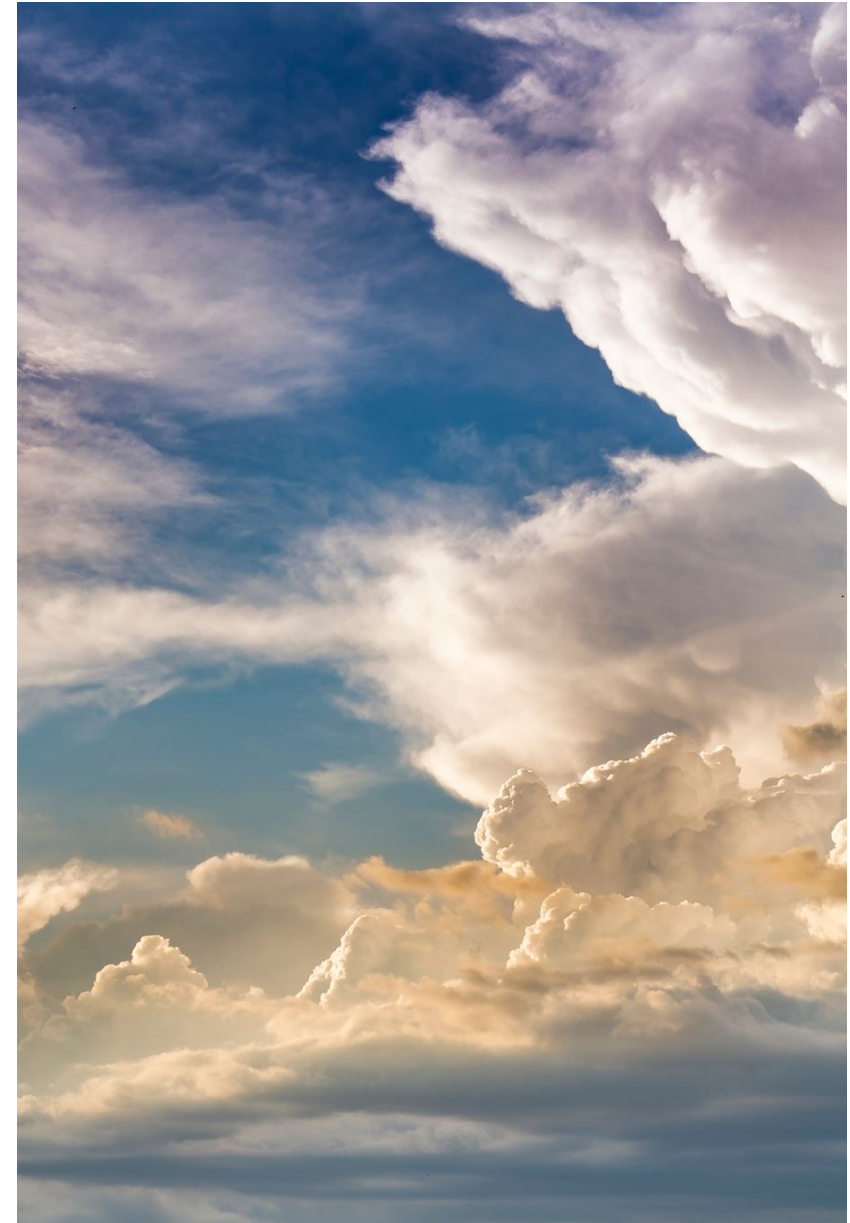


# Industrial Policies: Lessons from Shipbuilding



Panle Barwick, Myrto Kalouptsidi, Nahim Zahur

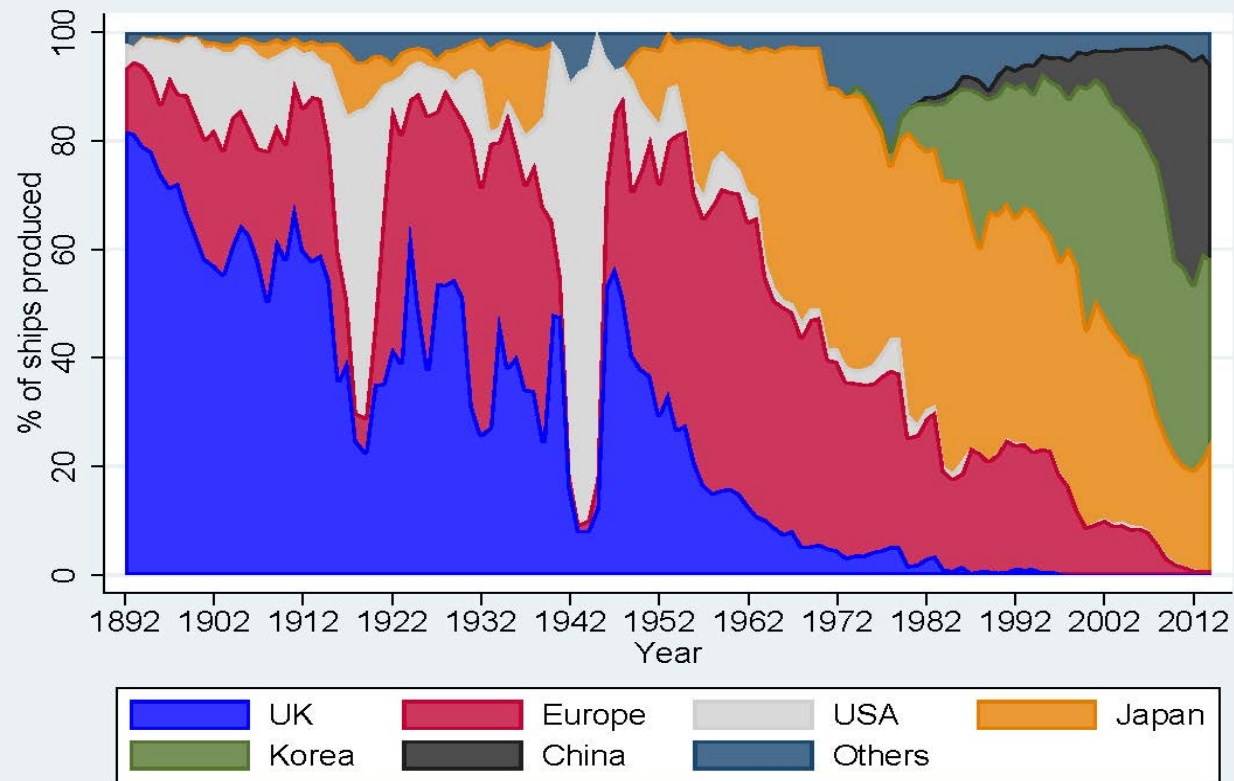
Mar 2025





# History of Shipbuilding

# World Ship Production 1892-2012



Source: World Fleet Statistics published by Lloyd's Register; Clarksons



# History of Shipbuilding

- ▶ Often dominated by a few countries with strong maritime traditions/trade:
  - ▶ UK and Europe till 1950s – 1960s;
  - ▶ US during the World War I and II, dictated by its military needs;
  - ▶ Japan since the 1950s;
  - ▶ South Korea since the 1980s;
  - ▶ China since the 2000s.
- ▶ All of these dominant players in shipbuilding were/are beneficiaries of heavy-handed government intervention.



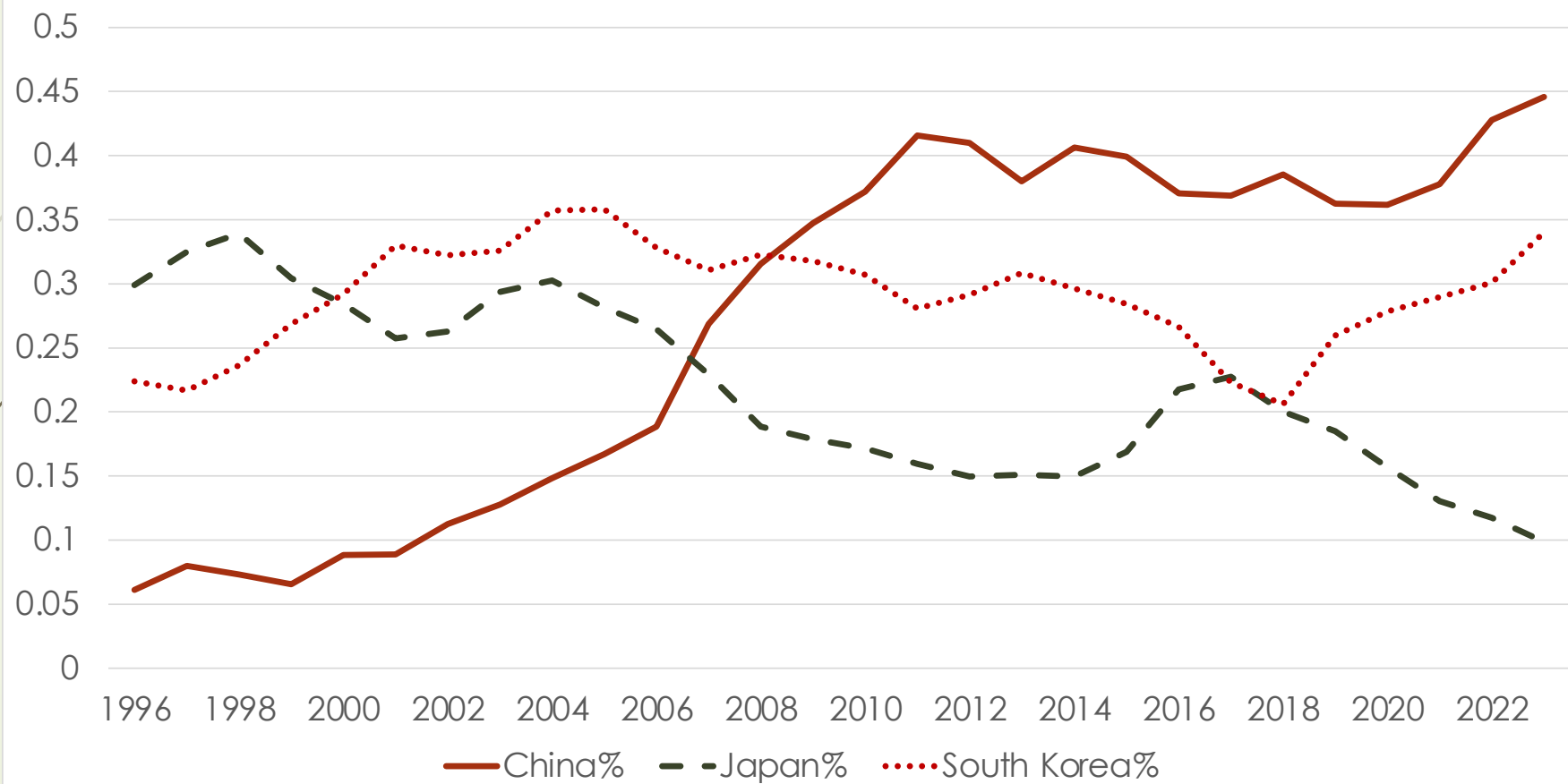
# IP Policies in Recent Years

- **2002:** Premier Zhu “China hopes to become the world’s largest shipbuilding country... by 2015.”
- **2006-2010, 2011-2015:** China’s 11<sup>th</sup> and 12<sup>th</sup> National 5-year Economic Plans
- **2009:** China’s “Plan on the Adjusting and Revitalizing the Shipbuilding Industry” – entry bans and subsidies shifted to incumbents
- **2009-:** South Korea’s “Shipbuilding Industry Restructuring and Competitiveness Reinforcement Plan” – financial subsidies totaled \$9bn
- **2013:** China’s “Shipbuilding Industry Standard and Conditions (“White List”)” – consolidation and subsidies directed to firms on the white list
- **2015:** Made in China 2025 – shipbuilding is among the key strategic sectors
- **2021:** South Korea “Strategy for the Re-emergence of Korean Shipbuilding” – maintain world #1 in ship building;
- **2021:** Japan’s “Act on Strengthening Maritime Industries” – competing with China and SK
- **2023:** China’s “Green Development of the Shipbuilding Industry – 50% market share in green ship production by 2025



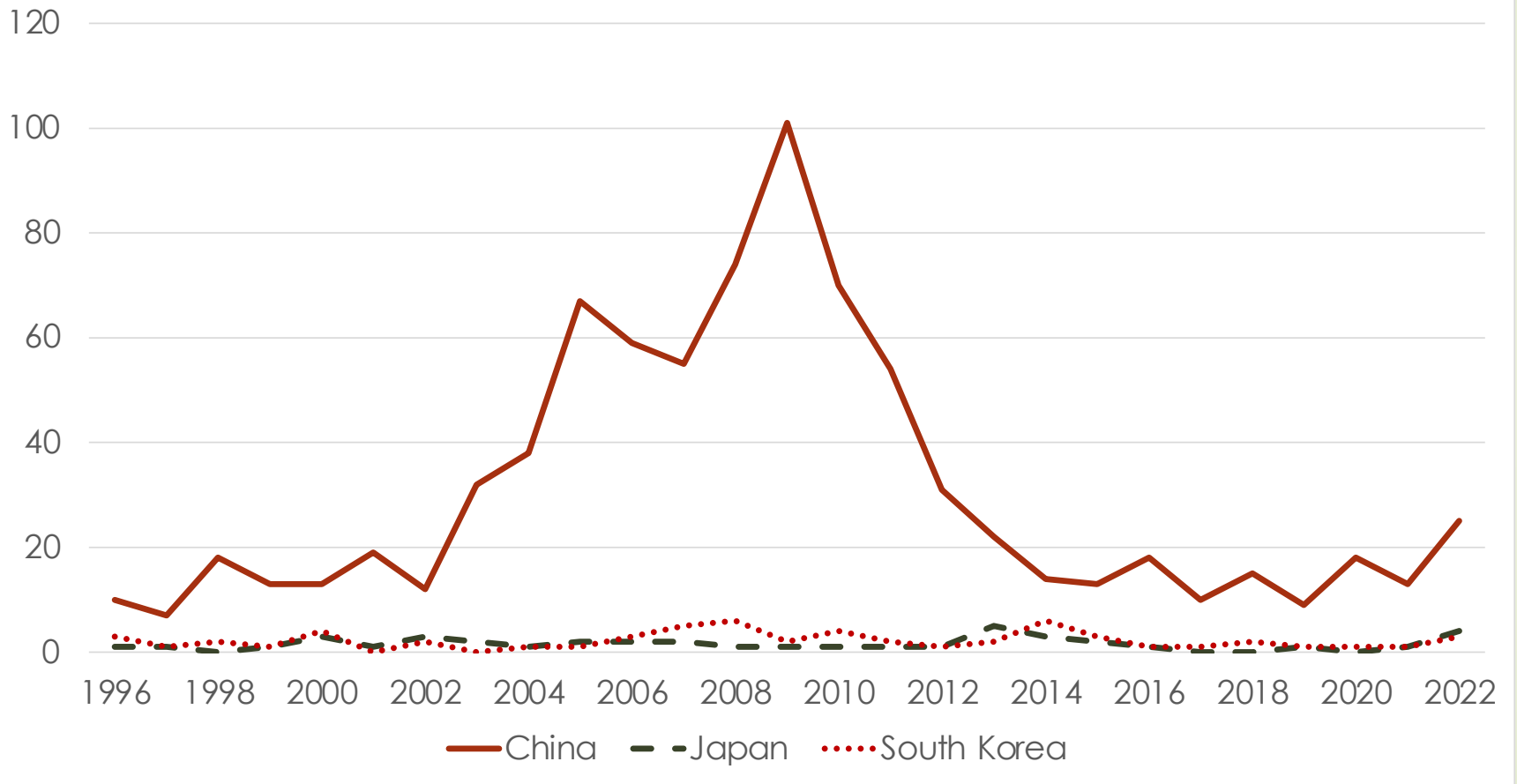
# Data and Descriptive Patterns

Share of New Ship Orders by Country (CGT, Quarterly)



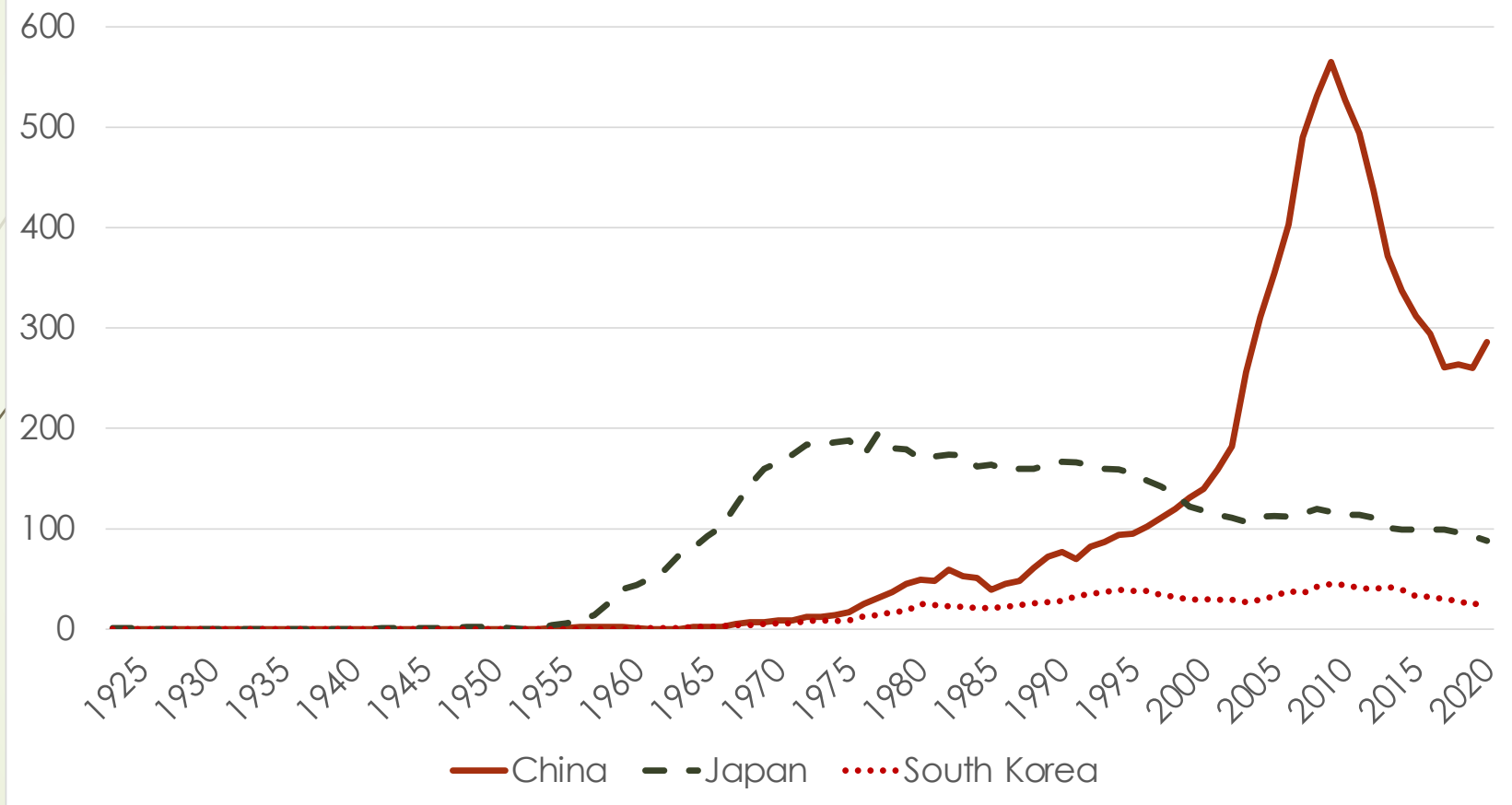


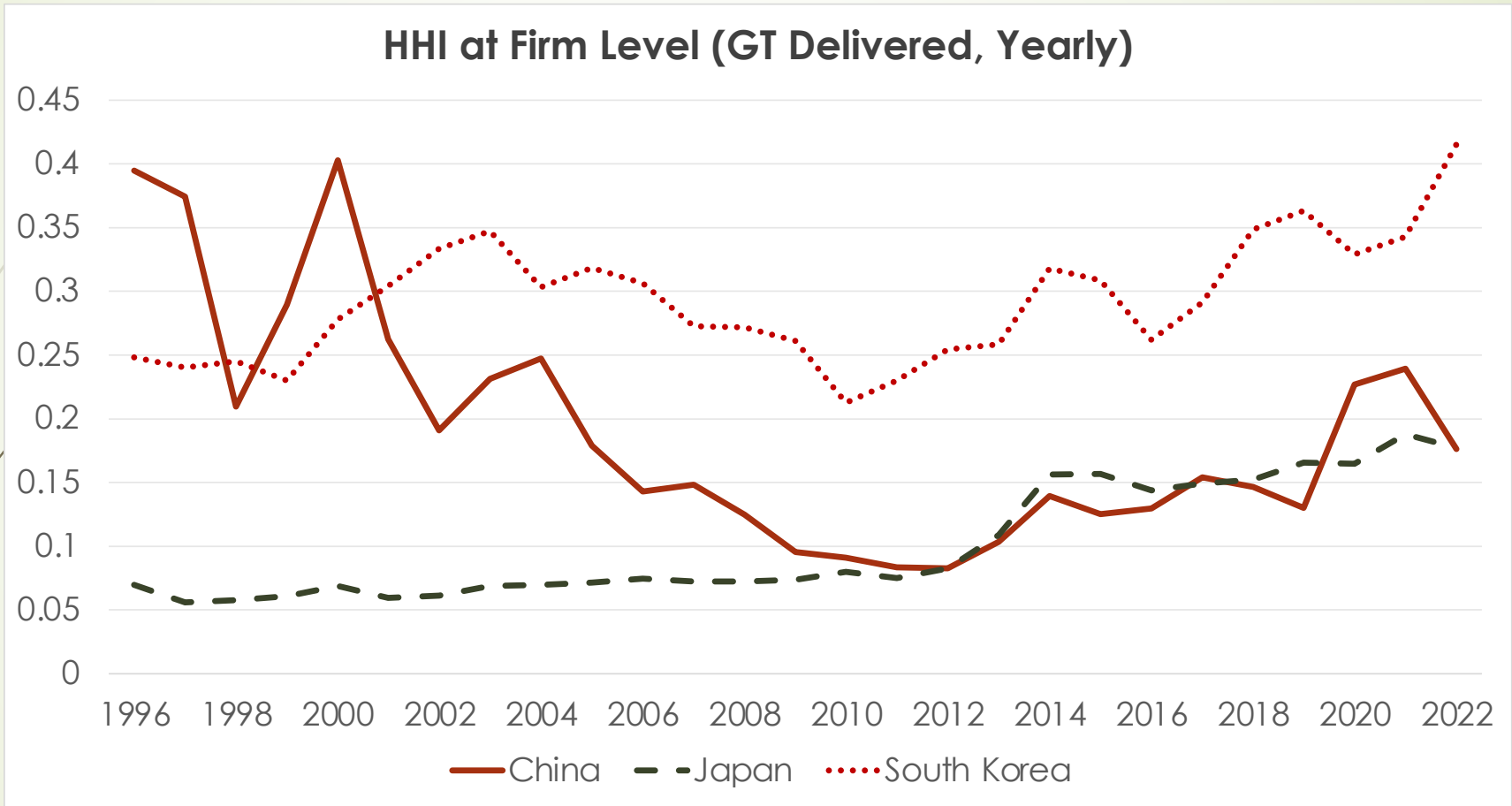
### Number of New Shipyards by Country (Yearly)



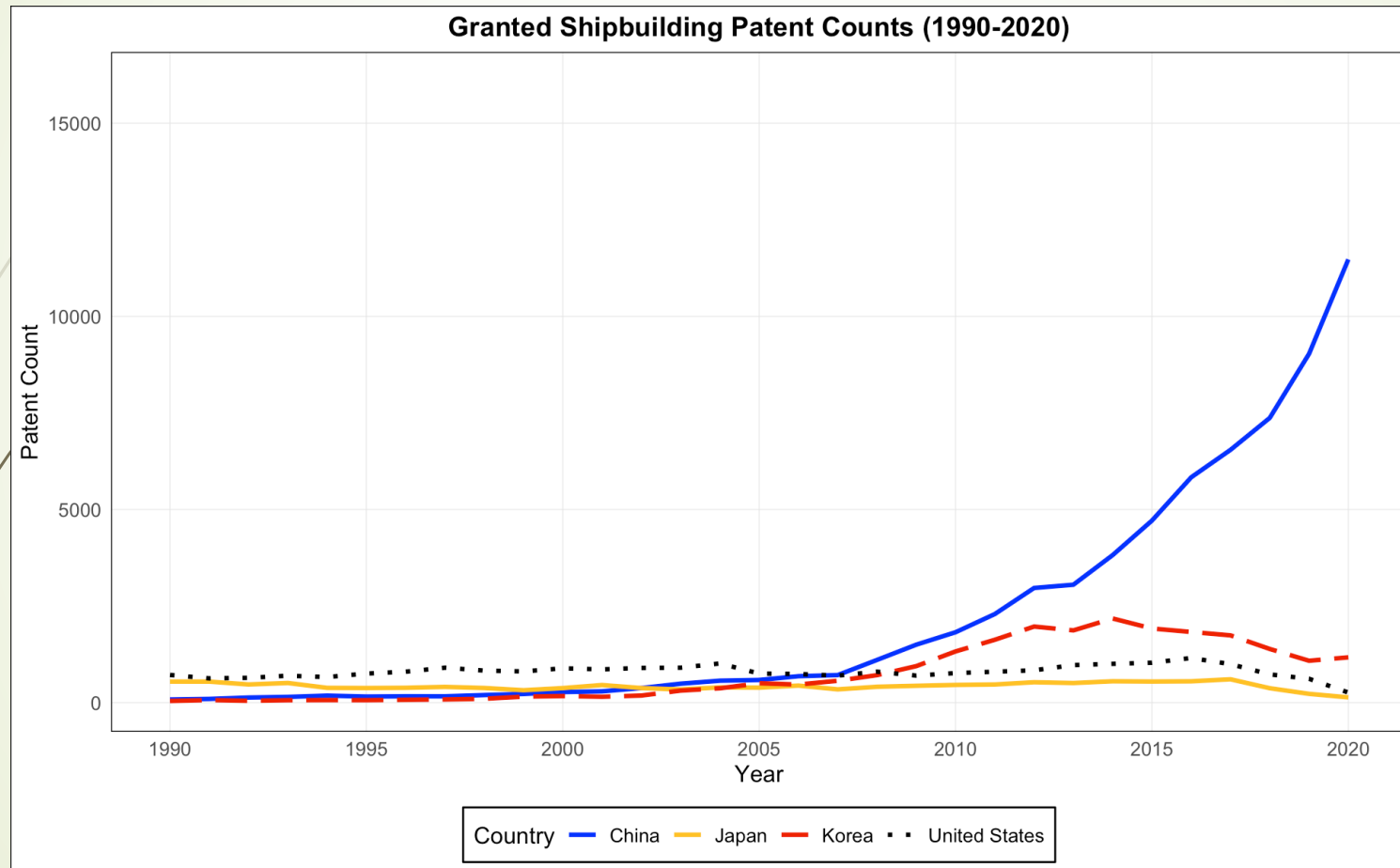


Number of Active Shipyards by Country (Yearly)





# Granted Shipbuilding Patents





# Modeling and Empirical Strategy



# Summary of Methodology

- ▶ Use estimated model to detect and measure subsidies:
- ▶ Estimated shipyard costs: look for a break in 2006
- ▶ Intuition: Chinese firms “over-produce” compared to our theoretical prediction

	<i>Chinese Market Share, Pre-2006</i>	<i>Chinese Market Share, Post-2006</i>
<i>Bulk carriers</i>	0.17	0.57
<i>Tankers</i>	0.15	0.28
<i>Containerships</i>	0.16	0.39
<i>Gas carriers (LNG/LPG)</i>	0.07	0.21



# Findings: Subsidy Detection

- ▶ **Large subsidies:**
  - ▶ \$91 billion between 2006 and 2013,
  - ▶ averaging over \$11 billion per year; nearly 50% of Chinese industry revenue
  - ▶ Caveat: not all entry subsidies are 'monetary'
- ▶ **Production subsidies:** 13-20% of the price
- ▶ **Investment subsidies:**
  - ▶ 27% of per-unit cost of investment 2006-08
  - ▶ 46% post 2009
- ▶ **Entry subsidies:**
  - ▶ 50-60% of entry costs, depending on region 2006-08,
  - ▶ 70% of total subsidies



## Impact of Chinese Subsidies

- ▶ Subsidies during 2006-2013 (2004-2013 for Zhejiang and Jiangsu):
  - ▶ boosted entry by 140%,
  - ▶ More than doubled investment,
  - ▶ led to higher fragmentation (HHI 40% lower with subsidies)
- ▶ Subsidies increased China's market share by 40%
  - ▶ 70% of this expansion occurred via business stealing from Japan and SK
  - ▶ Profits by Japanese and South Korean shipyards were reduced by \$20.3 bn



# Impact of Chinese Subsidies

- ▶ Subsidies reduced ship prices:
  - ▶ 17% lower for bulk,
  - ▶ 15% lower for tanker,
  - ▶ 4% lower for containers
- ▶ Lower ship prices benefited world shipowners by \$ 42.2 billion
  - ▶ only a modest amount accrued to Chinese shipowners





# Rationale for Subsidizing Shipbuilding

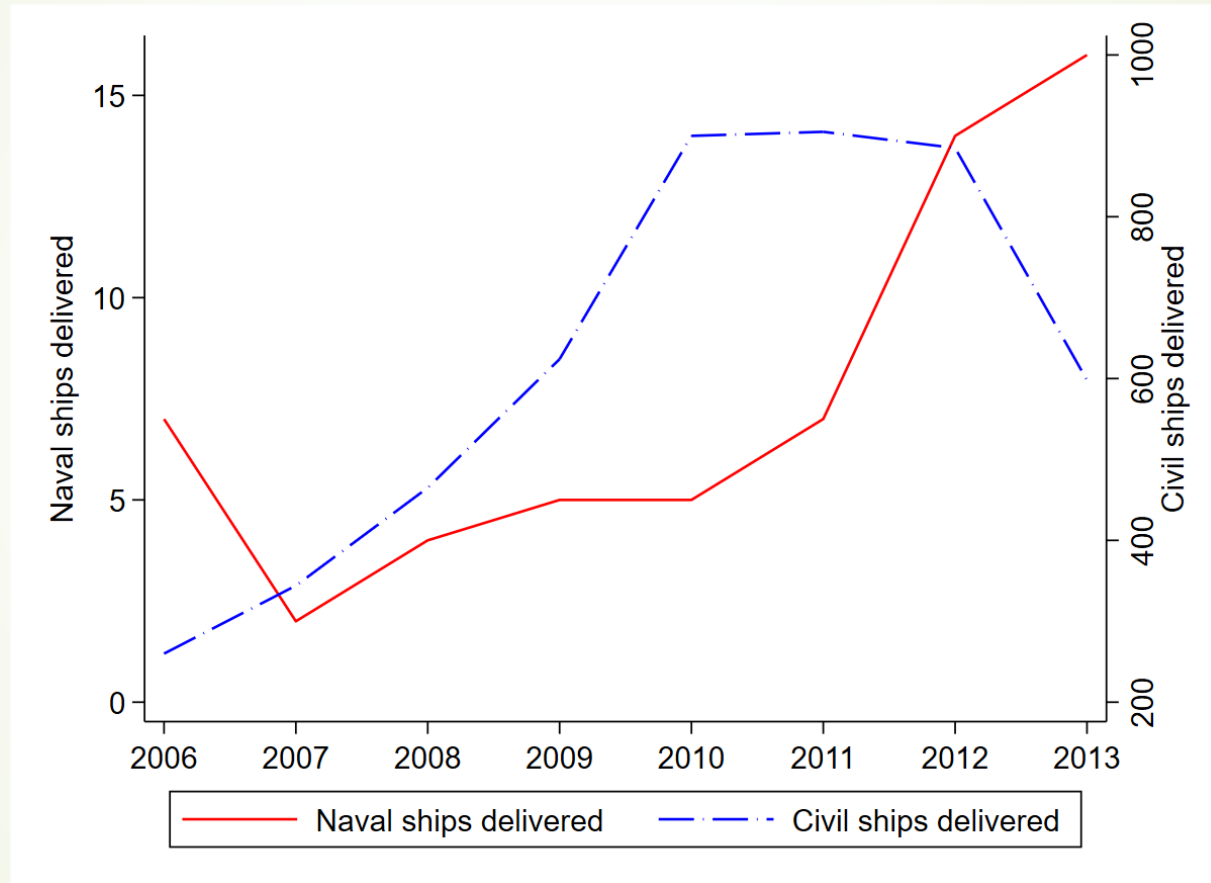
- No strong evidence for traditional rationales:
  - **Infant industry/learning by doing**
  - Strategic trade considerations (market power negligible )
  - Spillover to other sectors (steel) and the labor market
  - Subsidies to promote entry and create future winners, to force rival firms exit, or cost discovery
- However:
  - **Impact on China's trade volume**
  - **Military (national security) considerations**



## Rationales: Impact on China's Trade

- Impact on trade volume
- China's role in world imports/exports could justify policy
- Policy led to 6% decline in freight rates, leading to about a 5% increase in China's trade
  - About \$144bn annually
- Large enough to potentially cover subsidy cost

## Rationale II: Military Considerations



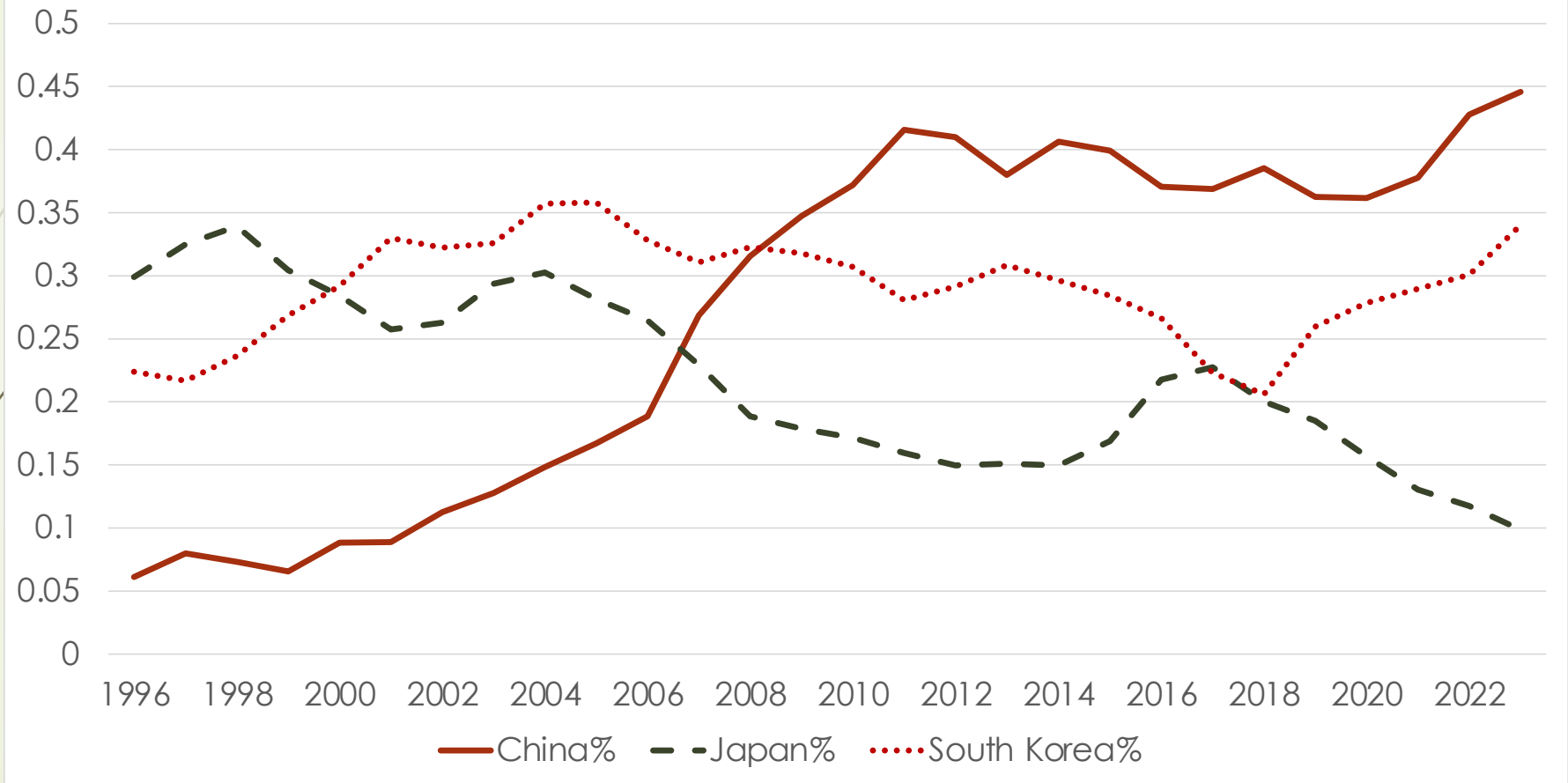
Source: Clarksons and IHS Jane's



# Long Run Implications of IP

# Beyond 2014: Long Term Implications of IP

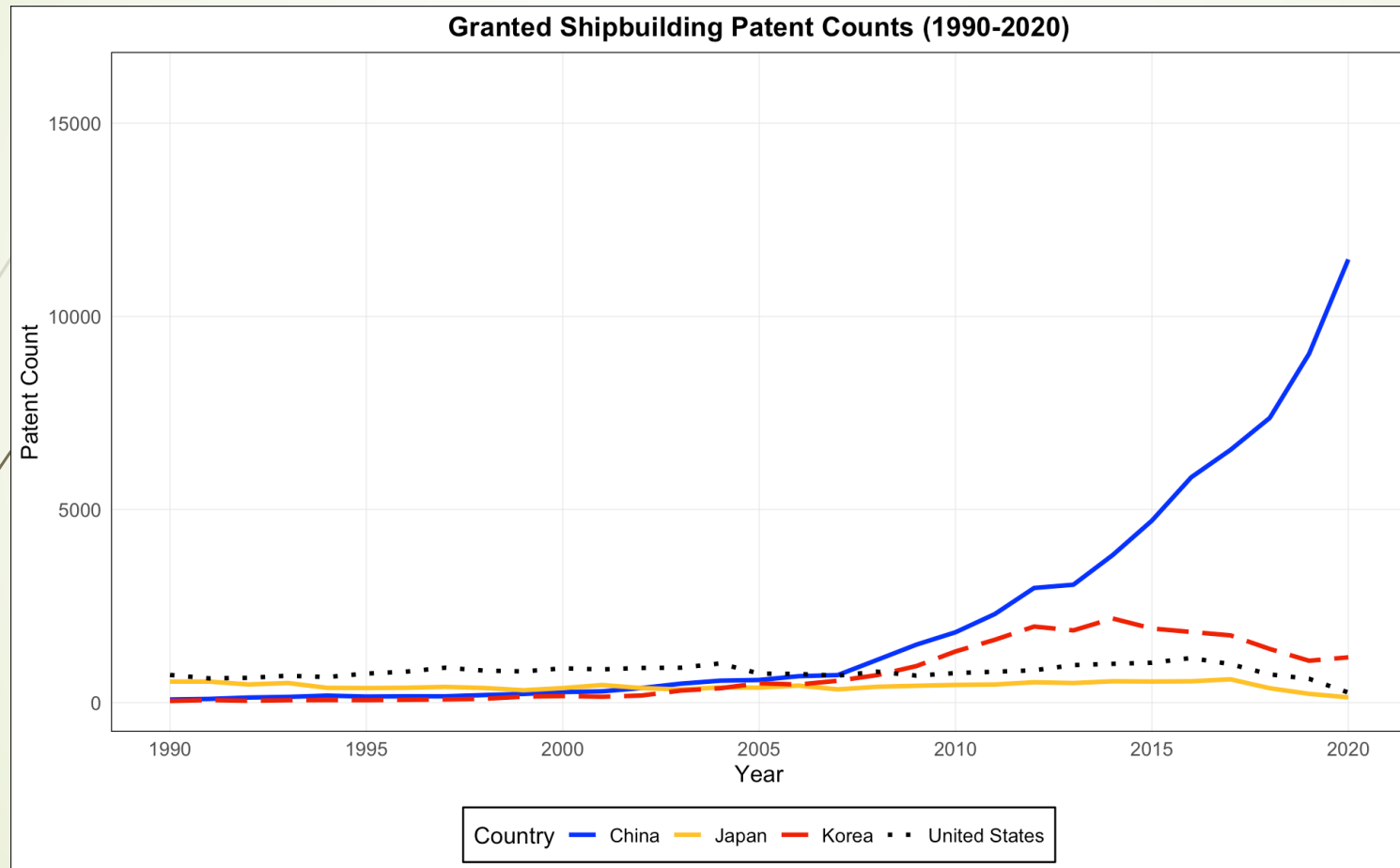
## Share of New Ship Orders by Country (CGT, Quarterly)



# Long-run Implications of IP



# WIP: Effects of IP on Patents





Thank you!