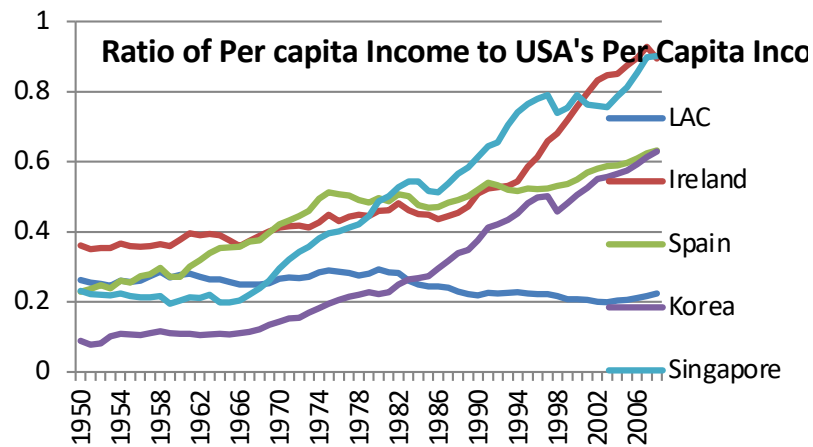
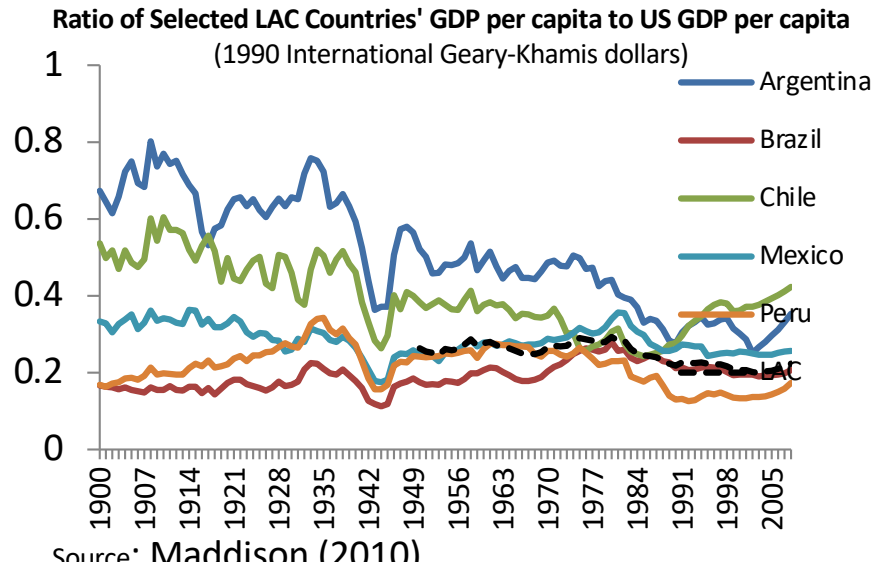


Industrial Policy for Avoiding Middle-income Trap: A New Structural Economics Approach

Justin Yifu Lin

**Institute of New Structural Economics
Peking University**

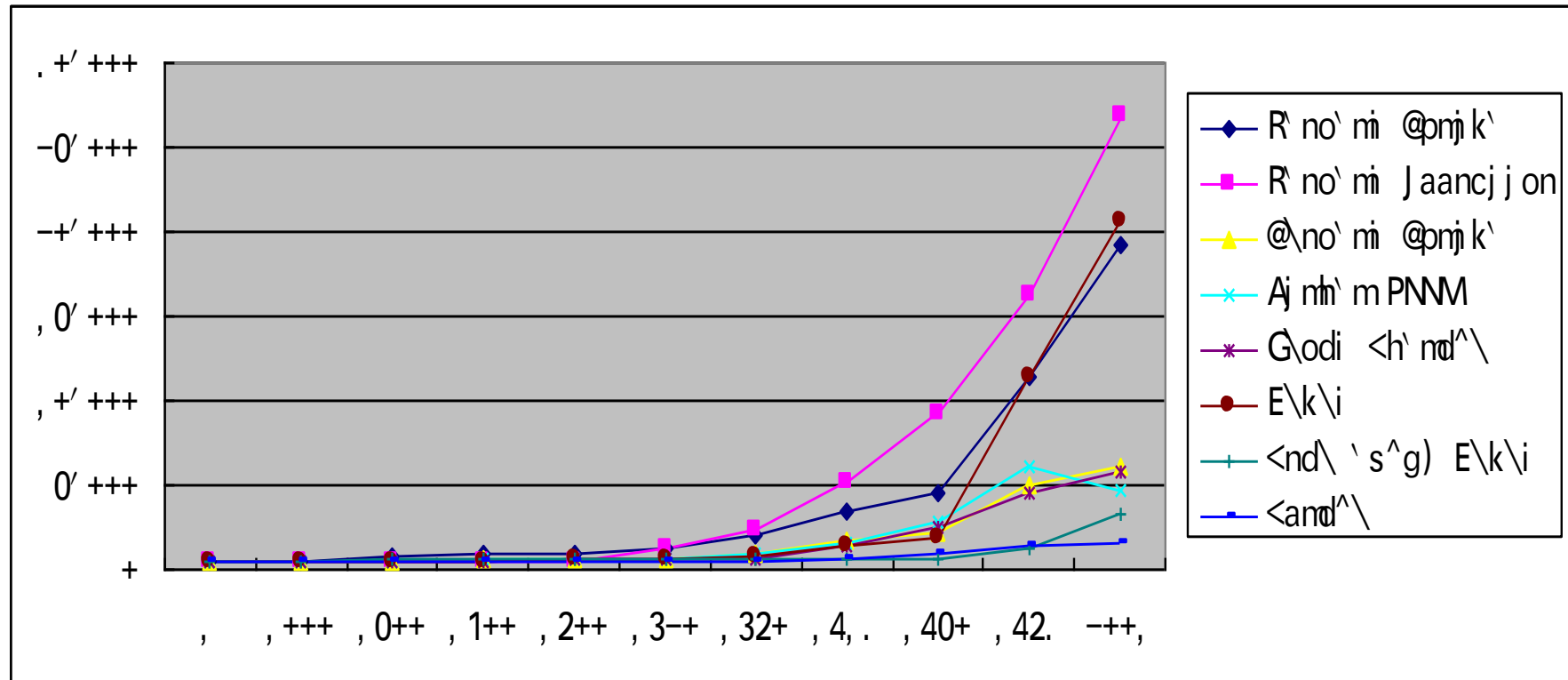
Middle-income Trap?



- Most Middle-income countries have been trapped in the same income bracket since WWII.
- The middle-income trap is not a destiny. Ireland and Spain in Europe and Korea and Singapore in East Asia are able to move from middle income to high income. China is likely to move up to a high-income country in just one or two years.
- The presentation attempts to provide a New Structural Economics perspective of the reasons for the trap and the way to avoid it.

The Nature of Modern Economic Growth

- The rapid, sustained income growth is a modern phenomenon

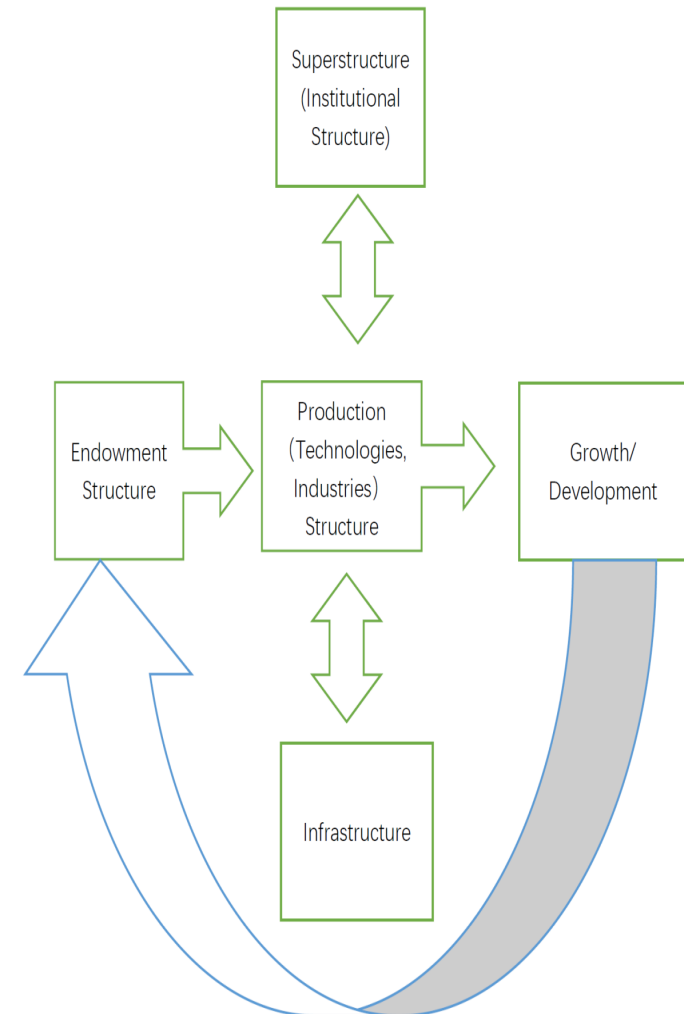


- The nature of modern income growth is a process of continuous structural changes in technologies and industries, which increase labor productivity, and in soft and hard infrastructure in the economy, which reduce transaction costs.

Determinants of Structure and Structural Change: A New Structural Economics Framework

- **The main hypothesis.** Economic structure in an economy is endogenous to its factor endowments which are the smallest elements for forming any economic activity and are given at any specific time and changeable over time
- **Endowments and the endowment structure** at any specific time determine the economy's total budgets and relative factor prices at that time, which in turn determine that specific time's:
 - Latent comparative advantages of the economy, i.e., industries that have the lowest factor costs of production in the world
 - To turn comparative advantages from latent to actual requires improvement of infrastructure and institution to reduce transaction costs so that the total costs will be competitive in domestic and international markets
 - Industrial structure, infrastructure and institution are endogenous to endowment structure
- **Dynamics.** Income growth depends on:
 - Upgrading industrial structure, which in turn depends on
 - Upgrading of endowment structure
 - Improvements in infrastructure and institution to reduce transaction costs and make the latent comparative-advantage industries become actual comparative advantages and competitive in the market
- **The low-income trap and the middle-income trap are both the result of a country's inability to have a dynamic structural transformation, which enables a developing country to grow faster than the high-income countries**

Economic System Diagram



Comparative-Advantage Facilitating strategy and development success

- *Facilitating an economy's industries of latent comparative advantages to become actual comparative advantages by improving infrastructure and institution is the best way to achieve dynamic growth and convergence:*
 - *The economy will be most competitive, produce the largest surplus, have the highest possible returns to capital and thus savings, ensure the fastest upgrading of endowments structure, and achieve the rapidest industrial upgrading and income growth*
 - *In this process, a developing country can have the latecomer advantages and thus have a faster technological innovation and industrial upgrading than high-income countries, which lead to convergence to high-income countries*

The Market and the State

- Firms maximize profits...choice of technology and industries based on relative factor prices...

Need for a competitive market system

- Industrial upgrading and diversification needs to:
 - Address externalities from first mover
 - Solve coordination problems for improvements of infrastructure and institution

Need for a facilitating state

Comparative Advantage Defying and the Failure of Industrial Policy

- The fact is that almost all governments in the world attempted to use industrial policies to play the facilitating role, but most failed.
- The reason is that the government's targeted industries went against the country's comparative advantages.
 - For developing countries, the targeted sectors are often too capital intensive
 - For developed countries, the targeted sectors are often too labor intensive
- Consequence of the comparative advantage-defying industrial policy
 - The firms in the industrial policy's targeted sectors were **non-viable** in the competitive market. The factor costs of production are higher than those in countries with comparative advantages in those sectors.
 - To support its investment and to ensure the firms' continuous operation, governments supported the non-viable firms through all kinds of subsidies and protections.
 - Those measures led to misallocation of resources and rent-seeking.
 - As a result, the attempts to pick winners ended up picking losers.

Latent Comparative Advantage and Picking Winners

- For an industrial policy to be successful, it should target sectors that conform to the economy's latent comparative advantage:
 - The latent comparative advantage refers to an industry that the economy has low factor costs of production but the transaction costs are too high to be competitive in domestic and international markets
 - Firms will be viable and the sectors will be competitive once the government helps the firms overcome coordination and externality issues to reduce the risk and transaction costs.
- But how can the government pick the sectors that are in line with the economy's latent comparative advantages?

Types of Industries in a middle-income country

- From the perspective of new structural economics, depending on an industry's distance to the global technology frontier, length of innovation cycle and strategic significance, there are five types of industries in a middle-income country:
 - Catching-up industries
 - Leading- edge industry
 - Comparative-advantage losing industries
 - Short innovation-cycle industries
 - Comparative advantage-defying strategic industries

Industry policy for Catching-up industries

- Removing binding constraints for the domestic enterprises to acquire advanced technologies from developed countries
- Encourage domestic enterprises to jointly tackle key problems in platform technologies and share them
- Facilitating firms to adopt digital technologies, artificial technologies and green technologies to improve quality, increase efficiency and quality, and even leap into a leading one.

Industry policy for Leading-Edge industries

- A developing country, especially for an upper middle-income country, may have some sectors which are on the global technology frontier, such as household electronic appliances in China and Embraer in Brazil
- To maintain technological leadership in those sectors, the firms need to have indigenous innovations in new technologies and products, which rely on R&D
- The government should support universities or research institutions for basic research related to the innovation of new technology in those sectors. Based on the breakthrough in basic research, the firms in those sectors should develop new technologies/products
- The government can also use procurement to support the new products from the sectors so the firms can reach economic scale of production quickly
- The government can support the firms' penetration into/expansion of the global market.

Industry policy for Comparative Advantage-losing industries

- Due to the rise of wage, a middle-income country may lose comparative advantages in some existing labor-intensive sectors
- The government may adopt policies to
 - Support some firms to shift to higher value-added activities such as branding, product design, and market channel management
 - Help other firms to relocate their production to lower wage regions/countries
 - Train existing workers for jobs in other sectors

Industry policy for Short Innovation-Cycle industries

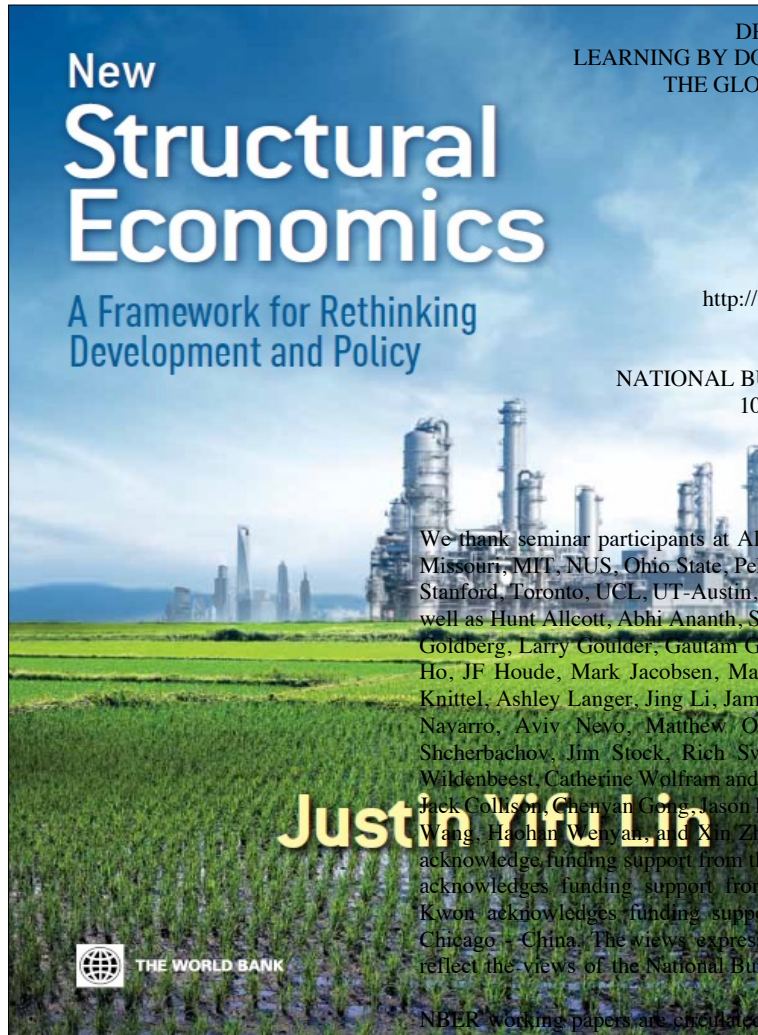
- New products and technologies in some emerging industries, such as internet applications, artificial intelligent, and mobile equipment have short innovation cycle and require primarily human capital for innovation
- Such properties make a middle-income country, especially that with sufficient human capital, a possibility to compete with high-income countries in such type of innovations
- The government in a middle-income country may encourage leapfrogging in industries by
 - Setting up incubation park
 - Encourage venture capitals
 - Strengthening intellectual property protection
 - Procurement of new products

Industry policy for Strategic industries

- For the national security reason, a middle-income country may have to develop indigenously national defense industries, which are capital-intensive, require long innovation cycle and are against the country's comparative advantages.
- The government needs to subsidize firms in such industries, no matter they are owned by the state or by the private.
- The subsidies are made either directly from fiscal appropriation or indirectly by prices/market distortions.
- It is better to provide subsidy directly as direct subsidy is more transparent, easier to supervise than indirect subsidies through distortions, and less costly to the economy.

Concluding Remarks

- The Middle-income trap is not a destiny for a middle-income country
- If the government in a middle-income country play a facilitating role in an effective market to enable technological innovation and industrial upgrading and diversification of its latent comparative advantages, the country can grow faster than high-income countries and avoid middle-income trap
- Industrial policies are essential for the government to play a facilitating role in the country's industrial upgrading and diversification



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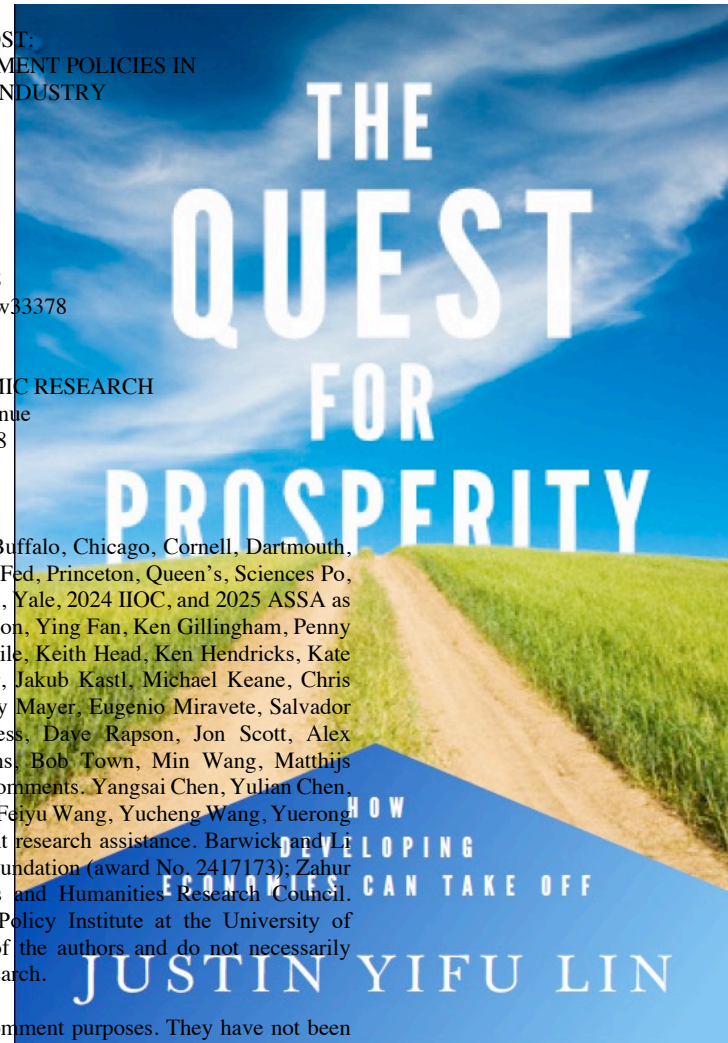
Panle Jia Barwick
Hyuk-Soo Kwon
Shanjun Li
Nahim B. Zahur

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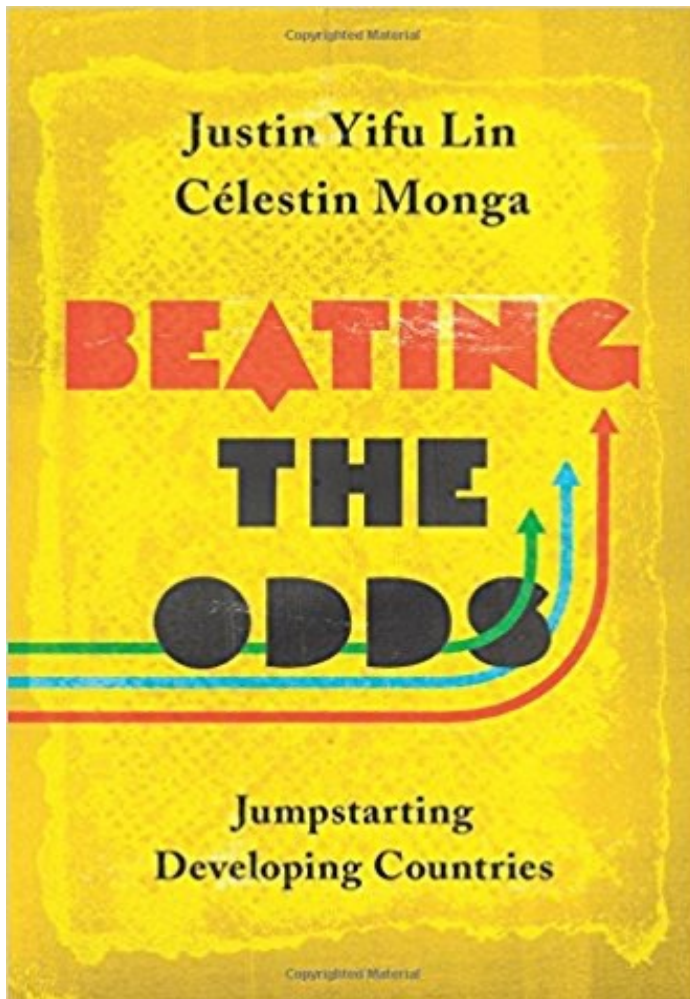
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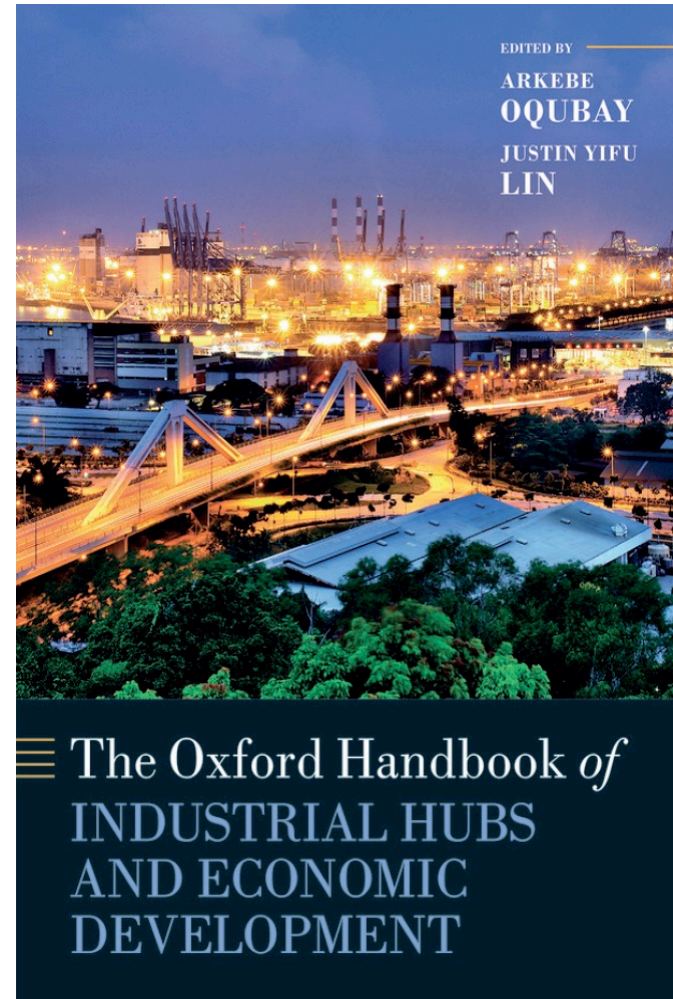
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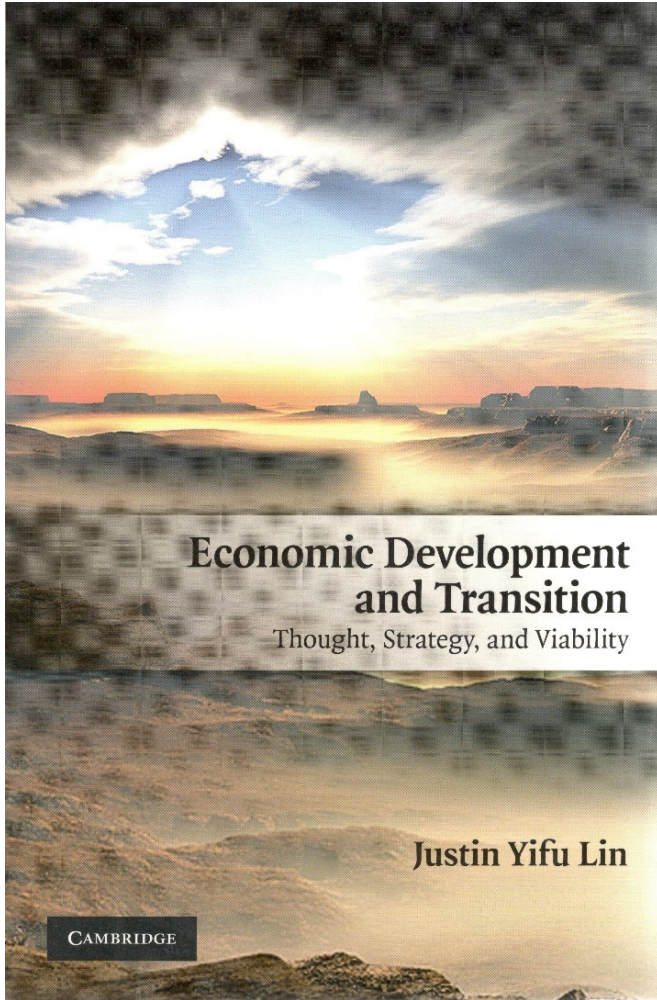
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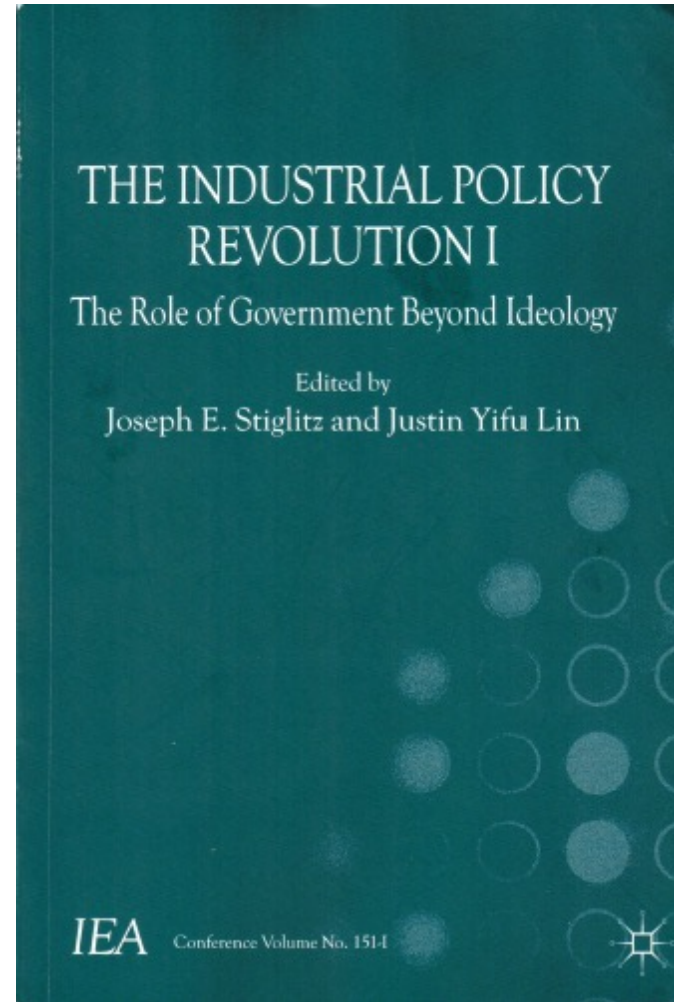
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