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Geopolitical hybrid threats

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Geopolitical Hybrid Threats*

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Abstract

Hybrid threats encompass a range of hostile activities aimed at achieving geopolitical objectives, including cyberattacks, infrastructure sabotage, espionage, economic and political coercion, disinformation, and other forms of hybrid warfare. We construct a Geopolitical Hybrid Threat (GHT) index based on newspaper coverage of these activities. The index surges from the mid-2010s, surpassing the high levels observed during the late Cold War. Using a narrative instrument in a vector autoregression, we find that hybrid threat shocks suppress aggregate demand by raising uncertainty, reducing confidence, and tightening financial conditions, while triggering policy responses in the form of increased defense spending and monetary easing.

JEL classification: E32, C43, F51, H56

Keywords: Geopolitical Risk, Hybrid Threats, Proxy VAR, Textual Analysis

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1 Introduction

Modern warfare increasingly relies on non-military means known as "hybrid threats," extending beyond traditional military force. Although there is no universally accepted definition, hybrid threats typically encompass hostile activities designed to achieve geopolitical objectives, including cyberattacks, infrastructure sabotage, espionage, economic and political coercion, disinformation campaigns, the use of proxy forces, and other forms of hybrid warfare. Examples range from high-profile Soviet espionage cases revealed in the 1980s to more recent incidents such as the 2014 annexation of Crimea by Russian irregular forces known as the "little green men," Russian interference in the 2016 U.S. presidential election, the 2017 WannaCry global cyberattack attributed to North Korean hackers, and the 2022 sabotage of the Nord Stream pipelines in the Baltic Sea. These incidents illustrate the breadth of hybrid threats and their evolution from the Cold War to the present.

Hybrid threats blur the boundaries between war and peace, highlighting the complex nature of contemporary geopolitical tensions. Despite the growing significance of hybrid threats, their macroeconomic consequences remain largely unexplored, primarily due to the absence of an adequate measure. Caldara and Iacoviello (2022) introduce a Geopolitical Risk (GPR) index that mainly captures risks from overt armed conflict and terrorism. However, this index does not account for hybrid threats, which often operate below the threshold of open conflict. To address this gap, we first quantify hybrid threats using newspaper coverage frequency. We then conduct a comprehensive analysis of their macroeconomic and financial effects using a structural vector autoregression (VAR) model, which allows us to shed light on the main transmission channels.

We create a novel Geopolitical Hybrid Threat (GHT) index by tracking the frequency of specific terms in major newspapers. Our search query draws on the definition of "hybrid threats" established by NATO and the European Centre of Excellence for Countering Hybrid Threats (Hybrid CoE).[1] The GHT index captures a broad spectrum of hybrid threats, including sabotage of physical and cyber infrastructure, espionage, economic and political coercion, disinformation, and other forms of hybrid warfare. While the design of our search query is consistent with the methodology underlying the GPR index, the actual search terms differ substantially, as the GPR index is constructed from newspaper articles referencing wars, military escalation, nuclear threats, and terrorism.

Given the multifaceted nature of hybrid threats, textual analysis of newspapers, as pioneered by Baker et al. (2016), offers clear advantages for their empirical measurement. Major newspapers provide timely and accessible information on a wide range of events, facilitating the construction of long historical time series in a standardized manner. Moreover, newspapers

[1] Hybrid CoE is an international knowledge hub established by the EU and NATO, with 36 member states – including Canada, the United Kingdom, the United States, and numerous European countries – aimed at fostering EU-NATO cooperation in this domain.

both reflect and shape public awareness, as well as the attention of market participants and policymakers, thereby capturing the prominence and perceived importance of these events within society. Nevertheless, newspaper reporting may be subject to media bias, editorial selectivity, and variation in coverage across outlets and over time. To mitigate these concerns and ensure consistency, comparability, and broad representation, we employ the same ten leading English-language newspapers as in Caldara and Iacoviello (2022), each with substantial global reach. While high-profile incidents typically receive extensive and near real-time coverage, less visible activities may attract limited attention or only come to light after a delay. Consequently, as with other news-based measures, our index reflects media attention to relevant events rather than the events themselves. Nevertheless, public attention and awareness are central to economic behavior and risk perceptions, and thus to aggregate economic outcomes.

The GHT index shows that hybrid threat levels were elevated in the 1980s and early 1990s, declined during the post-Cold War period, and have risen sharply since the mid-2010s. In particular, the strategic use of disinformation and infrastructure sabotage, once relatively rare, has become increasingly prominent since the mid-2010s, as captured by pronounced spikes in the GHT index associated with Russian interference in the 2016 U.S. election, the 2017 WannaCry cyberattack, and the 2022 Nord Stream pipeline sabotage. Notable increases in the index also coincide with major espionage scandals, including Cold War-era Soviet spy cases, the NSA leaks by Edward Snowden in 2013, and the poisoning of former Russian double agent Sergei Skripal in 2018. Coercive measures, such as U.S. sanctions on Libya for alleged support of terrorism in 1986, U.S. and EU sanctions on Russia in response to the conflict in eastern Ukraine in 2014, and escalating U.S.-China trade tensions in 2019, also contribute to movements in the index. Hybrid military operations are captured as well, including Russia's 2014 annexation of Crimea and the toppling of the Assad regime by Syrian rebel forces in 2024. Finally, spikes are observed during outright military conflicts, including the Gulf War in 1991, the Russian invasion of Ukraine in 2022, and the Iran-Israel Twelve-Day War in 2025, each involving elements of hybrid warfare, such as intelligence operations, coercive measures, and the use of propaganda and disinformation.

We study the macroeconomic impact of hybrid threats using a structural VAR framework with U.S. data from 1986:Q1 to 2025:Q2. To isolate exogenous hybrid threat shocks, we employ a narrative event proxy for identification, which captures salient hybrid threat incidents. These events are historically significant and typically associated with pronounced increases in the GHT index.

Three main results emerge from our VAR analysis. First, an exogenous increase in hybrid threats generates macroeconomic effects akin to a negative demand shock: measures of real economic activity and prices decline, business and consumer sentiment deteriorate, and both macroeconomic and financial uncertainty rise. Second, a hybrid threat shock leads to a

tightening in indicators of financial conditions, such as credit spreads and the Gilchrist and Zakrajšek (2012) excess bond premium, which raise firms' external financing costs and further weigh on demand. Third, the shock prompts expansionary policy responses: monetary policy eases, while defense spending increases to enhance military capabilities, reflecting the risk that hybrid threats could escalate into overt conflict. This results in a sustained accumulation of public debt. On balance, the negative demand effects outweigh the stimulative impact of these expansionary policy measures. Our results remain robust across a range of sensitivity checks, including alternative narrative instruments, GHT index constructions, model specifications, and sample periods.

Overall, hybrid threat shocks appear to depress economic activity primarily by weakening aggregate demand, in contrast to the predominantly supply-side effects of geopolitical risk stemming from outright military conflict and terrorism documented in the existing literature (e.g., Caldara and Iacoviello, 2022; Bondarenko et al., 2024; Caldara et al., 2026). Instead the impact of hybrid threat shocks aligns more closely with the macroeconomic consequences of uncertainty shocks (e.g., Leduc and Liu, 2016; Basu and Bundick, 2017). This association is intuitive, as hybrid threats are generally designed to remain below the level of open conflict and typically do not involve direct military confrontation or large-scale physical disruption. Instead, by increasing uncertainty and eroding confidence, they prompt heightened caution among businesses and consumers, which in turn depresses aggregate demand rather than constraining supply.

The remainder of the paper is structured as follows: Section 2 reviews the related literature; Section 3 details the measurement and provides a historical overview of hybrid threats; Section 4 presents the empirical results on their macroeconomic implications; and Section 5 concludes.

2 Related Literature

Our study makes two main contributions. First, it introduces a novel index of geopolitical hybrid threats that captures a broad spectrum of risks through systematic analysis of newspaper coverage. Second, it empirically documents the macroeconomic effects of hybrid threats using a narrative proxy VAR, thereby addressing the current gap in evidence on this increasingly important dimension of geopolitical risk. In doing so, the study brings together several strands of literature, which are discussed in detail below.

Our paper contributes to the expanding literature on the macroeconomic effects of geopolitical risk, pioneered by Caldara and Iacoviello (2022), who show that increases in the GPR index reduce economic activity and tighten financial conditions in the United States. Related studies find that geopolitical risk is negatively correlated with U.S. business investment (Wang et al., 2024), and that precious metals such as gold and silver serve as hedges against these risks

(Baur and Smales, 2020). Other research examines the impact of geopolitical risk on global oil and energy markets (e.g., Baumeister et al., 2022). Internationally, Caldara et al. (2026) find that heightened geopolitical risk increases inflation, disrupts supply, reduces trade, and lowers economic activity. Bondarenko et al. (2024) construct local GPR indices and document negative effects of local GPR shocks on the Russian economy. Fernández-Villaverde et al. (2024) construct data-driven indices of geopolitical fragmentation and show that greater fragmentation has adverse macroeconomic consequences.

Our paper bridges the macroeconomics literature and research on hybrid warfare within international relations. For instance, Krishnan (2022) argues that hybrid warfare, fifth-generation warfare, and gray-zone conflict all describe conflict characterized by reduced military roles, increased civilian involvement, and multi-domain operations beyond traditional battlefields. Mumford and Carlucci (2023) highlight ambiguity as central to hybrid warfare, demonstrating through the eastern Ukraine and South China Sea cases that combining kinetic and non-kinetic means serves political objectives in great power competition. Galeotti (2016) analyzes Russia's hybrid operations in Ukraine, highlighting their emphasis on non-kinetic means, integration of non-state actors, and close coordination between political and military leadership. Chen et al. (2024) examine China's hybrid strategy in East Asia, showing how coast guard, naval forces, and maritime militia are used to increase tensions without direct conflict, affecting fisheries in Japan, Taiwan, and the Philippines.

Our study also relates to the literature on the economic implications of coercive measures, which can be seen as an instrument of hybrid warfare. For example, Meyer and Wesseler (2025) show how competing hegemons use economic incentives and threats to influence third-country alignment. In the area of economic sanctions, Felbermayr et al. (2021) review recent advances and call for closer integration between economics and political science, while Morgan et al. (2023) trace the evolution of sanctions since World War II, linking these changes to shifts in the international order and emphasizing the need for interdisciplinary research. Itskhoki and Ribakova (2024) analyze the mixed impact of sanctions on Russia after the 2022 invasion of Ukraine, arguing that effectiveness depends on clear objectives, careful design, enforcement, coalition unity, and economic costs. Trade protectionism, another coercive tool, has been shown to negatively affect both domestic economies (Barattieri et al., 2021) and major trading partners (Metiu, 2021). Regarding reserve currency choice, Eichengreen et al. (2019) find that both economic and geopolitical factors matter, with military alliances significantly increasing a currency's reserve share.

Methodologically, our paper contributes to the literature using textual analysis of news to construct economic indicators. For example, Baker et al. (2016) develop a U.S. economic policy uncertainty index based on newspaper word frequencies. Caldara et al. (2020) apply a similar approach to trade policy uncertainty, while Caldara and Iacoviello (2022) and Bon-

darenko et al. (2024) use this method to quantify geopolitical risk. Metiu (2021) shows that media coverage of U.S. trade protection facilitates the international transmission of trade policy shocks. Finally, several studies assess whether newspaper-based economic information improves macroeconomic forecasts (Thorsrud, 2020; Kalamara et al., 2022; Shapiro et al., 2022).

3 Measuring Geopolitical Hybrid Threats

This section introduces the concept of geopolitical hybrid threats, details the construction of the GHT index, and concludes with a descriptive, historical overview of hybrid threats.

3.1 Definition of Hybrid Threats

In recent years, the terms "hybrid warfare" and "hybrid threats" have come to denote what is arguably a new form of conflict in international security discourse. Hybrid warfare refers to a strategy that goes beyond the use of conventional military force and includes a wide range of non-military means, involving both state and non-state actors, while hybrid threats denote the specific tactics and tools employed within this strategy (e.g., Krishnan, 2022; Mumford and Carlucci, 2023).

The term "hybrid warfare" was introduced by Hoffman (2007) and gained prominence following Russia's annexation of Crimea and the outbreak of war in Ukraine in 2014. Although the term itself is relatively new, and modern technologies have expanded the range of hybrid methods, such approaches have deep historical roots. For example, Mansoor (2012) notes that during the Peloponnesian War in the 5th century BC, Athens used unconventional tactics such as inciting uprisings to weaken Sparta. Similarly, the British campaign against Ottoman Turkey during World War I relied on irregular Arab tribal forces (supported by T.E. Lawrence, known as "Lawrence of Arabia"), who used guerrilla tactics to disrupt Ottoman operations and supply lines.

Hybrid threats are generally understood to encompass a broad spectrum of hostile activities intended to achieve geopolitical objectives. According to NATO:

> "Allies face threats and challenges from both state and non-state actors who use hybrid activities to target political institutions, influence public opinion and undermine the security of NATO citizens. [...] Hybrid threats combine military and non-military as well as covert and overt means, including disinformation, cyber attacks, economic pressure, deployment of irregular armed groups and use of regular forces. Hybrid methods are used to blur the lines between war and peace, and attempt to sow doubt in the minds of target populations. They aim to destabilise

and undermine societies."[2]

Hybrid threats thus consist of diverse and often ambiguous methods that are cost-efficient, evade detection and accountability, and usually remain below the threshold of open conflict.

3.2 Construction of the GHT Index

We construct the GHT index using textual analysis of newspaper articles, using the Dow Jones Factiva global news database under the Factiva for Professional Services license. To ensure consistency and comparability with previous research, our search is based on the ten leading English-language newspapers employed by Caldara and Iacoviello (2022): Chicago Tribune, The Daily Telegraph, Financial Times, The Globe and Mail, The Guardian, Los Angeles Times, The New York Times, USA Today, The Wall Street Journal, and The Washington Post. The sample comprises approximately 12.7 million articles published between January 1985 and June 2025, corresponding to roughly 16,400 to 36,400 articles per month.

Table 1 presents our newspaper search query, which consists of 'core' and 'exclusion' terms. Core terms are two-word phrases that frequently co-occur to form relevant bigrams, such as "hybrid threat" or "cyber attack." These terms are required to appear within a two-word window in a newspaper article, enabling us to capture expressions like "spread of disinformation." Exclusion terms, such as "movie," "music," and "sport" are used to filter out unrelated contexts. The query also accounts for morphological variations, including singular and plural forms, as well as relevant suffixes. While the design of our search query is consistent with the methodology of Caldara and Iacoviello (2022), the actual search terms differ substantially.[3]

We categorize the core terms into five groups. The first category, **Warfare**, covers references to hybrid warfare and related tactics, such as "hybrid warfare," "hybrid threat," "paramilitary force," "airspace violation," and "maritime incursion." Second, **Espionage** encompasses covert intelligence activities, including terms like "intelligence agent," "cyber espionage," "dou-

[2]See: https://www.nato.int/cps/en/natohq/topics_156338.htm?selectedLocale=en (last updated on May 7, 2024). A similar definition has been proposed by the Hybrid CoE: "Hybrid threats are harmful activities that are planned and carried out with malign intent. They aim to undermine a target, such as a state or an institution, through a variety of means, often combined. Such means include information manipulation, cyberattacks, economic influence or coercion, covert political manoeuvring, coercive diplomacy, or threats of military force. Hybrid threats describe a wide array of harmful activities with different goals, ranging from influence operations and interference all the way to hybrid warfare." See: https://www.hybridcoe.fi/hybrid-threats-as-a-phenomenon/ (accessed August 12, 2025).

[3]Note that the overlap with the GPR query of Caldara and Iacoviello (2022) is minimal. Only the following words from our core group are shared: "blockade," "boycott," "embargo," "guerilla," "insurgent," "mobilize," "rebel," "sanction," and "troop." However, these words are not used to form the same phrases or bigrams in their query as in ours. For instance, while we use "blockade," "boycott," "embargo," and "sanction" in a coercion context, their query focuses on military terms such as "arms embargo." At the same time, while most of our exclusion terms are shared with their query, we additionally include "artist," "criminal," "marketing," "scam," and "thriller," and omit words like "cancer," "racing," "film," "game," "tax," and "trial" due to redundancy and to conserve space.

Category	Core terms
Warfare	(airspace, maritime, territorial, border) NEAR2(dispute, incursion, violation); hybrid NEAR2(attack, conflict, operation, tactic, threat, warfare); (counterinsurgent, guerilla, insurgent, mercenenary, paramilitary, rebel) NEAR2(deploy, force, group, mobilize, operation, recruit, tactic, troop), unit, warfare); (irregular, proxy) NEAR2(force, warfare)
Espionage	(clandestine, covert, false flag) NEAR2(action, attack, mission, operation, tactic); agent NEAR2(assassinate, clandestine, double, foreign, infiltrate, intelligence, poison, recruit, security, secret, spy); (espionage, spy, spies) NEAR2(action, cyber, network, operation, recruit, ring)
Sabotage	(infrastructure, industrial, supply chain, pipeline, power grid) NEAR2(attack, breach, disrupt, sabotage, threat, vulnerability); (cyber, data breach, denial of service, malware, ransomware, phishing) NEAR2(attack, campaign, incident, threat); cyberattack; cyber warfare
Coercion	(economic, financial, trade) NEAR2(blockade, boycott, coercion, conflict, embargo, restriction, sanction); diplomatic NEAR2(coercion, conflict, crisis, dispute, isolation, sanction, pressure, tension); political NEAR2(coercion, sanction); currency NEAR2(interference, manipulation, sanction); asset freeze
Disinformation	(conspiracy, disinformation, fake news, malinformation, misinformation, propaganda) NEAR2(attack, campaign, censor, disseminate, fabricate, manipulate, mislead, operation, spread, subversive); (election, foreign, media, social) NEAR2(destabilization, disinformation, interference, manipulation, polarization, propaganda, subversion, undermine); (psychological, information, influence) NEAR2(operation, warfare)

Table 1: **Search Query for the GHT Index**

Notes: The table reports the search query for the GHT index. An article is included in the results if it meets the following criteria: (i) it contains at least one core term – defined as a two-word phrase from any of the five categories – with both words appearing within two words of each other in the text (as specified by the NEAR2 operator); (ii) it does not contain the following exclusion terms: anniversary, art, artist, book, criminal, cinema, mafia, marketing, memoir, memorial, movie, museum, music, obituary, price war, real estate, scam, sport, thriller, tribute, veteran; and (iii) it jointly includes the words "the," "be," "to," "of," "and," "at," and "in". The query accounts for morphological variations, including singular and plural forms, as well as relevant suffixes. The search is implemented in the Dow Jones Factiva database under the Factiva for Professional Services licence.

ble agent," "spy ring," and "covert operation." Third, **Sabotage** includes terms that reflect threats to critical infrastructure, both physical and cyber, with examples such as "infrastructure attack," "pipeline sabotage," "cyberattack," "cyber threat," and "ransomware attack." Fourth, **Coercion** reflects economic, diplomatic, and political pressures by foreign actors, illustrated by terms like "economic sanction," "trade embargo," "diplomatic dispute," "political coercion," and "asset freeze." Lastly, **Disinformation** pertains to the strategic manipulation of information to destabilize societies, as seen in phrases such as "disinformation campaign," "spread of propaganda," "election interference," "psychological operation," and "information warfare."

The GHT index is constructed from a single search query that includes search terms from all five categories (see Table 1). Let x_t denote the number of newspaper articles referencing hybrid threat terms belonging to any of the five categories in month $t = 1, \ldots, T$. We normalize x_t by the total number of articles per month, m_t, to obtain the share of articles, s_t, containing hybrid threat terms:

$$s_t = \frac{x_t}{m_t}. \tag{1}$$

The GHT index is computed by normalizing the share s_t so that its mean equals 100 over the sample period (January 1985-June 2025):

$$GHT_t = 100 \frac{s_t}{\frac{1}{T}\sum_{t=1}^{T} s_t}. \tag{2}$$

The total number of articles per month, m_t, is determined using a query that jointly contains all of the following words: "the," "be," "to," "of," "and," "at," and "in". These words are among the 20 most common words found in the historical archives of the Chicago Tribune, The New York Times, and The Washington Post since 1900 (see Caldara and Iacoviello, 2022). Including these words helps exclude articles that are too short or titles that are sometimes erroneously classified as full articles. Importantly, we also require that newspaper articles referencing hybrid threat terms jointly contain all seven keywords, ensuring that the search query for both the numerator and denominator in Equation (1) refers to the same population. Out of approximately 12.7 million news articles in our sample, about 204,000 (1.7%) mention hybrid threat terms.[4]

3.3 A Historical Overview of Hybrid Threats

The historical narrative emerging from our newspaper search can be organized into five key episodes (see Supplementary Appendix Section A for details). The first episode encompasses the late Cold War period from 1985 through the Gulf War in 1991. During this period, the GHT

[4]By comparison, on average over the same sample period, 3.1% of articles reference GPR terms in the search query of Caldara and Iacoviello (2022). Note that they implement their search in a different database than we do.

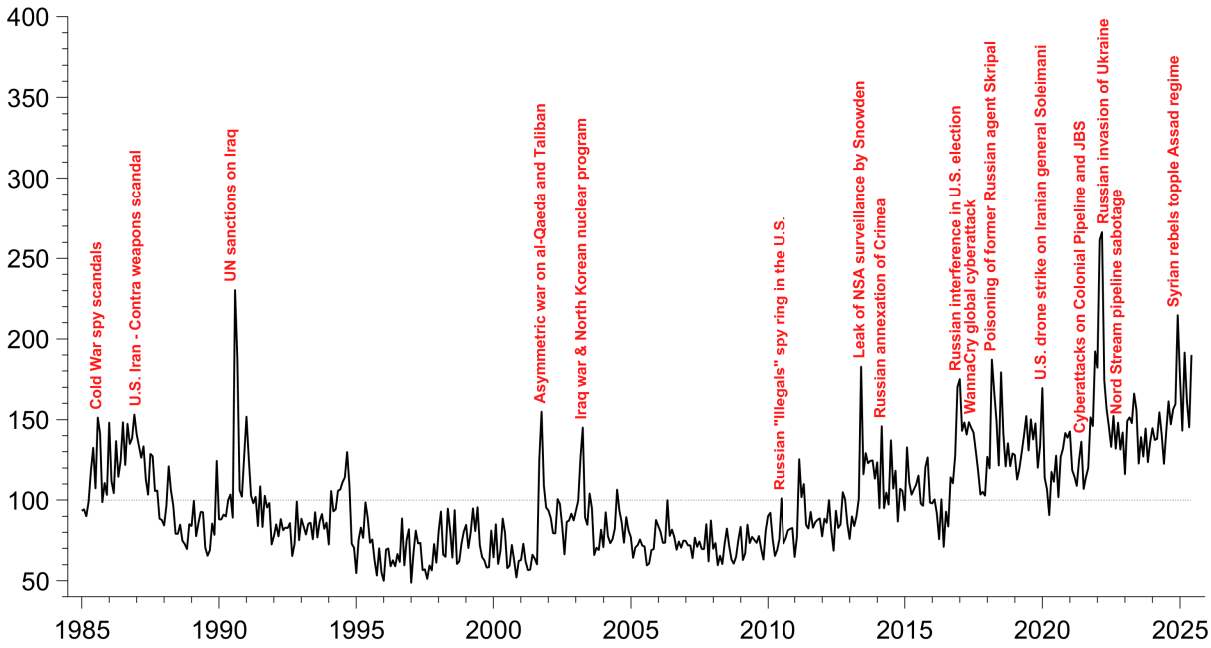


Figure 1: **Geopolitical Hybrid Threat Index, January 1985 - June 2025**

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.

index is elevated, with several pronounced spikes (see Figure 1). The index spikes in 1985 with several high-profile Soviet spy scandals, including the Walker spy ring within the U.S. Navy and the defection of West German counterintelligence chief Tiedge to East Germany. In 1986, spikes in the index correspond to U.S. sanctions on Libya for supporting terrorism, Western sanctions against the apartheid regime in South Africa, and the Iran-Contra scandal involving secret U.S. arms sales to Iran and diversion of funds to Nicaraguan Contra rebels. Another spike occurs in late 1989, involving several events around the globe: the fall of the Berlin Wall and the collapse of Eastern European communist regimes, which accelerated the dissolution of the Soviet Union, as well as the U.S. intervention in Panama and support for the Philippine government during a coup attempt. The index significantly spikes with the imposition of UN sanctions and rising international diplomatic pressure on Iraq after its invasion of Kuwait in 1990, followed by a smaller spike with the 1991 U.S.-led intervention in the Gulf War.

The second episode spans the post-Cold War order from 1992 to 2000, characterized by the United States as the leading global power. During this period, the GHT index declines, reaching a low in the late 1990s. Nevertheless, notable increases occur in response to several key events: the 1994 U.S.-led intervention to remove Haiti's coup-installed military regime; the 1995 U.S. threat to impose tariffs on Japanese automobiles, which would have represented the largest potential U.S. trade penalty since World War II; the Taliban's seizure of Kabul and

consolidation of power in Afghanistan in 1996; and the imposition of EU and U.S. sanctions on Serbia and Montenegro during the Kosovo War beginning in 1998.

The third episode, spanning 2001 to 2013, is marked by the war on terror following the 9/11 attacks and subsequent conflicts in the Middle East, involving intensified U.S. intelligence operations. Key events influencing the GHT index during this period include: the onset of the asymmetric war waged by U.S.-led coalition forces against al-Qaeda and the Taliban in Afghanistan in 2001; the beginning of the Iraq War, including U.S. intelligence and reconnaissance missions, as well as growing international concerns over North Korea's suspected nuclear activities in 2003, which led to increased economic sanctions; the arrest of Russian sleeper agents under the "Illegals Program" in 2010; the 2011 Arab Spring, leading to civil wars in the Middle East and North Africa, such as in Syria and Libya; and the disclosure of extensive NSA surveillance activities by Edward Snowden in 2013.

The fourth episode, spanning 2014 to 2021, is characterized by increasing geopolitical power rivalry and the growing prominence of cyber warfare. Major events captured by the GHT index include: Russia's annexation of Crimea in early 2014, subsequent U.S. and EU sanctions on Russia and the downing of Malaysia Airlines Flight MH17 in mid-2014 by a Russian-made missile launched from separatist-controlled territory in eastern Ukraine; the U.S. Office of Personnel Management data breach in 2015, attributed to hackers with suspected ties to China; the 2015 cyberattack on the Ukrainian power grid, attributed to Russian-linked hackers; Russian interference in the 2016 U.S. presidential election; the WannaCry cyberattack in 2017, attributed to North Korean hackers; the 2018 poisoning of former Russian double agent Sergei Skripal in the UK; the 2018 U.S.-Russia presidential summit, which drew criticism for publicly questioning U.S. intelligence assessments of Russian election interference; and escalating U.S.-China trade tensions and U.S.-Iran tensions in 2019. Finally, in 2021, the GHT index captures various incidents, including the ransomware attacks on Colonial Pipeline, a major U.S. fuel supplier, and JBS, a leading meat processor, both attributed to Russian-based criminal groups; repeated maritime incursions by Chinese vessels and airspace violations by Chinese military aircraft in the South China Sea; NATO's expulsion of Russian intelligence officers for espionage; and Russia's troop buildup near Ukraine's border, raising fears of a potential invasion.

The 2022 Russian full-scale invasion of Ukraine can be seen as a historical turning point, marking a new era of geopolitical instability. The GHT index reached its highest level in three decades during the Russian invasion of Ukraine in early 2022, which was preceded by Russian espionage, sabotage, and disinformation campaigns and followed by sweeping Western sanctions. Further major events reflected in the GHT index include the Nord Stream pipeline sabotage in the Baltic Sea in late 2022; arrests in Europe related to suspected Chinese espionage in mid-2024; the toppling of the Assad regime by Syrian rebel forces amid escalating Middle East tensions in late 2024; and the Iran-Israel Twelve-Day War in mid-2025.

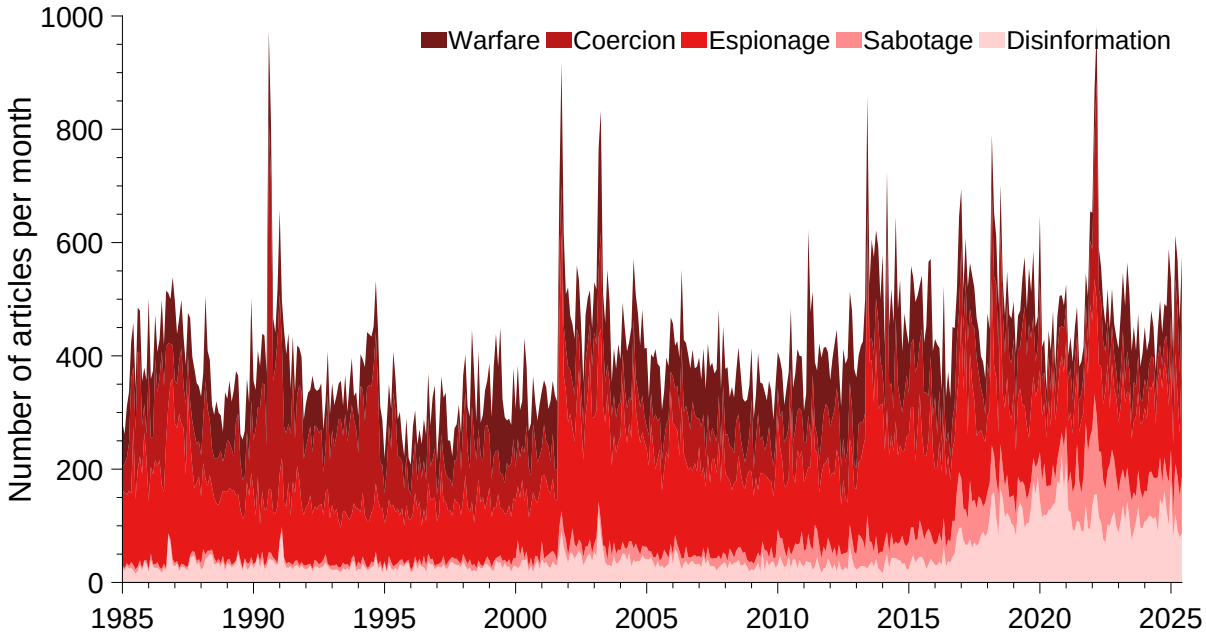
We decompose the GHT index into the contributions of its five categories by separately counting articles that mention search terms associated with each category. This approach can lead to multiple counting when articles reference hybrid threat terms from more than one category – for example, if both "hybrid threat" and "cyber attack" appear in the same article, it is counted twice. It should be noted that such double-counting does not occur in our main query, which searches jointly for terms across all five categories. We adjust the categorical counts to correct for double-counting, thereby effectively eliminating the issue.[5]

Figure 2 illustrates the composition of the GHT index by category. The top panel shows the absolute number of newspaper articles containing terms related to each category, while the bottom panel displays the relative share of articles by category. The topical breakdown reveals significant shifts in media coverage over time. During the Cold War, articles on Warfare and Coercion were the primary contributors to the index, a pattern that persisted through the Afghanistan and Iraq wars in the 2000s. Since the mid-2010s, however, the relative importance of Disinformation and Sabotage has increased markedly; while these topics were rare in the 1980s and 1990s, they now account for over one-third of articles in the 2020s. Articles on Espionage have consistently represented a significant share of the index since 1985, underscoring the enduring relevance of intelligence activities throughout different periods of time.

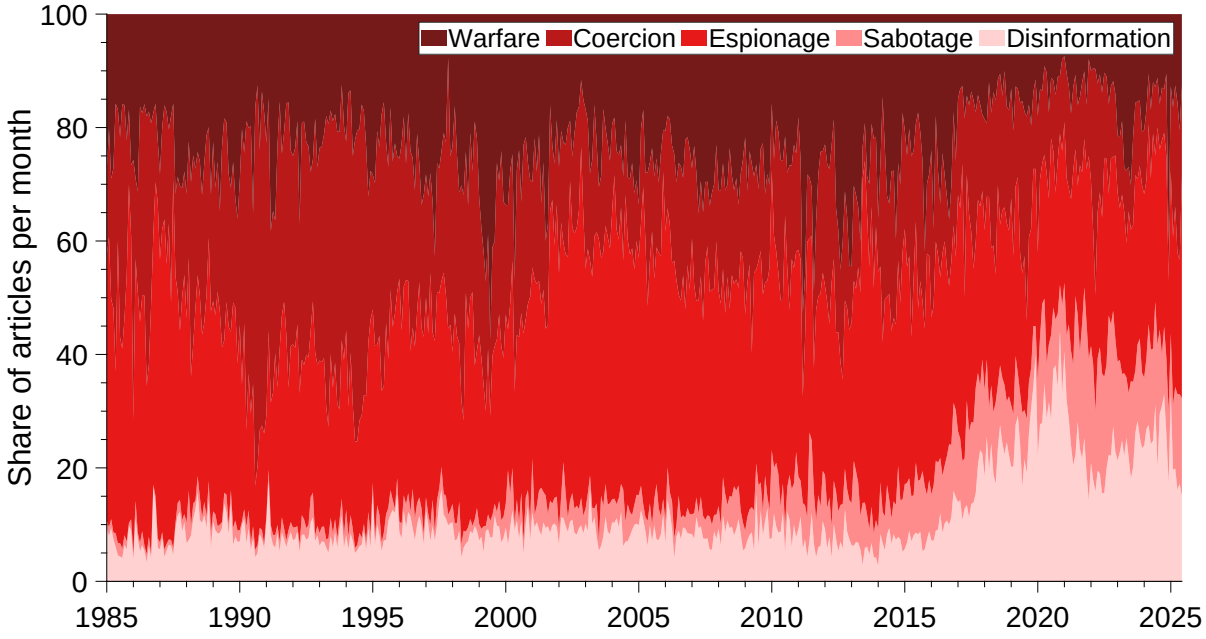
Figure 3 compares the GHT index with the GPR index of Caldara and Iacoviello (2022). In contrast to the GHT index, the GPR index exhibits a few pronounced spikes associated with major war and terrorism events, such as the Iraqi invasion of Kuwait in 1990, the Gulf War in 1991, the 9/11 terrorist attacks in 2001, the Iraq War in 2003, and the Russian invasion of Ukraine in 2022. The correlation coefficient between the GHT and GPR indices is 0.44, indicating a moderate positive association over the sample period. This is unsurprising, as outright military conflicts are typically preceded and accompanied by hybrid warfare tactics such as intelligence operations, economic and political coercion, and propaganda or disinformation, which explains some of the simultaneous increases in the GHT and the GPR indices.

The two indices diverge most notably in three periods. First, the GHT index shows a much more pronounced spike in August 1990, when the UN Security Council imposed sanctions on Iraq in response to Iraq's invasion of Kuwait, than in January 1991, when the U.S.-led coalition began Operation Desert Storm to expel Iraqi forces from Kuwait. In contrast, the GPR index shows a major spike when the active military conflict between the U.S.-led coalition and Iraqi forces began. Second, the GPR index has its largest peak around the 9/11 terror attack and the U.S.-led Operation Enduring Freedom in Afganhistan in 2001, followed by other

[5]The adjustment is made using the following formula: $\tilde{x}_t^{cat} = x_t^{cat} - (x_t^{cat} + x_t^{ex} - x_t)/2$, where, for a given category, x_t^{cat} denotes the number of articles corresponding to the categorical count, x_t^{ex} represents the number of articles corresponding to the count that excludes the search terms for that category but includes the other four categories, and $\tilde{x}_t^{cat}$ is the number of articles in the categorical count adjusted for multiply counted articles. This adjustment reduces the number of articles counted more than once by a factor of 100 to 0.08% of the sample.



(a) Number of newspaper articles that include terms from each GHT category



(b) Share of newspaper articles that include terms from each GHT category

Figure 2: **Composition of GHT index, January 1985 - June 2025**

Notes: The figure shows the composition of the GHT index by categories, covering the period from January 1985 to June 2025. Top panel: A breakdown of the GHT index illustrating the number of newspaper articles that include terms from each GHT category. Bottom panel: The share of newspaper articles that include terms from each GHT category, relative to the total number of articles containing GHT terms for each month.

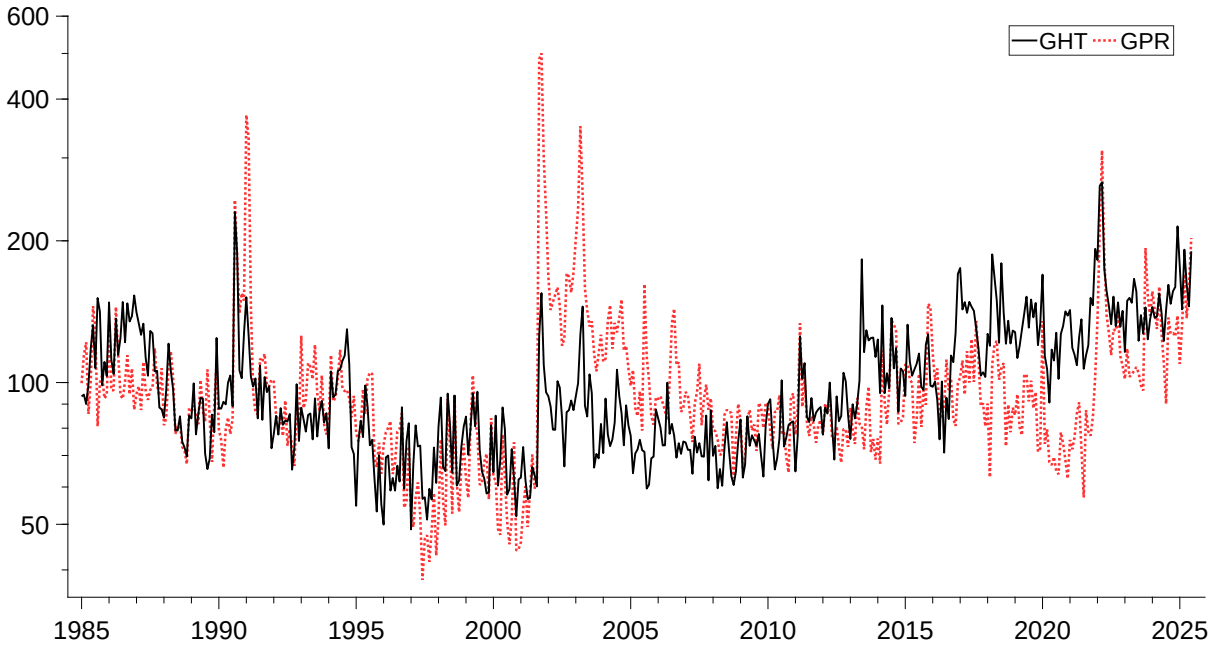


Figure 3: **GHT Index and GPR Index, January 1985 - June 2025**

Notes: The figure depicts the GHT index and GPR index, covering the period from January 1985 to June 2025. Both indices are plotted on a logarithmic scale and normalized to a mean of 100.

spikes in the early years of the global war on terror. In contrast, the GHT index is less elevated during the 2000s, reflecting relatively subdued hybrid threats in line with our definition. Third, the GHT index indicates a steady build-up of hybrid threats over the past decade, beginning with the disclosure of the NSA's extensive surveillance activities by Edward Snowden in June 2013, which strained U.S. relations with allies and handed geopolitical rivals potential military-intelligence benefits. This was followed by the Russian annexation of Crimea in March 2014, which signalled that the post-Cold War unipolar order was giving way to renewed rivalry between geopolitical great powers, and by Russian interference in the 2016 U.S. presidential election, ultimately culminating in Russia's full-scale invasion of Ukraine. In contrast, the GPR index does not capture the increasing trend and frequency of hybrid threat events in the same period.

4 Macroeconomic Impact of Geopolitical Hybrid Threats

To assess the macroeconomic impact of hybrid threat shocks, we employ a structural proxy VAR approach. This section details the VAR model specification and identification strategy, presents the empirical results, and concludes with a discussion of robustness checks.

4.1 VAR Model

The VAR model is represented in reduced form as follows:

$$y_t = c + B_1 y_{t-1} + \cdots + B_p y_{t-p} + u_t, \tag{3}$$

where y_t is a $n \times 1$ vector of endogenous variables observed in quarter $t = 1, \ldots, T$, c is a $n \times 1$ vector of constants, and $B_1, \ldots, B_p$ are $n \times n$ coefficient matrices. The reduced-form errors are denoted as $u_t \sim N(0, \Sigma_u)$. We further assume a linear mapping between the reduced-form errors u_t and a $n \times 1$ vector of mutually independent structural shocks ε_t, with $\Sigma_\varepsilon = E(\varepsilon_t \varepsilon_t') = I$. This relationship is expressed as $u_t = A_0 \varepsilon_t$, where the i^{th} column of the matrix A_0 represents the contemporaneous impact of the i^{th} shock on the endogenous variables.

Our baseline model specification closely follows that of Caldara and Iacoviello (2022). Specifically, the baseline VAR is an eight-variable system comprising: the GHT index (in logs); real investment per capita (in logs); hours worked per capita (in logs); the GDP implicit price deflator (in logs); the two-year Treasury bond yield; the VIX index[6]; the S&P 500 composite index deflated by the U.S. consumer price index (in logs); and the West Texas Intermediate (WTI) spot price of crude oil deflated by the U.S. consumer price index (in logs).[7] We subsequently extend our analysis to include a broader set of variables. Definitions and data sources for all variables are provided in Supplementary Appendix Section B.

We estimate the VAR using quarterly data from 1986:Q1 to 2025:Q2, averaging higher-frequency variables within each quarter. Based on the Akaike information criterion (AIC), we include two lags of the endogenous variables, as in Caldara and Iacoviello (2022). To account for the substantial shifts in macroeconomic conditions associated with the COVID-19 pandemic, we omit 2020:Q1-Q4 from the sample (see also Lenza and Primiceri, 2022; Baumeister and Hamilton, 2024; Schorfheide and Song, 2024).[8] Confidence intervals are based on Hall (1992)'s percentile method, constructed using 5,000 replications of the residual-based moving block bootstrap of Brueggemann et al. (2016), as recommended by Mertens and Ravn (2019).[9]

[6] We substitute the VXO index for the VIX between 1986Q1 and 1989Q4 due to a lack of VIX data.

[7] Relative to Caldara and Iacoviello (2022), we replace the GPR index with the GHT index and substitute the Chicago Fed National Financial Conditions Index (NFCI) with the GDP deflator to enable a direct analysis of the price response to GHT shocks.

[8] Results are generally robust but less stable when dropping less quarters.

[9] The block length is set to the nearest integer of $\kappa T^{1/4}$, with $\kappa = 5.0297$, as proposed by Jentsch and Lunsford (2019).

4.2 Identification

The identification of hybrid threat shocks is complicated by the possibility of contemporaneous feedback between the GHT index and other variables included in the model. Recursive identification schemes, commonly used in the literature on GPR shocks, rule out such feedback by construction, which represents a potential limitation (see, e.g., Kilian et al., 2025). Although it is reasonable to argue that hybrid threat events occur independently of current economic conditions and can therefore be treated as exogenous within the quarter, this assumption may be violated if media attention systematically reflects expectations about the economic and financial impact of these events. For example, newspapers may disproportionately cover hybrid threat incidents that are anticipated to have greater economic consequences.

Hence, we implement a non-recursive proxy VAR identification scheme specifically designed to identify GHT shocks. Following the methodology of Stock and Watson (2012) and Mertens and Ravn (2013), we use an external instrument Z_t to identify the GHT shock ε_t^j, under the conditions that the instrument is correlated with the GHT shock but orthogonal to all other structural shocks:

$$E\left[Z_t \varepsilon_t^j\right] \neq 0, \tag{4}$$

$$E\left[Z_t \varepsilon_t^k\right] = 0, \quad \text{for all} \quad k \neq j. \tag{5}$$

To estimate the relevant elements of the structural impact matrix A_0, we first estimate the reduced-form VAR by ordinary least squares and obtain the residuals for each variable. Next, we compute the sample covariances between the external instrument Z_t and the reduced-form residuals, which yields a vector proportional to the corresponding column of A_0 – that is, the contemporaneous effects of the GHT shock. Because the scale of the identified shock is indeterminate, we normalize this vector by setting the response of the GHT index to unity, i.e., dividing by its entry for the GHT index. The normalized impact vector is then used to recover the impulse response functions of all variables to the identified shock (for further details, see Mertens and Ravn, 2013). By using an external instrument, the proxy VAR approach enables non-recursive identification, thereby avoiding concerns about the potentially arbitrary recursive ordering of the GHT index and other variables in the model (e.g., Kilian et al., 2025).

The choice of instrument is crucial for identification. We follow a narrative approach similar to those of Carriero et al. (2015) and Andreasen et al. (2024) in the literature on uncertainty shocks. Specifically, we construct a narrative event dummy, Z_t, which equals one in quarters with significant GHT events and zero otherwise. Table 2 lists the quarters in which this dummy is set to one and a brief description of the associated events. Drawing on the historical narrative from our newspaper search, we select events for their historical significance, aiming to represent a wide array of hybrid threats. The Snowden NSA leaks, Russian interference in the 2016

U.S. election, and the Skripal poisonings coincide with the largest spikes in the GHT index among our selected events. Other historically relevant events, including inter alia the Iran-Contra weapons scandal, the revelation of the Russian Illegals spy ring, the Russian annexation of Crimea, the cyberattacks on Colonial Pipeline and JBS, and the Nord Stream pipeline sabotage align with pronounced increases in the GHT index. For their historical significance, we also include the cyberattacks on the U.S. Office of Personnel Management and the Ukrainian power grid, as well as the WannaCry global ransomware attack, which also leave a discernible imprint on the index, albeit with less pronounced movements than other narrative events.

Quarter	Event(s)
1986:Q3	Western sanctions on apartheid regime in South Africa
1986:Q4	U.S. Iran-Contra weapons scandal
1989:Q4	Eastern Bloc collapse; U.S. intervention in Panama; Philippine coup attempt
1995:Q2	U.S.-Japan trade dispute; Balkan tensions and Bosnian conflict escalation
1996:Q3	Taliban seize Kabul and consolidate power in Afghanistan
2010:Q3	Revelation of Russian Illegals spy ring and related arrests in the U.S.
2013:Q2	Disclosure of NSA extensive surveillance activities by Edward Snowden
2014:Q1	Russian annexation of Crimea
2014:Q3	Expansion of U.S. and EU sanctions on Russia; downing of flight MH17
2015:Q2	U.S. Office of Personnel Management cyberattack, attributed to Chinese hackers
2015:Q4	Cyberattack on Ukraine power grid, attributed to Russian hackers
2016:Q4	Russian interference in U.S. presidential election
2017:Q2	WannaCry global cyberattack, attributed to North Korean hackers
2018:Q1	Poisoning of former double agent Skripal; U.S. steel and aluminum tariffs
2018:Q3	U.S. intelligence on election interference disputed at U.S.-Russia summit
2019:Q2	U.S.-China trade tensions; U.S.-Iran airspace violation and cyberattack
2021:Q2	Cyberattacks on Colonial Pipeline and JBS, attributed to Russian hackers
2021:Q4	NATO expels alleged Russian spies; Russian troop buildup near Ukraine
2022:Q3	Sabotage of Nord Stream pipelines in Baltic Sea
2024:Q2	European arrests of alleged Chinese spies
2024:Q4	Toppling of Assad regime by Syrian rebels amid broader Middle East tensions

Table 2: **Events Included in the Narrative Instrument**

Notes: This table lists the quarters in which the narrative event dummy is set to one and a brief description of the associated historical events.

From the list of events included in our instrument, we exclude episodes that correspond to pronounced increases in the GHT index but also trigger large increases in the GPR index, such as the Iraqi invasion of Kuwait, the Gulf War, the war in Afghanistan following the 9/11 terror attacks, the Iraq War, and the Russian invasion of Ukraine. By excluding these events from our narrative instrument, we ensure that our identification strategy isolates shocks attributable

specifically to hybrid threats, rather than to explicit war-related events. To address exogeneity concerns, we also exclude major macroeconomic and financial events, such as the burst of the dot-com bubble in the early 2000s, the 2008 financial crisis and Great Recession, and the COVID-19 crisis.

We evaluate instrument relevance using conventional statistics. Specifically, we report the F-statistic from the first-stage regression of the reduced-form forecast errors on the instrument. An F-statistic below 10 indicates potential weak instrument concerns (Staiger and Stock, 1997; Stock and Watson, 2016). We also assess the statistical reliability of the instrument as a proxy for the underlying structural shock using the reliability statistic of Mertens and Ravn (2013), where low values suggest limited informational content for identification. Additionally, we examine the sensitivity of our results to the selection of instrument dates.

4.3 Results from the Baseline Specification

Figure 4 reports the impulse responses to a GHT shock identified using a proxy VAR with our narrative instrument. The first-stage regression yields an F-statistic of 21.156 and a reliability measure of 0.757, comfortably exceeding conventional thresholds for instrument relevance. For interpretability, we scale the shock to generate a 40% increase in the GHT index on impact, matching the surge observed during the Russian invasion of Ukraine in 2022:Q1 (unit effect normalization, as in Stock and Watson, 2016).

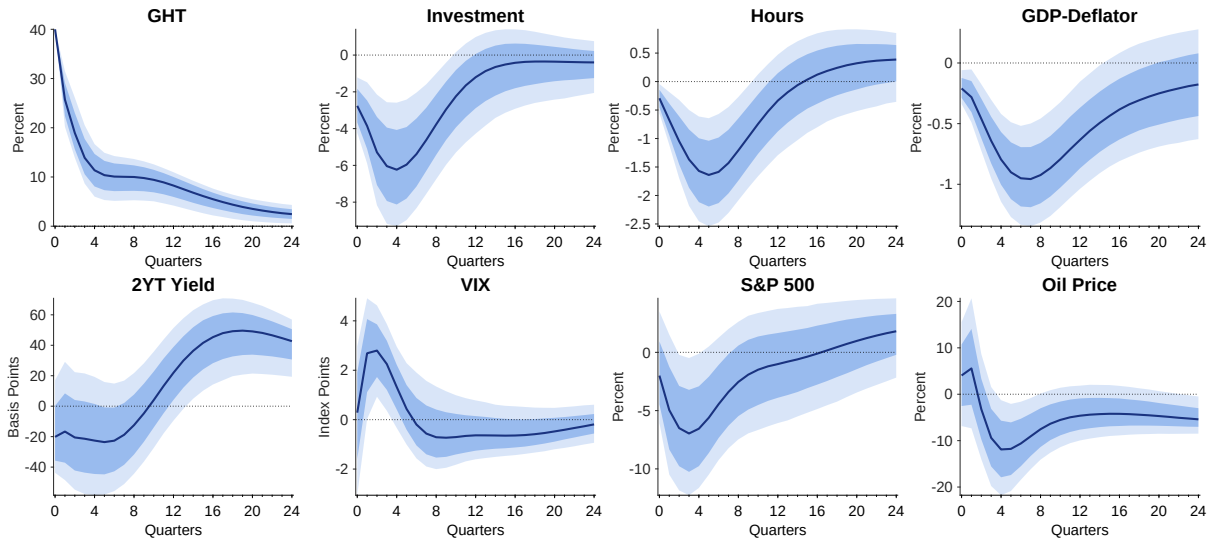


Figure 4: **Impulse Responses to a Hybrid Threat Shock**

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

An unexpected rise in hybrid threats has significant effects on key macroeconomic and fi-

nancial variables. Macroeconomic conditions deteriorate on impact, as reflected in significant declines in per capita investment and hours worked. These effects intensify over time: investment reaches its lowest point after four quarters, at approximately 6.2% below the baseline, and hours worked fall to about 1.6% below the baseline after five quarters. Both variables gradually return to baseline within four years. The shock also triggers a negative financial market response, with the real S&P 500 index declining significantly and reaching a trough of roughly 7.0% below the baseline three quarters after impact, reflecting deteriorating asset valuations. At the same time, the VIX rises significantly, indicating that higher hybrid-threat activity is associated with increased uncertainty and risk aversion, and consequently tighter financial conditions.

The GHT shock depresses the general price level, as evidenced by an immediate and significant decline in the GDP deflator. Prices continue to fall, reaching nearly 1% below the baseline within six quarters and remaining significantly depressed for several years. Oil prices also decline gradually and persistently, reaching a trough of 11.9% below the baseline after four quarters. Two-year Treasury yields fall by around 20 basis points below the baseline for six quarters, although this response is not statistically significant. This tendency toward lower yields may reflect a more accommodative monetary policy stance in response to weaker activity and lower prices following the shock. In later quarters, Treasury yields rise by up to nearly 50 basis points, which may reflect an increase in the Treasury risk premium.

The simultaneous decline in economic activity and prices suggests that GHT shocks primarily affect the macroeconomy through demand-side channels. This contrasts with the supply-side effects typically associated with GPR shocks (e.g., Caldara and Iacoviello, 2022; Bondarenko et al., 2024; Caldara et al., 2026). To further illustrate this difference, we replace the GHT index with the GPR index in our baseline VAR specification and apply a recursive identification scheme.[10] The resulting GPR shock dampens investment and hours while raising the aggregate price level significantly, in line with earlier studies (see Supplementary Appendix Figure C.1). A demand-side propagation of GHT shocks resembles the established macroeconomic effects of uncertainty shocks (e.g., Leduc and Liu, 2016; Basu and Bundick, 2017). This association is intuitive, as hybrid threats typically do not involve direct military confrontation or large-scale physical disruption, but instead aim to destabilize and undermine societies by sowing fear and uncertainty in the minds of target populations.

Figure 5 reports the share of forecast error variance in the endogenous variables explained by GHT shocks. At business-cycle frequencies, these shocks account for up to nearly 10% of the variation in investment, up to 15% in hours worked, and around 5% in the remaining variables. These contributions are similar in magnitude, though somewhat smaller, than those of

[10]Notwithstanding the caveats of recursive VARs discussed earlier (e.g., Kilian et al., 2025), we employ this identification strategy to facilitate direct comparison with the existing literature, which routinely uses recursive VARs to identify GPR shocks.

uncertainty shocks (Jurado et al., 2015; Born and Pfeifer, 2021) and financial shocks (Gilchrist and Zakrajšek, 2012; Furlanetto et al., 2017). By contrast, they generally exceed the variation attributed to monetary policy shocks (Barakchian and Crowe, 2013; Furlanetto et al., 2017) and stock market volatility shocks (Jurado et al., 2015), and they also surpass the forecast error variance shares for GPR shocks in a Cholesky VAR (see Supplementary Appendix Figure C.2).

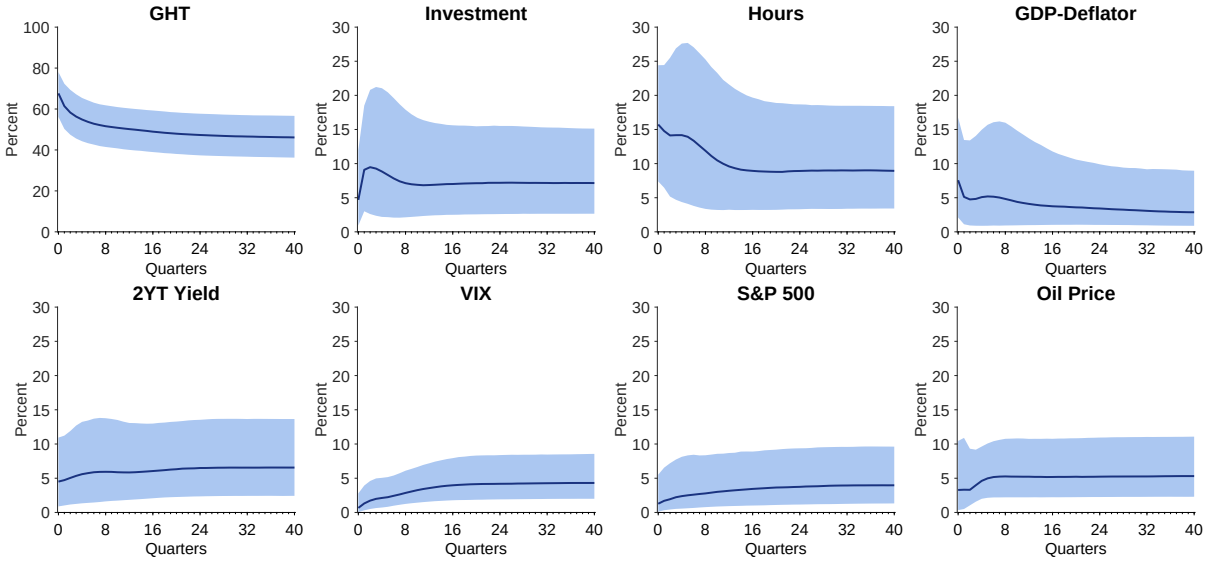


Figure 5: **Forecast Error Variance Contributions of a Hybrid Threat Shock**

Notes: Forecast error variance shares attributable to a GHT shock, identified via a narrative instrument in a proxy VAR. Median response (blue solid line), with 68% (blue shaded) confidence intervals. Sample period: 1986:Q1-2025:Q2.

4.4 Inspecting the Transmission Mechanism

To examine the macroeconomic transmission of GHT shocks in greater detail, we add a range of additional variables to the benchmark VAR. Figure 6 presents the impulse responses of selected variables to a GHT shock, with each variable incorporated individually into the model. The responses are estimated using the narrative proxy VAR approach, and the shock is again scaled to a 40% increase in the GHT index on impact.

First, we examine the responses of U.S. and global economic activity and prices to GHT shocks by augmenting the VAR, one variable at a time, with U.S. real GDP per capita (in logs), the index of global real economic activity in industrial commodity markets proposed by Kilian (2009) (using the corrected series discussed in Kilian, 2019), and the global real price index of industrial and agricultural commodities (in logs) constructed by Baumeister and

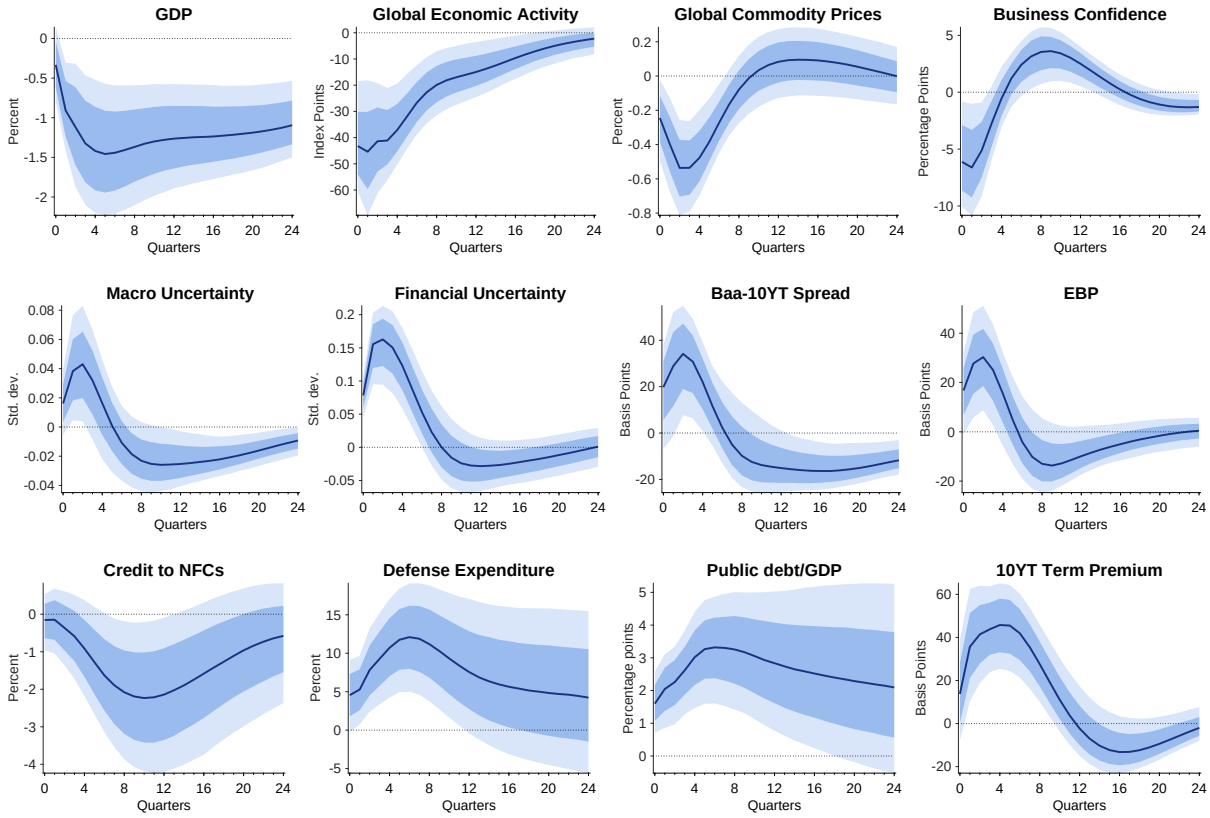


Figure 6: **Impulse Responses to a Hybrid Threat Shock – Additional Variables**

Notes: Impulse responses to a 40% exogenous increase in the log GHT index, identified via a narrative instrument in a proxy VAR. Median response (blue solid line) for variables added one-at-a-time to the benchmark model specification, with 68% (dark blue shaded) and 90% (light blue shaded) confidence intervals. Sample period: 1986:Q1-2025:Q2.

Guerin (2021).[11] The results show that all three variables decline significantly and persistently following a GHT shock: U.S. output falls by nearly 1.5%, global economic activity drops by more than 40 index points at the trough,[12] and global real commodity prices decrease by up to about 0.5%. Taken together, the contraction in global real activity and the fall in global real commodity prices indicate that GHT shocks dampen global demand.

Next, we assess the responses of U.S. business confidence and uncertainty. Business confidence, measured by a survey-based indicator from the OECD Business Tendency Surveys, declines significantly on impact of a GHT shock, indicating heightened caution among firms. In addition, a GHT shock significantly increases macroeconomic uncertainty and, even more strongly, financial uncertainty, as measured by the composite indices of Jurado et al. (2015). This combination of weakening confidence and rising uncertainty is consistent with a demand-side transmission mechanism.

Further, we study the response of corporate credit markets to GHT shocks, motivated by the rise in financial uncertainty and risk aversion indicated by the VIX. We sequentially augment the VAR with the credit spread between Moody's Baa corporate bond yields and ten-year Treasury yields, the excess bond premium (EBP) of Gilchrist and Zakrajšek (2012), and the aggregate volume of credit to non-financial corporations (NFCs), deflated by the U.S. consumer price index (in logs). Following a GHT shock, both credit spreads and the EBP increase significantly on impact and remain elevated for about two quarters before returning to baseline after roughly one and a half years. The resulting rise in external financing costs constrains investment and further depresses aggregate demand. Consistent with tighter financial conditions and weaker demand, NFC credit declines significantly and persistently.

Finally, we examine whether the government responds to GHT shocks by enhancing its military capabilities, given the potential for elevated risk that hybrid threats may escalate into overt conflict. Specifically, we analyze fiscal policy responses using real defense expenditures and investment (in logs), as well as the ratio of federal government debt to GDP. The results show that a GHT shock leads to a significant and persistent increase in defense spending, accompanied by sustained accumulation of public debt. This pattern indicates a reallocation of resources from the private to the public sector and suggests potential long-term implications for fiscal policy. Turning to the corresponding reaction in the U.S. Treasury market, we find that the GHT shock triggers a sharp increase in the ten-year Treasury term premium, as derived from the model of Adrian et al. (2013), likely reflecting heightened uncertainty and the prospect of increased Treasury supply due to higher public debt.

[11] The global real economic activity index is derived from a panel of dollar-denominated global bulk dry cargo shipping rates and may be viewed as a proxy for the volume of shipping in global industrial commodity markets. The global commodity price index is constructed as the first principal component of a balanced panel of prices for 23 basic industrial and agricultural commodities, deflated by the U.S. CPI.

[12] For historical context, the decline in the global activity index is roughly comparable in magnitude to the drop observed during the 2001 U.S. recession between 2001:Q1 and 2001:Q3.

4.5 Robustness

We conduct a series of robustness checks. First, we assess the sensitivity of our results to the construction of the narrative event dummy. We begin with a placebo test, instrumenting the GPR index with our event dummy to identify geopolitical risk shocks. The resulting F-statistic of 0.181 indicates that the hybrid threat event dummy contains essentially no useful information for identifying shocks associated with geopolitical events such as wars and terrorism. We also perform a jackknife-style check by sequentially excluding each event from the narrative event dummy; apart from minor uncertainties in individual impulse responses, the results remain consistent with the baseline, confirming that the effects are not driven by any single event (see Supplementary Appendix Figure C.3). Finally, we assess the sensitivity of our results to the use of a binary event dummy as an instrument for identifying GHT shocks. While our use of event dummies follows the uncertainty literature (e.g., Carriero et al., 2015; Andreasen et al., 2024), the magnitude of the shock – as reflected in the share of articles devoted to a given event – may contain additional information. Nevertheless, results remain nearly unchanged when, instead of using a binary event dummy (ones and zeros), we substitute the ones with the corresponding values of the log GHT index in our narrative instrument (see Supplementary Appendix Figure C.4).

Second, we vary the composition of the GHT index and assess how this affects the results. Specifically, we replace the GHT index in the benchmark VAR specification with GHT indices that sequentially omit the search terms associated with each of the five categories. We estimate impulse responses to an adverse GHT shock using these alternative GHT indices and the narrative proxy approach, employing the same instrument as before. Overall, the resulting impulse responses are robust to alternative compositions of the GHT index, with only relatively minor differences (see Supplementary Appendix Figure C.5).

Third, we assess the impact of the COVID-19 pandemic on our results. The outbreak in early 2020 caused substantial shifts in macroeconomic variables, posing challenges for VAR analysis. Recent studies have addressed these extreme observations either by modeling them directly or by excluding them from the sample (e.g., Lenza and Primiceri, 2022; Baumeister and Hamilton, 2024; Schorfheide and Song, 2024). In our main specification, we exclude all quarters of 2020 to omit both the sharp contraction and subsequent recovery – particularly pronounced in per capita hours – from the sample. Our results are robust to truncating the sample at 2019Q4 or excluding fewer quarters (see Supplementary Appendix Figure C.6). However, the response of hours is sensitive to including more quarters from 2020, as the sharp decline and rebound during the pandemic enter the sample. In particular, including the large drop in 2020:Q2 produces an atypical increase in hours, likely reflecting this extreme movement. Moreover, Treasury yields decline more strongly in the pre-pandemic sample.

Fourth, we vary the model specification by replacing the price and interest rate measures.

Our results remain qualitatively unchanged when using the PCE or CPI instead of the GDP deflator, although these measures respond somewhat less strongly to a GHT shock (see Supplementary Appendix Figure C.7). We also examine the monetary policy response to GHT shocks by replacing two-year Treasury yields with the policy rate in the baseline specification. To account for the zero lower bound period, we use the federal funds rate spliced with the shadow rate of Wu and Xia (2016). The results indicate that the funds rate declines in the first two years following a GHT shock, consistent with the initial drop in Treasury yields and indicative of an accommodative monetary policy response to weaker aggregate demand (see Supplementary Appendix Figure C.8).

Finally, we assess the sensitivity of our results to the number of lags included in the reduced-form system. Recent studies highlight the risks of relying on short lag lengths based on the AIC (Montiel Olea et al., 2025; Baumeister, 2025; De Graeve and Westermark, 2025). We therefore re-estimate the baseline VAR with four lags of the endogenous variables. As expected, including more lags yields less smooth impulse responses (see Supplementary Appendix Figure C.9). Nevertheless, our main conclusions remain unchanged.

5 Conclusion

We construct a novel index of geopolitical hybrid threats based on newspaper coverage of cyberattacks, infrastructure sabotage, espionage, economic and political coercion, disinformation, and other forms of hybrid warfare. The index rises sharply from the mid-2010s, surpassing Cold War levels observed in the mid-1980s, which underscores the growing prominence of hybrid threats. A decomposition reveals that sabotage of critical infrastructure, including cyberattacks, and the spread of disinformation have become increasingly important in recent years.

Using this index, we analyze the impact of geopolitical hybrid threat shocks on U.S. and global macroeconomic and financial measures. Our results show that an exogenous increase in hybrid threats produces macroeconomic effects similar to those of a negative demand shock: aggregate output and prices decline, business sentiment weakens, uncertainty rises, and financial conditions tighten. In contrast to traditional geopolitical risk shocks, which typically disrupt aggregate supply, hybrid threats primarily suppress aggregate demand by prompting greater caution and reducing investment. This outcome is in line with the objective of hybrid warfare to destabilize and undermine societies and sow fear and uncertainty in the minds of target populations. In response, monetary policy eases and fiscal policy expands through higher defense spending financed by public debt. On balance, the negative demand effects seem to outweigh the stimulative effects of these expansionary policies.

These findings suggest several promising avenues for future research. Further work is needed to understand how businesses, households, and the financial sector adapt to hybrid

threats and how they can build resilience. Another potential extension would be to assess the country-specific impact of hybrid threats by constructing regional or local GHT indices. In addition, assessing potential hybrid threat scenarios within a structural macroeconomic framework would offer valuable insights for policymakers seeking to mitigate their economic consequences.

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