

Geopolitical Risks and Financial Stability: Literature and Measurements

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Introduction and Motivation

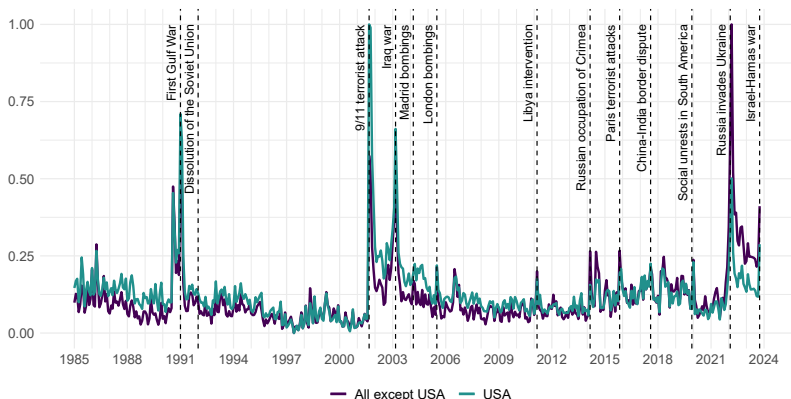
- **Geopolitical tensions** are rising, underlining the need to understand threats to economic growth and financial stability
 - ▶ **Exogeneous** to economic models, these shocks escape standard predictive models, leaving economies vulnerable to sudden and severe impacts

We offer:

- 1 Overview of existing measures of geopolitical tensions and uncertainty
 - ★ ...showing that GPR impacts economic and financial uncertainty episodically
 - 2 Review of the literature to identify the main transmission channels through which geopolitical risks influence macro-financial stability
 - ★ **The financial channel** – heightened uncertainty, leading to increased risk aversion and significant shifts in investment portfolio reallocations and cross-border capital flows
 - ★ **The real economy channel** – works indirectly by impacting global trade and supply chains and commodity markets
- Using data from the past two to three decades, we provide graphical analyses that corroborate findings from the literature

Geopolitical Risk Index

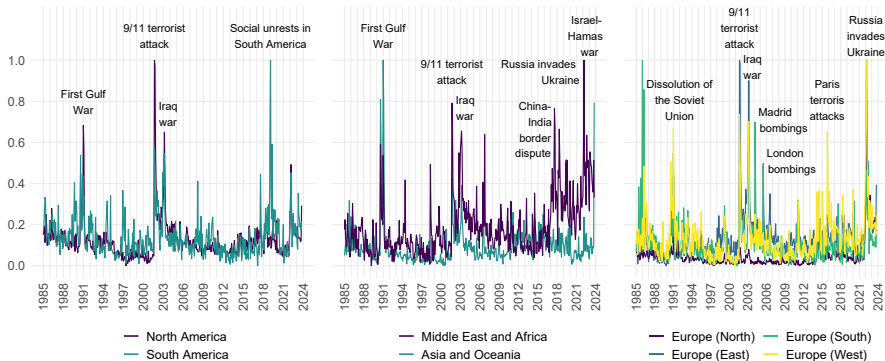
- Caldara & Iacoviello (2022) construct a **GPR index** by computing the **share of articles mentioning adverse geopolitical events** in US newspapers
- The global GPR index highlights mainly wars and terrorist attacks (albeit from US perspective)
 - ▶ For the US, the GPR index peaks during the 9/11 attacks (otherwise, the Russia invasion of Ukraine is the peak)



Note: The GPR index was normalised using min-max scaling.

GPR Events – Breakdown by Region

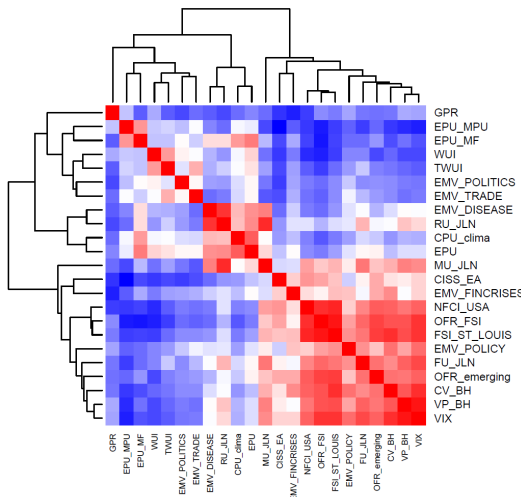
- GPR indices *vary across countries* (regions)
- ...but the regions generally “agree” on the main spikes (albeit at a different level of exposure)



Note: The country-specific GPR indexes reflect automated text-search results of the electronic archives of US newspaper articles. The data were normalised using min-max scaling.

How Does the GPR Index Relate to Existing Uncertainty Indexes?

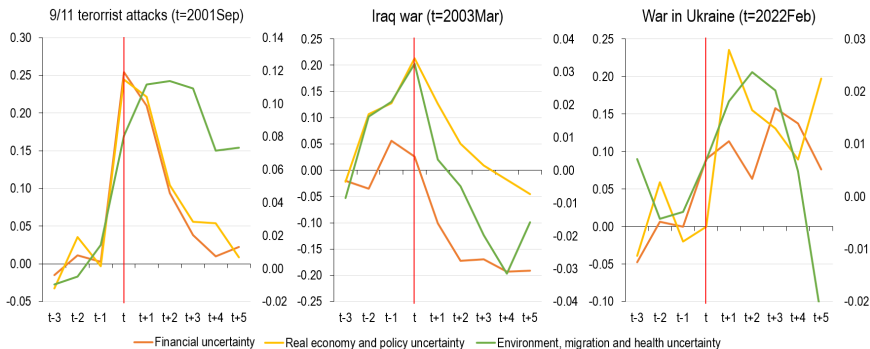
- Various uncertainty measures available in the literature
 - ▶ Cascaldi-Garcia *et al.* (2023) offer a methodological review
- We categorized existing uncertainty measures into **three categories** (based on the sources of the shock):
 - ▶ Financial uncertainty
 - ▶ Real economy and policy uncertainty
 - ▶ Environmental and health issues
- **Where does the GPR index fit?**
 - ▶ Grouped together with **migration and trade-related uncertainty indexes**



Note: The heatmap displays pairwise correlations among the listed indices. Dendrograms use hierarchical clustering to group variables based on their correlation patterns.

Uncertainty Spikes Around Significant GPR Events

- Selected GPR events generate large spikes in uncertainty
 - Cross-correlation analyses reveal that the GPR index aligns with uncertainty indices primarily during significant GPR events and not necessarily consistently over time



Note: The financial uncertainty is represented by the VIX index, the Real economy and policy uncertainty is the global EPU index, and the Environment, migration and health uncertainty is a simple average between the Climate policy uncertainty index, the EPU migration policy uncertainty index, and the EMV Infectious Disease tracker. Pre-event mean value was subtracted from the time series.

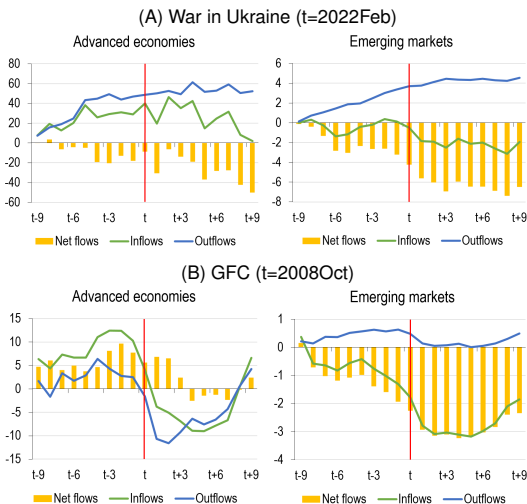
Geopolitical Risks: Transmission Channels

Financial Channel

Financial Channel: Uncertainty Diminishes

Cross-border Capital Flows

- Rising uncertainty can lead to a **flight to safety** (Fogli & Perri, 2015; Akinci *et al.*, 2022)
- During crises, investors are known to **retrench from foreign positions** (Broner *et al.*, 2013; Choi *et al.*, 2023)
- **Capital controls** can help, but only affect composition of flows (e.g. reduce foreign borrowing), not their volume (Montiel & Reinhart, 1999; Bacchetta *et al.*, 2023)



Note: Cumulative equity cross-border flows (USD bn).

Financial Channel: Mutual Funds Are Very Sensitive to Uncertainty

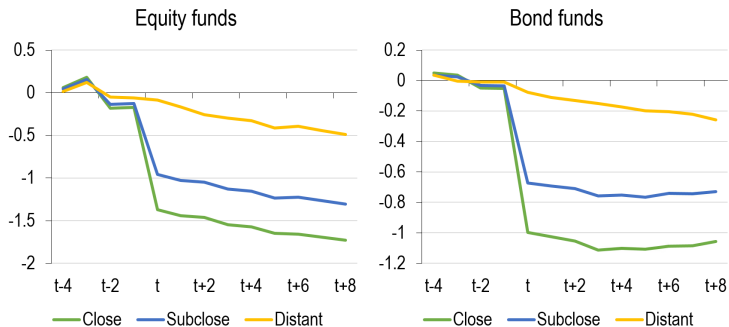
- **Mutual funds** are exposed to all kinds of uncertainties
- Uncertainty spikes lead investors **away from higher-risk investments** (flight to quality), see Weber *et al.* (2013) and Cohn *et al.* (2015)
 - ▶ Outflows from the entire industry or re-allocations amongst assets classes (Adrian *et al.*, 2019; Baele *et al.*, 2020)

| | Financial uncertainty | Real economy and policy uncertainty | Environmental and health uncertainty |
|-------------|-----------------------|-------------------------------------|--------------------------------------|
| Equity | -0.44*** | -0.15* | 0.12 |
| Real Estate | -0.22** | 0.19** | 0.17* |
| Hedge | -0.37*** | -0.33*** | -0.25*** |
| Bond | -0.32*** | -0.22** | -0.23** |

Note: The table shows pairwise correlation coefficients between monthly flows of euro area domiciled funds and different types of uncertainty indicators over 2009Jan–2023Jun period.

Financial Channel: Proximity to GPR Event Matters?

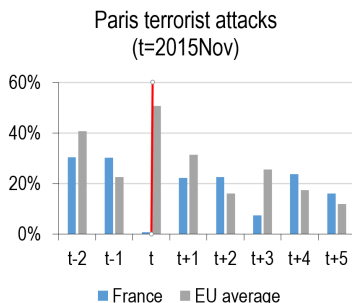
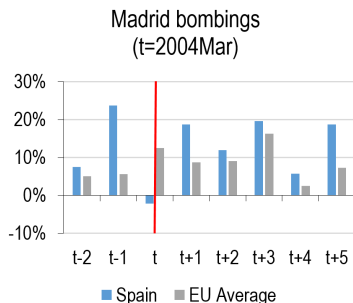
- Federle *et al.* (2022) speaks of **proximity penalty** in stock markets returns (lower returns for neighboring countries to Ukraine)
- Something similar can be picked up for EU-domiciled mutual funds



Note: Annual growth rates of total fund assets, pre-event mean subtracted from the time series. Close includes: Estonia, Finland, Hungary, Lithuania, Latvia, Poland, Romania, and Slovakia. Subclose comprises of the Close category countries and adds Austria, Czech Republic, Germany, and Slovenia. Distant countries are Belgium, Cyprus, Spain, France, Greece, Ireland, Italy, Luxembourg, Malta, Netherlands, and Portugal.

Financial Channel: Bank Lending

- Uncertainty is known to **affect business cycle**, as per irreversible investment literature (Bloom, 2009; Bachmann *et al.*, 2013)
- Heightened uncertainty leads banks to **reduce their loan supply** (Buch *et al.*, 2015)
 - ▶ ...but **better capitalized banks with larger liquidity buffers** are less impacted (Raunig *et al.*, 2017)
 - ▶ Gric *et al.* (2022) suggest that negative sentiment needs to be backed-up by worsening economic fundamentals to bring down lending



Note: Annual growth rate of new consumer loans around selected event dates (t).

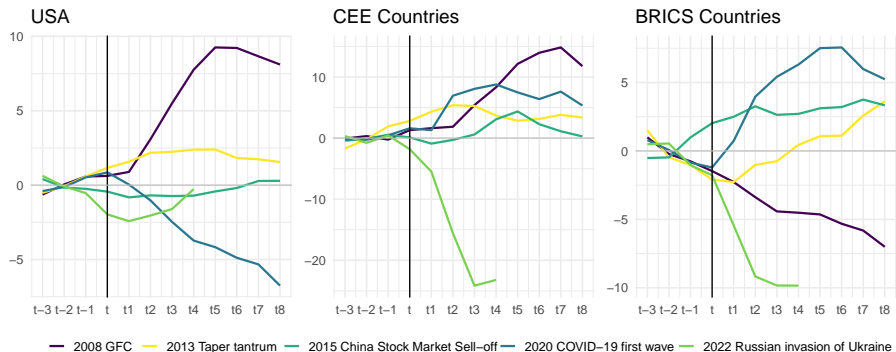
Geopolitical Risks: Transmission Channels

Real Economy Channel

Real Channel: Trade Tensions and Imbalances

- Trade tensions and imbalances, often triggered by geopolitical events, **affect the current and financial accounts of the BoP**
- Potentially disrupting the financial stability of economies (reflection in Capital Flows)

Figure: Current Account in USA, CEE and BRICS after Events



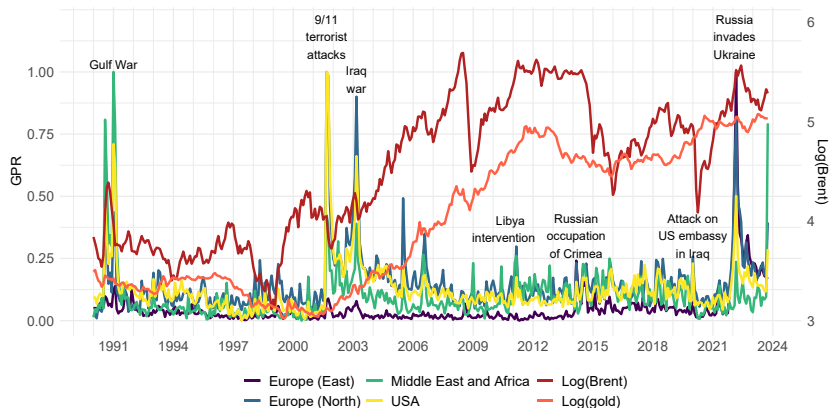
Note: Time t represents the moment when a particular event occurred.

Real Channel: Trade Tensions and Imbalances

- Sudden disruptions in trade and capital flows, often due to geopolitical events, have been linked to significant financial crises (Kaminsky & Reinhart, 1999; Janus & Riera-Crichton, 2013).
- Trade deficit lead to capital inflows, elevating financial risks and potentially fueling asset price bubbles, especially in smaller economies (Frankel & Rose, 1998; Alcalá & Ciccone, 2004).
- Capital inflows support growth but expose EMEs to external shocks. The impact on financial stability is ambiguous and varies with financial openness, development level, and other local factors (Baum *et al.*, 2017; Bruno & Shin, 2015; Broner *et al.*, 2013).
- Trade imbalances and fluctuating capital flows can induce exchange rate volatility, leading to financial market risks and affecting the valuation of foreign assets and liabilities (Rose, 2020; Forbes & Warnock, 2012).

Real Channel: Disruptions in Commodity Markets

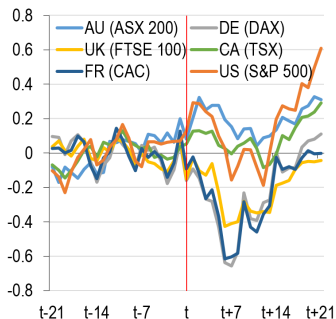
- **High interconnectedness** between GPR events and commodity markets
 - ▶ ...often causing **spillovers of local events to the global economy** (Caldara *et al.*, 2022)
 - ▶ Exposure to commodity price risk depends on **country's reliance on commodities** (Wang & Sun, 2013)
- **Direct effects** on stock markets, bank performance and risk
- **Indirect effects** on production costs, earnings, and consumer behavior



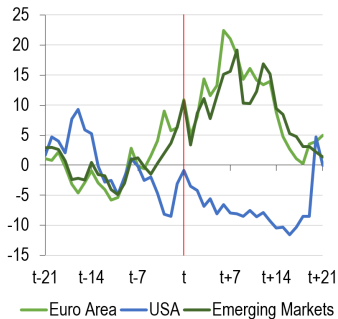
Commodity Disruptions and Stock Market Volatility

- Extensive body of research links commodity price volatility and stock market development (Kilian & Park, 2009; Basher *et al.*, 2018)
 - ▶ Commodity price shocks affect not only **stock returns** but also **increase market volatility** (Olson *et al.*, 2014; Lombardi & Siklos, 2016)
- Smales (2021) show that an increase in geopolitical risk is leads to **higher oil prices** and **greater stock market volatility**

(A) Stock Market Returns



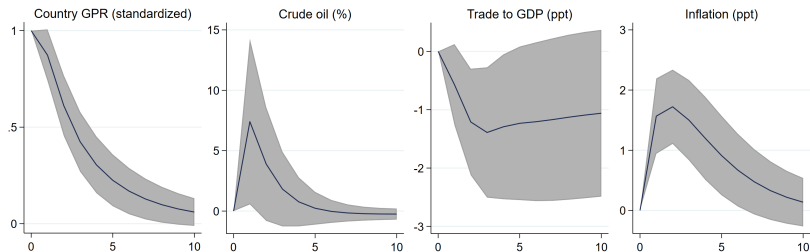
(B) Stock Market Volatility



Note: Development of stock market returns and volatility around the Russia invasion of Ukraine (t). Individual pre-event sample means were subtracted from the time series.

Effects of Geopolitical Risks on Inflation

- Estimate **four-variable panel VAR** using annual data spanning 1946–2020
 - ▶ **Cholesky ordering** of variables (using two lags of variables set according to information criteria tests)
 - ▶ Variables: country GPR (standartized), log of crude oil prices (West Texas Intermediate), trade to GDP ratio, and the inflation rate (winsorized from the top using 2.5% cut-off)
- A country-specific one-standard-deviation **GPR shock induces inflationary pressures, which peak at nearly 1.5%** in the first two years following the shock
 - ▶ ... accompanied by subsequent increases in crude oil prices and disruptions in trade, which serve as conduits for the transmission of these effects

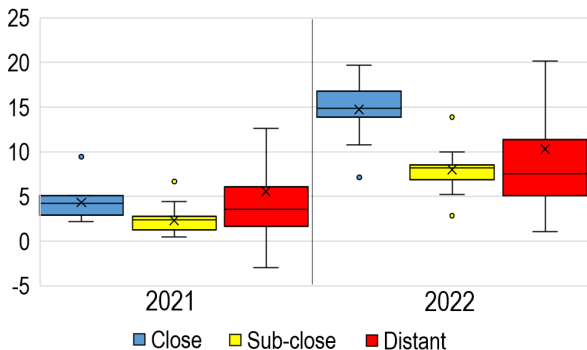


Source: Caldara & Iacoviello (2022), FRED and Jordà-Schularick-Taylor Macrohistory Database.

Effects of Geopolitical Risks on Inflation

- Figure tracks inflation dynamics in 171 countries following the Russian invasion of Ukraine
- Significantly larger increase of inflation in countries closer to Ukraine compared to others

Figure: Inflation Dynamics Following the War in Ukraine (in %)



Note: Close group include direct neighbours to Ukraine and second-degree neighbours (12 countries total). Sub-close consists of the rest of the European countries (19 countries total). Distant is the rest of the world countries (140 countries total).

Concluding remarks

- **Uncertainty spikes around geopolitical events**
 - ▶ This concerns both, the **real economy and policy** and the **financial sector** uncertainty
 - ▶ Episodic relationship
- **Rising GPR can endanger macro-financial stability** through real economy and financial channels
 - ▶ **Financial channel** operates through heightened uncertainty, possibly causing:
 - ★ disruptions to cross-border capital flows
 - ★ increase in risk aversion and portfolio reallocations during flight-to-safety(quality) episodes
 - ★ depressed bank demand and supply; worsened access to credit
 - ▶ **Real economy channel** works mainly indirectly by impacting global trade, supply chains and commodity markets
- **Proximity to the GPR event** is likely to increase the negative effects, similarly to trade/commodity exposure – in progress

Thank you for your attention

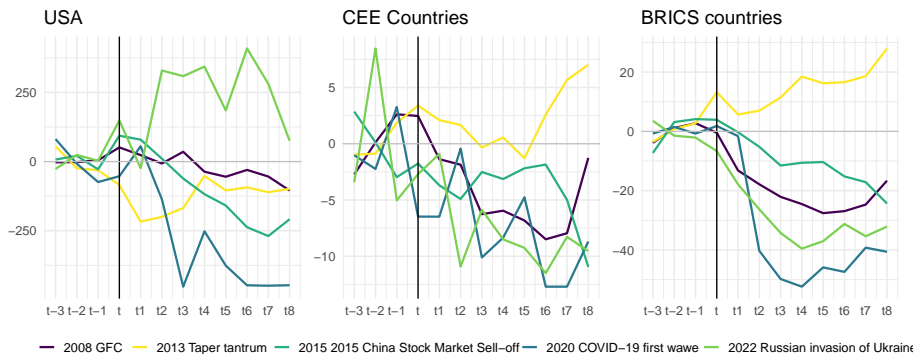
Back-up slides

Appendix: Real Channel, Trade Tensions and Imbalances

BACK

- Capital flows partially reflect changes in current account

Figure: Net Portfolio Flows in EMEs and USA after Events



Note: Time t represents the moment when a particular event occurred.

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