Supplementary Appendix to "Geopolitical Hybrid Threats"[1]

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A Detailed Historical Overview of Hybrid Threats, 1985-2025

This section presents the historical narrative emerging from the newspaper articles identified through our search query. We focus on the most widely reported events, as shown in Figure A.1, and provide additional context. For coherence, we organize the discussion around five key episodes. First, the period from 1985 to 1991 marks the late Cold War era and the Gulf War. Second, 1992 to 2000 reflects the post-Cold War order, with the United States as the sole superpower. Third, 2001 to 2013 is shaped by the onset of the war on terror following the 9/11 attacks and subsequent Middle East conflicts. Fourth, 2014 to 2021 is characterized by the return of great power rivalry between leading global powers, as well as the increased prominence of cyber warfare. Finally, the 2022 Russian invasion of Ukraine can be seen as a historical turning point, marking a new era of geopolitical instability and global fragmentation. In what follows, we discuss each of these episodes in detail.

1985 - 1991: Late Cold War Era and Gulf War

The period from 1985 to 1991 marks the end of the Cold War and the collapse of the Eastern Bloc. The year 1985, widely referred to in the press as the "Year of the Spy," saw several high-profile espionage cases attract substantial media attention. Notably, these included the exposure of the Walker spy ring within the U.S. Navy, which enabled the transfer of Western naval technology and intelligence to the Soviet Union (Smith, 1988; Taylor and Snow, 1997), as well as the defection of Hans-Joachim Tiedge, a West German counterintelligence chief, to East Germany. That same year, the Soviet Union launched a disinformation campaign known as "Operation Denver" (also referred to as "Operation Infektion"), which falsely claimed that the United States had engineered the HIV/AIDS virus as a biological weapon (e.g., Boghardt, 2009; Selvage, 2019).

In 1986, the United States and the United Nations imposed a range of economic sanctions on Libya in response to its support for terrorism, including a total ban on trade, commercial contracts, and travel-related activities, as well as the freezing of Libyan government assets (Schwartz, 2007). During the same period, Western countries also imposed sanctions on South Africa in response to its apartheid policies, which included bans on air travel, investments, bank loans, key imports, the promotion of tourism, and the withdrawal of consular facilities (Kaempfer and Lowenberg, 1988). That same year,

[1]Disclaimer: The views expressed in the paper, its appendices, and the associated computer codes are those of the authors and do not necessarily reflect the views of the Deutsche Bundesbank or the Eurosystem. All remaining errors are our own.

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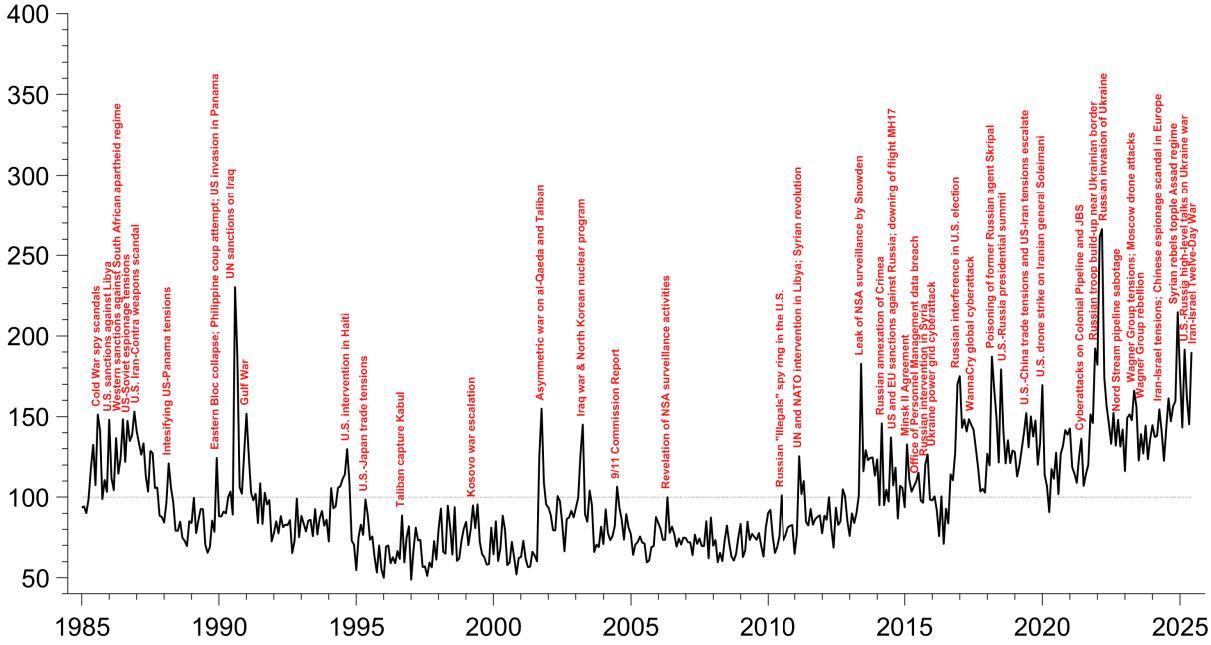

Figure A.1: **Geopolitical Hybrid Threat Index, January 1985 - June 2025**

Notes: The figure depicts the Geopolitical Hybrid Threat (GHT) index from January 1985 to June 2025. The index measures the intensity of hybrid threats based on their frequency of coverage in ten leading English-language newspapers. The index is normalized to have a mean of 100, as indicated by the dotted line. Red labels mark selected incidents that received notable media attention.

the Iran-Contra affair became public. This political scandal involved the secret sale of arms by the United States to Iran and the diversion of funds to support the Nicaraguan Contra rebels, despite a congressional ban.

Several significant historical events occurred in 1989, most notably the fall of the Berlin Wall and the collapse of communist regimes across Eastern Europe, which together signaled the disintegration of the Iron Curtain. The dissolution of the Soviet Union in December 1991 ended decades of superpower rivalry and led to a unipolar world dominated by the United States. During this period, the United States launched "Operation Just Cause" in Panama and supported the Philippine government during a coup attempt in late 1989. The Iraqi invasion of Kuwait in August 1990 prompted comprehensive UN economic and political sanctions, followed by the U.S.-led "Operation Desert Storm" in January 1991, marking the beginning of the Gulf War.

1992 - 2000: Post-Cold War Order

The years from 1992 to 2000 were characterized by relatively subdued geopolitical tensions, despite ongoing regional conflicts and U.S. interventions. Key events during this period included the 1994 U.S.-led "Operation Uphold Democracy" in Haiti, authorized by the UN Security Council to restore the country's legitimate president and democratic governance. In 1995, the United States threatened to impose 100% tariffs on nearly $6 billion worth of Japanese luxury cars in an escalation of a trade dispute – the largest proposed U.S. trade penalty since World War II – though the tariffs were ultimately averted by a last-minute agreement. That same year saw the Srebrenica massacre during

the Bosnian War, the most severe mass killing in Europe since World War II. In 1996, the Taliban seized Kabul, consolidating power in Afghanistan. The Kosovo War, which began in 1998 and escalated in 1999, led to EU and U.S. sanctions on Serbia and Montenegro, including arms embargoes, asset freezes, and investment bans.

2001 - 2013: War on Terror and Middle Eastern Conflicts

The period from 2001 to 2013 was defined by the U.S.-led "war on terror" declared by President George W. Bush in response to the September 11, 2001 attacks, as well as intensified intelligence operations and ongoing conflicts in the Middle East. In October 2001, the United States and its allies launched "Operation Enduring Freedom" in Afghanistan to dismantle al-Qaeda and remove the Taliban from power. Domestically, the U.S. established the Office of Homeland Security (later elevated to the Department of Homeland Security in 2002) and enacted the USA PATRIOT Act to enhance security and intelligence-gathering capabilities. In 2003, a U.S.-led coalition initiated "Operation Iraqi Freedom," resulting in the overthrow of Saddam Hussein's regime. U.S. intelligence agencies conducted high-risk reconnaissance and collaborated with Kurdish Peshmerga forces to identify Iraqi military targets and facilitate defections. During this period, international concerns grew over North Korea's suspected nuclear activities, including uranium enrichment, which led to increased economic sanctions.

In July 2004, the 9/11 Commission Report identified significant intelligence failures preceding the September 11 attacks and found no credible evidence of a collaborative operational relationship between Iraq and al-Qaeda. The report recommended a reorganization of the U.S. intelligence community, including the creation of a Director of National Intelligence and a National Counterterrorism Center. In May 2006, revelations about the NSA's mass collection of Americans' phone records sparked public debate and congressional scrutiny over domestic surveillance practices. In April and May 2007, Estonia experienced one of the first major cyberattacks on a state, widely attributed to Russian-speaking hackers targeting government, financial, and media institutions following the relocation of a Soviet war memorial. In June 2010, the FBI arrested ten Russian sleeper agents operating under the "Illegals Program." In March 2011, the Syrian civil war began amid the Arab Spring, and a UN-sanctioned no-fly zone was imposed over Libya, with U.S. and European forces targeting President Gaddafi's military. In June 2013, Edward Snowden disclosed extensive NSA surveillance programs, revealing the agency's direct access to data from major technology companies and secret intelligence-sharing with foreign agencies.

2014 - 2021: Resurgence of Great Power Rivalry and Rise of Cyber Warfare

From 2014 to 2021, international relations were increasingly shaped by renewed great power rivalry and the growing prominence of cyber warfare. Russia's annexation of Crimea in 2014, following a disputed referendum, prompted widespread condemnation and sanctions from the United States, the European Union, and other allies. Amid this escalation, Malaysia Airlines Flight MH17 was downed in eastern Ukraine in July 2014 by a Russian-made missile launched from separatist-controlled territory, provoking global

outrage.[1] Despite the Minsk II ceasefire agreement in 2015, hostilities continued.

Cyber threats also intensified during this period. In 2015, for example, the U.S. Office of Personnel Management suffered a significant data breach, reportedly linked to Chinese state-sponsored actors, compromising sensitive information of more than 21 million federal employees and contractors (Gootman, 2016).[2] That same year, Ukraine's power grid was targeted by a significant cyberattack, attributed to Russian-linked hackers, resulting in temporary blackouts.[3] Additionally, Russia expanded its military intervention in Syria in support of the Assad regime, and Turkey's downing of a Russian jet near the Syrian border in November 2015 further heightened diplomatic tensions.

In 2016, Russian interference in the U.S. presidential election heightened concerns over foreign influence.[4] In 2017, the WannaCry ransomware attack, attributed to a North Korean hacker group, infected more than 230,000 computers across 150 countries, disrupting healthcare systems and other essential services (e.g., August et al., 2022).[5] The 2018 Novichok poisoning of former Russian military intelligence officer and double agent Sergei Skripal and his daughter in the United Kingdom, attributed to Russia, underscored ongoing espionage tensions (Vale et al., 2018).[6] In response to the Skripal poisonings, Western countries coordinated the expulsion of Russian diplomats to exert diplomatic pressure. That same year, the U.S. imposed tariffs on steel and aluminum, escalating global trade disputes, while President Trump's summit with President Putin in Helsinki drew criticism for publicly questioning U.S. intelligence assessments of Russian election interference.

U.S.-China trade tensions escalated further in 2019, with both countries imposing reciprocal tariffs. U.S.-Iran geopolitical relations also deteriorated as Iran shot down a U.S. surveillance drone due to alleged airspace violation followed by a U.S. cyberattack. In January 2020, a U.S. drone strike killed Iranian General Qasem Soleimani, followed by Iranian missile attacks on U.S. bases in Iraq. In 2021, a major ransomware attack on Colonial Pipeline disrupted fuel supplies along the U.S. East Coast, while a similar attack on JBS, one of the world's largest meat processors, underscored vulnerabilities in critical infrastructure; both incidents are believed to have been carried out by Russian-

[1] See the news release of the International Civil Aviation Organization (ICAO) on the "ICAO Council vote on the Flight MH17 case", May 12, 2025 (https://www.icao.int/news/icao-council-vote-flight-mh17-case).

[2] See the Congressional Research Service Report on "Cyber Intrusion into U.S. Office of Personnel Management: In Brief", July 17, 2015 (https://sgp.fas.org/crs/natsec/R44111.pdf).

[3] See the news release of the Cybersecurity and Infrastructure Security Agency (CISA) on the "Cyber-Attack Against Ukrainian Critical Infrastructure", July 20, 2021 (https://www.cisa.gov/news-events/ics-alerts/ir-alert-h-16-056-01).

[4] See the "Report of the Select Committee on Intelligence United States Senate on Russian Active Measures Campaigns and Interference in the 2016 U.S. Election", August 18, 2020 (https://www.intelligence.senate.gov/2020/08/18/publications-report-select-committee-intelligence-united-states-senate-russian-active-measures/).

[5] See the White House press briefing on the attribution of the WannaCry malware attack to North Korea, December 19, 2017 (https://trumpwhitehouse.archives.gov/briefings-statements/press-briefing-on-the-attribution-of-the-wannacry-malware-attack-to-north-korea-121917/).

[6] See UK Prime Minister Theresa May's statement to Parliament on the Salisbury incident, March 12, 2018 (https://www.gov.uk/government/speeches/pm-commons-statement-on-salisbury-incident-12-march-2018).

based criminal groups.[7] That year, repeated maritime incursions by Chinese vessels and a surge in airspace violations by Chinese military aircraft heightened geopolitical tensions in the South China Sea and the Taiwan Strait (e.g., Chen et al., 2024). In late 2021, NATO expelled Russian intelligence officers for espionage, highlighting persistent concerns over Russian activities targeting Western institutions. Additionally, Russia's significant troop buildup near Ukraine's border in late 2021 intensified fears of a potential invasion.

2022 - Present: A New Era of Geopolitical Instability and Global Fragmentation

Since 2022, global geopolitics have been marked by escalating conflict and increasing fragmentation. Russia's full-scale invasion of Ukraine in February 2022 triggered the largest war in Europe since World War II, sharply polarizing international relations. In response, Western countries imposed sweeping sanctions on Russia and provided extensive military, financial, and humanitarian support to Ukraine, while the conflict disrupted global food and energy supplies. During the war, the Wagner Group operated as a Russian proxy force until internal tensions culminated in the group's brief rebellion against the Russian Ministry of Defense in June 2023.

Several significant sabotage incidents occurred during this period. In September 2022, underwater explosions damaged three of the four Nord Stream gas pipelines in the Baltic Sea, severely impacting European energy security and resulting in the largest recorded release of methane from a single event (e.g., Larsson, 2024; Mohrmann et al., 2025). Prior to the pipeline sabotage in September 2022, several restrictive gas supply shocks occurred due to a continuous decline in Nord Stream gas flows between June and August 2022. Alessandri and Gazzani (2025) show that negative gas supply shocks have sizable stagflationary effects on the euro area economy and accounted for nearly 50% of the increase in core prices observed between 2021 and 2023. Subsequently, repeated disruptions to power and data transmission affected Baltic submarine cables in 2023 and 2024, raising concerns over the security of critical communication infrastructure (e.g., Bueger and Liebetrau, 2021; Moghadam et al., 2023; Larsson, 2024).[8]

Hybrid threats have remained elevated in recent years. In April 2024, hostilities between Israel and Iran escalated as Iran launched a missile and drone attack on Israel. Simultaneously, several spy scandals in Europe raised concerns about China's expanding espionage activities. In December 2024, President Bashar al-Assad's regime in Syria collapsed abruptly after an opposition offensive supported by the Turkish-backed Syrian National Army. That month, Ukrainian intelligence assassinated a senior Russian chemical, biological, and nuclear defense official in Moscow. High-level U.S.-Russia negotiations over the war in Ukraine continued into March 2025. In June 2025, Israel attacked Iranian

[7] See FBI Deputy Director Paul Abbate's press conference regarding the ransomware attack on Colonial Pipeline, June 7, 2021 (https://www.fbi.gov/news/press-releases/fbi-deputy-director-paul-abbates-remarks-at-press-conference-regarding-the-ransomware-attack-on-colonial-pipeline); and the FBI statement on JBS cyberattack, June 2, 2021 (https://www.fbi.gov/news/press-releases/fbi-statement-on-jbs-cyberattack).

[8] See also: Richard Milne et al., "Inside Russia's Shadow War in the Baltics," Financial Times (London), March 10, 2025, https://ig.ft.com/baltic-sea/; as well as Warrell et al., "The Russian spy ship stalking Europe's subsea cables," Financial Times (London), September 36, 2025, https://www.ft.com/content/0b351091-3f82-4f2f-bef2-a52a35f009f2.

military and nuclear sites, prompting Iranian retaliation with missiles and drones. The U.S. intervened with "Operation Midnight Hammer," striking Iranian nuclear facilities. The Iran-Israel Twelve-Day War ended with a U.S.-brokered ceasefire amid fears of wider regional escalation.

B Data

This section provides details on the macroeconomic data used in our empirical analysis.

Baa-10YT Spread: Quarterly averages of Moody's seasoned Baa corporate bond yield relative to the yield on 10-year Treasury bonds at constant maturity, measured in basis points. Data retrieved from FRED, Federal Reserve Bank of St. Louis (mnemonic: BAA10YM). Transformation: none.

Business Confidence: OECD Business Tendency Surveys (manufacturing): confidence indicators: composite indicators: national indicator for United States, measured in percent. Data retrieved from FRED, Federal Reserve Bank of St. Louis (mnemonic: BSCICP02USM460S). Transformation: none.

CPI: Quarterly averages of the consumer price index for all urban consumers: all items in U.S. city average (1982-1984=100). Retrieved from FRED, Federal Reserve Bank of St. Louis (mnemonic: CPIAUCSL). Transformation: natural logarithm.

Credit to NFCs: Total credit to non-financial corporations, adjusted for breaks, for the United States, measured in billions of U.S. dollars. Data retrieved from FRED, Federal Reserve Bank of St. Louis (mnemonic: QUSNAMUSDA). Credit to NFCs is delfated by the U.S. CPI. Transformation: natural logarithm.

Defense Expenditure: Real federal government consumption expenditures and gross investment in national defense, expressed as the percent change from the previous quarter (cumulated to levels). Data retrieved from FRED, Federal Reserve Bank of St. Louis (mnemonic: A824RL1Q225SBEA). Transformation: natural logarithm.

EBP: Quarterly averages of the excess bond premium constructed by Gilchrist and Zakrajšek (2012), measured in basis points. Source: Favara et al. (2016).[9] Data retrieved from FRED, Federal Reserve Bank of St. Louis (mnemonic: USEPUINDXM). Transformation: none.

FFR & Wu-Xia: Quarterly averages of the effective federal funds rate, measured in basis points, spliced with the shadow federal funds rate constructed by Wu and Xia (2016) for the period from 2009Q1 to 2015Q4. Data retrieved from FRED, Federal Reserve Bank of St. Louis (mnemonic: FEDFUNDS) and the Federal Reserve Bank of Atlanta, as well

[9] https://www.federalreserve.gov/econresdata/notes/feds-notes/2016/updating-the-recession-risk-and-the-excess-bond-premium-20161006.html

as Jing Cynthia Wu's website.[10] Transformation: none.

Financial Uncertainty: Quarterly averages of the composite index of financial uncertainty (h=1) constructed by Jurado et al. (2015). Data retrieved from Sydney Ludvigson's website.[11] Transformation: none.

GDP: Real gross domestic product, measured in billions of chained 2017 dollars on a quarterly basis. Data retrieved from FRED, Federal Reserve Bank of St. Louis (mnemonic: GDPC1). GDP is converted to per capita terms by dividing by the civilian noninstitutional population, also retrieved from FRED (mnemonic: CNP16OV). Transformation: natural logarithm.

Global Commodity Prices: Quarterly averages of the real commodity price factor constructed by Baumeister and Guerin (2021) from the first principal component of the balanced panel of percentage changes in prices of 23 basic industrial and agricultural commodities, deflated by the U.S. CPI (cumulated to levels). The commodities include: aluminum, barley, beef, coffee (Arabica), coffee (Robusta), copper, cotton, lead, logs, maize, nickel, palm oil, rice, rubber, sawnwood, soybeans, soybean meal, soybean oil, sugar (U.S.), sugar (world), tin, wheat, and zinc. Data retrieved from Christiane Baumeister's website.[12] Transformation: natural logarithm.

Global Economic Activity: Quarterly averages of the index of global real economic activity in industrial commodity markets, as proposed in Kilian (2009) and corrected in Kilian (2019). This index is derived from a panel of dollar-denominated global bulk dry cargo shipping rates and is expressed in percent deviations from trend. Data retrieved from FRED, Federal Reserve Bank of St. Louis (mnemonic: IGREA). Transformation: none.

Hours: Index of aggregate weekly hours worked by production and nonsupervisory employees (2002=100). Data retrieved from FRED, Federal Reserve Bank of St. Louis (mnemonic: AWHI). Hours worked are converted to per capita terms by dividing by the civilian noninstitutional population, also retrieved from FRED (mnemonic: CNP16OV). Transformation: natural logarithm.

GDP Deflator: GDP implicit price deflator. Data retrieved from FRED, Federal Reserve Bank of St. Louis (mnemonic: GDPDEF). Transformation: natural logarithm.

Investment: Real gross private domestic investment, measured in billions of chained 2017 dollars on a quarterly basis. Data retrieved from FRED, Federal Reserve Bank of St. Louis (mnemonic: GPDIC1). The U.S. Bureau of Economic Analysis defines gross private domestic investment as private fixed investment and change in private inventories. It is measured without a deduction for consumption of fixed capital, includes replacements and additions to the capital stock, and excludes investment by U.S. resi-

[10] https://sites.google.com/site/jingcynthiawu/
[11] https://www.sydneyludvigson.com/data-and-appendixes
[12] https://sites.google.com/site/cjsbaumeister/home

dents in other countries.[13] Investment is converted to per capita terms by dividing by the civilian noninstitutional population, also retrieved from FRED (mnemonic: CNP16OV). Transformation: natural logarithm.

Macro Uncertainty: Quarterly averages of the composite index of macroeconomic uncertainty (h=1) constructed by Jurado et al. (2015). Data retrieved from Sydney Ludvigson's website.[14] Transformation: none.

Oil Price: Quarterly averages of the spot price of crude oil: West Texas Intermediate, measured in US dollars per barrel. Data retrieved from FRED, Federal Reserve Bank of St. Louis (mnemonic: WTISPLC). The oil price is delfated by the US CPI. Transformation: natural logarithm.

PCE: Personal consumption expenditures: chain-type price index (2017=100). Data retrieved from FRED, Federal Reserve Bank of St. Louis (mnemonic: PCEPI). Transformation: natural logarithm.

Public debt/GDP: Total federal debt as a percentage of GDP, expressed in percent on a quarterly basis. Data retrieved from FRED, Federal Reserve Bank of St. Louis (mnemonic: GFDEGDQ188S). Transformation: none.

S&P 500: Quarterly averages of S&P 500 composite equity index. Retreived from the ECB Data Portal.[15] The S&P 500 index is delfated by the U.S. CPI. Transformation: natural logarithm.

VIX: Quarterly averages of the CBOE volatility index (VIX) from 1990Q1 to 2024Q4, retreived from FRED, Federal Reserve Bank of St. Louis (mnemonic: VIXCLS). Quarterly averages of the CBOE S&P 100 volatility index (VXO) from 1986Q1 to 1989Q4, retreived from FRED, Federal Reserve Bank of St. Louis (mnemonic: VXOCLS). Transformation: none.

10YT Term Premium: Quarterly averages of the model-implied ten-year term premium from Adrian et al. (2013), measured in basis points and retrieved from the Federal Reserve Bank of New York (mnemonic: ACMTP10). Transformation: none.

2YT Yield: Quarterly averages of the market yield on U.S. Treasury securities at 2-year constant maturity, quoted on an investment basis and measured in basis points. Data retrieved from FRED, Federal Reserve Bank of St. Louis (mnemonic: DGS2). Transformation: none.

[13] See: https://www.bea.gov/help/glossary/gross-private-domestic-investment.
[14] https://www.sydneyludvigson.com/data-and-appendixes
[15] https://data.ecb.europa.eu/data/datasets/FM/FM.M.US.USD.DS.EI.S_PCOMP.HSTA

C Additional Figures

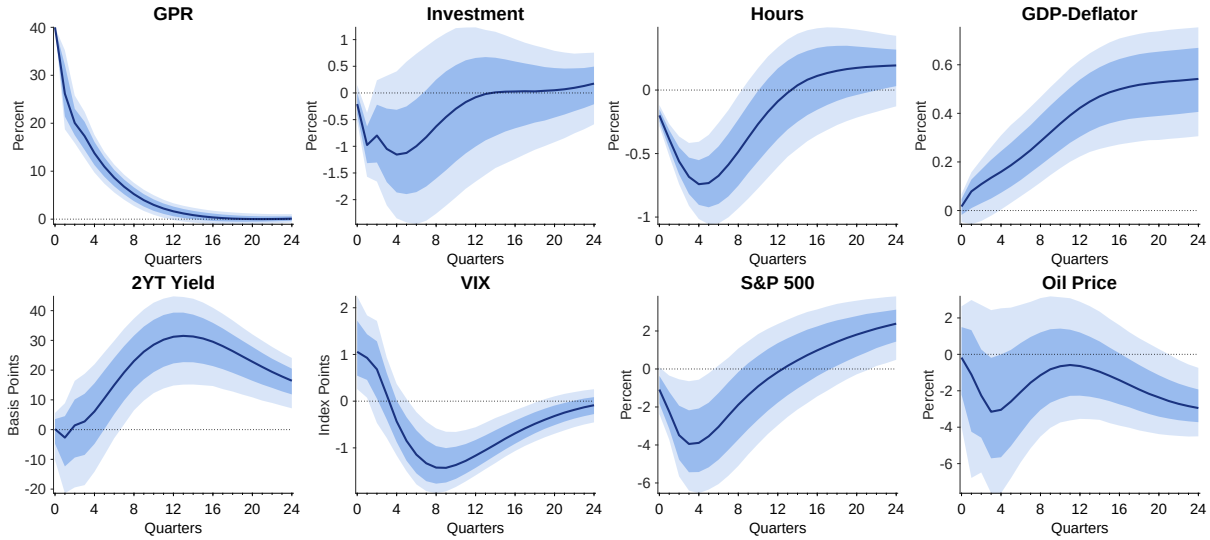

Figure C.1: **Impulse Responses to Geopolitical Risk Shock (Recursive VAR)**

Notes: Impulse responses to an exogenous 40% increase in the log GPR index, identified via Cholesky decomposition in a recursive VAR. Median response (blue solid line), with 68% (dark blue shaded) and 90% (light blue shaded) confidence intervals. Sample period: 1986:Q1-2025:Q2.

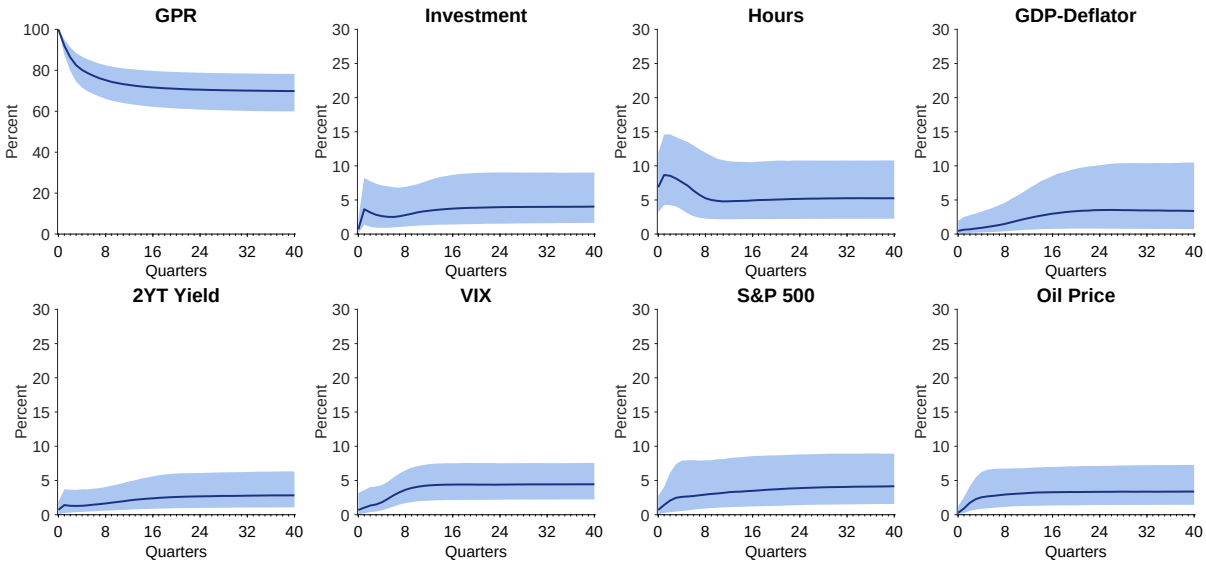

Figure C.2: **Forecast Error Variance Contributions of a GPR Shock**

Notes: Forecast error variance shares explained by a GPR shock, identified via Cholesky decomposition in a recursive VAR. Median response (blue solid line), with 68% (blue shaded) confidence intervals. Sample period: 1986:Q1-2025:Q2.

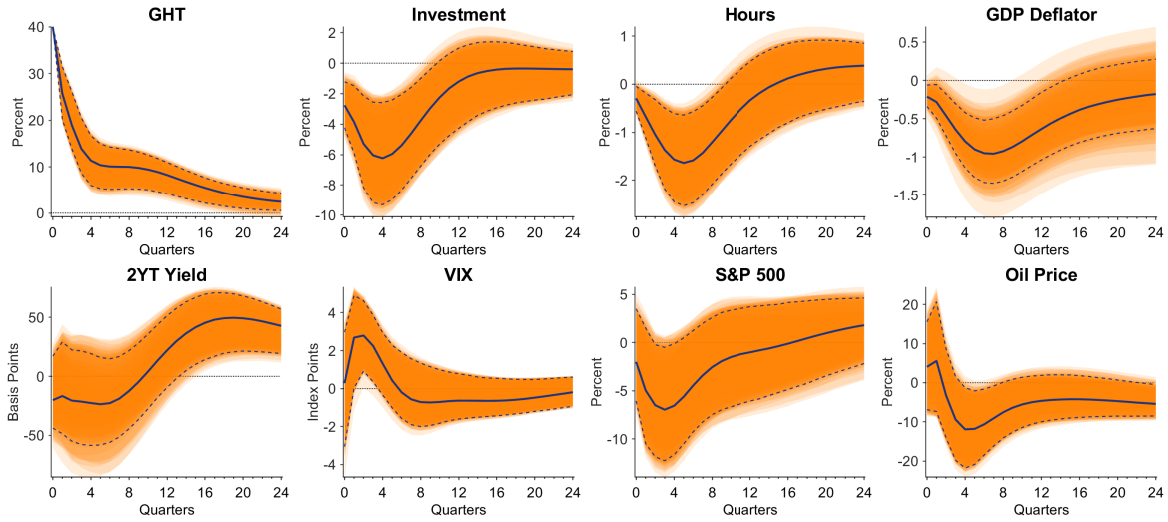

Figure C.3: **Impulse Responses to a Hybrid Threat Shock – Robustness: Jackknife Test**

Notes: The figure shows 90% confidence intervals (orange shaded areas) for impulse responses to a 40% exogenous increase in the log GHT index, identified via a narrative instrument in a proxy VAR, obtained from specifications that omit one event at a time from the event dummy by setting the corresponding entry to zero. For comparison, the figure also shows the median responses (blue solid lines) and associated 90% (blue dashed) confidence interval from the baseline specification that includes all narrative events in the instrument. Sample period: 1986:Q1-2025:Q2.

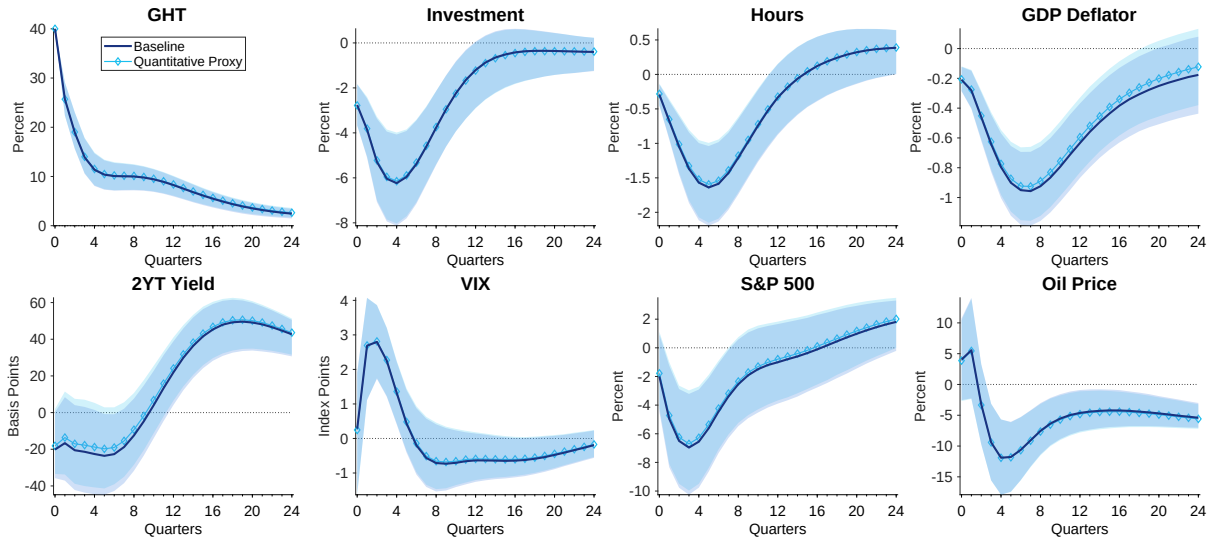

Figure C.4: **Impulse Responses to a Hybrid Threat Shock – Robustness: Instrument**

Notes: Impulse responses to a 40% exogenous increase in the log GHT index, identified via a narrative instrument in a proxy VAR. The median response (blue solid line) from the baseline VAR is shown, with 68% (blue shaded) confidence interval. The figure also displays the impulse responses to a GHT shock estimated using a quantitative instrument that takes the value of the log GHT index during hybrid threat events and equals to zero otherwise (turquoise line with diamonds), together with turquoise shaded 68% confidence interval. Sample period: 1986:Q1-2025:Q2.

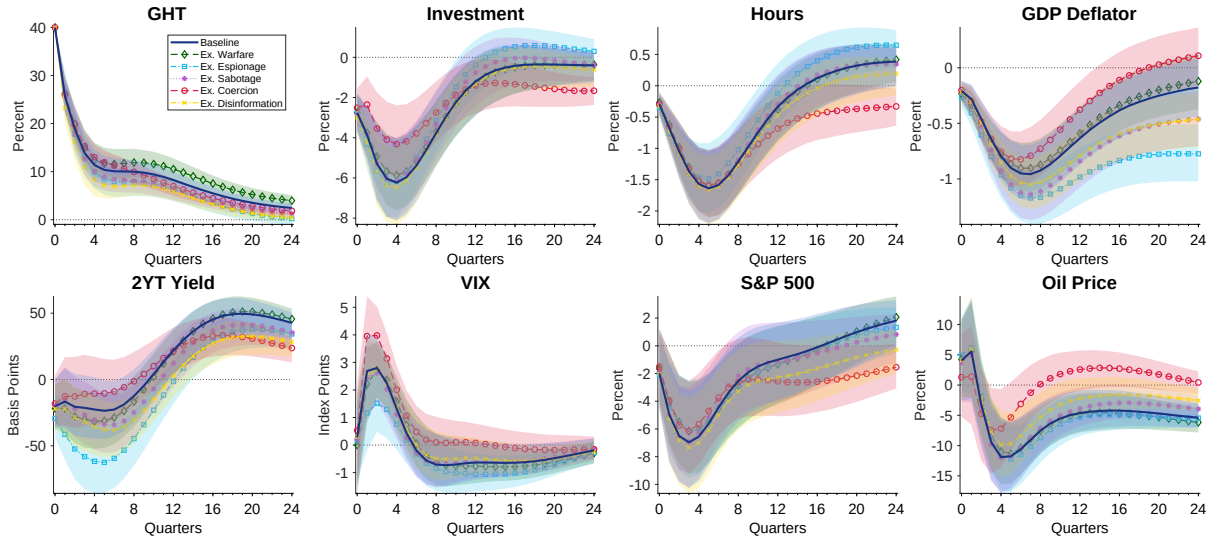

Figure C.5: **Impulse Responses to a Hybrid Threat Shock – Robustness: Exclusion of Categories**

Notes: Impulse responses to a 40% exogenous increase in the log GHT index, identified via a narrative instrument in a proxy VAR. The median response (blue solid line) from the baseline VAR is shown, with 68% (blue shaded) confidence interval. The figure also displays the impulse responses to a GHT shock estimated using GHT indices constructed by excluding each of the five categories: Warfare (green dashed with diamonds), Espionage (turquoise dashed-dotted with squares), Sabotage (magenta dotted with stars), Coercion (red dashed with circles), and Disinformation (yellow dashed-dotted with crosses), together with shaded 68% confidence interval. Sample period: 1986:Q1-2025:Q2.

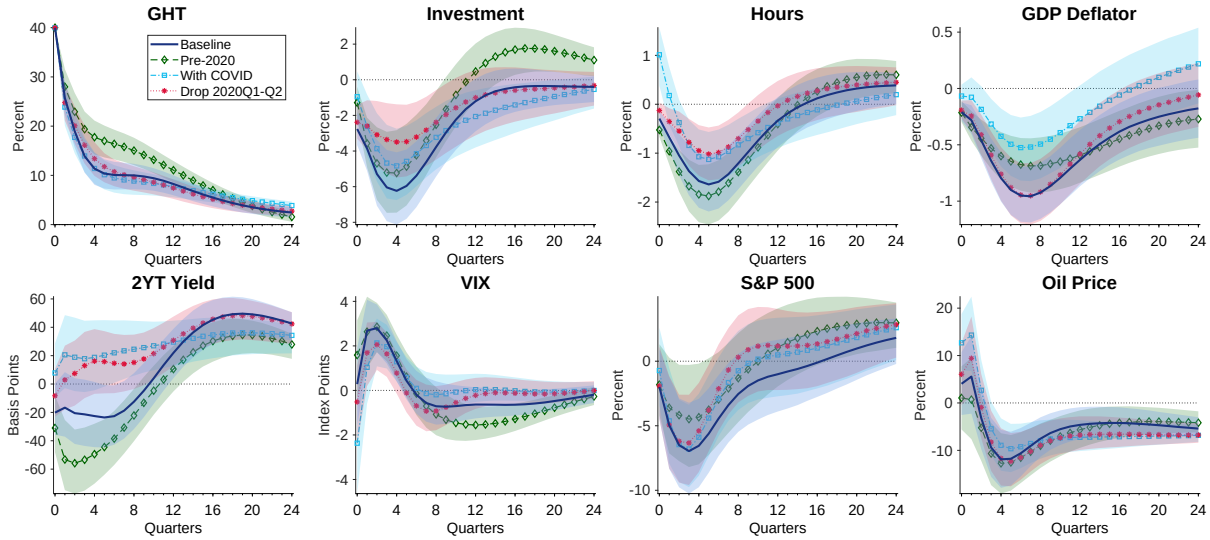

Figure C.6: **Impulse Responses to a Hybrid Threat Shock – Robustness: COVID-19**

Notes: Impulse responses to an exogenous 40% increase in the log GHT index, identified in a proxy VAR using the narrative proxy approach. The median response (blue solid line) from the baseline VAR is shown, with 68% (blue shaded) confidence interval. The figure also displays the impulse responses to a GHT shock estimated using three alternative model specifications: (1) a pre-COVID sample from 1986:Q1 to 2019:Q4 (green dashed line with diamonds and 68% confidence interval); (2) a sample including the 2020 COVID obserbations (turquoise dash-dotted line with squares and 68% confidence interval); and (3) a sample that omits 2020:Q1 and 2020:Q2 (red dotted line with stars and 68% confidence interval).

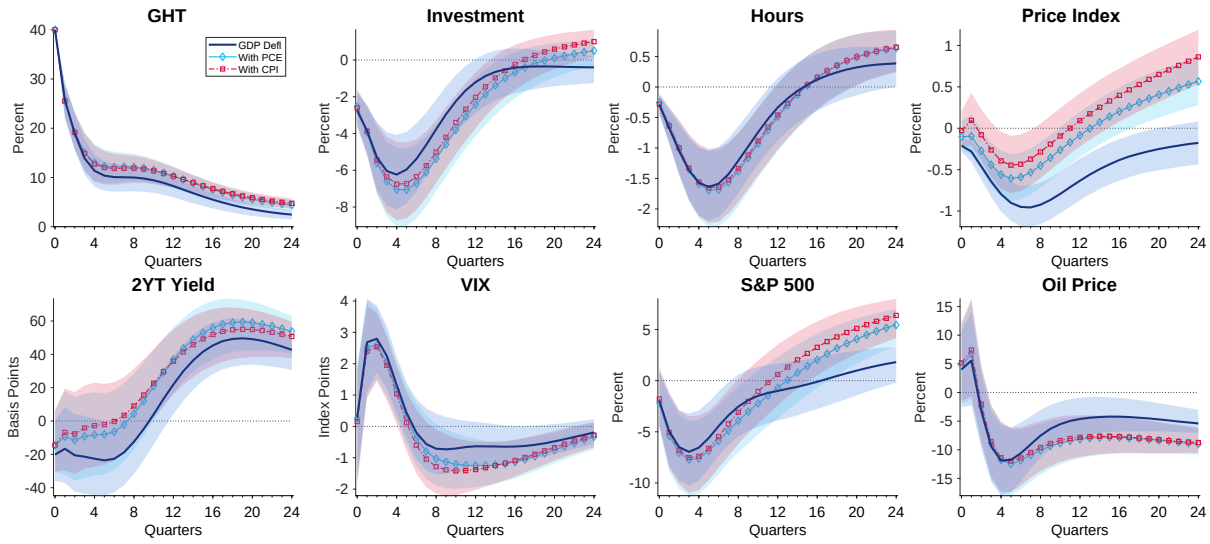

Figure C.7: **Impulse Responses to a Hybrid Threat Shock – Robustness: Prices**

Notes: Impulse responses to a 40% exogenous increase in the log GHT index, identified via a narrative instrument in a proxy VAR. The median response (blue solid line) from the baseline VAR is shown, with 68% (blue shaded) confidence interval. The figure also displays the impulse responses to a GHT shock estimated after replacing the GDP deflator with either the PCE index (turquoise dash-dotted line with squares and 68% confidence interval) or the CPI index (red dotted line with stars and 68% confidence interval). Sample period: 1986:Q1-2025:Q2.

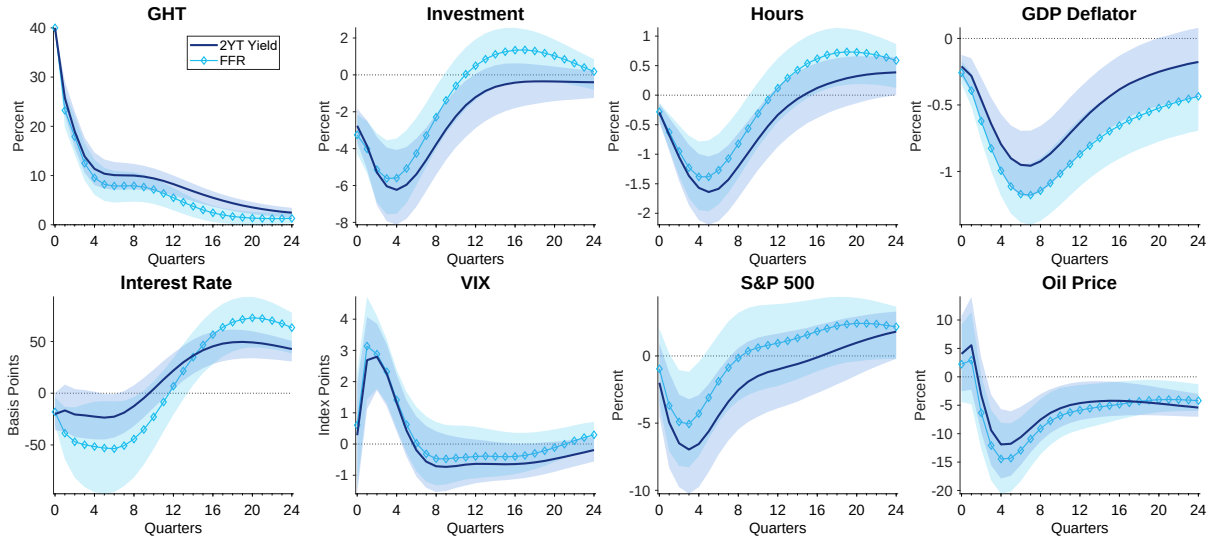

Figure C.8: **Impulse Responses to a Hybrid Threat Shock – Robustness: Yields**

Notes: Impulse responses to a 40% exogenous increase in the log GHT index, identified via a narrative instrument in a proxy VAR. The median response (blue solid line) from the baseline VAR is shown, with 68% (blue shaded) confidence interval. The figure also displays the impulse responses to a GHT shock estimated after replacing the two-year Treasury yield with the federal funds rate spliced with the Wu-Xia shadow rate (turquoise dash-dotted line with squares and 68% confidence interval). Sample period: 1986:Q1-2025:Q2.

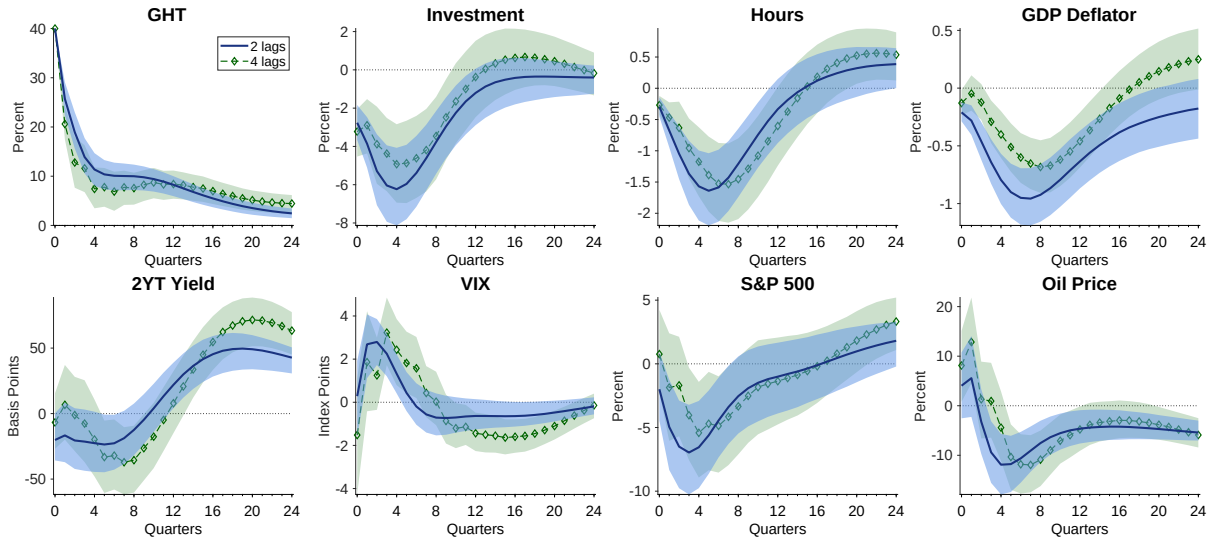

Figure C.9: **Impulse Responses to a Hybrid Threat Shock – Robustness: 4 Lags**

Notes: Impulse responses to a 40% exogenous increase in the log GHT index, identified via a narrative instrument in a proxy VAR. The median response (blue solid line) from the baseline VAR is shown, with 68% (blue shaded) confidence interval. The figure also displays the impulse responses to a GHT shock estimated using four lags in the reduced-form system (green dashed lines with diamonds) with 68% (green shaded) confidence interval. Sample period: 1986:Q1-2025:Q2.

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