

# Emerging technologies in emerging economies: perspective from China nanotechnology

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# Why emerging technologies ?

**Emerging technologies** can be defined as science-based technologies that are characterized by novelty, recent high-growth, and potentially broad impacts.

All the countries stand on almost **the same starting line.**

Emerging technologies tend to have huge **economic potentials.**



# Why emerging technologies ?



Emerging technologies have been identified as national priorities both in developed countries such as the U.S. and U.K. and emerging countries such as China since the opening of 'windows of opportunity' .



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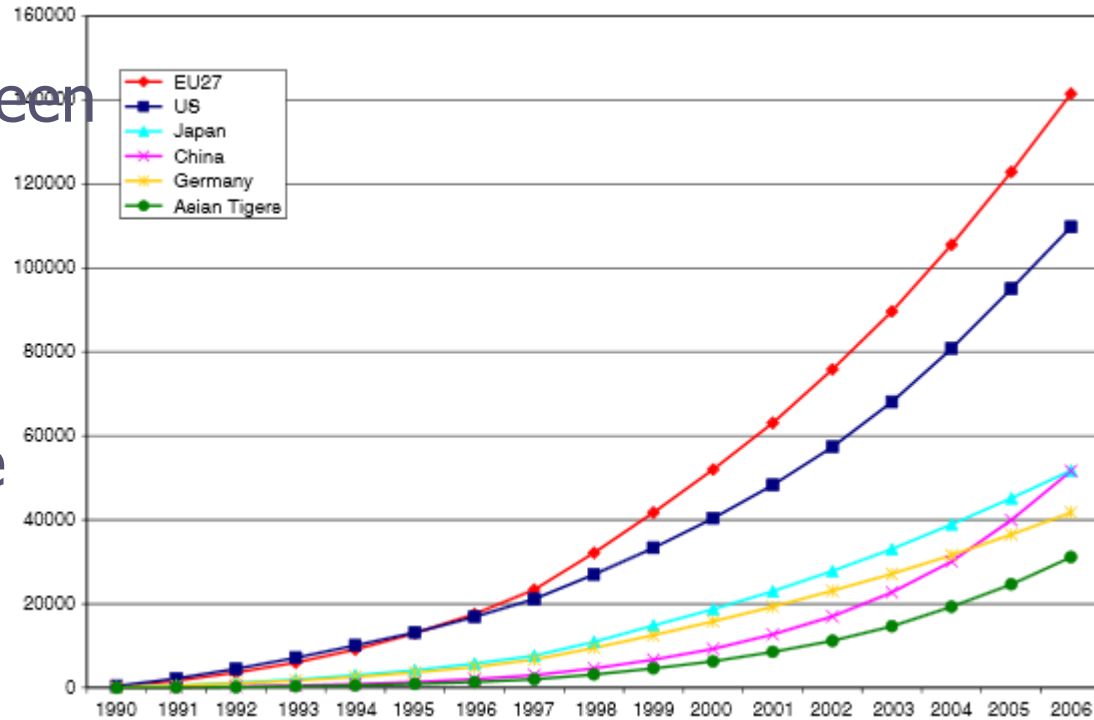


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# Why nanotechnology ?

**Nanotechnology** , as an emerging technology , has been regarded as one of the paramount **drivers of future economy**.

More than **60 countries** have national nanotechnology programs with **billions of investments** since the announcement of the US National Nanotechnology Initiative (NNI).



Nano Pubs by leading countries. Youtie, J., Shapira, P., & Porter, A. L. (2008)



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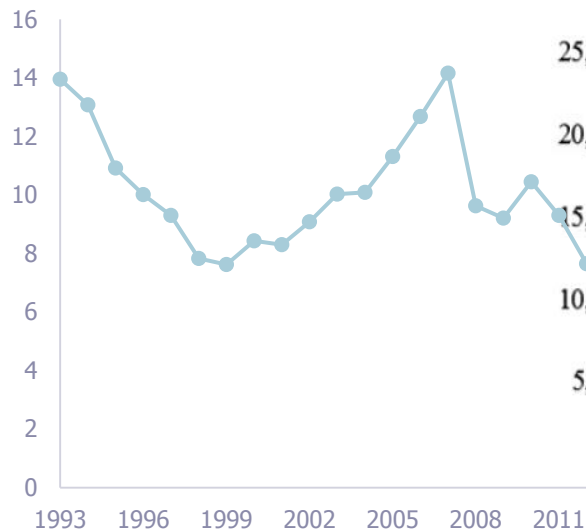


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# Why China ?

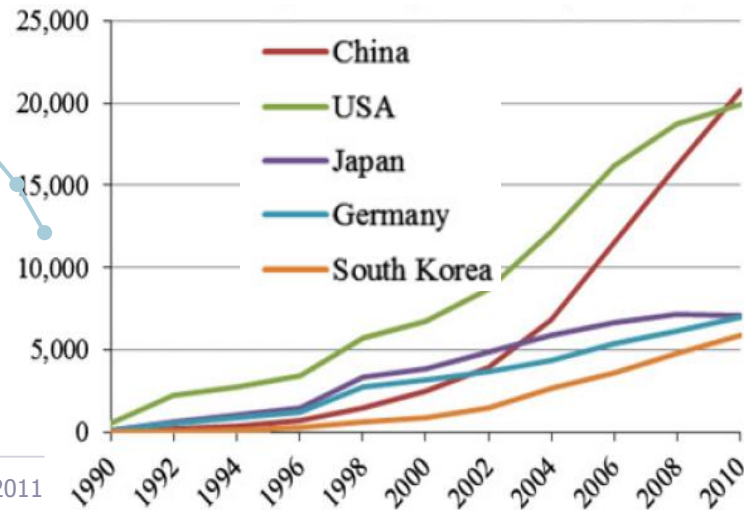
China, a **fast growing economy**, is active in emerging technologies.



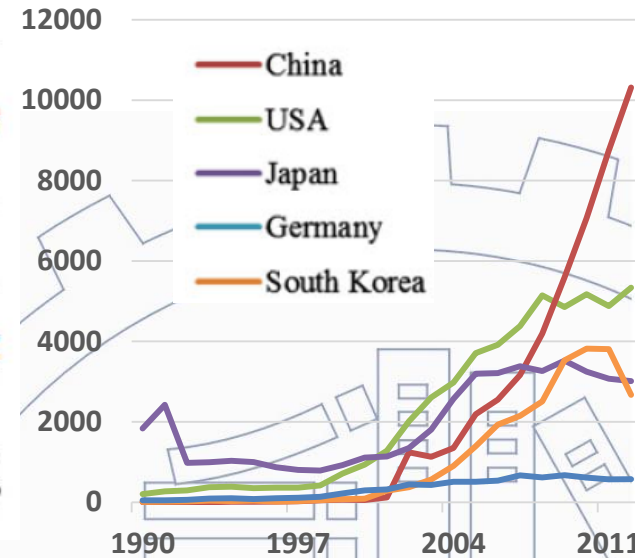
Growth rate of China GDP



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Nano publications. Arora, S. K., Porter, A. L., Youtie, J., & Shapira, P. (2013)



Nano patents



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# RQ1:How can China make itself stand-out in nanotechnology research?

## Question

- What roles do **public policy** play?
- Does **collaboration** matter(regional and international)?
- What roles do **overseas Chinese** play?

## Methods

- **Bibliometric analysis**
- **Econometric model analysis**

# RQ2: Can technology breakthroughs be used to build globally competitive and high-value added economy?

## Question

- What roles do **industry** play in China nanotechnology publications and patents?
- What measures can be make to turn nanotechnology innovation into **economic outputs**?

## Methods

- **Bibliometric analysis**
- **Questionnaire survey**
- **Benchmarking analysis**



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# Research design

## Research targets

- URIs in Nano
- Oversea Chinese researchers
- Returnees
- Nano firms

Econometric analysis  
Survey, Benchmarking

Analyze Nano paper and patent database and code bibliometric data to do econometric model analysis

- What roles do collaboration play?
- Do oversea Chinese and returnees matter?
- Does support from government matter?

Interview Nano firms and compare STI system with the U.S.

- What hinders firms to turn innovation to economic outputs?
- What experiences can be learned from the US?



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# Objectives

- Depict the **state quo and dynamics** of China nanotechnology research.
- Identify the **factors** that boost China to be one of the leading countries in nanotechnology.
- Recognize **barriers** that hinder the transformation of innovation into economic outputs.
- Draw **implications** for other developed and emerging countries in developing emerging technologies.



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# Potential challenges

- It is urgent to solve the **name disambiguation** problem in WoS database.
- It is difficult to **code** bibliometric data to do empirical analysis
- Need to find a way to download **large-scale USPTO** data



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Looking forward to your comments!



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