

Rischi geopolitici e climatici: il ruolo dei dati geospaziali e di supply chain nel risk management

Session 3.3: Competitività, resilienza e governo dei rischi nelle banche: sfide nei nuovi scenari geopolitici, macroeconomici e ambientali

ABF Supervision

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Agenda

- 01 Extending risk management to geopolitical risk**
Monitoring and governance framework across counterparties, issuers, countries and markets

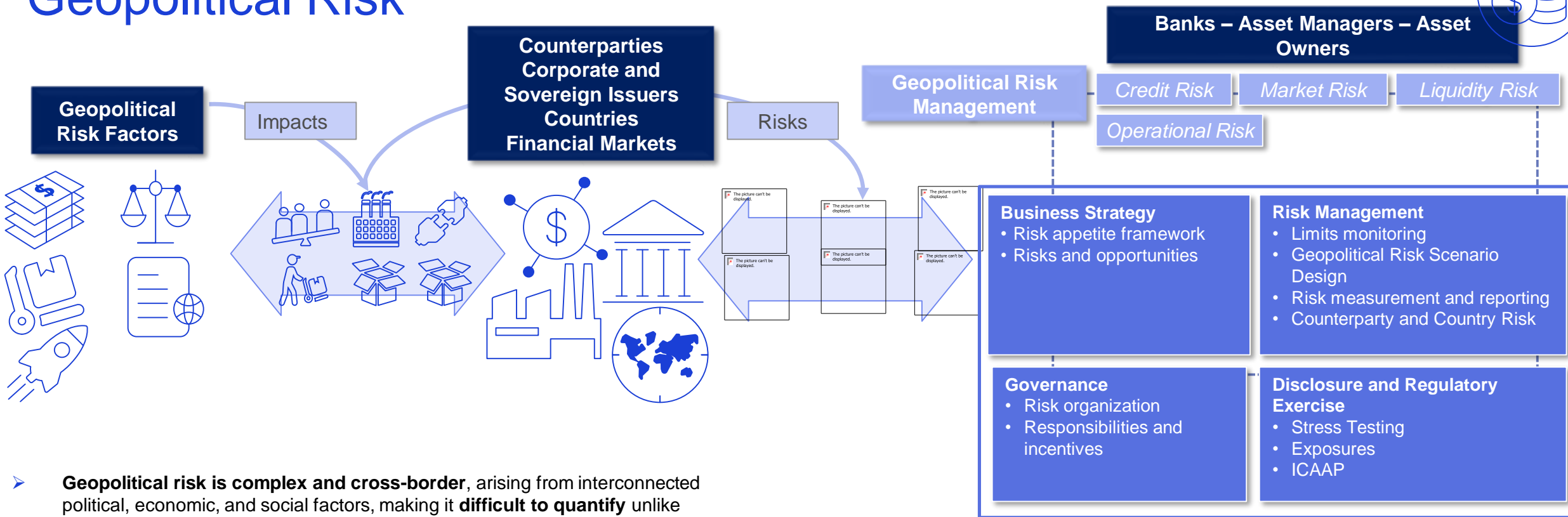
- 02 Geopolitical risk in practice: historical evidence**
Middle East tensions, historical market drawdowns and ECB geopolitical risk guidance

- 03 GeoSpatial and Supply Chain Data Intelligence**
Physical and nature risk, supply chain visibility and sector-level exposure analysis

- 04 Conclusions**
Key takeaways and next steps for integrating geopolitical risk into investment processes

Geopolitical Risk and the Regulatory Context

Extending Risk Management Monitoring and Governance to Geopolitical Risk

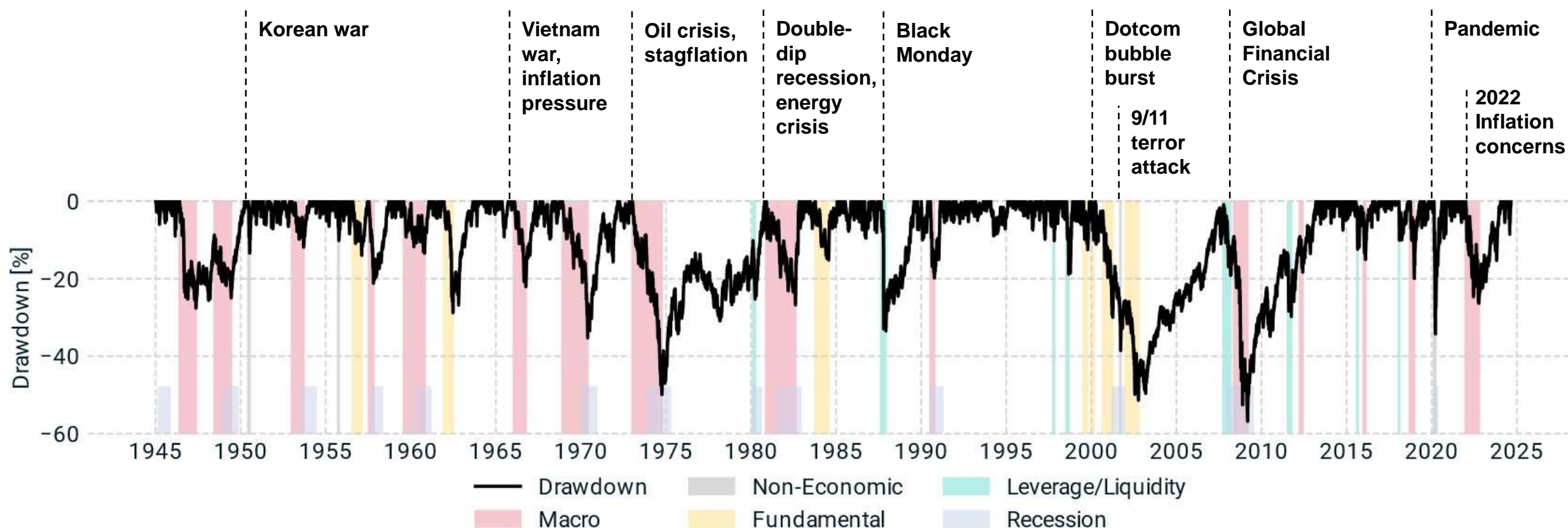


- **Geopolitical risk is complex and cross-border**, arising from interconnected political, economic, and social factors, making it **difficult to quantify** unlike traditional risks such as credit and market risks.
- Geopolitical Risk have a **different impacts across countries**.
- The magnitude of shocks on financial system is quite disperse, with major geopolitical event **threatening financial stability**.
- **Need of capital buffers for Geopolitical Risk**

Geopolitical risk in practice: historical evidence

Market turmoil was caused by different event types

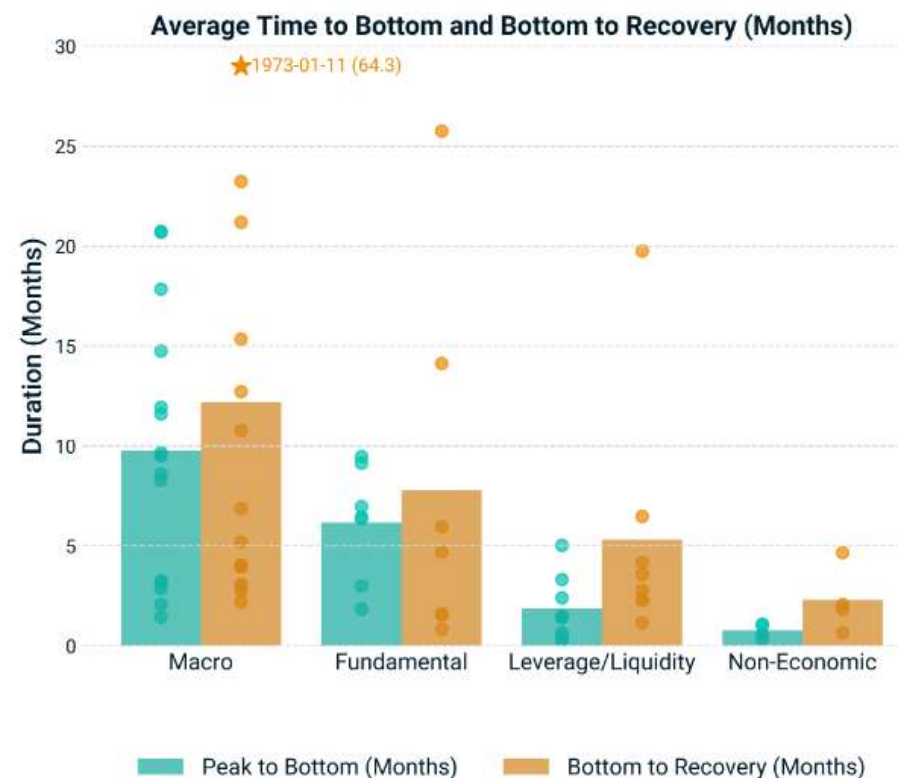
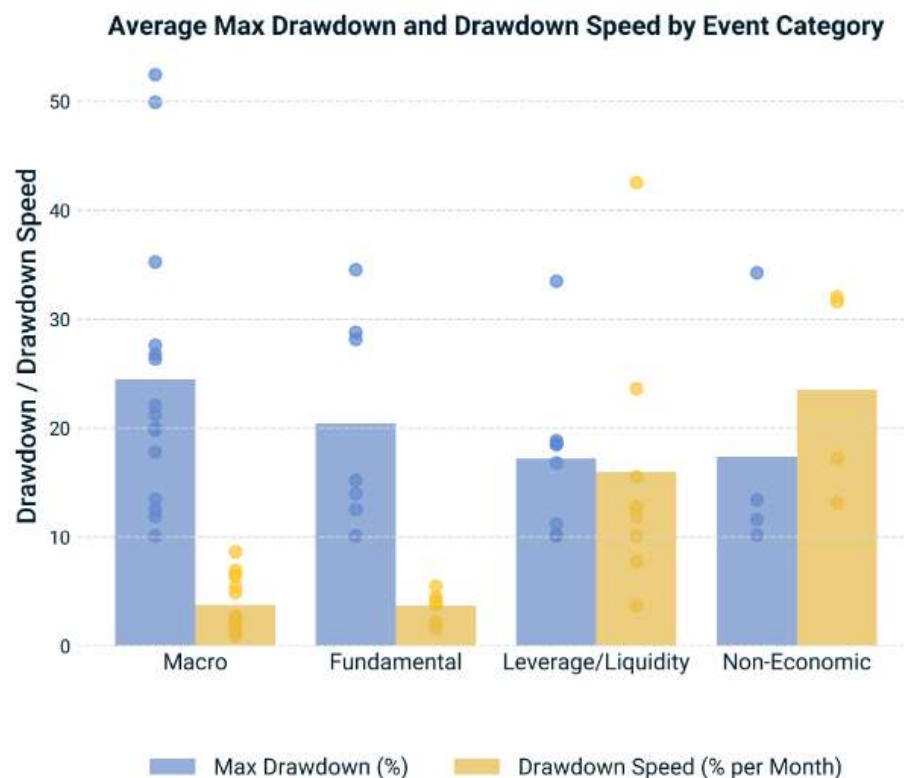
→ We linked 34 trigger events with the major drawdowns (>10% loss of U.S. equity market) and classified them into 4 categories: **macroeconomic**, **fundamental**, **leverage/liquidity**, and **non-economic** → See appendix for definitions of the categories and the list of events



Major drawdowns in US equity markets between Jan. 1, 1946 to Aug. 31, 2024. The shaded areas indicate the drawdowns we identified. Source: Fama-French Data Library , MSCI. Past performance — whether actual, backtested or simulated — is no indication or guarantee of future performance. See: [A Historical Look at Market Downturns to Inform Scenario Analysis](#)

Macro channel often led to deeper and longer drawdowns

- **Macro** events tended to result in the largest and longest sell-offs, with **fundamental** events following closely behind in severity and duration.
- **Leverage/liquidity** events led to quicker, smaller sell-offs, while **non-economic** events typically caused the fastest initial drops.



Characteristics for events identified between January 1946 and August 2024. The dots show the maximum drawdown, drawdown speed, time to bottom and time to recovery for individual events. The bars represent the averages. Past performance — whether actual, backtested or simulated — is no indication or guarantee of future performance. See: [A Historical Look at Market Downturns to Inform Scenario Analysis](#)

Geopolitical risk: Examples of Middle East tensions

This historical analysis focuses on cases in which the **U.S. got actively involved in Middle East tensions**

The **oil price** is the main **causation mechanism** through which Middle East tensions impact economies and markets

In various cases, the oil price spiked, but reverted relatively soon: E.g., Gulf War I & II

The **most adverse event was the Yom Kippur war**, when Middle East tensions led to a sustained oil price surge, high inflation and stagflation

When **geopolitical risk has significant macroeconomic implications**, the market impact is often exacerbated (see also Russia-Ukraine war and European energy prices and inflation).

Oil-price surges tended to fade after the geopolitical events we identified



Source: Based on Crude oil prices: West Texas Intermediate, Consumer Price Index for All Urban Consumers: All Items in U.S. City Average and the MSCI USA Index. Source: U.S. Energy Information Administration and U.S. Bureau of Labor Statistics retrieved from FRED, Federal Reserve Bank of St. Louis, MSCI. Data between Jan. 1970 and June 2025. [Middle East Conflicts Through a Historical Lens](#).

GeoSpatial and Supply Chain Data Intelligence

Where are a company's operational assets located?



Source: MSCI ESG Research, June 2024

We enable you to identify where corporates' assets are located, what is being done at the facilities and which locations are key to the company's operations...

- Drill into the location-specific details for the companies and real estate locations in your portfolio or loan book.
- We strive for accuracy and detail, combining manual collection with third-party sources and AI, backed by a stringent and transparent verification process.
- Uncover key attributes for each physical location.

Dimensions	What is the areal measurement and the total no. of floors?
Activity	What activity is the company performing at the asset location? Is the asset's activity key to the issuer's revenue division?
Company	Issuer (ID, Name, Mapping accuracy, affiliation)
Contribution	What is the location's contribution to the company's assets and revenue?
Quality	Measure of data quality (confidence level) Issuer coverage score (completeness level)
Sources	Sources used

~4 Million Assets
~780,000 public and private companies
Continuously expanding access to global location-based data.

Companies on average generate 47% of output internationally

Country of domicile (red) vs. direct operations (blue) for two companies

Heidelberg Materials AG



8.0% 92% output outside Germany

Bridgestone Corporation



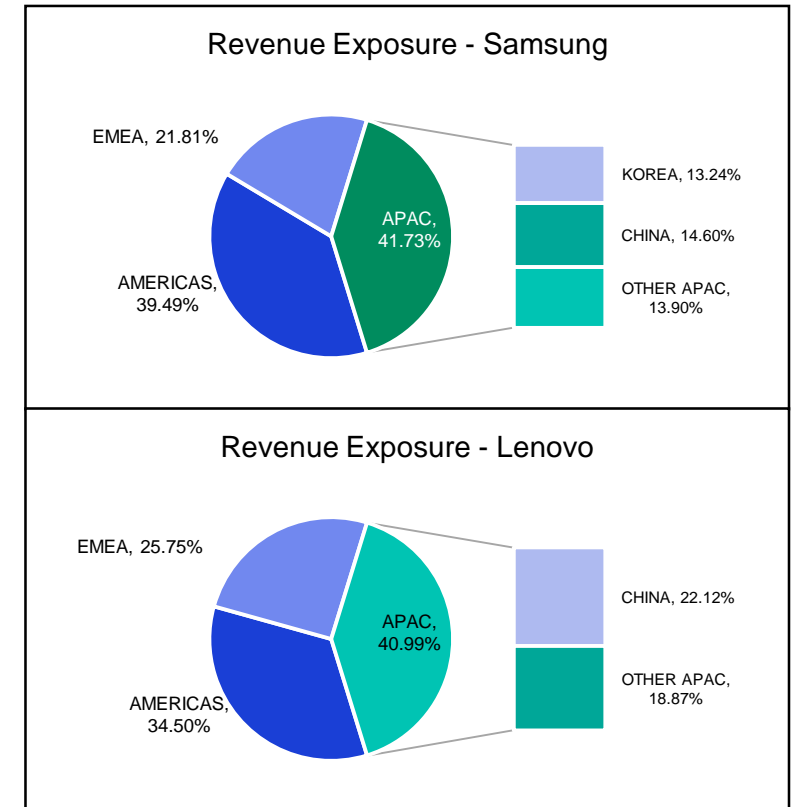
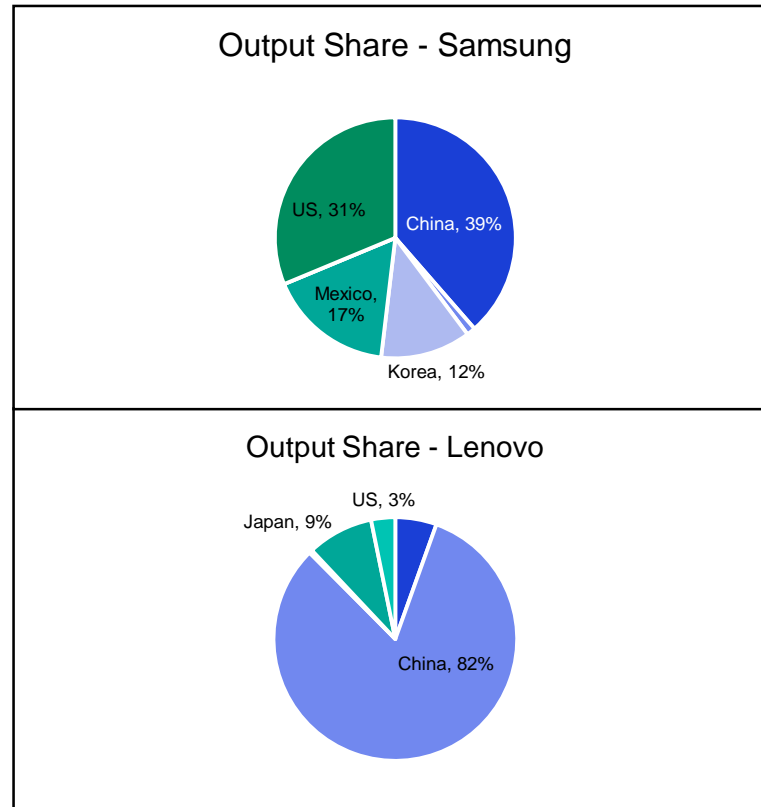
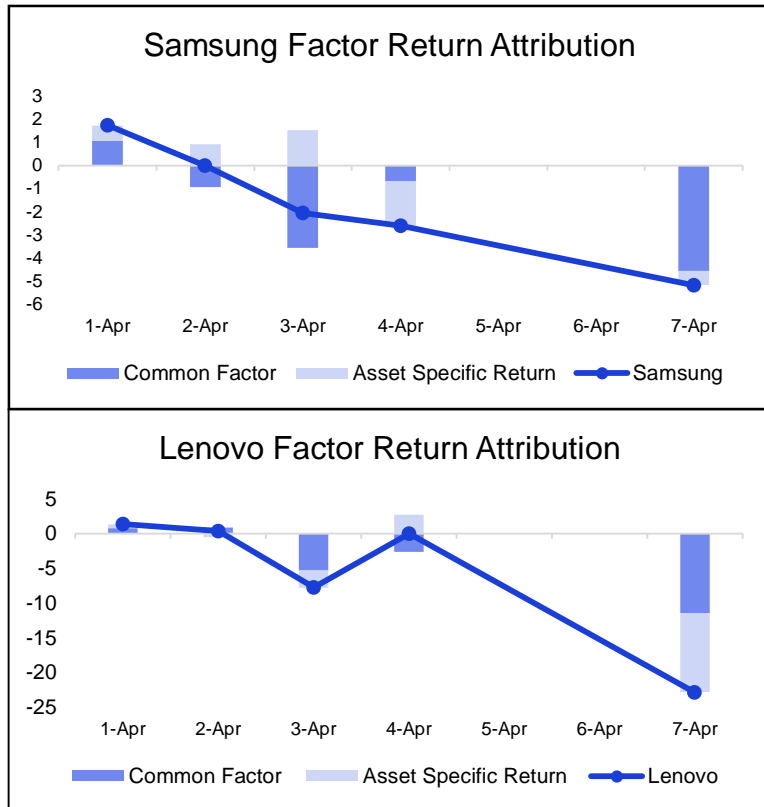
16.0% 84.0% output outside Japan

Higher output share Lower output share

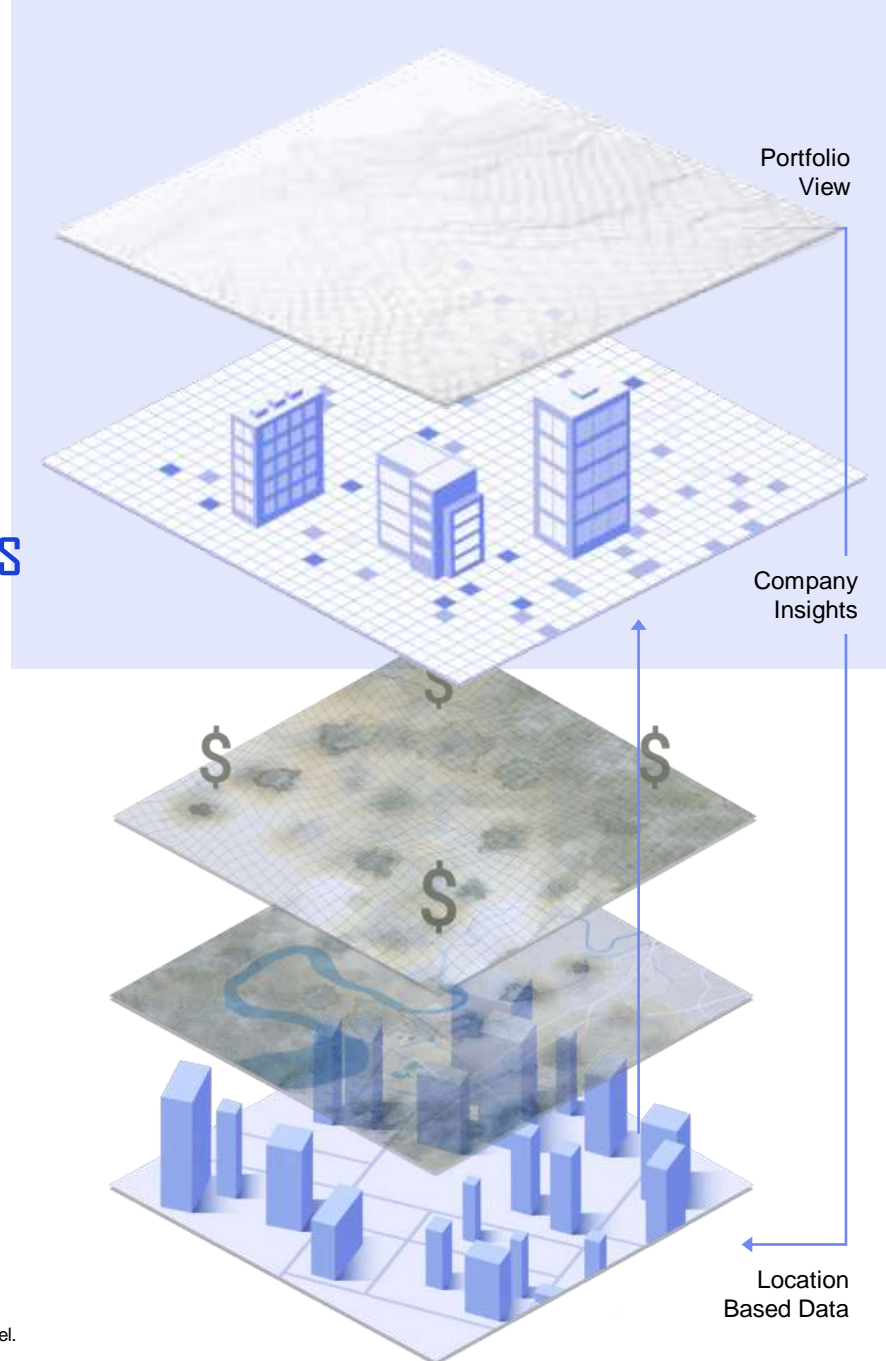
Alternative data driving scenario analysis: An example of Samsung versus Lenovo

Alternative data like geographic revenue exposure (where does a company sell) and geographic output share (where does a company produce) **can enrich scenario analysis**, by assessing exposures beyond traditional market risk factors.

Example: Samsung and Lenovo sell to roughly the same regions, while Lenovo's production footprint is much more concentrated in China. This could explain the much larger idiosyncratic shock on Lenovo during the April 2025 tariff turmoil.



MSCI GeoSpatial Asset Intelligence enables drill-down insights into physical & nature risk of your portfolio or loan book to individual asset locations



Company level Risk Assessment

Hazard Exposure

- Company Hazard Intensity Values, Company Hazard Percentiles
- Country Breakdowns of Hazard Levels and Intensity Values*

Financial Impact

- Company Relative Average Annual Loss, Company Exposure Growth-adjusted Average Annual Loss, Business Interruption and Asset Damage
- Country Breakdowns of Loss*, Macroeconomic physical risk losses*

Location Level Risk Assessment

Financial Impact

- Asset-level physical risk losses (average annual loss (AAL), return periods), incl. % asset damage and % business interruption

Hazard Exposure

- Hazard levels, hazard percentiles and hazard intensity values for up to 28 chronic and acute hazards**
- Nature exposure & dependencies

Asset locations

- 4M asset locations for 780k private & public companies (As of Mar 26)
- Any corporate or real asset location on-demand
- Zip code proxies globally

Source: MSCI ESG Research, June 2025

*Additional feature on 2025H2 roadmap (roadmap items are subject to change)

**MSCI assesses 28 hazards at the issuer level and 29 hazards (Ocean Acidification) at asset level.

Supply chain is a corporate and investor blind spot

- “45% of corporates have no visibility beyond Tier-1 suppliers”¹
- “Expected disruption losses can total ~45% of one year’s profits over a decade”²
- “Even disruptions ≤30 days can put ~3–5% of EBITDA margin at risk”³

Source:

(1) [McKinsey Global Supply Chain Survey 2024](#)

(2) [McKinsey Global Institute, Risk, resilience, and rebalancing in global value chains 2020](#)

(3) [McKinsey: Reimagining Global Supply Chains 2020](#)

Modelling an issuer's supply chain

From asset-level operations to aggregated tier 1 and tier 2 suppliers, an issuer-specific I/O cascade

1 Direct operations

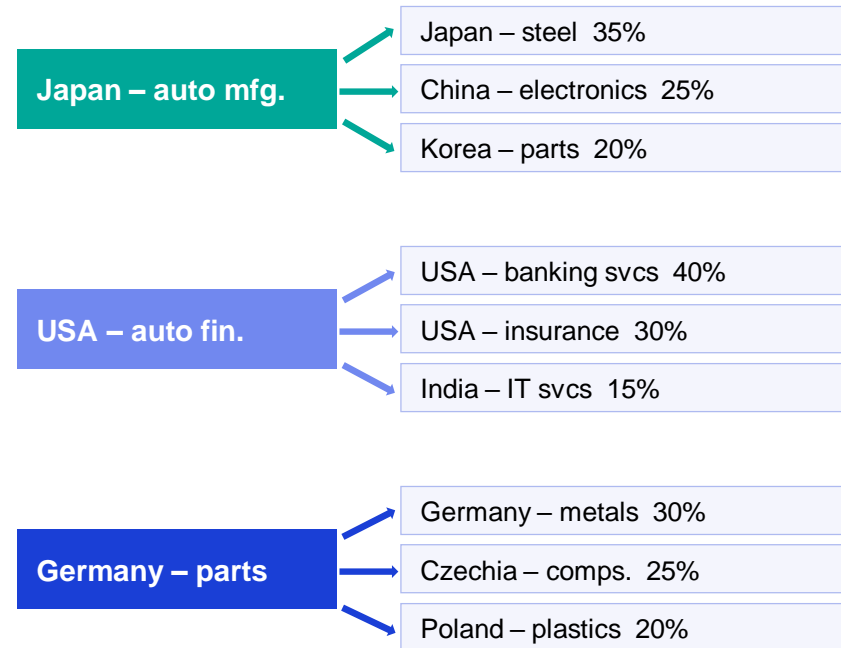
Geospatial Asset Intelligence maps each issuer's assets to locations and economic activities.

AutoCorp Inc.	USD 1,000M output
Japan Automotive manufacturing	500 M
USA Auto finance	200 M
Germany Auto parts	300 M

Source: MSCI GeoSpatial Asset Intelligence

2 Per-location supply chains

Custom I/O table determines plausible suppliers for each location/activity



Source: MSCI Supply Chain Intelligence input-output table. Numbers for illustration.

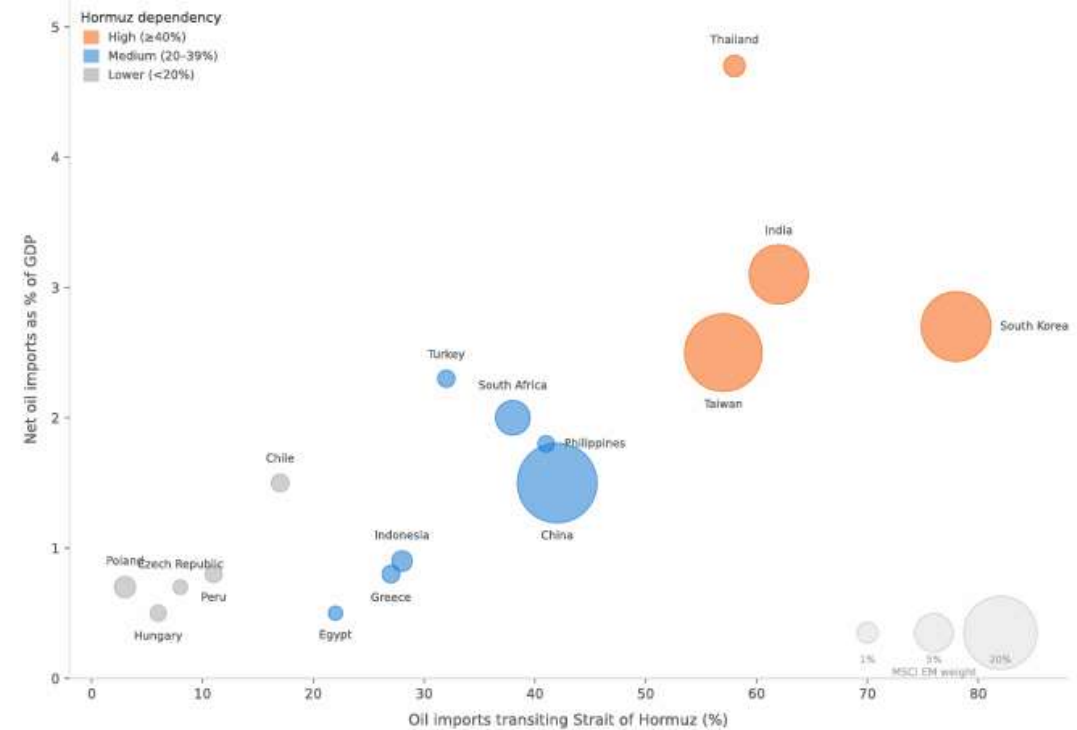
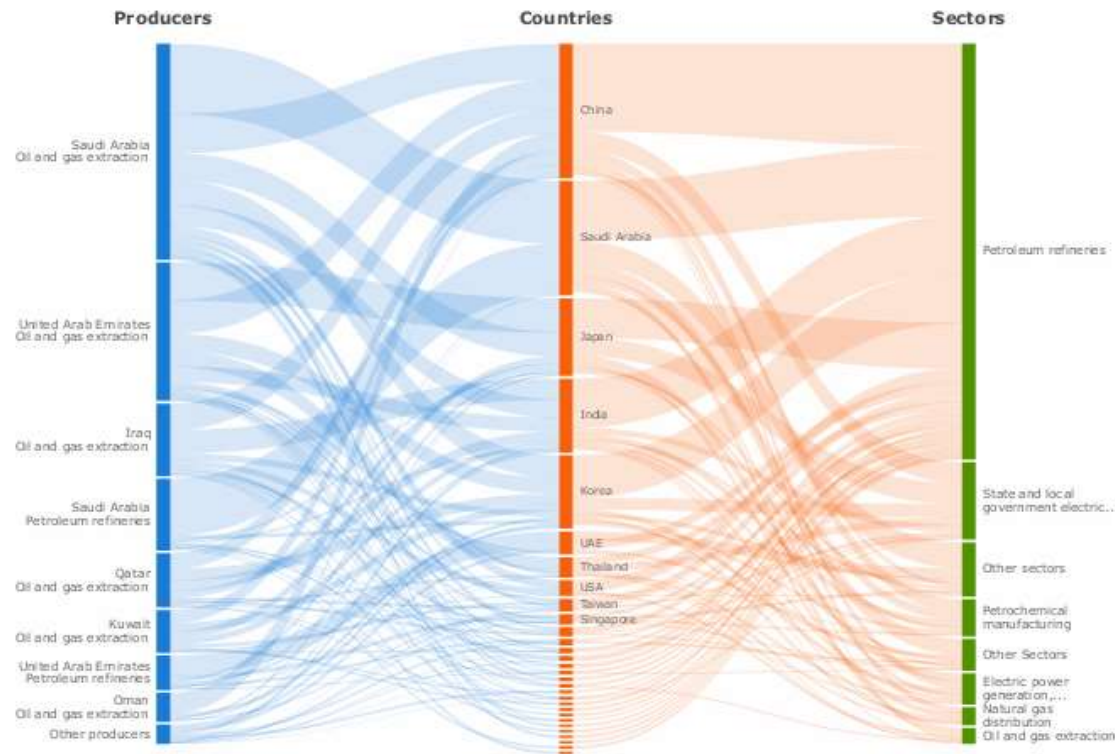
3 Issuer-level supply chain

Aggregated across all assets; I/O applied recursively to model Tier 2.

Tier 1 suppliers		Top 5 of 20
Japan Steel	18%	
China Electronics	14%	
USA Banking	11%	
Germany Metals	9%	
Korea Parts	8%	
+ 15 more named suppliers		
Tier 2 suppliers		I/O RE-APPLIED
Australia Iron Ore	6%	
Taiwan Semis	5%	
India IT	3%	
Chile Copper	2%	
+ 25 more named suppliers		

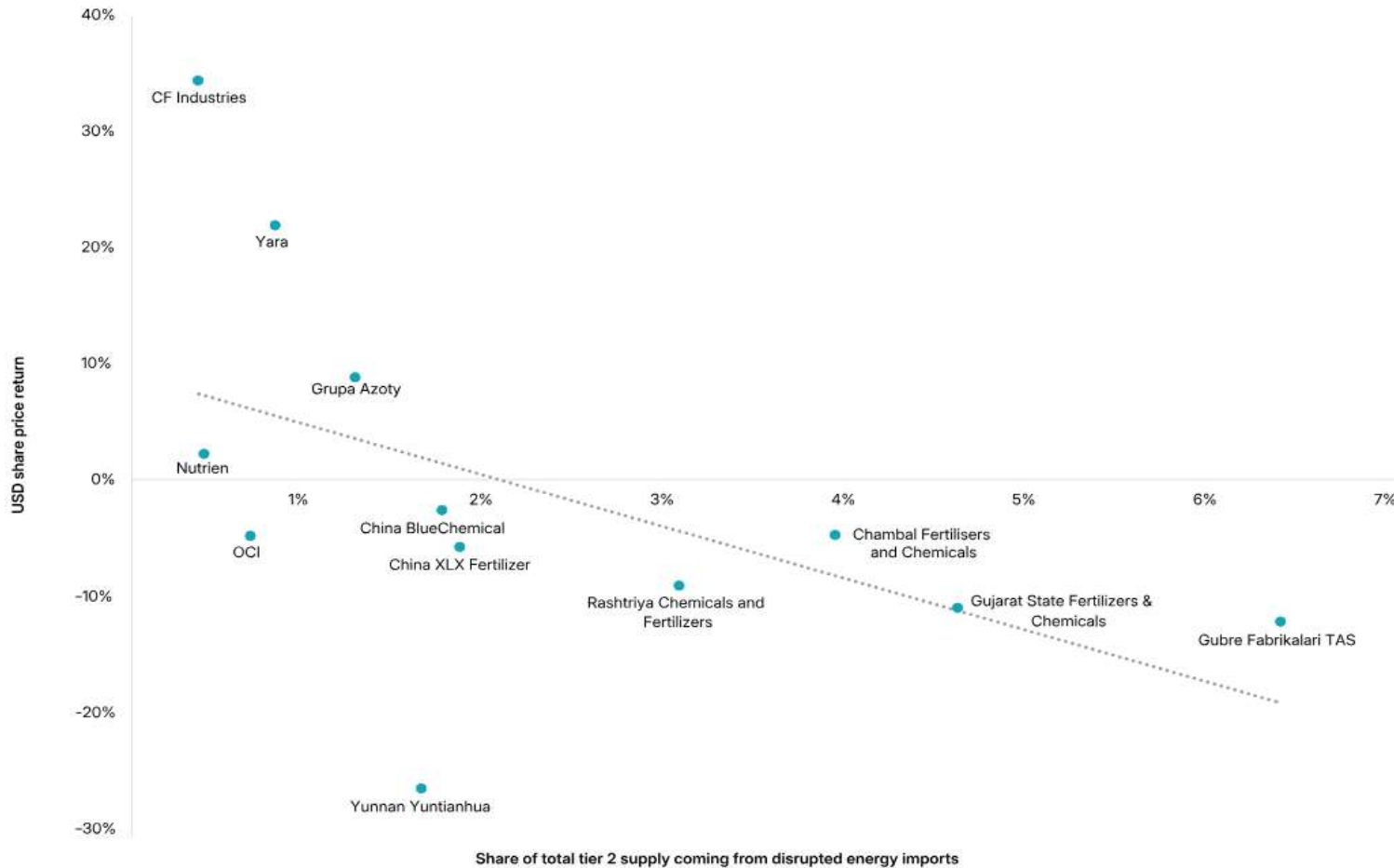
Each issuer's supply chain is built from its actual asset footprint, not sector averages. Two issuers in the same sector but different geographies get materially different modelled supply chains.

Asian industries face direct supply-chain exposure to Gulf disruption



Data as of Feb. 27, 2026. The left side shows the source — oil and gas extraction and petroleum-refining capacity concentrated in Iran, Iraq and GCC countries; the middle shows destination markets; the right side shows industries within those economies facing first-order exposure. Nodes and flows represent estimated share of input or output. Hover over the nodes to highlight the connected links. Based on MSCI supply-chain data.

Fertilizer companies reliant on disrupted energy supplies underperformed



- Nitrogen-based fertilizer production is highly energy-intensive and relies heavily on natural gas as a key input
- Companies with significant indirect supply chain exposure to Gulf energy sources faced higher input cost risk when the Strait of Hormuz was disrupted
- Standard sector classification would group these companies together — supply chain data reveals the divergence in underlying exposure
- This is a second-order effect: the disruption is geopolitical, the impact is financial, and the transmission channel is invisible without supply chain intelligence

Study period from Feb. 28, 2026 to April 7, 2026. Analysis covers constituents of the fertilizers and agricultural chemicals subindustry within the MSCI ACWIIMI Index, filtered for companies with significant revenue exposure to nitrogen-based fertilizer production and excluding those domiciled in the Middle East. Supply-chain analysis captures indirect reliance on energy-related segments in Saudi Arabia, Qatar, Kuwait, Bahrain, Iraq and Iran. Energy-related segments defined as: natural gas distribution; oil and gas extraction; petroleum refineries; petroleum and petroleum products; other petroleum and coal-products manufacturing; industrial-gas manufacturing.

Key takeaways

Key takeaways

01

Geopolitical and climate risks operate on longer time horizons

Macro geopolitical scenarios are the deepest and slowest-moving — on average 10 months to reach the bottom and as long to recover. Models calibrated on short, sharp crises systematically underestimate them.

03

A more proactive approach to risk management

Not just measuring potential losses, but anticipating where exposure concentrates before a shock materializes — and identifying which asset classes may support a faster recovery.

02

Real visibility requires different data

Domicile and sector classification are not enough. Geospatial and supply chain data reveal where a company actually produces, who it depends on, and where exposure concentrates — even when undisclosed.

04

The same logic applies to climate risk

The EBA dedicated its 2024 thematic stress test to climate and its 2026 one to geopolitical risk — two sides of the same challenge: emerging risks, long horizons, non-traditional data.

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