# Discussion of Huo, Levchenko and Pandalai-Nayar (2019): The Global Business Cycle: Measurement and Transmission

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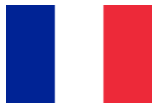
# The paper in a nutshell: Research question 1

## Propagation vs. correlated shocks

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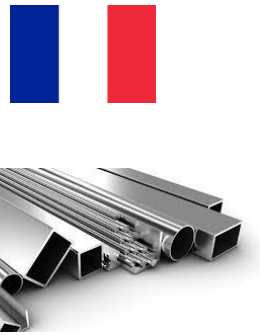


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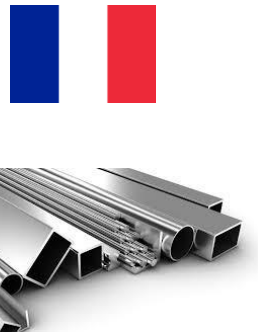

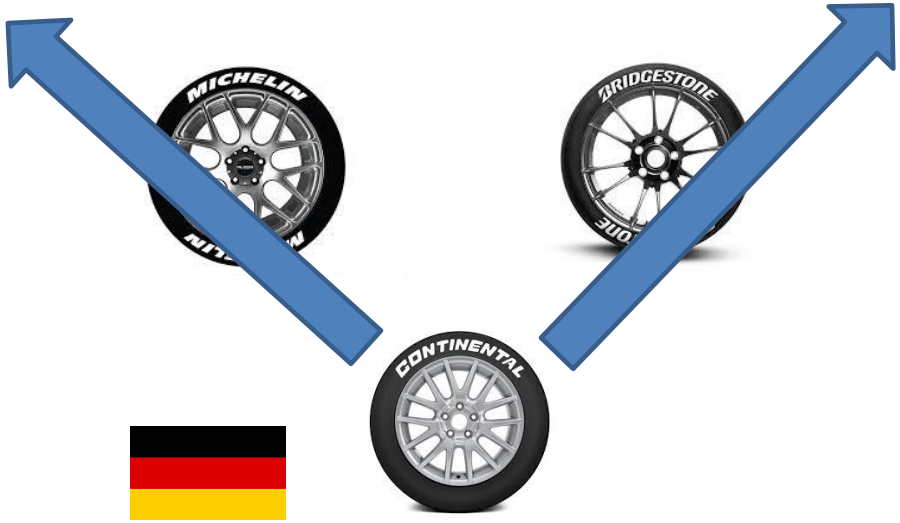

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Technology vs. non-technology shocks

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## The paper in a nutshell: Motivation and contribution

- Abundant literature with variety of approaches
- This paper:
  - Incorporation of sectoral input linkages (Acemoglu et al, 2012) in an international setting
  - Accounting framework
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  - Accounting framework
  - Clean and very careful estimation of technology shocks à la Basu et al. (2006)
- Non-technology shocks co-move across countries
- Propagation through trade is only a small driver of business cycle comovement

## Comments: open questions

- What are non-technology shocks?
- Autarky vs trade integration: reallocation towards sectors with more correlated shocks
- Trade comovement puzzle

## What are "non-technology shocks"?

- Measurement:

$$\begin{aligned}\text{Non-tech shock} &= \text{GDP - tech shock - pre-determined factor changes} \\ &= \text{anything that drives within-period supply of L and K}\end{aligned}$$

$\rightarrow$ Dependence on parameters.

$\rightarrow$ Difficult object to grasp.

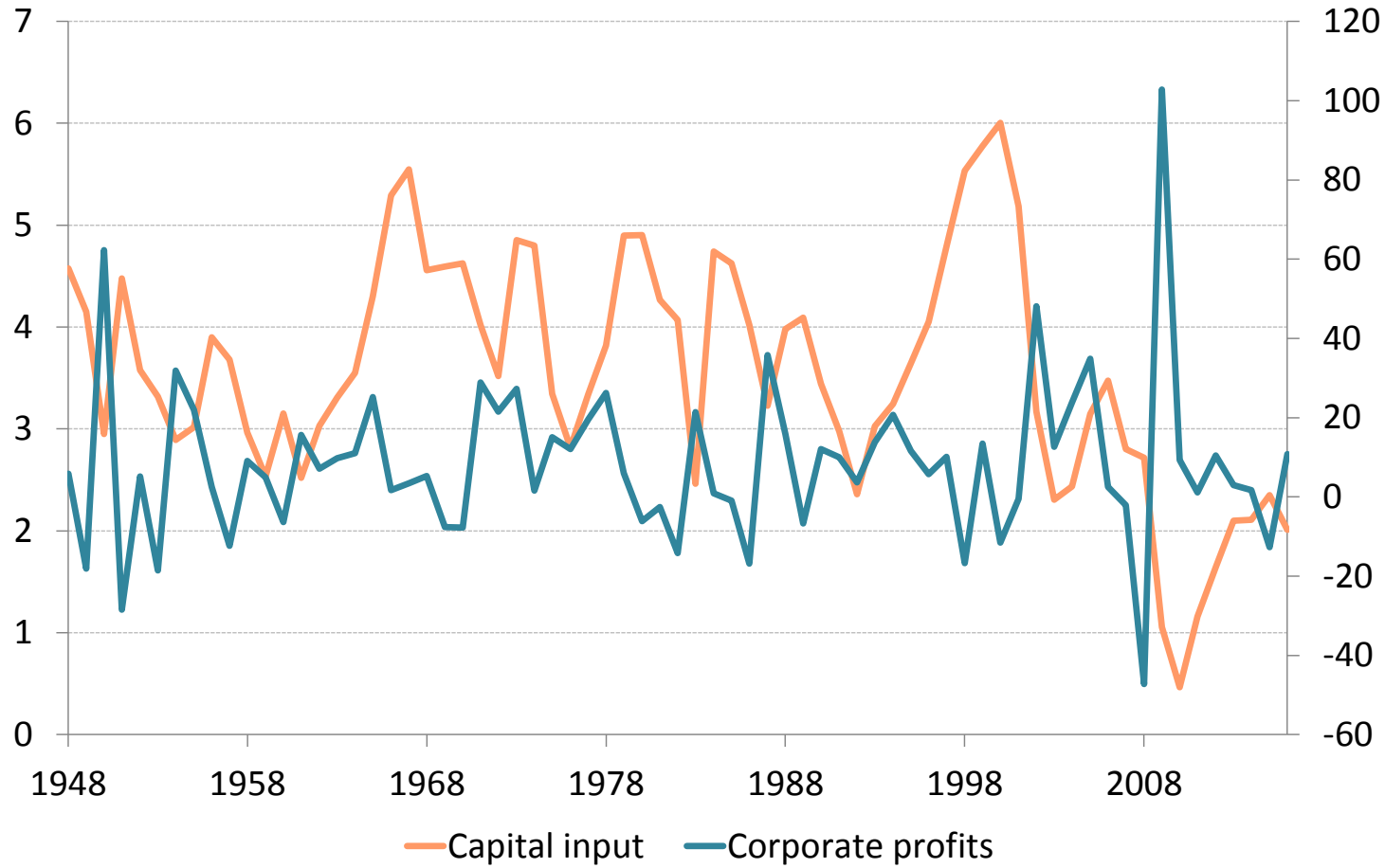
- Results mainly hold for G7 countries. Non-technology shocks can only generate 15% of the observed comovement for the entire sample.
- Is there anything G7-specific?
  - Multinational production (Cravino and Levchenko, 2016)?
  - Similar policies?
  - Financial integration?

## What are "non-technology shocks"?

- Technology shocks: very careful treatment of capacity utilization and non-constant returns to scale
- Basu, Fernald and Kimball (2006): control for imperfect competition
- Why could this matter?
  - Purged Solow residuals = Technology shock in the absence of economic profits
  - Large firms (multinationals, exporters) in less competitive sectors?

# What are "non-technology shocks"?

**Growth rate of capital input and corporate profits, US 1948-2016**




Source: FRED, John Fernald

## What are "non-technology shocks"?

- Accounting exercise for variables other than real GDP?
- Empirical validation: correlation with well-identified shocks that are standard in the literature?

## Autarky vs trade integration: reallocation

- G7 countries: Higher comovement under autarky (0.38 vs. 0.36) as trade integration shifts exposure to sectors with more correlated shocks.
- Accounting framework allows to assess role of domestic sectoral shifts:

$$\Delta \mathrm{Cov}(d \ln Y_n, d \ln Y_m) = \underbrace{\sum_j \sum_i \left(s_{nnj} s_{mmi} - s_{nj}^{AUT} s_{mi}^{AUT}\right) \mathrm{Cov}(\theta_{nj}, \theta_{mi})}_{\Delta \text{Shock Correlation}} + \text{Bilateral Transmission} + \text{Multilateral Transmission}$$

- Non-tradables sectors (negative shock correlation) are more influential under trade integration, their shocks are less correlated.

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- Non-tradables sectors (negative shock correlation) are more influential under trade integration, their shocks are less correlated.
- Flip side: Autarky leads to more influence of tradables sectors whose shocks are more correlated.

→ Where does this correlation come from? Multinational production? Anything G7-specific?

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- Empirical evidence: more trade, more comovement
- Theoretical models: difficult to match comovement in data
- Authors find similar result: trade integration is not a large contributor to business cycle comovement.

$\rightarrow$ It's the correlated non-technology shocks.

# Conclusion

- Very rich and neat paper:
  - Accounting framework
  - International propagation through I/O linkages
  - Technology shock estimation
- Nice result on the shift in exposure when moving from trade integration to autarky.
- One wants to know more about the type of shocks and what drives their correlation.