"Supply shocks in supply chains: Evidence from the early lockdown in China"

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Paper Summary

- Examines **China COVID-19 lockdown shock** (preceded other lockdowns by about 2 months)

- To study:
  - **Input shock propagation** through supply chains
  - **Role of supply chain management strategies** in propagation

- French firm-level data

Industrial production, yoy % change

Source: Haver Analytics
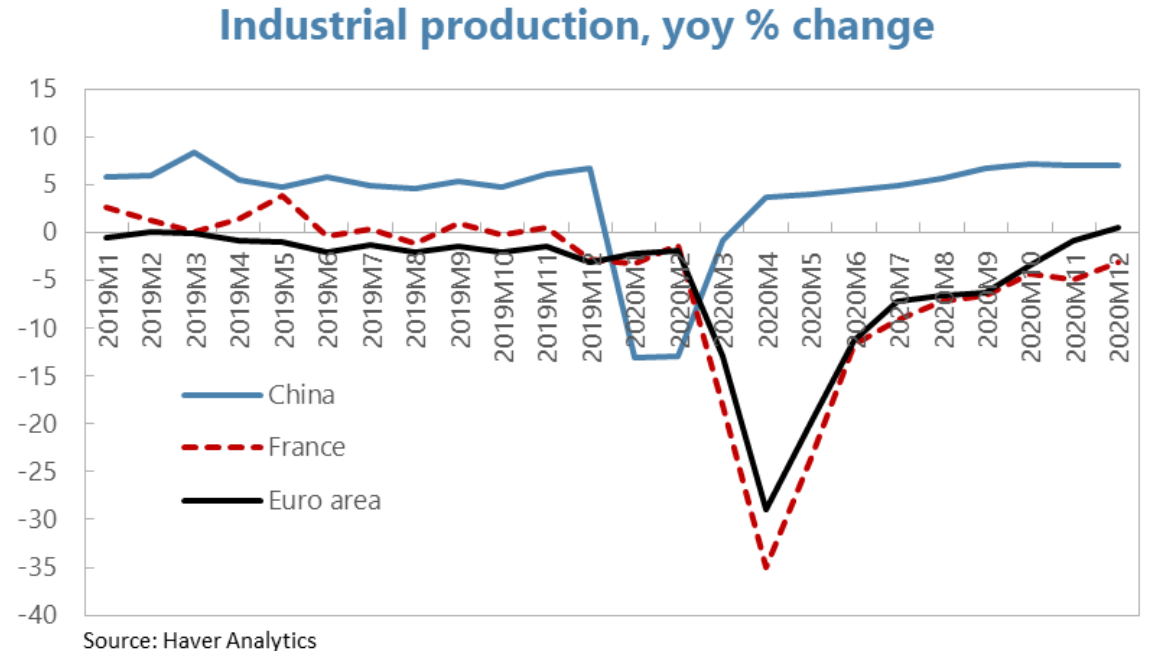
Paper Summary

Findings

- Relative to a control group, firms that depend on intermediate inputs from China saw
  - A **7% larger drop in imported** inputs
  - Transmitting into a **5% drop in exports**
  - Almost entirely **extensive margin** (# of markets served)
- Role of supply chain management strategies
  - Ex-ante **diversification of inputs did not alleviate** impact on exports; ex-post substitution for standardized products
  - **Inventories helped**
- Extensive robustness checks

Paper Summary

- What are key contributions?
  - Shock transmission via supply chains (e.g., Japan earthquake, COVID-19)
  - Role of diversification and inventories->understanding supply shortages
  - Short-term elasticity of substitution for inputs

- (Potentially more broadly) resilience of trade:
  - Did supply chains magnify the COVID-19 shocks?

- Are results plausible? Yes.

Comment 1: Shock exposure and domestic substitution margin

- Intensity of firm involvement in GVCs is measured as:

$$X_f/(X_f+M_f)$$ [Exposed to supply chains if $0 < X_f/(X_f+M_f) < 1$]

- Consider instead a more generalized setting with M_f/Y_f and X_f/Y_f

- Vertical specialization (VS) measure (Hummels, Ishii and Yi 2001):

$$(M_f/Y_f)*X_f$$ [How dependent firm's exports are on imports?]
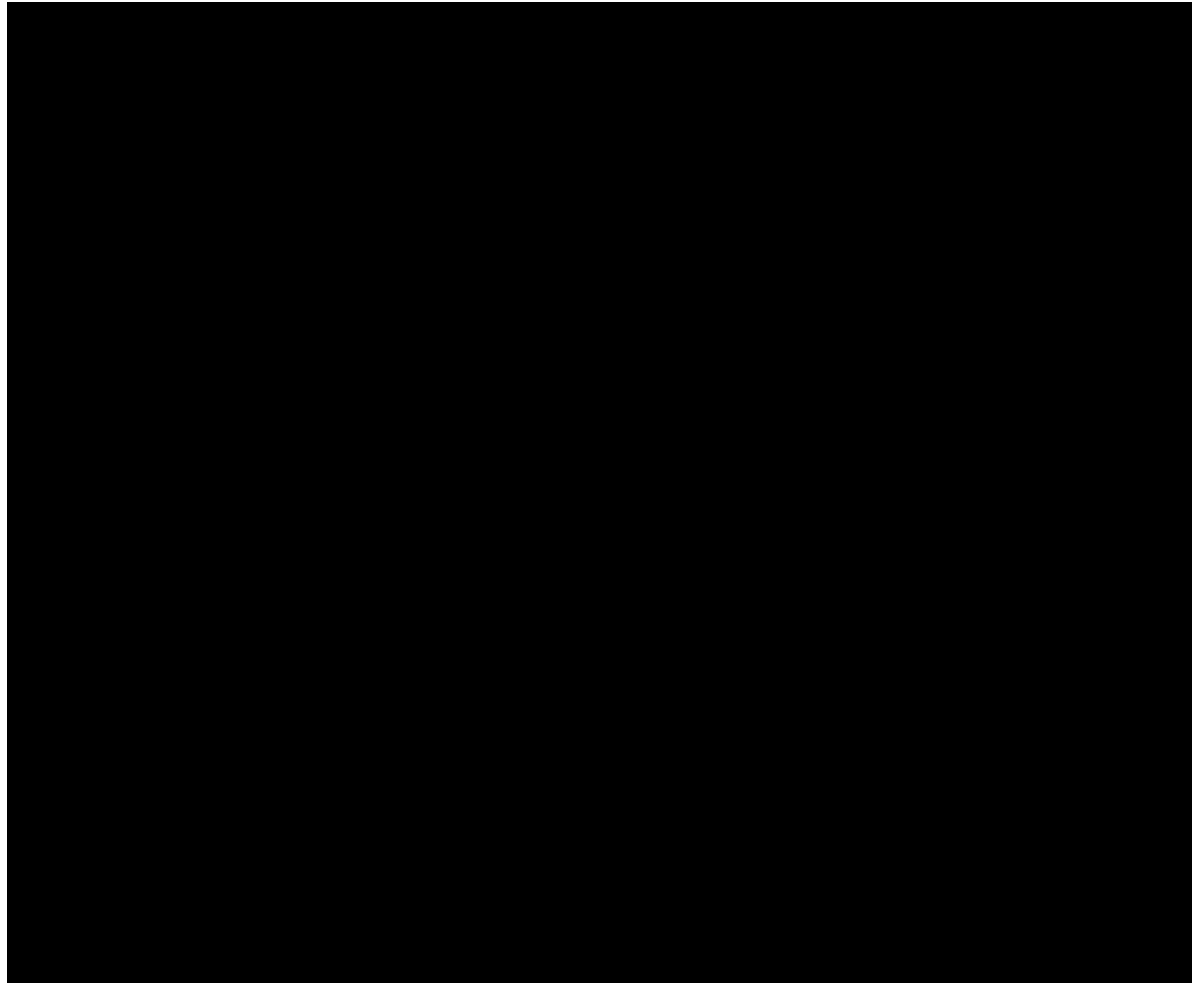
- Were firms with higher VS measure affected more/less?

Comment 1: Shock exposure and domestic substitution margin
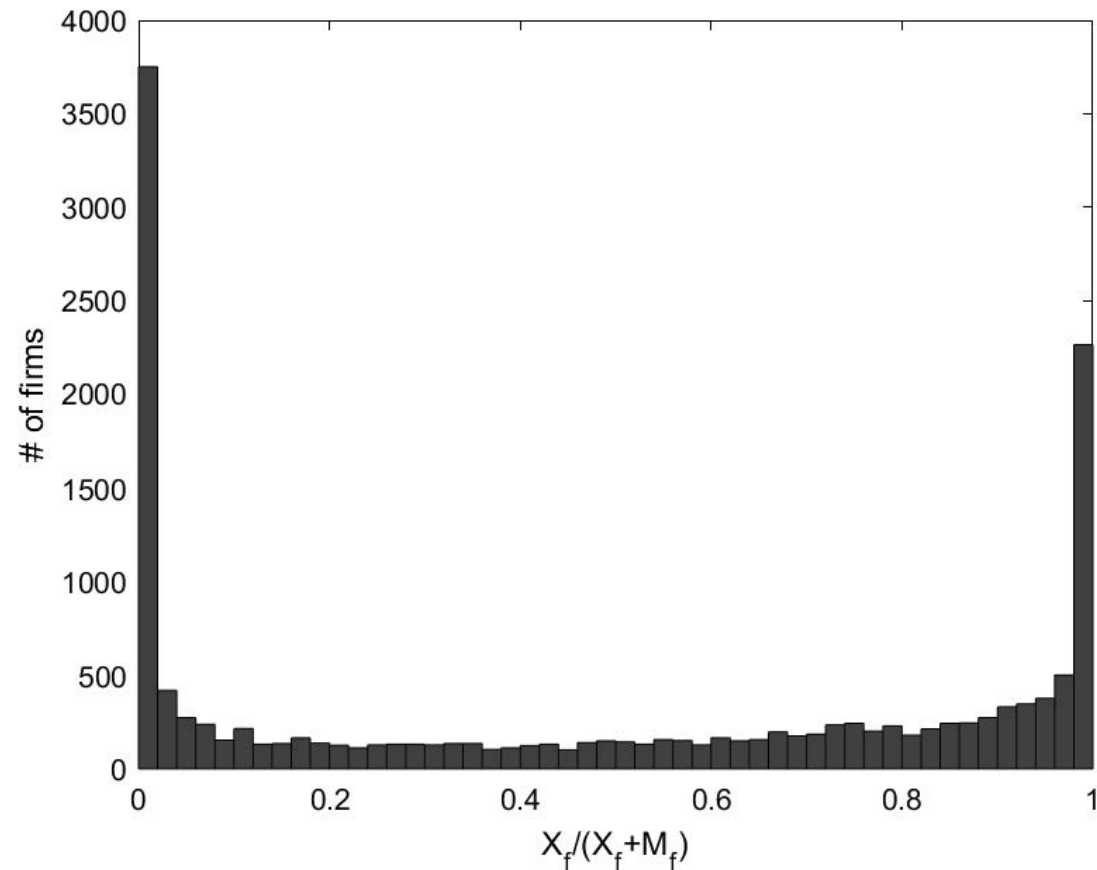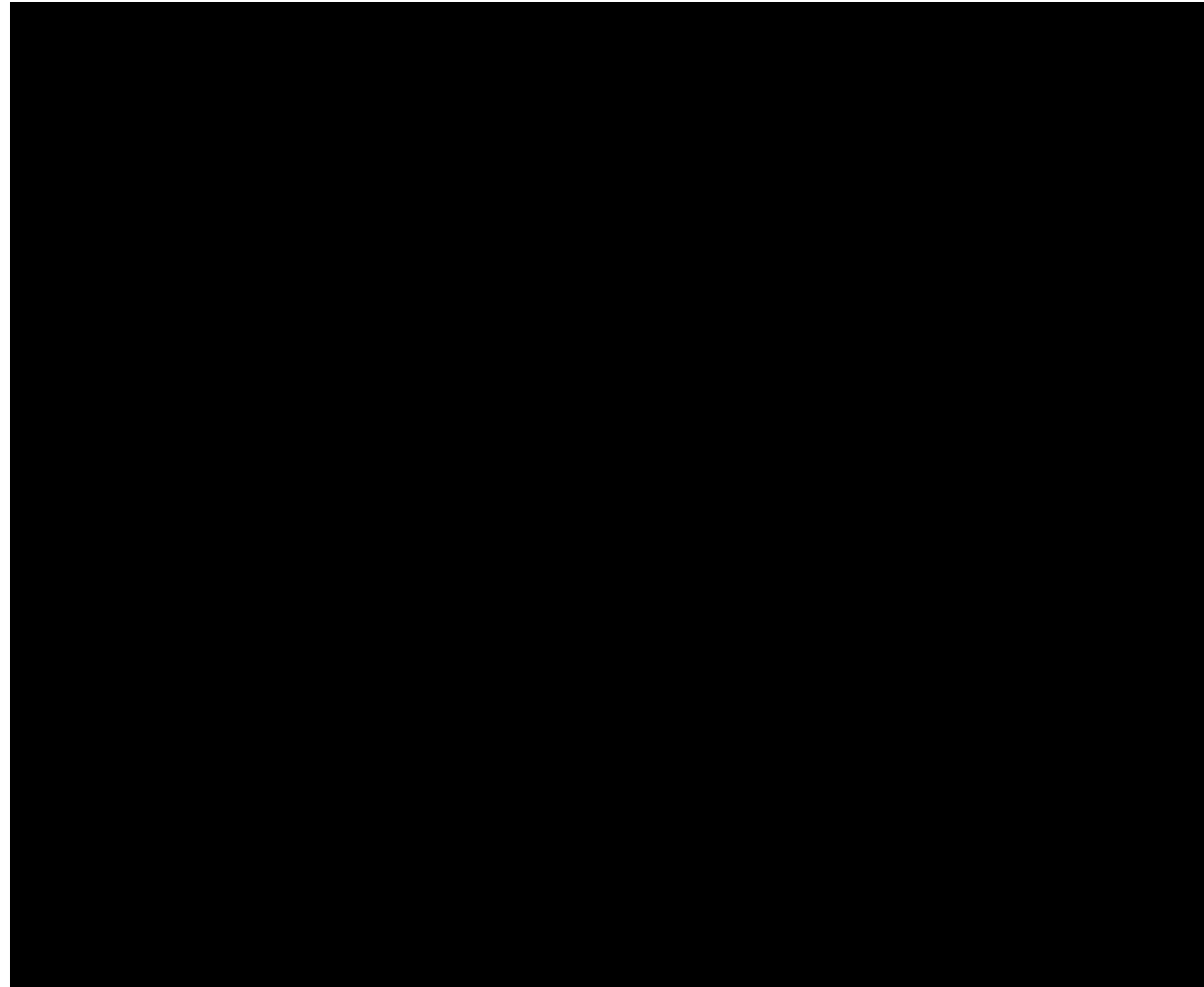

Source: KOSTAT firm-level data for Korea, 2017

Comment 1: Shock exposure and domestic substitution margin

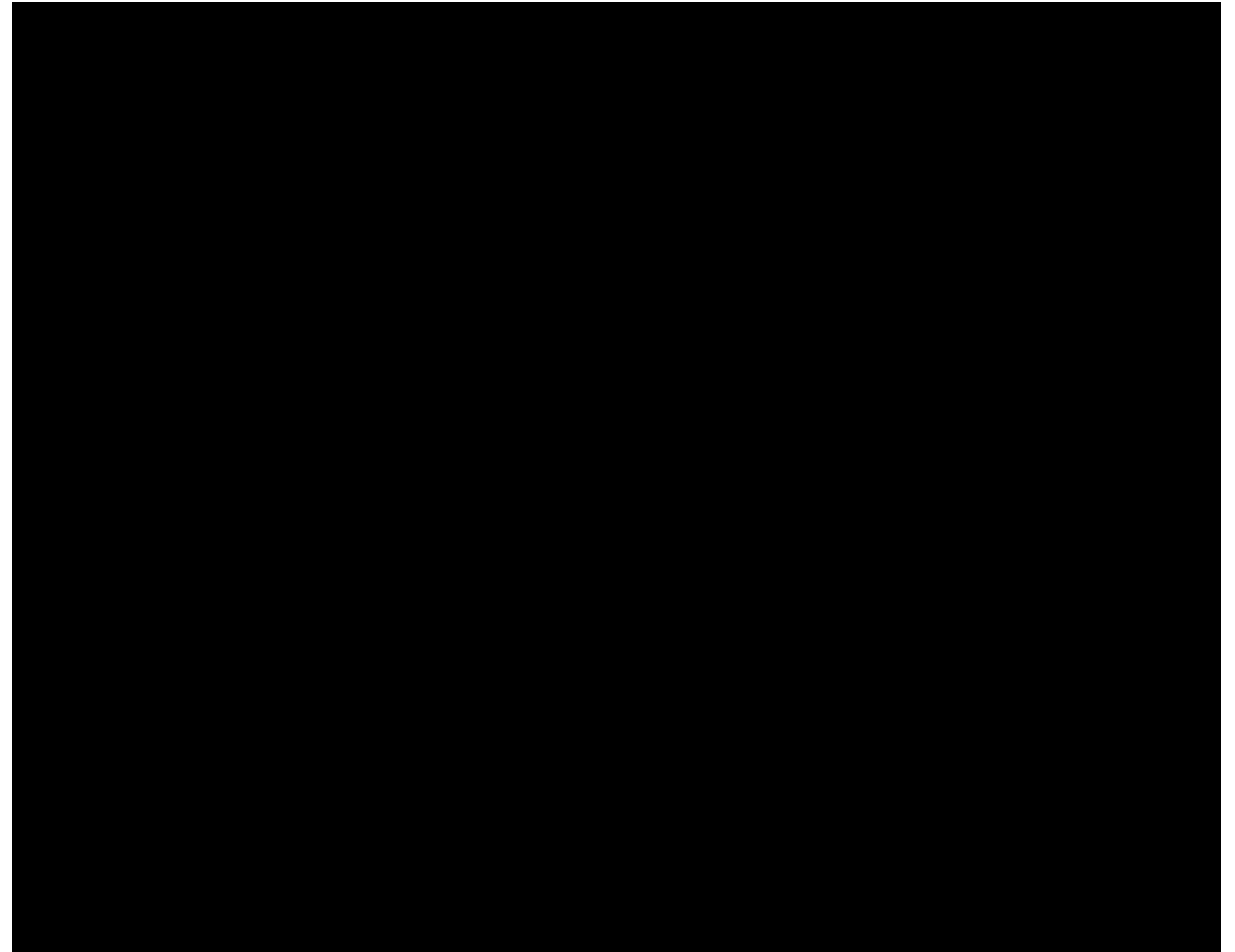Source: KOSTAT firm-level data for Korea, 2017

Comment 1: Shock exposure and domestic substitution margin

Source: KOSTAT firm-level data for Korea, 2017

Comment 1: Shock exposure and domestic substitution margin

- Were "GVC firms" more affected than "domestic"?

- Robot adoption mitigated impact of the COVID-19 shock (Brussevich, Papageorgiou and Wibaux, 2021)
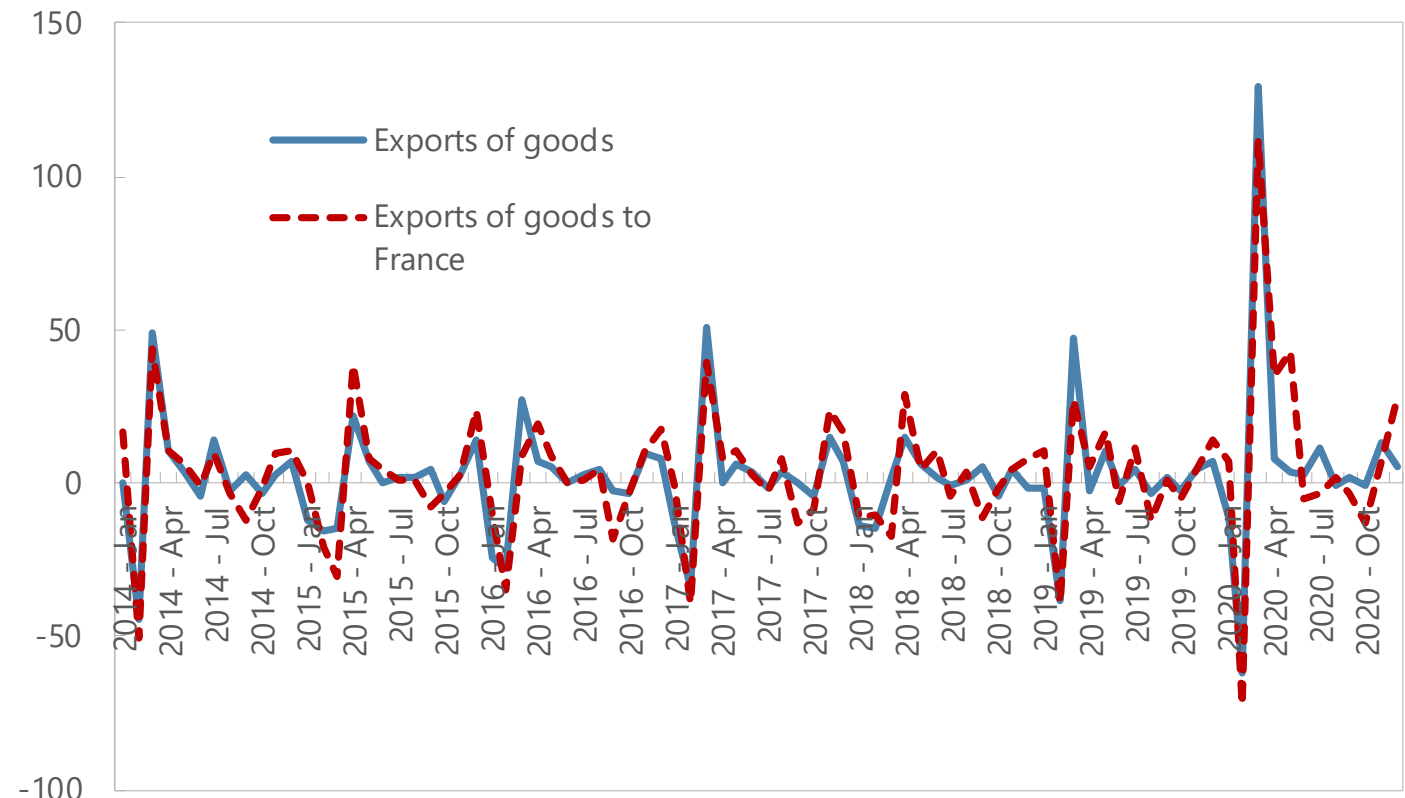
Source: KOSTAT firm-level data for Korea 2017

Comment 2: Seasonality

- Strong and <u>predictable</u> seasonality for China exports that overlaps with the COVID-19 shock
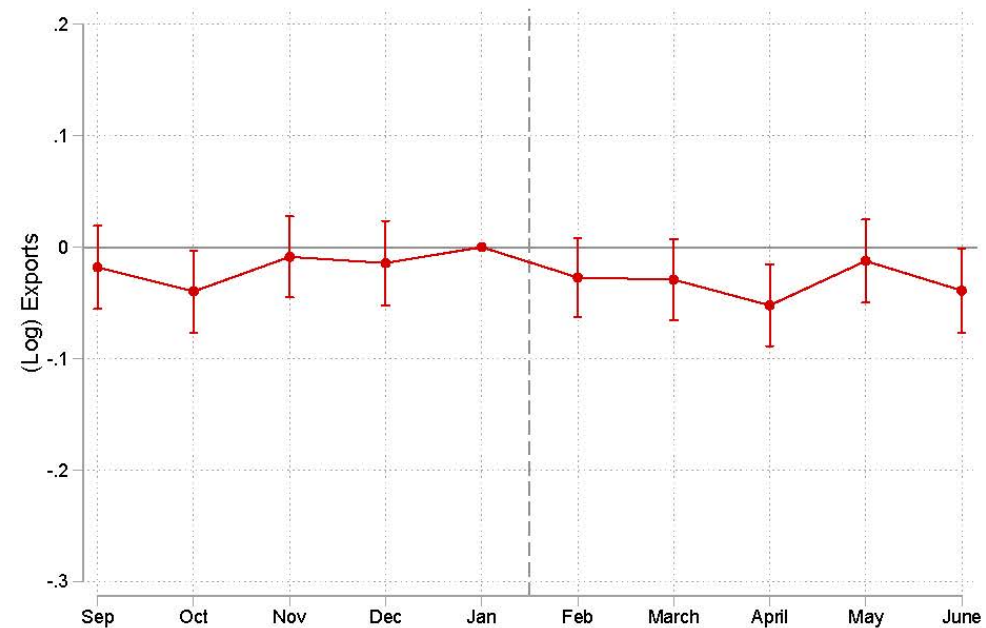
Seasonality in China's exports, M/M % change

Source: Haver Analytics

Comment 2: Seasonality

Figure A.7: Placebo test: Dynamics of firm-level exports between September 2018 and June 2019

Notes: The figure shows the dynamics of exports for treated firms in comparison with the control group. The treatment is based on imports from China between September 2018 and January 2019 and the placebo date of the treatment is considered to be February 2019. The estimated equation includes firm and period fixed effects. Standard errors are clustered at the firm-level. The confidence intervals are defined at 5%.

Comment 2: Seasonality

- Paper should examine the role of seasonality in more depth

- If exports not affected by seasonality:
  - what supply chain strategies used?
  - Is the result about inventory management partly driven by the seasonal pattern, limiting its broader applicability?

- If exports affected by seasonality:
  - What's the qualitative contribution?

Other Comments

- Where **large/small firms** disproportionately affected by the shock?

- How did **prices** of imports and exports of French firms respond to the shock?

- **Trade resilience**: Was trade in final goods or inputs more affected?

Takeaways

- Very interesting paper on an important topic. Carefully implemented empirical work with extensive robustness checks.

- Recommended reading if you are interested in GVCs and/or ongoing supply disruptions