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Geopolitical turning points and macroeconomic volatility: a bilateral identification strategy☆

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A B S T R A C T

This paper constructs a new identification method to quantify bilateral geopolitical shocks—geopolitical turning points—i.e., abrupt, unforeseen state-to-state political turning points. Geopolitical shocks are captured by the second difference of the Political Relationship Index (Δ^2PRI), a monthly narrative-based index constructed from Chinese government and media coverage. Unlike conventional global geopolitical risk indicators, Δ^2PRI separates sudden departures from bilateral diplomatic paths so causal estimation is possible in a comparative cross-national context. Quantile instrumental variable local projections (IV-LP) are applied in the paper to estimate the dynamic and asymmetric geopolitical shock impact on world oil prices. It is estimated that US–China relational improvements lower oil prices by 0.2% in the short run and increase them by 0.3% in the medium run, with larger effects at the distribution boundaries of oil prices. Replication from Japan–China data establishes external validity. The paper adds a replicable analysis framework to explain how geopolitical shocks for dyads with heterogeneous institutional history and strategic rivalry spill over into global economic instability.

1. Introduction

Geopolitical relationships between major players have essential consequences for the world economy. Political tensions between states can generate uncertainty for firms and households, disrupt trade flows, and influence the expectations of commodity prices. An emerging literature has examined the relations between geopolitical shocks and the dynamics of oil prices. However, establishing credible causal effects remains a challenge because previous literature relied on the (reasonable) assumption that monthly changes in oil price do not affect the geopolitical relations between major powers.

This research provides empirical evidence on that reasonable assumption using a novel identification strategy that focuses on what can be coined as *geopolitical turning points*, defined as surprise inflection points in bilateral geopolitical relations. Rather than assuming that geopolitical risk is a smooth or a gradually evolving process, I argue that markets respond more sharply to inflection points—sudden accelerations or decelerations in geopolitical relationships that depart from prior trajectories. For example, the relationship between the US and China deteriorated sharply after the US bombed the Chinese embassy in Belgrade in May 1999 during NATO operations. This deterioration was short-lived as the relationship stabilized in June 1999. More generally, these geopolitical turning points can take the form of unexpected escalation (e.g., imposition of sanctions/tariffs, diplomatic breakdowns, or military posturing) or surprise reconciliations (e.g., high-level summit or bilateral treaty announcements). Such turning points are unexpected

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by the markets.

To capture these dynamics, I introduce a new instrumental variable based on the second difference of the Political Relationship Index (Δ^2PRI). The political relation index (PRI) has been introduced in the literature by a group of political scientists led by Xuetong Yan (Yan, 2010; Yan et al., 2009, 2010). This quantitative measure of China relationships with its major trade partners is based on the measurement of geopolitical events in Chinese sources, like People's Daily and the Chinese Ministry of Foreign Affairs. Each month geopolitical events are classified using a Goldstein scale (Goldstein, 1992) and used to build the PRI. The Δ^2PRI isolates the nonlinear shift in geopolitical relations by filtering out trends and persistent levels. This new instrument is likely to affect oil markets and is unlikely to be affected by concurrent changes in the oil prices or other macroeconomic fundamentals.[1]

My findings show that improvements in US–China geopolitical relations lower oil prices by around 0.2% in the short run and raise them by up to 0.3% in the medium run. These effects are economically meaningful. Furthermore, these responses are asymmetric: oil prices react more strongly in the short run when they are initially low and more strongly in the medium run when they are initially high. These results may be particularly useful for policymakers about the transmission of geopolitically driven oil price fluctuations. For example, a positive shock occurring when the price of oil is low will have a greater negative impact on the oil price, as it relaxes the precautionary demand for oil in the short run. It will have consequences for both the monetary policy in oil-importing countries and for fiscal policy in oil-exporting countries. Besides, a positive shock occurring when the price of oil is high will have a greater positive impact on the oil price, as it changes the outlook for the oil demand in the medium to long run. Again, it will have fiscal consequences for oil-exporting countries and inflationary consequences that need to be tackled by the monetary policy for oil-importing countries.

This study adds to the field of international economics by revealing one of the main and overlooked, for example by Backus and Crucini (2000) or Khalil (2022), transmission channels of geopolitical shocks: the dynamic and asymmetric response of oil prices. As oil is a cornerstone of terms-of-trade shocks, trade balances and fiscal positions in exporting and importing economies, shocks to oil prices are triggered by bilateral geopolitical turning points can reverberate through global macroeconomic circumstances. This work has consequences for the literature on the current account dynamics (Bodenstein et al., 2011; Kilian et al., 2009). This is parallel to the literature on global spillovers of geopolitical uncertainty and commodity-induced instability in real exchange rates (Riera-Crichton and Aizenman, 2008; Goldberg and Krogstrup, 2023).

To my best knowledge, this study relies for the first time in the literature on quantile IV-local projections (quantile IV-LP) that allow for dynamic, instrumented causal inference for conditional quantiles together with the use of a novel instrument, the geopolitical turning points. This research opens some perspectives on the asymmetric propagation of external shocks through commodity markets, trade links, and international financial flows under the pressure of geopolitical turbulences.

What are the main channels under investigation in this study? Firstly, it is postulated that exogenous improvements of relations in the short run should be decreasing oil prices due to their decrease in the perception of geopolitical risk and precautionary demand, most particularly at those points when markets are experiencing high levels of uncertainty. Secondly, it is hypothesized that exogenous improvements of relations in the medium run can increase expectations of international economic activity and energy demand with upward pressures on price. Thirdly, these impacts are not expected to be uniformly distributed along the oil price distribution. Short-run responses may be larger for lower quantiles of prices, given higher risk compression sensitivity. Conversely, in the case of declining prices in higher quantiles, medium-run increases may be steeper as expectations respond to further growth in demand. The empirical approach built in this paper—quantile IV-local projections—is specifically designed to identify such distributional heterogeneous causal effects.

Although oil price dynamics are the application in this paper, the methodological innovation applies broadly to understanding how bilateral political shocks impact economic stability, particularly in countries exposed to geopolitical turning points. Beyond commodity markets, the same dyadic political-relations approach can be used to study real outcomes such as firm-level trade flows; for example, Saadaoui et al. (2026) apply this approach to granular Chinese export data to quantify how geopolitical alignment shapes export patterns.

The remainder of the paper presents the related literature in Section 2, describes the empirical strategy in Section 3, and provides causal empirical evidence in Section 4 before the conclusion.

2. Related literature

The literature review is structured around three dimensions involved in this study. The first dimension explores the growing body of literature on the impact of geopolitical tensions on the oil markets. The second dimension reviews some key aspects related to the measurement of geopolitical tensions. The third dimension briefly surveys recent improvements in the local projection literature.

2.1. Geopolitics and oil markets

An increasing number of studies have explored the impact of geopolitical relations on the commodity price fluctuations.

[1] As shown by Bondarenko et al. (2024) in the Russian case, the perception of the geopolitical risk matters. The PRI index is built on Chinese sources, ensuring that the relation between China and its partners is accurately measured and, in addition, does not encounter translation problems. The PRI index has been used by Du et al. (2017) to investigate the influence of geopolitical shock on trade for China and its main trade partners. Kilian et al. (2025) warn us about the perils of reverse ordering between macroeconomic fluctuations and uncertainty. Using the geopolitical tensions between China and its partners allow to circumvent these dangers.

Geopolitical tensions are increasingly recognized as a first-order driver of commodity markets, particularly in contexts involving major energy-trading economies. Mignon and Saadaoui (2024) show that geopolitical tensions and political risk indicators have a statistically significant impact on global oil prices using structural vectorial autoregressions (SVAR) and local projections (LP). Their findings highlight how markets respond not only to supply and demand fundamentals but also to political signaling and uncertainty. The medium-run elasticity of oil prices to an improvement of political relations between the US and China is around 0.5.

Mignon and Saadaoui (2025) explore the asymmetric role of China in global oil markets using quantile regression techniques. They demonstrate the growing influence of China in the oil markets, conditional to the level of oil price and on China's position in the demand structure. In particular, the oil price is related to its long-run geopolitical determinants, especially for higher quantiles of the oil price.

Other important work in this field includes Kilian and Vega (2011), who examine how oil prices respond to macroeconomic news, and Aastveit et al. (2015), who distinguish the drivers of oil price fluctuations in emerging and advanced economies.

2.2. Geopolitical risk measurement and geopolitical turning points

My work also aligns with recent research aimed at quantifying geopolitical risk using news-based indices or text-based indices. Caldara and Iacoviello (2022) construct a global geopolitical risk (GPR) index using several Anglo-Saxon newspapers covering international affairs. Their index has been widely adopted to study the effects of geopolitical tensions on financial markets, investment, and global growth.

In contrast to the GPR index, the use of the Political Relationship Index (PRI) focuses on bilateral relationships. This dyadic lens offers more granularity and allows me to examine turning points, since the GPR index is asymmetric as it does not record the influence of good events. At best, the GPR index is equal to zero when we have no record of geopolitical news in the North American press. Cai et al. (2022) make this point more explicit, showing that not all geopolitical shocks have the same economic consequences: the nature, direction, and timing of geopolitical events can produce sharply different oil price responses. Their study uses a structural VAR framework, which, while insightful, is limited by identification assumptions and rigidity in dynamic response functions.

The main contribution to this literature consists in isolating unanticipated changes in bilateral relations using a second-difference transformation of the PRI (Δ^2PRI). This approach filters out persistent trends and isolates inflection points that more closely resemble "news shocks" in the sense of Barsky and Sims (2011) or Ramey (2011).

2.3. Causal inference using local projections and quantile-iv methods

Local projection (LP) regressions are used to capture the short- and long-run causal impact of geopolitical shocks. This local projection methodology has been introduced by Jordà (2005). This methodology allows the estimation of impulse response functions in a simpler and possibly in a more robust way than in the VAR-based approaches. However, it is important to note that the LP approach does not solve the identification problem. The requirement to identify an exogenous shock is still an essential part of this methodology. The econometric literature on the LP approach has developed several important extensions. Among them, we have the Smoothed Local Projections (Barnichon and Brownlees, 2019) that aim at solving the bias-variance trade-off between VAR and LP estimators. Another major development is related to the time-varying instability of the impulse response functions. Usually, researchers relied on sub-samples to capture time-varying effects, but this approach is restrictive and faces sample limitation problems. To overcome these limitations, Inoue et al. (2024) introduced the time-varying parameter local projections (TVP-LP) that rely on a path estimator to estimate time-varying effects without relying on subsamples.

Relying on the Stata package of Ugarte (2025), I combine the local projection with the instrumental variable quantile regression (IVQR) estimators of Chernozhukov and Hansen (2006).[2] The estimator, the inverse quantile regression (IQR), allows the estimation of conditional causal effects in the presence of endogeneity. A recent extension of this estimator, which provides improvements in terms of computational efficiency, can be found in Kaplan and Sun (2017).

Taken altogether, the combination of the LP, IV, and quantile regression approaches allows the estimation of credible short- and long-run conditional causal effects of geopolitical shocks in the bilateral relation between the US and China, without relying on the (reasonable but not yet tested) assumption that the US–China relation changes are exogenous to monthly variation in oil prices. This is a novel contribution to the literature. Finally, these causal empirical results may have important implications for policymakers to understand the asymmetric channels through which geopolitical tensions between China and the US propagate in an era of turbulent geopolitics.

[2] Local projections at horizon h use overlapping outcomes y_{t+h}, which typically induces serial dependence in the LP disturbance even when the underlying shocks are weakly dependent. In the quantile IV–LP setting, the IVQR approach of Chernozhukov and Hansen (2006) can be expressed as moment conditions based on orthogonality between instruments and a quantile-score residual. Under standard stationarity and weak-dependence conditions for the induced score (moment) process, these orthogonality conditions continue to deliver consistency of the IVQR-based estimator; overlap affects inference through the long-run variance of the moment process, not the identifying restrictions themselves. As emphasized by Jordà and Taylor (2025), in standard time-series LP applications lag-augmented local projections yield confidence bands that are very similar to those obtained using Newey-West/HAC corrections—often slightly more conservative in highly persistent settings—providing a practical and transparent approach to dependence-robust inference in overlapping-horizon regressions.

3. Empirical strategy

3.1. Identification strategy and instrument design

The Political Relationship Index (PRI) captures the evolving intensity of the bilateral political relationship between China and the US. However, shifts in PRI may be partially endogenous to oil price movements, introducing bias due to simultaneity or omitted global shocks. In Fig. 1, we can see that the deterioration of the relationship after the US bombing of the Chinese embassy during NATO operations in May 1999 was short-lived. The deterioration of the relationship stopped the month after in June 1999. Moving from a sharp deterioration to a stable relation may be considered a geopolitical turning point and is susceptible to reassuring the market participants.

To address this concern of partial endogeneity between the monthly changes in PRI and the monthly changes in oil prices, I construct an instrument defined as the second difference of PRI:

$$Z_t = \Delta^2 PRI_t = PRI_t - 2PRI_{t-1} + PRI_{t-2}. \quad (1)$$

This second difference captures the acceleration or deceleration in the geopolitical stance, reflecting turning points such as abrupt diplomatic breakdowns or reconciliations. More broadly, focusing on turning points improves the separation between signal and noise in measured bilateral political relations. The second-difference transformation Δ^2PRI filters out slow-moving components and isolates abrupt, event-driven inflections, which are the relevant source of variation for identification. These are less likely to be anticipated or driven by oil price dynamics and more likely to reflect exogenous geopolitical events. This logic parallels the concept of "news shocks" in macroeconomic models.

Crucially, the instrument isolates abrupt bilateral geopolitical turning points associated with identifiable diplomatic or conflict-related events, rather than smooth or routine macroeconomic fluctuations. It is therefore unlikely that contemporaneous oil-market innovations systematically generate the large second differences in the relationship index used for identification.

To assess the face validity of the Δ^2PRI, I match its largest spikes to known geopolitical shocks. For the US–China dyad, these include the 1996 Third Taiwan Strait Crisis, the 1999 Belgrade bombing, and the 2018 trade war onset. For Japan–China, sharp PRI inflections coincide with the 2010 rare-earth export freeze and the 2012 Senkaku nationalization. These alignments support the instrument's plausibility as a measure of unanticipated geopolitical turning points.

To increase readability, I can briefly recall how the PRI is computed following the description made by Mignon and Saadaoui (2024). The PRI is an index built by the Institute of International Relations at Tsinghua University to measure the political relationships between China and its major trading partners (see Yan (2010) for a discussion). PRI, ranging between −9 and 9, indicates whether the countries are rivals (between −9 and −6), in a tense relationship (between −6 and −3), in a bad relationship (between −3 and 0), in a normal relationship (between 0 and 3), in a good relationship (between 3 and 6), or friends (between 6 and 9). PRI fluctuates according to a scale similar to the Goldstein scale (Goldstein, 1992). Each month, bad or good events appearing in *People's Daily* and on the Chinese Ministry of Foreign Affairs website and other sources are included to update the index. Specifically, the formula used to update PRI is given by

$$PRI_t = \frac{\left(\frac{N-PRI_{t-1}}{N}EV^{+} + \frac{N+PRI_{t-1}}{N}EV^{-}\right)}{5} + PRI_{t-1}. \quad (2)$$

with N denotes the half of the range of the *PRI* index. EV^{+} is the level of good events and EV^{-} is the level of bad events during the current month, respectively. The first term after the equal sign is rounded to the smallest increment 0.1. The division by 5 is a time window of 5 months used to smooth the influence of large events. The formula used to update PRI gives less weight (i) to bad events when the relation deteriorates, and (ii) to good events when the relationship is good.

Fig. 2 summarizes the identifying exclusion restriction: conditional on X_t, geopolitical turning points Z_t affect oil prices WTI_{t+h} only through their impact on the latent bilateral geopolitical state PRI_t^* and its observed proxy PRI_t. Formally, $E[u_{t+h}|Z_t, X_t] = 0$. A violation would require a systematic direct channel from Z_t to oil prices not captured by X_t, which is further mitigated by the non-anticipation (lead) evidence (Fig. 3).

3.2. Instrumented local projections

To estimate the dynamic effects of geopolitical shocks between China and the US on the oil price between January 1990 and March 2022, I implement instrumented local projections (Jordà, 2005) with a lag-augmented specification. For each horizon (h), I estimate:

$$WTI_{t+h} = \alpha_h + \beta_h PRI_t + \sum_{j=1}^{2} X'_{t-j}\gamma_{h,j} + \sum_{g=1}^{3} \phi_{h,g} WTI_{t-g} + \sum_{k=1}^{2} \lambda_{h,k} PRI_{t-k} + u_{t+h}, \quad h = 0, \ldots, 48. \quad (3)$$

In the following, the instrument Z_t is constructed as the second difference of the original PRI series; the endogenous regressor PRI_t in Eq. (3) refers to its log-modulus transform, and $\widehat{PRI}_t$ denotes the first-stage fitted value used to implement 2SLS at each horizon.

In Eq. (3), *WTI* is the real price of crude oil (West Texas Intermediate) in log (see Baumeister and Hamilton, 2019). X_t includes usual

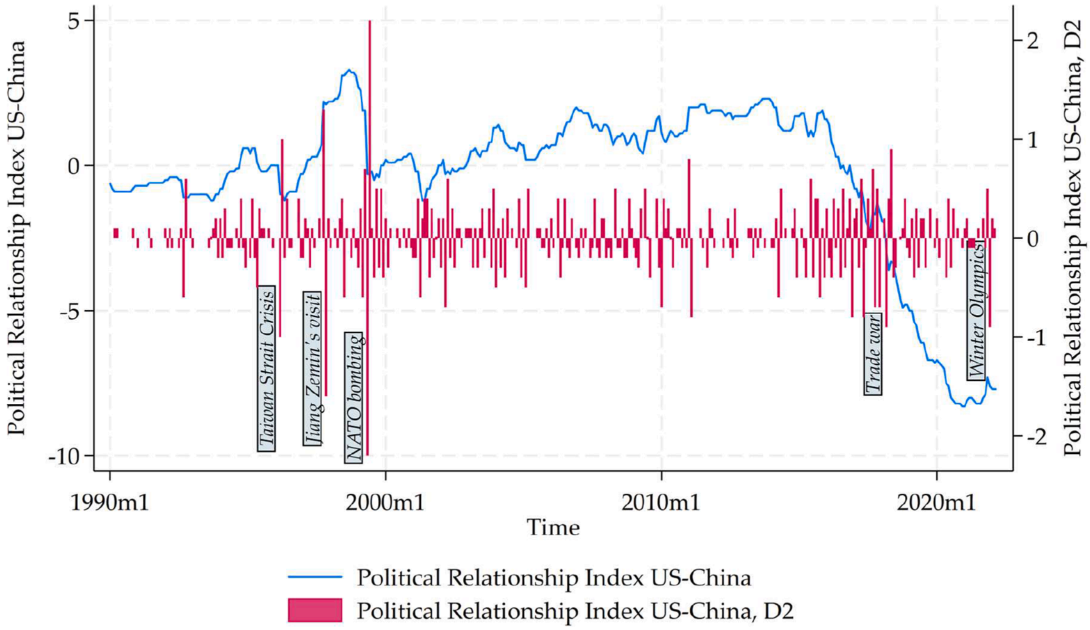

Fig. 1. Original PRI and the second difference of PRI (US–China).
Notes: On the left axis, the line is the original PRI. On the right axis, the bars correspond to the instrument, Δ^2PRI. The largest negative second differences of PRI (inferior or equal to -0.9) align with major geopolitical turning points, including the Third Taiwan Strait Crisis, when U.S. aircraft carriers were deployed in response to Chinese missile tests (March 1996, sharp deterioration), Jiang Zemin's state visit to the U.S., initially symbolic but followed by backlash over Taiwan and human rights (November 1997, improvement in October and sharp deterioration November); the NATO bombing of the Chinese embassy in Belgrade, triggering spontaneous mass protests and a temporary freeze in bilateral dialogue (May 1999, very sharp deterioration), the onset of the U.S.-China trade war, marked by the Trump administration's tariff announcements (March 2018, sharp deterioration), Biden administration's announcement of a diplomatic boycott of the 2022 Beijing Winter Olympics, in protest of human rights abuses in Xinjiang, Hong Kong, and over the disappearance of Peng Shuai (December 2021, sharp deterioration). These events demonstrate the instrument's sensitivity to exogenous shocks in geopolitical relations and support its use in identifying causal effects on oil prices.

controls in the oil price literature (see Kilian, 2009), such as the first difference of the oil production measured in thousands of barrels of oil per day obtained from the US Energy Information Administration's (EIA) Monthly Energy Review (in log), and the world industrial production (in log) proxied by the industrial production index for OECD countries and six major non-member economies (Brazil, China, India, Indonesia, the Russian Federation, and South Africa); see Baumeister and Hamilton (2019) for more details about these two controls. I use two lags and the log transform for these controls and for the oil price.[3] For the PRI index, which includes 0 in its definition range, I also use two lags and the log-modulus transform as in Mignon and Saadaoui (2025). Finally, I use 48 horizons to investigate the possibility of medium- to long-run effects, as in Mignon and Saadaoui (2024).

4. Data and results

I use a sample of data spanning the period January 1990 to March 2022 (387 monthly observations) to capture the role of political tensions between the US and China on the oil price dynamics. The sample choice is driven by data availability. The number of observations available for the estimation fluctuates from 384 at horizon 0 to 336 at horizon 48. Besides, the influence of China and other emerging markets started to increase significantly in the early days of trade globalization. Fig. 4 shows the results for the IV-LP using the "geopolitical turning point" instrument. The results are in line with Mignon and Saadaoui (2024). Following an improvement in the relations, the oil prices decline (i.e., the elasticity is around -0.2 after 6 months) in the short run and increase in the medium term (i.e., the elasticity is around 0.3 after 32 months).

Across horizons $h = 0, \ldots, 48$, the first stage indicates very strong relevance of $Z_t = \Delta^2 PRI_t$ for PRI_t (Table A1). Given the large heteroskedasticity-robust first-stage F-statistics and high partial R^2, weak identification is not a concern in practice. The correlation Figs. A1 and A2 and the complete results in Tables A1 and A2 are given in the Appendix A.

[3] I choose the baseline lag structure as a lag-augmented specification to improve robustness of LP inference in persistent monthly data: I include 2 lags of the control vector and the relationship index, and an additional (third) lag of *WTI* to better capture oil-price persistence—consistent with the lag-augmented local projection approach advocated by Montiel Olea and Plagborg-Møller (2021) and with Jordà and Taylor's (2025) discussion that lag augmentation provides a practical route to dependence-robust inference in standard time-series LP applications, yielding confidence bands that are typically very similar to Newey-West/HAC bands (often slightly more conservative in highly persistent settings).

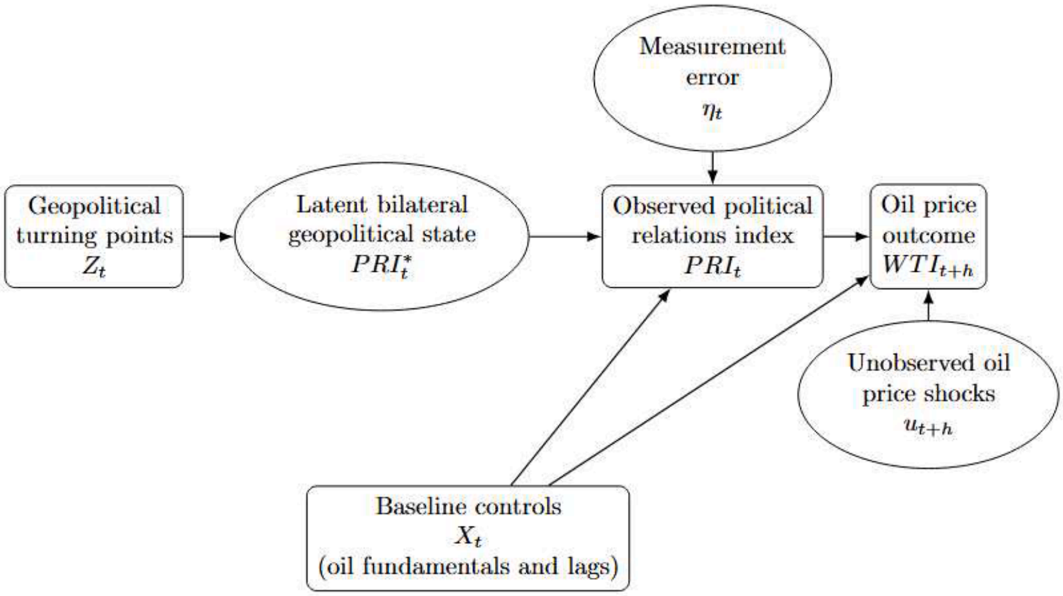

Fig. 2. Exclusion restriction and identification channel (economic content).
Notes: This figure summarizes the identifying exclusion restriction underlying the IV–local projection framework. The instrument, geopolitical turning points Z_t (defined as $Z_t = \Delta^2 PRI_t$), shifts the latent bilateral geopolitical state PRI_t^*, which is measured with error by the observed political relations index PRI_t. The identifying assumption is that conditional on the baseline information set X_t (oil fundamentals and lags) and the included dynamics of the relationship index, Z_t affects the oil-price outcome WTI_{t+h} only through its impact on PRI_t^* (and hence through PRI_t). Formally, for each horizon h, $E[u_{t+h}|Z_t, X_t] = 0$, so that any correlation between Z_t and WTI_{t+h} operates through the channel $Z_t \rightarrow PRI_t^* \rightarrow PRI_t \rightarrow WTI_{t+h}$. A violation would require that monthly macroeconomic or financial innovations systematically generate turning-point movements in PRI_t^* (captured by Z_t) and directly shift oil prices through an independent channel not accounted for by X_t. This joint requirement is implausible at the monthly frequency given the nature of turning points and is further mitigated by the non-anticipation evidence based on lead/placebo tests.

Fig. 5 confirms and extends the pattern observed in Fig. 4. I document for the first time an important asymmetric response of the oil price conditional to its level following exogenous shocks in the political relation between the US and China. Following an improvement in US-China political relations and when the price of oil is low, the short-run reaction is stronger. The elasticity is above -0.2 during 9 months after the shock. Besides, when the price of oil is high, the medium-run reaction is stronger. The elasticity is above 0.2 around 30 months after the shock.

To test the validity of the identification approach and estimation technique, I redo the analysis for Japan–China bilateral relations. The Japan–China bilateral relation, as with the US–China dyad, experiences similar geopolitical differences and widespread energy dependence; hence, it is an appropriate case for comparison.

The geopolitical instrument is highly first-stage relevant for all 48 horizons, with partial R^2 above 0.8 and F-statistics above 100 (see Appendix B, and the Figs. B1, B2 and B3).

The IV-local projections (Fig. B2) exhibit the same dynamic response pattern as the one in the US–China case: oil prices fall short-term and rise medium-term after a positive geopolitical shock. Of particular note, quantile IV-LP estimates (Fig. B3) validate asymmetric effects throughout the whole distribution of oil prices. The short-term response is more pronounced at lower quantiles, whereas the medium-term rise is greater at higher quantiles. While the confidence intervals in the Japan–China case are wider—particularly in the medium run and at the tails—this is consistent with lower geopolitical volatility in that dyad. Nevertheless, the directional patterns of the oil price responses are broadly consistent with those found for US–China. The U.S.–China and Japan–China dyads offer empirically tractable geopolitical archetypes—one in terms of long-term strategic rivalry and high-frequency turns, the other in terms of spasmodic maritime and historical tensions.[4] These results corroborate the general validity of the geopolitical turning point instrument and confirm that commodity price responses to political shocks are quantile-specific.[5]

[4] The US-China relationship is marked by enduring strategic rivalry that periodically reaches critical junctures, whereas the Japan-China relationship is colored by periodic maritime and historical issues. Other dyads, including China–India or China-Germany, may not have adequate temporal variation in monthly PRI to be used in the identification strategy.

[5] In Appendix C, I show that the results are robust to the inclusion of the geopolitical relation changes in the other 11 main economic partners of China.

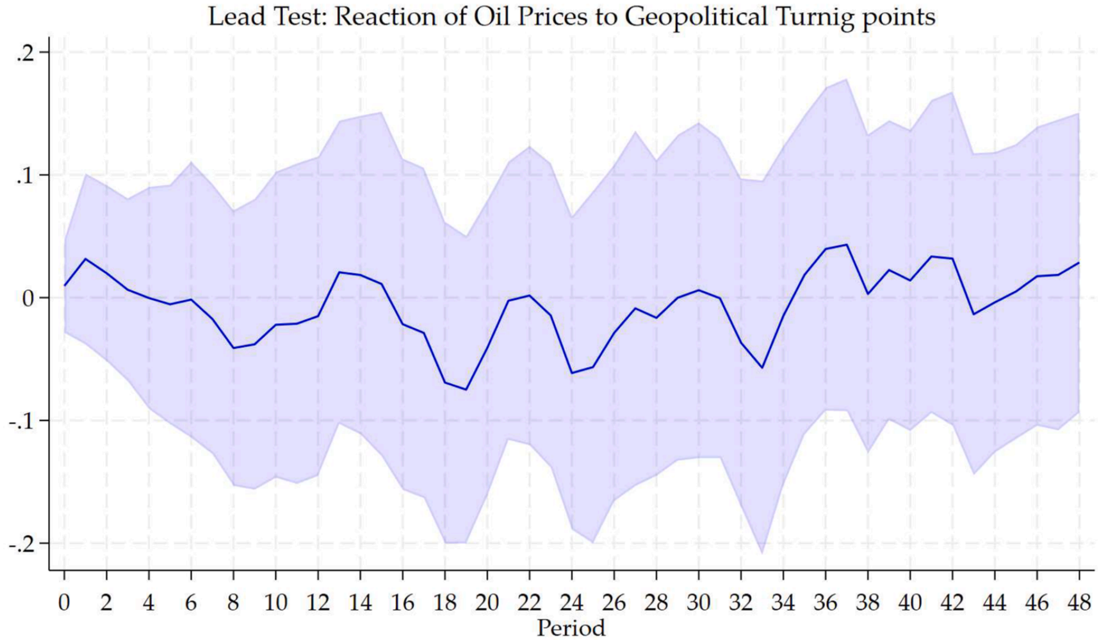

Fig. 3. Lead (non-anticipation) test: reaction of oil prices to future geopolitical turning points.

Notes: This figure reports lead coefficients from local projections in which the dependent variable is WTI_{t+h} and the regressor of interest is the 2-month lead of the turning-point instrument, $Z_{t+2} \equiv \Delta^2 PRI_{t+2}$, used as a placebo to test for pre-trends/non-anticipation. The specification conditions on the baseline information set (including lags of world industrial production and lags of global oil production growth) and uses the same horizon range h = 0,…48 as in the baseline IV-LP analysis. The shaded area shows the confidence band (constructed using robust standard errors). Failure to detect statistically significant lead effects is consistent with the non-anticipation assumption: oil prices do not systematically respond before turning points materialize.

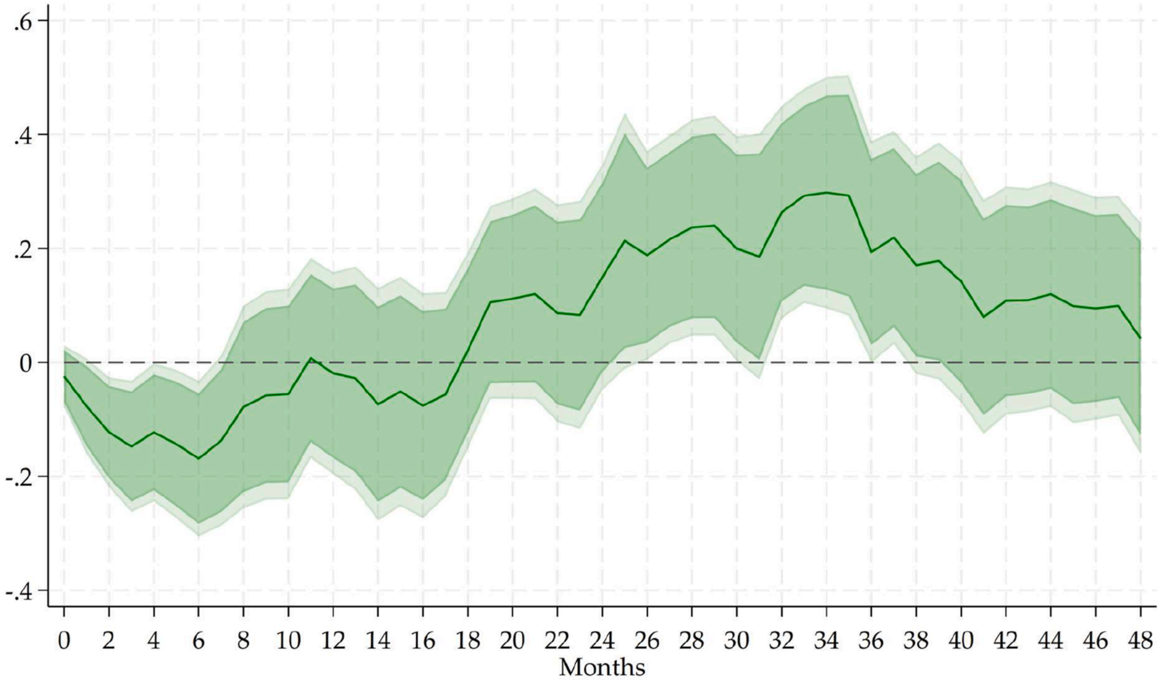

Fig. 4. Oil price reaction to an improvement of PRI between the US and China.

Note: IV-LP local projections estimates. The shock is a positive unit shock on the PRI. This positive shock corresponds to an improvement in the relationship between the US and China. 90% and 95% confidence intervals in green and light green, respectively.

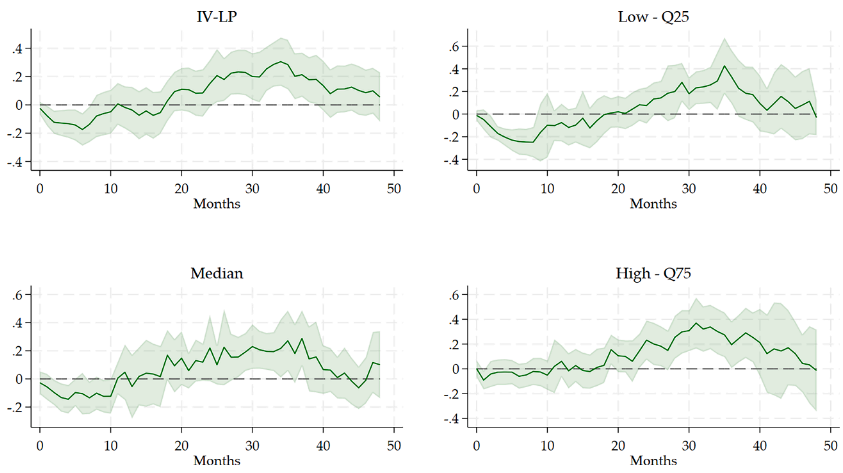

Fig. 5. Oil price reaction to an improvement of PRI between the US and China for different quantiles.
Note: IV-LP quantile local projections estimates. The shock is a positive unit shock on the PRI. This positive shock corresponds to an improvement in the relationship between the US and China. 90% confidence intervals.

5. Conclusion

This study presents empirical evidence for the transmission of geopolitical shocks to oil prices via dynamic and heterogeneous channels. Exploiting a new identification strategy using the second difference of the Political Relationship Index (Δ^2PRI), I propose an instrument that identifies geopolitical turning points—surprise inflection points in bilateral political relations. With the use of instrumental variable local projections (IV-LP), I can observe that the improvement in US–China relations reduces oil prices in the short term and increases them in the medium term. These impacts are quantile-dependent: short-run decreases are larger when initial prices are lower, and medium-run increases are larger when initial prices are higher. These results are economically meaningful in magnitude and clarify how geopolitical tensions are transmitted into commodity prices.

Besides the US–China dyad, I conduct the exercise with the Japan–China political relationship to quantify the cross-robustness of the framework. The instrument continues to hold, and quantile IV-LP estimates reveal comparable asymmetric patterns. Although geopolitical events between Japan and China are less frequent and abrupt, the quantile IV-local projections yield similar asymmetric patterns. Wider confidence intervals reflect this lower signal variance, yet the persistence of the effects across quantiles reinforces the robustness of the instrument.

More generally, the evidence is suggestive of the influence of geopolitical shocks as a stand-alone and measurable cause of terms-of-trade changes. By influencing current account trajectories and capital flow patterns, including real exchange rate changes and saving-investment balance adjustment, these shocks can amplify macroeconomic consequences. Economies with foreign energy dependence or vulnerability to the resulting mineral supply chain can have more volatile strategic imports, amplifying macroeconomic exposure to external shocks. In documenting a strong and asymmetric causal relationship from geopolitical tension to oil prices, I contribute to the transmission of geopolitical risk across global markets and monetary and fiscal policy framework design in a more interdependent and uncertain world.

Aside from the oil price situation, the Δ^2PRI instrument provides a strong and replicable framework for estimating the causal effect of bilateral geopolitical shocks on various global economic variables. It can be employed in future studies to forecast capital flows, exchange rate volatility, sovereign spreads, or trade imbalance—particularly for emerging economies or strategic dyads that have volatile foreign policy. While geopolitical uncertainty continues to influence global macroeconomic trends, the Δ^2PRI offers a methodology for high-frequency, event-based, exogenous shock detection, usable in international economics.

CRediT authorship contribution statement

Jamel Saadaoui: Writing – review & editing, Writing – original draft, Visualization, Validation, Supervision, Software, Resources, Project administration, Methodology, Investigation, Formal analysis, Data curation, Conceptualization.

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Supplementary materials

Supplementary material associated with this article can be found, in the online version, at doi:10.1016/j.jce.2026.03.010.

Appendix A. Supplementary materials

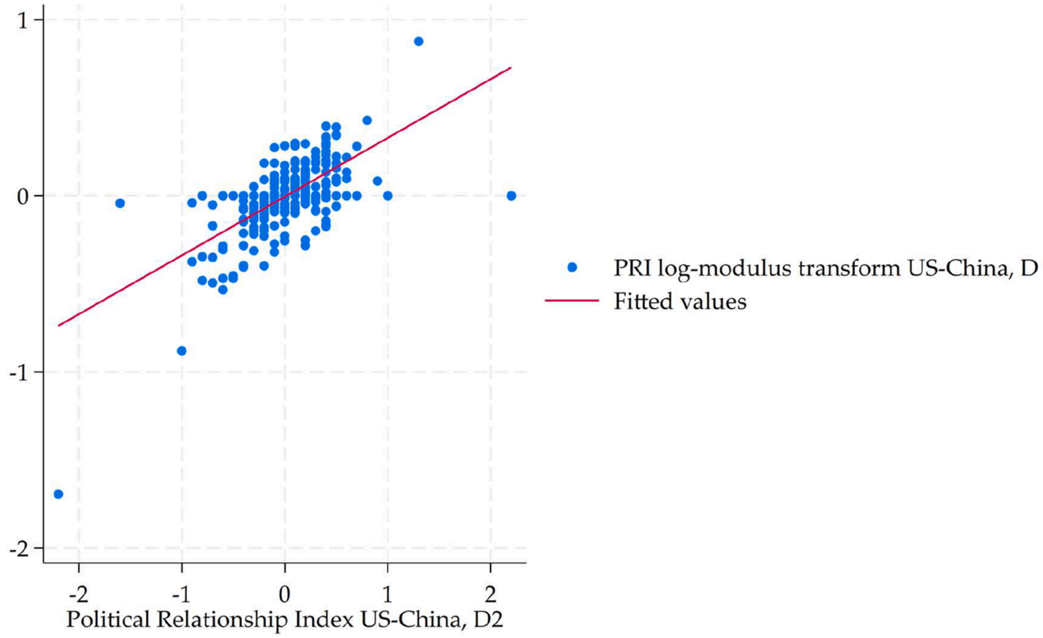

Fig. A1. Relevance of the instrument.
Note: contemporaneous correlation between the log-modulus transform of the PRI and the Δ^2PRI. The correlation is positive and significant at the conventional levels.

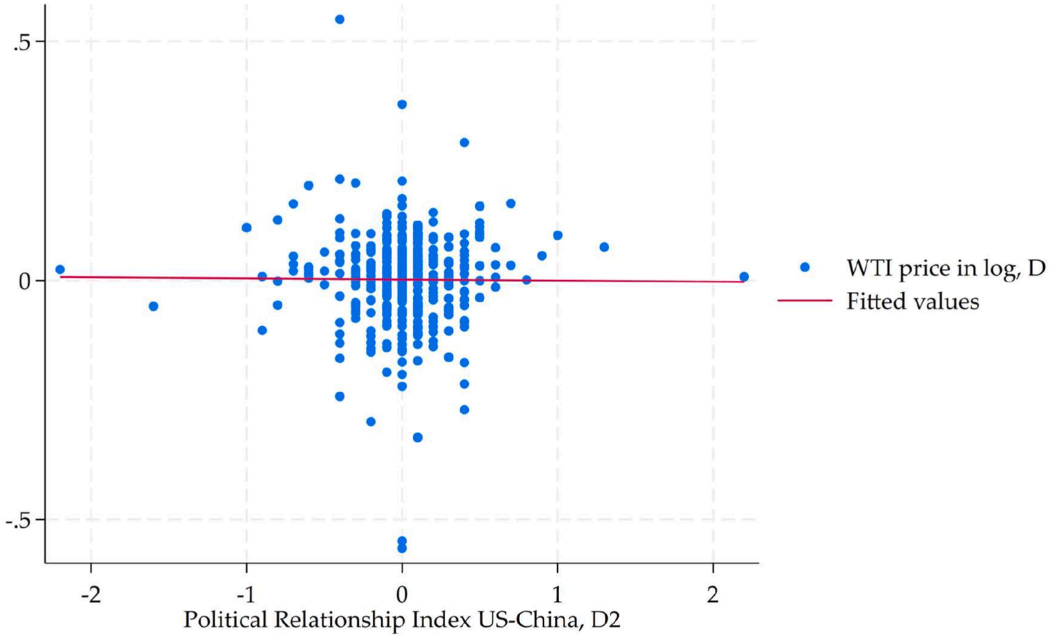

Fig. A2. Orthogonality of the instrument (descriptive).
Note: contemporaneous correlation between the WTI oil price in log and the Δ^2PRI. The correlation is almost zero, and the p-value is very high.

Table A1
First-Stage regression diagnostics for IV-LP.

Horizon	Adjusted R^2	Partial R^2	F stat	p-value
0	0.9969	0.8250	236.185	<0.0000
1	0.9968	0.8250	236.716	<0.0000
2	0.9968	0.8259	239.271	<0.0000
3	0.9971	0.8443	313.417	<0.0000
4	0.9972	0.8494	330.080	<0.0000
5	0.9972	0.8496	329.385	<0.0000
6	0.9971	0.8506	331.764	<0.0000
7	0.9971	0.8506	331.800	<0.0000
8	0.9970	0.8507	332.625	<0.0000
9	0.9970	0.8507	332.464	<0.0000
10	0.9970	0.8510	332.883	<0.0000
11	0.9969	0.8511	332.157	<0.0000
12	0.9969	0.8516	334.186	<0.0000
13	0.9968	0.8523	335.597	<0.0000
14	0.9968	0.8524	335.774	<0.0000
15	0.9967	0.8527	335.348	<0.0000
16	0.9967	0.8527	335.218	<0.0000
17	0.9966	0.8528	335.745	<0.0000
18	0.9966	0.8527	335.613	<0.0000
19	0.9966	0.8551	340.384	<0.0000
20	0.9966	0.8578	349.945	<0.0000
21	0.9965	0.8581	345.593	<0.0000
22	0.9965	0.8595	343.745	<0.0000
23	0.9964	0.8595	344.640	<0.0000
24	0.9964	0.8595	344.687	<0.0000
25	0.9963	0.8600	346.920	<0.0000
26	0.9963	0.8609	348.614	<0.0000
27	0.9962	0.8610	348.235	<0.0000
28	0.9961	0.8610	347.740	<0.0000
29	0.9961	0.8629	350.751	<0.0000
30	0.9960	0.8629	350.888	<0.0000
31	0.9960	0.8651	353.560	<0.0000
32	0.9959	0.8659	356.605	<0.0000
33	0.9959	0.8669	358.329	<0.0000
34	0.9958	0.8689	362.377	<0.0000
35	0.9958	0.8708	366.118	<0.0000
36	0.9958	0.8744	373.712	<0.0000
37	0.9958	0.8750	374.307	<0.0000
38	0.9957	0.8756	373.452	<0.0000
39	0.9956	0.8758	372.638	<0.0000
40	0.9956	0.8791	385.051	<0.0000
41	0.9955	0.8793	386.349	<0.0000
42	0.9954	0.8792	386.748	<0.0000
43	0.9953	0.8790	387.096	<0.0000
44	0.9953	0.8800	386.726	<0.0000
45	0.9953	0.8828	389.163	<0.0000
46	0.9957	0.8944	470.933	<0.0000
47	0.9956	0.8955	476.593	<0.0000
48	0.9958	0.9003	551.697	<0.0000

Note: This table reports diagnostic statistics from the first-stage regressions of the IV-local projection framework across forecast horizons $h=0$ to $h=48$. The first stage consists of regressing PRI_t on Z_t, the instrument and X_t, the controls. Adjusted R^2 reflects overall model fit, while partial R^2 and the corresponding F-statistics assess the relevance of the instrument. P-values refer to the robust F-test for instrument significance. All reported p-values are less than 0.0001, indicating strong instrument relevance across all horizons.

Table A2
IV Endogeneity Tests across Horizons (0–48).

Horizon	GMM C-statistic	p-value
0	0.291522	0.5892
1	1.085920	0.2974
2	1.858530	0.1728
3	1.281550	0.2576
4	0.405387	0.5243
5	0.417978	0.5179
6	1.983480	0.1590
7	0.634675	0.4256
8	0.406872	0.5236
9	0.562691	0.4532
10	0.476418	0.4900
11	0.000090	0.9924
12	0.059130	0.8079
13	0.001989	0.9644
14	0.180213	0.6712
15	0.000105	0.9918
16	0.224359	0.6357
17	0.692351	0.4054
18	0.287643	0.5917
19	0.020776	0.8854
20	0.040570	0.8404
21	0.215723	0.6423
22	0.006960	0.9335
23	0.590329	0.4423
24	0.000085	0.9926
25	0.276917	0.5987
26	0.020946	0.8849
27	0.379701	0.5378
28	0.384029	0.5355
29	0.045586	0.8309
30	0.026610	0.8704
31	0.071427	0.7893
32	0.051640	0.8202
33	0.124078	0.7247
34	0.001101	0.9735
35	0.002503	0.9601
36	0.003652	0.9518
37	0.007923	0.9291
38	0.000667	0.9794
39	0.018494	0.8918
40	0.074174	0.7854
41	0.099088	0.7529
42	0.062716	0.8023
43	0.145959	0.7024
44	0.049104	0.8246
45	0.003838	0.9506
46	0.011145	0.9159
47	0.003613	0.9521
48	0.110055	0.7401

Note: This table reports the results of the GMM C-statistic applied to instrumented local projection regressions of oil prices at horizons 0 through 48. The null hypothesis is that the regressor of interest, PRI_t, is exogenous. For each horizon h, the test statistic follows a chi-squared distribution with 1 degree of freedom. High p-values (above 0.10) indicate failure to reject the null.

Appendix B. Results for the Japan-China PRI

I apply my identification strategy based on the *geopolitical turning points* instrument to the Japan-China dyad. Like in the case of the US-China dyad, the partial R-square (above 0.8) and the F-stat (above 100) confirm strong instrument relevance at each of the 48 horizons. Besides, the p-values for the strength of the instrument are very low at each of the 48 horizons. The full set of results is available in the replication archive

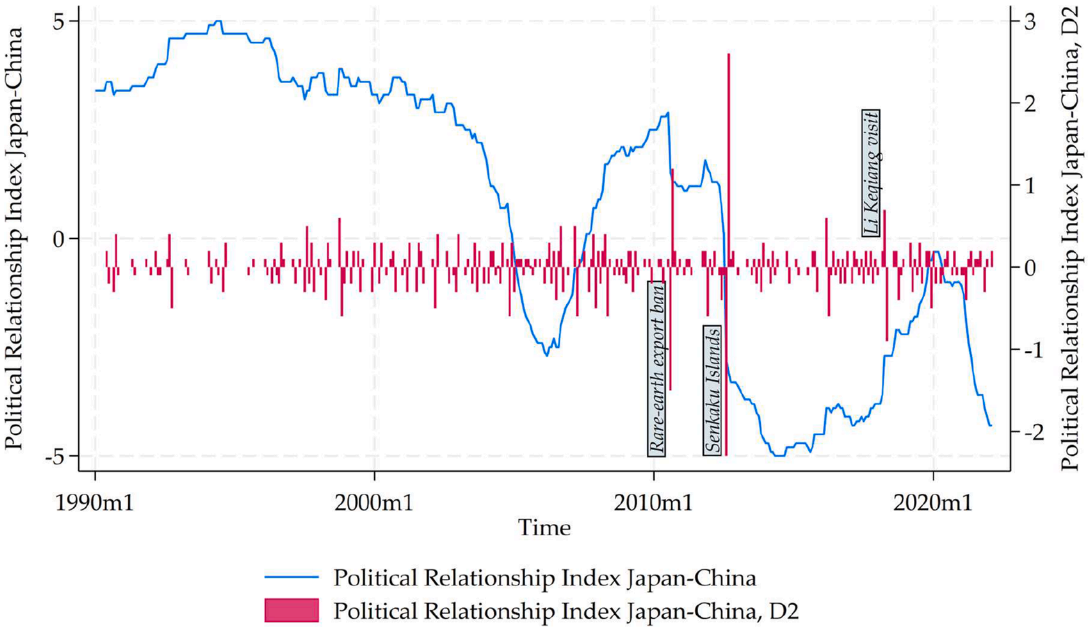

Fig. B1. Original PRI and the second difference of PRI (Japan-China).

Notes: On the left axis, the line is the original PRI. On the right axis, the bars correspond to the Δ^2PRI. For the Japan–China dyad, the three largest negative second differences in the PRI (inferior or equal to -0.9) correspond to the Senkaku Islands nationalization (September 2012, sharp deterioration in August), the rare-earth export ban and fishing-boat dispute (September 2010, sharp deterioration in August), and Li Keqiang's visit to Japan (May 2018, improvement then deterioration). These events show the instrument's ability to capture exogenous and geopolitically driven inflection points.

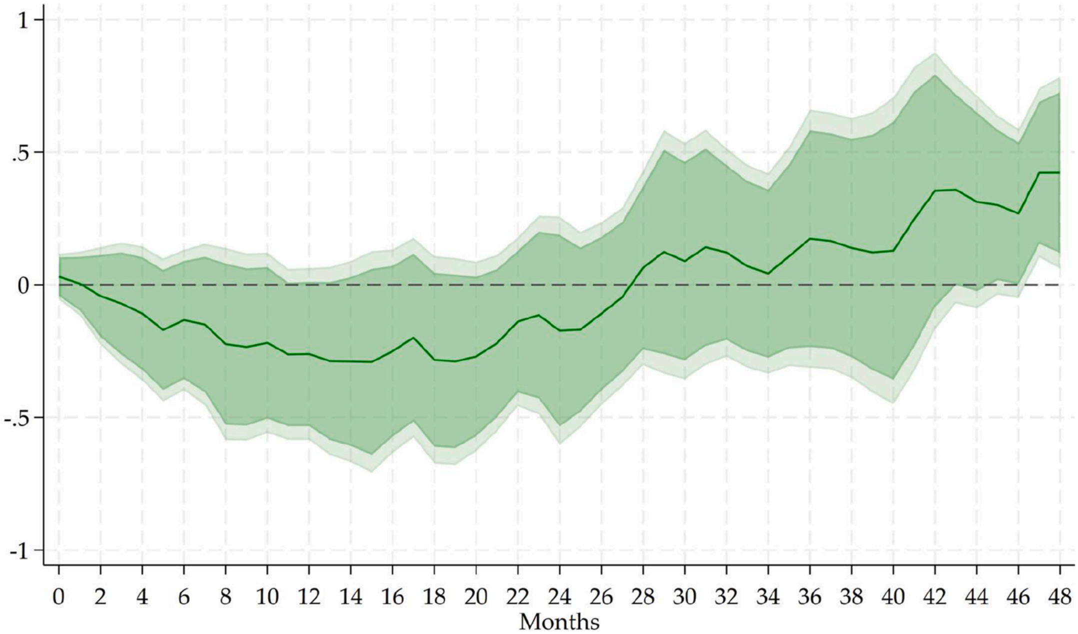

Fig. B2. Oil price reaction to an improvement of PRI between Japan and China.

Note: IV-LP local projections estimates. The shock is a positive unit shock on the PRI. This positive shock corresponds to an improvement in the relationship between Japan and China. 90% and 95% confidence intervals in green and light green, respectively.

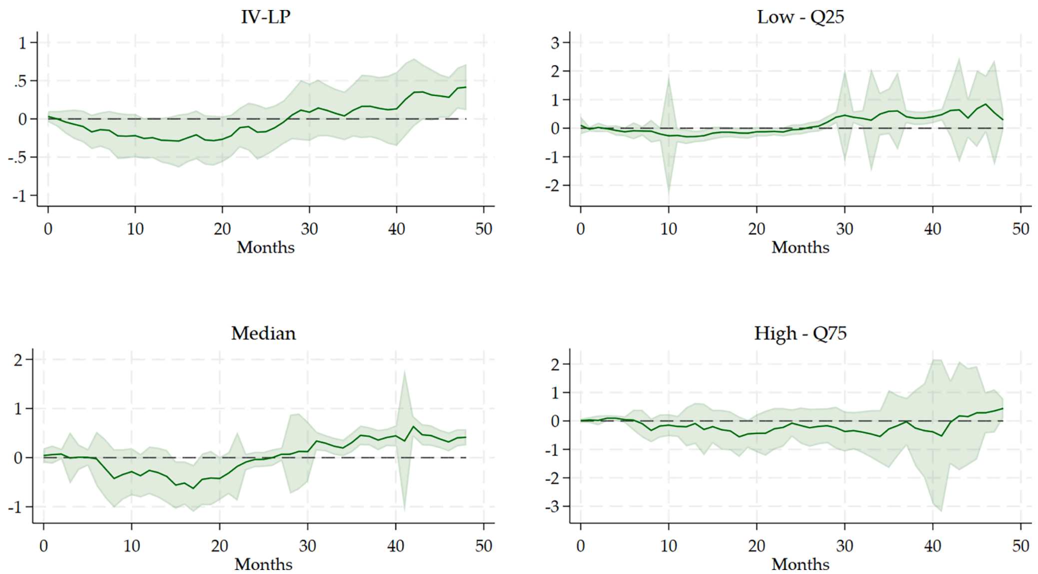

Fig. B3. Oil price reaction to an improvement of PRI between Japan and China for different quantiles.
Note: IV-LP quantile local projections estimates. The shock is a positive unit shock on the PRI. This positive shock corresponds to an improvement in the relationship between Japan and China. 90% confidence intervals.

Appendix C. Military alliances

In this appendix, I consider whether there are strategic alliances in setting the diplomatic relations with China. First, in Fig. C1, some countries have fluctuating relations, like the US and Japan; some have known a recent deterioration, like Australia and the UK, and to a lesser extent Germany and France; others have known a lot of improvements in the 1990s and have known a recent deterioration, like South Korea and India; finally, a group of countries maintains stable and good geopolitical relations with China, namely Indonesia, Vietnam, Pakistan, and Russia. Strategic military alliances exist in the world; consequently, some bilateral geopolitical relations may be influenced by other ones. To assess this, I use a VAR(7) model with the change of bilateral relationship to ensure stationarity. I focus on chi-squared statistics that have very large values/very low p-values. The results suggest a strategic alliance between the US, the UK, South Korea, and Australia in setting their geopolitical relations with China. The change in relations of Russia with China precedes those of India and Indonesia, reflecting improvements in the 1990s. These patterns are consistent with the interpretation that some bilateral relationships with China co-move in ways suggestive of strategic alignment. To assess whether such co-movement affects the baseline estimates, I re-estimate the main specification while controlling for changes in China's bilateral relations with other major partners. The estimated response of oil prices remains qualitatively unchanged (see Fig. C2).

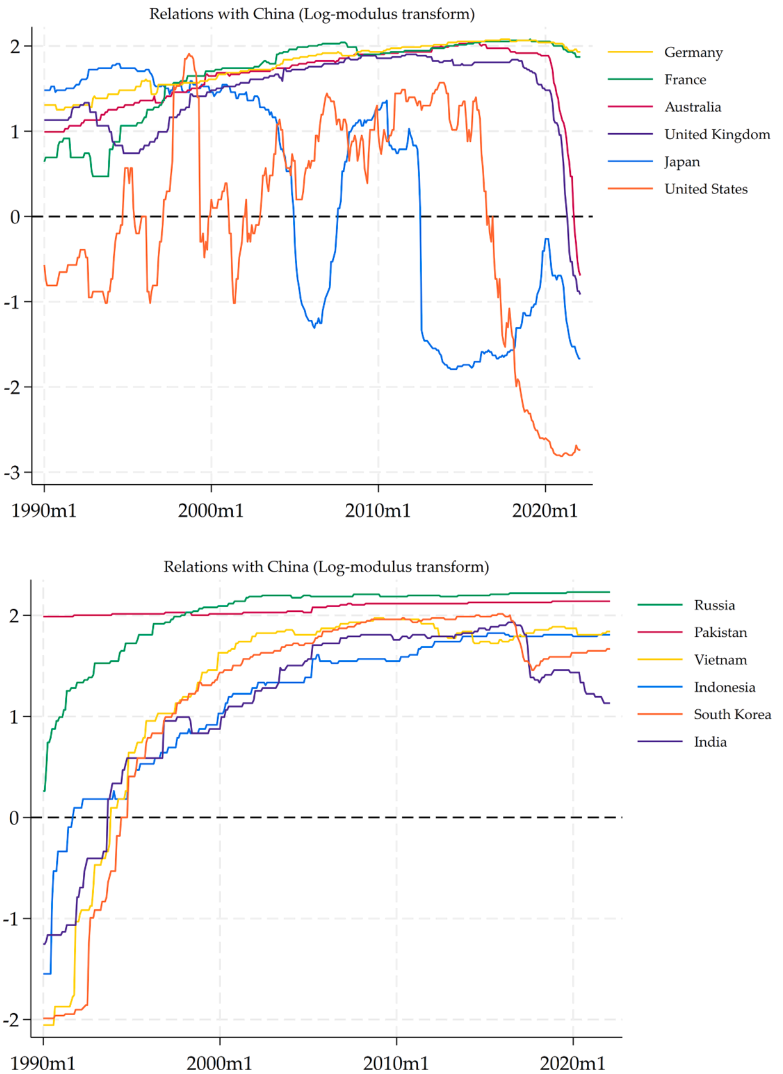

Fig. C1. Bilateral relations with China.
Note: On the left axis, the line is the log-modulus transform of the PRI. A higher value indicates better bilateral relations.

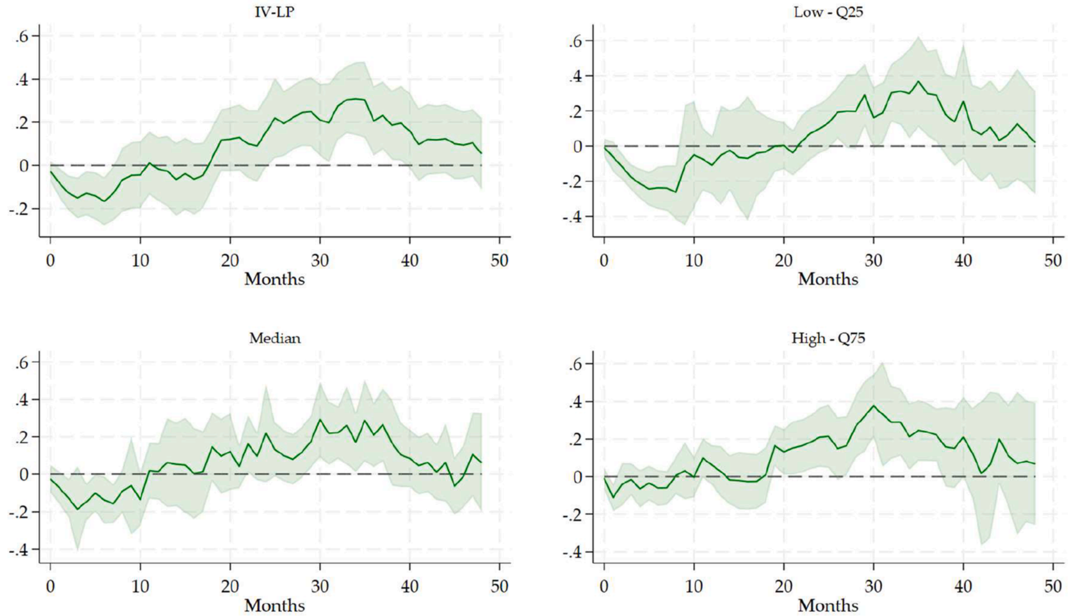

Fig. C2. Oil price reaction to an improvement of PRI between the US and China, controlling for military alliances.
Note: IV-LP quantile local projections estimates. The shock is a positive unit shock on the PRI. This positive shock corresponds to an improvement in the relationship between the US and China. 90% confidence intervals.

References

Aastveit, K.A., Bjørnland, H.C., Thorsrud, L.A., 2015. What drives oil prices? Emerging versus developed economies. J. Appl. Econom. 30 (7), 1013–1028.

Aizenman, J., Riera-Crichton, D., 2008. Real exchange rate and international reserves in an era of growing financial and trade integration. Rev. Econ. Stat. 90 (4), 812–815.

Backus, D.K., Crucini, M.J., 2000. Oil prices and the terms of trade. J. Int. Econ. 50 (1), 185–213.

Barnichon, R., Brownlees, C., 2019. Impulse response estimation by smooth local projections. Rev. Econ. Stat. 101 (3), 522–530.

Barsky, R.B., Sims, E.R., 2011. News shocks and business cycles. J. Monet. Econ. 58 (3), 273–289.

Baumeister, C., Hamilton, J.D., 2019. Structural interpretation of vector autoregressions with incomplete identification: revisiting the role of oil supply and demand shocks. Am. Econ. Rev. 109 (5), 1873–1910.

Bodenstein, M., Erceg, C.J., Guerrieri, L., 2011. Oil shocks and external adjustment. J. Int. Econ. 83 (2), 168–184.

Bondarenko, Y., Lewis, V., Rottner, M., Schüler, Y., 2024. Geopolitical risk perceptions. J. Int. Econ. 152, 104005.

Caldara, D., Iacoviello, M., 2022. Measuring geopolitical risk. Am. Econ. Rev. 112 (4), 1194–1225.

Cai, Y., Mignon, V., Saadaoui, J., 2022. Not all political relation shocks are alike: assessing the impacts of US–China tensions on the oil market. Energy Econ. 106, 106199.

Chernozhukov, V., Hansen, C., 2006. Instrumental quantile regression inference for structural and treatment effect models. J. Econ. 132 (2), 491–525.

Goldberg, L.S., Krogstrup, S., 2023. International capital flow pressures and global factors. J. Int. Econ. 146, 103749.

Goldstein, J.S., 1992. A conflict-cooperation scale for WEIS events data. J. Confl. Resolut. 36 (2), 369–385.

Du, Y., Ju, J., Ramirez, C.D., Yao, X., 2017. Bilateral trade and shocks in political relations: evidence from China and some of its major trading partners, 1990–2013. J. Int. Econ. 108, 211–225.

Inoue, A., Rossi, B., Wang, Y., 2024. Local projections in unstable environments. J. Econ. 244 (2), 105726.

Jordà, Ò., 2005. Estimation and inference of impulse responses by local projections. Am. Econ. Rev. 95 (1), 161–182.

Jordà, Ò., Taylor, A.M., 2025. Local projections. J. Econ. Lit. 63 (1), 59–110.

Kaplan, D.M., Sun, Y., 2017. Smoothed estimating equations for instrumental variables quantile regression. Econ. Theory. 33 (1), 105–157.

Kilian, L., 2009. Not all oil price shocks are alike: disentangling demand and supply shocks in the crude oil market. Am. Econ. Rev. 99 (3), 1053–1069.

Kilian, L., Plante, M.D., Richter, A.W., 2025. Macroeconomic responses to uncertainty shocks: the perils of recursive orderings. J. Appl. Econom. 40 (4), 395–410.

Kilian, L., Rebucci, A., Spatafora, N., 2009. Oil shocks and external balances. J. Int. Econ. 77 (2), 181–194.

Kilian, L., Vega, C., 2011. Do energy prices respond to US macroeconomic news? A test of the hypothesis of predetermined energy prices. Rev. Econ. Stat. 93 (2), 660–671.

Khalil, M., 2022. Oil prices, manufacturing goods, and nontradeable services. J. Int. Econ. 134, 103553.

Mignon, V., Saadaoui, J., 2024. How do political tensions and geopolitical risks impact oil prices? Energy Econ. 129, 107219.

Mignon, V., Saadaoui, J., 2025. Asymmetries in the oil market: accounting for the growing role of China through quantile regressions. Macroecon. Dyn. 29, e38.

Montiel Olea, J.L., Plagborg-Møller, M., 2021. Local projection inference is simpler and more robust than you think. Econometrica 89 (4), 1789–1823.

Ramey, V.A., 2011. Identifying government spending shocks: it's all in the timing. Q. J. Econ. 126 (1), 1–50.

Saadaoui, J., Strauss-Kahn, V., Creel, J., 2026. How geopolitics influence Chinese firms' exports: firm-level evidence of "friendtrading" under extreme events. SSRN. https://doi.org/10.2139/ssrn.6130286.

Ugarte-Ruiz, A., 2025. LOCPROJ & LPGRAPH: Stata Commands to Estimate Local Projections. BBVA Research WP-25-09.

Yan, X., 2010. The instability of China–US relations. Chin. J. Int. Polit. 3 (3), 263–292.

Yan, X., Qi, H., 2009. Zhongwaiguanxidingliangyuce, [中外关系定量预测; Quantitative Forecasts of China's Foreign Relations]. Shijieheshichubanshe, Beijing, China.

Yan, X., Zhuo, F., Qi, H., Xu, J., Zhaijiu, M., Liangzhu, Y., 2010. Zhongwaiguanxijianlan 1950–2005—Zhongguoyudaguoguanxidinglianghengliang [中外关系鉴览 1950–2005 – 中国与大国关系定量衡量; China's Foreign Relations with Major Powers By the Numbers 1950–2005]. Gaodengjiaoyuchubanshe, Beijing, China.