

***Comments on  
The New Global Invention Machine  
And  
Multinationals in the Digital Economy***

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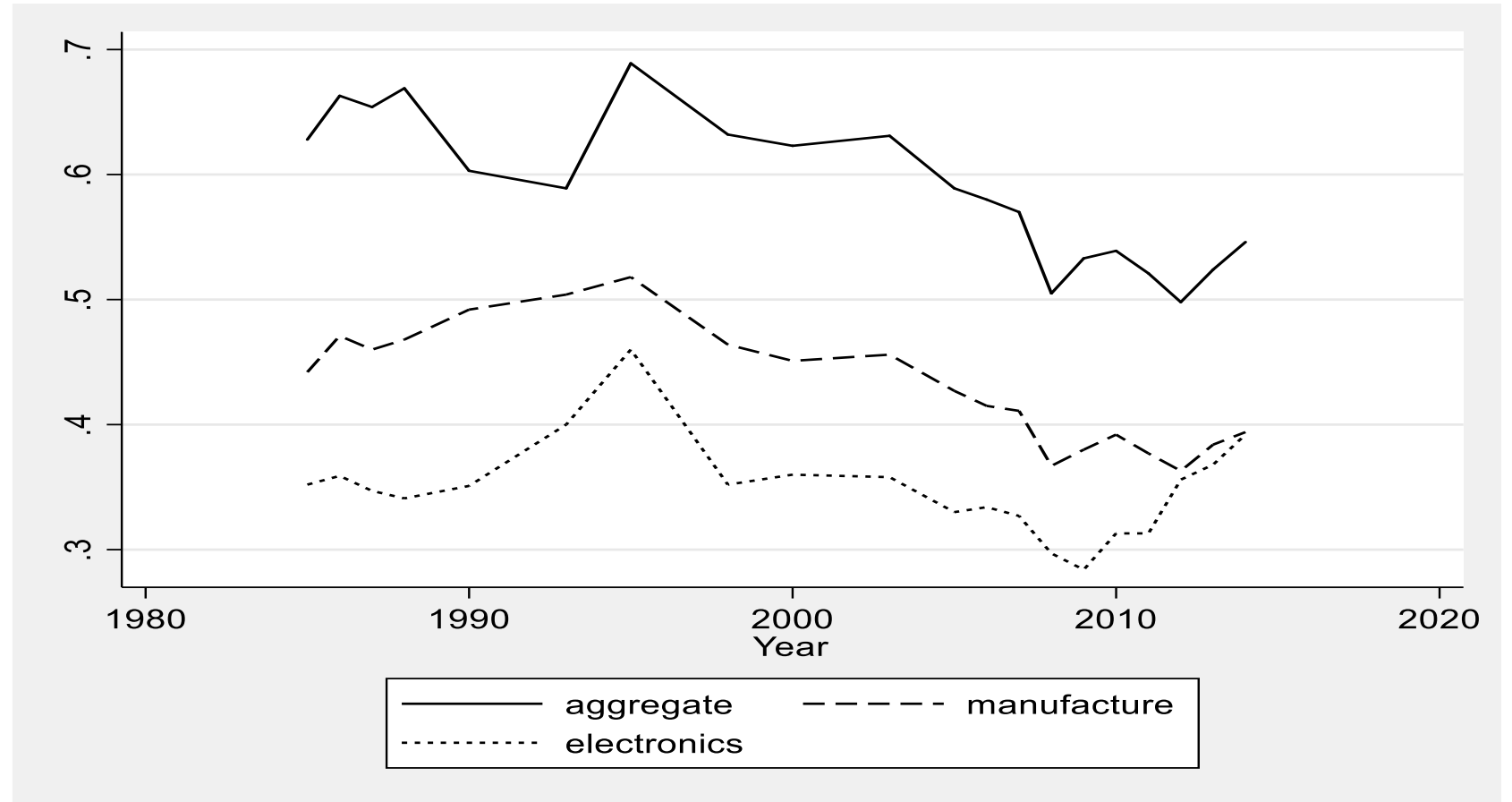
# *The New Global Invention Machine*

- “U.S. multinational firms are creating a global division of R&D labor akin to global value chains in goods production...”
- Since 2000, big increase in U.S. MNC R&D in the three new hubs: China, India, Israel
- Large share of patenting from the new hubs assigned to MNCs
- Policy obstacles from the U.S. and the hubs, especially China

# *Research value chain different from manufacturing GVCs*

- U.S. MNCs domestic share of R&D declined from 88% around 1990 to 84% in 2013
- By comparison, domestic share of Korean manufactured exports in the 30-40% range
- Large number of developing countries involved in mfg GVCs, but only China and India for R&D

# *Domestic value added in South Korean exports*



Source: Authors' calculation based on South Korea's national IO table.

# *Policy obstacles from the U.S.*

- Restrictions on skilled immigration
- Trade war with China
- Technology decoupling with China

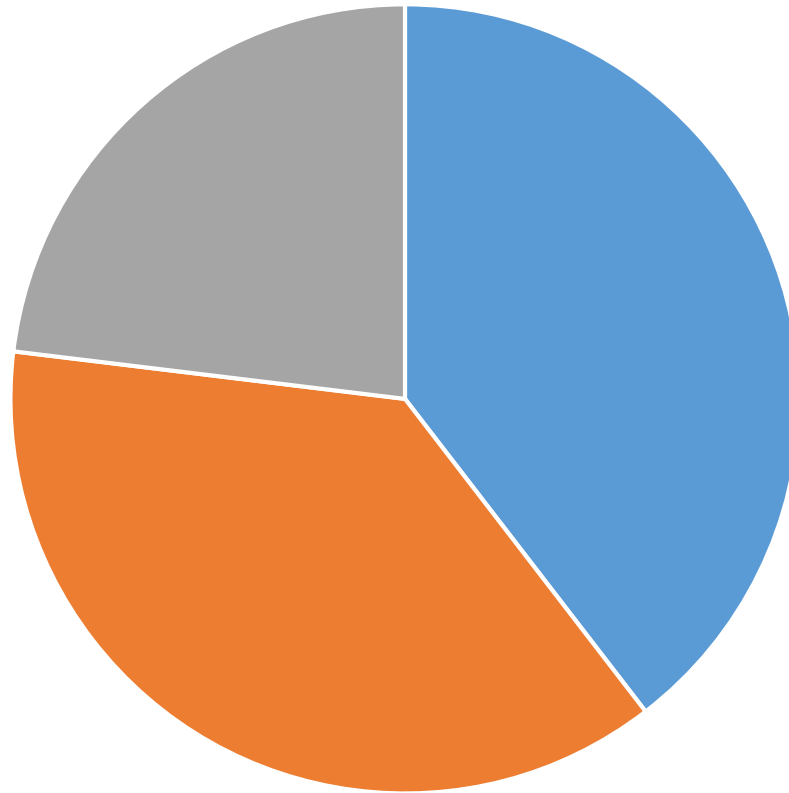
# *Policy obstacles from China*

- Weak IPR protection
- Forced data localization
- But also...
- Indigenous innovation policy
- Made in China 2025
- Restrictions on FDI in services

# *Made in China 2025 Targets 10 Industries with subsidies and protection (?)*

- Artificial intelligence and quantum computing
- Automated machine tools and robotics
- Modern rail transport equipment
- Self-driving and new energy vehicles
- Biopharma and advanced medicine
- Aerospace
- Maritime equipment
- Power equipment
- Agricultural equipment
- New materials

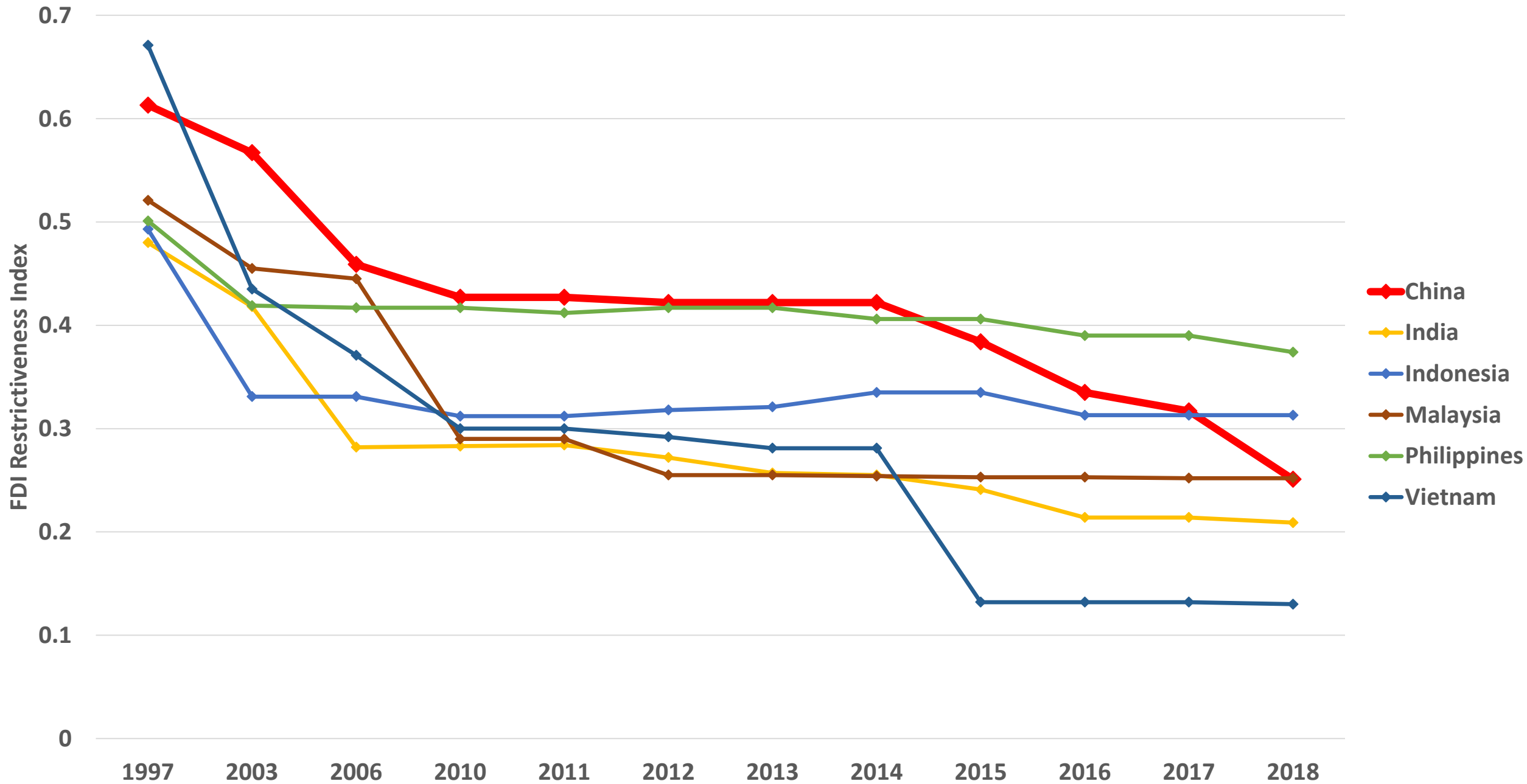
# *USPTO patents granted to Chinese inventors 2013 (from Figure 7b)*



■ Co-invented, assigned to MNCs ■ Chinese invented and assigned to MNCs ■ Chinese invented, indigenous firms



# Overall FDI Restrictiveness Index, 1997-2018 (0=Open; 1=Closed)



# *Multinationals in the Digital Economy*

- “Core digital MNCs, distinctive in that they build digital offerings as their primary product or service”
- 7 of 10 top market capitalization globally are digital MNCs (5 U.S., 2 Chinese)
- Only 1 of these (Amazon) is in the top 10 in terms of employment
- “Bottom line is that the digital economy is more centralized than some intuition might have predicted”

# *Digital MNCs and Labor*

- Paper speculates that buying services through digital MNCs does not stimulate local output and employment
- Is this serious enough to affect the whole labor market?
- What would be a rational policy response?

# *Digital MNCs and Regulation*

- Initially it was thought that digital MNCs might be able to evade law/regulation because of lack of physical presence
- Uber flaunting of laws was a case in point
- But increasingly digital MNCs do have servers and employees in country, making them easier to regulate

# *Future of Digital MNCs: Some Questions*

- How feasible are the plans of some Democratic candidates to break up the tech titans?
- What would that landscape look like?
- Different approaches to cross-border data flows in EU, U.S., and China: can these be reconciled into a single standard?
- What is the implication for digital MNCs of three different data localization regimes?