

Geopolitical and Macroeconomic Risks in the European Banking Sector: Recent Evidence, Transmission Channels and Policy Implications

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ABSTRACT: This article analyses the combined impact of increased geopolitical risk and inflationary macroeconomic dynamics on the financial stability of the euro area banking sector. The analysis complements the theoretical and regulatory framework with recent quantitative data provided by the European Central Bank (ECB), the European Banking Authority (EBA), the International Monetary Fund (IMF), UNCTAD, and the Financial Stability Board (FSB).

On the macroeconomic front, the euro area experienced a significant inflationary shock: the Harmonized Index of Consumer Prices (HICP) peaked at 10.6% year-on-year in October 2022, before gradually declining in 2023–2024, driven by the ECB's monetary policy normalization and the easing of the energy shock. At the same time, pressure on global public debt increased, from approximately \$97 trillion in 2023 to \$102 trillion in 2024, with the global debt-to-GDP ratio estimated at 94% in 2023 and projected to be on an expansionary path, particularly in advanced economies.

Despite this scenario of high uncertainty, credit institutions in the European Union and the European Economic Area (EU/EEA) maintain a robust prudential stance: the average fully-loaded Common Equity Tier 1 (CET1) ratio reached 15.9% in the fourth quarter of 2023 (Source: EBA), while the Non-Performing The overall loan (NPL) ratio stabilized at around 1.9%, with liquidity ratios (such as the Liquidity Coverage Ratio (LCR) and the Net Stable Funding Ratio (NSFR)) well above the regulatory minimums. The article, however, highlights the crucial role of the non-banking sector: exposures to Non-Banking Financial Intermediaries (NBFIs) constitute 9.2% of EU/EEA banks' assets, while funding received from NBFIs represents 10.3% of liabilities, highlighting significant systemic interconnections.

Based on these findings, three qualitative scenarios are developed for the 2025–2030 horizon: (A) Geopolitical Escalation and Stagflation, (B) Soft Landing in a Context of High Public Debt, and (C) Financial Fragmentation with Stress in the Non-Banking Sector. For each scenario, the transmission channels are analysed, discussing the implications for micro-prudential risk management and the design of macro-prudential instruments. The findings suggest that system resilience is no longer simply a function of capital and liquidity availability but requires a systematic integration of geopolitical and macroeconomic variables into governance processes and strengthened coordination between monetary, fiscal, and macro-prudential policies.

KEYWORDS: banking risk; geopolitical risk; inflation; public debt; financial stability; sovereign-bank nexus.

I. INTRODUCTION

The operating environment of European banks has undergone a profound **structural disruption** in recent years, characterized by the simultaneous emergence of geopolitical risks and a marked macroeconomic discontinuity.

- **On the geopolitical front**, the conflict in Ukraine, growing tensions in strategic areas (Middle East, Red Sea) and the fragmentation of global value chains (ECB, 2022, 2023) have permanently elevated the geostrategic risk premium in financial markets.
- **On the macroeconomic front**, the euro area faced an inflationary shock without historical precedent for the monetary union, with the HICP hitting **10.6% on an annual basis in October 2022**. The subsequent rapid normalisation of monetary policy by the ECB (ECB, 2023, 2025) radically changed the interest rate regime.
- Furthermore, **global public debt** continued its expansion, exceeding USD 100 trillion in 2024 (UNCTAD, 2025), raising a question of fiscal sustainability in the medium to long term, especially in high-debt jurisdictions in the euro area (IMF, 2024).

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Despite these exogenous turbulences, data show that the European banking sector maintains, on average, a **solid prudential position**. The EBA *Risk Dashboard* (Q4 2023) shows an average **fully loaded CET1 ratio of 15.9%** and ample liquidity indicators (LCR, NSFR) (EBA, 2024a).

This coexistence of **high external risk** and **strong internal resilience** raises fundamental questions for financial stability:

1. What are the main channels of interaction between new geopolitical risks, the dynamics of high public debt, and the financial stability of European banks?
2. How does the expansion of the non-bank sector (NBFIs) amplify or mitigate the transmission of shocks to the credit system?
3. *governance* tools, at both the micro-prudential and macro-prudential levels, are needed to preserve stability in this new regime of uncertainty?

This article aims to provide a structured analysis to answer these questions, integrating (i) the underlying theoretical framework, (ii) a quantitative analysis based on the most recent available data, and (iii) a **scenario-based assessment** of prospective vulnerabilities. The paper is structured as follows: Section 2 reviews the literature and risk transmission channels; Section 3 describes the methodology and key data; Section 4 develops the scenario analysis; Section 5 discusses policy implications; and Section 6 concludes, outlining a possible future research agenda.

II. THEORETICAL AND REGULATORY FRAMEWORK AND EMPIRICAL CONTEXT

A. THE FORMALIZATION OF GEOPOLITICAL RISK

Recent economic literature has recognized geopolitical risk as an endogenous component of the business cycle. Caldara and Iacoviello (2022) developed a **Geopolitical Risk Index (GPR)** and demonstrated that an increase in GPR has systemic effects that include: **a reduction in real Gross Domestic Product (GDP), a decline in investment, and an increase in financial volatility**.

For banking intermediaries, geopolitical risk manifests itself through the following channels:

- **Real/Microeconomic Channel:** Disruption of supply chains, rising energy and raw material costs, which compromise the solvency of sensitive industrial sectors and, consequently, **credit quality** (counterparty *default risk*).
- **Financial/Market Channel:** Increased risk aversion, *flight-to-quality*, widening credit *spreads*, and *asset price corrections*, impacting market risk and regulatory capital.
- **Compliance and Sanctions Channel:** The implementation of complex sanctions regimes (e.g. anti-Russian sanctions) exposes banks to high **operational risks** (including reputational risks) in case of violations or inadequacies of *screening systems*.
- **Cyber-Strategic Channel:** Geopolitical *escalation* increases the likelihood of targeted cyber-attacks on critical infrastructures of the financial system (ECB, 2023; EBA, 2024b), transforming operational risk into a potential exogenous systemic risk.

B. INFLATION, RATES AND CREDIT RISK

The unprecedented inflation shock of 2021–2023 has led to a rapid increase in key interest rates since July 2022. While rising rates can expand banks' **net interest margins**, they also introduce **vulnerabilities**:

1. **Market Risk on Portfolios:** *Mark-to-market* losses on bonds held in the portfolio, particularly those with long *durations*, due to devaluation.
2. **Induced Credit Risk:** Rising borrowing costs and the erosion of purchasing power (due to inflation) reduce the *Debt Service Coverage Ratio* (DSCR) for indebted households and firms. The EBA (2024a) has in fact warned of a potential risk of deterioration in asset quality in segments such as consumer credit, small and medium-sized enterprises (SMEs), and **commercial real estate (CRE)**.

C. THE SOVEREIGN-BANK NEXUS AND PUBLIC DEBT

The so-called bank-sovereign *doom loop*, highlighted by the 2010–2012 sovereign debt crisis, remains a critical issue (Acharya et al., 2014; Rojas, 2024). EU/EEA banks continue to hold a significant share of domestic sovereign debt, with *home bias* standing at around 80% in the euro area (EBA, 2024c).

Total exposures: As of June 2024, EU banks' exposures to sovereign counterparties exceeded **€3.5 trillion**.

As global public debt increases from \$97 trillion to \$102 trillion (UNCTAD, 2025), the vulnerability of the banking system to **sovereign risk** is amplified, particularly for banks in countries with high debt-to-GDP (Gross Domestic Product) ratios and low growth potential (IMF, 2024).

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2.4 Interconnections with Non-Banking Financial Intermediaries (NBFI)

The NBFI sector now represents nearly half of global financial assets (FSB, 2023). Its growth and complexity create potential channels of contagion.

- **Direct Bank Exposures:** In the EU/EEA sample, exposures to NBFIs amount to **9.2% of assets** and *funding* from NBFIs covers **10.3% of liabilities** (EBA, 2024b).

These interconnections expose banks to **liquidity risk** (sudden withdrawal of wholesale *funding*), **market risk** (*fire sales* of illiquid assets by NBFIs), and **counterparty risk** (*collateral calls or defaults* on derivative contracts).

D. THE POST-CRISIS REGULATORY ARCHITECTURE

The post-global financial crisis prudential framework (Basel III, implemented in the EU through the **Capital Requirements Regulation and Directive (CRR/CRD)**) and the establishment of the Banking Union have significantly strengthened the resilience of the system, introducing higher capital (CET1) and liquidity (LCR, NSFR) requirements, as well as a resolution framework (such as the **Minimum Requirement for Own Funds and Eligible Liabilities/Total Loss-Absorbing Capacity (MREL/TLAC)**).

The Banking Union has created a **Single Supervisory Mechanism (SSM)**, which gives the ECB direct supervision of major banks, and a **Single Resolution Mechanism (SRM)**. On the macroprudential level, the EU framework provides tools such as the **Countercyclical Capital Buffer (CCyB)** and systemic *buffers*, under the guidance of the **European Systemic Risk Board (ESRB)**. However, the failure to complete the European Deposit Guarantee leaves a residual risk component.

III. DATA, INDICATORS AND METHODOLOGY

A. DATA SOURCES

The analysis is based on a structured dataset for the period 2014–2024. The main official sources include: EBA, ECB, IMF, UNCTAD, FSB, Eurostat, and their specific *reports* (*Financial Stability Review*, *Risk Assessment Report*, *Global Financial Stability Report*).

B. KEY FINANCIAL INDICATORS

The empirical indicators used are:

- **Capital:** average fully-loaded CET1 ratio (15.9% Q4 2023).
- **Asset Quality:** Overall NPL ratio (1.9% Q4 2023).
- **Liquidity:** Average LCR and NSFR.
- **Sovereign Risk:** Exposures to sovereign counterparties (over €3.5 T).
- **Structural Risk:** Percentage of exposures (9.2%) and *funding* (10.3%) to NBFIs in the EU/EEA sample.

C. METHODOLOGY: QUALITATIVE SCENARIO ANALYSIS

qualitative scenario analysis methodology is adopted, consistent with supervisory *stress testing* practices. This approach allows us to explore the complex **transmission mechanisms** and interactions of risks (geopolitical, macroeconomic, structural) in a context of high uncertainty, focusing the analysis on policy implications.

IV. SCENARIO ANALYSIS: 2025–2030

A. SCENARIO A: GEOPOLITICAL ESCALATION AND PROLONGED STAGFLATION

A.1 DESCRIPTION

The scenario assumes an intensification of global geopolitical tensions, resulting in persistent shocks to energy and commodity prices. Inflation remains structurally high (stagflation), amid modest and volatile real growth in the euro area.

A.1.2 TRANSMISSION CHANNELS

- **Credit Risk (High):** The prolonged increase in operating costs is compressing the margins of **Non-Financial Corporations (NFCs)**. The deterioration in the DSCR translates into an increase in the Probability of *Default* and the NPL ratio in the most exposed segments (SMEs, CRE).
- **Market Risk (High):** Geopolitical uncertainty fuels risk aversion and volatility, causing *mark-to-market losses* on bank bond portfolios and widening *spreads*.
- **Operational Risk (Critical):** The increase in targeted *cyber* attacks against critical banking infrastructure is a direct consequence of geopolitical tensions, as indicated by the ECB and EBA.

A.1.3 INTERACTIONS – SCENARIO A

Stagflation and increased public spending worsen government budget balances, increasing sovereign risk and strengthening the bank-state *nexus*.

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Table I: Scenario A: Geopolitical Escalation and Prolonged Stagflation

This scenario describes an environment characterized by high geopolitical uncertainty (high **GPR**), persistent inflation and weak economic growth.

ELEMENT	SHOCK DESCRIPTION (INPUT)	PRIMARY TRANSMISSION CHANNEL	EXPECTED IMPACT ON THE BANKING SECTOR
Geopolitical Driver	Rising Geopolitical Risk Index (GPR) . Value chain disruptions and energy shocks.	Real/Credit Risk: Rising production costs for Non-Financial Corporations (NFCs) .	Increase in NPL Ratio: Deterioration in credit quality (SMEs, CRE, consumer credit).
Macroeconomic Driver	Persistent inflation above 2%; prolonged high interest rates (contractual monetary policy).	Market Risk: Increased <i>asset</i> volatility and sovereign <i>spreads</i> .	CET1 Ratio Reduction: <i>Mark -to-market</i> losses on fixed income securities (FVOCI/AFS).
Risk Interaction	Stagflation -> Lower tax revenue and higher public spending.	Operational/Cyber-Strategic Risk: Increase in cyber-attacks on critical infrastructure.	Liquidity and Contagion Risk: Potential disruption of payment systems.
Key Vulnerability	High public debt and sovereign <i>home bias</i> .	Sovereign-Bank Nexus: Worsening Fiscal Fundamentals.	Systemic Risk: Vicious circle between the state and banks in times of stress.

Table I: Scenario A: Geopolitical Escalation and Prolonged Stagflation

B SCENARIO B: *SOFT LANDING* WITH STRUCTURAL FISCAL RISK

B.1 DESCRIPTION

The scenario envisages a **controlled slowdown** in the global economy (*soft landing*), with inflation gradually returning to *target*. However, the **structurally high public debt burden** (\$102 trillion) persists as a vulnerability factor.

B.2 TRANSMISSION CHANNELS

- **Sovereign Risk (Structural):** A moderate exogenous event can trigger a sudden reaction in bond markets on government bonds of highly indebted countries. Sovereign concentration risk (*home bias*) remains the primary vehicle for transmission to the domestic banking system.
- **Market and Capital Risk:** Any corrections in sovereign bond prices translate into losses in banking portfolios, impacting CET1.
- **Liquidity Risk:** Sovereign tensions may reduce domestic banks' accessibility to international wholesale markets.

B.3 POLICY IMPLICATIONS

The success of this scenario depends on a **credible fiscal strategy** of EU countries and progress in **completing the Banking Union**, particularly with regard to European deposit insurance, in order to mitigate the sovereign-bank *nexus*.

Table II: Scenario B: *Soft Landing* with Structural Fiscal Risk

This scenario assumes an orderly decline in inflation and positive (albeit moderate) growth, but with global public debt remaining at record levels (over \$100 trillion).

ELEMENT	SHOCK DESCRIPTION (INPUT)	PRIMARY TRANSMISSION CHANNEL	EXPECTED IMPACT ON THE BANKING SECTOR
Fiscal Driver	Global public debt at \$102 trillion; tensions on sovereign markets of high-debt eurozone countries.	Sovereign Risk/Concentration: Sudden and selective repricing of government bonds.	Net Worth Volatility: Write-down of sovereign exposures held in the portfolio.
Market Drivers	Increase in risk premium and risk aversion.	Market Risk: Widening <i>spreads</i> on sovereign and <i>corporate bonds</i> .	Rising Cost of Funding: Difficulties for banks perceived as exposed to domestic risk.

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ELEMENT	SHOCK DESCRIPTION (INPUT)	PRIMARY TRANSMISSION CHANNEL	EXPECTED IMPACT ON THE BANKING SECTOR
Risk Interaction	Failure to complete the Banking Union (e.g. deposit insurance).	Indirect Credit Risk: The <i>credit crunch</i> (tightening of credit conditions) due to sovereign risk is holding back growth.	Fragmentation Risk: Reducing access to international wholesale markets for the most vulnerable banks.
Key Vulnerability	High <i>duration</i> of sovereign bonds on the balance sheet; high <i>home bias</i> .	Sovereign-Bank Nexus: Fiscal risk translates directly into banking risk.	National Systemic Risk: The stability of banks is closely linked to the perceived solvency of the state.

Table II: Scenario B: Soft Landing with Structural Fiscal Risk

C SCENARIO C: FINANCIAL FRAGMENTATION AND NBFi STRESS

C.1 DESCRIPTION

Scenario C is driven by increasing **geo-financial fragmentation** and an expansion of the NBFi sector. Episodes of financial *stress*, concentrated in NBFis, occur, such as runs on open instruments or liquidity crises (examples similar to those observed in the UK in 2022).

C.2 INTERCONNECTION CHANNELS

- **Induced Liquidity Risk:** *Stress* on NBFis can trigger massive **liquidity calls** on banks providing credit lines (backstops) or *prime brokerage* services.
- **Market Risk from Fire Sales:** Forced liquidation (*fire sales*) of illiquid *assets* by NBFis triggers a widespread price decline that translates into *mark -to-market losses* in the portfolios of exposed banks.
- **Counterparty Credit Risk:** Banks suffer losses on 9.2% of their assets exposed to NBFis in the event of *default* by non-bank counterparties, in addition to the risk arising from losses on derivatives.

Table III: Scenario C: Financial Fragmentation and Stress in Non-Banking Financial Intermediaries (NBFis)

This scenario focuses on structural vulnerabilities arising from the growth and leverage of the NBFi sector and the risk of contagion to the banking sector.

ELEMENT	SHOCK DESCRIPTION (INPUT)	PRIMARY TRANSMISSION CHANNEL	EXPECTED IMPACT ON THE BANKING SECTOR
Structural Driver	Expansion of the NBFi sector; high leverage and <i>maturity mismatch</i> in specific funds.	Induced Liquidity Risk: <i>Collateral</i> requests and activation of credit lines (<i>backstops</i>) by NBFis.	Bank Funding Stress: Pressure on Liquidity Buffers and the LCR/NSFR.
Driver of Contagion	Episodes of NBFi <i>stress</i> (e.g., runs on open-end funds, forced liquidations).	Market Risk from Fire Sales: Massive liquidation of illiquid <i>assets</i> (e.g. CRE, <i>private credit</i>).	Mark-to-Market (and RWA) Losses: Collapse in the prices of <i>assets</i> held by banks as well.
Interconnections	Banks' exposures to NBFis (9.2% assets) and <i>funding</i> from NBFis (10.3% liabilities).	Counterparty Credit Risk: <i>Default</i> on credit lines, <i>repos</i> and derivative contracts with NBFis.	Increase in NPLs/Counterparty: Direct losses resulting from the default of non-banks.
Key Vulnerability	Insufficient macro-prudential supervision of NBFis.	Regulatory Fragmentation: Lack of coordinated intervention tools.	Global Systemic Risk: Cross-border contagion (EU banks exposed to global NBFis).

Table III: Scenario C: Financial Fragmentation and Stress in Non-Banking Financial Intermediaries (NBFis)

V. DISCUSSION: POLICY AND RISK MANAGEMENT IMPLICATIONS

A. SUMMARY AND GENERAL REFLECTIONS

The data confirm that the EU banking system is well capitalized (CET1 $\sim 15.9\%$) and liquid, but *soft landing* (Scenario B) or stagflation (Scenario A) combined with high sovereign debt and NBFi interconnections (Scenario C) remain the main sources of **exogenous and amplified systemic risk**.

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B. IMPLICATIONS FOR MICRO-PRUDENTIAL RISK MANAGEMENT

B.1 INTEGRATION OF RISKS INTO THE *RISK APPETITE FRAMEWORK* (RAF)

Banks must update their **Risk Appetite Framework (RAF)** to include:

- **Geopolitical Metrics:** Definition of tolerance thresholds and concentration limits (expressed in **Risk -Weighted Assets (RWAs)** based on GPR indicators.
- **NBFI Monitoring:** Strengthening *due diligence* on non-bank counterparties, assessing their leverage and illiquidity.

B.2 INTERNAL MODELS AND *STRESS TESTS*

International Financial Reporting Standard 9 (IFRS 9) models to incorporate macro-financial scenarios that reflect the combination of high inflation, rising interest rates, and volatile sovereign *spreads*. *Stress tests* must be integrated. Internal **Capital Adequacy Assessment Process (ICAAP)** and **Internal Liquidity Adequacy Assessment Process (ILAAP)** must explicitly reflect geopolitical scenarios and the risk of contagion from NBFIs.

C. IMPLICATIONS FOR MACRO-PRUDENTIAL AND REGULATORY POLICY

C.1 DYNAMIC CALIBRATION OF INSTRUMENTS

Macroprudential authorities (such as the ESRB and national central banks) must adopt a dynamic macroprudential framework. The **Countercyclical Capital Buffer (CCyB)** should be calibrated not only based on the domestic credit cycle but also on indicators of global systemic and geopolitical risk.

C.2 MITIGATION OF THE SOVEREIGN-BANK *NEXUS*

It is appropriate to strengthen the monitoring of sovereign concentrations within the SSM. Progress towards regulatory neutrality for government bonds on balance sheets and the completion of the Banking Union remain the most effective structural policies to break the *doom loop*.

C.3 EXTENSION OF THE SUPERVISORY PERIMETER TO NBFI

In line with FSB and IMF guidance, it is crucial:

- **Extend the information perimeter** on NBFIs to collect more granular data on leverage, liquidity and *maturity mismatch*.
- **Include NBFIs in system-wide stress tests** (ECB/EBA) to simulate the impact of contagion and *fire sales* on the banking system, addressing the risks described in Scenario C.

VI. CONCLUSIONS AND FUTURE RESEARCH AGENDA: TOWARDS A SYSTEMIC RISK INTEGRATED MODEL (SRIM)

The analysis showed that the European banking sector, while maintaining solid capital and liquidity positions on average (average CET1 ratio around 15.9%, NPL ratio close to 2%), operates in a context structurally characterized by: (i) elevated geopolitical risk, (ii) record levels of global public debt, and (iii) growing interconnectedness with non-bank financial intermediaries (NBFIs), which now represent nearly half of global financial assets. These factors, combined, generate a set of systemic vulnerabilities that cannot be assessed with static or single-sector tools alone.

The **2025–2030 scenario analysis** (Geopolitical escalation and stagflation, Soft landing with fiscal risk, financial fragmentation with NBFI stress) highlighted that:

- **geopolitical risk** acts as an exogenous “trigger” that can rapidly propagate to bank balance sheets through credit, market, liquidity, and cyber-operational shocks;
- the **sovereign-bank nexus continues to represent a crucial channel of amplification, especially in high-debt and high-home-** bias jurisdictions;
- Interconnections **with NBFIs** generate new forms of contagion (fire sales, runs on open-ended funds, collateral calls) that put pressure on banks' capital and liquidity metrics.

In this context, future resilience can no longer be interpreted solely in terms of CET1, LCR, or NSFR levels, but requires a **systematic integration of geopolitical variables and financial interconnectedness networks** into risk analysis models and policy tools.

A. RATIONALES FOR AN INTEGRATED SYSTEMIC RISK MODEL

The evidence discussed suggests three key points:

1. **Nonlinearity and interdependencies:** The effects of geopolitical shocks are not proportional to their intensity: shocks of similar magnitude can generate very different outcomes depending on the network structure between banks, states and NBFIs and on the initial macro-financial conditions.

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2. **Relevance of contagion networks:** The “multi-node” nature of the system (banking, sovereign, non-banking) requires a framework capable of explicitly modelling exposure, funding and collateral links, overcoming purely aggregate or only cross-sectional approaches.
3. **Need for predictive tools for authorities:** Supervisory authorities and policy institutions need models that translate measurable geopolitical shocks (e.g. Geopolitical Risk Index, GPR) into **forward-looking metrics** of contribution to systemic risk for each “node” of the system.

On this basis, the proposal for a Systemic Risk Integrated Model (SRIM) is **conceived as a future research agenda**.

B. THE SRIM MODEL: BASIC IDEA AND STRUCTURE

B.1 WHAT IS SRIM?

The **SRIM – Systemic Risk Integrated Model** is a **conceptual model** that aims to:

- represent the financial system as a **network of interconnected nodes**;
- study how an initial **geopolitical shock** propagates along this network;
- measure how much each node **contributes to overall systemic risk**.

The underlying idea is simple: if a geopolitical event increases uncertainty (for example, regarding gas, energy, security, trade), this is reflected in financial markets. But it doesn't affect everyone equally. Some sectors are directly affected, while others are affected "in a rebound" through credit, financing, and market relationships.

B.2 THE FOUR NODES OF THE MODEL

In SRIM the system is represented by **four main nodes**:

1. **B – Banking Sector (Banks)**
 - Includes significant banks in the euro area.
 - We look at indicators such as capital ratio (CET1), cost of financing, credit quality.
2. **S – Sovereign Sector (Sovereigns)**
 - It represents the public debts of the Eurozone countries.
 - We look in particular at **sovereign spreads**, CDS, and the average cost of refinancing the debt.
3. **N – NBFIs Sector (Non-banking Intermediaries)**
 - It includes open-ended mutual funds, highly leveraged hedge funds, private credit vehicles, etc.
 - Indicators such as leverage, liquidity, asset-liability mismatch, and shareholder redemptions are considered.
4. **G – Geopolitical Shock (Geopolitical Risk)**
 - It is an “exogenous” node that represents the level of geopolitical risk, measurable through indices such as the **Geopolitical Risk Index (GPR)**.

Nodes **B**, **S** and **N** are connected by links that express:

- balance sheet exposures (for example, banks holding government bonds in their portfolio);
- financing relationships (NBFIs financing banks or vice versa);
- market relationships (collateral, derivatives, repo).

B.3 HOW CONTAGION WORKS IN PRACTICE

The idea of contagion can be explained with a simple metaphor:

- **G** node (geopolitical risk) is like an **initial shock**;
- the **S** (sovereign) node is like a **bridge**: if the shock is strong, the bridge starts to vibrate (sovereign spreads increase);
- node **B** (banks) is connected to the bridge: if the bridge moves too much, the banks that “walk on it” begin to wobble (the cost of funding rises, expectations worsen);
- Node **N** (NBFI) is in turn connected to banks and sovereigns (through investments, derivatives, repos, etc.) and therefore in turn suffers and amplifies the shock wave.

Mathematically, the model describes how a change in risk at a node today is affected:

- from the **geopolitical shock** observed today;
- from **risk variations in other nodes** in the previous period.

But the key message, even without formulas, is that:

The same geopolitical shock can have very different effects depending on **how** banks, states and NBFIs are organised and connected to each other.

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C. ILLUSTRATIVE NUMERICAL EXAMPLE (WITHOUT TECHNICALITIES)

To make the idea intuitive, a **simplified numerical example is now presented**. The numbers are purely illustrative but constructed realistically.

C.1 THE STARTING SITUATION

Let's imagine that, in a phase of relative calm, the following holds true:

- Banks have a **funding spread of 100 basis points** (i.e. they pay 1 percentage point more than a “risk-free” rate).
- Sovereigns **have an average spread of 150 basis points** (government debt perceived as moderately risky).
- NBFIs (**funds**, hedge funds, etc.) have a **stress ratio of 80 basis points** (a relatively low level).

In compact form (for reference only):

- Banks: $R_B = 100$
- Sovereigns: $R_S = 150$
- NBFIs: $R_N = 80$

These numbers are not good or bad in any way: they simply indicate a starting point.

C.2 A GEOPOLITICAL SHOCK ARRIVES

At a certain point, the geopolitical context worsens: a conflict intensifies, energy and supply risks increase, there is talk of possible sanctions, etc.

Suppose a **geopolitical risk index** (such as the GPR) moves from **100 to 150**. We can think of this as a **50-point “jump”** in geopolitical uncertainty.

The question is:

How much does this leap increase the perceived risk on banks, sovereign debt and NBFIs?

C.3 FIRST PHASE: DIRECT EFFECT, WITHOUT CONTAGION

First, let us consider only the **direct effect** of the geopolitical shock, that is, the reaction of each sector **as if it were isolated**, without interactions with the others.

Let's imagine that:

- sovereigns are very sensitive to geopolitical **shocks** (because a conflict can raise debt financing costs);
- banks are moderately sensitive (because geopolitics can affect growth, credit quality, and funding costs);
- NBFIs are also sensitive, but to an intermediate extent.

To give you an idea:

- 50 basis point shock in geopolitical risk increases **sovereign risk by 40 basis points**;
- risk of **20 basis points**;
- risk of **30 basis points**.

After **only a direct effect**, without contagion between sectors, we would have:

- Banks: 100 to **120** basis points;
- Sovereigns: 150 to **190** basis points;
- NBFIs: 80 to **110** basis points.

This is a snapshot of what would happen if each sector reacted **only to the geopolitical shock**, independently of the others.

C.4 SECOND PHASE: CONTAGION THROUGH THE NETWORK

However, the three sectors are not isolated:

- Banks hold large amounts of **government bonds**. If sovereign spreads rise, the value of those bonds falls, and bank balance sheets suffer.
- NBFIs invest in bank and sovereign bonds and finance themselves (directly or indirectly) through banks. If banks experience difficulties, they can reduce credit lines, ask for more collateral, **etc.**
- Sovereigns, in turn, are affected by the health of the banking and NBFI sectors: if the financial system enters into crisis, growth slows, tax revenues decrease, **and** debt refinancing costs may increase.

To account for this, the SRIM introduces the idea that **part of the increased risk in one sector is transmitted to others**. In very simplified terms:

- **sovereign** risk is passed on to the **banks** (sovereign-bank nexus);
- part of the shock to **banks** is transmitted to **NBFIs**, and vice versa;

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- part of the risk of banks and NBFIs is reflected back on **sovereigns**.

Without going into mathematical details, let's assume that, after also considering these contagion effects, the overall increase in risk becomes:

- Banks: +49 **basis** points (no longer +20);
- Sovereigns: +54 **basis** points (no longer +40);
- NBFI: + 50 basis points (no longer +30).

The new risk levels (**as represented in Table IV**) therefore become:

Table IV: New risk levels

SECTOR	INITIAL RISK	TOTAL INCREASE AFTER SHOCK + CONTAGION	FINAL RISK
Banks (B)	100 bps	+49 bps	149 bps
Sovereigns (S)	150 bps	+54 bps	204 bps
NBFI (N)	80 bps	+50 bps	130 bps

Compared to the direct effect:

- banks increase not by more than 20, **but** by 49 basis points;
- NBFIs increase not by more than 30, but by 50 basis points;
- Sovereigns** also get an additional increase (from 40 to 54).

C.5 HOW MUCH DOES THE CONTAGION WEIGH?

We can now ask ourselves: **how much of the increased risk is linked to the “pure” geopolitical shock and how much to the network of relationships?**

For **banks**:

- direct effect (geopolitics only): +20 basis points;
- total increase (geopolitics + contagion): +49 basis points;
- contagion**: +29 basis points, i.e. almost **60%** of the overall shock.

For the **sovereigns**:

- direct: +40; total: +54; contagion: +14 basis points (about **a quarter**).

For **NBFIs**:

- direct: +30; total: +50; contagion: +20 basis points (about **40%**).

This simple breakdown tells us that:

- sovereigns are **directly** affected by **geopolitics** (because public debt is considered riskier);
- banks are particularly vulnerable to **contagion** from other sectors;
- NBFIs experience both the direct effect and significant contagion from banks and sovereigns.

In other words, the geopolitical shock **originates “outside” the financial system** but becomes a systemic problem **because the links between banks, states and NBFIs amplify it**.

D. CONNECTION TO SYSTEMIC RISK MEASURES (ΔCoVaR)

In the literature on systemic risk, there are various measures that try to answer a simple question:

“How much does the risk of the entire system worsen if a certain sector (for example, banks) enters a state of stress?”

One such measure is the ΔCoVaR , which, intuitively, compares:

- the system's risk level under “normal” conditions;
- the level of risk in the system **when a certain sector is in difficulty**.

To connect our example to this idea, let's imagine that:

- under normal conditions the **VaR** (the maximum expected loss, with a certain probability and in a certain time horizon) of the "European financial system" is equal to **-5%**;
- with **only a geopolitical shock**, without contagion, the VaR drops to **-7%**;
- Considering both **geopolitical shock and network contagion** (as in the numerical example above), the VaR reaches **-9%**.

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We can then say, in a simplified way, that the stress on the banking sector, conditioned by the geopolitical shock, **adds 2 points of potential loss to the system:**

- from –7% (geopolitics only) to –9% (geopolitics + banking stress).

This is, in essence, the spirit of ΔCoVaR applied to the banking node: it measures **how much the difficulties of the banks contribute to the risk of the entire system**, in the presence of a geopolitical shock.

The same can be done, in principle, for the sovereign node and the NBFi node, so as to compare **which is the main “amplifier”** of systemic risk.

E. POLICY IMPLICATIONS AND RESEARCH AGENDA

The proposed numerical example is deliberately simple, but it allows us to clarify what a model like the SRIM could offer, in perspective, once estimated on real data and with advanced econometric tools.

The main implications are as follows.

E.1 BETTER UNDERSTANDING THE ROLE OF GEOPOLITICAL RISK

First, the model allows us to **quantify** the link between geopolitical risk indicators and financial variables (spread, funding costs, NBFi stress). This means:

- be able to assess ex ante the effect of an increase in the GPR on banks, sovereigns and NBFIs;
- distinguish situations in which the geopolitical shock remains “manageable” from situations in which, due to the network structure, it risks becoming systemic.

E.2 MEASURING THE CONTRIBUTION OF INDIVIDUAL NODES TO SYSTEMIC RISK

Second, SRIM allows to calculate measures such as ΔCoVaR or SRISK **for each node** (banks, sovereigns, NBFIs):

- If the **banking sector** shows a high systemic contribution and a strong contagion component, this may justify:
 - more stringent capital requirements;
 - higher macroprudential buffers in times of increased geopolitical risk;
 - limits on concentrations on certain debtors (for example high-risk sovereigns).
- If the **NBFi sector** emerges as an increasingly central node, the model can offer quantitative support for:
 - extend the scope of supervision in a structured way;
 - introduce specific macro-prudential tools for funds with high leverage and liquidity mismatch;
 - systematically include NBFIs in **system stress tests**.
- If the **sovereign node** is the main amplifier, SRIM can strengthen the arguments for:
 - policies to reduce the **home bias** of bank portfolios;
 - more robust European mechanisms for managing and mutualising sovereign risks;
 - completion of the Banking Union (including a European deposit guarantee).

E.3 FROM THE CONCEPTUAL MODEL TO THE EMPIRICAL ESTIMATE

The future research agenda includes:

- the construction of **risk indicators** for each node (banks, sovereigns, NBFIs) on a European basis;
- the definition of an **interconnection matrix** that quantifies the balance sheet, funding and market links between the various sectors;
- estimation of model parameters (sensitivity to geopolitical shock, contagion coefficients) through **dynamic network analysis techniques**, VAR models, regime change approaches (crisis vs. normality).

This step would transform the SRIM from **a theoretical framework** to an **operational tool** for assessing systemic risk and calibrating macroprudential buffers.

CONCLUSIONS

Chapter 6 showed how the empirical evidence gathered in the work – overall solidity of the banking sector, persistence of geopolitical risk, centrality of the sovereign-banking nexus, growth of the role of NBFIs – converge towards a common conclusion: To assess and manage systemic risk in the euro area, it is no longer sufficient to analyse individual sectors in isolation; an **integrated, networked approach, contingent on geopolitical shocks, is needed**.

The **SRIM – Systemic Risk Integrated Model** – is proposed as a **future research agenda** in this direction. It does not replace existing tools (stress tests, sensitivity analyses, metrics such as CoVaR and SRISK), but offers a framework for:

- integrate them into a coherent system vision;

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- explicitly link geopolitical risk to financial stability;
- Translating the complexity of the interconnections between banks, sovereigns, and NBFIs into **operational metrics** for authorities and operators.

Looking ahead, the empirical development of the SRIM would allow the lessons of recent shocks to be transformed into a stable source of **preventive analysis**, increasing the capacity of the European system to absorb future geopolitical shocks without degenerating into systemic crises.

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