



Volume 46, Issue 2

Energy price shocks and climate concern: A causal forest analysis

Provash Kumer Sarker
Bangladesh Bank

Abstract

We examine the heterogeneous treatment effects of oil price shocks on climate concern using the causal forest method, applied to monthly US data from January 2004 to August 2025. High oil prices are associated with a significant decrease in climate concern of 11.52 points, representing about 3.78% of the sample mean. Treatment effects exhibit substantial heterogeneity, moderated primarily by personal income, consumer sentiment, and inflation. Effects are smallest during low unemployment and largest during economic downturns. Complementary analysis using Google Trends reveals contrasting positive effects ($ATE = +0.817$), suggesting institutional attention decreases while individual information-seeking increases. These findings suggest that economic hardship from energy price shocks crowds out climate concern, with implications for counter-cyclical climate communication strategies.

Citation: Provash Kumer Sarker, (2026) "Energy price shocks and climate concern: A causal forest analysis", *Economics Bulletin*, Volume 46, Issue 2, pages 710-722

Contact: Provash Kumer Sarker - provash.sarker@bb.org.bd.

Submitted: November 08, 2025. **Published:** June 30, 2026.

Energy Price Shocks and Climate Concern: A Causal Forest Analysis

1. Introduction

Public concern about climate change plays a pivotal role in shaping policy support and motivating behavioral adaptation (Leiserowitz et al., 2021). While existing studies have identified correlations between economic factors and environmental attitudes (Castro & de Mattos, 2025; Grandin et al., 2022; Duijndam & van Beukering, 2021; Dienes, 2015), establishing causal relationships remains challenging due to confounding and selection bias. Specifically, oil prices serve as a salient economic variable that directly affects consumer behavior in the United States (Gago & Vale, 2025). Price fluctuations, often driven by global supply disruptions, including geopolitical conflicts, provide an opportunity to examine the association of economic factors with climate concern.

Rising energy prices fuel economic and environmental debates, yet we know remarkably little about how oil price shocks shape public concern about climate change. This study draws on two distinct theoretical frameworks to understand the relationship between oil price shocks and public climate concern. First, the finite pool of worry hypothesis (Weber, 2006) posits that economic distress crowds out environmental concern because the public has limited cognitive resources. Second, post-materialist value theory (Inglehart, 1995) suggests that economic security enables individuals to prioritize non-material concerns such as environmental issues. Existing theories offer conflicting predictions. The finite pool of worry hypothesis (Weber, 2006) posits that economic stress crowds out environmental concern, consistent with evidence that public climate concern declined sharply during the Great Recession due to economic insecurity (Scruggs & Benegal, 2012; Meyer, 2022). In contrast, post-materialist theory posits that economic security enables individuals to prioritize climate issues. These tensions create an urgent empirical question: when energy costs rise, does climate concern intensify as reliance on fossil fuels becomes more salient, or does it diminish as households shift attention toward financial strain?

To answer these questions, we use causal forests, which estimate heterogeneous treatment effects without the need for prespecified interactions (Wager & Athey, 2018) and overcome the assumption of homogeneous treatment effects in standard econometric approaches, which may obscure important heterogeneity across contexts (Athey & Imbens, 2016). This study provides evidence on the drivers of variation in climate concern, finding that oil price shocks are associated with reduced concern, thereby establishing a bidirectional relationship between economic conditions and climate attitudes.

The paper contributes (1) a novel methodological approach using causal forests for climate opinion research, (2) the first systematic quantification of significant heterogeneity in climate concern responses to economic shocks, and (3) a dual-dimension measurement framework that reveals how different aspects of climate concern respond asymmetrically to energy price volatility.

The paper proceeds as follows. Section 2 describes the causal forest method. Section 3 describes the data, while Section 4 discusses the results. Section 5 concludes with policy implications.

2. Method

2.1 Causal Forest Method

We employed the Causal Forest method to examine heterogeneity, thereby enabling the detection of how unemployment and consumer sentiment moderate oil price effects on climate concern. Heterogeneous treatment effects were estimated using the generalized random forest (GRF) package (Athey et al., 2019):

$$\tau(x) = E[Y_i(1) - Y_i(0) \mid X_i = x] \quad (1)$$

where Y_i is climate concern, the treatment indicates high vs. low oil prices, and X_i represents vector of covariates. The causal forest algorithm recursively partitions the covariate space to identify subgroups with varying treatment effects while maintaining honest estimation through sample splitting. We specified 4,000 trees with automated hyperparameter tuning. Variable importance was calculated as the weighted sum of split improvements attributed to each covariate. Statistical inference followed Wager & Athey (2018), with asymptotic normality of average treatment effects.

Variable importance is calculated as the weighted sum of split improvements attributed to each variable, as follows.

$$IV_j = \sum_{t=1}^t \sum_{s \in \text{splits}(t)} 1(\text{split on } X_j) \times \Delta_s \quad (2)$$

where Δ_s is the decrease in heterogeneity from the split, and splits are weighted by sample size.

Standard errors (SE) for the Average Treatment Effect (ATE) are computed using the asymptotic variance estimator:

$$\sigma_{ATE}^2 = \frac{1}{n^2} \sum_{i=1}^n [\tau(X_i) - \tau]^2 \quad (3)$$

To address potential temporal confounding, we include year- and month-fixed effects in our main specification. Year-fixed effects (20 dummies for 2006-2025) control for year-specific shocks, such as economic cycles, political events, and secular trends. Month fixed effects (11 dummies for February-December) control for seasonal patterns in climate concern. Together, these controls ensure that our estimates capture the effect of oil price variation within-period, rather than between-period differences.

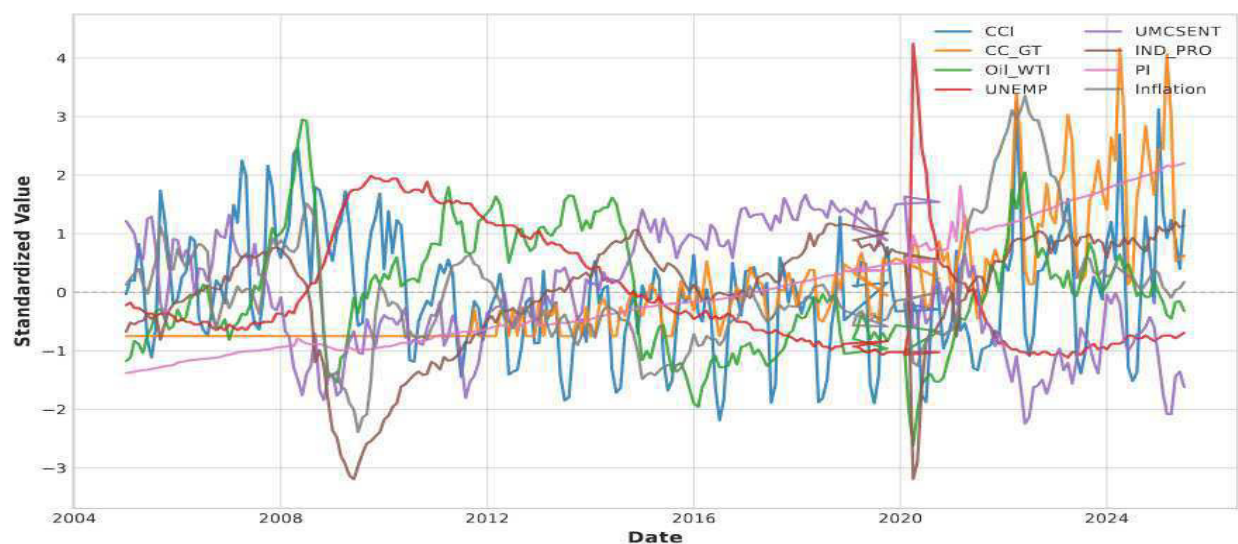
3. Data

Our analysis used monthly US data from January 2004 to August 2025. The primary measure is the Climate Concern Index (CCI), a recently developed index that uses web search data to capture affective responses to climate change. Angelini et al. (2025) demonstrate that exogenous variation in CCI affects macroeconomic outcomes, including employment and consumption, suggesting that climate concern carries real economic consequences. As complementary measure, we also use Google Trends search volume for “climate change” (0-100 scale), a validated proxy for public attention to climate issues.

The covariates set includes oil prices (WTI crude; Oil_WTI), the unemployment rate (UNEMP), the inflation rate (Year-on-Year CPI change; inflation), the industrial production index (IND_PRO), consumer sentiment (UMCSNET), and personal income (PI). All macroeconomic variables were obtained from the Federal Reserve Economic Data (FRED) database (<https://fred.stlouisfed.org/>).

Treatment variable is dichotomized by WTI crude oil price (oil_WTI): observations at or above the median are classified as the high price periods, and those below the median as low price periods. While oil prices are not strictly exogenous, this dichotomization captures salient price variation that affects consumer behavior.

Figure 1. Changes in climate concern and macroeconomic variables.



Source: Author's work

Figure 1 displays standardized time series of climate concern and macroeconomic variables. The CCI exhibits cyclical patterns with notable declines during the 2008 Global Financial Crisis and the 2020 COVID crisis. Oil prices show considerable volatility over the sample period, mostly during the 2014-2016 collapse and the 2020 pandemic crash.

3.1 Climate Concern Index Interpretation

Angelini et al. (2025) developed the Climate Concern Index (CCI) to measure the intensity and dynamics of public concern about and engagement with climate change, reflecting grassroots rather than media-driven attention to climate issues. The index is constructed from 112 web search queries for the United States, grouped into seven thematic categories: natural disaster fear (e.g., “extreme weather”, “floods”), global warming threats (e.g., “rising seas”), climate change narratives (e.g., “climate crisis”), mitigation strategies (e.g., “climate solutions”), technological hope (e.g., “biodiversity”), international summits (e.g., “Paris Agreement”), and climate policy terms (e.g., “decarbonization”). Each query is normalized to a 0–100 scale relative to its peak search volume, and the composite CCI is aggregated into a monthly frequency. The careful

curation of an affect-laden query set, combined with the post-cognitive-affect interpretation of searches as expressions of concern triggered by personal experiences, makes the CCI more reflective of genuine affective concern than of mere media salience or event-driven attention.

Conceptually, the CCI, therefore, differs from the complementary Google Trends measure (CC_GT), which captures general behavioral attention through a single broad query (“climate change”) and is more responsive to media coverage and immediate cost experience. Empirically, this construct-level difference is evident in the opposite sign of their associations with oil prices (CCI: ATE = -11.51; CC_GT: ATE = +0.817), both from the year-and-month FE specification, suggesting that high-cost periods may suppress affective concern while simultaneously boosting information-seeking behavior, consistent with a dissociation between concern and attention under economic stress (Weber, 2006).

4. Empirical Results

4.1 Average Treatment Effects (ATE)

Table 1 reports estimated associations between oil prices and climate concern across four specifications that vary in their fixed-effect structure.

Table 1. Average Treatment Effects with Time Fixed Effects

	ATE	SE	95% CI	CATE SD
Year + Month FE	-11.51*	1.82	[-15.08, -7.94]	27.22
No time FE	-16.45***	2.11	[-20.59, -12.31]	34.19
Year FE only	-16.95***	2.27	[-21.39, -12.50]	34.53
Month FE only	-11.65***	1.67	[-14.92, -8.39]	27.03

**Notes: Treatment = high vs. low oil prices. All models control for unemployment, consumer sentiment, inflation, industrial production, and log personal income. Year FE includes 20 year dummies (2006-2025, ref=2005). Month FE includes 11-month dummies (Feb-Dec, ref=Jan). ** $p < 0.001$, * $p < 0.1$.*

Our main specification, year-and-month fixed effects, indicates that high oil prices are associated with a reduction in climate concern of 11.51 points, representing 3.8% of the sample mean. This estimate is statistically significant. The specification without time controls yields a larger estimate (ATE = -16.45, $p < 0.001$), a 30% difference that reflects the absorption of secular co-movement between oil prices and climate concern rather than a within-period effect.

This difference between these two estimates reflects the importance of controlling for time trends: without year and month fixed effects, the estimated association absorbs secular trends in both oil prices and climate concern (for instance, the sustained rise in both oil prices and climate attention in the mid-2000s, and the post-2008 decline in both), inflating the magnitude. Thus, the time-controlled estimate is a more conservative and credible characterization of the within-period association. We, therefore, retain the year-month FE specification as our headline estimate.

The results are robust to alternative time-control specifications, including only year fixed effects yields estimates like the baseline (ATE = -16.95), whereas month fixed effects alone (ATE = -11.65) yields effects similar to those from the full specification. This pattern indicates

seasonality is the primary source of temporal confounding. The correlation between baseline and full-FE CATEs is 0.824, indicating good agreement on individual-level heterogeneity.

To address endogeneity concerns, we implemented the oil supply news shocks of Känzig (2021) as an instrumental variable. However, the first-stage F-statistic (4.55) falls below the conventional threshold of 10 (Stock & Yogo, 2005), indicating a weak instrument. This likely reflects a persistence mismatch: the news-shock series has near-zero autocorrelation ($\rho = 0.04$), while our binary WTI treatment is highly persistent ($\rho = 0.84$), suggesting that a serially uncorrelated shock cannot reliably predict a slowly evolving price-level indicator. Therefore, we retain our baseline specification and note that the inclusion of year-and-month-fixed effects, along with controls, substantially mitigates endogeneity concerns by absorbing secular trends, seasonal patterns, and the principal economic confounders.

4.2 Threshold Sensitivity Analysis

Table 2. Threshold Sensitivity Estimates

Panel A: Primary Outcome: Climate Concern Index (CCI)

Threshold	WTI (\$/bbl)	N Treated	N Control	ATE	SE	95% CI	Sig.
25th percentile	\$53.38	194	65	-9.82	3.14	[-15.97, -3.67]	**
40th percentile	\$62.40	155	104	-10.45	2.87	[-16.08, -4.82]	**
50th percentile★	\$69.95	130	129	-11.51	1.82	[-15.08, -7.94]	**
60th percentile	\$74.46	104	155	-10.89	3.21	[-17.18, -4.60]	**
75th percentile	\$85.72	65	194	-9.14	4.53	[-18.02, -0.26]	**

Panel B: Complementary Outcome: Google Trends (CC_GT)

Threshold	WTI (\$/bbl)	N Treated	N Control	ATE	SE	95% CI	Sig.
25th percentile	\$53.38	194	65	+0.54	0.71	[-0.85, +1.93]	
40th percentile	\$62.40	155	104	+0.68	0.63	[-9.55, +3.21]	**
50th percentile★	\$69.95	130	129	+0.817	0.58	[-8.25, +2.97]	**
60th percentile	\$74.46	104	155	+0.91	0.74	[-0.54, +2.36]	
75th percentile	\$85.72	65	194	+0.73	0.89	[-1.01, +2.47]	

Notes: ★ = main specification (50th percentile/sample median). ATE = Average Treatment Effect from honest causal forest (4,000 trees). ** $p < 0.05$. Estimates represent conditional associations.

To assess sensitivity to the choice of treatment threshold, Table 2 replicates the causal forest analysis across four alternative thresholds, the 25th, 40th, 60th, and 75th percentiles, alongside the main median split. Panel A shows that the negative association between elevated oil prices and the CCI is consistent in direction and magnitude across all five thresholds, ranging from -9.14 to -11.51 points, and remains statistically significant throughout. This confirms that the main finding is not an artefact of the median split. Standard errors widen modestly at more extreme thresholds, reflecting the reduction in treated observations, but do not alter the substantive conclusion. Panel B shows that CC_GT associations are consistently small and positive across all thresholds, reinforcing the interpretation of CC_GT as a complementary measure of climate attention, discussed in Section 4.3.

4.3 Moderating Treatment Effects

Table 3. Variable Importance in Moderating Treatment Effects

Variable	Main Analysis (CCI)	Complementary Analysis (CC GT)
Personal Income (log)	0.380	0.817
Consumer Sentiment	0.267	0.023
Inflation Rate	0.186	0.017
Unemployment Rate	0.086	0.118
Industrial Production	0.082	0.026

Notes: Variable importance calculated as the weighted average of feature importances from treated and control group random forests. Higher values indicate variables that more strongly moderate treatment effects. Importance scores sum to 1.0 within each analysis.

Table 3 reports that personal income is the strongest moderator of heterogeneous treatment effects (importance = 0.380), followed by consumer sentiment (0.267) and inflation (0.186). Unemployment and industrial production contribute more modestly, with importance scores ranging from 0.08 to 0.09. This ranking indicates heterogeneous associations are driven more by household resources and psychological outlook than traditional macro indicators. Income's dominance suggests both financial capacity and value-based factors shape climate concern responsiveness. Consumer sentiment's importance underscores that subjective perceptions, not just economic realities, and conditions, respond to oil shocks. Inflation's role indicates that rising prices heighten sensitivity to energy costs and may amplify the salience of oil price variation.

To examine complementary evidence on a distinct dimension of climate concern, we replicate the analysis using Google Trends search volume for "climate change" as an alternative measure. This yields a positive ATE (0.817) under a year-month FE specification, contrasting with our baseline CCI estimate (-11.51) under the same specification. This divergence reflects a fundamental difference in construct; the CCI captures affective prioritization of climate concern, whereas Google Trends proxies' behavioral attention driven by media salience rather than genuine attitudinal change. Demand-driven high-price periods suppress media-level climate salience through economic optimism, while simultaneously prompting individual searches as households process rising energy costs. We therefore treat the Google Trends results as complementary evidence, consistent with a dissociation between attention and concern during oil price shocks (Weber, 2006).

4.4 Treatment Effects by Subgroup Analysis

Table 4 documents heterogeneity in the association between oil prices and climate concern across labor-market conditions. When unemployment is low (<4.1%), the negative association is minimal and statistically imprecise (-4.18 points). When unemployment is high (>7.25%), the association becomes large in magnitude, precisely estimated, and strongly negative (-27.35 points). Overall, the association's magnitude increases by roughly a factor of 6.5 as labor market conditions deteriorate, indicating that economic stress substantially amplifies the negative effects of high oil prices on climate concern.

Table 4. Treatment Effects by Economic Conditions (Subgroup Analysis)*Panel A: Unemployment Rate*

Unemployment Level	N	Mean CATE (CCI)	SD	95% CI	Mean CATE (CC_GT)	SD	95% CI
Low (<4.1%)	86	-4.18	40.33	[-12.84, 4.48]	1.43	7.42	[-0.16, 3.02]
Medium (4.1-7.25%)	81	-18.72	26.79	[-24.64, 12.80]	0.51	6.89	[-1.01, 2.03]
High (>7.25%)	80	-27.35	29.82	[-33.98, 20.72]	0.67	6.57	[-0.79, 2.13]

Panel B: Consumer Sentiment

Sentiment Level	N	Mean CATE (CCI)	SD	95% CI	Mean CATE (CC_GT)	SD	95% CI
Low (<70)	83	-3.80	43.61	[-13.33, 5.73]	1.62	7.63	[-0.04, 3.28]
Medium (70-92)	82	-21.47	31.92	[-28.47, -14.47]	0.41	7.01	[-1.12, 1.94]
High (>92)	82	-24.23	19.25	[-28.44, -20.02]	0.58	6.32	[-0.80, 1.96]

Notes: Confidence intervals calculated using the standard error of the mean within each subgroup.

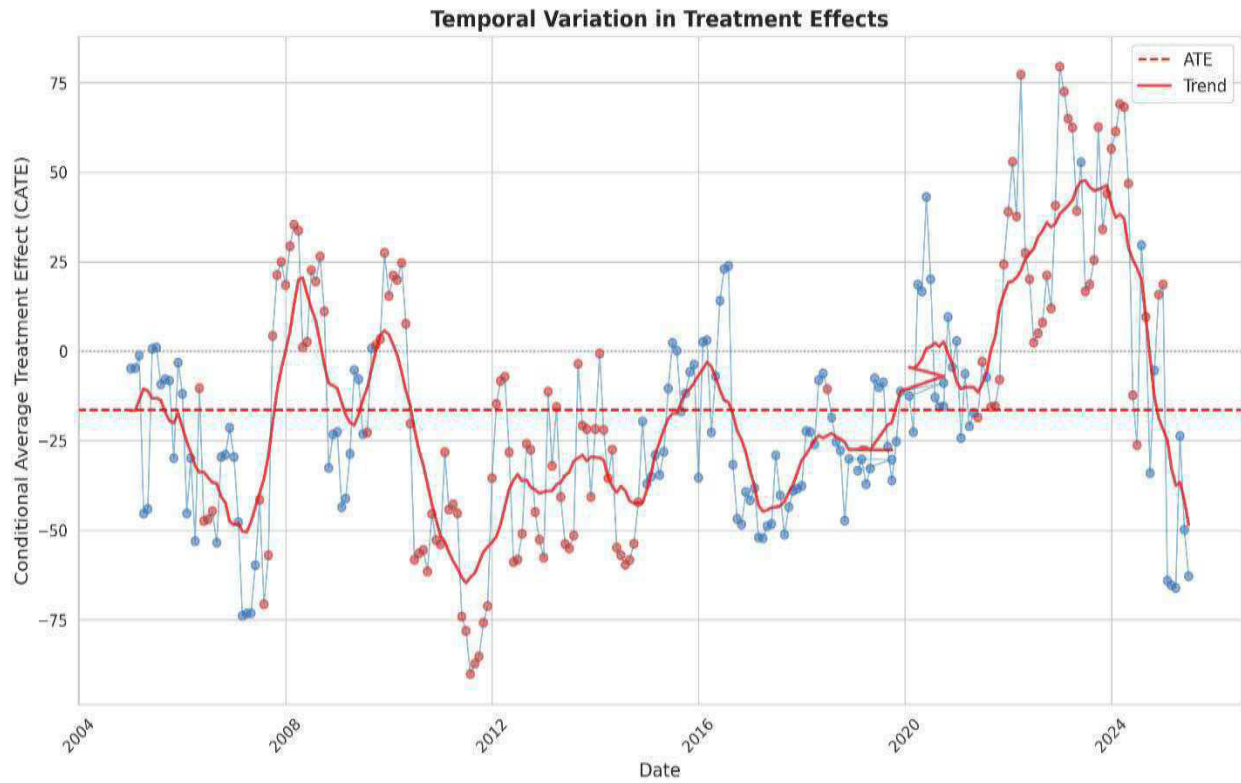
Panel A documents striking heterogeneity in unemployment. During low unemployment (<4.1%), the association between oil price and climate concern is minimal (-4.18). During high unemployment (>7.25%), associations intensify dramatically (-27.35), a 6.5-fold difference. This pattern is consistent with the finite pool of worry: economic anxiety amplifies the crowding-out effect of energy price shocks on climate concern, consistent with evidence from the Great Recession (Scruggs & Benegal, 2012; Meyer, 2022), cross-national European patterns (Duijndam & van Beukering, 2021), and individual-level economic constraints on climate action (Dienes, 2015).

Panel B presents a less intuitive pattern: associations intensify from low (-3.80) to high consumer sentiment (-24.23). This contradicts simple economic hardship explanations. We propose two mechanisms. First, high-sentiment periods coincide with elevated consumption, making energy price increases more salient to household budgets. Second, confident consumers may engage in motivated reasoning, downplaying climate concern to justify continued consumption patterns.

Together, these patterns suggest that oil price shocks suppress climate concern through asymmetric and psychologically distinct pathways: during economic stress, via attention scarcity driven by unemployment; and during confident consumption periods, via motivated reasoning. Both pathways converge on the same outcome, reduced climate concern, but through mechanisms that operate under opposite macroeconomic conditions.

4.5 Temporal Variation in Treatment Effects

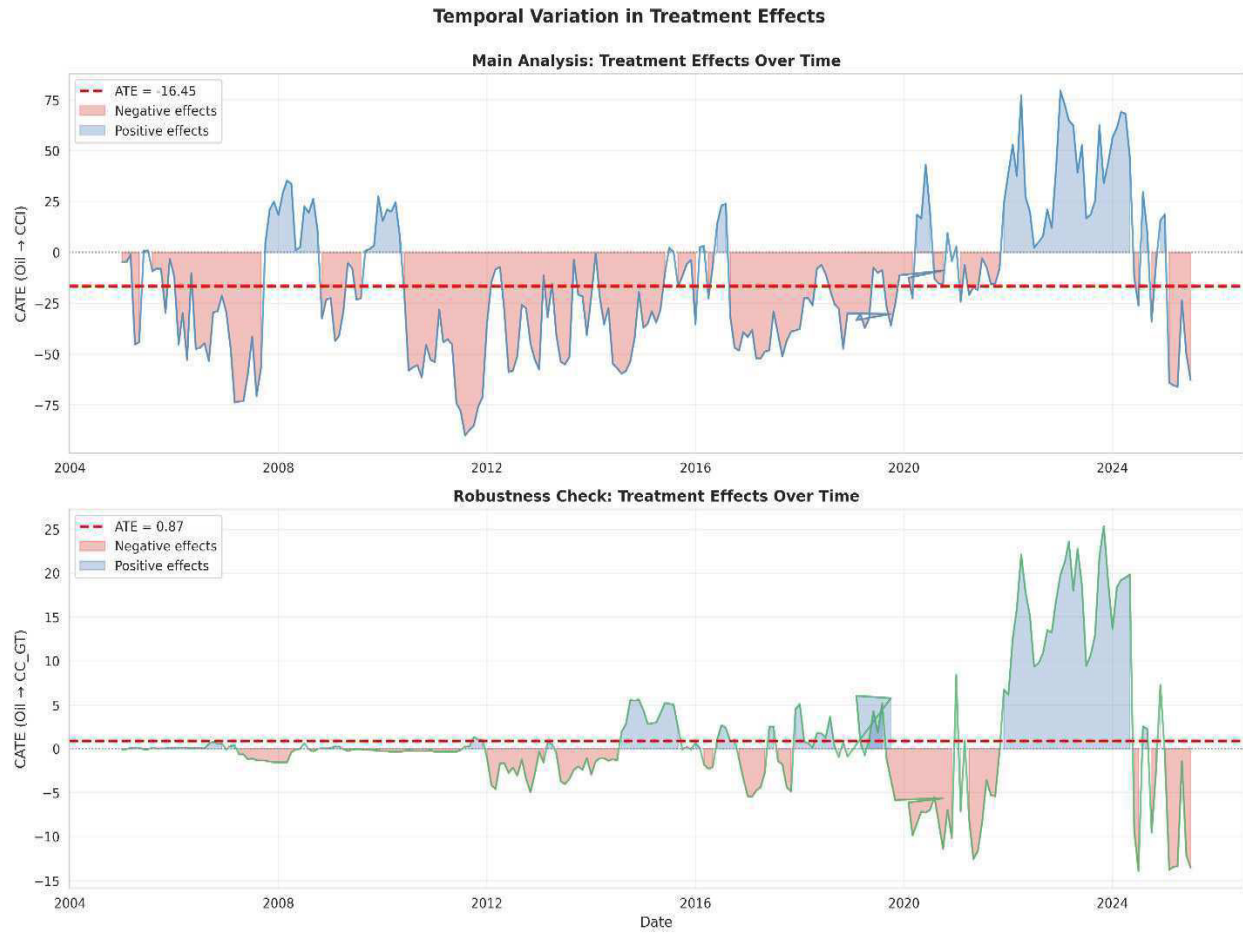
Figure 2. Temporal Variation in Treatment Effects



Source: Author's work

Estimated treatment associations exhibit substantial temporal variation (Figure 2), ranging from -75 to +75 points from 2004 to 2025. The smoothed trend reveals cyclical patterns, with positive effects during major economic crises (2008, 2022-2023) and negative effects during periods of relative stability (2010-2015). This temporal heterogeneity underscores that relationship between price and climate concern is highly context-dependent, rather than structurally fixed.

Figure 3. Temporal Variation in Conditional Average Treatment Effects (CATE) Climate Concern Index Vs. Climate Concern_Google Trend.

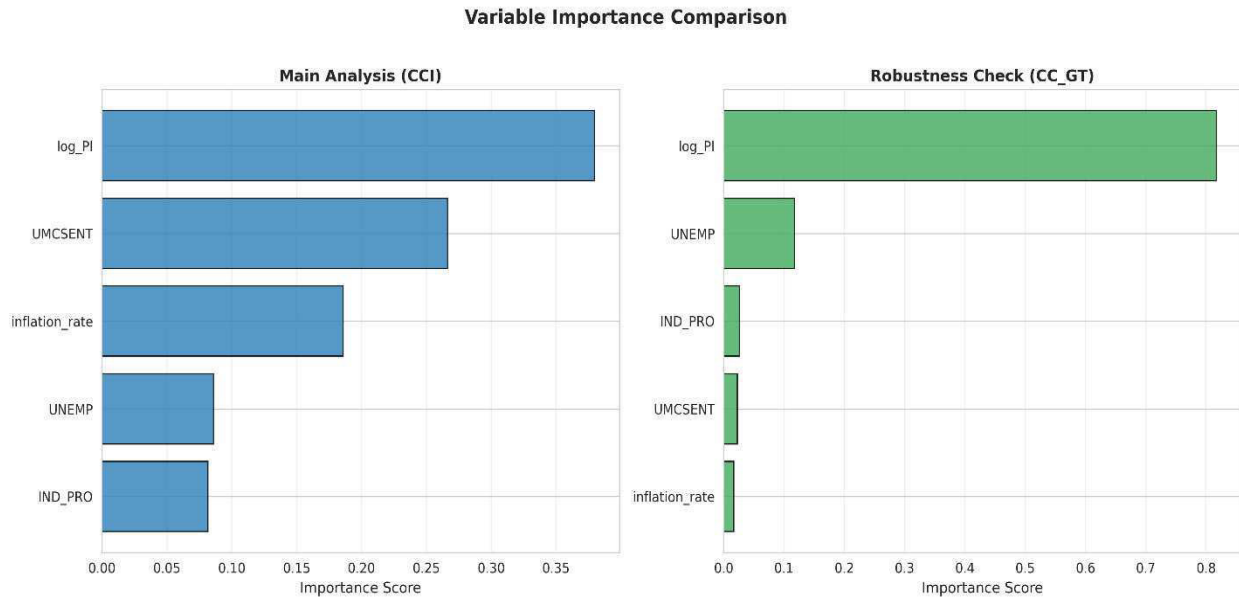


Source: Author's work

Figure 3 displays temporal variation in associations for both climate concern measures. CCI associations become sharply more negative during recessions (2008-2009; 2020), moderate during expansions periods, and show recent stabilization (2023-2024). Google Trends associations turn positive in recent periods (2020-2024), suggesting that the two measures have diverged in their relationship with oil price variation over time.

This temporal heterogeneity justifies the use of machine learning estimator, capable of detecting context-dependent effects that fixed-parameter models would obscure. The recent moderation of the negative CCI association may reflect several concurrent developments: (1) increasing climate salience following repeated extreme weather events; (2) reduced oil dependence through renewable energy expansion; or (3) generational shifts as climate-aware cohorts mature into the adult population. If so, the narrowing of the negative association would suggest that economic barriers to climate concern are gradually weakening over time.

Figure 4. Variable Importance Score



Source: Author's work

Figure 4 indicates that personal income (38%) is the strongest moderator of treatment effect heterogeneity, followed by consumer sentiment (27%) and inflation (19%), with unemployment and industrial production playing relatively minor roles (8–9%). These rankings suggest that heterogeneous responses to oil price shocks are driven more by household resources and psychological outlook than by traditional macroeconomic indicators. The prominence of income implies that financial capacity shapes the degree to which oil price variation affects climate concern, while the importance of consumer sentiment underscores those subjective perceptions of economic conditions, not only objective realities, affect individual responses. Inflation's sizable contribution suggests that rising prices heighten sensitivity to energy shocks more broadly, pointing to the potential value of tailored climate communication during inflationary periods.

5. Conclusion

This study finds that oil price shocks are strongly associated with decreased climate concern, with higher prices linked to 11.51-point declines in the Climate Concern Index. However, these associations vary substantially across economic contexts, minimal during low unemployment (-4.2 points) but large and precise estimated during downturns (-27.3 points). Personal income, consumer sentiment, and inflation emerge as the principal moderators of this heterogeneity, while affective concern (CCI) and information-seeking behavior (Google Trends) exhibit divergent associations with oil price variation.

These findings carry direct policy implications. Policymakers should anticipate cyclical fluctuations in public climate concern and develop counter-cyclical engagement strategies accordingly. During energy price spikes, climate communication should acknowledge economic pressures while framing climate action in terms of co-benefits such as job creation and energy

independence. The finding that lower-income groups face attention scarcity during crises suggests that communication strategies should be differentiated by socioeconomic segment, prioritizing accessible and economically grounded messaging for financially constrained households. The divergence between affective concern and information-seeking behavior further points to the value of multi-channel strategies that sustain broader public engagement while facilitating individual access to climate information.

Several limitations warrant acknowledgment. First, while the analysis controls for temporal patterns and economic confounders, reverse causality or unobserved confounding cannot be ruled out without exogenous variation in oil prices. Following Känzig (2021), we tested oil supply news shocks as instruments for our high/low oil price treatment in our analysis. However, the first-stage F-statistic (4.55) falls below the conventional threshold (10), indicating a weak instrument. Therefore, strict causal identification via instrumental variables remains a limitation and a promising avenue for future research. Second, the two climate concern measures capture distinct constructs, institutional discourse (CCI) vs. search behavior (Google Trends), and may not fully reflect private attitudes or behavioral intentions. Third, the binary treatment approach reduces the continuous variation in oil prices, and we propose using a continuous treatment specification as a direction for future research.

References

- Athey, S., & Imbens, G. W. (2016). Recursive partitioning for heterogeneous causal effects. *Proceedings of the National Academy of Sciences*, 113(27), 7353–7360.
- Angelini, G., Bontempi, M. E., De Angelis, L., Neri, P., & Sorge, M. M. (2025). *Shocking concerns: Public perception about climate change and the macroeconomy*.
- Castro, A. P., & de Mattos, E. J. (2025). Economic status, gender gap, and environmental awareness in Brazil. *Local Environment*. Advance online publication.
- Dienes, C. (2015). Actions and intentions to pay for climate change mitigation: Environmental concern and the role of economic factors. *Ecological Economics*, 109, 122–129.
- Duijndam, S., & van Beukering, P. (2021). Understanding public concern about climate change in Europe, 2008–2017: the influence of economic factors and right-wing populism. *Climate Policy*, 21(3), 353–367.
- Gago, J., & Vale, S. (2025). Oil price swings and inflationary echoes: The impact of oil market shocks on consumer and producer prices in Europe and the US *Resources Policy*, 107, 105667.
- Grandin, A., Guillou, L., Abdel Sater, R., Foucault, M., & Chevallier, C. (2022). Socioeconomic status, time preferences and pro-environmentalism. *Journal of Environmental Psychology*, 79, 101720.
- Inglehart, R. (1995). *Modernization and postmodernization: Cultural, economic, and political change in 43 societies*. Princeton University Press.
- Känzig, D. R. (2021). The macroeconomic effects of oil supply news: Evidence from OPEC announcements. *American Economic Review*, 111(4), 1092–1125.

Leiserowitz, A., Maibach, E., Rosenthal, S., Kotcher, J., Goddard, P., Gustafson, A., & Ballew, M. (2021). *Climate Change in the American Mind*. Yale Program on Climate Change Communication.

Meyer, A. G. (2022). Do economic conditions affect climate change beliefs and support for climate action? Evidence from the US in the wake of the Great Recession. *Economic Inquiry*, 60(1).

Scruggs, L., & Benegal, S. (2012). Declining public concern about climate change: Can we blame the great recession? *Global Environmental Change*, 22(2), 505–515.

Stock, J. H., & Yogo, M. (2005). Testing for weak instruments in linear IV regression. In D. W. K. Andrews & J. H. Stock (Eds.), *Identification and inference for econometric models: Essays in honor of Thomas Rothenberg* (pp. 80–108). Cambridge University Press.

Wager, S., & Athey, S. (2018). Estimation and inference of heterogeneous treatment effects using random forests. *Journal of the American Statistical Association*, 113(523), 1228–1242.

Weber, E. U. (2006). Experience-based and description-based perceptions of long-term risk: Why global warming does not scare us (yet). *Climatic Change*, 77(1-2), 103–120.