# Middle East conflict and energy companies: The effect of air and drone strikes on global energy stocks

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ABSTRACT

The recent April 2024 Israel-Iran conflict had a notable impact on global energy markets. Returns on the top ten global energy stocks indicate investor apprehension up to 10 days before the event started on April 13, 2024. Energy stocks had significant negative returns on the event day itself, with positive CAARs pre-event and negative CAARs post-event. The dynamic market response highlights the heightened uncertainty for energy firms due to regional instability and potential supply chain interruptions, emphasizing the critical role of geopolitical events in shaping investor sentiment and the financial performance of energy firms.

## 1. Introduction

Geopolitical disturbances are widely recognized to adversely impact various sectors including international trade, equity markets, commodities, and currency markets.[1] Geopolitical tensions in energy-rich regions, particularly the Middle East, hold significant ramifications for global energy markets, given its status as a major oil producer (Al-Saidi, 2023). Instabilities in this region can disrupt oil supplies, thereby triggering fluctuations in energy prices, which, in turn, reverberate through global stock markets due to the pivotal role of energy prices in the global economy.[2]

The Middle East has long been a focal point for geopolitical tensions, intensifying uncertainty in global financial markets and prompting cautious investor reactions that may impact stock prices (Hassan et al., 2022). Recent conflicts such as the Russia-Ukraine conflict and the ongoing Israel-Hamas conflict have underscored the interconnectedness of regional turmoil and global energy markets (Hossain et al., 2024). The Israel-Hamas conflict, which commenced on October 7, 2023, has extended beyond its initial spheres of Israel and Gaza, engulfing Lebanon, Iraq, Syria, and the Red Sea region. The conflict's spillover effects have destabilized neighbouring countries like Egypt, Lebanon, and Jordan, as noted by the International Monetary Fund (2024). Furthermore, the conflict has

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[1] See Cui and Maghyereh (2024), Khan et al. (2023a), Feng et al. (2023), and Pandey et al. (2024).

[2] Global energy prices often face unpredictability due to the pervasive uncertainty and geopolitical risks (Mamman et al., 2024; Fang and Shao, 2022).

significantly disrupted Middle East shipping activities, with Houthi militia targeting ships in and around the Red Sea, exacerbating regional tensions and further impacting global energy markets.

The recent escalation of conflict between Israel and Iran signifies a substantial geopolitical risk for energy markets. The April 13, 2024 attack by Iran on Israel marked a pivotal moment in the history of both nations. This attack included the unprecedented occurrence of direct strikes originating from Iranian territory onto Israeli soil, featuring an unparalleled number of ballistic missiles launched in a singular military manoeuvre by Iran. Iran's attack on Israel, in conjunction with potential retaliatory measures by Israel, gave rise to apprehensions regarding the safeguarding of crucial energy infrastructure and transit passages, notably the Strait of Hormuz. Any notable disturbance in this region has the potential to result in a surge in oil prices, impacting global energy security. In this case, both Iran and Israel are significant entities in the Middle East, with the ability to potentially disrupt energy supply networks and transit corridors. Middle East conflicts can have large repercussions on the price of crude oil, as well expected corporate profitability for those firms tied to the energy sector and the market as a whole.[3]

In this paper, we examine the effects of the April 13, 2024 Iran-Israel military conflict on the returns of top ten energy stocks around the globe along with the US market. Since April 13, 2024 was a non-trading day, April 15 is considered an event date. To the best of our knowledge, this is the first study to investigate the impact of Israel-Iran conflict which began on April 13, 2024. Using the commencement of the military operation on April 13, 2024 as the event date, we find statistically significant negative reactions on the event date in crude oil and energy companies around the globe. We also find a strong negative reaction in the U.S. market more broadly. The responses across the energy stocks were also negative but varied by firm; only PetroChina had a positive return across the ten selected energy stocks. We also find significant negative returns in the ten days leading up to the event, indicating investor apprehension. Specifically, significant negative returns were observed for most energy stocks on the event day, with BP PLC experiencing the most substantial negative abnormal return at −2.26%.

Geopolitical risks have a dynamic, nonlinear, and time-varying impact on commodities, as well as green and socially responsible markets (Mo et al., 2024; Helmi et al., 2024). Such risks often lead to various forms of market contagion, including capital flight from emerging markets (Carney et al., 2024), price bubbles and spillovers in the energy sector (Illiyasu et al., 2024), reduced stock returns and instability in global equity markets (Yilmazkuda, 2024; Hossain et al., 2024), and adverse effects on foreign exchange markets (Ohikhuare, 2023). By studying financial markets responses to this crisis, this study helps examine the intricate interplay between geopolitical tensions and global energy markets and major energy firms, and how such conflicts reverberate across the financial landscape. Overall, we find that the recent conflict between Iran and Israel negatively impacted energy firms but that the results vary by firm. Following the attack, there was uncertainty and speculation regarding the potential escalation of the conflict, suggesting there were questions about how the situation will develop for the energy market, particularly considering Iran's significant role in the sector. Our robustness tests also highlight the importance of examining various time windows for analysis, providing a more detailed understanding of the results.

Importantly, the findings have significant implications for key stakeholders, including policymakers, portfolio managers, sovereign wealth managers, and investors. Policymakers can leverage these insights to craft more informed strategies for mitigating the potential impact of geopolitical unrest on energy markets, while portfolio managers and sovereign wealth managers could benefit by refining their risk management strategies and optimizing asset allocations in response to heightened geopolitical risks. Investors in general can use these findings to make more informed decisions, navigating energy market volatility and identifying potential opportunities amidst uncertainty.

The remainder of this paper is structured as follows. Section 2 describes data sources and methodology used in this paper. Section 3 presents the results and discussion. The conclusion and implications are furnished in Section 4.

## 2. Data & methodology

We examine a sample of top ten global energy firms selected based on their market capitalization as on April 3, 2024. Conflicts in the Middle East impact energy firms as they can lead to supply shortages or increased costs for importing countries, affecting operational efficiency and profitability (Ji et al., 2019; Huntington, 2018). Additionally, the interconnectedness of the global oil market may spike volatility in oil prices worldwide, impacting energy firms' revenues, cost of capital and investment decisions. Table 1 provides the names and abbreviations used in this paper for the broad US market index, crude oil, and the ten energy firms. For the additional analysis, the pharma sector, banking industry and top ten Israeli companies are also considered.

The event study methodology offers valuable insights into the effects of significant events on various asset classes and different financial markets (Pandey et al., 2024; Yadav et al., 2023; Hassan et al. 2022; Yousaf et al., 2022; Chen et al., 2007 and Mackinlay, 1997). Since April 13, 2024 was non-trading day, April 15, 2024 is considered as an event date for empirical analysis. In this study, 90 days are used for the estimation of window spanning from t-100 (November 22, 2023) to t-11 (March 28, 2024), and the event window covers t-10 (April 1, 2024) to $t + 10$ (April 29, 2024). We compute expected return/normal return using mean return of window estimation which is in the similar line of Ganie et al. (2022) and Yadav et al. (2023). The abnormal return is derived subtracting the normal return from actual log return which is expressed as below:

$$AR_{it} = R_{it} - E(R_{it}) \tag{1}$$

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[3] Both Israel and Iran wield considerable geopolitical sway. The war affected markets negatively; for example, the S&P 500 fell down by 1.21% followed by crude oil with 0.39%.

**Table 1**
Data Description.

| Market | Proxies | Abbreviation | Data Source |
|---|---|---|---|
| | S&P 500 | SP 500 | |
| Global Energy Stocks* | Crude Oil | CROL | Bloomberg |
| | EXXON Mobil Corp | XOM | |
| | Chevron Corp | CVX | |
| | PetroChina Co. Ltd | PTR | |
| | Shell PLC | SHEL | |
| | Total Energies | TTE | |
| | ConocoPhillips | COP | |
| | BP PLC | BP | |
| | Canadian Natural Resources Ltd. | CNQ | |
| | Equinor ASA | EQNR | |
| | EOG Resources Inc. | EOG | |
| Global Banking stocks* | JP Morgan Chase | JPM | Bloomberg |
| | Bank of America | BAC | |
| | Industrial and Commercial Bank of China Limited | 1398.HK | |
| | Agricultural Bank of China | 1288.HK | |
| | Wells Fargo | WFC | |
| | China Construction Bank | 0939.HK | |
| | Bank of China | 3988.HK | |
| | HDFC Bank | HDFCB | |
| | HSBC London | HSBA | |
| | Morgan Stanley | MS | |
| Global Pharma stocks* | Eli Lilly & Co | LLY US | Bloomberg |
| | Novo Nordisk-B | NOVOB DC | |
| | Johnson & Johnson | JNJ | |
| | ABBVIE Inc | ABBV | |
| | Merck & Co | MRK | |
| | Roche Holding AG | ROG | |
| | Astrazeneca PLC | AZN | |
| | Novartis AG-REG | NOVN | |
| | Pfizer Inc | PFE | |
| | Sanofi | SAN | |
| Top 10 Israeli stocks (listed in Tel Aviv)* | Teva Pharma | TEVA | Bloomberg |
| | Bank Leumi LE-IS | LUMI | |
| | Bank Hapoalim | POLI | |
| | Nice Ltd | NICE | |
| | Mizrahi Tefahot | MZTF | |
| | Elbit Systems | ESLT | |
| | Azrieli Groups | AZRG | |
| | Israel Discoun-A | DSCT | |
| | Nova Ltd | NVMI | |
| | ICL Group Ltd | ICL | |

Source: Authors' own compilation.* The top ten global stocks in the banking and pharmaceutical sectors, as well as the top ten stocks on the Tel Aviv Stock Exchange, were selected based on their market capitalization values from Bloomberg.

Where, $AR_{it}$ is the abnormal returns for the respective stocks (i) on day t; $R_{it}$ is the log return for the stocks (i) on day t. The log returns are computed using the expression $\ln(\frac{P_t}{P_{t-1}})*100$, where $P_t$ is the price of the stock (i) on day t and $P_{t-1}$ is the stock price on the previous day, i.e. t-1. E(R) is the mean return of window estimation of respective series.

We further calculate the daily average abnormal returns (AAR) that will help in generalizing the results of the selected stocks. The AAR is determined in the following Eq. (2):

$$AAR_{it=} \frac{1}{n} \sum_{i=1}^{n} AR_{it} \tag{2}$$

Where, $AAR_{it}$ is the average of abnormal returns determined for the selected stocks on day t; n is the number of energy stocks in the sample. We determined the cumulative average abnormal returns (CAAR) during different estimation windows such as $[-10, -1]$, $[-7,-1]$, $[-3,-1]$, $[+1,+3]$, $[+1,+7]$, $[+1,+10]$, $[-3,+3]$, $[-7,+7]$ and $[-10,+10]$. The CAAR is estimated using the following Eq. (3):

$$CAAR_{i, \ T1-T2} = \sum_{t=T1}^{T2} AR_{it} \tag{3}$$

Where, $CAAR_{i,T1-T2}$ is the cumulative average abnormal returns for the selected energy stocks for the event window defined by [T1-T2]. For instance, the CAAR for $[-3,+3]$ provides the sum of daily abnormal returns from t-3 to $t+3$. Fig. 1 represents the price trajectory of selected energy stocks for the time window of $[t+10]$ and $[t-10]$.

## 3. Empirical results

This section delves into the repercussions of the recent assault by Iran on Israel on the top energy stocks. Table 2 provides insights into the abnormal return and associated t-statistics of selected stocks on the event day. Notably, all examined assets including energy stocks, except PetroChina, experienced a negative abnormal return, albeit with varying levels of significance. BP PLC bore the brunt of the impact with the most substantial negative abnormal return (−2.26%), followed by EOG Resources (−2.20%) and Canadian Natural Resources (−2.12%). BP PLC and similar companies faced significant negative abnormal returns due to their high exposure to the Middle East, which heightened investor concerns about geopolitical risks, operational vulnerabilities, and potential disruptions in production and transportation routes (Fukutomi, 2024; Khan et al., 2023b). BP PLC is uniquely positioned in the energy sector, balancing traditional fossil fuel operations with a significant commitment to green energy. With a diverse geographic footprint, BP benefits from its extensive global oil and gas assets. Additionally, the total risk is depicted in the same table which presents that PTR is highly risk stock (0.0195) followed by CROL (0.0160) whilst the S&P 500 is spotted with the least risky market.

Table 3 presents the results of abnormal returns across the S&P 500 and select energy stocks in the timeframe pre and post event day, denoted as "t" days relative to the event date. Spanning from ten days prior to the event (t-10) to ten days post the event ($t + 10$), the table presents the fluctuation in stock returns preceding and succeeding the event, thereby shedding light on market sentiment and
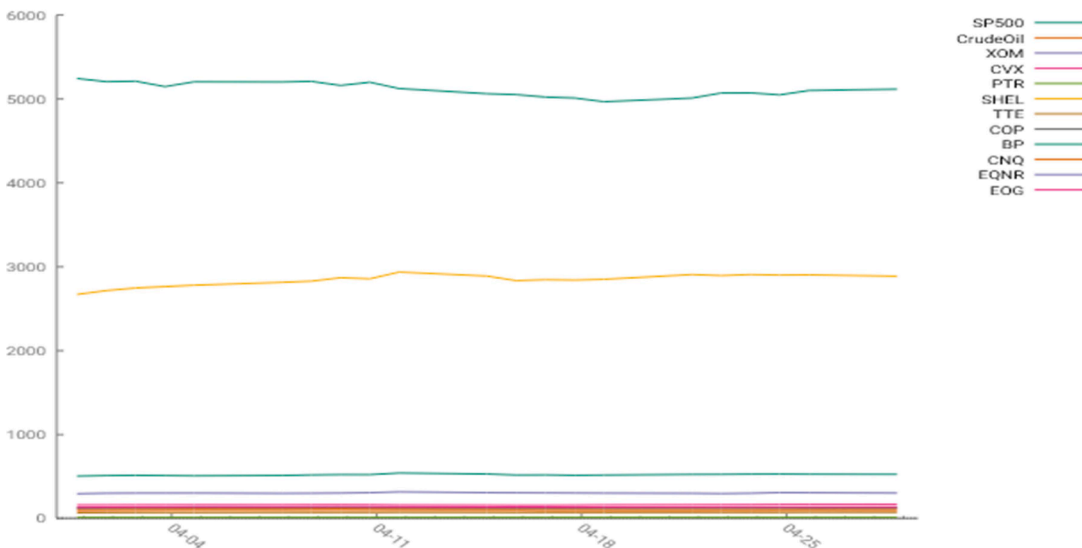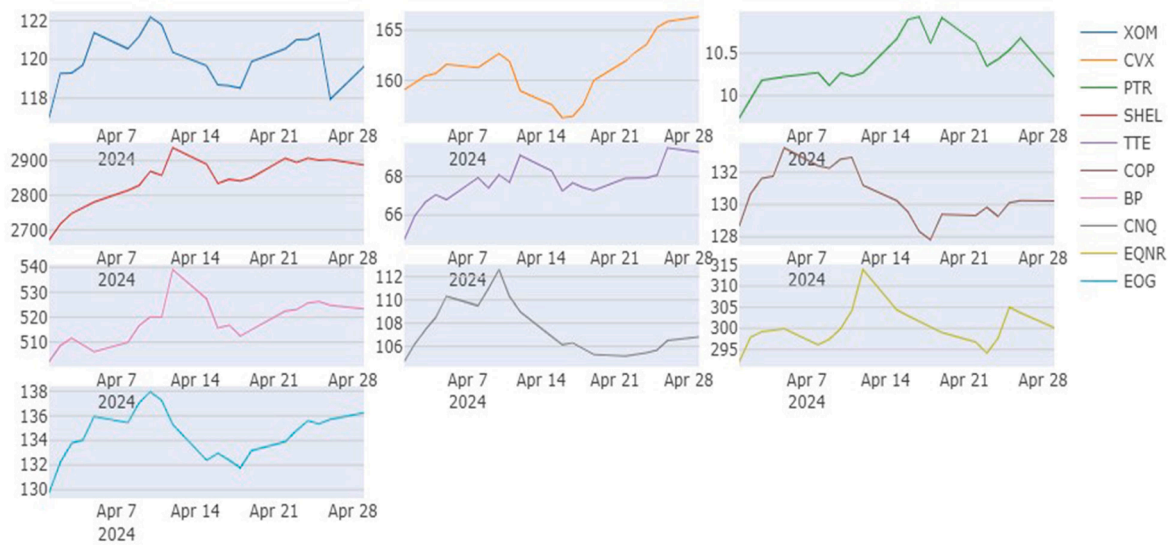




**Fig. 1.** Graphical display of raw series during window period.

**Table 2**
Risk and Abnormal return along with t-statistics on the event day.

| Stocks | Abbreviation | Risk | Abnormal Return | t-statistics |
|---|---|---|---|---|
| S&P 500 | SP 500 | 0.0063 | −0.0137 | −20.55 |
| Crude Oil | CROL | 0.0160 | −0.0045 | −2.67 |
| EXXON Mobil Corp | XOM | 0.0110 | −0.0069 | - 5.96 |
| Chevron Corp | CVX | 0.0108 | −0.0097 | −8.45 |
| PetroChina Co. Ltd | PTR | 0.0195 | 0.0353 | 17.13 |
| Shell PLC | SHEL | 0.0095 | −0.0164 | −16.29 |
| Total Energies | TTE | 0.0107 | −0.0117 | −10.37 |
| ConocoPhillips | COP | 0.0120 | −0.0084 | −6.62 |
| BP PLC | BP | 0.0111 | −0.0226 | −19.15 |
| Canadian Natural Resources Ltd. | CNQ | 0.0117 | −0.0212 | −11.99 |
| Equinor ASA | EQNR | 0.0159 | −0.0069 | −5.96 |
| EOG Resources Inc. | EOG | 0.0130 | −0.0220 | −15.94 |

Source: Authors' compilation.

investor responses. Each column within the table corresponds to a distinct asset class, encompassing entities such as S&P 500, CROL, XOM, CVX, PTR, SHEL, TTE, COP, BP, CNX, EQNR, and EOG. Analysis of the selected stocks unveils a mix of positive and negative abnormal returns leading up to and following the event day. Noteworthy trends include significant negative returns observed in the ten days preceding the event, indicative of investor apprehension and wavering confidence. For [t-2] window significant and negative returns were observed for all energy stocks except COP and BP which reported insignificant negative abnormal returns. However, S&P 500 had positive and significant abnormal returns. The mixed results were reported for a day prior to the event day with significant and negative returns reported for SP 500, XOM, CVX, COP, CNX, EQNR and EOG while CROL, SHEL, TTE and BP had significant positive abnormal returns. Historical examples, such as the Gulf War, US-China trade war and the Russia-Ukraine conflict, demonstrate recurring patterns where markets react not just to the events themselves but to the potential threats they pose. For instance, studies show that geopolitical events have historically influenced oil prices and stock market returns even before any actual disruptions occurred (Cheng et al., 2023; Ma et al., 2022; Noguera-Santaella, 2016).

The immediate aftermath of the event showed significant negative abnormal returns across examined markets except PTR and EOG on the following day ($t + 1$). The idiosyncratic behaviour of PetroChina, exhibiting significant positive performance post the event date attack on Israel and significant negative performance on days following retaliatory strikes by Israel on April 19, 2024, hints at China's cautious stance amidst the conflict, attributed to its extensive economic ties with Iran. PetroChina's resilience amidst global challenges is evident in its strong Q1 2024 performance, with record-high revenue of RMB 812.18 billion and 4.7% net profit growth. Strategically positioned in China, the company benefits from stable domestic demand while expanding in new energy sectors like wind, photovoltaic, and hydrogen. The contagion effect of the news was evident through varied abnormal returns over the subsequent days ([$t + 1$] to [$t + 10$]), underscoring market apprehension regarding the potential escalation of the conflict and its impact.

In summary, the fluctuating responses of energy stocks, both preceding and succeeding the event, underscore the pervasive uncertainty surrounding the conflict. Tensions in the Middle East have historically fuelled volatility in commodity markets and detrimentally impacted stock performances (Cui and Maghyereh, 2024; Pandey et al., 2024).

Table 4 presents the Cumulative Average Abnormal Returns (CAAR) and their respective t-statistics for selected energy stocks across various event windows surrounding the critical event date of April 15, 2024. The analysis reveals that the pre-event windows of [−10, −1] and [−7, −1] exhibit significant positive CAARs of 0.0513 and 0.0133 indicating positive market anticipation and substantial abnormal gains leading up to the event. In contrast, the window [−3, −1] displays a non-significant CAAR of 0.0019 suggesting negligible abnormal returns in the immediate pre-event period. In early April 2024, global energy firms saw significant positive returns due to a sharp rise in oil prices, with brent crude futures surging above $90/bbl on April 5, the highest since October 2023. This rally was bolstered by Russian refinery outages and OPEC+ production cuts (IEA, 2024). Post-event windows reveal mixed outcomes. The [+1, +3] window stands out with a significant negative CAAR of −0.0145 reflecting a sharp market correction immediately following the event. Conversely, the [+1, +7] and [+1, +10] windows exhibit non-significant CAARs of −0.0031 and −0.0053 indicating the initial negative reaction diminishes over a longer period. The [−3, +3] window presents a significant negative CAAR of −0.0217 underscoring pronounced negative returns surrounding the event.

However, the broader windows of [−7, +7] and [−10, +10] tell a different story, with a non-significant CAAR of 0.0012 (t-statistic 0.5141) and a significantly positive CAAR of 0.0369 (t-statistic 18.8214), respectively. These results highlight significant positive abnormal returns when a broader event window is considered, despite the immediate negative impact observed in narrower windows. The recovery in energy stock prices post-event, 2024, reflects the market's calculated response to geopolitical risks. When markets reopened on April 15, Brent crude oil prices were at $90.1 per barrel, remained stable at $90.02 on April 16, but slipped to $87.29 by the week's end. However, oil prices rebounded by April 26 (10 days post the event day) to $89.5. This stability was further supported by OPEC+ efforts to increase production quotas, mitigating potential price spikes (Jao, 2024). As a robustness check, we compute CAAR based on various window periods ranging from 120, 180 and 60 days, and find no major differences in the significance of the CAAR comparatively.

In summary, the CAAR results underscore a pattern of significant positive abnormal returns in the days leading up to the event, a sharp negative reaction immediately following the event, and a subsequent recovery that stabilizes over a longer period, reflecting the dynamic market response to the event. The escalation between Israel and Iran has heightened geopolitical tensions, yet immediate oil

**Table 3**
Abnormal return pre and post of the event.

| Event Window | SP 500 | CROL | XOM | CVX | PTR | SHEL | TTE | COP | BP | CNX | EQNR | EOG |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| t-10 | −0.0036** | −0.0013 | 0.0052** | 0.0074*** | 0.0487*** | 0.0173*** | 0.0193*** | 0.0098** | 0.0125*** | 0.0116** | 0.0052* | 0.0146*** |
| t-9 | −0.0089*** | 0.0164*** | 0.0182*** | 0.0034* | 0.0194*** | 0.0170*** | 0.0190*** | 0.0142*** | 0.0123*** | 0.0129** | 0.0182*** | 0.0186*** |
| t-8 | −0.0005 | 0.0042* | −0.0010 | 0.0031* | 0.0190*** | 0.0111*** | 0.0105** | 0.0062* | 0.0054** | 0.0100* | −0.0010 | 0.0113** |
| t-7 | −0.0140*** | 0.0138*** | 0.0023* | 0.0005 | 0.0023* | 0.0059** | 0.0057** | −0.0002 | −0.0057** | 0.0084* | 0.0023* | 0.0016 |
| t-6 | 0.0094*** | 0.0051* | 0.0125*** | 0.0046** | 0.0125*** | 0.0057*** | −0.0038* | 0.0122*** | −0.0060** | 0.0153*** | 0.0125*** | 0.0138*** |
| t-5 | −0.0020* | −0.0094*** | −0.0080*** | −0.0031* | −0.0080*** | 0.0121** | 0.0167*** | −0.0094** | 0.0070** | −0.0089** | −0.0080** | −0.0039* |
| t-4 | −0.0002 | −0.0113*** | 0.0040* | 0.0035* | −0.0176*** | 0.0051** | −0.0079** | −0.0024 | 0.0126*** | 0.0120** | 0.0040* | 0.0115** |
| t-3 | −0.0111*** | 0.0111*** | 0.0072** | 0.0031* | 0.0118*** | 0.0142*** | 0.0099*** | 0.0032* | 0.0063** | 0.0130** | 0.0072** | 0.0062* |
| t-2 | 0.0058*** | −0.0089*** | −0.0045* | −0.0058** | −0.0068** | −0.0042** | −0.0057*** | −0.0004 | −0.0006 | −0.0223*** | −0.0045* | −0.0053* |
| t-1 | −0.0163*** | 0.0072** | −0.0129*** | −0.0193*** | 0.0010 | 0.0276*** | 0.0202*** | −0.0141*** | 0.0356*** | −0.0134** | −0.0129*** | −0.0148*** |
| t+1 | −0.0037** | −0.0015 | −0.0095*** | −0.0094*** | 0.0184*** | −0.0193*** | −0.0154*** | −0.0067** | −0.0229*** | −0.0080** | −0.0095** | 0.0146* |
| t+2 | −0.0074*** | −0.0315*** | −0.0017 | −0.0002 | −0.0001 | 0.0040* | 0.0060** | −0.0104*** | 0.0019 | −0.0001 | −0.0017 | 0.0040* |
| t+3 | −0.0038** | −0.0027 | −0.0021 | 0.0064** | −0.0317*** | −0.0016 | −0.0036* | −0.0052* | −0.0090** | −0.0058* | −0.0021 | −0.0045* |
| t+4 | −0.0104*** | 0.0014 | 0.0102*** | 0.0143*** | 0.0250*** | 0.0033* | −0.0022 | 0.0111** | 0.0044* | −0.0065* | 0.0102 | −0.0052** |
| t+5 | 0.0071*** | −0.0040* | 0.0045* | 0.0109** | −0.0298*** | 0.0194*** | 0.0091*** | −0.0015 | 0.0142*** | −0.0028 | 0.0045** | 0.0103* |
| t+6 | 0.0103*** | 0.0155*** | 0.0027* | 0.0047** | −0.0296*** | −0.0042** | 0.0001 | 0.0028* | 0.0007 | −0.0006 | 0.0027** | 0.0052* |
| t+7 | −0.0014* | −0.0052* | −0.0010 | 0.0034* | 0.0048* | 0.0041** | −0.0001 | −0.0054* | 0.0043* | 0.0001 | −0.0010* | 0.0064* |
| t+8 | −0.0062*** | 0.0105*** | 0.0011 | 0.0094*** | 0.0076* | −0.0021* | 0.0021 | 0.0053* | 0.0009 | 0.0009 | 0.0011 | 0.0056 |
| t+9 | 0.0085*** | 0.0048* | −0.0294*** | 0.0027* | 0.0103** | 0.0008 | 0.0206*** | −0.0001 | −0.0033* | 0.0064* | −0.0294*** | −0.0021 |
| t+10 | 0.0015* | −0.0130*** | 0.0130*** | 0.0016 | −0.0469*** | −0.0056** | −0.0034* | −0.0013 | −0.0033* | 0.0014 | 0.0130*** | 0.0022* |

Source: Authors' compilation; Notes: The daily closing prices for the selected energy stocks were collected from Bloomberg. *, **, and *** indicate significant values at 10%, 5% and 1% respectively. XOM – EXXON Mobil Corp, CVX – Chevron Corp, PTR – PetroChina Co. Ltd, SHEL – Shell PLC, TTE – Total Energies, COP – Conoco Phillips, BP – BP PLC, CNQ – Canadian Natural Resources Ltd., EQNR – Equinor ASA, EOG – EOG resources Inc.

**Table 4**
CAAR and its t-statistics of Energy Sector.

| Window | CAAR | T-stat of CAAR |
| --- | --- | --- |
| (−10,−1) | 0.0513 | 18.4213*** |
| (−7,−1) | 0.0133 | 3.9692*** |
| (−5,−1) | 0.0030 | 0.7729 |
| (−3,−1) | 0.0019 | 0.3639 |
| (+1,+3) | −0.0145 | −2.7827*** |
| (+1,+5) | −0.0031 | −0.7924 |
| (+1,+7) | −0.0031 | −0.9184 |
| (+1,+10) | −0.0053 | −1.8704* |
| (−3,+3) | −0.0217 | −6.3937*** |
| (−7,+7) | 0.0012 | 0.5141 |
| (−10,+10) | 0.0369 | 18.8214*** |

Source: Authors' compilation; Note *, ** and *** denotes significant CAAR values at 10%, 5% and 1% level of significance.

markets remain relatively stable.

Crude oil prices have declined despite rising Middle East tensions, likely due to traders anticipating supply disruptions following the April 1 attack on Iran's diplomatic compound in Syria. Bloomberg estimated that a $25 per barrel war premium was already embedded in oil prices before Iran's April 13 retaliatory attack (Liu, 2024). Despite this stability, future disruptions, particularly in the Strait of Hormuz, could significantly drive prices higher, introducing increased uncertainty for energy firms due to potential supply chain interruptions (Rajendran and Young, 2024). For the comprehensive analysis of other sectors, we investigate the impact on global pharma sector, banking industry, and top 10 Israeli companies and present them in Tables 5–7 respectively. The results reveal that the effect is more pronounced to the Israeli companies since their CAAR is witnessed negatively ranging from (−10, −1) to (−10,+10) window periods, however, other sectors have mixed CAAR.

Figs. 2–5 present a graphical display of the Cumulative Average Abnormal Returns (CAAR) for selected energy stocks, global pharma sector, the banking industry, and top 10 Israeli companies over various event windows surrounding the event date. The graph visually illustrates the fluctuations and significant changes in CAAR, highlighting the periods of abnormal returns before, during, and after the event.

## 4. Conclusion

The study highlights the significant impact of recent Israel-Iran conflict on global energy markets, demonstrating how such an event can lead to volatility in stock performances of major energy firms worldwide. The findings reveal a discernible trend wherein energy stocks experienced negative returns on the day of the event, with British Petroleum registering the most substantial negative abnormal returns, while PetroChina emerged as an exception with positive abnormal returns relative to the selected energy firms. Notably, a heterogeneous performance among energy stocks was evident during both pre-event and post-event periods highlighting the pervasive uncertainty stemming from the prolonged shadow conflict between Israel and Iran unexpectedly manifesting in the financial and energy markets. In addition, we present a comprehensive analysis of this conflict in global pharma sector, banking industry, and Israeli companies.

The present study underscores the importance of incorporating geopolitical risk assessments into the strategic planning of policymakers, portfolio managers, sovereign wealth managers, and investors to mitigate potential impacts on energy markets. The findings suggest that investors and managers need to be vigilant and responsive to geopolitical developments, refining their risk management strategies and optimizing asset allocations to navigate market volatility and identify potential opportunities amidst uncertainty. The

**Table 5**
CAAR and its t-statistics of Pharma Sector.

| Window | CAAR | T-stat of CAAR |
| --- | --- | --- |
| (−10,−1) | −0.0501 | −27.2650*** |
| (−7,−1) | −0.0331 | −15.0583** |
| (−5,−1) | −0.0176 | −6.7691** |
| (−3,−1) | −0.0119 | −3.4711* |
| (+1,+3) | −0.0167 | −4.8423** |
| (+1,+5) | 0.0013 | 0.5015 |
| (+1,+7) | 0.0013 | 0.5682 |
| (+1,+10) | 0.0054 | 2.8228* |
| (−3,+3) | −0.0305 | −13.4631*** |
| (−7,+7) | −0.0282 | −18.3503*** |
| (−10,+10) | −0.0466 | −36.4429*** |

Source: Authors' compilation; Note *, ** and *** denotes significant CAAR values at 10%, 5% and 1% level of significance.

**Table 6**
CAAR and its t-statistics of Banking Sector.

| Window | CAAR | T-stat of CAAR |
|---|---|---|
| (−10,−1) | −0.0270 | −12.2473*** |
| (−7,−1) | −0.0273 | −10.3993*** |
| (−5,−1) | −0.0258 | −8.2819*** |
| (−3,−1) | −0.0300 | −7.4669*** |
| (+1,+3) | 0.0082 | 2.0796* |
| (+1,+5) | 0.0256 | 8.2125*** |
| (+1,+7) | 0.0256 | 10.0196*** |
| (+1,+10) | 0.0164 | 7.6932** |
| (−3,+3) | −0.0182 | −7.0582** |
| (−7,+7) | 0.0027 | 1.5320*** |
| (−10,+10) | −0.0069 | −4.6187** |

Source: Authors' compilation; Note *, ** and *** denotes significant CAAR values at 10%, 5% and 1% level of significance.

**Table 7**
CAAR and its t-statistics of Israeli companies.

| Window | CAAR | T-stat of CAAR |
|---|---|---|
| (−10,−1) | −0.0549 | −26.0013*** |
| (−7,−1) | −0.0375 | −14.8533*** |
| (−5,−1) | −0.0269 | −9.0002*** |
| (−3,−1) | −0.0277 | −6.9465*** |
| (+1,+3) | −0.0093 | −2.3399* |
| (+1,+5) | −0.0017 | −0.5687 |
| (+1,+7) | −0.0017 | −0.6451 |
| (+1,+10) | −0.0102 | −4.6108* |
| (−3,+3) | −0.0496 | −18.2523*** |
| (−7,+7) | −0.0476 | −24.9239*** |
| (−10,+10) | −0.0777 | −47.7609*** |

Source: Authors' compilation; Note *, ** and *** denotes significant CAAR values at 10%, 5% and 1% level of significance.
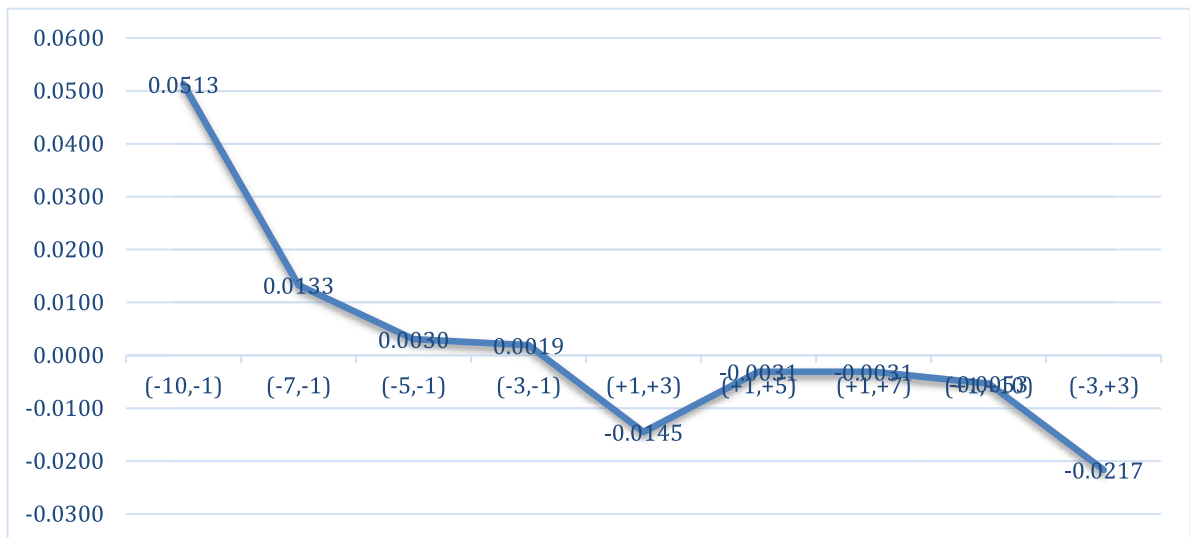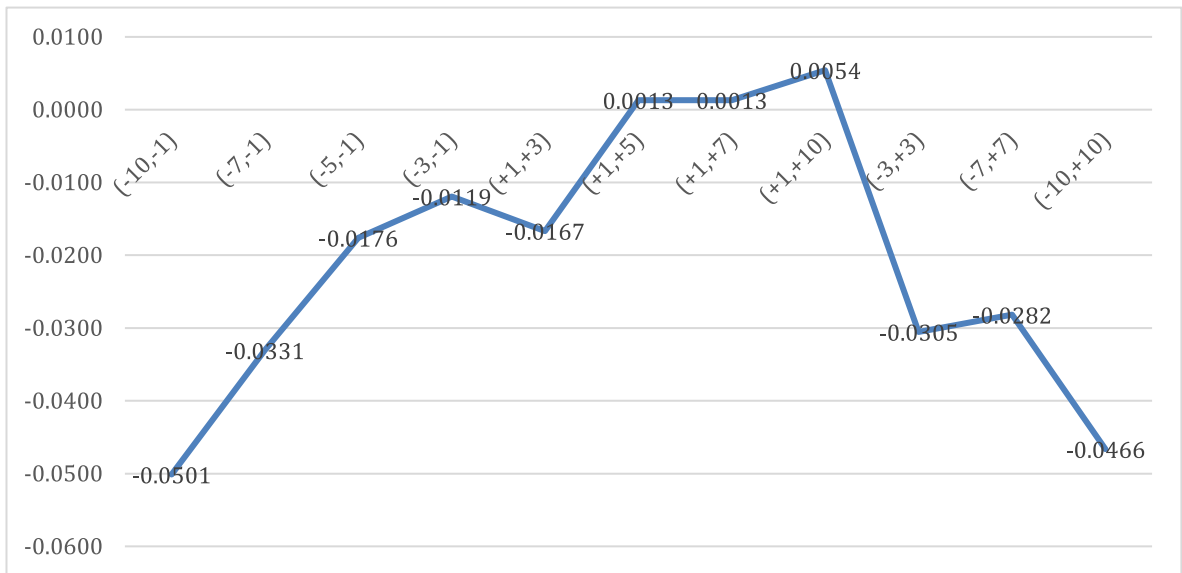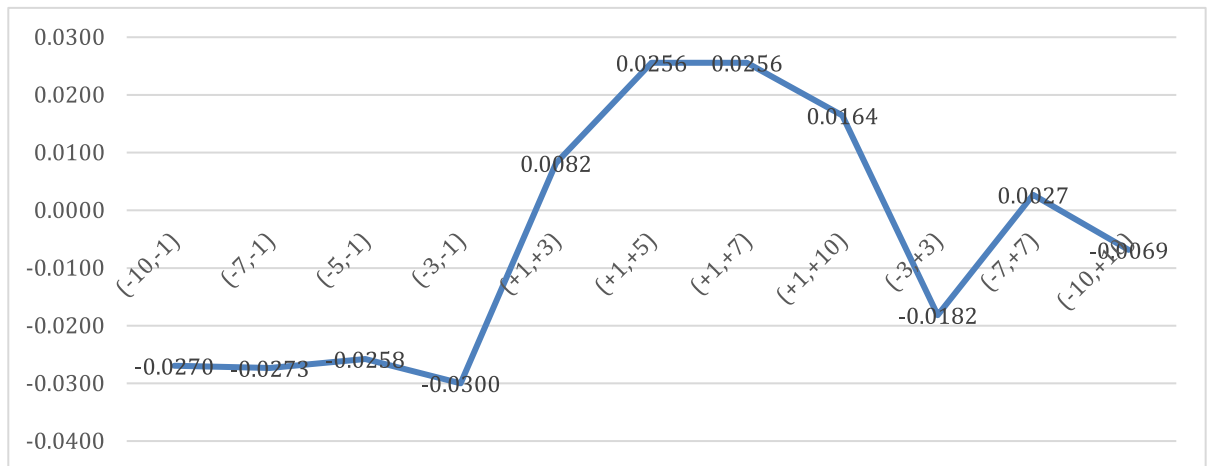


**Fig. 2.** Graphical display of CAAR of energy sector.

**Fig. 3.** Graphical display of CAAR of Pharma sector globally.



Source: Authors' compilation

**Fig. 4.** Graphical display of CAAR of Banking sector globally.
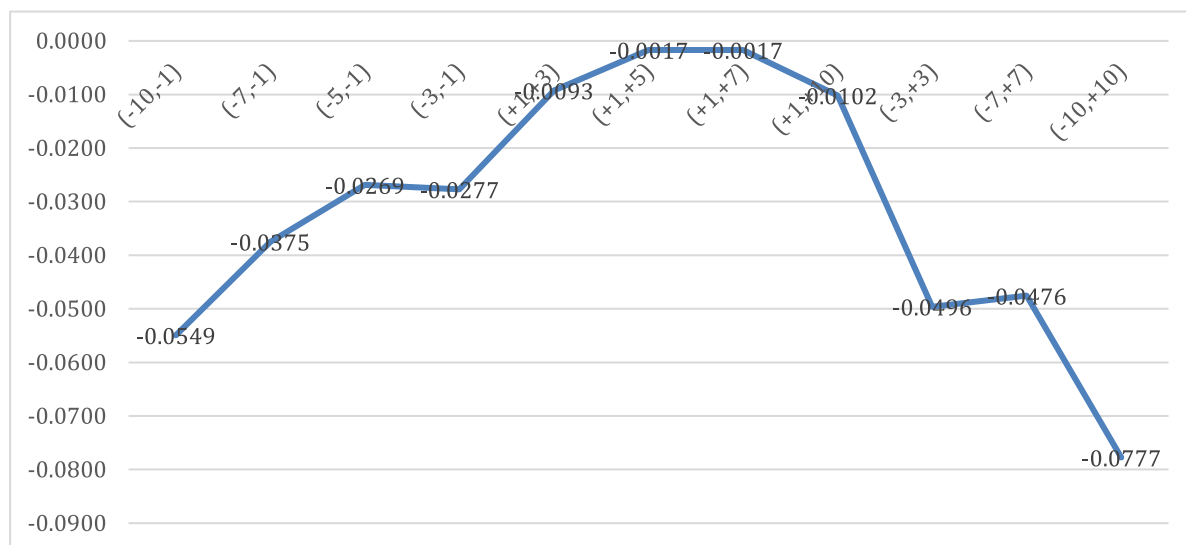Source: Authors' compilation.

results provide a novel perspective on the contagion effect of geopolitical conflicts on energy markets, enriching the understanding of the temporal dynamics at play and offering a comprehensive analysis of the financial ramifications of such conflicts.

**CRediT authorship contribution statement**

**Mohammad Zoynul Abedin:** Conceptualization, Project administration, Supervision, Writing – review & editing. **Michael A. Goldstein:** Writing – review & editing, Validation, Supervision. **Nidhi Malhotra:** Formal analysis. **Miklesh Prasad Yadav:** Methodology, Formal analysis, Data curation.

**Declaration of competing interest**

We have no competing interests to declare.

Source: Authors' compilation

**Fig. 5.** Graphical display of CAAR of Banking sector globally.
Source: Authors' compilation.

## Data availability

The authors do not have permission to share data.

## Supplementary materials

Supplementary material associated with this article can be found, in the online version, at doi:10.1016/j.frl.2024.106009.

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