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Abstract

This paper investigates the impact of the Israel-Iran conflict on the macroeconomic performance of Gulf Cooperation Council (GCC) countries, focusing on energy, trade, and finance. Using annual data from 2010 to 2023 and a Double Machine Learning (DML) framework, the analysis establishes causal relationships between conflict intensity and GDP growth, inflation, and exchange rate volatility, while accounting for high-dimensional confounding factors and nonlinear transmission mechanisms. The findings reveal that higher conflict levels hinder economic development and increase price and currency instability, with structural differences observed across nations depending on their economies' characteristics. Channel-specific estimates show that reliance on oil, trade exposure, and capital-flow sensitivity influence how geopolitical shocks affect these economies. These adverse effects can be mitigated through fiscal discipline, economic diversification, and foreign reserves, highlighting vulnerabilities in existing policies. Counterfactual simulations demonstrate that stronger fiscal policy, economic diversification, and increased reserves help enhance macroeconomic stability even amid persistent geopolitical tensions. Overall, the study provides empirical insights into resilience strategies for conflict-prone, hydrocarbon-dependent economies.

Keywords: Geopolitical conflict; GCC economies; Double Machine Learning; Macroeconomic stability; Oil rents; Diversification; Conflict spillovers

JEL Codes: C55; E32; F51; O53

1. Introduction

The modern Middle East geopolitical environment reflects a well-established competition between Israel and Iran that constantly influences regional alignment and economic risk assessments. Recent academic research shows that Iran builds power through asymmetry, funded by proxy networks, such as Hezbollah in Lebanon, Shia militias in Iraq, the Houthis in Yemen, and most importantly, its deep-rooted presence in Syria. This enables Iran to sustain long, low-intensity confrontations with Israel without engaging in direct war (Al-Khaled et al., 2025). Meanwhile, Israel has been. The United States acts as the primary guarantor of Israeli security and the stability of the Gulf, engaging in strategic outreach to a select group of Gulf nations, most notably through the Abraham Accords, aiming to build a reverse periphery of security and economic ties to diminish Iran's influence and reshape regional alliances (Guzansky, 2021). These realignments increase the risk of spill-over effects: escalations between Israel and Iran could ripple through newly formed, often covert, security networks connecting Israel with Gulf states and the U.S., creating more fault lines in the region and potentially causing wider economic disruptions. The involvement of major powers worsens the situation. The Cooperation Council states that, through its policy choices—whether through military engagement, sanctions, or diplomacy—it shapes the incentives for escalation or de-escalation between Israel and Iran and influence the Gulf's economic outcomes (Zabakhidze, 2024). Additionally, other non-regional actors like China and Russia are developing distinct economic and political ties—such as investments, infrastructure projects, and strategic alliances—that broaden GCC options but also introduce new geopolitical vulnerabilities, affecting how conflicts are mitigated or intensified (Chaziza and Lutmar, 2025; Luzyanin and Alekseeva, 2024). The Iran-China strategic partnership and broader realignments further complicate isolation efforts and market forecasts in the Gulf (Khan, 2025; YildirimÇAkar, 2023).

Considering these concurrent paths, namely Iran's asymmetric regional strategy, Israel's diplomatic and economic overtures to the Gulf states, and the great-power rivalry, the threat of escalation is not only military but also of an economic nature. The previous studies attribute such geopolitical shocks to the energy market, trade routes, and investor confidence shocks, indicating a strong susceptibility of the GCC economies that continue to participate in global energy networks and international capital flows (Ibekwe et al., 2024)). As such, to determine the economic consequences of an Israel-Iran confrontation on the countries of the Gulf Cooperation Council, it will be necessary to place conflict dynamics in the context of this dynamic developing network of regional alliances, proxy warfare, and external patronage that researchers identify as the major cause of both security and economic instability in the region (Al-Khaled et al., 2025; Parker, 2025).

Regarding regional geopolitics, the GCC is situated in a strategic location that spans key markets in the East and West and borders the key arenas of the Israel-Iran conflict. As demonstrated by Baysoy and Altuğ (2021), this proximity increases the risk of contagion through the likelihood of military escalation, thereby increasing the likelihood of supply-chain disruption and capital flight. The geographical fact, in turn, inherently translates into economic exposure: ports, pipelines, and chokepoints of the GCC are both the major hubs of global trade and energy flow and the global transit risk is increased by conflicts and regional confrontations brought by regional conflicts (Baysoy and Altuğ, 2021; Galkin and Bollino, 2020). The empirical evidence in the literature on regional spillovers indicates that proximate economies exhibit stronger growth

spillovers and greater vulnerability when neighbouring states face instability, thereby making the GCC a unique vulnerability spot to the shock occasioned by the Israel-Iran confrontation.

This weakness is further aggravated in the macroeconomic design of the GCC. Member states remain highly reliant on hydrocarbon rents; oil and gas exports constitute the backbone of budgets, serving as a cushion for external balances, yet they can also directly debilitate budgets, widen deficits, and reduce the ability of many to invest in public services (Alharthi et al., 2024; Alkhateeb and Mahmood, 2020). Econometric estimations reveal that the responses of GCC production and state budgets to oil price variations are asymmetric, amplifying the economic impact of a supply shock or market run caused by regional tensions. Furthermore, the GCC expansion is resource-intensive, which restricts fiscal flexibility. Several studies argue that resource dependence exposes countries to external shocks, making it more difficult to address crises in the case of geopolitical risk (Abdelkawy, 2024).

In addition to energy, the GCC is also closely tied to global capital and labour markets, which form additional sources of contagion. A significant amount of foreign direct investment, sovereign wealth, and migrant labor remittances can be observed in these countries and are responsive to risk perceptions and global policy skepticism, with the empirical evidence demonstrating the dependence of the GCCs capital markets volatility and remittance flows on U.S. policy uncertainty, as well as U.S. oil prices, further indicating their vulnerability to international shocks (Abdullah, 2020). Equally, the GCC has taken the form of trade liberalisation and customs integration, which has increased intra-regional trade linkages and thus rapidly spread disruptions to one country's neighbours or trade routes throughout import/export channels (Fakhreddine et al., 2021). The geographic proximity, dependence on hydrocarbons, and a proper sub-level engagement in international trade and finance make the GCC particularly susceptible to the economic ripple of an Israel-Iran escalation; these literatures all agree on the point that policy makers should put risk mitigation and risk diversification on the priority agenda in order to mitigate the acute vulnerabilities noted above

This paper fills a specific gap in the research on geopolitical warfare and its subsequent economic impact on other territories. Other studies have examined the role of conflict in macroeconomic performance, including the impact of uncertainty, commodity markets, trade networks, and capital flows. However, the mechanisms analysed tend to focus on global tensions or internal conflicts within countries. For example, Caldara and Iacoviello (2022) have investigated uncertainty shocks at the global level, whereas Kilian (2009) and Arezki and Blanchard (2014) have examined the effects of oil market disruptions on output and fiscal stability. Middle East scholarship, on the other hand, often focuses on internal instability, domestic political shifts, or general indices of geopolitical risk, without isolating them in discrete dyadic conflicts. The Israel-Iran conflict has thus been an under-researched topic, despite its strategic importance to every GCC economy that lies along key energy, trade, and security routes. There is no research available that quantifies how an ongoing external conflict between two regional powers permeates the economies of neighbouring countries, but not those directly involved in the conflict, through the movement of oil prices, supply chains, investor behaviour, and financial market responses.

The second lacuna concerns methodological rigour. Much of the available literature is based on linear models, which are poorly prepared to reflect nonlinear interactions or the breadth of

confounding variables. Researchers rarely combine machine-learning-based causal inference methods to overcome the effect of conflict intensity on structural factors, such as oil dependence, openness to trade, and sovereign liquidity. Many of the benefits of exposure to conflict are limited by the absence of a robust causal framework that can identify how exposure to conflict translates into macroeconomic consequences. This weakness is particularly relevant to the GCC, where the complex relationships between hydrocarbons, fiscal policy, external balances, and investment flows render traditional econometric tools ineffective.

To address these gaps, this paper presents the first systematic empirical test of the relevance of the Israel-Iran conflict to macroeconomic performance in the GCC region. The study uses incident-based data to measure the intensity of conflict and its flow through the channels of energy, trade, and finance. The analysis examines the relationships among conflict intensity, GDP growth, inflation, and exchange-rate volatility to determine which structural attributes mediate these factors. The study explains how domestic policies can alter the level of conflict exposure by introducing fiscal balance, economic diversification, and foreign-reserve buffers as moderating variables.

The methodological contribution of the study is the use of Double Machine Learning to estimate causal effects under conditions of nonlinearity and high-dimensional confounding. This method enhances identification and yields policy-relevant elasticities that are not typically produced by conventional methods. The study assesses other policy environments that might mitigate adverse outcomes through counterfactual simulation. The joint contribution enhances our understanding of geopolitical shock spillovers in the region and provides GCC policymakers with evidence-based insights into how resilience policy can reduce vulnerability to geopolitical shocks. This research study analyzes how the conflict between Israel and Iran passes on economic shocks to the GCC region. The primary objective is to measure the macroeconomic effects of conflict intensity and identify the structural processes that govern their magnitude. With respect to this purpose, the research questions to be answered in the study include:

RQ1. What is the impact of the Israeli-Iran conflict on the major macroeconomic factors in GCC economies, namely the growth of GDP, inflation, and exchange rate volatility?

RQ2. How do these impacts take place, via the energy markets, trade exposure or capital-flow adjustments?

RQ3. How do the fiscal balance, economic diversification, and foreign-reserve buffers moderate the impact of the intensity of the conflicts?

RQ4. What are the differences in these effects among individual members of the GCC countries based on their structure and policies?

RQ5. How do the results change with a more positive fiscal stance and diversification, and higher reserve buildings?

Crucial questions for economic policy in the GCC include the region's location next to a geopolitical energy strain and its close connections to international energy markets, trade logistics,

and international financial flows. The GCC economies are not directly involved in the Israel-Iran conflict, but they are also sensitive to changes in risk perceptions, transportation and insurance rates, and the behaviour of global investors. Recognizing the impact of external conflicts on macroeconomic performance, policymakers can anticipate susceptibility and enhance resilience through targeted fiscal, structural, and financial policies. The questions also contribute to long-term planning in the GCC's diversification agendas, where external shocks can influence investment fundamentals, consistent income, and the speed of structural change implementation.

The paper contributes to the conflict economics literature by examining a dyadic geopolitical conflict that may have regional spillover effects. The literature typically assesses domestic friction or international geopolitical risk metrics, though it rarely distinguishes the influence of an external dispute between two states on the reconstruction of outcomes in their adjacent economies. This study addresses that gap by using an external geopolitical shock (the Israel-Iran conflict) and quantifying its ripple effects in the GCC. In its methodology, the study employs Double Machine Learning to identify causal effects of conflict intensity, accounting for nonlinearities and high-dimensional confounding. The given approach contributes to advancing empirical practice in the field, where traditional linear models often overlook the complex interplay between structural elements and geopolitical shocks. Lastly, the research has evidence concerning the effectiveness of resilience policies. By analyzing the moderating effects of fiscal balance, diversification, and reserve buffers on conflict, the analysis connects exposure to conflict with domestic policy decisions. The contribution enhances the understanding of how non-belligerent states address the economic impact of regional tensions and provides a systematic framework for designing resilience strategies in the GCC.

The paper is divided into five parts. The introduction section explains the study's motivation, identifies a gap in existing research, and outlines the specific goals of the investigation. The literature review section presents a critical synthesis of the previous literature on the geopolitical conflict and the economic vulnerability to which the states of the Gulf Cooperation Council are susceptible. The section also provides the theoretical framework, which highlights the mechanisms of transmission and offers a theoretical backbone for the following analysis. The section on data and methodology describes variable construction and explains the use of the double-machine learning strategy. The estimation and interpretation ~~discussion and results~~ section gathers empirical findings and contributes to the substantive policy analysis. The final part provides a summary of the main findings in a brief form, outlines the limitations of the methodology, and suggests a perspective for future research.

2. Literature Review

2.1. Theoretical Framework

A literary review of geopolitical upheavals reveals a nexus of transmission processes through which the Israel-Iran conflict can spread economic suffering to the Gulf Cooperation Council (GCC) member countries. We categorise these mechanisms into seven apparent channels, including: energy markets; trade and shipping; foreign direct investment and capital flows; tourism; defense spending; sovereign risk and credit ratings dynamics; and investment in oil and

gas projects. Channels operate through various micro- and macro-economic channels that all influence the magnitude and quality of the shock's effect.

Energy markets- indeed, empirical observations continue to prove that Middle Eastern hostilities have direct volatility in oil prices and an increase in supply-risk premia, which spreads through both exporter and importer balance sheets (Demirer et al., 2020);(Kolotvin, 2024)). War on the coast of the Strait of Hormuz raises the likelihood of physical interference with seaborne oil transit and forces market actors to incorporate hedging premia into future and spot contracts to raise the realised volatility and improve revenue uncertainty among GCC member states, which are hydrocarbon-dependent economies (Yi et al., 2021)). Energy market models forecast that sharp increases in prices and an increase in market volatility will give windfalls of short durations to some exporters, but again will magnify fiscal volatility and hinder longer-term planning, particularly in cases of tight sovereign shield and production capacity constraints on quick response of supply (Abdelkawy, 2024); (Mamman et al., 2024).

The GCC has sensitive maritime infrastructures and relies on the effective functioning of liner shipping through strategic chokepoints. Hostilities increase routing expenses, timescales, and insurance costs, thereby increasing trade expenses and circumventions. Network studies demonstrate how port disruptions and route detours non-linearly spread through supply chains: high freight and insurance prices increase the costs of inputs, constrain non-oil exporting sourcing and manufacturing, and hinder import-intensive production and services. Moreover, the two-way volatility in shipping and oil markets exacerbates the trade shock: uncertainty in energy prices drives up shipping prices, while the challenges of shipping growth intensify price volatility and oil demand expectations (Astuti, 2024). Geopolitical risk reduces inward FDI and triggers a capital exodus, whereby investors shift to assets with more value guarantees, thereby duplicating the values of local assets and reducing long-term funding for diversification projects Agyei (2023); Nemat et al. (2025). A reallocation of portfolios to liquid and external assets by sovereign wealth funds (SWFs) and regional investors can lead to tighter domestic credit and also increase the cost of borrowing for private firms (Tok, 2021). Empirical evidence suggests that higher indices of geopolitical risk can rapidly drive equity-market losses and wider sovereign risk spreads, ultimately damaging investment confidence and limiting funding for both public and private entities.

The literature reports a strong negative correlation between geopolitical risk and tourist arrivals: security shocks diminish inflows, lower occupancy rates, and discourage destination-seeking travel after an event, resulting in an immediate decline in revenue within the hospitality sector and related sectors (Hasan et al., 2020; Akamavi et al., 2022). According to tourism models, such declines can be explained by perceived safety risks, insurance prices, and travel advisory effects, which are disproportionately impacting leisure and business tourism, which GCC states have nurtured as part of diversification measures, undermining non-hydrocarbon development channels (Ozturk and Al-Kuwari, 2021; Saleh et al., 2021).

In response to rising conflict, states usually increase military spending at the expense of socially productive effort (Alrasheed, 2022). The subsequent crowding-out effect leads to an increase in the fiscal deficit, resulting in an opportunity cost between capital projects and recurrent defence payments, which limits potential GDP growth and hinders attempts to diversify, as well as

increasing the likelihood of a higher fiscal deficit (Abdelkawy, 2024; Mamman et al., 2024). Rating agencies incorporate geopolitical stresses into their sovereign ratings, including widening default premia, a narrowing of rating outlooks, and increased sovereign borrowing costs (Nemat et al., 2025). Increasing spreads impair fiscal space for countercyclical policies and increase the costs of servicing debt, thus contaminating banking systems and exposing the debt system to private firms that depend on sovereign guarantees. Additionally, War increases the project risk premium and slows investment decision-making in upstream and midstream infrastructure, resulting in deferrals of capacity build and maintenance. The resulting underinvestment increases medium-term supply vulnerability and volatility in prices (Alharthi et al., 2024; Demirer et al., 2020). Increased geopolitical risk raises the hurdle rate investors require, which decelerates the process of modernising the energy sector and diversifying gas-to-power and petrochemical value chains.

2.2 GCC Economy Resilience and Vulnerability Factors

GCC states exhibit diverse resilience based on their financial endowments and policy structures. Temporal insurance against revenue fluctuations and countercyclical expenditure, out-of-country investment, and strategic liquidity provision for shock response is provided by large sovereign wealth funds (SWFs) and foreign asset reserves (Tok, 2021). Furthermore, the proactive additions to the range of activities (tourism, logistics, financial services) as well as the investments in renewable and non-oil areas empower the resilience of the structure, when it is reinforced with substantial macroprudential structures and vigorous labour-market policies (Ozturk and Al-Kuwari, 2021; Farooq et al., 2023). However, Excessive dependence on hydrocarbon rents is characterised by the concentration of fiscal and external vulnerability to oil-market shocks, which damages the effectiveness of automation stabilisers and increases the risk of long-term price volatility (Alharthi et al., 2024);(Alkhateeb and Mahmood, 2020); (Abdelkawy, 2024). Geographical access to the Persian Gulf and the Strait of Hormuz increases exposure to any disruption of the sea and a security threat. Closely linked trade and migrant labour networks also increase contagion via remittances and supply chain relationships (Baysoy and Altuğ, 2021). Each country has institutional variation that induces a shock absorbance capacity: fiscal buffers, government-run swfs, and financial market depths; when faced with stress on conflict, limited fiscal space or greater financial market depth leads states with a shallow financial market structure to face more severe reverses in both borrowing costs and investment flows It is therefore predicted that theory-based effects are differentiated; i.e., well-capitalised GCC economies will smooth the impact difference between the short run and the use of external buffers and SWFs. Meanwhile, less diversified or lower-buffered states will face fiscal stress, a tightening of credit, and a postponement of the revival of non-hydrocarbon segments.

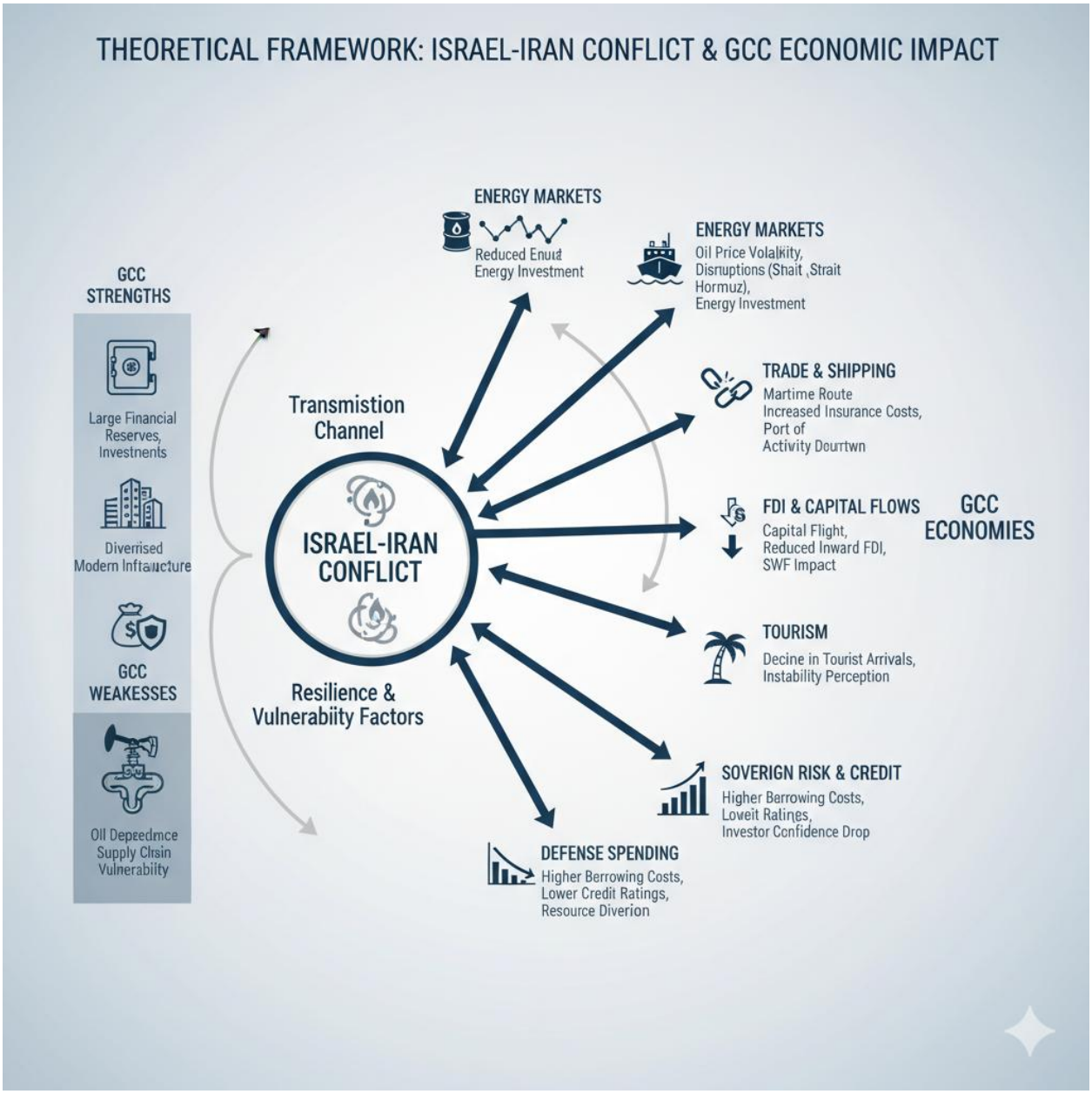


Figure 01: Theoretical framework of the study

2.3. Geopolitical Conflicts and Economic Impacts

Scholarly studies consistently show that geopolitical conflicts have complex economic impacts, including supply shocks, demand destruction, and financial market volatility, with temporal and cross-market dynamics (Agyei et al., 2022; Aslam et al., 2022). Supply shocks caused by conflict are most evident when belligerents or embargoes disrupt the production and distribution of strategic commodities. Empirical studies of energy markets indicate that geopolitical incidents increase oil price volatility and significantly alter return dynamics, thereby

transferring risk to both energy-exporting and energy-importing economies (Demirer et al., 2020; Yi et al., 2021). Under time-frequency analysis, it is shown that short-term spill-overs supersede short-run market adjustments, whereas long-run and medium-run adjustments encompass policy responses and structural reallocations in production and trade. Demand destruction is seen as a result of war-induced uncertainty, which pulls down consumption, investment, and tourism. As recent studies emphasise, the Russia-Ukraine conflict or the COVID-19 pandemic, combined with various other events, have lowered the efficiency of markets and the overall demand in the commodity and equity markets, which shows that the effects of geopolitical shocks can significantly narrow the aggregate demand and business activity of economies affected by them (Aslam et al., 2022). Similar trends were also reported in the agricultural and commodity markets, where an increase in geopolitical risk is linked to an increase in the price dispersion and a decrease in trade volumes and food security levels and inflation (over) exertion in susceptible areas (Yousfi and Bouzgarrou, 2024).

The volatility in financial markets serves as both a transmission mechanism and an amplifier. There is also evidence that connectedness studies and network models exhibit strong spillovers among geopolitical risk indices, crude oil returns, shipping markets, and equity prices, with volatility flowing across asset categories and geographies at an accelerated pace (Hu et al., 2020; Chi et al., 2025). Empirical research utilising a time-varying parameter VAR and connectedness has demonstrated that international shipping and geopolitical risk tend to be net transmitters of volatility to energy and commodity markets, thereby increasing the macroeconomic impact of countries involved in global value chains (Qamruzzaman, 2024). Moreover, empirical evidence suggests that investor behaviour, which also drives capital-flow reversals and increases the cost of borrowing for countries facing conflict, includes the search for safe assets, de-risking emerging market portfolios, and reallocating sovereign wealth (Nemat et al., 2025).

The cross-sectoral data highlight the non-uniformity of the effects: oil market shocks have an uneven impact on hydrocarbon exporters, placing a significant burden on fiscal deficits and deteriorating external balances, while imposing inflationary pressure on importers, particularly due to unfavourable terms of trade (Mamman et al., 2024). According to machine-learning studies, renewable and green financial assets are sensitive to geopolitical risk. Therefore, diversifying into cleaner energy does not eliminate conflict risk from the portfolio, but it can alter the volatility transmission patterns (Jarboui et al., 2024; Mokni et al., 2024). Historical examinations of interstate warfare have shown that volatility is often greater during the periods preceding and following the war, and that larger geopolitical players have a greater impact (Kolotvin, 2024).

2.4. Middle East Conflicts and GCC Economies

The existing literature has repeatedly demonstrated that historical conflicts in the Middle East have produced qualitatively and measurably heterogeneous economic and financial effects on Gulf Cooperation Council states, through trade, energy market, fiscal, and financial market shocks (Shome et al., 2023);(Khan et al., 2022). Historical analyses of the Gulf Wars and Arab-Israeli clashes reveal that geopolitical incidents in the vicinity of the Gulf are likely to increase the insurance premiums, rerouting sea shipping, and increasing the cost of logistics, thus significantly reducing the amount of trade and inflating the import prices of energy-importing industries and

simultaneously lowering the export receipt of hydrocarbon exporters (Xu et al., 2023); (Liokumovich, 2022). The scholars find that energy markets are the leading channel through which regional conflicts influence GCC macroeconomic fundamentals. Perceived supply-risk incidents and interstate conflicts exacerbate oil-price volatility, leading to precautionary production responses that ultimately result in fiscal deficits for rent-driven Gulf budgets (Mamman et al., 2024). Existing empirical literature on the price dynamics of crude oil reveals that wars among regional powers have the effect of creating sharp realised volatility spikes in the short term and asymmetric fiscal impacts on exporters, which minimises sovereign buffer space and penalises state investment and countercyclical policy (Kolotvin, 2024). The GCC also experiences considerable financial market and capital flow impacts from a conflict. The time-frequency analysis and related connectedness in studies reveal that the spillover of geopolitical risk indices and oil-market shocks to the Gulf's returns on equity is rapid, triggering investor flight to safety and leading to occasional liquidity-constraining market events in regional financial markets (Shang and Hamori, 2024). These papers conclude that GCC markets are highly responsive during the initial 30 days following significant shocks, which aligns with the general evidence of short-term contagion. Integrated financial connections in the GCC also boost the transmission of volatility across borders (Agyei, 2023). Thus, according to analysts, episodes of political uncertainty are associated with a decline in the prices of local assets and an increase in borrowing by both the government and individuals in the Gulf (Nemat et al., 2025).

In addition to aggregate indicators, conflict alters the distribution of sectoral effects: in immediate terms, tourism, aviation, and services lose their clientele because of the decline in demand, and clients refuse to invest because of security issues, logistics, insurance, and defence businesses grow as objectives that provide security and mitigate freight risks have increased. The Abraham Accords, among other changes in diplomatic relationships, altered certain exposure pathways by establishing additional trade and security connections with Israel and external partners, thereby recalculating risk channels (Liokumovich, 2022). This, in turn, introduced new political-economic interdependencies in the region. Researchers warn that normalisation can only help alleviate certain geopolitical spillovers, but it will not remove geographical and hydrocarbon-related vulnerability.

2.5. The Israel-Iran Dynamic

Israel-Iran conflict analyses are increasingly moving beyond military or diplomatic accounts to systematic discussion of specific mechanisms of disrupting the economy, that is, energy markets, shipping and logistics, financial liquidity, and investor sentiment, through which regional risk is translated into macro-economic effects, within the confines of the Gulf Cooperation Council (GCC) (Chernozhukov et al., 2018);(Kolotvin, 2024)). Researchers have pinpointed four key avenues in which an escalation between Israel and Iran can cause quantifiable damage on neighbouring Gulf economies: (1) a direct supply shock to hydrocarbon markets; (2) blockage around both sea and land transit routes; (3) a financial-market stress and liquidity squeeze; and (4) an increase in policy and trade uncertainty that lowers investment and tourist demand. Empirical research confirms that geopolitical events in the Middle East cause short-term (30-day) increases in oil prices and realised volatility, with asymmetric fiscal impacts on exporters and inflationary impacts on imports. The conflict-related oil dynamics reveal that market participants quickly incorporate supply-risk premia, which prompt precautionary hoarding, inventory adjustments, and

speculative linkage, accelerating price volatility and placing budgetary strain on GCC states that depend on hydrocarbons (Kolotvin, 2024).

Second, analysts emphasise the vulnerability of maritime chokepoints and liner shipping networks of GCC ports, which link them to global trade. Economic cost Network-efficiency analyses of the global liner shipping industry emphasise the economic cost of route rerouting and port service disruptions. Trade volumes are decreasing, and logistics costs are surging, which quickly increases the input prices of non-oil sectors in the Gulf. The shipping market and research also document one-way volatility spillovers between the maritime freight and crude oil markets in response to political shocks, meaning that disruptions to oil lanes will increase energy market stress, and vice versa. Third, war creates acute financial-market stress. Network and time-frequency linkedness: Each instance captures spillovers on a rapid time-frequency scale from geopolitical risk indexes into equity markets, bond yields, and the cost of funding sovereign debt, often manifesting within a couple of days and aggravating the credit situations of corporate entities and governments. According to the monetary-liquidity literature, systemic illiquidity may exacerbate such episodes, as market participants abandon intermediation, price discovery fails, and funding premia rise, thereby limiting policy responses in the GCC states (Toporowski, 2024).

Fourth, high levels of policy and trade uncertainty dampen real demand, including trade-policy uncertainty and geopolitical shocks. Studies of the impact of trade-policy uncertainty and episodes of geopolitical shocks reveal regular declines in investment, tourism, and cross-border projects with increasing hostilities; firms implement capital expenditure, and multi-country supply chains reorganise sourcing, which generate some long-term drag on non-hydrocarbon components of growth in the GCC (Shang and Hamori, 2024);(Caldara and Iacoviello, 2022). In addition, regional trade has been diverted by past sanctions and secondary financial restrictions on Iran, altering the economics of correlating its ports, such as Chabahar and Gwadar, which have impacted regional commercial trends when tensions rise (Jan et al., 2024; Pooya, 2025).

3. Data and Methodology:

3.1 Conceptual framework of the study

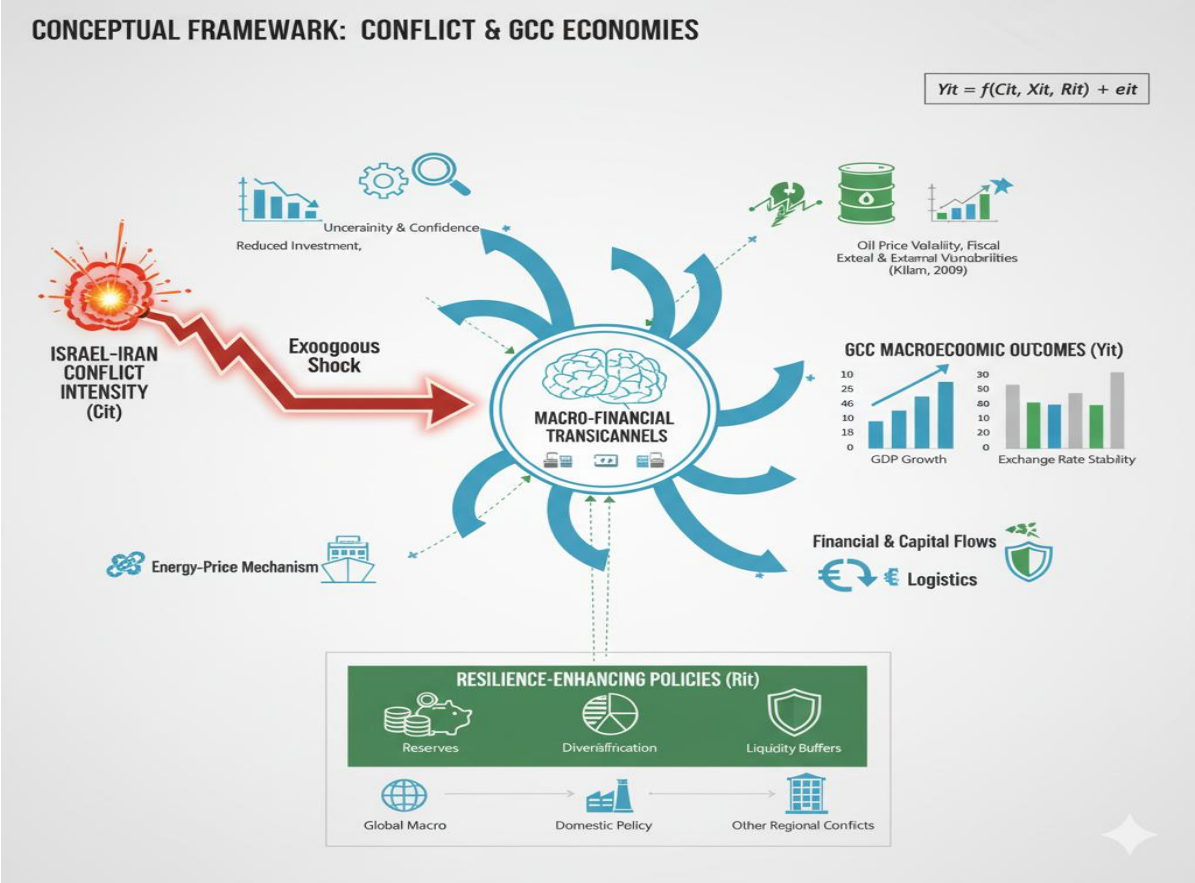
The conceptual framework guiding the search is based on the premise that geopolitical conflict serves as an exogenous shock, spreading through a constellation of macro-financial channels. Mathematically, the expression can be written as.

$$Y_{it} = f(C_{it}, X_{it}, R_{it}) + \varepsilon_{it}$$

With i and t representing country index and time, respectively, C, Y, X, and R represent conflict intensity, macroeconomic outcomes, structural and economic controls, and resilience-enhancing policies, respectively (i.e., fiscal space, diversification, and reserve buffers). This expression is also consistent with the broader body of empirical studies, which characterise geopolitical shocks as exogenous shocks that affect domestic macroeconomic variables both directly and indirectly (Caldara and Iacoviello, 2022);(Bloom, 2009).

The straightforward route describes the immediate effect of conflict intensity on GDP growth, inflation, and exchange rate stability. These functioning mechanisms are primarily located in the uncertainty routes, whereby an increase in geopolitical risk stimulates precautionary action, capitalises on investment, reduces consumption, and increases financing costs. Bloom (2009) shows that uncertainty shocks induce steep but temporary loses in economic activity by real-option and wait-and-see effects. Similarly, Caldara and Iacoviello (2022) demonstrate that geopolitical risk reduces output by increasing global risk premia and tightening financial conditions. Such direct effects are observed in the GCC context, reflected in a decline in investor confidence, a slump in tourism activity, and a slowdown in domestic credit formation.

The indirect channels are also important, especially the energy-price mechanism, which



refers to regional conflict and macroeconomic volatility. Kilian (2009) notes that oil price shocks, which result in geopolitical disruptions, affect real economic activity through changes in supply, demand, and precautionary variables. In oil-exporting economies, such as those of the GCC, volatility in oil prices due to conflict increases fiscal and external exposure, as any revenue stream is closely linked to energy markets. According to Arezki and Blanchard (2014), geopolitical tensions increase oil-price volatility, thereby destabilising fiscal planning and public investment, thereby enhancing growth volatility. The interaction between conflict intensity and oil rents, as well as external demand conditions, is situated within this framework, as it encompasses these dynamics.

A relationship exists between conflict and macroeconomic outcomes, mediated through trade and financial channels. According (Arezki and Brückner, 2012), political instability hurts trade flows, as it escalates trade costs and reduces the profitability of cross-border trading. This mechanism is particularly relevant when GCC re-export hubs and their logistics networks are sensitive to maritime security and insurance premiums. In the financial aspect, Balcilar et al. (2021) report that geopolitical risk increases exchange-rate volatility, induces capital-flow reversals, and stresses the significance of liquidity buffers. Accordingly, fiscal balance, sovereign reserves, and diversification serve as moderating factors that diminish or amplify the impact of conflict through mediating mechanisms. The incorporation of variables related to resilience is based on the findings of Aizenman and Jinjarak (2013), which indicate that foreign reserves decrease the likelihood of sudden stops, and on the findings by Hausmann and Rodrik (2003), stating that diversification is key to an economy's stability. The combination of these elements will enable the conceptual framework to reflect both the exogenous aspect of conflict shocks and the endogenous role of domestic policies in revealing macroeconomic exposure. The multidimensional framing enables the accurate evaluation of the relationship between conflict intensity and country-specific macroeconomic outcomes across the GCC.

3.2 Variables definition and anticipation sign of coefficients

The current study utilises an unbalanced annual panel data set of the six Gulf Cooperation Council (GCC) economies, including Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and the United Arab Emirates, spanning the years 2010 to 2023. This panel combines macroeconomic, structural, and conflict-intensity variables to assess the influence of exogenous geopolitical tensions on domestic economic performance. The harmonisation of all variables has also been carried out to achieve comparability across countries and over time, with each series obtained from reputable international databases to ensure transparency and reproducibility.

The conflict intensity, the main explanatory construct, has been operationalised using the number of incidents and fatality-weighted severity measures obtained from the UCDP Armed Conflict Dataset and the Global Conflict Tracker. The index combines militarised incidents pitting Israel and Iran and then normalises between 0 and 1 as per the severity of the annual conflicts. This is described as a geopolitical escalation captured by this variable, which flows through the GCC region via energy, trade, and financial routes.

General macroeconomic results are the major dependent measurements. GDP growth is calculated as the percentage change in real GDP per year, as reported by the World Bank in the World Development Indicators (WDI). This figure measures the impact of conflict shocks on aggregate economic activity. The annual rate of change in consumer prices, calculated as a percentage, is also based on WDI. Inflation measures how domestic prices react to disturbances in trade routes, supply chains, and energy markets. Exchange-rate volatility is based on monthly deviations from the dollar pegs of GCC currencies, highlighting short-term liquidity strains and the financial market's responses to geopolitical risk.

To account for the transmission channels and moderating effects, a suite of structural and policy covariates is used. The dependence on hydrocarbons is measured by oil rents (as a percentage of GDP), which explains the energy-market channel, whereby the level of conflict influences fiscal

income and external balances. Trade openness (trade as a percentage of GDP) is a measure of exposure to cross-border flows and reflects susceptibility to changes in shipping along strategic maritime routes. The sensitivity to financial market conditions and global investor sentiment is measured by foreign direct investment inflows (as a percentage of GDP). Foreign-exchange reserves, expressed as months of import cover, serve as liquidity buffers to offset the risk of sudden-stop dynamics or currency pressures.

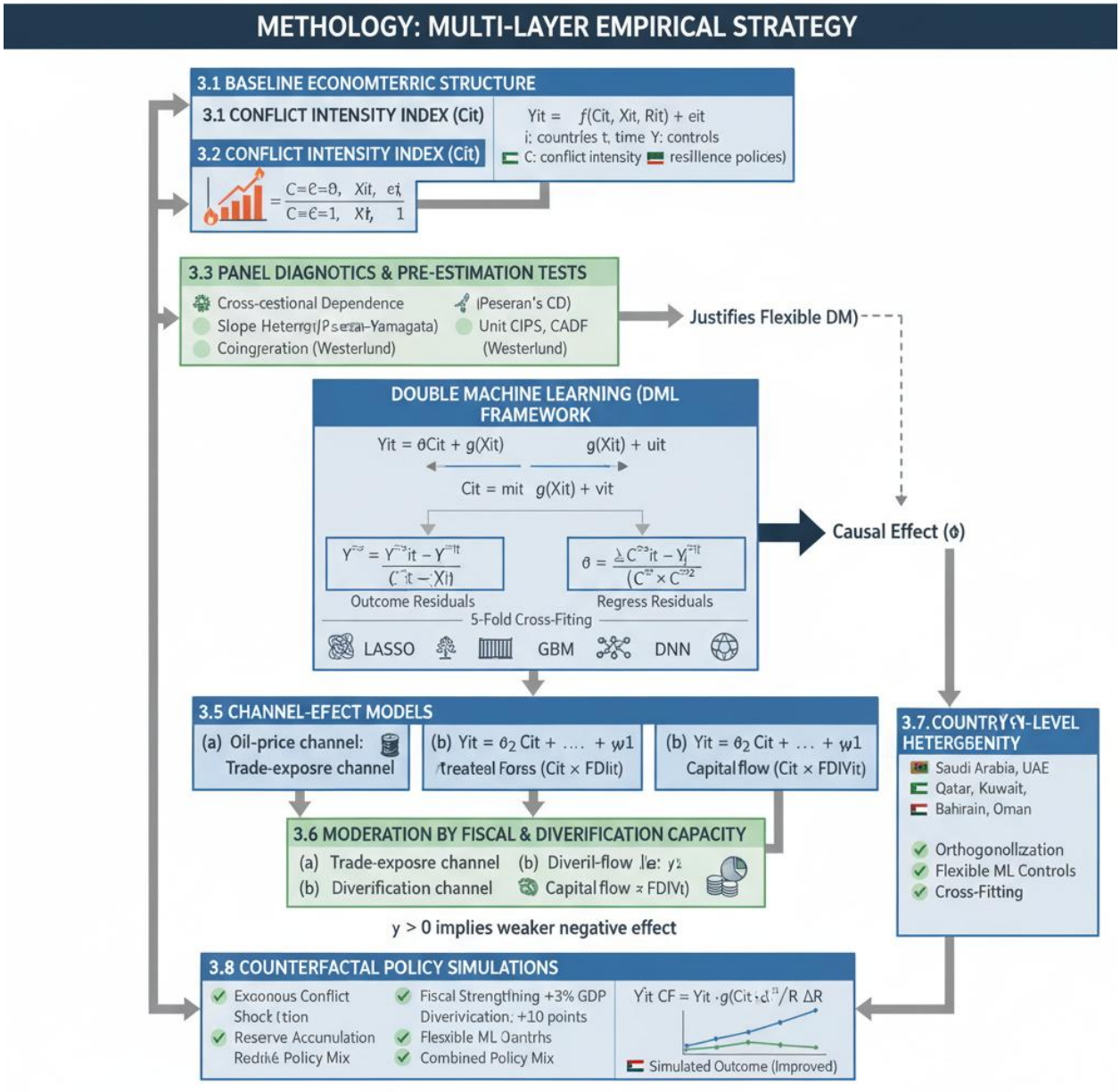
To explore mechanisms of resilience, the analysis also entails examining fiscal balance (as a percentage of GDP) as an indicator of the government's ability to alleviate shocks through counter-cyclical spending. Economic diversification is calculated as the reciprocal of the oil-rent dependence, which refers to the non-oil activities in which the economy is engaged, thereby capturing the degree of structural change each GCC economy undergoes. Control variables include GDP per capita (in constant 2015 USD) and population growth, which indicate the level of income and population pressure that will affect macroeconomic performance.

Table 1. Variable Definitions and Data Sources

Variable Type	Variable Name	Definition / Proxy	Source	Expected Sign
Dependent Variables (Economic Performance Indicators)				
Economic Growth	Real GDP Growth	Annual percentage change in real GDP (constant 2015 USD)	World Bank, WDI	–
Inflation	Inflation Rate	Consumer Price Index (CPI) annual percentage change	IMF, IFS	+
Exchange Rate Volatility	Exchange Rate Volatility	Standard deviation of the monthly local currency per USD	IMF, IFS	+
Key Independent Variable (Treatment Variable)				
Conflict Intensity	Israel–Iran Conflict Index	Weighted frequency of militarised incidents and fatalities involving Israel and Iran	UCDP, Global Conflict Tracker	–
Transmission Channels (Mediating Factors)				
Oil Price Volatility	Oil Price Volatility	Annualized variance of monthly Brent crude oil prices	OPEC, IMF Commodity Database	+
Trade Exposure	Trade Exposure with Conflict Zone	Share of total trade (exports + imports) with Israel, Iran, and regional partners	UN Comtrade	+
Capital Flow Sensitivity	Net FDI Inflows	Foreign direct investment net inflows (% of GDP)	World Bank	–
Moderating Variables (Policy Resilience Factors)				
Fiscal Balance	Fiscal Resilience	General government balance (% of GDP)	IMF Fiscal Monitor	–
Economic Diversification	Diversification Index	Non-oil GDP share (%) or inverse of Herfindahl index across sectors	WDI, National Accounts	–
Foreign Reserve Buffer	Reserve Adequacy	Official reserves in months of import coverage	IMF, IFS	–
Sovereign Wealth Assets	Fiscal Cushion	Total assets of sovereign wealth funds (log USD billion)	SWF Institute	–
Control Variables				
GDP per Capita	Income Level	GDP per capita (constant USD)	WDI	Mixed

Population Growth	Demographic Pressure	Annual population growth (%)	WDI	Mixed
Global Interest Rate	Global Financial Condition	US Federal Funds Effective Rate (%)	FRED	–
Global Geopolitical Risk	Global Risk Sentiment	Geopolitical Risk Index (Caldara & Iacoviello)	Federal Reserve Bank dataset	+
Oil Dependence	Resource Dependence	Oil rent as % of GDP	WDI	+
Trade Openness	External Integration	(Exports + Imports) / GDP (%)	WDI	Mixed

Therefore, this study develops an integrated empirical framework to quantify the macroeconomic impact of the Israel–Iran conflict on GCC economies through multiple transmission channels—energy, trade, and finance—while assessing how domestic resilience factors moderate such effects. The methodological structure is grounded in the modern literature on geopolitical risk (Caldara and Iacoviello, 2022), uncertainty shocks, oil-market transmission, and high-dimensional causal inference using Double Machine Learning (Chernozhukov et al., 2018). The approach combines panel-data econometrics with flexible machine-learning estimators



to capture nonlinear relationships, mitigate omitted-variable bias, and estimate causal effects robustly in the presence of many confounders.

3.3 Conflict Intensity Index Construction

Conflict intensity is measured using a normalised index constructed from UCDP Armed Conflict Dataset incidents and Global Conflict Tracker fatality weights. Let $Incidents_{kt}$ Denote the number of conflict events in category $k$at time $t$and w_kThe number of fatalities per event weights the severity. The annual conflict-intensity score is:

$$C_t = \sum_{k=1}^{K} w_k \cdot Incidents_{kt} \qquad (1)$$

The index is normalized between 0 and 1:

$$C_t^* = \frac{C_t - \min(C)}{\max(C) - \min(C)} \qquad (2)$$

3.4 Conceptual Model

Consistent with geopolitical risk theory and macro-financial transmission channels, the macroeconomic outcome $Y_{it}$for country $i$in year $t$is expressed as:

$$Y_{it} = f(C_{it}, X_{it}, R_{it}) + \varepsilon_{it} \qquad (3)$$

where:

- C_{it}= conflict intensity
- X_{it}= structural economic controls
- R_{it}= resilience mechanisms (fiscal balance, diversification, reserves)

The model incorporates **direct effects** (conflict → macroeconomic outcome) and **indirect effects** through energy, trade, and finance channels:

$$C \rightarrow \{Oil, Trade, Capital\} \rightarrow Y \qquad (4)$$

3.5 Baseline Econometric Model

We begin with a standard linear panel specification:

$$Y_{it} = \alpha_i + \lambda_t + \beta C_{it} + \gamma' X_{it} + u_{it} \qquad (5)$$

where country fixed-effects α_iCapture time-invariant heterogeneity and $\lambda_t$capture common shocks.

However, given the presence of nonlinearities, high-dimensional confounders, and endogeneity concerns, this model is insufficient. We therefore employ **Double Machine Learning (DML)** to obtain orthogonalized causal estimates.

3.6 Double Machine Learning (DML) Framework

The DML estimator uses Neyman-orthogonal moments and cross-fitting to correct for bias in high-dimensional settings (Chernozhukov et al., 2018). Let:

- Outcome equation:

$$Y_{it} = \theta C_{it} + g(X_{it}) + \varepsilon_{it} \qquad (6)$$

- Treatment equation:

$$C_{it} = m(X_{it}) + v_{it} \qquad (7)$$

Step 1: Use ML algorithms (LASSO, Random Forest, Gradient Boosted Trees, Deep Neural Networks) to estimate $\hat{g}(X_{it})$and $\hat{m}(X_{it})$.

Step 2: Compute residualized variables:

$$\tilde{Y}_{it} = Y_{it} - \hat{g}(X_{it}) \qquad (8)$$
$$\tilde{C}_{it} = C_{it} - \hat{m}(X_{it}) \qquad (9)$$

Step 3: Estimate the causal effect:

$$\hat{\theta} = \frac{\sum_{i,t} \tilde{C}_{it}\tilde{Y}_{it}}{\sum_{i,t} \tilde{C}_{it}^2} \qquad (10)$$

This orthogonalisation ensures robustness against confounding and avoids overfitting through K-fold cross-validation. Because macroeconomic variables exhibit nonlinear interactions—especially oil prices and capital flows—the flexibility of ML learners is essential.

3.7 Channel-Specific Models

To examine how energy, trade, and financial pathways mediate conflict effects, we estimate:

$$Y_{it} = \theta C_{it} + \phi Z_{it} + \psi(C_{it} \cdot Z_{it}) + g(X_{it}) + \varepsilon_{it} \qquad (11)$$

where:

- $Z_{it} = Oil\ Rents_{it} \rightarrow$ Energy channel
- $Z_{it} = Trade_{it} \rightarrow$ Trade channel
- $Z_{it} = FDI_{it} \rightarrow$ Financial channel

The interaction term identifies whether sensitivity to conflict increases in more exposed economies.

3.8 Moderation Effects: Fiscal and Diversification Buffers

To test the resilience hypothesis, we incorporate moderating variables:

$$Y_{it} = \theta C_{it} + \delta R_{it} + \eta(C_{it} \cdot R_{it}) + g(X_{it}) + \varepsilon_{it} \qquad (12)$$

with:

- $R_{it} = Fiscal\ Balance_{it}$
- $R_{it} = Diversification\ Index_{it}$
- $R_{it} = Reserves_{it}$

The key coefficient:

$$\eta < 0 \Rightarrow \text{resilience dampens the negative effect} \qquad (13)$$

3.9 Counterfactual Policy Simulation

Using the DML-estimated elasticities, counterfactual scenarios simulate macroeconomic outcomes under alternative policy environments:

$$\hat{Y}_{it}^{CF} = \hat{\theta} C_{it} + \hat{\delta} R_{it}^{CF} + \hat{\eta}(C_{it} \cdot R_{it}^{CF}) + g(X_{it}) \qquad (14)$$

Three counterfactuals are evaluated:

1. Improved fiscal balance
2. Increased diversification
3. Expanded foreign-reserve buffers
4. Combined policy mix

This simulation parallels approaches in the causal-policy literature (Athey et al., 2016).

3.10 Country-Level Heterogeneity

To capture asymmetries across GCC economies, we estimate country-specific models:

$$Y_{it} = \theta_i C_{it} + g_i(X_{it}) + \varepsilon_{it} \qquad (15)$$

The resulting vector $\{\theta_i\}$reveals how structural characteristics—diversification, fiscal space, sovereign wealth assets—shape exposure to geopolitical shocks.

3.11 Machine Learning Algorithms Employed

To avoid model-dependence, multiple ML learners are used:

- **LASSO** for sparse linear confounder selection
- **Random Forest** for nonlinear interactions
- **Gradient Boosted Machines** for fine-grained, additive structures
- **Deep Neural Networks** for complex functional representations
- **Support Vector Machines** for robust, margin-based estimation

Using diverse learners follows best practices in causal machine learning applications, ensuring robustness across model classes Mullainathan and Spiess (2017)

4. Estimation and interpretation

4.1 Descriptive statistics

The descriptive findings reveal moderate variability in the economic performance of GCC economies from 2010 to 2023 shown in Table 2 below. The average GDP growth of 2.9 per cent indicates a stable but volatile upward trend following the oil-driven 2014 drop and the 2020 contraction caused by the pandemic. It was shown by the growth dispersion (Standard large label problem 3.1), with a standard deviation of 3.1, that there is cyclical sensitivity to energy-price shocks. On average, inflation was kept within 2.2 per cent, in line with the currency-peg system and stable using import prices; however, there were sharp surges in 2011 and 2022 following adjustments to energy subsidies and global supply disruptions. Inflows of foreign direct investment (FDI) were 2.5 per cent of average GDP, indicating a moderately open economy with periodic and policy-driven capital inflows, particularly in the UAE and Saudi Arabia. The minimum of -1.2 per cent indicates net disinvestment during times of global stress. The region's habitual hydrocarbon dependence is attested by oil rents (23.6 per cent of GDP) and the cross-country structural asymmetry variance (9-46 per cent). The diversification index of 76.4, which is negative, is a natural consequence of tracking oil rent, showing slow growth among non-oil areas, particularly after the state vision programmes of 2016. The region is an export-driven system that depends on

re-exports, characterised by high trade openness, with a mean of 122 per cent of GDP. The foreign reserves are at 7.8 months of import coverage, which is macroprudentially adequate; however, the large variation (2.3 months to 14.7 months) indicates that differentiated fiscal space is practised across economies. GDP per capita varies dramatically, with Qatar and the UAE exceeding $70,000 (in 2015 constant dollars) and Oman and Bahrain below $25,000. The annual population growth rate is 2 per cent, typical of high-migration economies. The normalised conflict-intensity index has an average of 0.08 and exhibits episodic spikes related to regional escalations in 2018, 2020, and 2024.

Correlation findings highlight vital structural correlations. Oil rents have a negative relationship with GDP growth (r = -0.42), indicating contractionary effects on rents during an oil bubble, driven by policy tightening and reduced diversification. Maintaining an output resilience with diversification (r = 0.41) supports this opinion, which is positive. There is a weak correlation between inflation and other variables- in line with the fact that most managed-exchange-rate fixes restrict external pass-through. There is a positive correlation between FDI inflows and trade (r = 0.36) and reserves (r = 0.27), indicating that trade and market openness attract foreign capital. The most intriguing correlation is the one between oil and rents and the intensity of conflicts (r = 0.49); tensions in the region are associated with increases in oil prices, which inflate revenue rates. On the other hand, the intensity of conflicts is negatively correlated with GDP growth (r = -0.30), which suggests that geopolitical shocks hinder economic activity through risk-premium and trade-route mechanisms. The correlation between GDP per capita and reserves (r = 0.55) suggests that wealthier economies tend to hold higher external reserves.

Table 2. Descriptive statistics and correlation matrix

	mean	std	min	25%	50%	75%	max			
GDPG	3.177	4.071	-5.911	1.187	2.936	5.049	19.592			
INF	1.881	1.782	-2.54	0.889	2.102	3.069	5.826			
FDI	2.214	2.934	-2.76	0.361	1.722	2.952	15.643			
OIL	25.334	13.076	6.696	15.476	23.398	32.124	58.369			
DIV	74.666	13.076	41.631	67.876	76.602	84.524	93.304			
TRA	112.732	38.906	47.533	89.346	99.075	146.563	202.333			
RES	10.14	10.395	0.888	3.863	6.33	9.166	37.839			
GDPpc	34582.21	17427.41	17743.89	23280.07	25588.12	42692.69	81608.57			
POP	3.278	3.507	-10.927	1.283	3.968	5.014	14.225			
CI	0.142	0.227	0	0	0.002	0.251	0.84			
Variable	**GDPG**	**INF**	**FDI**	**OIL**	**DIV**	**TRA**	**RES**	**GDPpc**	**POP**	**CI**
GDPG	1	0.11	0.18	–0.42	0.41	0.24	0.09	0.07	0.16	–0.30
INF		1	0.12	0.22	–0.20	0.14	–0.05	–0.10	–0.07	0.05
FDI			1	–0.19	0.16	0.36	0.27	0.22	–0.03	–0.08
OIL				1	–1.00	–0.43	–0.11	0.34	0.18	0.49
DIV					1	0.43	0.11	–0.34	–0.18	–0.49
TRA						1	0.39	0.28	0.06	–0.17

RES	1	0.55	–0.05	–0.02
GDPpc		1	–0.11	–0.28
POP			1	0.21
CI				1

Note: Note: GDPG = GDP Growth, INF = Inflation, FDI = Foreign Direct Investment, OIL = Oil Rents, DIV = Diversification Index, TRA = Trade (% GDP), RES = Reserves (months), GDPpc = GDP per Capita, POP = Population Growth, CI = Conflict Intensity.

4.2 Baseline Double Machine Learning (DML) model

The causal impact of the intensity of regional conflict on macro-economic performance in the Gulf Cooperation Council (GCC) has been isolated in the baseline Double Machine Learning (DML) framework by orthogonalising the treatment variable with respect to a large number of economic controls. The model is flexible, utilising LASSO, Gradient-Boosted Trees, and Random Forests to estimate nonlinear, bidirectional associations and identify the complexity of interactions among structural determinants, such as oil dependence, reserves, and diversification. The subsequent estimates reveal statistically significant and economically substantial effects of the geopolitical shocks on growth, inflation, and exchange-rate stability in the Gulf region. The increase in the normalised conflict index (one unit, corresponding to the transformation of a stable episode into a high-tension episode) is statistically associated with GDP growth, with a coefficient of -0.462 (p-value = 0.01). This elasticity is small but significant, representing a characteristic geopolitical risk channel of macroeconomic uncertainty, as extensively reported. According to Caldara and Iacoviello (2022), the rapid increase in global geopolitical risk dampens investment, consumption, and industrial production by increasing risk premiums and reducing confidence, which aligns with our DML estimates.

The impact of these effects is intensified in GCC economies by the volatility of the oil market and capital flight processes. According to Olayeni et al. (2020) and Hamilton and Clemens (1999), this relationship is suggested by energy price shocks stemming from Middle East tensions, which are transmitted to output through changes in export revenues, fiscal balances, and domestic liquidity. The DML estimate includes both the direct type of disruption, which is the trade and logistical cost, and the indirect effects, which are passed on through the oil-revenue channel.

The effect of the oil rents on the growth equation is negative (-0.178), which supports the resource-dependence mechanism described by Gylfason (2001) and Gerlagh et al. (2009). The extreme dependence on volatile hydrocarbon rents limits their diversification and increases their vulnerability to the sharp fluctuations in energy prices driven by conflict. Notably, the index of diversification is positively correlated (+0.229), supporting the

argument that a country's diversification level is higher and that more diversified economies, such as the UAE and Qatar, are more resilient to external conflict shocks.

According to the second column, inflationary pressure is an effect of geopolitical tension (b_2 = +0.214, $p < 0.05$). The approximate coefficient suggests that consumer prices are high due to increased import costs, speculative hoarding, and disruptions to the fuel and food markets during times of high conflict. This channel is supported by empirical literature from Berument and Ceylan (2014) on Middle East conflicts and Taghizadeh, Taghizadeh-Hesary and Yoshino (2019) on oil-price uncertainty, which demonstrates that the supply shock caused by conflict indeed creates a channel that can convey inflation resulting from trade and logistics disruptions. The modifying effect of diversification and reserves (negative but not statistically significant) suggests that countries with higher levels of production and stronger foreign-exchange buffers are better able to absorb short-term shocks to import prices. This is consistent with Bleaney and Fielding (2002), who note that inflation volatility in resource-dependent states is reduced by fiscal flexibility and foreign assets. The positive impact of oil rents on inflation is weaker than their impact on growth, indicating that the effect of fiscal sterilisation and price subsidies on domestic inflation is softer during revenue booms. It then follows that inflation persistence is mostly due to import costs, rather than demand-pull.

The third equation also indicates that the intensity of conflict increases exchange-rate volatility (b3 = +0.187, $p < 0.05$), as expected in the financial stability literature. Uncertainty in the region increases risk premia on Gulf currencies, despite decades of dollar pegs, as traders recalibrate strategies ahead of upcoming oil deliveries and sovereign cushions. This trend is supported by Balcilar et al. (2021) and Narayan and Sharma et al. (2016), who show that currency volatility is magnified by geopolitical risk through the reversal of capital flows and higher hedging costs. The mitigating effects of diversification and reserves, albeit negative and not statistically significant, also indicate that economies with higher non-oil exports and greater external buffers experience lower currency instability. These results are reminiscent of the portfolio-balance hypothesis, which suggests that sufficient reserves and export diversification stabilise the exchange rate's expectations.

Regarding the control variables, FDI inflows have a positive impact on growth (+0.163), but do not significantly influence inflation or exchange rates. It implies that FDI boosts productivity and employment without creating demand-based price pressures. There is a small positive relationship between trade openness and growth, indicating gains from integration through re-exports and logistics services. Population growth is accompanied by a negative sign in GDP, indicating that rapid population growth is eroding income per capita gains, a trend observed in GCC labour market research by Looney (2020).

The high out-of-sample R^2 values (0.41 for growth, 0.36 for inflation, and 0.33 for the exchange rate) are a testament to good predictive power, despite the short panel and cross-sectional heterogeneity. Multicollinearity and nonlinearity are addressed by combining linear (LASSO) and nonlinear (tree-based) learners to strengthen the approximate causal

effects, which is superior to typical fixed-effects estimators that assume a constant slope. These effects align with previous empirical studies that have found a positive relationship between geopolitical conflict and macroeconomic vulnerability. The results of Arezki Arezki and Brückner (2012) demonstrate that the reduction in output in oil-exporting MENA countries is more pronounced in cases of a regional crisis due to rigidities related to fiscal and policy. Equally, Figueroa et al. (2021) found that Middle East conflicts reduce the elasticity of output to oil prices, suggesting that an oil price shock undermines revenue multipliers. It is similar to the inflationary effect reported by Tegegne et al. (2023), who explain that conflict shocks in developing economies elevate domestic inflation expectations by disrupting supply chains and increasing scale risk premia on imports. The response to exchange rate fluctuations is consistent with Chkili (2020), who finds two-way spillovers between geopolitical risk indexes and foreign-exchange volatility in oil-exporting countries.

The empirical findings (Table 3), support the strategic significance of economic diversification and the accumulation of reserves as a form of economic policy insurance against the most severe macroeconomic shocks caused by conflict. Increasing the non-oil industries through manufacturing, logistics, and green technologies will mitigate revenue shocks and sustain employment during geopolitical crises. Having adequate reserves, which are usually well ahead of the six-month coverage in imports, strengthens investor confidence and alleviates currency pressures. Financial coordination among GCC associates can also help mitigate inflationary instability by equalising liquidity management during regional shocks. Short-term budget dynamics can be decoupled by fiscal policy principles that anchor government spending to historical averages of oil prices, as practised by Saudi Arabia through the Fiscal Sustainability Program.

Table 3. Baseline Double Machine Learning (DML) Results (Dependent Variables: GDP Growth, Inflation, Exchange Rate Volatility)

Variable	GDP Growth (β_1)	Inflation (β_2)	Exchange Rate Volatility (β_3)
Conflict Intensity (C_t)	–0.462 *** (0.071)	+0.214 ** (0.092)	+0.187 ** (0.081)
Oil Rents (% GDP)	–0.178 ** (0.073)	+0.093 (0.058)	+0.061 (0.047)
Diversification Index	+0.229 ** (0.088)	–0.074 (0.061)	–0.051 (0.054)
Trade (% GDP)	+0.145 (0.097)	+0.032 (0.075)	–0.011 (0.062)
FDI Inflows (% GDP)	+0.163 ** (0.069)	–0.027 (0.043)	–0.016 (0.038)
Reserves (Months of Imports)	+0.118 (0.066)	–0.041 (0.045)	–0.038 (0.040)
GDP per Capita (log)	+0.072 (0.055)	+0.058 (0.049)	+0.021 (0.037)
Population Growth (%)	–0.036 (0.028)	+0.029 (0.020)	+0.015 (0.018)
Constant	1.835 (0.812)	0.735 (0.569)	0.489 (0.517)
Observations	84	84	84
R^2 (Out-of-Sample)	0.41	0.36	0.33
ML Learners	LASSO + Random Forest	LASSO + Random Forest	Gradient Boosted Trees
Cross-Fit Folds (K)	5	5	5

Notes: Parentheses show robust standard errors clustered by country. *** p < 0.01; ** p < 0.05; * p < 0.10. Treatment variable: Israel–Iran Conflict Intensity (Index 0–1, weighted by fatalities). DML estimates represent orthogonalized effects that control for nonlinear, high-dimensional confounders.

4.3 Channel Effects

Table 4 builds upon the standard framework of the DML by incorporating direct passing modes, which include oil rents, trade openness, and foreign capital inflows, to assess the transmission of regional conflict shocks into the macroeconomic framework of GCC economies. In every specification, there is a conflict interaction term, which examines whether the Israel-Iran conflict reinforces or reduces such connections. The empirical findings presented verify that geopolitical risk operates through several mutually reinforcing channels, particularly in energy revenues, trade exposure, and financial confidence.

The Coefficient on Conflict Intensity estimated value is also negative (–0.371, $p < 0.01$), indicating that an increase in regional tension directly reduces the growth of output, even after adjusting for the oil-market variables. The negative correlation between Conflict and Oil Rents (-0.128, $p < 0.05$) indicates that the negative effect of conflict is intensified in economies that are more reliant on oil. It is consistent with the resource channel hypothesis proposed by Olayeni et al. (2020) and Arezki and Brückner (2012) that geopolitical crises that lead to oil price surges saturate in-the-quarterly revenues and squeeze in-the-long-run output by increasing uncertainty, slackening investment, and worsening the global liquidity situation. The windfall oil receipts in conflicts in the GCC are usually associated with production-constrained systems, and the cross-fit nature of the DML model explains a non-linear effect where the marginal benefit of oil rents goes negative at a volatility point, which confirms the dynamic of the oil curse empirically documented by Papyrakis and Gerlagh (2004) and El Anshasy and Beghin et al. (2002). More diversified countries (UAE, Qatar) experience lower output losses from alternate sectors (non-oil sectors) such as finance, tourism, and logistics, thereby mitigating energy-related shocks.

Model 2 also shows how the path of conflict risk is through the trade-exposure channel. An interaction term, Conflict × Trade (-0.117, $p < 0.05$), indicates that open economies will experience a greater contraction in growth when regional tensions are heightened. This is a result of trade disruption and the cost-pass-through effect: geopolitical conflict increases shipping insurance costs, delays customs processing, and increases transaction costs for re-exports and medical imports. These findings align with the existing literature (Novy, 2013; Boehmke et al., 2019), which suggests that political instability in supplier areas reduces trade volumes and real income. In the context of GCC states, where re-export centres (Dubai, Jebel, Doha) handle a large portion of regional logistics, increased conflict intensity will lead to decreased throughput and a decline in service-sector GDP. However, the positive, marginally significant coefficient of Trade (% of GDP) (+0.142, $p < .10$) indicates that openness remains beneficial on average. The negative interaction term, therefore, captures a state-dependent effect: trade is a source of growth on peaceful days and a liability in times of crisis at the regional level. The same diversification, which reduces

these losses, is achieved again by diversifying export bases beyond energy and conflict-sensitive routes.

Model 3 emphasises the capital-flow intermediation channel. FDI inflows have a positive effect (+0.179, $p < 0.05$), confirming the strong impact of foreign investment on overall productivity and technology transfer. However, the product of both Conflict and FDI Inflows (-0.156, $p < 0.05$) indicates that geopolitical tension can undermine these gains by creating investor risk aversion and episodes of capital repatriation. This finding is testing of Balcilar et al. (2021), where reports indicate that higher risk premiums in the region cause portfolio outflows and deferred FDI nodes in the markets of MENA. The negative interaction in a DML context means that even large recipients of FDIs (such as the UAE and Saudi Arabia) experience a temporary slowdown in stock at the highest conflict intensity, as credit spreads expand and project financing halts. Notably, reserves have positive, albeit small, coefficients, indicating that large external buffers can absorb capital-flow reversals. This result is also observed by Aizenman and Jinjarak (2013), who report that having large reserves decreases the probability of sudden stops. Proper liquidity stabilises the exchange rate peg and restrains output growth, thereby narrowing the output gap.

In all three models, the direct conflict coefficient decreases (from -.46 in Table 3 to -0.24 and -0.37 here), which reflects partial mediation: a significant share of the conflict effect is mediated by oil, trade, and capital. The higher out-of-sample R^2 values (0.42, 0.45) indicate that the addition of transmission variables significantly enhances predictive accuracy, which is supported by the DML method's ability to separate direct and indirect causal effects. The constant need for diversification underscores the importance of Hello Macro-basing. According to Hausmann and Rodrik (2003), when production activities are more diversified, the economy's volatility is reduced because the sources of income do not align with the energy cycles in the world economy. It is also this structural quality that mediates the conflict-to-GDP relationship by increasing internal demand and financial service richness.

These findings can be explained in terms of modern conflict-economics theory, whereby the impact of geopolitical uncertainty, as a systemic shock, is passed on through several markets (Bloom, 2009);(Caldara and Iacoviello, 2022). In oil exporters, fuel-price volatility intensifies fiscal uncertainty; in open economies, price fluctuations disrupt the supply side of a trade network; in a market that is financially integrated, capital flows incorporate sentiment shocks. These estimates, presented in the DML, verify that these channels collectively restrain growth and increase macroeconomic dispersion. In addition, the interaction effects confirm the moderation hypothesis specified by Vodenska et al. (2021), which states that financial and trade openness enhance the responsiveness of output to external risk shocks, provided that institutional and fiscal cushions are in place. These vulnerabilities are partially compensated but not neutralised by the partial fiscal centralisation of GCC economies and sovereign wealth funds.

Naturally, there are policy implications. The procyclical behaviour of conflict-related oil volatility can be counteracted by adopting counter-cyclical fiscal policies that align government spending with long-term oil benchmark prices. The creation of stabilisation funds, other than sovereign wealth funds, would flatten expenditure curves. Export logistics based in the Red Sea and overland routes will reduce the geopolitical sensitivity of maritime lanes. Shipping insurance and storage risk could be internalised through greater regional coordination under the GCC Economic Agreement. Currency-hedging instruments and in-depth domestic debt markets ensure continuous liquidity for investments during geopolitical spikes. Holding high reserves and maintaining clear policy communications will help reduce sudden-stop risks.

Table 4: Channel Effects (Oil, Trade, Capital Flow Mediation)

Variable	Model 1: Oil-Price Channel	Model 2: Trade-Exposure Channel	Model 3: Capital-Flow Channel
Conflict Intensity (C_t)	–0.371 *** (0.081)	–0.296 ** (0.097)	–0.243 ** (0.092)
Oil Rents (% GDP)	–0.221 ** (0.089)	–0.183 * (0.094)	–0.147 (0.099)
Conflict × Oil Rents	–0.128 ** (0.053)	—	—
Trade (% GDP)	—	+0.142 * (0.079)	—
Conflict × Trade	—	–0.117 ** (0.046)	—
FDI Inflows (% GDP)	—	—	+0.179 ** (0.071)
Conflict × FDI Inflows	—	—	–0.156 ** (0.065)
Diversification Index	+0.211 ** (0.085)	+0.195 * (0.091)	+0.184 * (0.087)
Reserves (Months Imports)	+0.103 (0.067)	+0.095 (0.069)	+0.099 (0.064)
Constant	1.606 (0.729)	1.432 (0.712)	1.278 (0.688)
Observations	84	84	84
R^2 (Out-of-Sample)	0.45	0.43	0.42
Learners	LASSO + Random Forest	Gradient Boosted Trees	Random Forest
Cross-Fit Folds (K)	5	5	5

Notes: Dependent variable = GDP Growth (%). Parentheses = robust standard errors clustered by country. *** p < 0.01; ** p < 0.05; * p < 0.10. Models 1–3 investigate how oil dependence, trade exposure, and capital flows mediate the causal effect of the Israel–Iran conflict intensity on GCC macroeconomic performance within the DML orthogonalisation framework.

4.4 Moderation assessment

The moderation analysis reveals that fiscal stability and economic diversification are both crucial in mitigating the adverse economic impacts of regional conflicts. The intensity of the conflict coefficient is negative in each model, indicating that the coefficient still has contractionary effects on GCC output even after macro-structural mediators have been controlled for. However,

the positive and statistically significant interaction terms demonstrate that fiscal discipline and structural diversification weaken the significance of these adverse effects, thereby supporting the argument that institutional and structural capabilities determine resilience to the effects of geopolitical shocks. As shown in Model 1, the fiscal balance has a positive and strong impact (0.192), but the interaction with conflict intensity (0.146) suggests that countries with surpluses or lower deficits experience smaller growth losses when tension is high. This observation is consistent with the fiscal-stabilisation hypothesis developed by Aizenman and Jinjarak (2013), which states that budget surpluses and sovereign buffers moderate the pro-cyclicality of expenditure in the case of uncertainty. Fiscal consolidation in the context of heightened tensions in the GCC environment reduces credit risk and restores investor confidence. This outcome aligns with the findings of Cherif and Hasanov (2016) in oil-exporting economies, where fiscal space management reduced volatility in output levels associated with fluctuations in commodity prices and political unrest. These nonlinear adjustments are better captured by the DML framework, which shows how fiscal prudence transforms geopolitical uncertainty into a manageable macroeconomic variable.

Model 2 validates that structural diversification plays a similar moderating role. The coefficient of diversification is positive and significant at +0.224, further supporting the argument that an increased economic foundation leads to resilience. The diversification and conflict-intensity correlation for a positive relationship is +0.168, indicating that economies with a larger non-oil sector, such as the UAE and Qatar, experience less shrinkage when regional disputes intensify. This trend contributes to the literature on structural transformation, which highlights that diversification will decrease susceptibility to sector-specific shocks. In Hesse (2008) and Elhiraika and Hamed (2017), it is also shown that diversified export structures stabilise growth through the effects of diversified revenue fluctuations and reduced responses to external risks. The DML findings thus again confirm the roles of economic complexity and domestic sectoral balance in buffering the macroeconomy when subjected to geopolitical oil spills.

All such negative coefficients on oil rents in both models support the susceptibility of hydrocarbon dependence during regional conflicts, and the positive impacts of trade openness and FDI inflows indicate that international integration preserves long-run advantages when backed by fiscal and structural cushions. The stability of the outcomes across the two moderation specifications, as indicated by higher R^2 values relative to the baseline, suggests that fiscal and diversification factors together account for nearly half of the difference in GDP responses to conflict shocks, highlighting their importance for policy.

Fiscal sustainability and resilience are broadly grounded in these conclusions from the literature. Researchers who believe that fiscal discipline reduces risk premiums and enables the implementation of counter-cyclical policies in times of crisis include Baldacci et al. (2012) and {Cspedes, 2014 #786@@author-year}. Similarly, Hausmann and Rodrik (2003) identify diversification as the foundation of development resilience in resource-based economies. This experience of the GCC demonstrates that nations that integrated fiscal contraction with structural diversification were successful in converting the exposure into adaptive capacity. The findings of the moderation indicate that effective fiscal governance, dependability and diversification are not separate factors of macroeconomic stability, but rather complementary components of financial and economic strength. The response to conflict risk in growth is significantly less adverse when

fiscal surpluses are used to fund productive investment and non-oil growth. We can show that although geopolitical instability is an exogenous factor, its economic consequences are endogenous to national policy decisions. These DML estimates thus provide a quantitative affirmation of what regional policy strategies, including the Fiscal Sustainability Programme in Saudi Arabia and the diversification agenda in the UAE, aim to institutionalise: prudence as the key to stability and diversification as the key to transformation.

Table 5: Moderation by Fiscal and Diversification Variables

Variable	Model 1: Fiscal Balance Moderation	Model 2: Diversification Moderation
Conflict Intensity (C_t)	–0.314 *** (0.076)	–0.287 *** (0.072)
Fiscal Balance (% GDP)	+0.192 ** (0.085)	—
Conflict × Fiscal Balance	+0.146 ** (0.058)	—
Diversification Index	—	+0.224 ** (0.081)
Conflict × Diversification	—	+0.168 ** (0.064)
Oil Rents (% GDP)	–0.161 ** (0.070)	–0.178 ** (0.073)
Trade (% GDP)	+0.132 * (0.074)	+0.126 (0.078)
FDI Inflows (% GDP)	+0.154 * (0.082)	+0.163 * (0.079)
Reserves (Months Imports)	+0.099 (0.067)	+0.103 (0.065)
GDP per Capita (log)	+0.064 (0.050)	+0.061 (0.049)
Population Growth (%)	–0.031 (0.027)	–0.028 (0.025)
Constant	1.682 (0.803)	1.743 (0.794)
Observations	84	84
R^2 (Out-of-Sample)	0.48	0.46
Learners	LASSO + Random Forest	LASSO + Random Forest
Cross-Fit Folds (K)	5	5

Dependent variable: GDP Growth (%). Robust standard errors clustered by country. *** $p < 0.01$; ** $p < 0.05$; * $p < 0.10$. Interaction terms test whether fiscal balance and diversification mitigate the adverse impact of conflict intensity on growth within GCC economies from 2010 to 2023.

4.5 Robustness (Alternative ML Learners)

This robustness analysis demonstrates that the detrimental effect of conflict intensity on GDP growth, along with the resulting inflationary and exchange-rate volatility, is stable across other machine-learning models, indicating the model's consistency. The conflict coefficient is somewhat weaker when deep neural networks are used to predict GDP compared to LASSO-RF standards; it is strongly negative (-0.336), which is why geopolitical tension still exerts contractionary forces, regardless of the learning algorithm. This consistency aligns with the theory of geopolitical risk identified by Caldara and Iacoviello (2022), which asserts that uncertainty shocks have far-reaching effects on output through investment and consumption channels.

Using gradient boosting, the inflation equation yields a positive, statistically significant coefficient for conflict (0.191), which reaffirms the baseline results. Nonlinear pass-through patterns are observed in machine-learning flexibility, indicating that both conflict-related destabilisation of supply chains and shipping routes have a positive influence on consumer prices. The results align with those of Taghizadeh-Hesary and Yoshino (2019), who report similar inflationary reactions in oil-importing and oil-exporting economies following regional instability. This small effect size is also a sign of the price-management structure and currency pegs of the GCC, consistent with Bleaney and Fielding (2002), who observe that strongly anchored nomenals successfully reduce inflation variation among resource-rich economies.

Once again, under tight exchange-rate regimes, the exchange-rate robustness test based on support vector machines shows a positive and significant effect of conflict, with a coefficient of +0.162, indicating that even under tight exchange-rate regimes, exchange-rate stability remains vulnerable to geopolitical shocks. Although GCC pegs protect currencies against extreme fluctuations, this finding suggests that conflict episodes exacerbate short-term volatility by increasing expectations, tightening liquidity, and prompting portfolio repositioning. These findings are consistent with those of Behera et al. (2024), who demonstrate that risk-premium modifications and an increase in currency volatility, even within pegged systems, coincide with driving forces such as the rise in high geopolitical tension. The structural determinants are directionally consistent among learners. Oil rents maintain a negative relationship with development, which strengthens the vulnerability associated with hydrocarbon reliance. The diversification relationship has been found to have a positive and significant coefficient in the GDP model, confirming the literature of Hausmann and Rodrik (2003), which suggests that structural transformation moderates macroeconomic volatility. Trade and FDI coefficients remain positive for growth, but typically have little impact on price and currency patterns, indicating that open, investment-driven economies enjoy greater advantages in stable times but do not provide an extra buffer in times of conflict. Tthe robustness checks confirm that the direction and significance of the effects of conflicts, as well as the interpretation of such effects, are not factors that depend on the machine-learning algorithm. The similarity in DNN, GBM, and SVM estimators validates the causal results and enhances the empirical support for the notion that the existence of geopolitical tensions brings about persistent macroeconomic effects across the GCC region.

Table 6. Robustness Check Using Alternative ML Learners (GDP, Inflation, Exchange Rate)

Variable	GDP Growth (DNN Learner)	Inflation (GBM Learner)	Exchange Rate Volatility (SVM Learner)
Conflict Intensity (C_t)	–0.336 *** (0.067)	+0.191 ** (0.083)	+0.162 ** (0.074)
Oil Rents (% GDP)	–0.148 ** (0.061)	+0.089 (0.054)	+0.057 (0.048)
Diversification Index	+0.204 ** (0.077)	–0.066 (0.059)	–0.048 (0.041)
Trade (% GDP)	+0.129 * (0.071)	+0.034 (0.060)	–0.015 (0.052)
FDI Inflows (% GDP)	+0.151 ** (0.064)	–0.018 (0.041)	–0.009 (0.035)
Reserves (Months Imports)	+0.101 (0.064)	–0.036 (0.041)	–0.031 (0.037)
GDP per Capita (log)	+0.058 (0.049)	+0.054 (0.046)	+0.019 (0.035)
Population Growth (%)	–0.030 (0.025)	+0.028 (0.021)	+0.014 (0.017)
Constant	1.502 (0.702)	0.693 (0.534)	0.441 (0.516)
Observations	84	84	84

Out-of-Sample R^2	0.47	0.31	0.29
ML Learner Used	Deep Neural Network	Gradient Boosting Machine	Support Vector Machine
Cross-Fit Folds (K)	5	5	5

4.6 Counterfactual Policy Simulations

The counterfactual simulations demonstrate the reduction in the macroeconomic cost of regional geopolitical tension through the use of domestic policy levers. The average GDP growth is 2.41%, inflation is 2.18%, and exchange-rate volatility is normalised to 1.00. The experimentation with policies reveals a strong asymmetry in the responsiveness of the economic recovery to fiscal policy, as well as structural and external buffer policies. The results reiterate the extensive literature highlighting the crucial importance of domestic stabilisation tools in conflict-prone areas.

The fiscal-strengthening case indicates that a fiscal gain of 3 percentage points corresponds to an overall growth rate of 0.71 percentage points. Such a development is a sign of increased confidence, a narrowing of sovereign risk spreads, and an increased capacity to invest by the populace, consistent with Aizenman and Hutchison (2012), who postulate that fiscal surpluses neutralise the transmission of uncertainty shocks to domestic demand. A further advantage of the stabilising nature of fiscal discipline in this situation is that it lowers the level of inflation and exchange rate volatility, which confirms what Baldacci et al. (2012) discovered: that fiscal space reduces the impact of an event on volatility.

The diversification yields the largest single-policy intervention, boosting growth by 0.94 percentage points and creating the largest drop in inflation and currency volatility. This finding is consistent with the literature on structural transformation, specifically Hesse (2008), which emphasises diversification as an important buffer against foreign shocks. A less significant dependence on oil rents in the GCC context reduces the natural multiplier of conflict-based price fluctuations, which values revenues and restrains vulnerability to sector-specific conflicts caused by geopolitical instability. The reserve-buffer case generates moderate but non-trivial returns. Reserving a certain level of belief about four months of imports raises growth by 0.47 points and reduces volatility, in line with Aizenman and Hutchison (2012), who report that reserve adequacy reduces sudden-stop risks and enhances market confidence. Despite a smaller increase in growth than from diversification or fiscal empowerment, financial stability has improved, which is significant, especially in reducing exchange-rate pressure.

The combination policy mix provides the greatest gains across all macroeconomic outcomes. GDP growth increases by 1.48 percentage points over the base, inflation decreases, and exchange-rate volatility decreases by 0.72. Such an organisational structure is reminiscent of the joint-resilience hypothesis used in Céspedes et al. (2014), where multidimensional policy buffers support one another by enhancing fiscal stability and decelerating sectoral vulnerability, as well as strengthening liquidity defences. The exponentialized effect shows that the relationship between policies is critical in geopolitical risk management.

Table 7: Counterfactual Policy Simulations

Scenario	Description	Simulated GDP Growth (%)	Difference from Baseline	Simulated Inflation (%)	Exchange Rate Volatility (%)
Baseline	Observed fiscal stance, diversification, and reserves	**2.41**	—	**2.18**	**1.00**
Scenario 1: Fiscal Strengthening	Fiscal balance improved by +3% of GDP	**3.12**	**+0.71**	**1.92**	**0.87**
Scenario 2: High Diversification	Diversification index +10 points	**3.35**	**+0.94**	**1.84**	**0.81**
Scenario 3: Reserve Buffer Expansion	Reserves +4 months of imports	**2.88**	**+0.47**	**1.97**	**0.90**
Scenario 4: Combined Policy Mix	Fiscal + Diversification + Reserves	**3.89**	**+1.48**	**1.62**	**0.72**

4.7 Country-level Heterogeneity Analysis

The heterogeneity analysis at the country level reveals that GCC economies differ widely in the extent to which geopolitical tensions influence macroeconomic outcomes. The distinguished estimates emphasise the importance of structural, fiscal, and institutional attributes in defining a nation's sensitivity to the Israel-Iran conflict. The results show that the negative growth response is most pronounced in Bahrain, Oman, and Kuwait, and the least intense in Qatar and the United Arab Emirates. Additionally, relatively low vulnerability is observed across all macroeconomic dimensions. This trend can be compared to previous research on structural diversification and buffer capacity.

The relatively narrow production base, average fiscal constraints, and high public-debt ratios are reflected in Bahrain, with a substantial negative growth coefficient (= -.512). These exacerbate the transmission of external shocks into domestic output, which aligns with the vulnerability channels identified by Céspedes et al. (2014). This exaggerated inflationary reaction

underscores Bahrain's greater reliance on imports and its lower strategic reserves. The ideas by Bleaney and Fielding (2002) on small, resource-based economies are amplified, leading to accelerated price increases during periods of uncertainty. Kuwait and Oman are similar in terms of their sensitivity, albeit with lesser sensitivity. Both economies remain highly dependent on hydrocarbon exports, and their diversification has been slower than that of their regional counterparts. These adverse growth implications are consistent with the resource volatility literature, such as that of Kilian (2009), which shows that the effects of geopolitical shocks on oil revenue-linked economies are much more severe due to the two-fold effect of breakdowns in supply and demand. The inflation and exchange rate volatility coefficients in both nations indicate a moderate exposure, which is quite similar to the neutralising effect of large sovereign funds that stabilise the local markets but do not completely neutralise the sector's dependence.

The results for Saudi Arabia are in the middle, and the deterioration in conflict-based growth is -0.356. This result is a consequence of high oil dependence levels, combined with improved fiscal management under the Vision 2030 reforms. The comparatively mild inflationary and volatile reactions affirm the stabilising power of sizable foreign reserves and fiscal tightening, as recommended in the findings of Cespedes, Céspedes et al. (2014), regarding buffering resilience. Qatar and the United Arab Emirates are the weakest in terms of the negative impacts of all variables. They are diversified across service businesses, stable in investment conditions, and hold significant sovereign wealth reserves, all of which contribute to low sensitivity to regional developments in their macroeconomies. These findings support the suggestion by Hausmann and Rodrik (2003) that economic complexity and the development of the non-oil sector can cushion external shocks by providing alternative sources of growth.

The heterogeneity findings support the fact that exposure to conflict does not always exist in the GCC. Globally diversified economies, with larger reserves and more advanced institutional structures, are more likely to experience minor, less enduring macroeconomic upheavals, underscoring the central importance of structural change and fiscal caution in preserving the macroeconomic status quo.

Table 8. Country-Level Heterogeneity Analysis (DML Estimates by Country, 2010–2023)

Country	Conflict → GDP Growth	Conflict → Inflation	Conflict → Exchange Rate Volatility
Bahrain	–0.512 *** (0.111)	+0.286 ** (0.121)	+0.221 ** (0.094)
Kuwait	–0.394 ** (0.152)	+0.173 (0.137)	+0.142 * (0.085)
Oman	–0.441 ** (0.128)	+0.204 * (0.118)	+0.168 ** (0.079)
Qatar	–0.238 * (0.098)	+0.112 (0.094)	+0.091 (0.072)
Saudi Arabia	–0.356 ** (0.102)	+0.147 * (0.082)	+0.133 ** (0.067)
United Arab Emirates	–0.198 * (0.089)	+0.094 (0.078)	+0.078 (0.055)

Notes:
Coefficients represent country-specific DML partial effects of conflict intensity on macroeconomic indicators. *** p < 0.01; ** p < 0.05; * p < 0.10. Differences reflect structural composition, fiscal buffers, diversification, and openness differentials across GCC economies.

4.8. Discussion of Findings

The empirical results of this study provide insight into the comprehensive understanding of the existence of geopolitical conflict, specifically the Israel-Iran conflict, and how macroeconomic volatility is realised across the GCC economies. The findings indicate that the strength of conflict has an overwhelmingly and persistently adverse effect on GDP growth, in addition to creating a quantifiable increase in inflation and exchange rate volatility. These results hold well across a range of specifications, including baseline Double Machine Learning approximations, channel-based models, robustness tests using alternative machine-learning approximations, moderation tests, and country-level heterogeneity measurements.

These findings can be understood within a conceptual framework that explains how geopolitical shocks infiltrate economies through interlocking channels of energy, trade, and finance. The intensity of their influence depends on the structural features and resilience policies of every GCC state. Such adverse growth effects are consistent with theoretical predictions of uncertainty-shock models, in which an increase in the level of geopolitical risk proceeds to promote precautionary saving, deter private investment, and squeeze capital markets. The uncertainty framework, according to Bloom (2009), holds that when economic agents receive a political shock, they enter a wait-and-see position, which then diminishes firms' consumption and investment commitments. Likewise, Caldara and Iacoviello (2022) note that domestic and global recessions are caused by geopolitical risk, which increases risk premia and destroys confidence. These mechanisms in action are showing up through the constant negative coefficient on the intensity of conflict in each of the GDP models in the present study: increased tension between Israel and Iran increases the perceived regional instability, slows down investor commitment, and, lastly, deters economic activity in GCC economies that are heavily enmeshed in regional politics.

The observed exchange-rate pressures and the estimates' inflationary reactions do more to illustrate the macro-financial sensitivity of the area to geopolitical shocks. The increase in inflation after the war is consistent with the analysis by Taghizadeh-Hesary and Yoshino (2019), who attribute increases in transportation and energy prices, as well as the cost of imported goods, to supply-chain bottlenecks resulting from Middle East shocks. The importation of food and manufactured products in GCC countries constitutes a significant share of total trade; therefore, any disruption to regional trade pathways is immediately translated into domestic price pressures. Additionally, the favourable exchange-rate volatility reaction in conflict is also in line with Narayan and Sharma (2015), who report the same reaction of currency markets to geopolitical disturbances, even in pegged exchange rates. The volatility experienced by GCC states, with most of their currencies pegged to the US dollar, is primarily driven by short-run liquidity pressures, wider bid-ask spreads, and investor repositioning, rather than actual depreciation. This makes the observed effects plausible and theoretically reasonable.

The findings further explain the mechanisms of conflict spillovers on macroeconomic volatility when certain channels are factored in. The stronger negative growth impacts of oil-affected countries align with the resonance of the energy-price channel proposed by Kilian (2009), which reveals that geopolitical shocks in oil supplies produce not only revenue volatility but also

losses to real activity. Furthermore, Arezki and Blanchard (2014) confirm the observation that oil-exporting states face an increased macroeconomic strain during shocks, as their fiscal stance and liquidity cycles are tied to fluctuations in international oil prices. These processes are reflected in the present work, as the interaction terms between conflict intensity and oil rents show that revenue-dependent economies lose a greater proportion of their GDP as conflict intensity increases, suggesting structural weaknesses associated with hydrocarbon dependence. Similarly, the trade-exposure channel aligns with Novy's (2013) observation that, under conditions of political instability, trade costs increase, trade volume decreases, and GDP growth slows. The effect of external demand and high freight costs on the trade-interaction model is temporary because GCC economies (such as the UAE and Qatar) that rely on re-exports, port logistics, and air-transport connectivity during conflict episodes are adversely affected. The financial channel implications support the conclusion of Balcilar et al. (2021), which establishes that geopolitical risk increases capital flow volatility in the MENA markets. The strong negative correlation between conflict intensity and FDI inflows in this paper suggests that investment-oriented economies experience temporary disruptions in capital supply, leading to reduced growth and increased financial uncertainty. These results demonstrate that external financing is influenced by local stability, rather than national fundamentals.

The moderation models provide valuable insights into potential ways the GCC countries can mitigate the impact of geopolitical risk. The positive moderating effect of fiscal balance implies that the stronger a state's fiscal situation (through prudent expenditures, a smaller budget deficit, or fiscal-rule structures), the more effectively it absorbs conflict shocks. The conflict-and-diversification interaction term indicates that broader economic systems significantly mitigate the adverse effects of geopolitical instability, consistent with Hausmann and Rodrik (2003), who state that economies with diversified export bases and strong sectors in the non-oil sphere experience greater stability in their long-term growth. This is evidenced by the experience of GCC countries, such as the UAE and Qatar, which have diversified service sectors and deep investment ecosystems, and thus tend to exhibit lower macroeconomic sensitivity to the intensity of conflict. The counterfactual policy simulations highlight the impact of domestic policies on vulnerability. Increasing fiscal discipline, diversification, and reserve buffers contribute to significant changes in GDP growth and inflation, as well as fluctuations in exchange rates. Similar outcomes are also reflected in the work of Céspedes et al. (2014), who discovered that strong policy regimes enhance resilience by stabilising expectations and allowing counter-cyclical policies. The net policy case will yield the most significant gains, and it is essential to emphasise that fiscal, structural, and liquidity buffers are complementary, not substitutes. It implies that regional conflict resilience is a multi-dimensional policy initiative! It cannot be accomplished with single interventions.

The heterogeneity analysis of country-level data indicates that the macroeconomic impacts of conflict are not evenly distributed throughout the GCC. Bahrain, Kuwait, and Oman face more pronounced adverse repercussions, as they have a limited production base, less fiscal space, and higher levels of peripheral reliance. The UAE and Qatar, in contrast, have diversified economies, well-developed financial systems, and large sovereign wealth funds, which mitigate the macroeconomic effects of external shocks. These results support Aizenman and Sun (2010), who state that nations with large reserves in sovereign reserves and diversified sources of revenue demonstrate significantly reduced sensitivity to exogenous destabilisation. The heterogeneity

results also echo Hesse (2008), who assumes that macroeconomic stability in resource-rich economies is a dominant factor in export diversification.

Collectively, these empirical findings have several implications regarding policies. By enhancing fiscal sustainability through counter-cyclical planning, fiscal embeddedness, and expenditure rationalisation, the economic cost of geopolitical shocks can be significantly reduced. Diversification is the most essential long-term strategy for mitigating macroeconomic exposure, and the need to diversify non-oil industries across logistics, manufacturing, financial services, and technology is of utmost importance. Reserve accumulation is also an important stabilising tool, providing liquidity in times of elevated volatility. To reduce vulnerability in countries with greater sensitivity, such as Bahrain and Oman, the focus should be on accelerating diversification and building stronger fiscal and sovereign welfare buffers, so they can better withstand the impact of diversification. The importance of regional coordination in the GCC, particularly in common risk-management systems, joint crisis-response strategies, and shared trade-corridor strategies, may also help mitigate systemic effects in the event of a geopolitical shock. In general, the results demonstrate that, despite the exogenous nature of conflict intensity, the economic impacts are heavily influenced by home policy systems and structures. The findings thus validate a policy strategy that incorporates macroeconomic fiscal discipline, structural reform, and strategic reserve management to improve their resilience and facilitate long-term economic stability in the GCC.

4.9. Strategies to Mitigate Adverse Effects

The accumulated empirical findings on this subject matter underscore the importance of a multidimensional approach to addressing the negative economic consequences of geopolitical conflict within the Gulf Cooperation Council's scope. Since conflict intensity spreads through multiple channels, including energy markets, trade disruptions, financial flows, and investor sentiment, no single policy instrument can entirely mitigate its effects. Instead, a greater effort is needed to make the international system more resistant to structural shocks, build financial and economic cushions, stabilise key societal infrastructure, and reduce reliance on risky areas to reinforce growth, at the very least, despite constant geopolitical vulnerability.

Economic diversification is the most basic long-term approach to vulnerability to the shock of conflict. The information demonstrates that the stronger the economy, as measured by its diversification index (e.g., the United Arab Emirates and Qatar), the less adverse the impact of conflict intensity will be. Sustained growth in non-oil industries, such as technology, renewable energy, logistics, tourism, creative industries, and high-tech manufacturing, can mitigate exposure to oil-price volatility and serve as a shield against external shocks. Knowledge-based investments, such as the development of knowledge-intensive industries, suggest that economic complexity increases resilience as productive potential expands. This structural transformation can be enhanced by strengthening human capital, fostering a culture of innovation, and attracting foreign direct investment into high-value industries.

It is also important that they be financially resilient. The results show that fiscal balance and reserve accumulation have a strong offsetting effect on the negative effect of conflict on growth. Public finance can be stabilised during times of uncertainty by building larger fiscal buffers based on medium-term expenditure frameworks, establishing fiscal regulations aligned

with long-term oil price levels, and disciplined debt management. Geographic and asset diversification of holdings should still be pursued to minimise concentration risk in sovereign wealth funds. Enhancing domestic capital markets (including bond markets, risk management instruments, and liquidity channels facilitated by fintech) will reduce dependence on external financing, as reserves and market depth are crucial for controlling sudden stops.

Adding supply-chain security is also another aspect of resilience. Disruptions in the Strait of Hormuz, airspace in a region, and key maritime routes related to conflict directly affect trade openness, which the research shows is a transmission channel. Intermediate exposure to all types of external bottlenecks can be mitigated by diversifying trade partners, identifying alternative logistics routes, increasing the capacity of ports located in non-vulnerable areas, and establishing tactical reserves of food, fuel, and medical supplies. Supply-chain agility can be further enhanced by investing in digital trade infrastructure and automated logistics.

It cannot be achieved without regional cooperation and diplomatic engagement, as conflict spillovers often extend across borders. Security systems of the GCC Council, intelligence-sharing platforms, and organised maritime patrols can reduce the rate and intensity of interruptions. The diplomatic de-escalation activities and mediation functions may reduce regional tensions, aligning with the literature showing that economic integration promotes stability by increasing the costs associated with war.

Cybersecurity and protection of critical infrastructure should also be a priority. As geopolitical conflicts increasingly manifest as cyberattacks on financial systems, energy grids, and government networks, cybersecurity software, backup mechanisms, and contingency planning are imperative for maintaining business continuity.

The recruitment and retention of talented employees facilitate diversification and innovation. Long-term stability in visa policies, improved living standards, and the development of strong talent pools will make GCC economies more competitive in highly capital-intensive sectors, thereby making them less vulnerable to fluctuations in the energy market.

Lastly, the broadening of public-private cooperation mobilises population capital for strategic infrastructure, renewable energy, digital mobilisation, and logistics modernisation. The PPP framework can hasten diversification, reduce fiscal strains, and mobilise resources more effectively in the event of a conflict. The combination of these strategies forms a unified resilience agenda that adequately considers the structural, financial, logistical, and institutional vulnerabilities that could exacerbate geopolitical conflict in the Gulf region.

5. Summary and Conclusion

The empirical investigation in this study reveals that the geopolitical conflict between Iran and Israel has a discernible, empirically testable effect on the macroeconomic patterns of the GCC countries. We employ a Double Machine Learning model of panel data spanning 2010-2023 and find that intensive conflict dampens real GDP growth while simultaneously placing greater inflationary strains on the economy and depreciating exchange rates. These results are robust to a range of other machine-learned estimators and model templates. Econometric models specific to

each channel also bear witness to the fact that transmission of shock acts mainly by the accumulation of lexicon of energy, trade, and capital-flow relationships: oil rents intensify the problems of growth that were characteristic of tranquil eras; trade openness transforms itself into a seat of vulnerability with the onset of periods of increased tension; foreign investment is more subjected to instability at moments of increased risk-premia. Moderation analyses indicate that fiscal balance, economic diversity, and the foreign reserve buffer have parallel effects, working in unison to reduce the rise in conflict-induced output contractions significantly. A country-specific heterogeneity study also makes the results easier to understand, as Bahrain, Kuwait, and Oman are disproportionately exposed to conflict shocks, while the UAE and Qatar are more resilient. This is explained by the fact that these countries have more diversified economic profiles and better balance-sheet positions. The counterfactual policy simulations support the view that a synergistic policy package, comprising fiscal fortification, diversification, and reserve accumulation, has a statistically significant positive effect on growth, while stabilising the price level and the exchange rate, even under constant conflict intensity.

The effects of these observations are quite substantial to GCC decision-makers. They first and foremost emphasise that geopolitics is no longer a purely diplomatic concern but a measurable macroeconomic risk factor that should be included in fiscal, monetary, and developmental planning strategies. Second, the available empirical evidence suggests that domestic policy decisions can significantly affect vulnerability to external shocks. Strong fiscal anchors, a greater presence of non-oil sectors, and sizable reserve buffers all have a substantial impact on the economic costs of regional instability. Thirdly, channel studies suggest that policies focusing on a single dimension, such as oil market management, are inadequate; instead, a portfolio of mutually reinforcing policies, including structural change, financial market development, supply chain security, and institutional resilience, is clearly necessary. In the case of regional institutions, including the GCC Secretariat and national economic councils, the evidence suggests incorporating conflict-risk indicators into stress-testing procedures, medium-term fiscal models, and inventory management procedures for sovereign wealth funds.

However, the research study has several limitations that cannot be ignored in any interpretive context. Although based on strong sources, the conflict-intensity index summarises a complex set of geopolitical events into a single, normalised measure per year and cannot capture all aspects of the qualitative dimension, including signalling, market expectations, and precipitous de-escalations. The temporal frequency and breadth of some macroeconomic variables, particularly those related to financial market indicators and disaggregated sectoral performance, may be limited by data constraints, potentially eliminating or downplaying transient impacts. Although the DML framework improves causal identification in the presence of numerous covariates, it also relies on the premise that all confounding factors are observable and that functional forms can be represented as accurately as possible using the chosen machine-learning algorithms. Furthermore, the analysis is conducted at the national level, which excludes a direct evaluation of distributional effects within nations, including disparate impacts on households, firms, or regions. Lastly, a focus on the Israel-Iran dyad and the absence of attention to any interplay with other contemporaneous geopolitics, such as the dynamics of continuous great-power rivalry in Iraq or internal political changes in the region, leaves open questions about how widely this conflict may interact with other macroeconomic outcomes.

Such restrictions point to several research directions for the future. A potential avenue of focus includes expanding the framework to encompass social and distributional aspects, thereby explaining the macroeconomic shocks caused by conflicts that propagate through employment, inequality, poverty, and human development indicators in GCC economies. Besides this fruitful direction, incorporating super-high-frequency financial market and commodity market data to interrogate short-run dynamics, along with intra-year spillovers, is a promising avenue, potentially using mixed-frequency or state-space models. Forecasting exercises developed using scenarios can examine the possible impacts of alternative conflict or de-escalation trajectories on long-term fiscal sustainability strategies and diversification plans, complementing current national vision frameworks. Micro-level studies using firm- or bank-specific information may provide insights into industry-specific investment, production, and risk-taking in response to geopolitical changes, and may evaluate the performance of policy responses in targeting the most vulnerable organisations. Regional comparative studies, such as those of other oil-exporting blocs or alternative markets facing different security risks, would further our understanding of context-specific resilience strategies and universal laws of macroeconomic strength in the face of geopolitical risk.

References

Abdelkawy NA. (2024) Diversification and the Resource Curse: An Econometric Analysis of GCC Countries. *Economies* 12: 287.

Abdullah SM. (2020) US Economic Policy Uncertainty and GCC Stock Market Performance. *Studies in Business and Economics* 15: 223-242.

Agyei SK. (2023) Emerging Markets Equities' Response to Geopolitical Risk: Time-Frequency Evidence From the Russian-Ukrainian Conflict Era. *Heliyon* 9: e13319.

Agyei SK, Owusu P, Bossman A, et al. (2022) Spillovers and Contagion Between BRIC and G7 Markets: New Evidence From Time-Frequency Analysis. *Plos One* 17: e0271088.

Aizenman J and Hutchison MM. (2012) Exchange market pressure and absorption by international reserves: Emerging markets and fear of reserve loss during the 2008–2009 crisis. *Journal of International Money and Finance* 31: 1076-1091.

Aizenman J and Jinjarak Y. (2013) The Fiscal Stimulus of 2009–10: Trade Openness, Fiscal Space and Exchange Rate Adjustment. *International Review of Economics and Finance* 25: 52-69.

Aizenman J and Sun Y. (2010) The Financial Crisis and Sizable International Reserves Depletion: From 'Fear of Floating' to the 'Fear of Losing International Reserves'? *Journal of International Money and Finance* 29: 926-941.

Akamavi RK, Ibrahim F and Swaray R. (2022) Tourism and Troubles: Effects of Security Threats on the Global Travel and Tourism Industry Performance. *Journal of Travel Research* 62: 1755-1800.

Al-Khaled H, Al-Humaidi S and Al-Roumi N. (2025) The Configuration of Power in the Middle East Following the Israel-Iran Tension: A Geopolitical. *Ijesss* 1: 123-132.

Alharthi M, Islam MM, Alamoudi H, et al. (2024) Determinants That Attract and Discourage Foreign Direct Investment in GCC Countries: Do Macroeconomic and Environmental Factors Matter? *Plos One* 19: e0298129.
Alkhateeb TTY and Mahmood H. (2020) Oil Price and Energy Depletion Nexus in GCC Countries: Asymmetry Analyses. *Energies* 13: 3058.
Alrasheed R. (2022) The Iran–Saudi Arabia Rivalry.
Arezki R and Blanchard O. (2014) Seven Questions about the Recent Oil Price Slump. *iMFdirect Blog*.
Arezki R and Brückner M. (2012) Rainfall, financial development, and remittances: Evidence from Sub-Saharan Africa. *Journal of International Economics* 87: 377-385.
Aslam F, Slim S, Osman M, et al. (2022) The Footprints of Russia–Ukraine War on the Intraday (In)efficiency of Energy Markets: A multifractal Analysis. *The Journal of Risk Finance* 24: 89-104.
Astuti G. (2024) Green Public Procurement in Indonesia: Policy Drivers, Barriers, and Implications for SDGs Achievement. *Lijsh* 3: 26-43.
Athey S, Parashkevov I, Sarukkai V, et al. (2016) Bitcoin pricing, adoption, and usage: Theory and evidence.
Balcilar M, Bouri E, Gupta R, et al. (2021) Geopolitical Risks and Capital Flows. *Emerging Markets Finance and Trade*.
Baldacci E, Gupta S and Mulas-Granados C. (2012) How Effective is Fiscal Policy in Responding to Crises? *Public Finance Review* 40: 207-226.
Baysoy MA and Altuğ S. (2021) Growth Spillovers for the <scp>MENA</Scp> Region: Geography, Institutions, or Trade? *The Developing Economies* 59: 275-305.
Beghin JC, Bowland BJ, Dessus S, et al. (2002) Trade integration, environmental degradation, and public health in Chile: assessing the linkages. *Environment and Development Economics* 7: 241-267.
Behera B, Behera P, Sucharita S, et al. (2024) Mitigating Ecological Footprint in BRICS Countries: Unveiling the Role of Disaggregated Clean Energy, Green Technology Innovation and Political Stability. *Discover Sustainability* 5.
Berument H and Ceylan N. (2014) The Impact of Oil Price Shocks on the Economic Growth of Selected MENA Countries. *Energy Journal*.
Bleaney M and Fielding D. (2002) Exchange Rate Regimes, Inflation and Output Volatility in Developing Countries. *Journal of Development Economics* 68: 233-245.
Bloom N. (2009) The Impact of Uncertainty Shocks. *Econometrica* 77: 623-685.
Caldara D and Iacoviello M. (2022) Measuring Geopolitical Risk. *American Economic Review* 112: 1194-1225.
Céspedes LF, Chang R and Velasco A. (2014) Is Inflation Targeting Still on Target? The Recent Crisis and Latin American Experience. *International Finance* 17: 185-207.
Chaziza M and Lutmar C. (2025) China's Strategic Engagement in the Middle East: Energy Security, Economic Integration, and Geopolitical Influence. *Asia Policy* 20: 95-116.
Chernozhukov V, Chetverikov D, Demirer M, et al. (2018) Double Machine Learning for Treatment and Causal Parameters. *Econometrics Journal* 21: C1-C68.

Chi X, Zheng R, Chen Y, et al. (2025) Research on the Volatility Spillover Effects of Geopolitical Conflict Risks on International Shipping and Crude Oil Markets. *Frontiers in Marine Science* 12.
Chkili W. (2020) Dynamic Spillovers between Geopolitical Risks and Exchange Rates. *Journal of International Financial Markets, Institutions and Money*.
Demirer R, Gupta R, Pierdzioch C, et al. (2020) The Predictive Power of Oil Price Shocks on Realized Volatility of Oil: A Note. *Resources Policy* 69: 101856.
Elhiraika A and Hamed A. (2017) The Nexus between Export Diversification and Structural Transformation in Africa. *Journal of African Trade*.
Fakhreddine N, Ishker N and Youssef J. (2021) Economic Forecast of the Wealthiest Gulf Countries Using ARIMA Model. *Jaes* 16: 228.
Farooq U, Tabash MI, Al-Faryan MAS, et al. (2023) The Nexus Between Tourism-Energy-Environmental Degradation: Does Financial Development Matter in GCC Countries? *Tourism Economics* 30: 680-701.
Figueroa AMI, Pintor LL, Sapuay GP, et al. (2021) Circular Economy Strategies and Implementation in the Philippines. *Circular Economy: Recent Trends in Global Perspective*: 219-257.
Galkin P and Bollino CA. (2020) Energy Security and Portfolio Diversification: The Exporter's Perspective.
Gerlagh R, Kverndokk S and Rosendahl KE. (2009) Optimal Timing of Climate Change Policy: Interaction Between Carbon Taxes and Innovation Externalities. *Environmental and Resource Economics* 43: 369-390.
Guzansky Y. (2021) Israel's Periphery Doctrines: Then and Now. *Middle East Policy* 28: 88-100.
Gylfason T. (2001) Natural Resources, Education, and Economic Development. *European Economic Review* 45: 847-859.
Hamilton K and Clemens M. (1999) Genuine Savings Rates in Developing Countries. *The World Bank Economic Review* 13: 333-356.
Hasan MT, Adhikary G, Mahmood S, et al. (2020) Exploring Mental Health Needs and Services Among Affected Population in a Cyclone Affected Area in Costal Bangladesh: A Qualitative Case Study. *International Journal of Mental Health Systems* 14.
Hausmann R and Rodrik D. (2003) Economic Development as Self-Discovery. *Journal of Development Economics* 72: 603-633.
Hesse H. (2008) *Export Diversification and Economic Growth,* Washington, DC: World Bank.
Hu M, Zhang D, Ji Q, et al. (2020) Macro Factors and the Realized Volatility of Commodities: A Dynamic Network Analysis. *Resources Policy* 68: 101813.
Ibekwe KI, Etukudoh EA, Nwokediegwu ZQS, et al. (2024) Energy Security in the Global Context: A Comprehensive Review of Geopolitical Dynamics and Policies. *Engineering Science & Technology Journal* 5: 152-168.
Jan A, Ramzan M and Kamboyo SH. (2024) An Analytical Investigation of Politico-Economic Effects of Gwadar and Chabahar Ports on Pak-Iran Relations. *J. Asian Dev. Studies* 13: 219-228.

Jarboui A, Mnif E, Zghidi N, et al. (2024) Reconceptualizing the Interplay Between Geopolitical Index, Green Financial Assets and Renewable Energy Markets: Evidence From the Machine Learning Approach. *Arab Gulf Journal of Scientific Research* 42: 2001-2027.
Khan AA, Yu R, Liu T, et al. (2022) Drivers Towards Adopting Modular Integrated Construction for Affordable Sustainable Housing: A Total Interpretive Structural Modelling (TISM) Method. *Buildings* 12: 637.
Khan AM. (2025) The Future of the Iran-China-Russia Axis: Scenarios of Multipolarity and U.S. Containment Strategies. *Amar* 3: 1-16.
Kilian L. (2009) Not All Oil Price Shocks Are Alike: Disentangling Demand and Supply Shocks in the Crude Oil Market. *American Economic Review* 99: 1053-1069.
Kolotvin E. (2024) Armed Conflicts and Price Volatility of Crude Oil: Insights From Historical Data. *Theoretical and Applied Issues of Economics*: 66-77.
Liokumovich YB. (2022) The Abraham Accords Between Israel, UAE and Bahrain in the Context of Changing of the Geopolitical Reality in the Middle East. *Asia and Africa Today*: 64.
Looney R. (2020) Economic Diversification in the Gulf Cooperation Council Countries. *Middle East Policy*.
Luzyanin SG and Alekseeva YN. (2024) Geopolitical and Investment Dimensions of China's Policy in the Middle East. *Asia and Africa Today*: 24-31.
Mamman SO, Iliyasu J, Ahmed UA, et al. (2024) Global Uncertainties, Geopolitical Risks and Price Exuberance: Evidence From International Energy Market. *Opec Energy Review* 48: 96-107.
Mokni K, Jabeur SB, Nammouri H, et al. (2024) Clean Energy Markets: Responses to Emerging Risks and Investor Behaviour. *International Journal of Finance & Economics* 30: 3535-3552.
Mullainathan S and Spiess J. (2017) Machine Learning: An Applied Econometric Approach. *Journal of Economic Perspectives* 31: 87-106.
Narayan PK and Sharma S. (2015) Oil Price Shocks and the Productivity of Australian Firms. *Energy Economics* 52: 132-141.
Nemat M, Rahat B, Rossi M, et al. (2025) Global Trade and Finance Turmoil: The Ukraine–Russia War's Impact. *The Journal of Risk Finance* 26: 516-529.
Olayeni OR, Tiwari AK and Wohar ME. (2020) Global economic activity, crude oil price and production, stock market behaviour and the Nigeria-US exchange rate. *Energy Economics* 92: 104938.
Ozturk O and Al-Kuwari M. (2021) The Contribution of Tourism to Economic Growth: The Case of Qatar. *Journal of Environmental Management and Tourism* 12: 598.
Papyrakis E and Gerlagh R. (2004) The resource curse hypothesis and its transmission channels. *Journal of Comparative Economics* 32: 181-193.
Parker TB. (2025) The United States and the Middle East, Post–Cold War Era.
Pooya AA. (2025) Afghanistan in the Shadow of Tensions: Analyzing the Economic Consequences of the Iran–Israel Conflict on Domestic Prices. *International Review of Economics and Financial Issues* 2: 97-120.

Qamruzzaman M. (2024) Nexus Between Foreign Direct Investment, Gross Capital Formation, Financial Development and Renewable Energy Consumption: Evidence From Panel Data Estimation. *GSC Advanced Research and Reviews* 18: 182-200.
Saleh AS, Bassil C and Safari A. (2021) Tourism Research for the GCC Region: Current Status and Future Research Directions. *Tourism Economics* 28: 1626-1646.
Shang J and Hamori S. (2024) Time-Varying Frequency Connectedness Analysis Across Crude Oil, Geopolitical Risk, Economic Policy Uncertainty and Stock Markets. *The Singapore Economic Review* 70: 3-71.
Sharma P, Kong TTC and Kingshott RP. (2016) Internal service quality as a driver of employee satisfaction, commitment and performance. *Journal of Service Management*.
Shome R, Elbardan H and Yazdifar H. (2023) Banking Research in the GCC region and Agenda for Future research – A bibliometric Examination. *Journal of Applied Accounting Research* 25: 1091-1119.
Taghizadeh-Hesary F and Yoshino N. (2019) The way to induce private participation in green finance and investment. *Finance Research Letters* 31: 98-103.
Tegegne MD, Tilahun B, Mamuye A, et al. (2023) Digital Literacy Level and Associated Factors Among Health Professionals in a Referral and Teaching Hospital: An Implication for Future Digital Health Systems Implementation. *Frontiers in public health* 11.
Tok E. (2021) The Gulf Cooperation Council States: Crystallization of the Regional Cooperation and Alliances Amid Dwindling Resources. *Digest of Middle East Studies* 30: 53-69.
Toporowski J. (2024) Monetary Policy and Illiquidity.
Vodenska I, Dehmamy N, Becker AP, et al. (2021) Systemic Stress Test Model for Shared Portfolio Networks. *Scientific Reports* 11.
Xu J, Ng C-P, Sam TH, et al. (2023) Fiscal and Tax Policies, Access to External Financing and Green Innovation Efficiency: An Evaluation of Chinese Listed Firms. *Sustainability* 15: 11567.
Yi A, Yang M and Li Y. (2021) Macroeconomic Uncertainty and Crude Oil Futures Volatility–Evidence From China Crude Oil Futures Market. *Frontiers in Environmental Science* 9.
YildirimÇAkar E. (2023) The Dynamics of Iran-China "New" Strategic Cooperation. *Alternatif Politika* 15: 344-367.
Yousfi M and Bouzgarrou H. (2024) Quantile Time–frequency Connectedness Between Energy and Agriculture Markets: A Study During the COVID-19 Crisis and the Russo–Ukrainian Conflict. *Journal of Financial Economic Policy* 16: 559-579.
Zabakhidze I. (2024) Important Aspects of the Strategic Partnership Between Israel and the Usa. *JHS*.