Discussion (Session 3)

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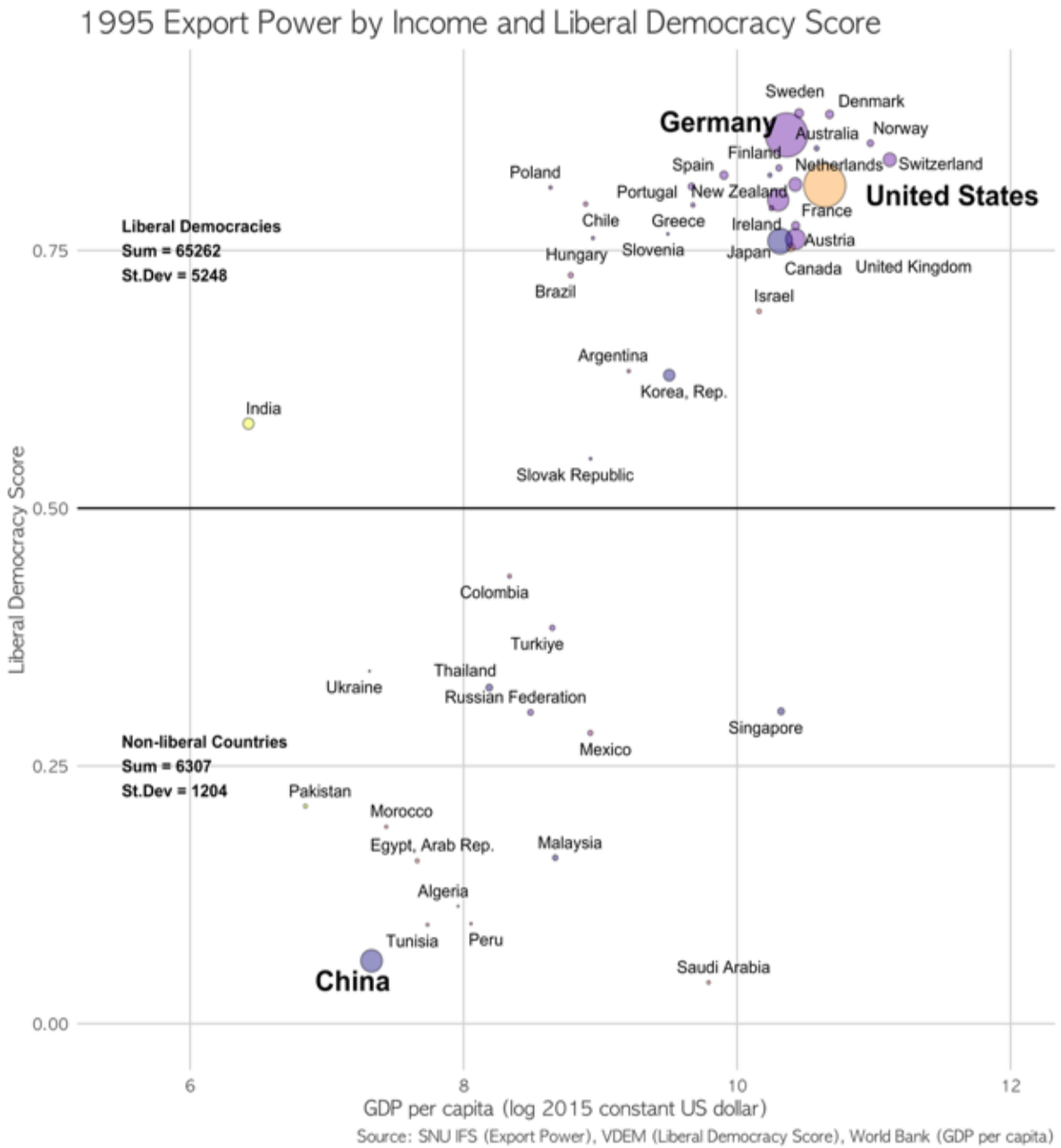
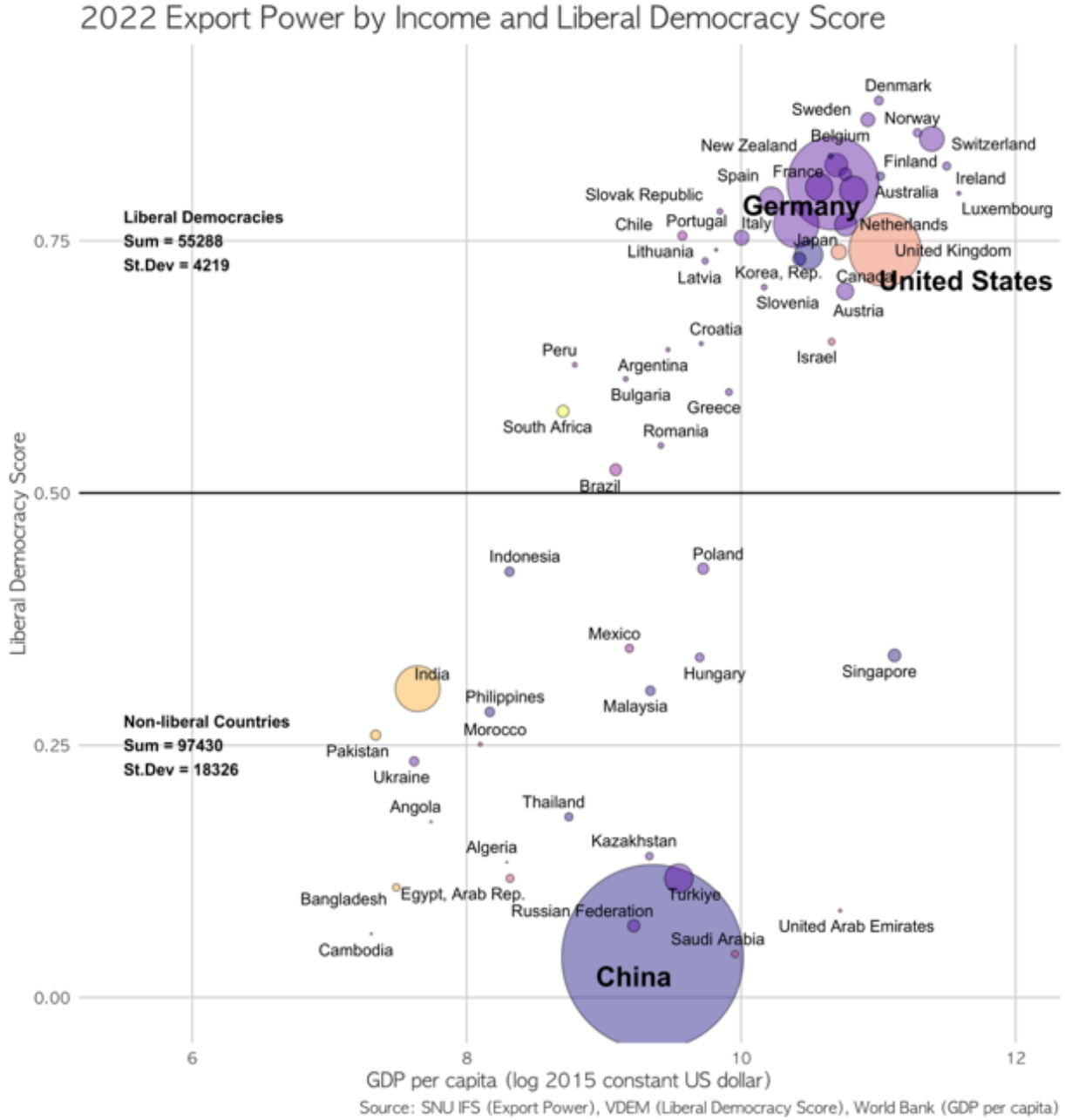
Analysis of Supply Chain Vulnerabilities using World Input-output Data

- It discusses world IO data to see the interconnections of intermediates among countries.
- It suggests using gross data instead of value-added and forward linkages.
- The ‘look-through’ exposure rather than face-value exposure especially intermediates used in production for domestic consumption is a genuine indicator for a risk in supply chain disruptions.
- It concludes that full decoupling US from China is not possible.
  - The ‘look-through’ exposure to China is 3.8 times larger than the ‘face-value’ exposure.
  - US reliance on Chinese industrial inputs is 3 times larger that China’s reliance on US industrial inputs.

Questions

- China may not be a dominant producer in all industrial outputs. Hence, the share of China's production in world production in a given input provides an additional information on China's dominance (ie. Substitutability).
- "Small yard, high fence" strategy the Biden administration tried to implement focuses on strategic and advanced manufacturing sectors (or emerging industries). To what extent is China dominant in these sectors according to FPEM?
- If like-minded countries are united in forming supply chain in key advanced manufacturing industries, how does China's position change?
- Given ongoing US-China hegemonic rivalry, what economic leverage can US use to counter China?


1995 Export Power by Income and Liberal Democracy Score
Liberal Democracies
Sum = 65262
St.Dev = 5248
Non-liberal Countries
Sum = 6307
St.Dev = 1204
Germany
United States
China
Sweden
Denmark
Norway
Australia
Finland
Netherlands
Switzerland
Spain
Poland
Portugal
New Zealand
France
Chile
Greece
Ireland
Austria
Hungary
Slovenia
Japan
Canada
United Kingdom
Brazil
Israel
Argentina
Korea, Rep.
India
Slovak Republic
Colombia
Turkiye
Thailand
Ukraine
Russian Federation
Singapore
Mexico
Pakistan
Morocco
Egypt, Arab Rep.
Malaysia
Algeria
Tunisia
Peru
Saudi Arabia
Liberal Democracy Score
0.00
0.25
0.50
0.75
6
8
10
12
GDP per capita (log 2015 constant US dollar)
Source: SNU IFS (Export Power), VDEM (Liberal Democracy Score), World Bank (GDP per capita)


2022 Export Power by Income and Liberal Democracy Score
Liberal Democracies
Sum = 55288
St.Dev = 4219
Non-liberal Countries
Sum = 97430
St.Dev = 18326
Germany
United States
China
Denmark
Sweden
Norway
Belgium
Switzerland
New Zealand
Finland
Spain
France
Ireland
Slovak Republic
Australia
Luxembourg
Chile
Portugal
Italy
Netherlands
Japan
United Kingdom
Lithuania
Latvia
Korea, Rep.
Canada
Slovenia
Austria
Croatia
Peru
Israel
Argentina
Bulgaria
Greece
South Africa
Romania
Brazil
Indonesia
Poland
Mexico
Hungary
Singapore
India
Philippines
Malaysia
Morocco
Pakistan
Ukraine
Angola
Thailand
Algeria
Kazakhstan
Bangladesh
Egypt, Arab Rep.
Turkiye
Russian Federation
United Arab Emirates
Saudi Arabia
Cambodia
Liberal Democracy Score
0.00
0.25
0.50
0.75
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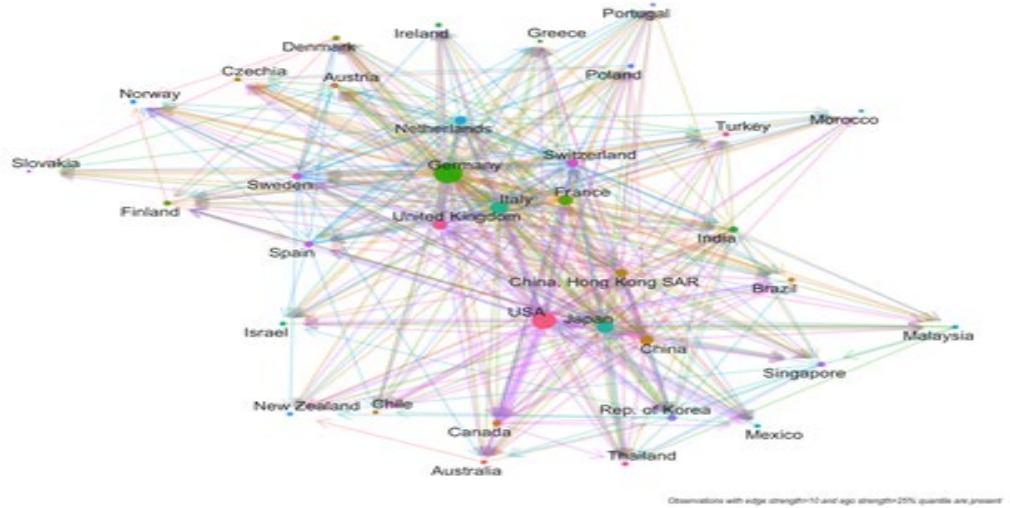
GDP per capita (log 2015 constant US dollar)
Source: SNU IFS (Export Power), VDEM (Liberal Democracy Score), World Bank (GDP per capita)

Trade Power Network in 1995

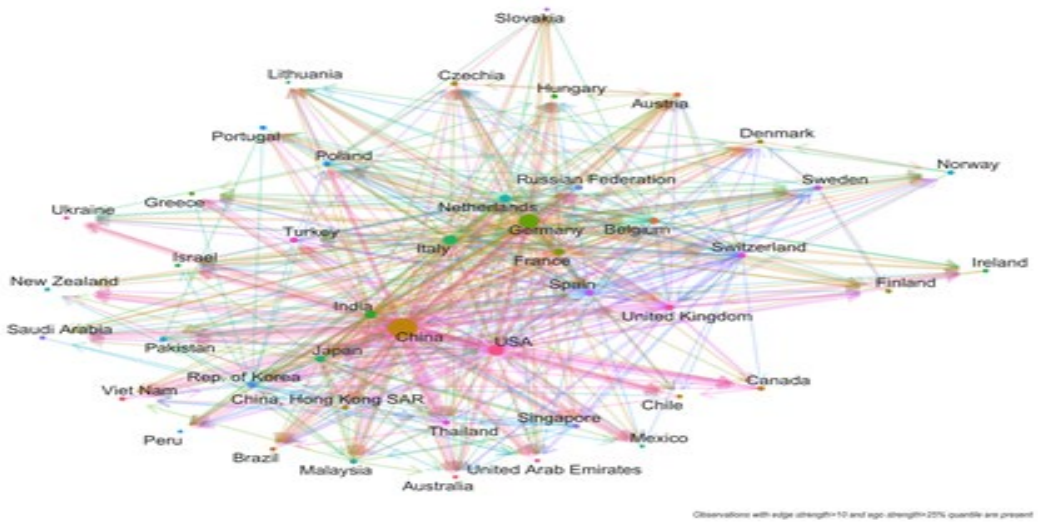
Node size is proportional to export strength.



Observations with edge strength>10 and ego strength>25% quantile are present

Trade Power Network in 2021

Node size is proportional to export strength.



Observations with edge strength>10 and ego strength>25% quantile are present

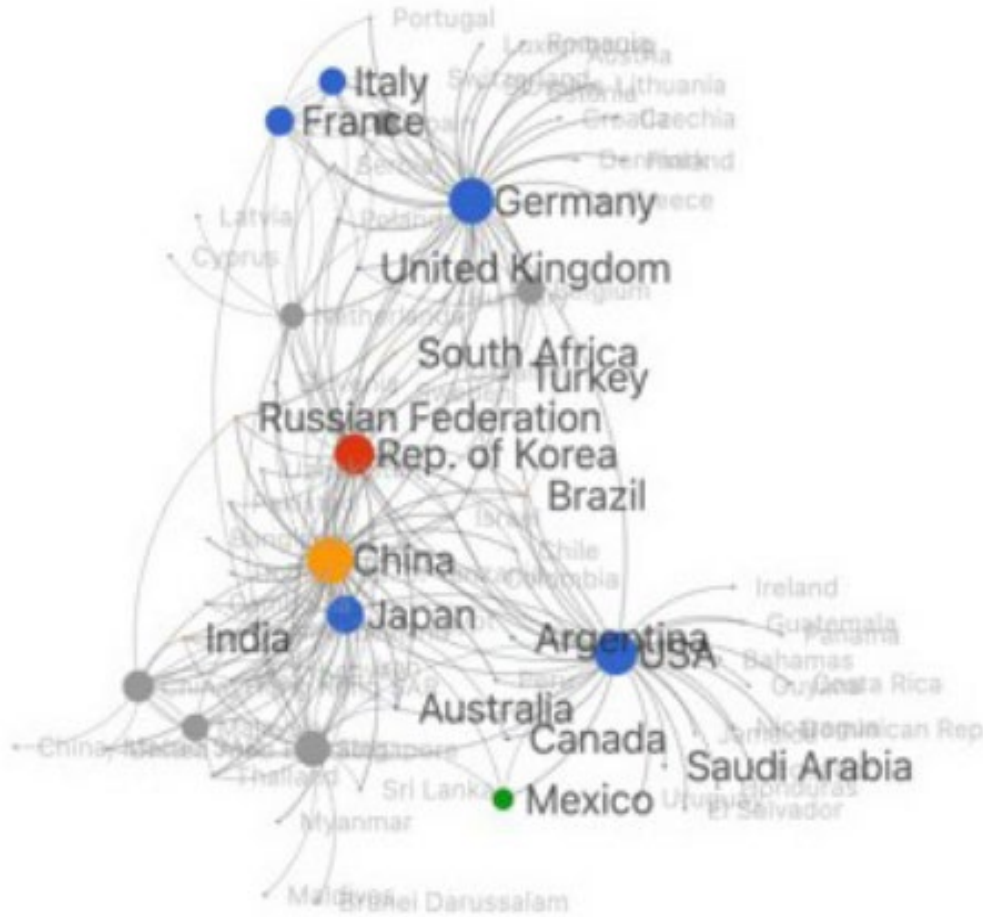


Figure B3. Supply Chain Dominance in Emerging Industries, 2021

Confronting China’s Critical Mineral Dominance

- It deals with China’s dominance in critical minerals and efforts to access Nickel in Indonesia. It also discusses the importance of batteries for drones.
- Critical minerals like gallium and germanium in which China is a dominant producer and refiner are vital not only for clean energy (production of EV batteries) but also semiconductors and high-tech military equipment.

Discussion on EV batteries and questions

- China and Korea are two global producers in EV batteries but their technologies are distinct: China relies on LFP batteries (Lithium Iron Phosphate) while Korea leads in high-nickel batteries (NMC). Thus Korea is a main investor in nickel reserves in Indonesia.
- Chinese producers of LFP batteries are benefitted from large domestic market and relatively cheap cost of inputs while Korean producers focus on high-end EVs due to high energy density and long distance driving capability.
- In this context, I would ask “ what are ways to minimize asymmetric dependence on China among like-minded countries?”
- Drones have emerged essential military technology and Lithium batteries are used for most drones. The question is whether we find other sources of Lithium than China, or develop different types of batteries like NMC.

Quantifying Economic Security Risks

- It uses IDE-GSM to quantify the effects of varieties of disruptions on the economy (regions, countries, the world).
- IDE-GSM combines CGE with spatial data.
- Among the three exercises, the tariff scenario under Trump admin is the most interesting and relevant to the current world order.

Discussion and questions

- As presented, there are no financial variables such as exchange rates and interest rates in IDE-GSM.
- Thus the following questions arise:
  - Is the prediction that US GDP declines by 3% overestimate? If exchange rates and interest rates adjust, would it decline less than 3%?
  - In a similar vein, will substitutions of imports from high-tariff countries to low-tariff ones lower the impact of tariffs?
  - In the long-run, firms relocate production facilities in the US to avoid high-tariffs. Then can we say GSM represents a long-run equilibrium?
- In the analysis of tariff imposition between US and China (25% for 3 years), the earlier paper in 2021 predicted that US and China's GDP would decline by 0.4% and 0.5% respectively. But under 2nd Trump admin., China will lose 0.7% of GDP despite that it did not impose tariff on US. Is it because of size of US tariff and trade diversion effect?