Do Geopolitical Risks Raise or Lower Inflation?

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Federal Reserve Board

ASSA Meetings – January 6, 2024

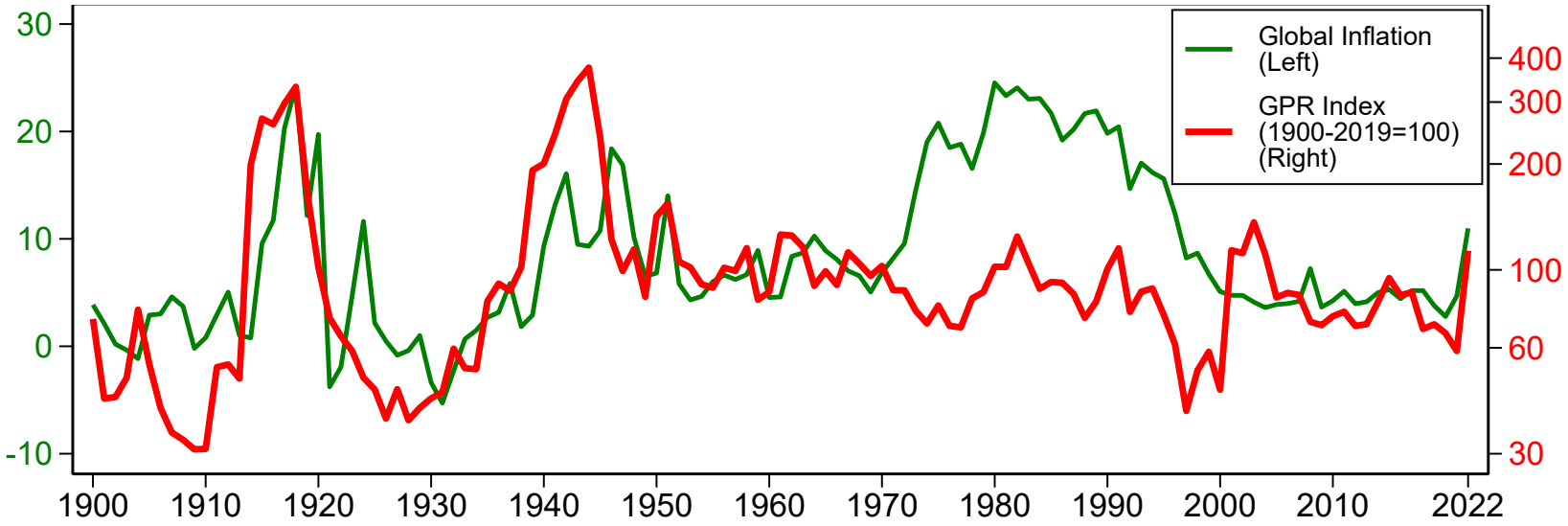
Introduction

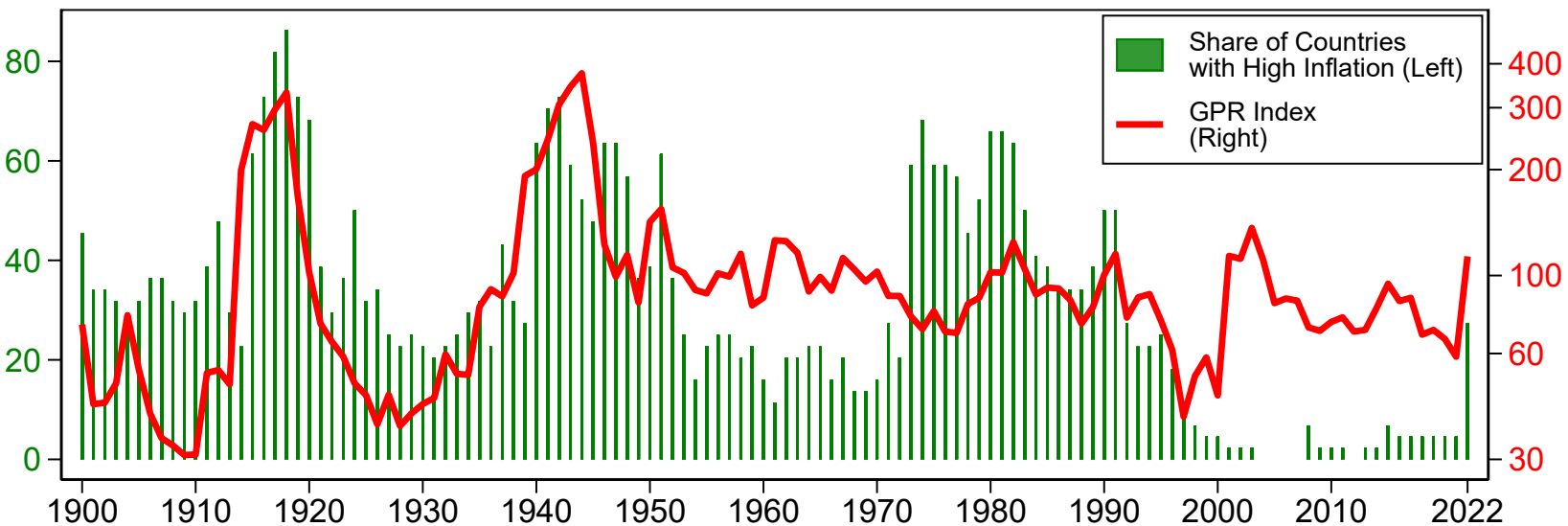
- What is the relationship between adverse geopolitical events (GPR) and inflation?

- Unclear from a theoretical standpoint:
  - Adverse supply effects ($\pi \uparrow$)
  - Adverse demand effects & uncertainty ($\pi \downarrow$)
  - Monetary & fiscal policy (π ?)
  - Commodity prices and dollar ($\pi \uparrow$)

- We use 120 years of data and various empirical techniques to examine the historical association between higher GPR and inflation.

Main Finding: Geopolitical Risks Raise Inflation





Geopolitical Risk and Inflation in the News

Argentines See Jump In Inflatic
By JAMES M. MARKHAMSpecial to T
New York Times (1923-); May 12, 1982; pg. D1

Argentines See Jump In Inflation

War Strains, Spending Cited

By JAMES M. MARKHAM

But the consensus in Argentina's business community is that the financial strains and dislocations that the conflict in the South Atlantic have caused — combined with a wave of spending by the military — have guaranteed that inflation will soar in the months ahead, and that a free-market, belt-tightening experiment under Economics Minister Roberto Alemann is just about over.

Well-placed bankers economists

VAST INFLATION ERUPTS FROM CHINA'S LONG W.
By TILLMAN DURDINSpecial to THE NEW YORK TIMES.
New York Times (1923-); Feb 16, 1947; ProQuest Historical Newspapers: T
pg. E4

VAST INFLATION ERUPTS FROM CHINA'S LONG WARS

End of Mediation Effort and Lack of U. S. Credits Contribute to the Crisis

By TILLMAN DURDIN
Special to THE NEW YORK TIMES.

A major element in the present state of affairs is the long-standing unsatisfactory fiscal position of the Central Government. Throughout eight years of the Japanese war, the Government met most of its domestic expenditures by issuing steadily increasing amounts of paper currency. Revenues during these Japanese war years never amounted to more than 30 per cent of disbursements; thus the new notes consistently represented 70 per cent of heavy wartime costs.

Internal Strife a Factor

By NEIL SHEEHANSpecial to The New York Times
New York Times (1923-); Nov 5, 1965; ProQuest Historical New
pg. 3

INFLATION A PERIL IN SOUTH VIETNAM

U.S. Helps Saigon Wage War on Economic Front

By NEIL SHEEHAN
Special to The New York Times

With much of its transportation system wrecked by war or severed by guerrillas and most of the rice-producing Mekong delta, the economic heartland of the country, in Communist hands, South Vietnam is being squeezed in the vise of a burgeoning money supply but a shrinking market of goods, services and facilities.

WAR BOOM HAS ITS DARK SIDE, BANKERS WA
Forrester, Leland
Chicago Daily Tribune (1923-1963); Oct 1, 1939; ProQuest Historic
pg. B9

WAR BOOM HAS ITS DARK SIDE, BANKERS WARN

Fear Vast Inflation in Long Conflict.

BY LELAND FORRESTER.

Other bankers, speaking at the meeting, said that unwise laws impair the efficiency of industry at a time when the nation should be using every economic means to make itself secure. They termed the government's cheap money policy a failure and said interest rates now are heading upward.

Economic Data

1. Country-Level Historical Annual Data:
   - **Coverage**: 1900 through 2021, 44 countries (17 AEs).
   - **Inflation** (Main Sources: IMF, Jordà et al. (2017), Reinhart and Rogoff (2009)).
   - **Real GDP** (Sources: WDI, PWT, Barro and Ursùa (2012)).
   - **Policy Indicators**: Military and public expenditures, public debt, money growth, foreign trade to GDP (Various sources)
   - **Text Data**: Two newly constructed news indexes to measure shortages and aggregate demand
2. Global Time-Series Monthly Data:
   - **Coverage**: 1974 through 2022.
   - **Macro variables**: world GDP, world inflation, consumer confidence
   - **Financial variables**: stock prices, dollar exchange rate, oil prices, commodity prices index.

Geopolitical Risk

- Geopolitical Risk is the threat, realization, and escalation of adverse events associated with wars, terrorism, and any tensions among states and political actors that affect the peaceful course of international relations.

- The GPR index is a continuous measure of risk. Higher values measure:
  - higher current intensity of negative events (e.g. more wars)
  - higher probability of negative events in the future
  - higher expected intensity of future negative events

Measurement: Newspaper Searches

- The geopolitical risk (GPR) index is measured by the **frequency** of newspaper articles discussing adverse geopolitical events.

$$GPR \propto \frac{\mathcal{G}}{\mathcal{U}}$$

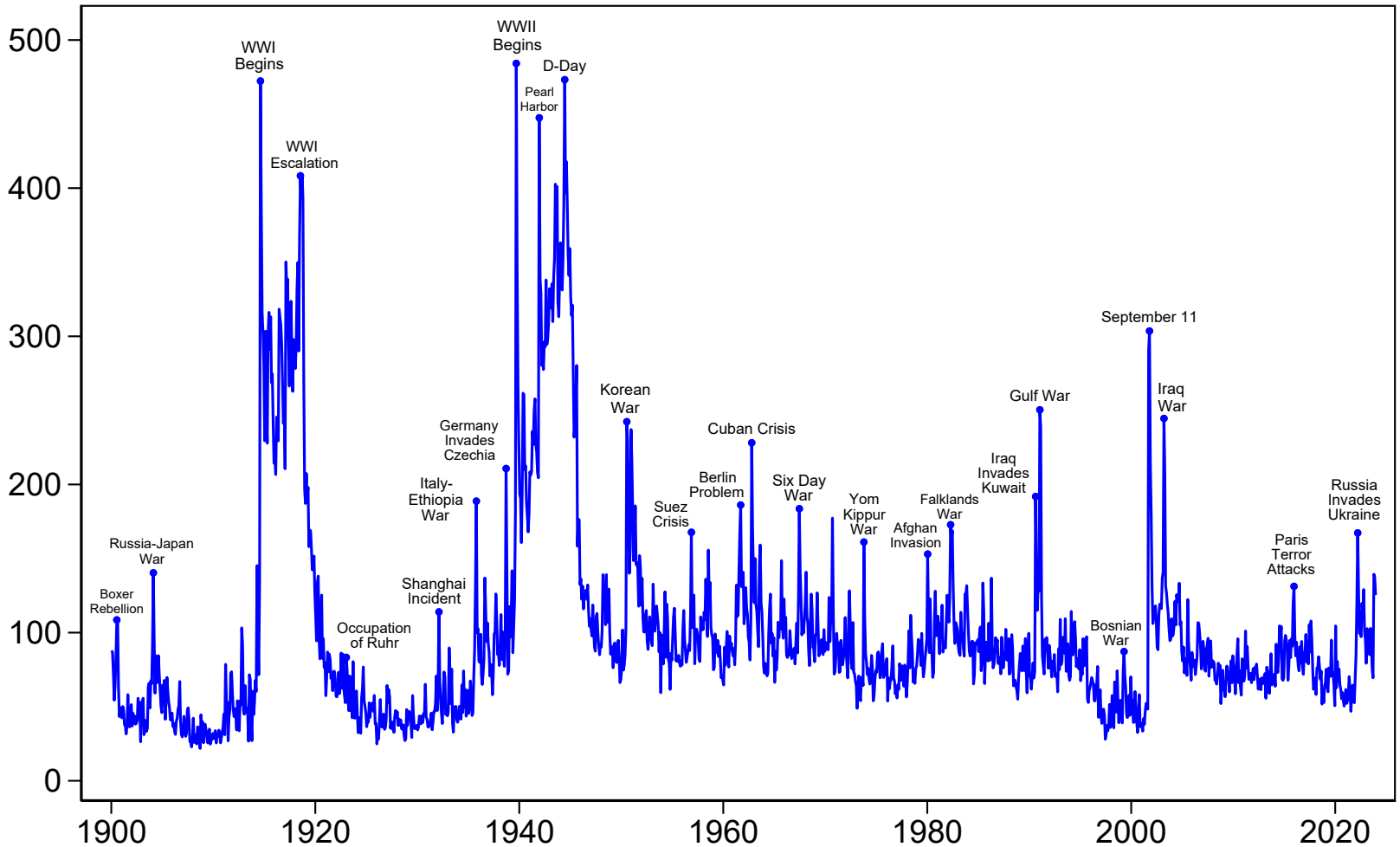
$\mathcal{G}$: number of articles mentioning adverse geopolitical events
$\mathcal{U}$: total number of articles

- An article mentioning geopolitical risks must contain:
  - "topic" words (e.g. war words, nuclear words, terrorism words)
  - "threat" or "act" words for each topic

- Historical indexes since 1900: NYT, Chicago Tribune, and WaPo

Terms Selection Search Terms Validation

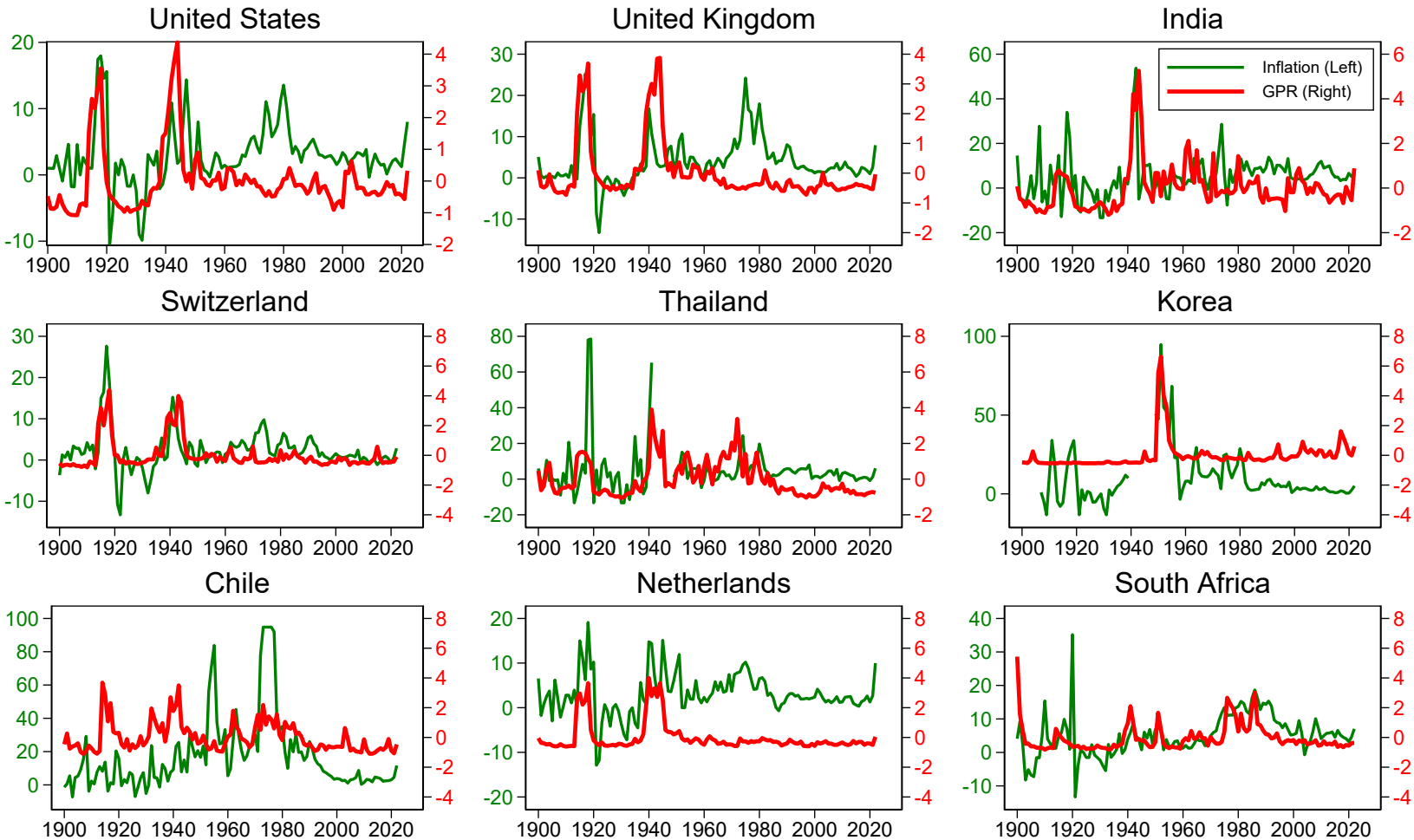
The Geopolitical Risk Index



Monthly Historical Geopolitical Risk, indexed to 100 in the 1900-2019 period. Last observation is for December 2023.
GPR available at https://www.matteoiacoviello.com/gpr.htm

Country-Specific GPR & Inflation

- GPR-related articles also covering country in question.
- High country-GPR correlated with higher inflation at the country level.

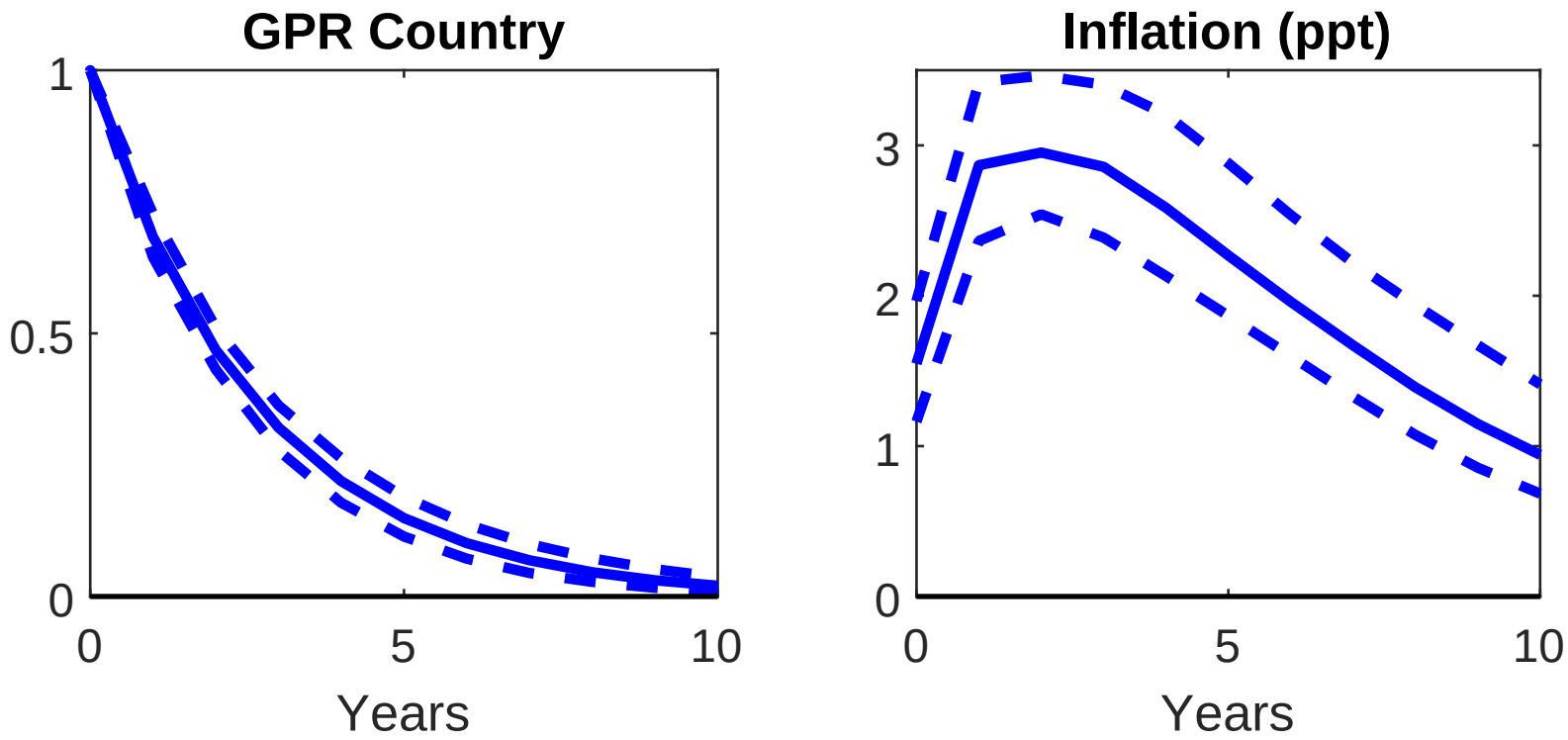


Annual Country-Specific Geopolitical Risk (Standardized) and Annual Inflation. Last observation is 2022. Inflation winsorized at 97.5 percentile.

Bivariate Panel VAR: GPR and Inflation

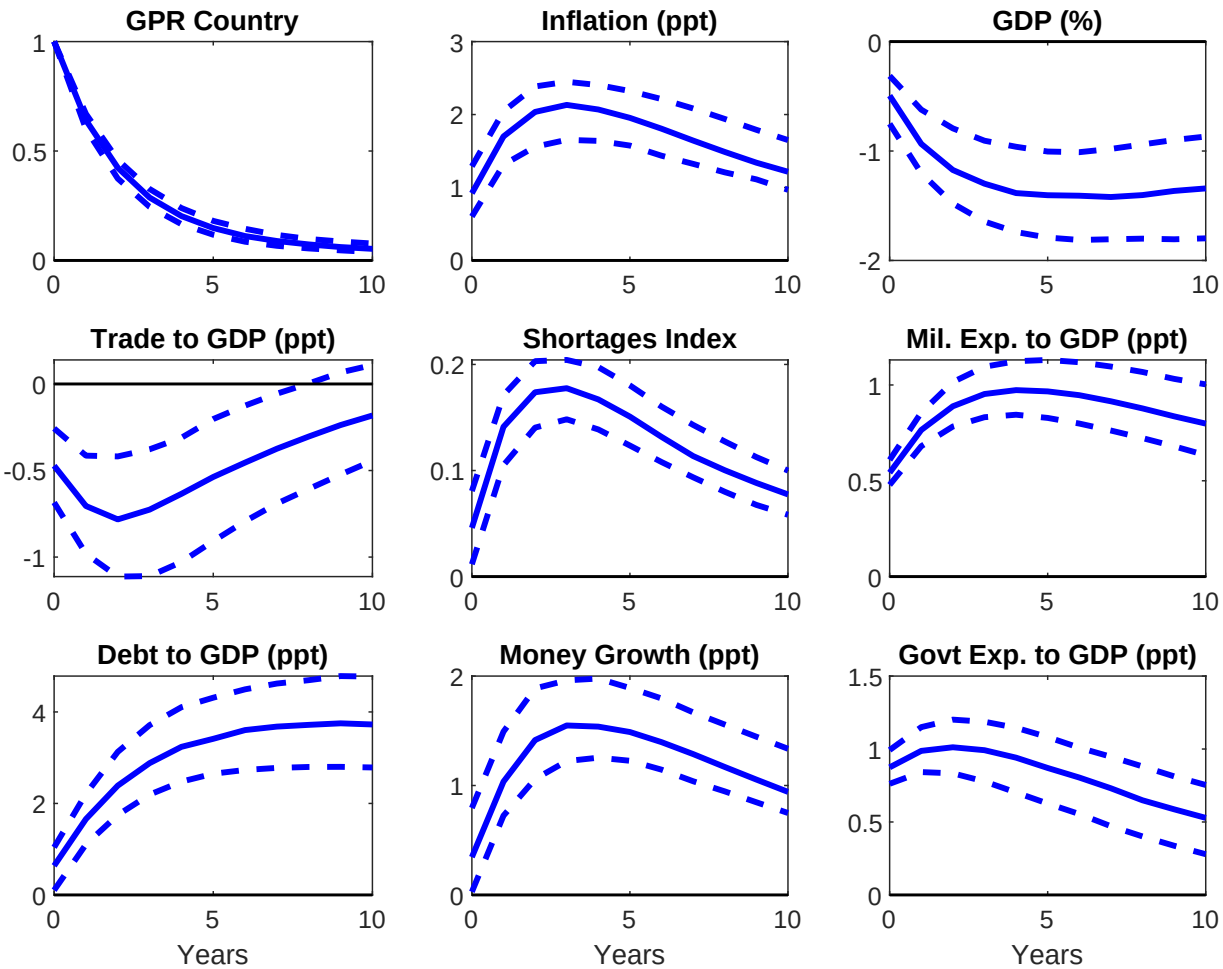
- Start with two-variable model to maximize number of observations
- Cholesky with country-GPR indexes ordered first

GPR shocks raise inflation



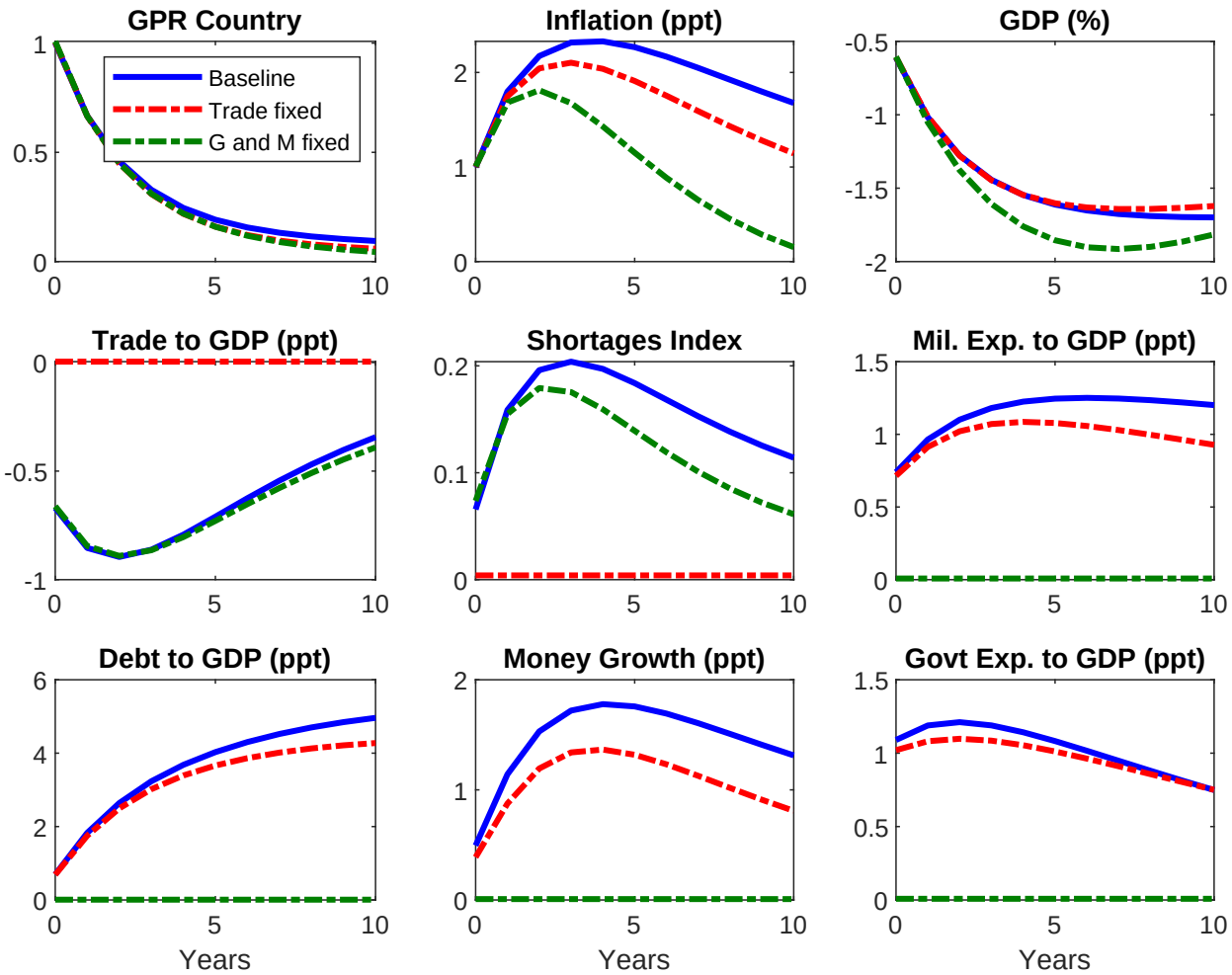
9-variable Panel VAR: Inspecting Transmission

- Add more variables to shed light on transmission
- Decline in international trade and higher supply disruptions
- Public spending, debt and money supply increase



Panel VAR: Counterfactual

- Does inflation rise because of demand or supply forces?
- Keeping shortages and trade unchanged, smaller inflation rise.
- Absent higher spending, smaller inflation rise, and larger activity drop.



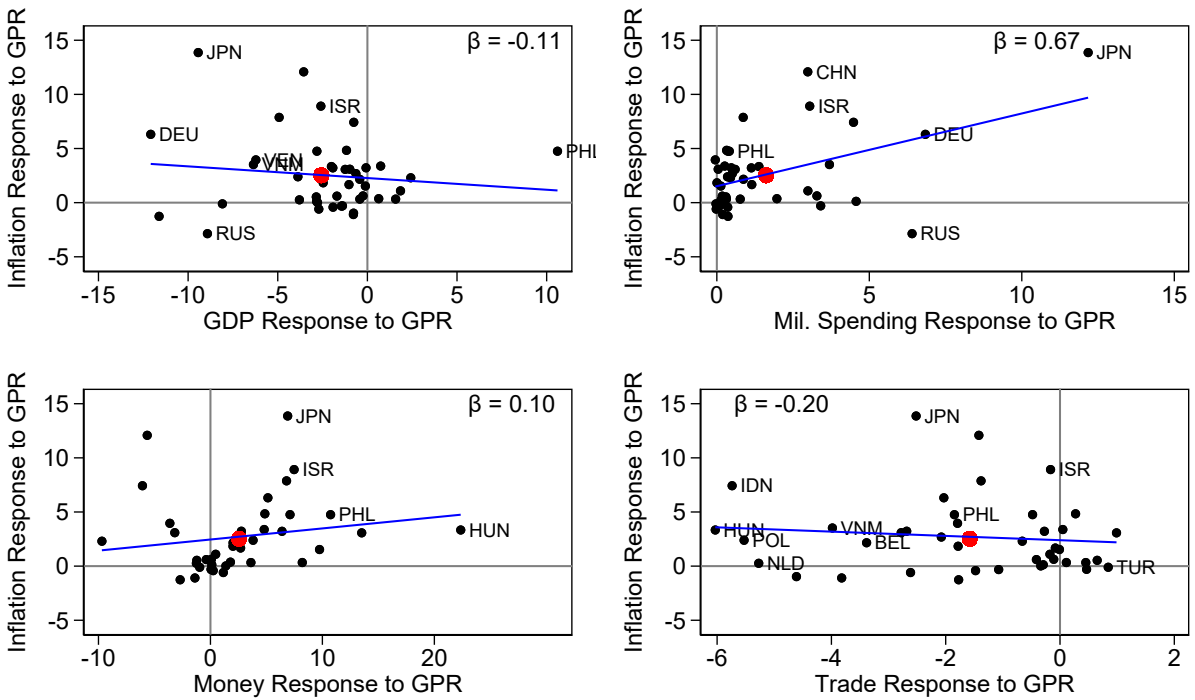
Allowing for Country Heterogeneity

Predictive regressions allowing for heterogeneous country responses.

$$\Delta X_{i,t+3} = \alpha_i + \beta_i GPRC_{i,t} + u_{i,t}$$

where X_t: π, GDP, Mil/GDP, Money Growth, Trade/GDP.

- Response of π varies across countries: mostly positive.
- Response of π lines up in the cross-section with responses of GDP(-), mil. spending (+), money (+), trade (-).



Robustness Analysis and Inflation Risk

	Horizon				
Inflation	t	$t+1$	$t+2$	$t+3$	$t+4$
Baseline	1.13	1.65	1.47	0.94	0.51
	(0.29)	(0.45)	(0.46)	(0.66)	(0.76)
Robustness					
Global GPR Control	0.81	1.17	0.90	0.64	0.76
	(0.33)	(0.40)	(0.37)	(0.46)	(0.51)
Advanced Economies	1.14	1.73	1.75	1.17	0.40
	(0.44)	(0.86)	(0.92)	(1.35)	(1.38)
Emerging Economies	1.12	1.58	1.21	0.74	0.61
	(0.38)	(0.46)	(0.40)	(0.42)	(0.61)
Post-1950s	0.92	1.26	1.05	0.67	0.49
	(0.37)	(0.49)	(0.49)	(0.54)	(0.67)
Quantiles					
q10	-0.86	-1.37	-1.97	-2.93	-3.35
	(0.35)	(0.44)	(0.46)	(0.62)	(0.63)
q50	1.21	1.79	1.62	1.09	0.62
	(0.25)	(0.31)	(0.39)	(0.44)	(0.52)
q90	3.53	5.00	5.28	5.18	5.08
	(0.49)	(0.62)	(0.79)	(0.86)	(0.73)
Observations (Baseline)	4,692	4,636	4,581	4,527	4,475
Number of Countries (Baseline)	44	44	44	44	44

Standard errors in parenthesis clustered by country and year.

Effects of inflation on geopolitical risk in a panel of countries from 1900 to 2021. Inflation is annual inflation in year $t+n$ minus its value in year $t-1$, with results shown at five different horizons n. Each row displays the effect of country-specific geopolitical risk in different specifications. "Global GPR" is the effect when controlling for standardized global geopolitical risk. "Advanced Economies", "Emerging Economies", and "Post-1950s" are the effects when limiting the sample to only those sets of countries or years. Quantile coefficients report the effects at the 10th, 50th, and 90th percentile of the distribution of inflation. Inflation is winsorized at the 1 and 97.5 percentiles. Country-specific geopolitical risk is standardized to have a mean of 0 and standard deviation of 1 for each country. All specifications include country fixed effects.

US VAR: Validating transmission

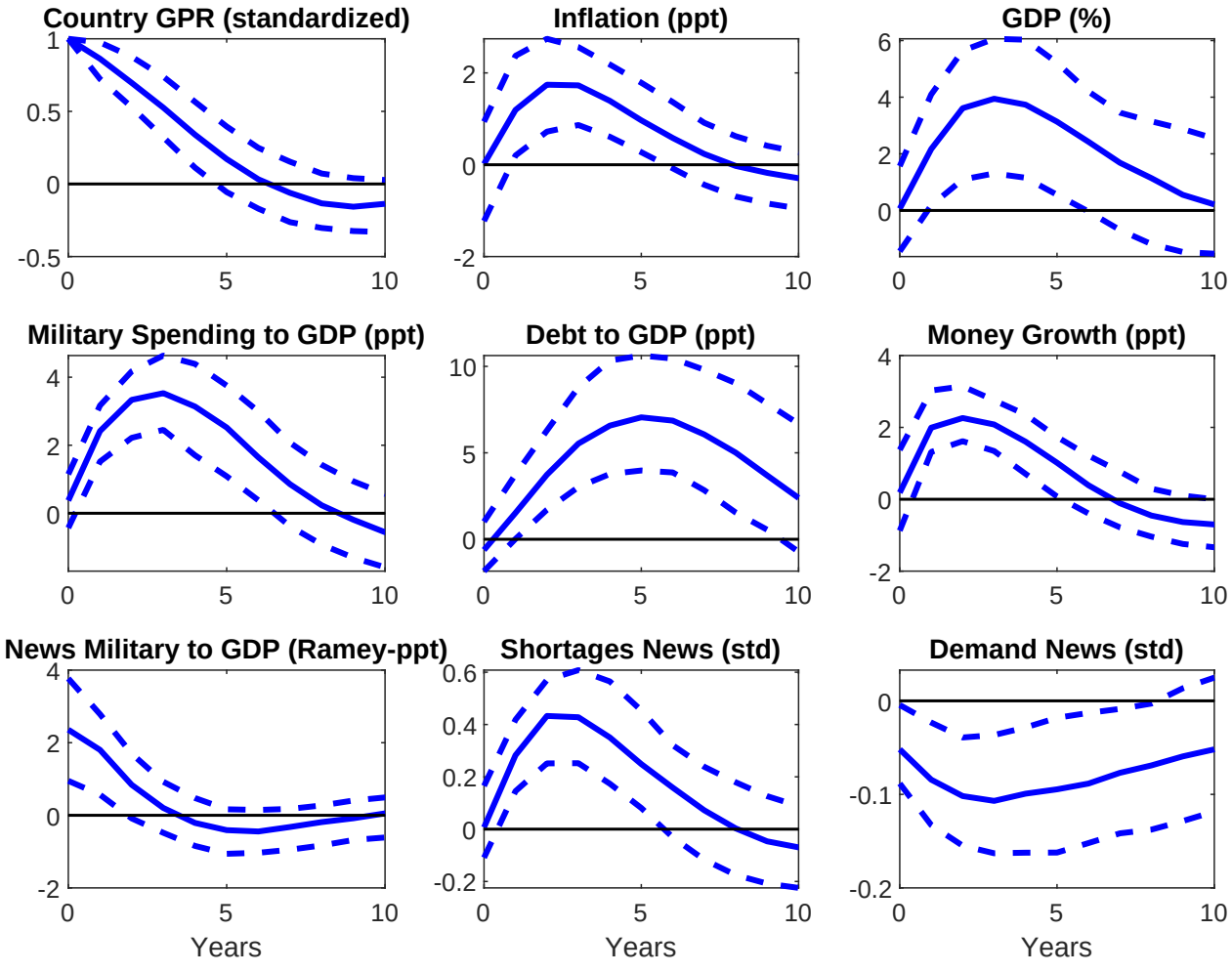
Why is instructive to zoom into the US?

1. U.S. unique experience in geopolitical events:
   - Involvement in many major conflicts
   - No conflict happening on U.S. soil (except 9/11).

2. More data to validate transmission:
   - Supply side: News index about shortages
   - Demand side: News index about aggregate demand.

3. Interplay of GPR with military news data (Ramey)

US VAR: Validating transmission



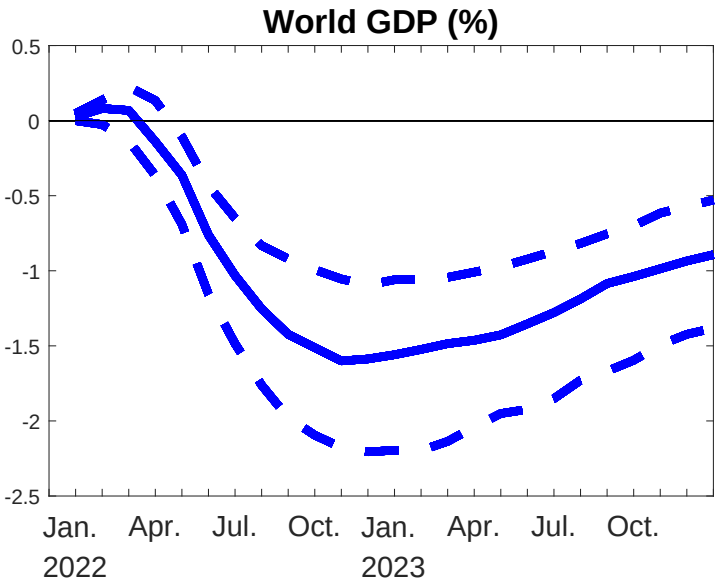
Global Effects of GPR since 1970s

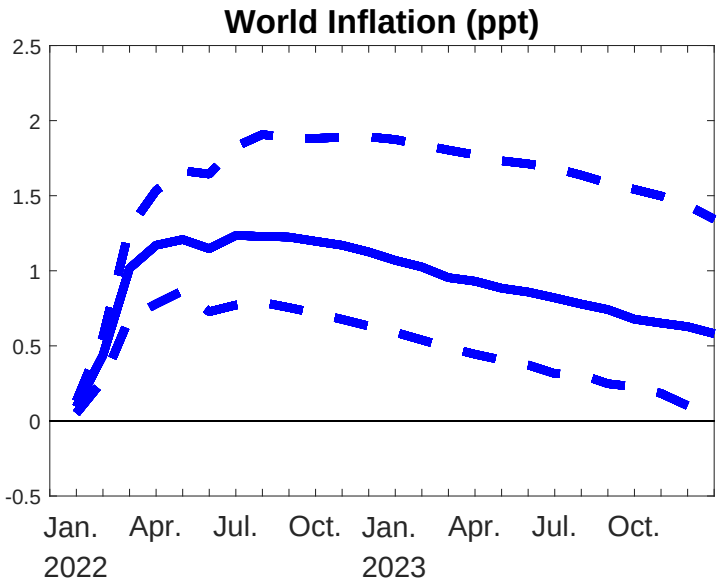
Application to the Russian Invasion of Ukraine

- Global monthly VAR from 1970s:
  - Examine role of global factors (dollar, comm prices)
  - Monthly frequency required to trace effects on fast-moving variables.
- Estimation uses GP Acts and GP Threats indexes:
  - GPA capture realization of adverse geopolitical events.
  - GPT capture higher threat of future adverse geopolitical events.
- Russia-Ukraine War Scenario:
  1. Extract historical GPT and GPA shocks.
  2. Construct simulation that tracks the dynamic effects of GPR shocks between Jan and Apr 2022.

Russia-Ukraine War Scenario: Global Effects

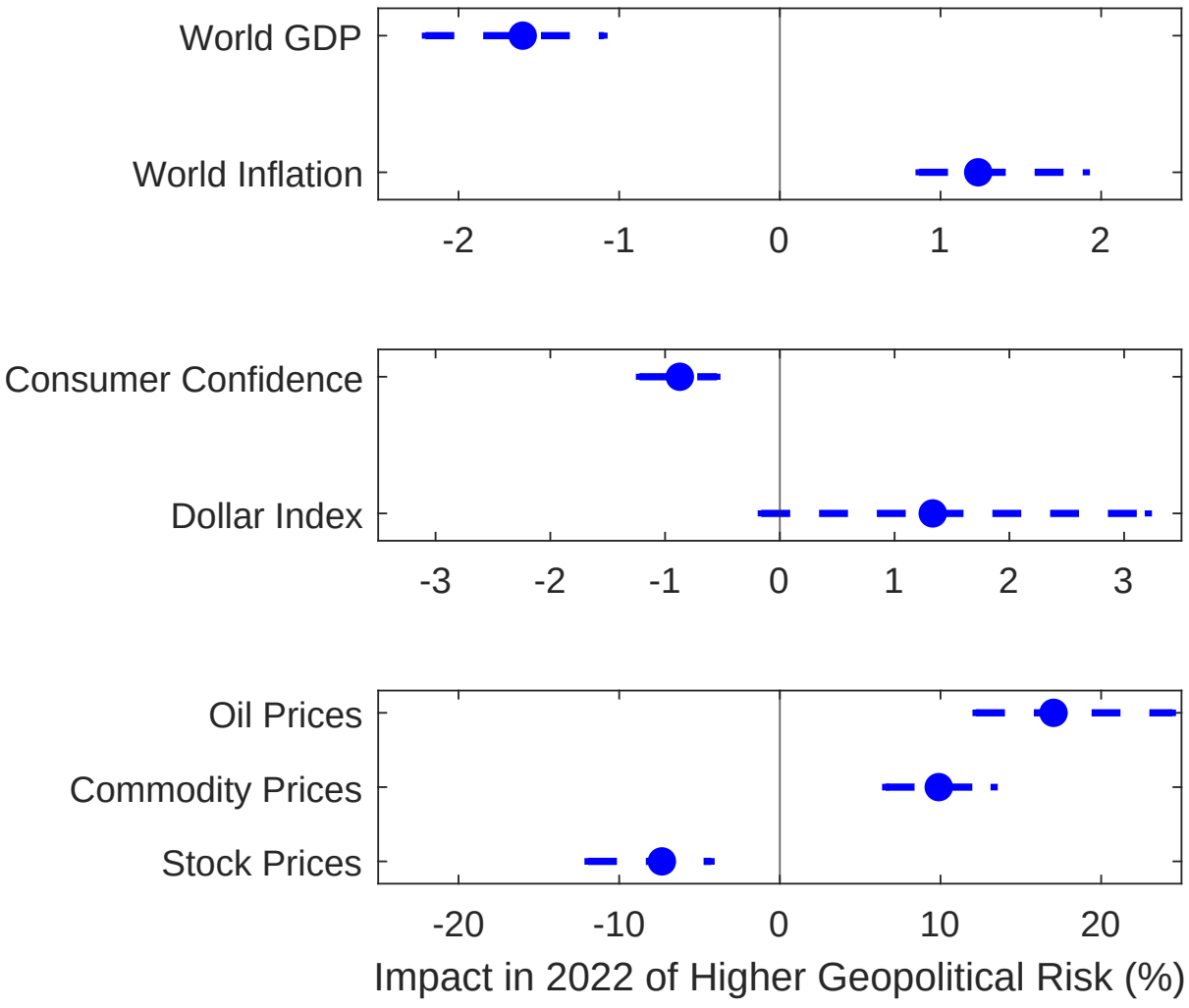
GPA & GPT Shocks Observed between Jan and Apr '22





Russia-Ukraine War Scenario: Transmission

GPA & GPT Shocks Observed between Jan and Apr '22



Conclusions

- Geopolitical risk raises inflation.
- Panel regressions since 1900: GPR predicts higher inflation through adverse supply-side effects and expansionary policies.
  - Effects vary over time and across countries.
- Global monthly VAR since 1974: GPR predicts higher inflation through higher commodity prices and dollar appreciation.
  - Russian invasion of Ukraine estimated to increase global inflation of nearly 1.5 ppt.

APPENDIX

Measurement: Selecting Terms in set $\mathcal{G}$

- An article mentioning geopolitical risks must contain:
  - "topic" words (e.g. war words, nuclear words, terrorism words)
  - "threat" or "act" words for each topic
- The selection of topic words is based on:
  - definition of the phenomenon itself;
  - human reading and textual analysis of 44,000 front pages of NYT;
  - analysis of language around key dates.
- Notes:
  - We exclude from searches articles containing words (such as movies, anniversaries, obituaries, books) associated with false positives.
  - We account for the evolution of language over time.

Back

The 2022 paper contains several exercises showing validity of the index

- Index Passes a Plausibility Test
- Index Uses Words that Reflect Changes in the Use of Language
- Index is Compared with Other Indicators of Conflict and War News

Back

Geopolitical Threats and Geopolitical Acts

- GPR index captures a mix of shocks to various moments of the distribution of geopolitical events.
- We break the index down into:
  - Geopolitical Threats (GPT): Search categories describing war and terror threats, military buildups, nuclear threats;
  - Geopolitical Acts (GPA): Search categories describing beginning and escalation of conflict, terrorist acts.
- Many spikes in GPT and GPA associated with occurrence of geopolitical acts, yet some movements in GPT may happen when no underlying act materializes.

Threats and Acts in 2022

- GPT index surged between January and March, declined in April.
- GPA index spiked in the aftermath of the invasion.