

Geopolitical Shocks and Inflation

By Matteo Iacoviello¹

Abstract

In these panel remarks, I will be discussing the relationship between geopolitical risks and inflation. For the most part, I will draw on research with a wonderful group of colleagues at the Federal Reserve Board illustrating the link between geopolitical risks and inflation. The research uses both long-run cross-country data and higher-frequency, monthly time-series data.²

1 Introduction

Geopolitical risks encompass a wide range of adverse events that threaten international relations. A narrow definition considers geopolitical risks as 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.³ Academic and journalistic practices sometimes extend this term to encompass a wide variety of risks, such as climate risks, trade policy tensions, or uncertainty over the legal environment faced by businesses operating abroad. In my remarks, I will adopt a narrow definition of the term.

It is instructive to think about geopolitical risks affecting inflation and broader economic activity through three channels. The first is an adverse, supply-side channel that links higher geopolitical risk with disruptions to trade, shortages of goods and services, and higher input and commodity prices. The second channel is an expansionary demand channel related to the need to finance government expenditures, including military spending, in the aftermath of geopolitical shocks. In historical data, both channels are present, and geopolitical risks are inflationary.

A third channel, which could mitigate the inflationary effects of geopolitical risk but only at the cost of a higher decline in activity, is a sentiment channel through which higher geopolitical risk disrupts financial markets and consumer sentiment. I will briefly discuss this sentiment channel towards the end of my presentation.

¹ Division of International Finance, Board of Governors of the Federal Reserve System. The views expressed here are my own and do not reflect those of the Board of Governors of the Federal Reserve System or anyone else associated with the Federal Reserve System. I thank Lilliana Wells and Kellen Lynch for assistance in preparing these remarks.

² See in particular Caldara and Iacoviello (2022) and Caldara, Conlisk, Iacoviello and Penn (2024).

³ This is the definition used in Caldara and Iacoviello (2022).

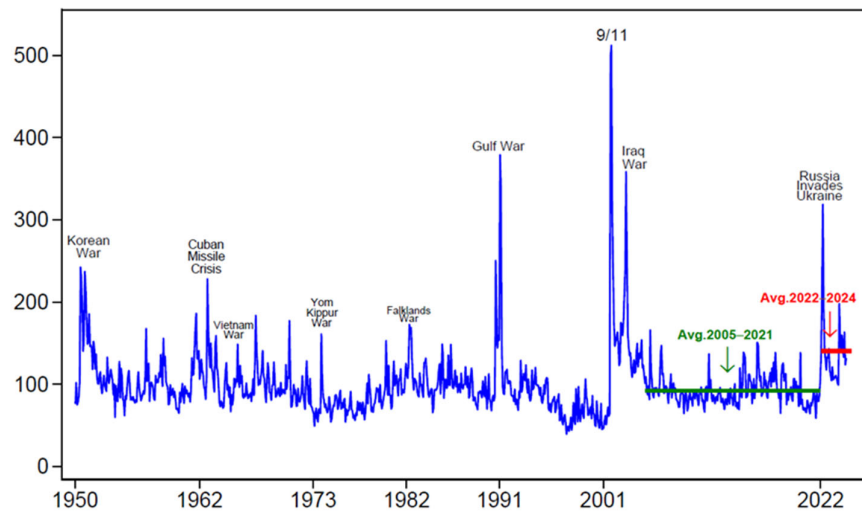
2 Measuring Geopolitical Risks

One hurdle with assessing the effects of geopolitical risks concerns their measurement. Dario Caldara and I have developed the Geopolitical Risk (GPR) Index, measured by the share of articles in leading international newspapers mentioning adverse geopolitical events and associated risks. Higher values of the index indicate a greater intensity of current negative events or higher probability of future negative events.

How global geopolitical risks have evolved since the end of World War 2 is illustrated in Chart 1. Many spikes in the index are familiar and are shown in the chart. It is instructive to pay attention to the evolution of the index in the last 20 years, smoothing through the noise of the monthly measure. Geopolitical risks soared after 9/11 but then gradually returned towards their historical average between 2005 and 2021. They spiked again with the Russian invasion of Ukraine and, while they have come down since the peak of early 2022, they have been averaging much higher values since 2022, compared to the relatively tranquil 2005-2021 period.

Chart 1
Geopolitical Risk Index since 1950

(Index: 1995-2019 = 100)



Sources: Data at <https://www.matteocioviello.com/gpr.htm>.

Notes: Index of geopolitical risks constructed using mentions in international newspapers of wars and adverse geopolitical events. Index: 1985-2019=100. The series shown combines data from the Historical Series up to 1984 with data from the Recent Series since 1985. The Historical series has been rebased to match the mean of the Recent Series in the 1985-2019 period. Last observation: June 2024.

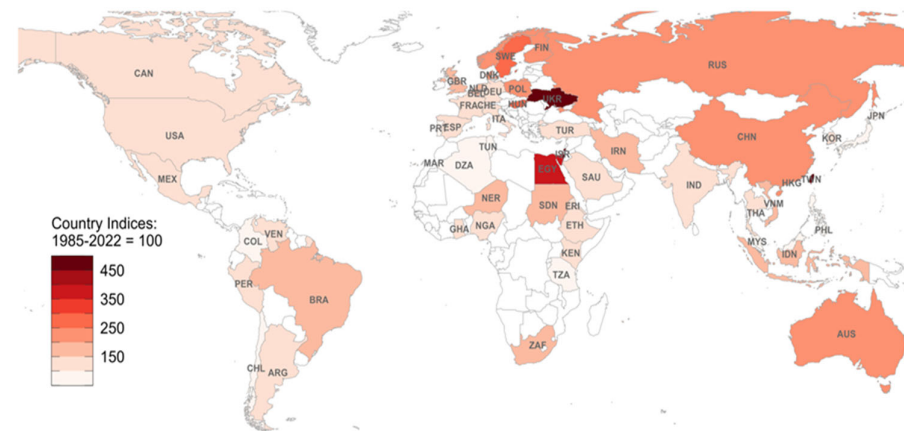
It is instructive to think of geopolitical risks as embedding both a global component and national component. We have constructed country-specific measures of geopolitical risk that zoom in on risks involving a particular country. The geographic disaggregation permits a more granular assessment of global risks, highlighting episodes that, while relevant for individual countries or regions, receive little weight in the aggregate index.

Of note, the role of country-specific factors in affecting global geopolitical risk has evolved over time. The heatmap shown in Chart 2 shows how recent geopolitical risks in each country compare to historical average for that country. The orange and red in the right half of the map shows how Eastern Europe, the Middle East, and parts of Asia have been sources of heightened geopolitical risk lately.

Chart 2

Heatmap of Global Geopolitical Risks Across Countries, July 2023-May 2024

(Country Indices: 1995 – 2022 = 100)



Sources: Data at <https://www.matteiacoviello.com/gpr.htm> and authors calculations.

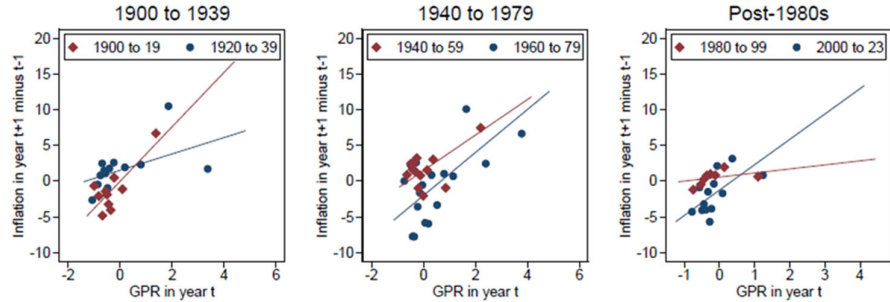
3 Geopolitical Risks and Inflation: Suggestive Evidence

What happens to inflation when geopolitical risks increase? Our research shows that spikes in geopolitical risk are associated with higher inflation in the years surrounding the event.

Chart 3 shows scatter plots of the relationship across countries/years between geopolitical risk in one country in year t , and the change in inflation in the same country in a two-year window including year t and the next. Regardless of the period, higher geopolitical risks are associated with rising inflation. The relationship is present in the 1900-1939 period, in the WWII period, and cold war period. It becomes slightly subdued in the 1980-1999 period but strengthens again in the last 20 years. Obviously, this evidence does not control for many other factors that could be driving inflation, but it is indeed suggestive of a positive association between inflation and geopolitical risks.

Chart 3 Geopolitical Risks and Inflation Over Time

Change in Inflation between year $t+1$ and year $t-1$.

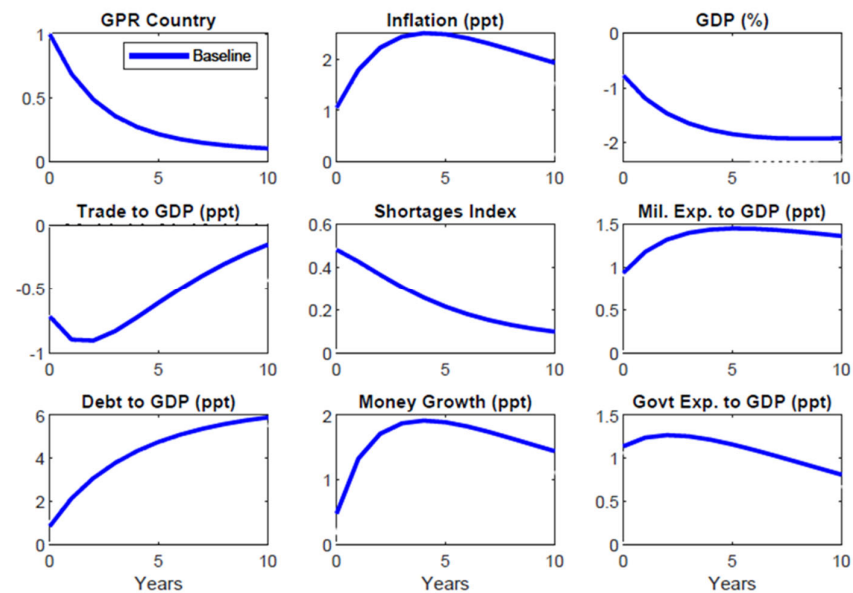


Sources: Caldara, Conlisk, Iacoviello, and Penn (2024).

4 Geopolitical Risks and Inflation: Panel VAR Evidence

I now dig deeper into this relationship by considering transmission channels through which geopolitical events influence inflation. The methodology we use is a panel vector autoregressive model. We use nearly 5,000 observations on geopolitical risk, inflation, GDP, and other variables for more than 40 countries from 1900 through today.

Chart 4 Effects of an Increase in Country-Specific Geopolitical Risk



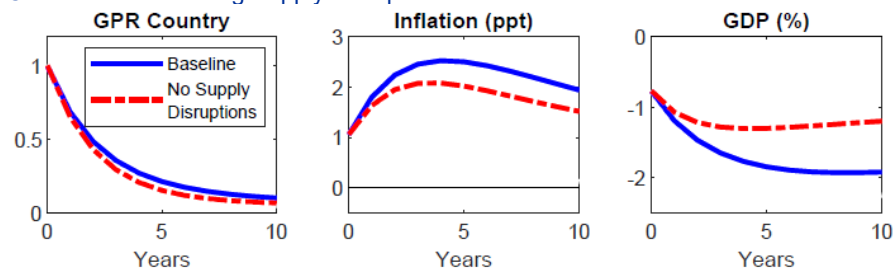
Sources: Caldara, Conlisk, Iacoviello, and Penn (2024).

The results are shown in Chart 4. Following a typical spike in geopolitical risk in one country, inflation rises and GDP drops. Of note, higher inflation and lower GDP are accompanied by a decline in trade and higher intensity of shortages.⁴ At the same time, public spending increases. As shown by the chart, geopolitical risks are followed by higher military spending, higher debt to GDP, higher money growth, and higher government expenditures.

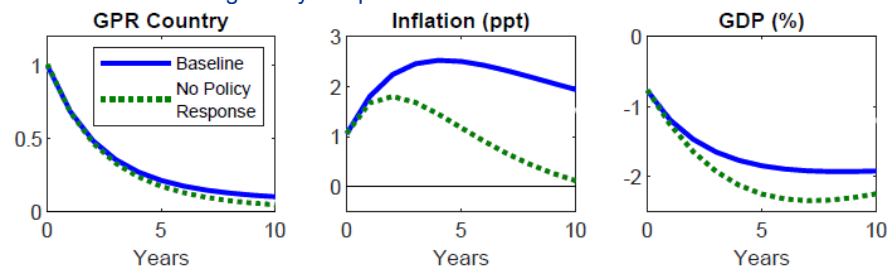
To better understand the relative contribution of supply and demand forces in driving inflation in the face of geopolitical shocks, I will now show two counterfactual scenarios done using the same model as before. These scenarios are illustrated in Chart 5.

Chart 5
Effects of Higher Country-Specific Geopolitical Risk: Counterfactual Scenarios

Counterfactual holding Supply Disruptions at Baseline



Counterfactual holding Policy Response at Baseline



Sources: Caldara, Conlisk, Iacoviello, and Penn (2024) and author's calculations.
Notes: The top row compares the all-in effects of an increase in geopolitical risk with a counterfactual scenario in which supply disruptions are held at baseline. The bottom row compares the all-in effects of an increase in geopolitical risk with a counterfactual scenario in which monetary and fiscal policy responses are held constant.

In the first scenario, illustrated in the top row of Figure 5, I fix trade and shortages to their baseline values to mimic the absence of supply disruptions in response to a geopolitical shock. In this scenario there is a smaller rise in inflation and a smaller drag on economic activity. So, indeed, higher shortages and reduced trade work as adverse supply shocks following a spike in geopolitical risk.

⁴ The shortage index shown in the charts is the country-specific counterpart of the news-based shortage index presented and described in Caldara, Iacoviello, and Yu (2024).

However, demand channels matter too. In the second scenario, illustrated in the bottom row, I fix public spending and money supply to simulate a “fixed” policy response. This scenario results in a smaller rise in inflation and a larger drop in GDP. Intuitively, the lack of a countercyclical policy response would exacerbate the adverse activity effects of a geopolitical shock.

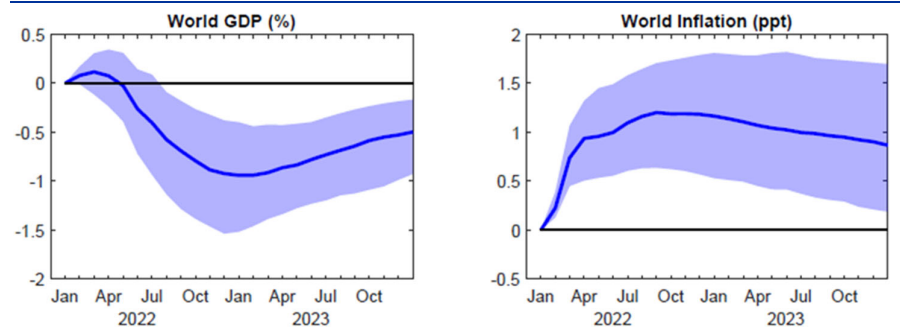
The evidence from the two scenarios illustrates why geopolitical risks tend to be inflationary: adverse supply effects are typically coupled with expansionary policy actions that mitigate the adverse GDP effects, but at the cost of higher prices.

5 Global Time Series Evidence

I conclude by illustrating an exercise that quantifies the inflationary effects of the disruptions associated with the Russian invasion of Ukraine, drawing on research first present in Caldara, Conlisk, Iacoviello and Penn (2022). For this scenario, we use global monthly data since 1970 and a richer set of macroeconomic variables such as global consumer confidence, financial market indicators such as the dollar index and stock prices, oil prices, and commodity prices. These variables are not easily available going all the way back to 1900, the sample used so far. Yet, an advantage of starting in 1970 is that one may be skeptical of drawing inference on episodes, such as WWI and WWII, which happened generations before each of our young economists present here today was born. The methodology is a vector autoregressive model similar to the one I just presented.

I use the model to simulate a shock sized to match the rise in geopolitical tensions that followed the Russian invasion of Ukraine. As shown in chart 6, estimates from this model indicate that the shock reduced world GDP (by about 1 percent) while increasing world inflation (by about 1 percentage point).

Chart 6
Global Effects of an Increase in Geopolitical Risk: Russian Invasion Scenario



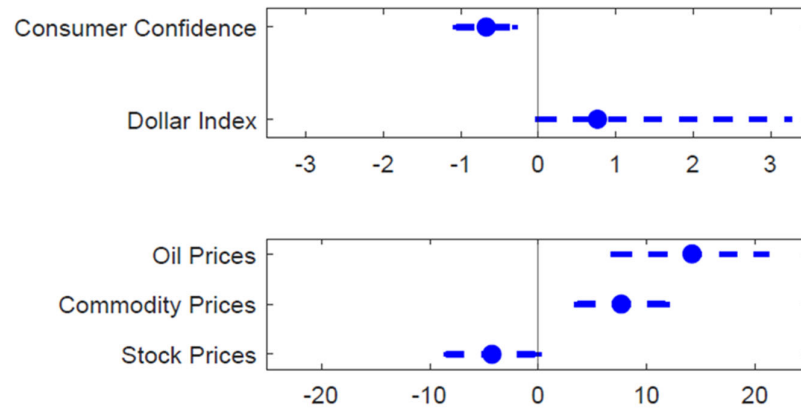
Sources: Caldara, Conlisk, Iacoviello, and Penn (2022).
Notes: Simulated effects over time on world GDP and inflation of Russia-Ukraine shock. Shaded areas indicate 90 percent confidence intervals.

As shown in Chart 7, the rise in inflation was accompanied by lower consumer confidence, tighter financial conditions, and higher oil and commodity prices. So even if the spike in geopolitical risk was associated with negative sentiment effects

through confidence and stock prices, the inflationary effects were present, in line with earlier historical evidence I showed, even during this period.

Chart 7

Transmission Channels of Higher Geopolitical Risk in Recent Data



Sources: Caldara, Conlisk, Iacoviello, and Penn (2022).
 Notes: Blue dots show the estimated peak effects of a Russia-Ukraine-sized shock (dashed lines show 90% confidence intervals). All variables are expressed in percent deviation (except for confidence in standard deviation units) from baseline.

6 Conclusion

In conclusion, the research highlighted here shows that inflation increases in response to adverse geopolitical shocks.

The magnitude of these effects depends on the adverse effects of these shocks for supply chains, trade, and commodity markets; on the policy response; and on the reverberations of the shocks on financial markets and business and consumer sentiment.

References

Caldara, D., Iacoviello, M. and Yu, D. (2024), "Measuring Shortages since 1900"

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