

Re-considering green industrial policy: Does techno-nationalism maximise green growth in the economy?

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Seminar outline

- **Techno-nationalism: Importance of addressing political economy concerns**
 - How current literature gaps creates misunderstandings on green growth from green industrial policies
- **Evolutionary economic geography: value-added from industrial activities**
- **Re-assessing green growth and industrial policy**



“Meanwhile, **China** is not waiting to revamp its economy. **Germany** is not waiting. **India**’s not waiting. These nations are not standing still. These nations are not playing for second place...**They’re making serious investments in clean energy because they want those jobs.** Well I do not accept second place for the **United States of America...** **Because the nation that leads the clean energy economy, is the nation that leads the global economy.** And America must be that nation.”

President Barack Obama, 2010 State of the Union Address

Current literature gaps

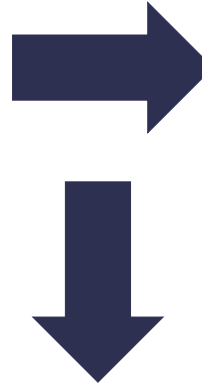
Green growth provides justification for green industrial policy

Green growth: Conceptual premises

1. Sustainable development
 2. Technological innovation
 3. Endogenous economic growth:
Industrial activities
- 
- ```
graph TD; Innovation --> Manufacturing; Manufacturing --> Market_deployment; Market_deployment --> Innovation;
```

## Address 6 key market failures

1. Environmental externality
2. Under-investment in RD&D
3. Network effects: high vs. low-carbon lock-in
4. Information asymmetries
5. Imperfection in risk/capital markets
6. Co-benefits



### Political justification for green industrial policy:

Public investment used for **domestic growth & domestic jobs**

# Global competition seems to undermine promise of green growth



# Gaps in current literature on competitiveness

## Techno-nationalism and international political economy

Why invest in **early innovation & market development** if other economies benefit from **manufacturing** in the long-run?

## Competitiveness literature on first-mover vs latecomer advantage

Uses the wrong indicators to **assess returns of public investment** to industrial activities **within geographical bounds of the domestic economy**

1. **Firms:** firms can locate industrial activities outside domestic economy
2. **Manufacturing:** Manufacturing is only one industrial activity, and is subject to global competition

- R&D → patents
- Profitability
- Market share

# Evolutionary economic geography: Importance of REGIONS

## Misunderstanding in literature on global competitiveness of technologies

1. Innovation and markets are justified for making manufacturing competitive.
2. Belief manufacturing provides highest value-added to the region in the short and long-run.
3. What makes businesses and technologies competitive does not have same spatial implications on what makes regions competitive.

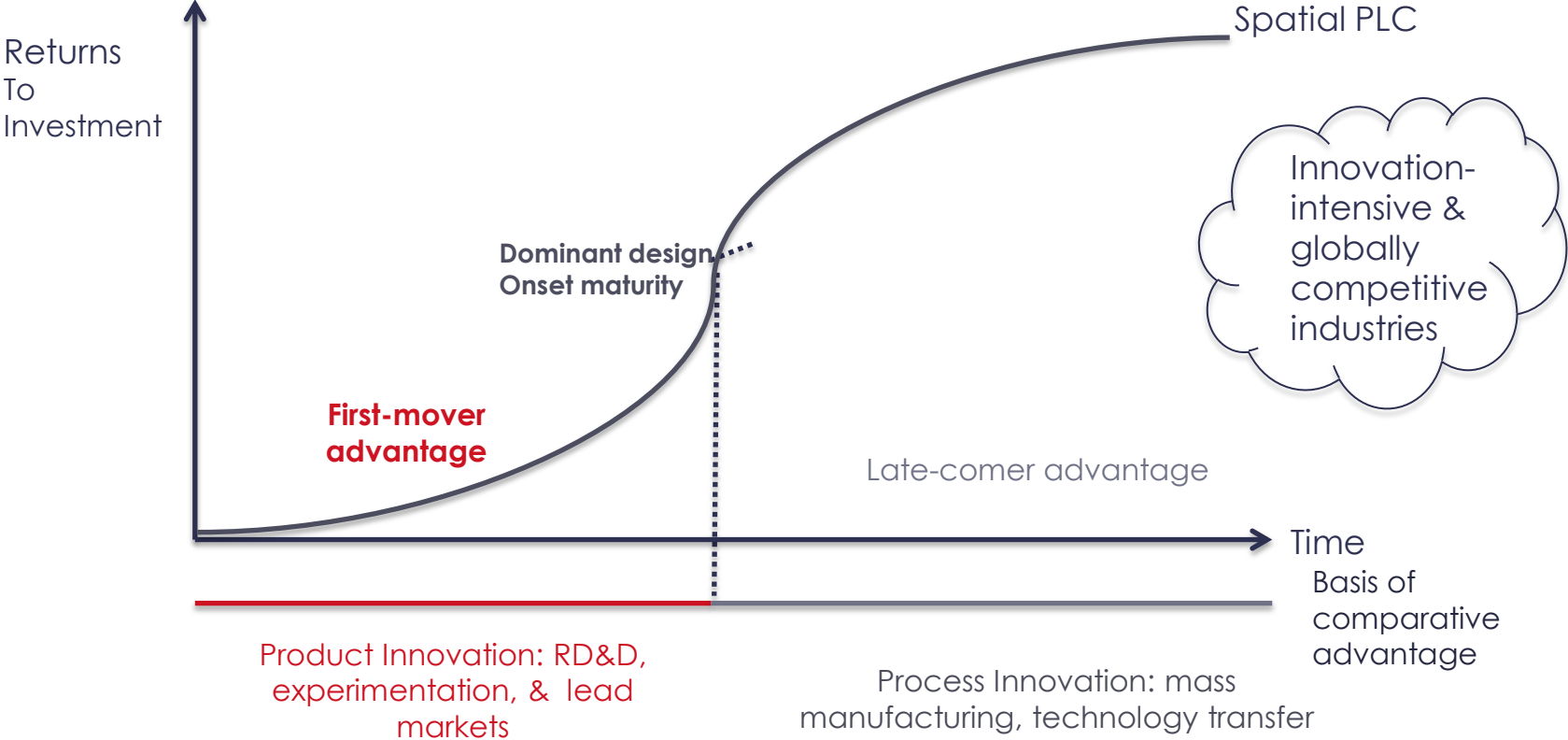
## Evolutionary economic geography: DOMESTIC ECONOMY as a REGION

1. Why different industrial activities shift to different regions as technologies mature?
2. The implications of value-added with different industrial activities as global competition increases

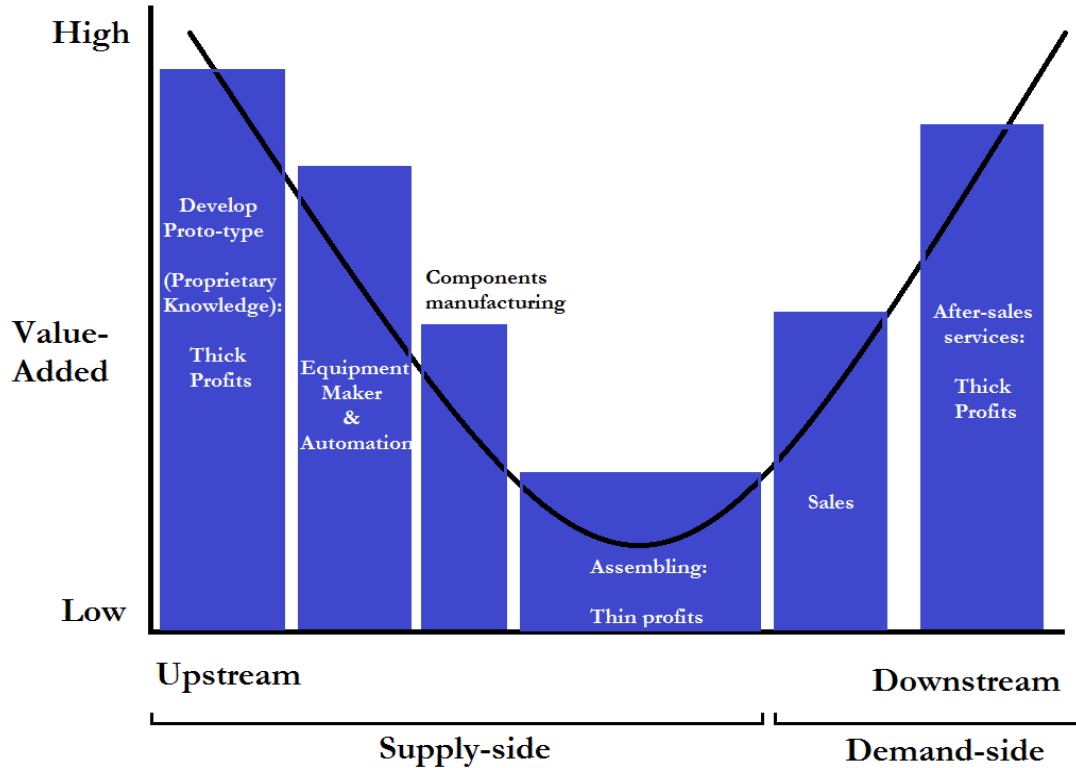


# Shifts in industrial activities and implications on value-added

# Spatial Product Life Cycle and shifts in industrial activity



# Value-added from different industrial activities

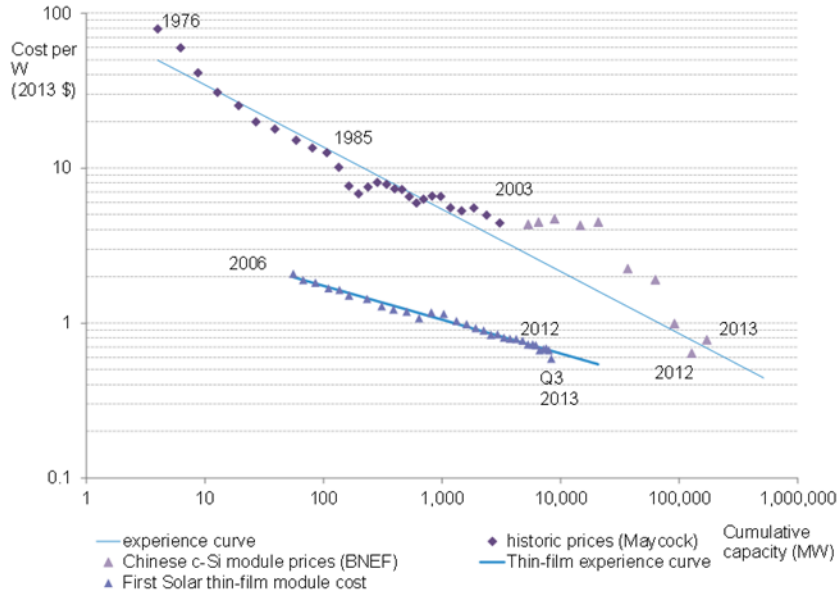


Developed from: Masahiko & Haruhiko (2002)

# Spatial characteristics of different industrial activities (I.A)

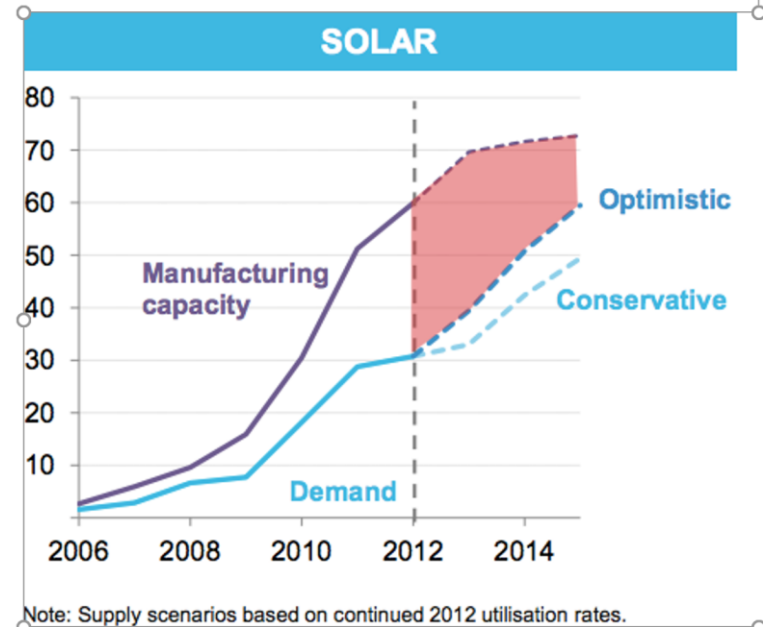
| EEG                                 | Innovation                                                                                       | Manufacturing                                                                                                                |                                                                                                                  | Markets                                                                      |
|-------------------------------------|--------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------|
|                                     |                                                                                                  | Technological capabilities                                                                                                   | Industrial capacity                                                                                              |                                                                              |
| Assets of the region to support I.A | National innovation systems (NIS) that enable technological capabilities to create new products  | NIS that enable high-level process innovations involved with making better production equipment (i.e high-value engineering) | Absorptive capacities that enable mass manufacture new products                                                  | NIS and policies to overcome market failures to enable technology deployment |
| Spatial mobility on I.A             | Low spatial mobility as knowledge spillovers concentrated to specific region                     | Some levels of spatial mobility but regions connects to manufacturing regions where production technology is sold            | Codification of production technology enables spatial transfer to regions with lower-costs & absorptive capacity | Low transport costs<br>Low trade barriers                                    |
| Number of regions involved with I.A | Few regions have developed NIS                                                                   | Regions with strong university-industry collaborations to do high-value engineering                                          | More regions as spatial transfer of technology allows more regions to manufacture products                       | Increase number of markets as costs for technologies go down                 |
| Value-added to economy with I.A     | High value-added as few regions have the NIS to build on previous knowledge to make new products | High-to-medium value-added as more regions become better at making production equipment for customers                        | Medium-to-low value-added as more regions manufacture and increase global supply                                 | High-to-Medium value-added to overcome market failures within economy        |

# Solar PV Industry: Lowering margins with increasing supply



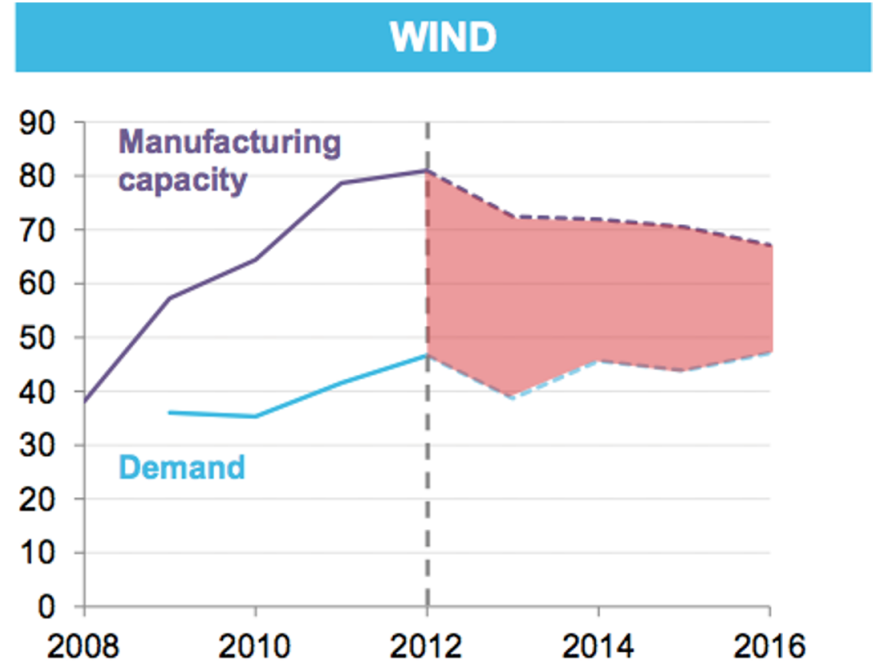
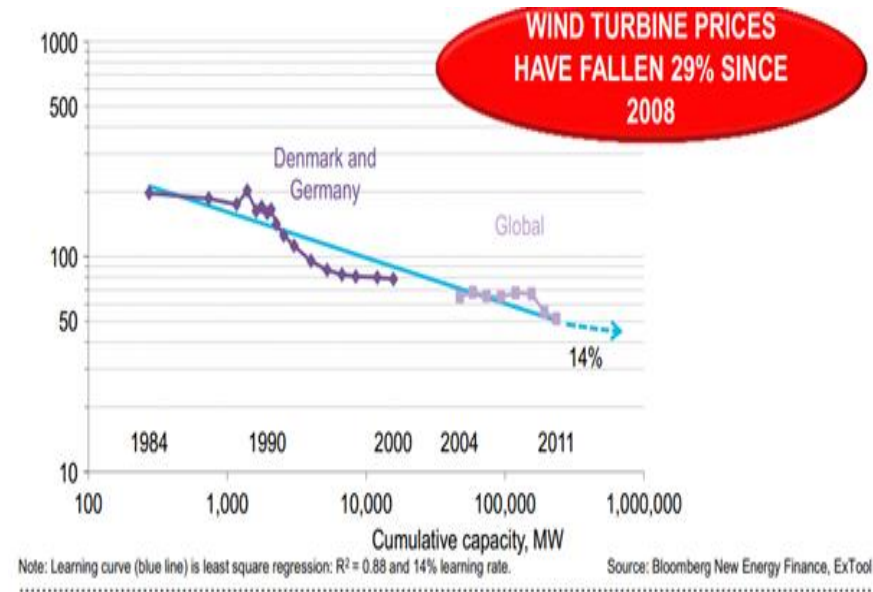
Source: Paul [Maycock](#), First Solar, Bloomberg New Energy Finance

Note: Prices inflation indexed to US PPI.



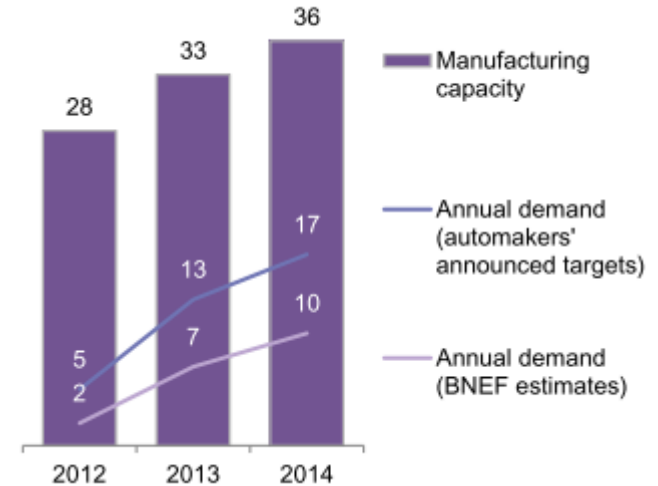
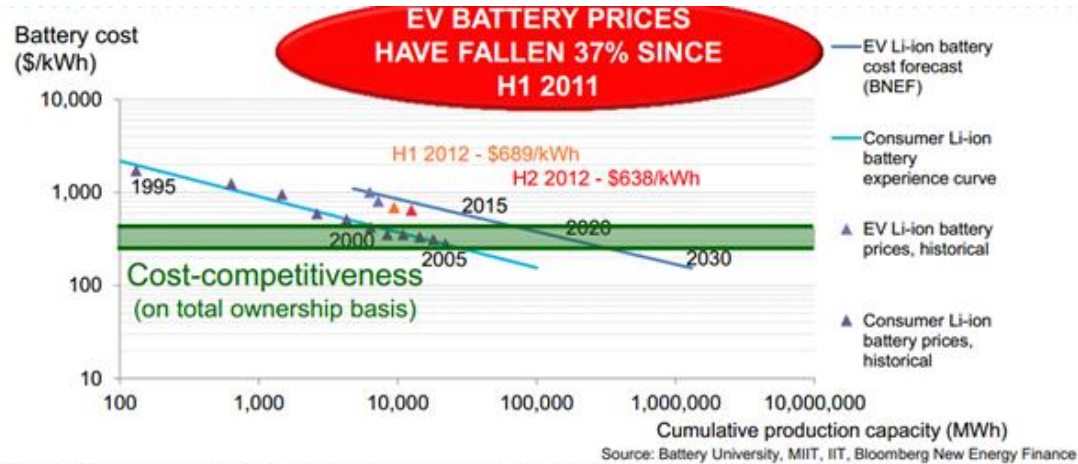
Note: Supply scenarios based on continued 2012 utilisation rates.

# Wind turbines: Lowering margins but high transport costs



Source: Bloomberg New Energy Finance

# Lithium ion batteries: Lowering margins with increasing supply



# Re-assessing green growth from industrial policy



# Value-added from evolutionary economic geography

## 1. Regions encompass all 3 industrial activities: innovation, manufacturing, markets

- Composition of industrial activities changes (spatial product life cycle)
- Industrial activities locate to comparative advantage exists for technological capabilities and industrial capacity
- However every region needs low-carbon markets

## 2. All 3 industrial activities provides value-added and jobs to the economy

- Value-added for each industrial activity changes over time
- Greater scope and number of jobs sources from domestic economy from market-related services

## 3. Competitiveness of regions: To do what other regions cannot replicate or appropriate

# Thank you

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