

How Geopolitics Influence Chinese Firms' Exports

Firm-Level Evidence of "Friendtrading" under Extreme Events

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Outline

Motivation and overview

Positioning relative to the literature

Data and measurement

Empirical strategy

Baseline results

Heterogeneity

Robustness and identification

Mechanisms and interpretation

Conclusion

Motivation: geopolitics and “friendtrading” from the export side

- ▶ Trade fragmentation and “friendshoring” debates emphasize geopolitical alignment as a determinant of cross-border flows
- ▶ Most evidence is import-side and Western-centric (risk indices from US/EU press), and often low frequency
- ▶ Export-side behavior is economically central: exporters’ reactions shape importers’ access to inputs and final goods
- ▶ We ask whether Chinese exporters systematically favor politically aligned destinations and how this changes under extreme events

Research questions

- ▶ Does a stronger China–partner political relationship increase Chinese firms' exports (value and quantity)
- ▶ Are effects nonlinear: do extreme geopolitical events change the marginal effect of political alignment
- ▶ Are effects asymmetric: do exporters respond more to positive diplomatic shifts than to negative ones
- ▶ Which firms and products react more: foreign-invested firms, differentiated goods, and textile versus non-textile sectors

Main contributions and headline results

Contribution

- ▶ High-frequency firm-product-destination evidence (monthly) linking geopolitics to exports
- ▶ China-centric measure of bilateral political relations with both positive and negative events
- ▶ Identification using rich fixed effects, tariffs, extreme-event interactions, and IV based on sudden geopolitical changes

Headline results

- ▶ Political alignment increases exports in value and quantity; effect is stronger for export values
- ▶ Nonlinearity: extreme positive events amplify the alignment effect; extreme negative events dampen it
- ▶ Asymmetry: stronger reaction to improvements than to deteriorations (“geopolitical inertia”)
- ▶ Stronger effects for foreign-invested firms and differentiated goods; no effect for homogeneous goods

Roadmap of the seminar

- ▶ Literature and positioning
- ▶ Data: Chinese customs transactions, tariffs, and PRI index
- ▶ Empirical strategy: baseline FE design and extreme events
- ▶ Results: baseline, heterogeneity, robustness, IV
- ▶ Interpretation and implications for fragmentation and GVC resilience

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Empirical strategy

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Literature map: where this paper fits

Geopolitics and trade fragmentation

- ▶ “Friendshoring” and GVC reallocation (Aiyar et al., 2024; Alfaro and Chor, 2023; Charpin, 2025; Freund et al., 2024; Gopinath et al., 2025; Luo, 2025)
- ▶ Import-side responses to tensions (Benguria et al., 2022; Caldara et al., 2020; Jackson et al., 2024)
- ▶ Policy discourse: economic security and strategic autonomy (Aiyar et al., 2024)

Firms, MNEs, and geopolitics

- ▶ MNE strategy under geopolitical risk and fragmentation (Ghauri et al., 2021; Luo, 2025)
- ▶ Procurement and sourcing toward aligned countries (Charpin, 2025; Alfaro and Chor, 2023)
- ▶ Geopolitical exposure, reputational and regulatory channels (Boddewyn and Brewer, 2016; Burmester et al., 2021)

China-centric political relations and trade

- ▶ PRI measurement and short-lived political shocks (Yan, 2009; Yan, 2010; Du et al., 2017)
- ▶ Conflict proxies and China trade responses (Fuchs and Klann, 2013; Li et al., 2021)
- ▶ Western-centric risk indices vs local measurement gaps (Caldara and Iacoviello, 2022; Bondarenko et al., 2024)

Key references (selected, by strand)

Trade fragmentation, GVCs, and friendshoring

- ▶ Alfaro and Chor (2023)
- ▶ Aiyar et al. (2024)
- ▶ Freund et al. (2024)
- ▶ Gopinath et al. (2025)
- ▶ Charpin (2025) on procurement and “friendshoring”
- ▶ Luo (2025) on multipolar MNE strategies

China political relations and trade; related identification

- ▶ Goldstein (1992) scale
- ▶ Yan (2009, 2010) on PRI construction
- ▶ Du et al. (2017): PRI and short-lived trade effects (annual vs high-frequency issues)
- ▶ Fuchs and Klann (2013): Dalai Lama visits and China trade
- ▶ Li et al. (2021): political conflict and Chinese imports (firm-level, annual)
- ▶ Caldara and Iacoviello (2022): GPR index (Western press-based baseline)
- ▶ Bondarenko et al. (2024): local vs international geopolitics measurement differences

Outline

Motivation and overview

Positioning relative to the literature

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Empirical strategy

Baseline results

Heterogeneity

Robustness and identification

Mechanisms and interpretation

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Data overview

- ▶ Unit of observation: firm i – product k (HS6) – destination c – month-year mt
- ▶ Chinese Customs Trade Statistics (CCTS): monthly export transactions, f.o.b. value and quantities
- ▶ PRI: monthly bilateral political relations between China and 12 major partners (range $[-9, 9]$)
- ▶ Tariffs: HS6-level annual tariffs by destination (WITS/World Bank); used as key control

Chinese customs transaction data (CCTS)

- ▶ Universe of monthly firm-level export transactions at HS8 level, aggregated to HS6 to match tariffs
- ▶ Deflation: HS2-level deflators (Upward et al.); harmonization across HS revisions using WITS conversion tables
- ▶ Cleaning: drop HS8 items with unit inconsistencies within HS6 categories (measurement error mitigation)
- ▶ Sample: firms exporting to 12 PRI destinations; about 17,470,260 firm–HS6–country–month–year observations

The Political Relationship Index (PRI): concept

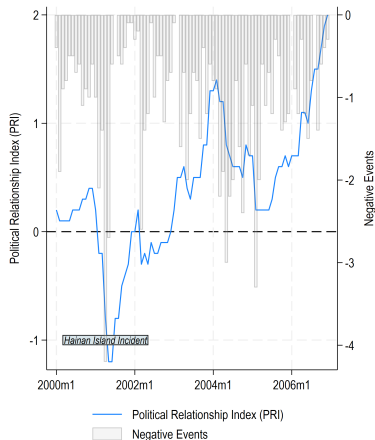
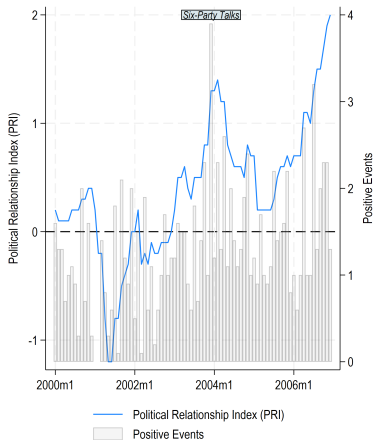
- ▶ Monthly bilateral diplomatic relations between China and 12 partners from a Chinese perspective
- ▶ Updated using events from *Renmin Ribao* (People's Daily) and Chinese Ministry of Foreign Affairs sources
- ▶ Interpretable scale: rivals $[-9, -6]$, tense $[-6, -3]$, bad $[-3, 0]$, normal $[0, 3]$, good $[3, 6]$, friends $[6, 9]$
- ▶ Key advantage: includes **positive and negative** events and allows intensity-based “extreme” event identification

PRI updating rule and interpretation

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

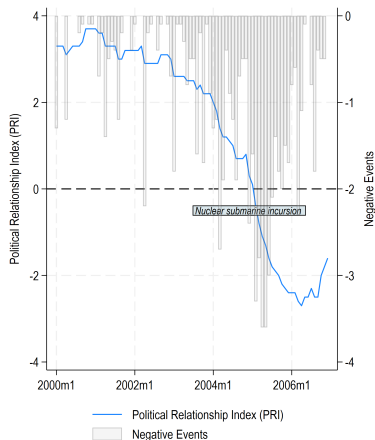
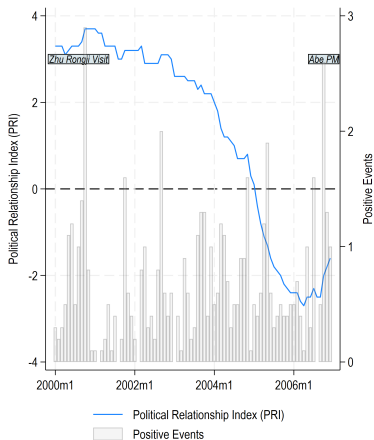
- ▶ EV^+ and EV^- : monthly positive and negative events (Goldstein-type scoring)
- ▶ Smoothing via division by 5, plus state dependence: marginal weight depends on current relationship level
- ▶ Interpretation: PRI reflects a smoothed bilateral relationship state, while events capture short-lived innovations

Visual motivation: bilateral PRI dynamics (examples)



China-US PRI and events

Visual motivation: bilateral PRI dynamics (examples)



China–Japan PRI and events

Outline

Motivation and overview

Positioning relative to the literature

Data and measurement

Empirical strategy

Baseline results

Heterogeneity

Robustness and identification

Mechanisms and interpretation

Conclusion

Baseline specification: firm-product within variation

$$Exports_{ikcmt} = \delta_1 PRI_{c,mt-1} + \delta_2 \tau_{kc,t-1} + \gamma_{ik} + \gamma_m + \gamma_t + \gamma_c + \eta_{ikcmt}$$

- ▶ Dependent variable: log export value (or quantity) of firm i , product k , destination c , month-year mt
- ▶ Fixed effects: firm-product (γ_{ik}), month (γ_m), year (γ_t), destination (γ_c)
- ▶ Identification: within firm-product changes across destinations and time, net of tariffs and common shocks
- ▶ Standard errors clustered at firm-product level

Extreme events: nonlinearity and asymmetry tests

- ▶ Define extreme-event dummies:
 - ▶ $EV^{++} = 1$ in months in the top 25% of positive events
 - ▶ $EV^{--} = 1$ in months in the bottom 25% of negative events (most negative)
- ▶ Interaction design:
 - ▶ $PRI \times EV^{++}$: does alignment matter more during highly favorable diplomatic shocks
 - ▶ $PRI \times EV^{--}$: does alignment matter less (or more) during crises
- ▶ Interpretation: tests whether exporters' response to geopolitical relations accelerates in good times and/or breaks in bad times

Timing and lags

- ▶ Baseline: 1-month lag between PRI and exports (fast adjustment is plausible at monthly frequency)
- ▶ Mechanisms imply different adjustment speeds:
 - ▶ Values can adjust faster than quantities (prices/margins vs production and logistics)
 - ▶ Scaling volumes may require contracts, capacity, and supply-chain reconfiguration
- ▶ Robustness: alternative lags (3 and 5 months) and more extreme thresholds (top/bottom 10%) confirm patterns

Endogeneity: why the design is credible

- ▶ Micro-level dependent variable reduces reverse causality: a single firm-product flow is unlikely to move bilateral diplomacy
- ▶ Tariffs control for trade-policy channel and trade-related political events
- ▶ Monthly frequency reduces anticipation and spurious annual correlations (Du et al. show annual timing problems)
- ▶ Extreme events are plausibly exogenous diplomatic shocks at monthly horizon
- ▶ Additional check: IV strategy exploiting sudden geopolitical changes (turning-point innovations in PRI)

Outline

Motivation and overview

Positioning relative to the literature

Data and measurement

Empirical strategy

Baseline results

Heterogeneity

Robustness and identification

Mechanisms and interpretation

Conclusion

Baseline results: exports in value

- ▶ Strong positive effect of *PRI* on export value: elasticity around 0.14–0.16
- ▶ Tariffs enter negatively with magnitude around -0.09 , consistent with standard trade predictions
- ▶ Economic magnitude: 1 s.d. increase in *PRI* from neutral (0 to 2.16) raises predicted exports by about 2.8%
- ▶ Nonlinearity in levels: effect depends on initial *PRI* level (log transform of $PRI + 10$)

Table: Export in value (baseline + extreme events)

Table 1: Export in Value

| | (1) | (2) | (3) |
|-----------------------------|---------------------|---------------------|----------------------|
| <i>PRI</i> | 0.142*** (0.009) | 0.141*** (0.009) | 0.160*** (0.009) |
| <i>EV</i> ⁺⁺ | | -0.026** (0.010) | |
| <i>PRI*EV</i> ⁺⁺ | | 0.009** (0.004) | |
| <i>EV</i> ⁻⁻ | | | 0.106*** (0.015) |
| <i>PRI*EV</i> ⁻⁻ | | | -0.046*** (0.007) |
| Tariff | -0.092** (0.040) | -0.092** (0.040) | -0.090** (0.040) |
| Intercept | 8.865*** (0.022) | 8.870*** (0.022) | 8.820*** (0.024) |
| R-squared | 0.544 | 0.544 | 0.544 |
| Observation | 17,501,693 | 17,501,693 | 17,501,693 |
| F-stat | 144.80 | 78.70 | 80.17 |
| RMSE | 1.444 | 1.444 | 1.444 |

Notes: The table reports estimates of equation (2). The dependent variable is export value of firm i for product k to country c in month c and year t . All estimations include firm-product, month, year and destination-country fixed effects. Standard errors are clustered at the firm-product level. ***, **, * indicate significance at the level of 1, 5 and 10% respectively.

Extreme events: asymmetric amplification vs dampening

- ▶ Extreme positive events: $PRI \times EV^{++} > 0$ (amplification of alignment effect)
- ▶ Extreme negative events: $PRI \times EV^{--} < 0$ (dampening of alignment effect)
- ▶ Interpretation: exporters exploit diplomatic openings more than they retrench during crises
- ▶ “Geopolitical inertia”: relationships persist through frictions, accelerate with alignment

Exports in quantity: weaker and slower adjustment

- ▶ *PRI* remains positive and significant but smaller in magnitude
- ▶ Positive-event interaction weaker and often insignificant at 1-month lag
- ▶ Negative-event interaction remains negative and significant
- ▶ With longer lags, quantity responses to positive events become clearer (consistent with adjustment frictions)

Outline

Motivation and overview

Positioning relative to the literature

Data and measurement

Empirical strategy

Baseline results

Heterogeneity

Robustness and identification

Mechanisms and interpretation

Conclusion

Firm ownership: SOE vs private vs foreign-invested

- ▶ Foreign-invested firms show the largest *PRI* elasticity and strongest sensitivity to extreme events
- ▶ Interpretation: stronger exposure to reputational/regulatory risk and global value chain discipline
- ▶ SOEs and domestic private firms respond, but with weaker interaction effects

Product types: differentiated versus homogeneous

- ▶ Strong effects for differentiated goods; no statistically significant effects for homogeneous goods
- ▶ This supports the mechanism: political alignment is more relevant when relationships and contracts matter
- ▶ Links to “sensitive sector” findings: tensions matter more where substitution and relationship specificity are high

Textile versus non-textile

- ▶ Results are not driven by textiles (around 17% of firms)
- ▶ Both textile and non-textile exports respond positively to alignment
- ▶ Stronger positive-event interaction in textiles may reflect faster adjustment in pricing/production and higher scrutiny

Outline

Motivation and overview

Positioning relative to the literature

Data and measurement

Empirical strategy

Baseline results

Heterogeneity

Robustness and identification

Mechanisms and interpretation

Conclusion

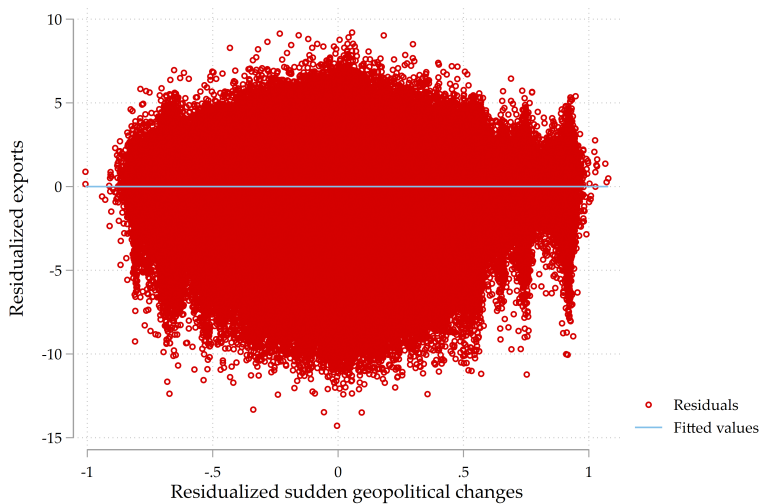
Balanced samples

- ▶ Address unbalanced monthly firm-product exporting patterns
- ▶ Balanced at product level (firm–HS6–year): firms exporting a product at least once each year
- ▶ Balanced at firm-month level: firms exporting every month
- ▶ Results remain qualitatively unchanged: *PRI* effect and negative-event dampening are robust

IV strategy: sudden geopolitical changes

- ▶ Instrument: sudden geopolitical changes defined as $\Delta^2 PRI$ (second difference)
- ▶ Rationale: captures unanticipated accelerations/decelerations (turning points) that shift relationship state
- ▶ Diagnostics: very strong first stage (Kleibergen–Paap F around 5879.6)
- ▶ 2SLS estimate: large positive elasticity of PRI on exports (local identification around sudden changes)

Visual exogeneity check



Correlation between exports and sudden geopolitical changes (residualized)

Outline

Motivation and overview

Positioning relative to the literature

Data and measurement

Empirical strategy

Baseline results

Heterogeneity

Robustness and identification

Mechanisms and interpretation

Conclusion

Interpreting the asymmetry

- ▶ Why stronger response to improvements than to deteriorations
 - ▶ Sunk costs: exiting or reconfiguring export relationships is costly
 - ▶ Contractual rigidities and relationship-specific investments (especially differentiated goods)
 - ▶ Option value of waiting during crises; exploiting openings when diplomatic signals improve
- ▶ PRI is smoothed; extreme negative events affect the marginal PRI-export link rather than shutting trade down
- ▶ Foreign-invested firms: greater sensitivity consistent with GVC compliance and risk management

What this implies for fragmentation and resilience

- ▶ “Friendtrading” is observable in exporter behavior even absent sanctions or trade wars (2000–2006 benchmark)
- ▶ Export-side adjustment matters for importer resilience and supply chain reliability
- ▶ Diplomatic predictability has measurable trade value beyond tariffs
- ▶ Differentiated products and foreign firms are key propagation channels through GVCs

Outline

Motivation and overview

Positioning relative to the literature

Data and measurement

Empirical strategy

Baseline results

Heterogeneity

Robustness and identification

Mechanisms and interpretation

Conclusion

Takeaways

- ▶ Better political relations (higher PRI) increase Chinese firm-level exports in value and quantity
- ▶ Nonlinearities: extreme positive events amplify the PRI-export link; extreme negative events dampen it
- ▶ Asymmetry: exporters respond more to improvements than to deteriorations (geopolitical inertia)
- ▶ Heterogeneity: strongest for foreign-invested firms and differentiated goods; no effect for homogeneous goods
- ▶ Identification strengthened by tariffs, rich fixed effects, robustness checks, and IV based on sudden changes

Discussion and next steps

- ▶ External validity: extend to more recent, more turbulent periods (post-2018, sanctions, trade wars)
- ▶ General equilibrium implications: exporter adjustments and importer welfare under fragmentation
- ▶ Micro channels: contract duration, supply-chain centrality, and destination-specific risk management
- ▶ Measurement: combining PRI-type local indices with global risk indices to map perception gaps