Sharma, D., Verma, R., & T., N. (2026). Impact Assessment of US Tariff Escalation on the International Energy Sectoral Indices. *Energy RESEARCH LETTERS*, *7*(Early View). https://doi.org/10.46557/001c.156407

Peer-reviewed research

Impact Assessment of US Tariff Escalation on the International Energy Sectoral Indices

Dhanraj Sharma[1], Ruchita Verma[1] [a], Nihal T.[1]

[1] Department of Financial Administration, Central University of Punjab, India

Keywords: Energy sector indices, Tariff escalation, Event study

JEL Classifications: F13 Trade Policy - International Trade Organizations, G15 International Financial Markets, Q43 Energy and the Macroeconomy

https://doi.org/10.46557/001c.156407

Energy RESEARCH LETTERS

Vol. 7, Issue Early View, 2026

The study attempt to investigate the impact of United States (US) tariff escalation on the global energy stock indices, major focus on 25 energy indices. The findings disclose the presence of significant negative abnormal returns followed by announcement, accentuating heightened investors' sensitivity towards trade policy shocks. The results provide that the risk associated with the global policy and financial uncertainty exert strong adverse effects. Therefore, in driving the energy market volatility, the critical role is played by the uncertainty that is policy-induced, rather than fundamental price shocks.

I. Introduction

The continuing trade tensions between the US and China has intensely influenced the global financial markets, exhibit sharply through tariff announcements and reactive measures. The Trump administrative decision of tariff hikes, propounded in the year 2018 and converted in to significant actions on April 2, 2025, with tariff announcement. Such announcement has elicited intensified uncertainty of economic policy as well as investors' anxiety across the world (Wengerek et al., 2025). These policy moves have drastically reshaped investors' expectations because of intense volatility in the stock market as well as disparities in stock performance of market-induced sectoral indices. Major impact found on industries integrated with supply chain of the technology, industrials inputs, and energy at global level. (Selmi et al., 2020; Wengerek et al., 2025).

The existing research on the trade wars demonstrate the serious role played by the uncertainty in the financial market (Ang & Wang, 2023; Baker et al., 2016). The Smoot Hawley Tariff Act of 1930, examined by Ang and Wang (2023), elucidate the political uncertainty steered by legislative trade policy events, which result in significant aggregate firm-level declines in stock prices, with increase in volumes and return volatility. Hence, this understanding deepens the present analysis by providing a long-term perspective on the market reactions to protective shifts in the policy makeup. Likewise, studies in the recent year focused on the trade conflict between the US and China and highlights that announcements related with the tariff are often impulsive and bring immediate negative abnormal returns. Among sectors, the energy sector is most vulnerable to such shocks given the reliance on international trade flows as well as input-output linkages (An et al., 2020; Bouri et al., 2025; Shafique & Bhutta, 2023).

Beside this, the sector-specific research reveals the presence of differentiated impacts across industries and geographical locations. Selmi *et al.* (2020) provide that the stock of energy sector in the US market has underwent extensive losses following the announcement of trade war. Alternatively, An *et al.* (2020) show that energy and other resource firms, majorly functioning in the Africa is expose to announcement in the both US and Chinese markets with the varying degrees of financial stress. Further, research by Shafique and Bhutta (2023) endorse that the volatility and spillover in the Asian market, induced by the trade-cum-tariff war are uneven and frequently complemented with the opportunities for portfolio diversification, and cross-market interactions.

The present study expand the literature as it specifically examines the impact of President Donald Trump's tariff announcement (April 2, 2025) on the energy stock indices across numerous countries and stock exchanges. The novelty of the study lies in its attempt to move beyond the firm-level or single-country frameworks as it encompasses analysis of the comparative, multi-market response of the energy sector towards the unforeseen US tariff escalations. Hence, it attempt to capture the sudden shocks of the trade policy, which spread globally illuminating heterogeneous market reactions. In other words, providing nuanced insights into the cross-border transmission of geopolitical trade disturbances.

In contrast to existing studies which focus on the earlier phases of the trade war or tariff impacts (Selmi et al., 2020;

a Corresponding author email: ruchitaverma@cup.edu.in

Wengerek et al., 2025), the present study considers the unique market dynamics adjoining to the latest policy-move-shift during the Trump administration. It contributes to the existing literature as it exhibit evidence about the substantial adverse effects of US tariff escalation on the selected energy stock and reveals the persistent negative abnormal returns across markets. It also demonstrates that policy-induced risk and financial uncertainty significantly affect the abnormal returns.

II. Methodology

To achieve objective of the study the daily closing prices of 25 major energy indices across global stock exchanges are considered and collected from Yahoo Finance and website of the stock exchange. For each index, one year of daily data prior to the event was retrieved to perform market model estimations. Tariff rates relevant to each region were sourced from official announcements and cross-checked with international trade databases. The list of energy countries, stock exchanges, and energy indices is given in Appendix 1.

A. Event study method

This study employs an event study methodology to evaluate the impact of President Trump's reciprocal tariff announcement on 02 April 2025 on global energy sector indices, building on established approaches in recent empirical literature (Ang & Wang, 2023; Selmi et al., 2020; Wengerek et al., 2025).

For each index, an estimation window of 240 trading days (one calendar year) has been used to fit the market model parameters.

$$E\left(R_{it}\right) = \alpha_i + \beta_i R_{bt} + \varepsilon_{it} \tag{1}$$

where R_{it} represents the daily return on index *i*, R_{bt} is the return on the MSCI world index, and model parameters α_i (intercept) and β_i (slope) are estimated. R-squared (R^2), standard error of regression, and standard deviation of daily returns were calculated to assess the fit and reliability of the market model for each index (Ang & Wang, 2023). MSCI world index is selected as a benchmark index which captures global systematic risk. The estimation window starts from 01 April 2024 to 18 March 2025 and the event window of -10 to +10 spans from 19 March 2025 to 16 April 2025.

The event window is centred on April 2, 2025 ($t = 0$). Abnormal returns were computed as:

$$AR_{it} = e_t = R_{it} - E(R_t) \tag{2}$$

B. Panel Regression Method

The panel regression model applied in this study is as follow:

$$\begin{aligned} AR_{it} = \alpha + \beta_1 Ln\_GPR_{it} + \beta_2 FU_{it} + \beta_3 WTI_{it} \\ + \beta_4 Ln\_NEX_{it} + \beta_5 Ln\_SPGCE_{it} + \varepsilon_{it} \end{aligned} \tag{3}$$

where *AR* denotes abnormal returns; *GPR* refers to Geopolitical Uncertainty, as developed by Caldara and Iacoviello; *FU* represents Financial Uncertainty, measured by the Equity Valuation Financial Stress Index; *WTI* stands for West Texas Intermediate crude oil futures contract; *NEX* refers to the WilderHill New Energy Global Innovation Index (the first and leading global index for clean, alternative, and renewable energy); and *SPGCE* stands for the SandP Global Clean Energy Index (comprising 100 global clean energy-related businesses from both developed and emerging markets).

Data sources include Caldara and Iacoviello's website for *GPR*; the Office of Financial Research for the Financial Stress Index; CME Group for *WTI*; cleanenergyindex.com for *NEX*; and SandP Global for *SPGCE*. Furthermore, a study period of 90 days, from 19/03/2025 to 28/07/2025, was utilised for the regression analysis.

Event study demonstrates the immediate markets' reactions towards the tariff escalation of the US. On the other hand, panel regression reveals the sustained sectoral impacts associated with such escalation. However, the combined application of these two approaches provide comprehensive insights for the interrelated and evidence driven understanding in context dynamics of the international energy index.

III. Results

Table 1 reveals that in case of North American and Asia-Pacific indices, particularly the SandP 500 energy, SandP/TSX capped energy, and SandP/ASX 200 Energy, sharp negative abnormal returns faced, majorly on +1 and +2 days. It indicate the delayed market adjustments after event announcement. Similarly, European markets such as the CAC Energy and AEX Oil and Gas also recounted significant post-event declines. Fascinating is that the selected indices, including Bovespa electrical energy and Indonesia SE energy, exhibited significant positive returns. Overall, the impact was not concentrated on day 0 but manifested more strongly in subsequent trading sessions, underscoring asymmetric regional sensitivities to the tariff escalation shock.

Furthermore, the cumulative abnormal returns have been reported in Table 2 for sample indices during various event windows: -1, +1; -3, +3; -5, +5; and -10, +10, for robustness checks. The results confirm the adverse impact of the reciprocal tariff policy announcement on the global energy sector.

Table 4 reports the Hausman test statistic ($p = 0.4501$), which indicates the appropriateness of the Random Effects model, suggesting that there is no evidence of endogeneity arising from unobserved heterogeneity. Hence, the estimation with the random effects provides vital understanding about the dynamics of the abnormal returns post announcement. The results provide that *Ln_GPR* is significantly negative which indicate that sharp-sudden policy uncertainty reduces abnormal returns. It also shows that majority of investors at worldwide respond adverse to policy-induced risks as it increase volatility and spillover in the market. *FU* exhibits negative outcome highlighting that the instability in the financial market vanish the investors' confidence and destroys abnormal returns. *WTI* is insignificant, meaning that the fluctuation in the price of crude oil is not a leading driver behind abnormal returns.

Table 1. Abnormal returns

Energy Indices	-5	-4	-3	-2	-1	0	1	2	3	4	5
1	0.012	-0.006	0.004	0.012	0.003	-0.002	-0.056***	-0.057***	0.000	-0.023**	0.042***
2	0.000	-0.001	-0.014	0.000	0.011	-0.003	0.001	-0.075***	0.041***	-0.004	0.001
3	-0.002	0.009	-0.012	-0.023	0.007	-0.030	0.011	0.028	-0.052***	0.038**	-0.049***
4	-0.014	-0.005	0.016	0.003	-0.009	0.004	0.017	-0.016	-0.021	0.017	-0.031**
5	-0.002	0.014	-0.009	0.001	0.021	-0.006	-0.003	-0.113***	0.032*	-0.028*	0.011
6	0.012	-0.004	0.000	0.014	0.005	0.004	-0.048***	-0.051***	-0.008	-0.045***	0.047***
7	0.027	-0.001	-0.002	0.008	-0.011	-0.010	-0.026	-0.032	-0.037	0.014	-0.092*
8	0.027	0.008	0.006	0.023	0.005	-0.009	-0.028***	0.009	-0.012	0.028***	-0.005
9	0.006	0.013	0.015	-0.025**	0.010	-0.013	-0.015	-0.061***	-0.063***	0.043***	-0.058***
10	0.025	-0.012	-0.007	-0.044**	0.006	-0.025	0.001	0.045**	-0.054***	-0.002	-0.068***
11	0.004	-0.023	0.006	-0.038**	0.035**	0.011	-0.035**	-0.022	-0.024	0.052***	-0.062***
12	0.009	0.014*	0.017**	-0.006	0.005	-0.002	0.023***	-0.025***	-0.052***	0.010	-0.039***
13	0.001	0.000	0.001	-0.006	0.002	0.000	0.037***	0.008	-0.005	0.006	-0.007
14	-0.010	-0.030**	0.003	0.028*	0.005	-0.048***	-0.033**	0.058***	0.003	0.024*	0.023
15	-0.004	-0.017	-0.016	-0.011	-0.016	-0.013	-0.013	-0.020	-0.020	0.005	-0.052***
16	-0.010	0.010	0.002	0.011	0.005	-0.019	0.001	0.001	-0.099***	0.006	-0.072***
17	0.013	-0.013	0.010	-0.014	0.006	0.009	-0.003	-0.005	0.013	-0.051***	0.024*
18	0.014*	0.005	-0.001	-0.008	-0.013	0.004	-0.019**	0.009	-0.002	0.009	-0.012
19	0.003	0.008	0.028*	-0.041***	0.027*	-0.006	0.016	-0.009	-0.019	0.032**	-0.053***
20	0.000	0.031*	0.008	-0.005	-0.038**	-0.012	0.028*	-0.011	-0.012	-0.017	0.005
21	-0.003	0.003	-0.013	-0.018	-0.002	-0.010	-0.020	-0.021	-0.038	0.007	-0.043*
22	0.008	0.002	-0.023	-0.007	0.001	-0.002	-0.077***	-0.043**	-0.030*	0.030*	-0.069***
23	0.018	0.003	-0.025	0.014	0.015	-0.005	-0.019	-0.018	-0.072***	0.026*	0.006
24	0.020*	0.002	-0.014	0.005	-0.003	-0.002	-0.034***	-0.042***	-0.042***	0.009	-0.062***
25	0.021	0.003	-0.011	0.010	-0.006	-0.012	-0.037***	-0.061***	-0.048***	0.015	-0.069***

Note: The table shows abnormal returns for global energy indices around the April 2, 2025, US tariff announcement. ***, **, and * denote statistical significance at 1%, 5%, and 10% levels, respectively.

Table 2. Cumulative abnormal returns

Energy Indices	CAR [1,1]	CAR [-3,3]	CAR [-5,5]	CAR [-10,10]
1	-0.054	-0.095	-0.070	-0.079
2	0.009	-0.039	-0.043	0.004
3	-0.011	-0.071	-0.076	-0.048
4	0.012	-0.006	-0.039	0.134
5	0.012	-0.076	-0.080	-0.047
6	-0.039	-0.085	-0.075	-0.049
7	-0.048	-0.111	-0.163	-0.100
8	-0.032	-0.006	0.052	-0.003
9	-0.018	-0.152	-0.149	-0.114
10	-0.018	-0.078	-0.134	-0.079
11	0.011	-0.067	-0.097	-0.039
12	0.026	-0.040	-0.046	0.047
13	0.039	0.036	0.036	0.040
14	-0.076	0.016	0.022	0.028
15	-0.043	-0.109	-0.176	-0.101
16	-0.013	-0.098	-0.163	-0.041
17	0.012	0.016	-0.010	-0.063
18	-0.029	-0.030	-0.015	-0.048
19	0.038	-0.004	-0.014	-0.022
20	-0.022	-0.041	-0.021	-0.049
21	-0.032	-0.121	-0.157	-0.163
22	-0.079	-0.183	-0.213	-0.107
23	-0.009	-0.109	-0.056	-0.045
24	-0.039	-0.132	-0.164	-0.072
25	-0.055	-0.166	-0.196	-0.105

Note: The table reports the cumulative abnormal returns (CARs) of selected energy indices in various event windows.

Whereas in case of *Ln_NEX* negative significant coefficient are seen, which suggest that market response to the clean energy innovation tend to experience adverse abnormal returns because of tariff escalations. This signifies that investors perceive clean energy firms are extensively sensitive towards trade disturbances. Possibly, because of their heavy reliance on global supply chains, emerging technologies, as well as policy-sensitive investments. Alternatively, *SPGCE* is insignificant, attributable to the fact that globally diversified portfolios have shield to overcome shocks more effectively than other specialised and innovation dictated firms. Hence, the findings of the study emphasize the importance of policy stability for fostering investor confidence under the uncertainty driven market because of such announcement.

The findings of the study carried by Fatemi *et al.* (2025), highlights the tariffs' disruptive effects on the functioning of the stock market and same is aligned with the Kaczmarek *et al.* (2025a) which reveals the sectoral vulnerability in the clean energy sector. Contrasting Wengerek *et al.* (2025), which highlights immediate shocks, the results of the present study emphasis the delayed adjustments, because of asymmetric temporal and regional sensitivities across the global market. Contemporary evidence in the field exerts that sensitive and intensified tariff exposure magnifies the vulnerability in the sectoral indices and can influence the response of global equity market (Kaczmarek et al., 2025a). Furthermore, tariffs escalations may substantially reduce the liquidity in the stock market (Fatemi et al., 2025; Klomp, 2025), while at the same time serving as a test of global stress that provokes adverse reaction of the protective actions (Kaczmarek et al., 2025b). Adding to these findings, the announcement of the reciprocal tariff have shown to trigger extensive financial contagion across global market because of interconnectedness (Akhtaruzzaman et al., 2025). The results of the study suggests resilience mechanisms, including planned allocation across conventional and clean-energy indices, and adaptive responses to policy induced risk and financial uncertainty. All such measure in collective application help to mitigate negative abnormal returns against tariff-induced volatility and spillover in the global stock market.

IV. Conclusion

This study contributes to the existing literature in the field as it exhibit systematic evidence about the substantial adverse effects of US tariff escalation on the selected energy stock indices worldwide. With the application of the event study, it reveals the persistent negative abnormal returns

Table 3. Descriptive statistics

	Mean	Standard Deviation	Kurtosis	Skewness	Minimum	Maximum
AR	0.000	0.017	4.808	-0.534	-0.112	0.083
Ln_GPR	5.150	0.312	0.990	0.588	4.513	6.296
FU	-0.207	0.084	0.377	0.862	-0.348	0.050
WTI	64.949	3.919	-0.154	0.469	57.130	75.140
Ln_NEX	5.739	0.107	-0.666	-0.075	5.512	5.945
Ln_SPGCE	6.304	0.468	-1.675	-0.432	5.512	6.790

Note: This table reports descriptive statistics of the variables used in the model. *AR* stands for abnormal returns; *Ln_GPR* stands for log of geopolitical uncertainty; *FU* stands for financial uncertainty; *WTI* stands for West Texas Intermediate crude oil future contract; *Ln_NEX* stands for log of WilderHill New Energy Global Innovation index, and *Ln_SPGCE* stands for SandP Global Clean Energy index.

Table 4. Results of Panel Regression

AR	Fixed Effect Coefficient (p value)	Random Effect Coefficient (p value)
C	0.092 (0.144)	0.120 ** (0.023)
Ln_GPR	-0.003 ** (0.013)	-0.003 ** (0.012)
FU	-0.043 *** (0.001)	-0.046 *** (0.000)
WTI	-0.000 (0.398)	-0.000 (0.378)
Ln_NEX	-0.024 * (0.066)	-0.0196 ** (0.040)
Ln_SPGCE	0.010 (0.493)	0.001 (0.315)
R_Square	0.023	0.015
F-Statistics (p value)	1.780 *** (0.006)	7.056 *** (0.000)
DW stat	2.246	2.230
Huasman Test (p value)	4.727 (0.450)	

Note: Table reports panel regression estimates of the determinants of abnormal returns, using fixed and random effects specifications. ***, **, and * denote statistical significance at 1%, 5%, and 10% levels, respectively. Variable definitions are in Table 3 notes.

across markets, indicating swift market assimilation of policy shocks. Beside this, the application of the panel regression demonstrates that at global level policy-induced risk and financial uncertainty significantly affect the abnormal returns. However, in case of price of crude oil only marginal influence observed. The study exhibits that the policymakers while advancing decarbonisation goals must prioritise framework that preserve energy as well as mitigate systemic risks. Hence, in order to foster global energy stability and climate resilience, the multilateral cooperation is suggested as it will enhance risk-sharing, technology exchange, and sustainable infrastructure investments. Future research can figure out on the presence of cross-sectoral contagion, investors' responses in heterogeneous clusters, and long-run adjustment mechanisms in the interconnect market. The researchers may also investigate the cross-market heterogeneity and structural differences between fossil fuel and clean-energy to suggest policy and strategies for investment across interconnected markets to mitigate differentiated risk exposures.

Submitted: September 01, 2025 AEST. Accepted: October 18, 2025 AEST. Published: March 20, 2026 AEST.

References

Akhtaruzzaman, M., Boubaker, S., Hegazi, A., & Manita, R. (2025). Does the US reciprocal tariff announcement trigger financial contagion? *Journal of Accounting Literature*, 1–20. https://doi.org/10.1108/JAL-04-2025-0198

An, J., Mikhaylov, A., & Richter, U. H. (2020). Trade war effects: Evidence from sectors of energy and resources in Africa. *Heliyon*, *6*. https://doi.org/10.1016/j.heliyon.2020.e05693

Ang, J., & Wang, J. (2023). The trade war's impact on the financial market: Observations from the historical global trade war-the Smoot Hawley Tariff Act. *Global Finance Journal*, *55*, 100802. https://doi.org/10.1016/j.gfj.2022.100802

Baker, S. R., Bloom, N., & Davis, S. J. (2016). Measuring economic policy uncertainty. *The Quarterly Journal of Economics*, *131*, 1593–1636. https://doi.org/10.1093/qje/qjw024

Bouri, E., Jalkh, N., & Demir, E. (2025). Higher-Order Co-Moment Contagion during Trump's Second Presidential Term: A Trade Policy Uncertainty Perspective. *Research in International Business and Finance*, 103028. https://doi.org/10.1016/j.ribaf.2025.103028

Fatemi, D., Kim, J. C., Mazumder, S., & Su, Q. (2025). Tariffs: Their Implications for Stock Liquidity. *Finance Research Letters*, 107907. https://doi.org/10.1016/j.frl.2025.107907

Kaczmarek, T., Demir, E., Rouatbi, W., & Zaremba, A. (2025a). Tariff exposure and sectoral vulnerability: Evidence from equity market responses to the 2025 US trade shock. *Research in International Business and Finance*, 102925. https://doi.org/10.1016/j.ribaf.2025.102925

Kaczmarek, T., Demir, E., Rouatbi, W., & Zaremba, A. (2025b). Tariffs announcement as a global stress test: Early stock market reactions to US protectionism. *Finance Research Letters*, 108080. https://doi.org/10.1016/j.frl.2025.108080

Klomp, J. (2025). Trump tariffs and the US Defense Industry. *PloS One*, *20*, e0313204. https://doi.org/10.1371/journal.pone.0313204

Selmi, R., Errami, Y., & Wohar, M. E. (2020). What Trump's China tariffs have cost US companies? *Journal of Economic Integration*, *35*, 282–295. https://doi.org/10.11130/jei.2020.35.2.282

Shafique, A., & Bhutta, N. T. (2023). Mean and volatility spillover in Asian economies: Evidence from trade war. *Plos One*, *18*, e0292819. https://doi.org/10.1371/journal.pone.0292819

Wengerek, S. T., Uhde, A., & Hippert, B. (2025). Share price reactions to tariff imposition announcements during the first Trump administration. *Finance Research Letters*, 107381. https://doi.org/10.1016/j.frl.2025.107381

Appendix

Table A. List of selected energy indices from global stock markets

S. No.	Country	Stock Exchange	Energy Index
1	United States	NYSE/Nasdaq	SandP 500 Energy
2.	China	Shanghai Stock Exchange	SSE Energy
3	Japan	Tokyo Stock Exchange	TOPIX Electric Power and Gas
4	India	National Stock Exchange	Nifty Energy
5	Hong Kong	Hong Kong Exchanges	Hang Seng Energy Index
6	Canada	Toronto Stock Exchange	SandP/TSX Capped Energy Index
7	United Kingdom	London Stock Exchange	FTSE 350 Oil and Gas Index
8	Saudi Arabia	Tadawul	Tadawul Energy Index
9	Australia	Australian Securities Exchange	SandP/ASX 200 Energy
10	South Korea	Korea Exchange	KOSPI Energy and Chemicals
11	South Africa	Johannesburg Stock Exchange	FTSE/JSE Oil and Gas Index
12	Spain	BME Exchange	IBEX 35 Energy (IBEXIE)
13	Brazil	B3 (Brasil Bolsa BalcÃ£o)	Bovespa Electrical Energy (IEE)
14	Indonesia	Indonesia Stock Exchange	Indonesia SE Energy
15	Russia	Moscow Exchange	MOEX Oil and Gas Index
16	Malaysia	Bursa Malaysia	FTSE Bursa Malaysia Energy Index
17	Israel	Tel Aviv Stock Exchange	TA Energy Utilities
18	Jordan	Amman Stock Exchange	Utilities and Energy (AMUEX)
19	Poland	Warsaw Stock Exchange	WIG-OILandGAS
20	Kuwait	Boursa Kuwait	Kuwait Energy Sector (BKE)
21	Argentina	Bolsas y Mercados Argentinos	SandP/BYMA Argentina General Energy
22	Sweden	Nasdaq Stockholm	OMX Stockholm Energy Index
23	New Zealand	New Zealand Exchange	SandP/NZX Energy Index
24	France	Euronext Paris	CAC Energy
25	Netherlands	Euronext Amsterdam	AEX Oil and Gas Sector Index