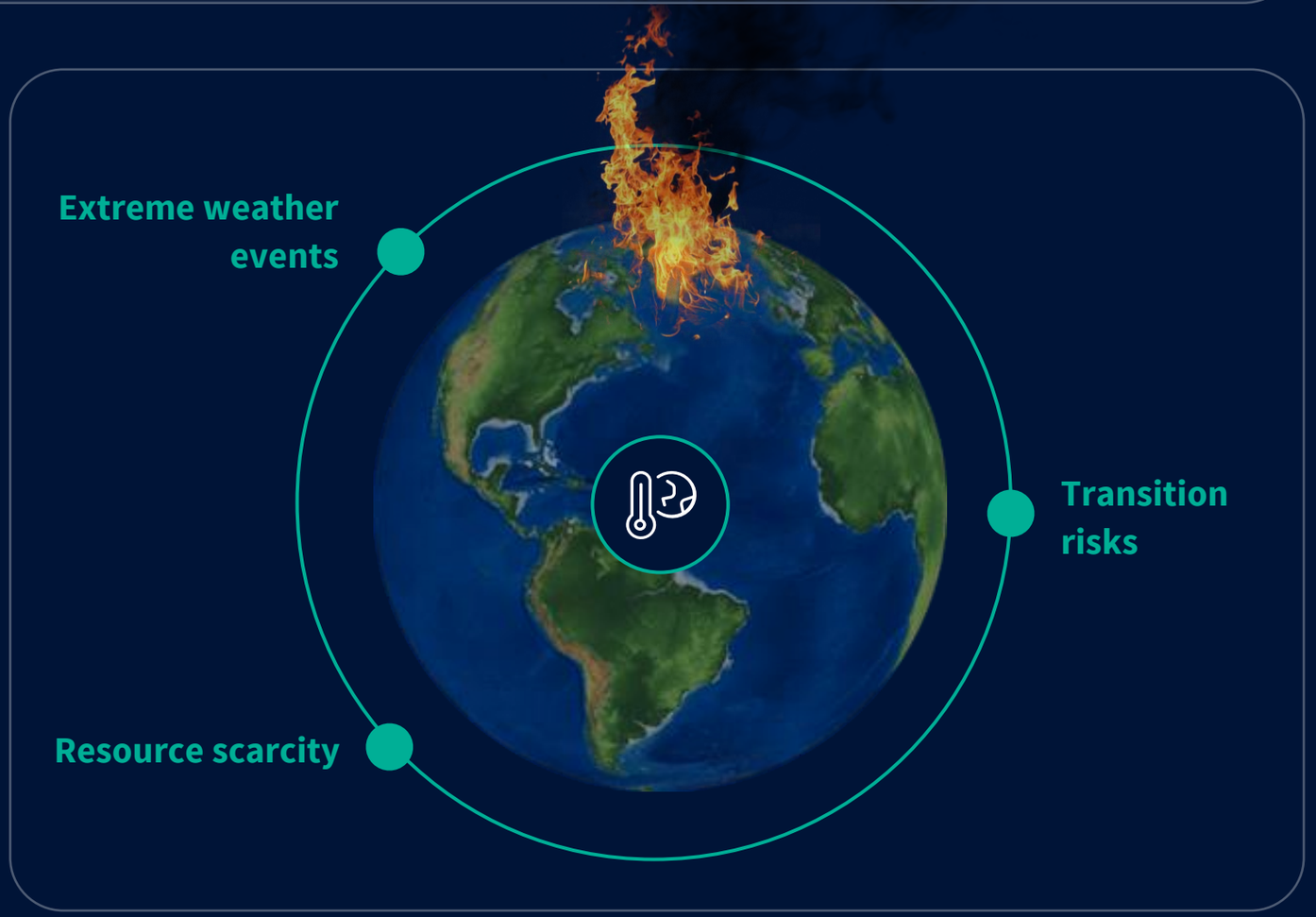

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Quantitative Risk Management Framework

Predictive approach for stress testing

Regulations

The **European Banking Authority (EBA)** issued a series of regulations (*e.g.,* **DORA**, **LOM**), which aim at ensuring the **integrity** of financial systems and testing the **resilience** in adverse stress conditions.

Scenario Analysis

Work with imagination

- Make assumptions: plausible, but severe
- Imagine a cascade of **stress events**. Go beyond the historical experience

Set the context

- Identify set of relevant **macroeconomic variables**
- Estimate **distribution parameters** and **event interdependencies**

Stress Testing

Under pressure

- Simulate hypothetical or mandated stress scenarios
- Model the **impact** on portfolio or organization

Measure the impact

- Evaluate summary metrics based on liquidity, credit or operational indicators
- Review strategy for **portfolio allocation**, **liquidity management** and **emergency planning**

Embrace modern technologies

AI Integration

- Continuous learning
- Pattern recognition and anomalies detection
- Automatic classification
- Process automation

Big Data Analytics

- Employment of large and costantly updated datasets
- Analysis of unstructured data (social media, articles, reviews)
- Market sentiment analysis

Cloud Computing

- Secure storage
- Scalable infrastructures
- Remote operations
- Easy data accessibility and integration

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Upgrade to unlock new skills

Enhanced Scenario Analysis

Spot hidden risks

Uncover patterns in large datasets to anticipate and control emerging threats.

Capture market shifts

Real-time analysis of streaming data can catch nonlinear twists in market behavior.

Consider sustainability

Incorporate ESG factors in scenarios to explore financial implications of climate-related risks.

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Enhanced Stress Testing

Boost prediction accuracy

Improve accuracy of the impacts in complex scenarios by analyzing multiple variables simultaneously.

Stress testing automation

Model synchronization, automatic reporting and alert for anomalies.

Fast decision-making

Speed up simulations to readily adapt risk strategies of the bank.

Stress scenarios through AI's eyes

Traditional vs AI-generated stress scenarios

Comparison between stress scenarios proposed by regulators, Risk Managers and AI

Feature	EBA scenarios	Risk Manager scenarios	AI-generated scenarios
Flexibility & Customization	*Low* Standardized scenarios validated by experts, shared by all European banks (*e.g.*, **2025 EU-wide stress test**).	*Very High* Potentially bank-specific and in agreement with bank strategy.	*High* Tailored and non-conventional scenarios, with full adaptation to specific portfolios, sectors and geographies. Needs proper integration to mirror bank strategies.
Innovation	*Medium* Focus mainly on traditional systemic risks, with strong methodology.	*Medium* Often based on known risks and biased by experience.	*Very high* Cover both traditional and emerging risks.
Velocity of Generation	*Very low* Published every 2-3 years.	*Low* Time and resource consuming.	*Very high* Instant response.
Quantitative Support	*Medium* Provides macroeconomic variables on both global and UE scales (*e.g.*, GDP, inflation, IR, unemployment).	*Variable* Depends on model maturity and availability of external and internal data.	*Medium* AI can propose relevant risk factors and simulate impacts with dynamic models. Results should be validated by experts and internal models.
Documentation & Reporting	*Low* Offers robust guidelines, but no operational tools.	*Medium* Often manual and time consuming.	*High* Auto-generation of reports, charts, and presentation.

Stress scenarios through AI’s eyes

Examples of AI-generated Scenarios

Create two non-conventional stress scenarios to be used in a bank stress testing exercise. Define a series of cascading events, potential impacts, and relevant risk factors to monitor. Elaborate original adverse conditions based on risks related to AI disruptions that could emerge within the next 1 to 5 years.

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Stress scenario 1: Social Uprising against AI

Narration of events

- Rapid **AI-driven automation** causes massive job losses in low-skilled sectors.
- Strikes spread across major cities, fueling **anti-AI political movements.**
- Governments respond with **robot taxes**, and incentives to preserve human jobs.

Expected impacts

- **Unemployment: + 7.5%** in 1st year, following gradual recovery
- **GDP: - 3%** in 2 years
- Increase in loan default
- Higher social inequality

Suggested risk factors

- **Default Rate** on consumer loans
- **Loan-to-Deposit ratio**
- **Sensitivity to Tech securities**

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Stress scenario 2: Deepfake-Induced Market Dislocation

Narration of events

- "**Truth crisis**" from convergence of hyper-realistic AI-generated media.
- Deepfake of **ECB President** announcing a 500 bps emergency rate hike.
- **Market flash crash** and severe regulator countermeasures on trading and GenAI.

Expected impacts

- Sudden **20%** drop in European equity indices, follow global contagion
- Billions lost in **algorithmic trades**
- **Distrust** in digital financial communications

Suggested risk factors

- **Abnormal trading volumes**
- **Investor sentiment volatility**
- **Latency** in **verification** protocols

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“Perhaps imagination is only intelligence having fun.”

George Scialabba

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