

Global Supply Chain Resilience: evidence and policy implication

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Global supply chain disruption/resilience in the case of ...

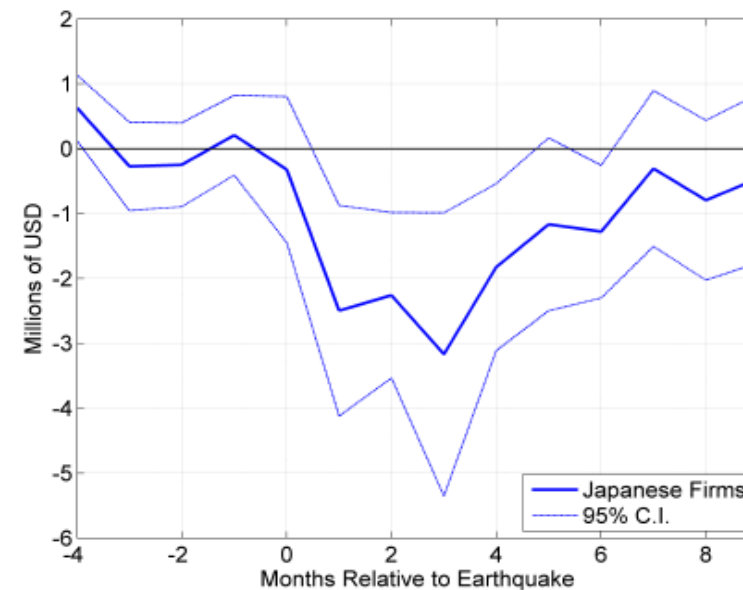
- Natural Disasters
 - Pandemic
 - Brexit
 - The US-China Trade War
 - The Security Export Control
-
- Based on previous studies and my own research, I provide some evidence (with a focus on Japanese firms) and policy implication.

Natural Disasters

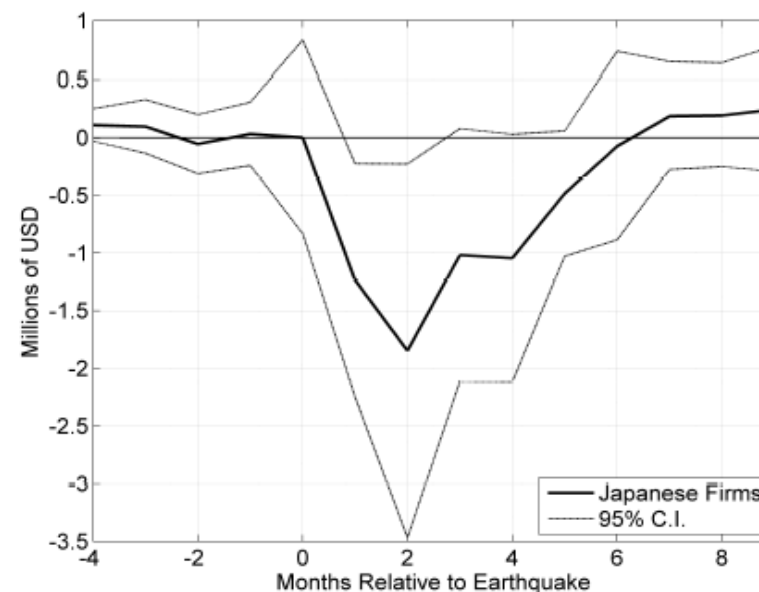
- The 2011 Great East Japan Earthquake
- The US affiliates of Japanese firms' intermediate imports and exports to the North America recovered within one year.
- The negative impacts of the earthquake were short-lived.

Source: Boehm et al. (2019) Input Linkages and the Transmission of Shocks: Firm Level Evidence from the 2011 Tohoku Event, *Review of Economics and Statistics*, 101(1): 60-75.

A. Relative Intermediate Input Imports of Japanese Firms

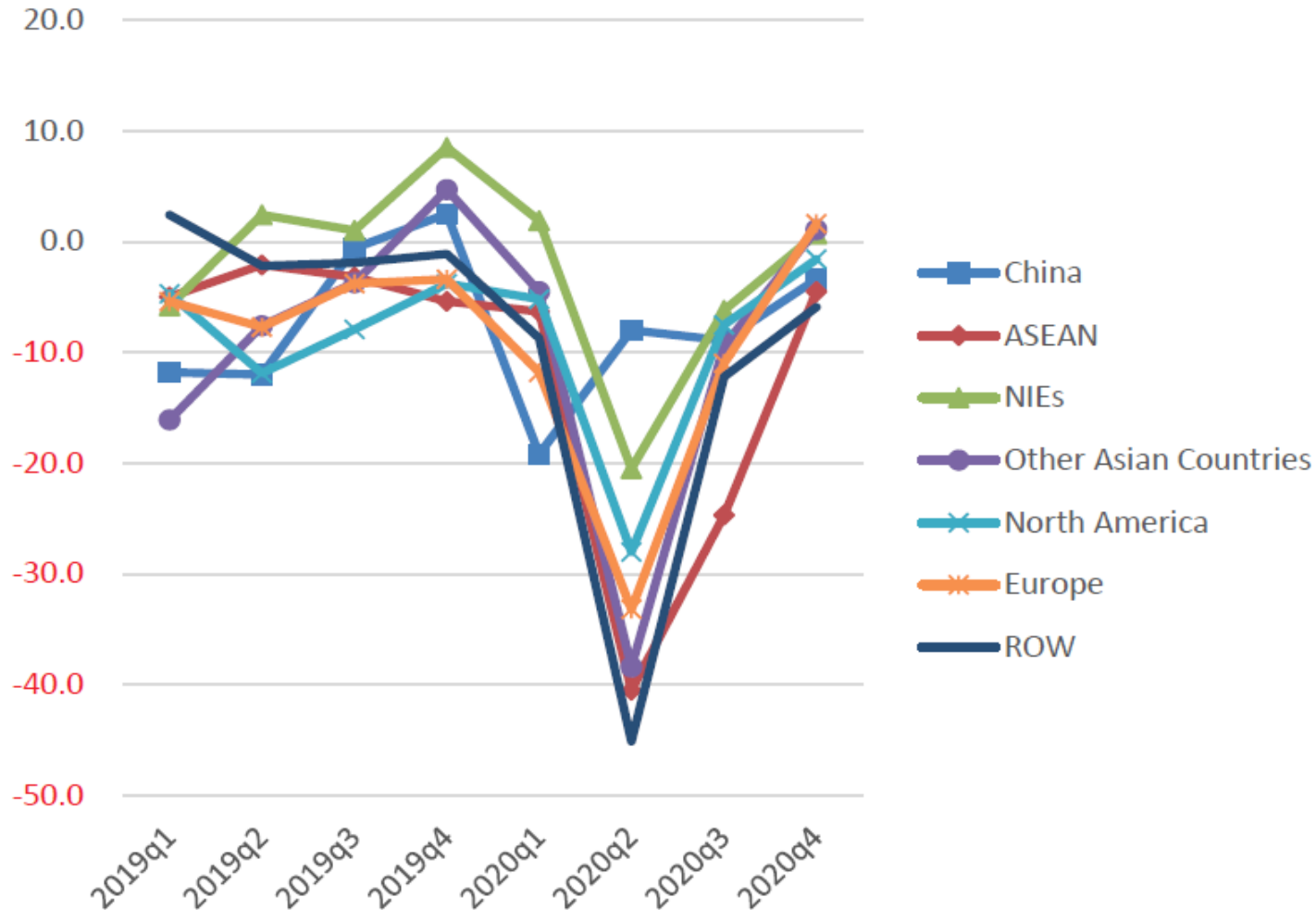


B. Relative North American Exports of Japanese Firms



Pandemic

Figure 4B: Exports to Third Countries (% , y-o-y)

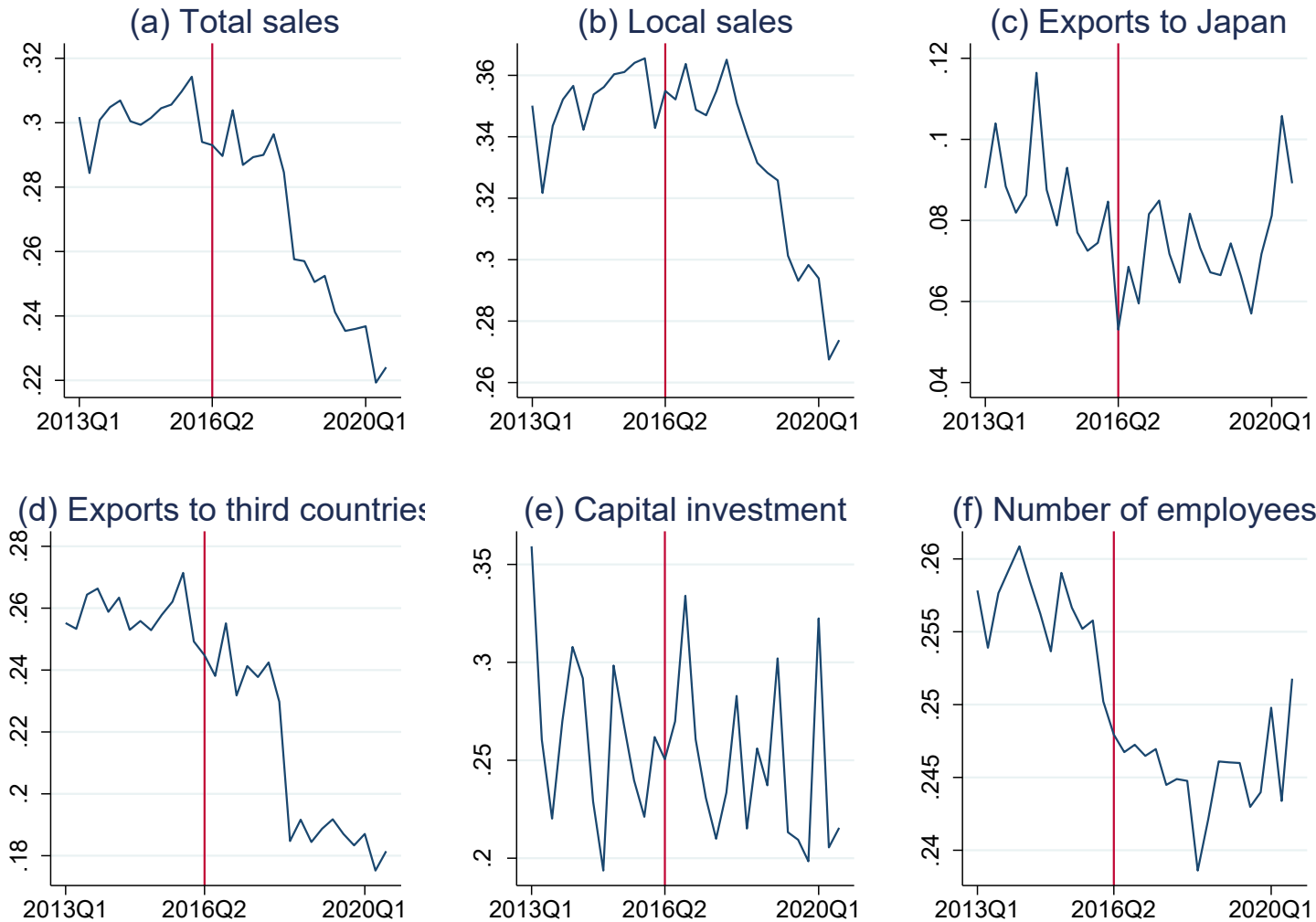


Source: Author's own compilation based on the QSOS, METI.

Source: Zhang (2021) The Impact of COVID-19 on Global Production: Evidence from Japanese Multinational Firms, *The International Economy*, 24: 142-165.

- Japanese foreign affiliates were hit hard by the COVID-19 in Q1-Q2 2020 but their exports to third countries recovered in Q4 2020.
 - Also true for local sales and exports to Japan
- It suggests the resilience of multinational production and global supply chains.

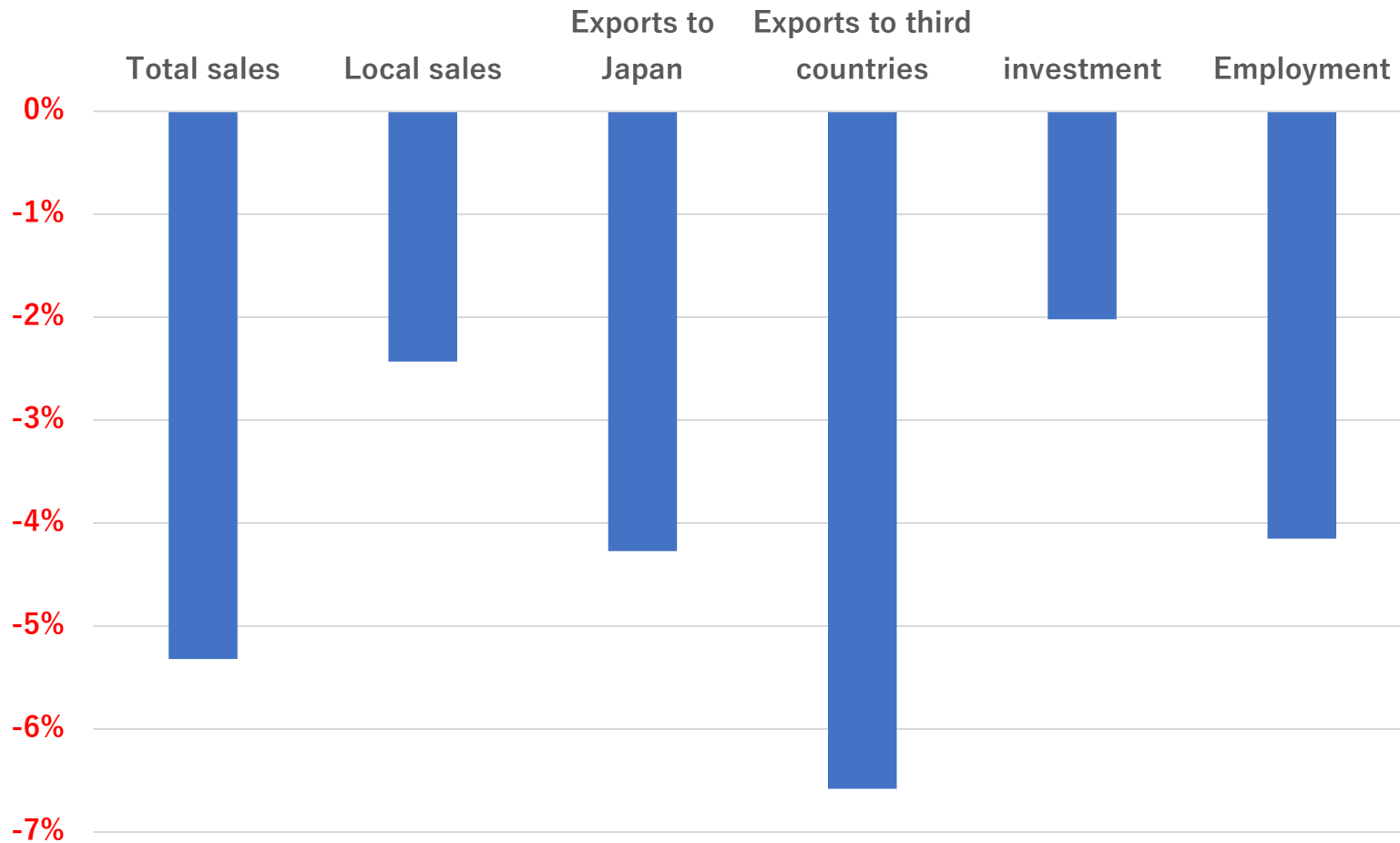
Brexit



- This figure shows the UK's share in Europe (UK and EU members) in terms of sales, exports, investment, and employment by Japanese manufacturing affiliates.
- The vertical line indicates Brexit vote in June 2016.
- As a production base and export platform to the EU, the UK's role weakened after the Brexit.
 - long-term impact

The US-China Trade War

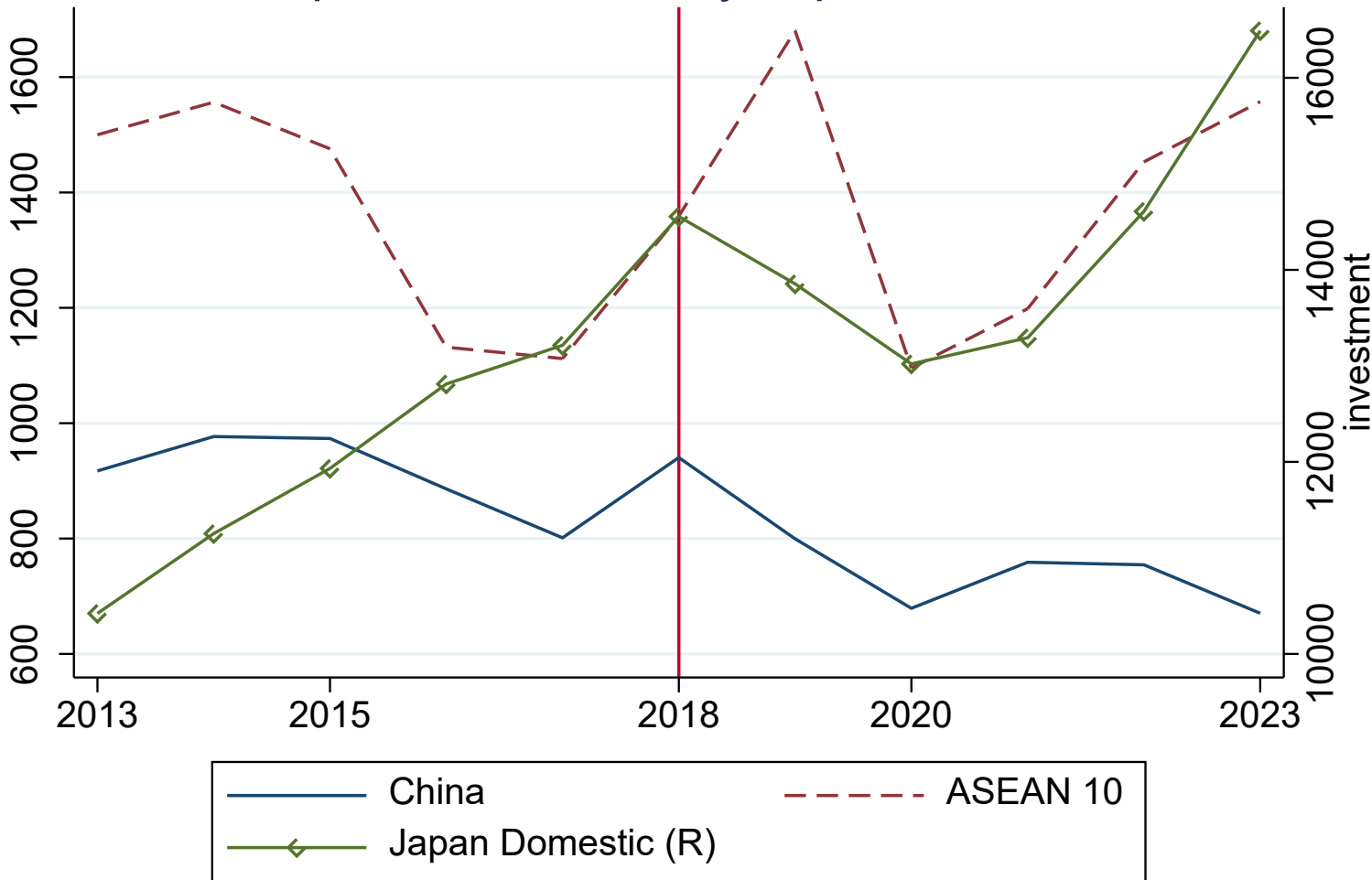
Short-run Impacts: Q1 2018 to Q3 2018



- Relative to Japanese affiliates in other Asian countries, affiliates in China, especially those with high exposure to trade with North America (NA), in general see a decline in sales since the trade war began.
- This decline is largely driven by a drop in sales to third countries

The US-China Trade War

Capital investment by Japanese firms



Note: billion yen. Source: Authors' compilation based on BSOBA and QSOS, METI and FSSCI, MOF.

Source: Zhang and Doan (2024) Geopolitical Risk and Supply Chain Reallocation, mimeo.

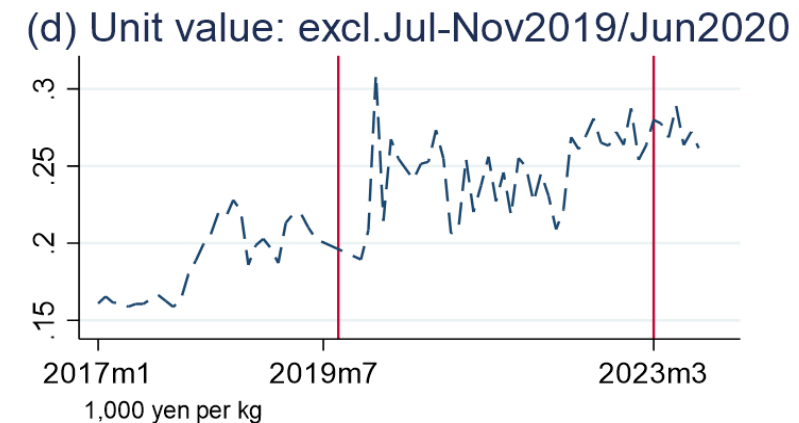
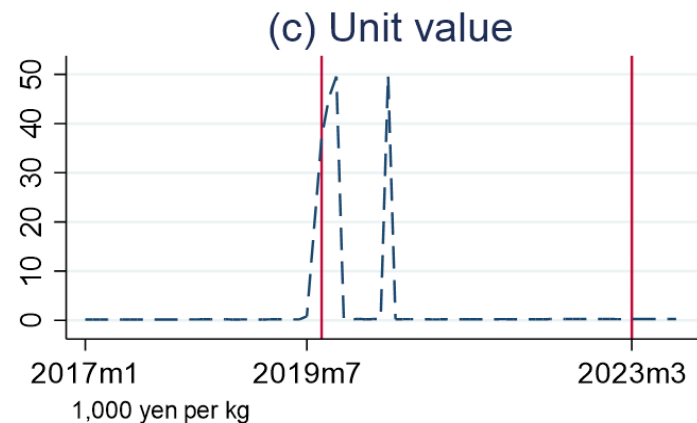
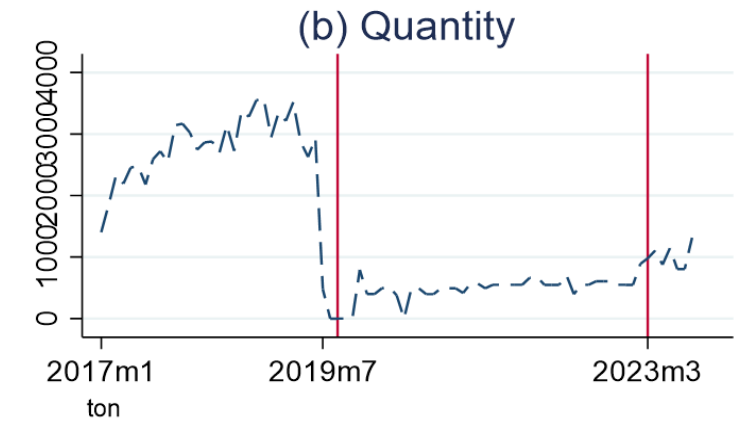
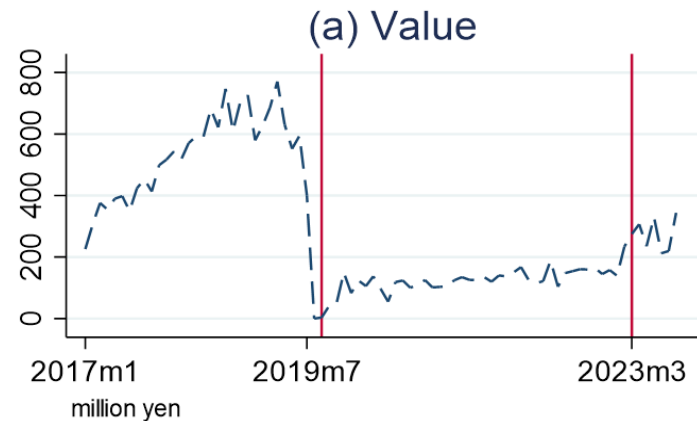
- **Long-run impacts:**
- After the trade war, Japanese multinational firms' capital investment gradually declined in China but significantly increased in ASEAN, suggesting **diversification/reallocation of supply chains.**
- Capital investment also expanded in Japan in the last two years, suggesting **reshoring.**

The Security Export Control

- In July 2019, Japan strengthened export control to South Korea on three chemical inputs (hydrogen fluoride, photoresist, fluorinated polyimide) essential in semiconductor production.

- The export control was lifted in March 2023. However, exports of hydrogen fluoride did not revert, suggesting a **long-run impact**.

Long-term impact on Japanese exports to Korea



Hydrogen fluoride. Export control started in Jul 2019 and ended in March 2023.

Conclusion

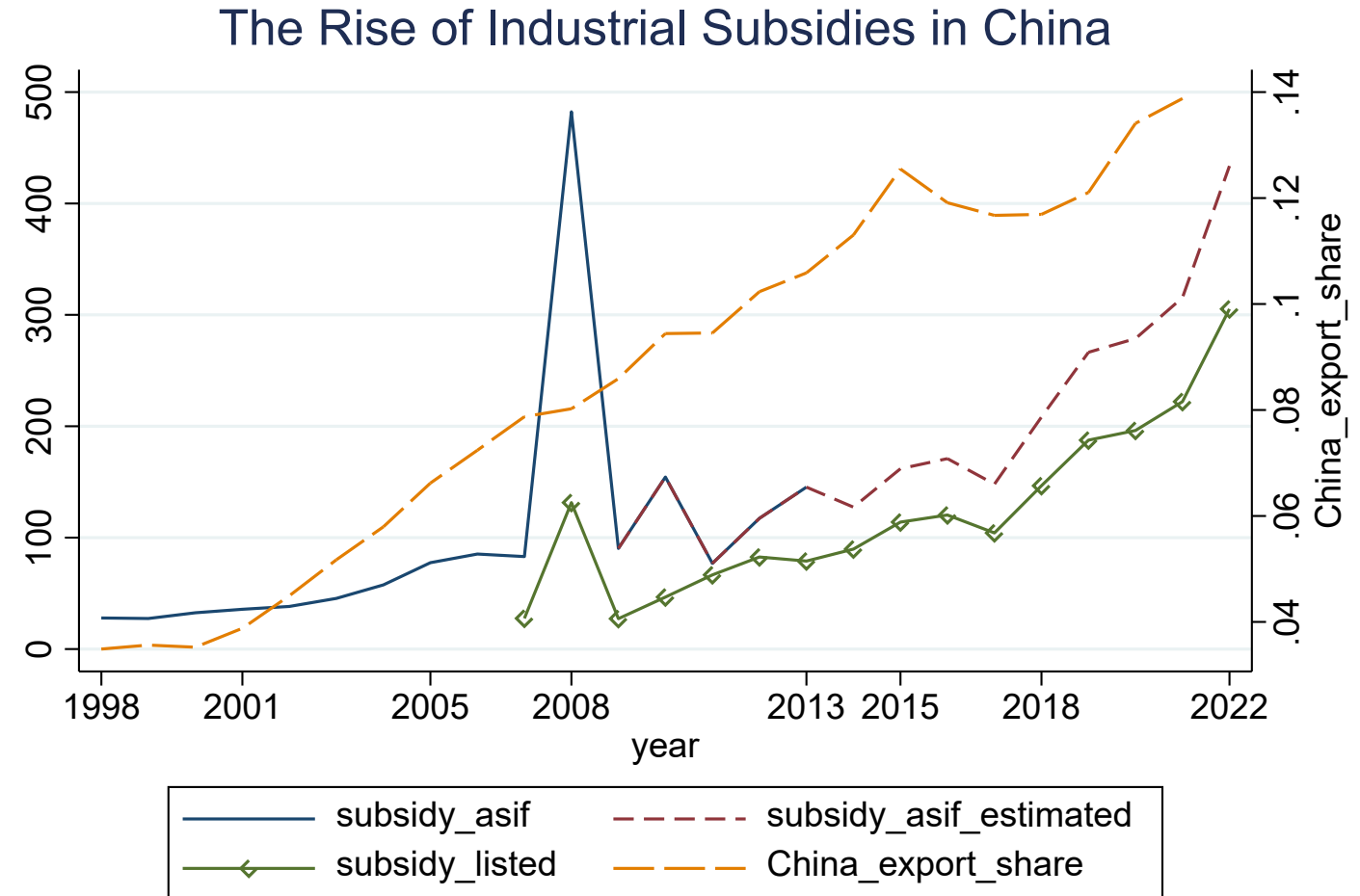
- The impacts of exogenous shocks on global supply chains are heterogeneous.
- Natural disaster/ pandemic: impacts are relatively short-lived
- Policy change/ institutional change: impacts are long-lasting
 - Brexit
 - the US-China trade war/decoupling, geopolitical risks
 - export control

Policy Implication

- Natural disaster/ pandemic:
- METI' s supply chain subsidies in 2020-2022
 - Domestic investment promotion: 「サプライチェーン対策のための国内投資促進事業費補助金」
 - Supply chain diversification: 「海外サプライチェーン多元化等支援事業」
- Policy support for emergency is needed. Subsidies for reshoring is not a good idea.
- Policy change/ institutional change:
- Policy coordination / trade talk among G7/G20/WTO members are needed
- Industrial policy and economic security policy that promote domestic investment/production may have long-run impacts on supply chains
 - Reshoring, diversification, reorganization of supply chains

Policy Implication

- Industrial policy is costly (subsidies, tax incentives).
- Domestic industrial policy may have negative/positive effects across national borders and affect foreign countries/firms/competitors.
 - Negative effects may lead to trade war/conflict, protectionism policy, subsidy competition



Subsidies are in billion RMB. Authors' compilation based on the ASIF, WIND, and WITS database.

Source: Zhang, Cheng, Liang, and Meng (2024) Industrial Subsidies along Domestic Value Chains and their Impacts on China's Exports, IDE Discussion Paper.