Discussion of "Rethinking China's Growth" by Rogoff and Yang

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Discussion Roadmap

1. Very brief overview of the paper
2. Specific comments on their analysis
3. China's growth in context
4. Growth accounting from macro perspective
5. Role of infrastructure

Summary of the Paper

- China's growth has been phenomenal over the past few decades
- Roughly 30% of GDP attributable to construction/infrastructure
- Share much higher than advanced economies
- Cross-sectional evidence of decreasing returns
- Concerns about local gov't debt due to reliance on real estate taxes
- Bottom line: thought provoking paper with compelling facts

More specific comments

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  - Spillovers across regions
  - Reallocation across regions
  - Micro decreasing returns can still be CRS in aggregate

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- How should we aggregate?
  - Spillovers across regions
  - Reallocation across regions
  - Micro decreasing returns can still be CRS in aggregate
- Is local government debt an aggregate problem (or a distributional one)?

China's growth in context

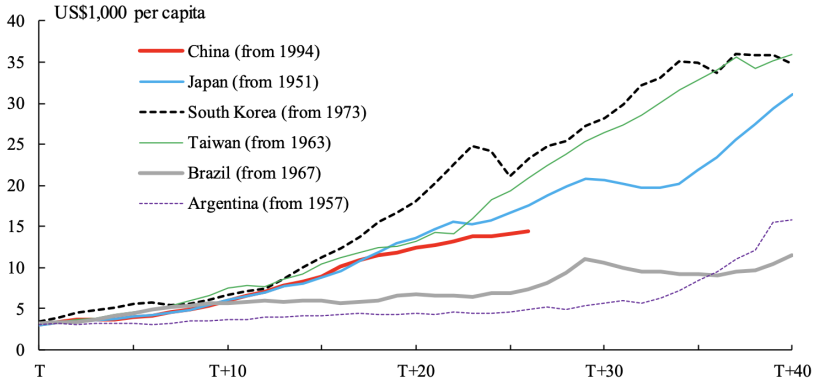


Figure: Year T is defined as the year when the GDP per capita of each economy surpassed US$3,000. Figures are based on output-side real GDP at chained PPPs (in mil. 2017 US$). Source: Sasaki et al (2021) based on PWT.

Structural change in China

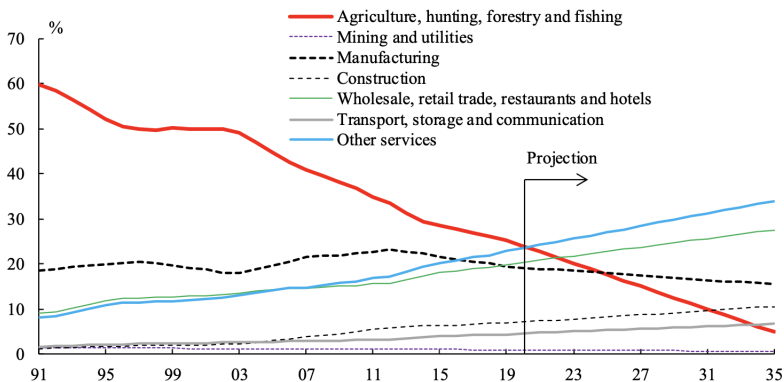


Figure: Source: Sasaki et al (2021) based on ILO data.

China's structural change in context

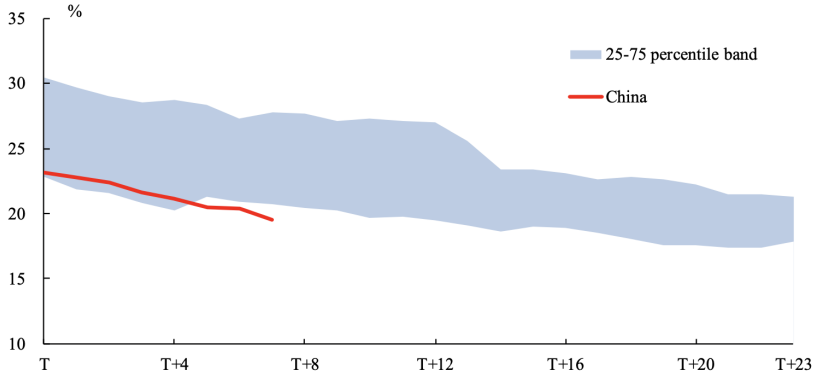


Figure: Year T is defined as the year when manufacturing employment peaked). Source: Sasaki et al (2021) based on ILO.

Basic Growth Accounting

- Going back to Solow, we can think about decomposing growth into contributions from factor inputs (like labor and capital) and total-factor productivity (TFP). Can provide insights into the sources of growth: is it driven by accumulating more inputs or by using these inputs more efficiently?
- Basic Solow model is:

$$\underbrace{Y_t}_{\text{output}} = \underbrace{A_t}_{\text{TFP}} F(\underbrace{K_t}_{\text{capital}}, \underbrace{L_t}_{\text{labor}})$$

- Growth rate of output can be decomposed as:

$$\frac{dy_t}{Y_t} = \frac{dA_t}{A_t} + \alpha \frac{dK_t}{K_t} + (1-\alpha)\frac{dL_t}{L_t}$$

  where α is output elasticity of capital.
- If F is CRS and perfect competition, and we can measure inputs $\Rightarrow$ can do accounting

Growth Accounting in China: Output per worker

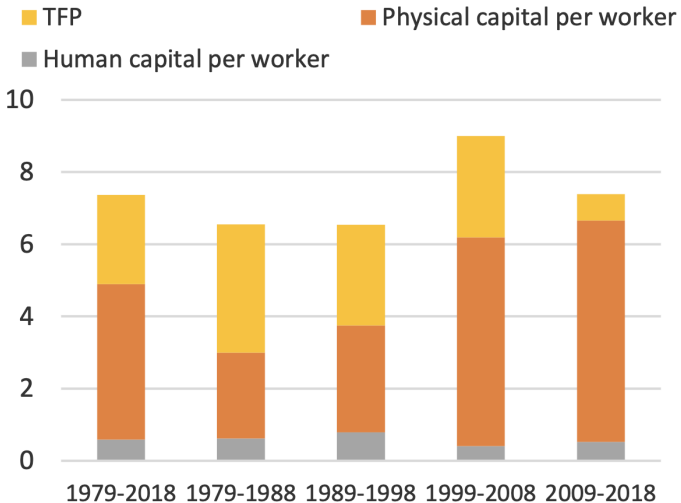


Figure: Source: Brandt et al (2020)

Capital labor ratio: China

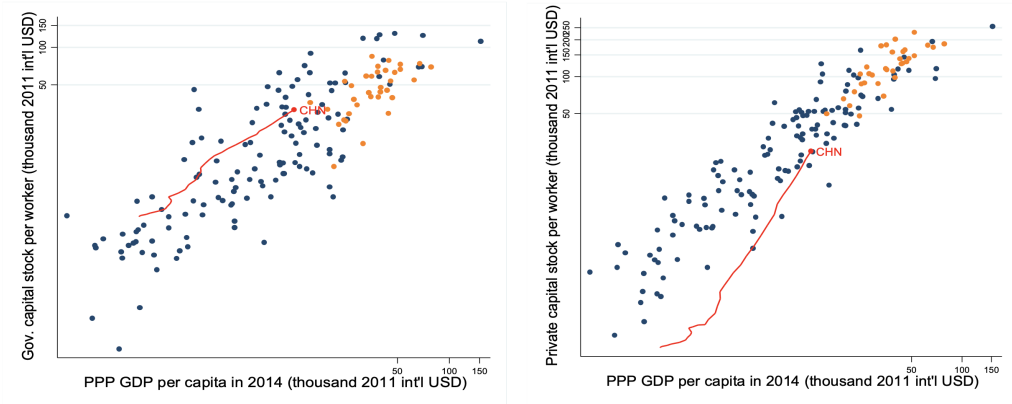


Figure: Government capital per worker (left), private capital per worker (right). Source: Brandt et al (2020)

Capital output ratios: US vs China

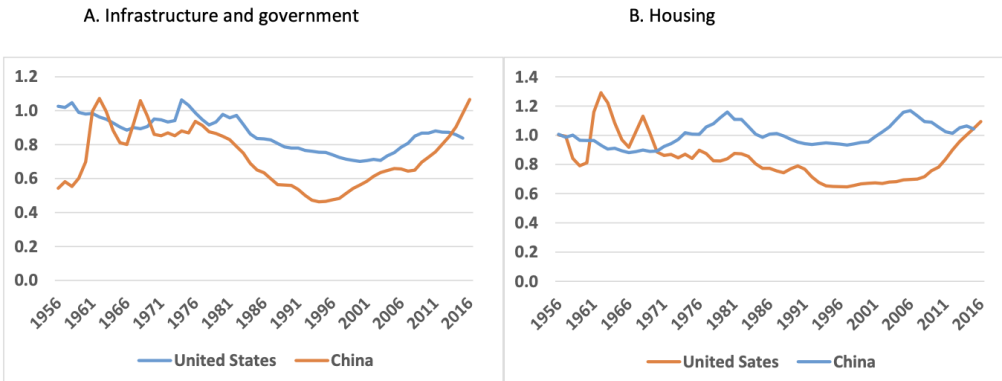
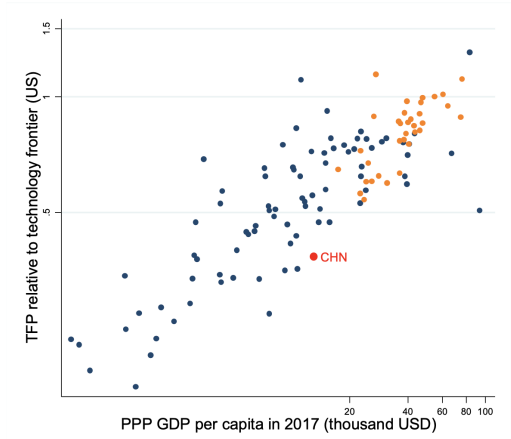


Figure: Source: Herd (2020)

TFP and Human capital



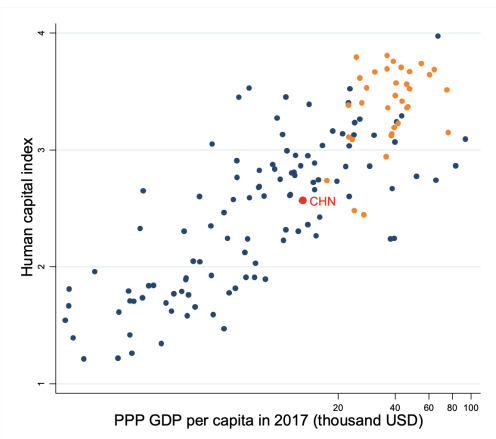


Figure: TFP relative to frontier, US=1 (left), human capital index (right). Source: Brandt et al (2020)

R&D Investment

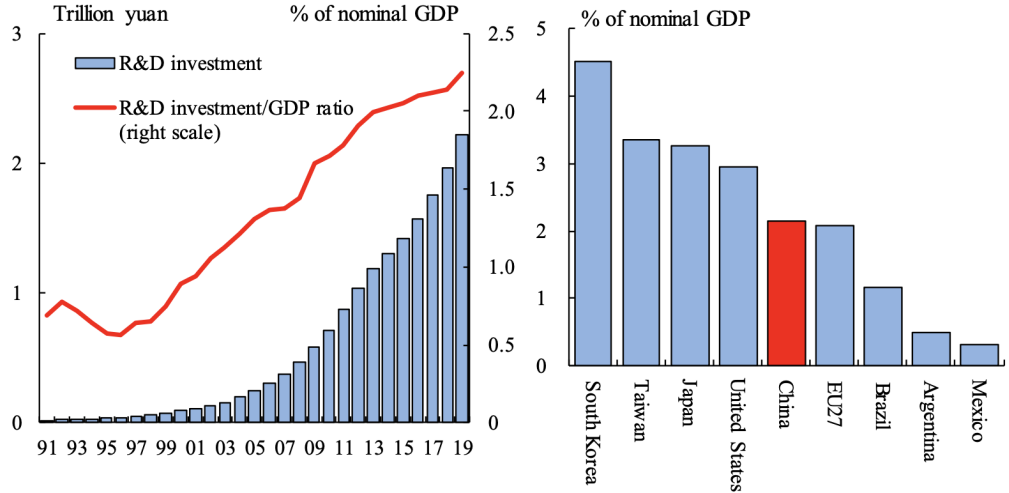


Figure: Chinese R&D investment (left), comparison of R&D investment in 2018 (right). Source: Sasaki et al (2021)

"Stylized facts"

- Chinese growth a combination of TFP, capital deepening and improved human capital
- Since 2009, little TFP growth, mostly capital deepening
- Chinese TFP still far from frontier, room for catch up
- Growth pattern so far similar to Japan, S. Korea, Taiwan
- Capital to output ratios "converged" to US levels, suggesting perhaps less role for capital deepening going forward

Infrastructure and growth

- Unclear how to include infrastructure in growth accounting:
  - Complementarities with capital and labor
  - Potential network effects, increasing returns to scale
  - Enhances market access
  - Reduction in transaction costs
- Little quantitative work (so far!)
- Chinese experience potential opportunity for learning more

Is US the "frontier" for infrastructure?

Final thoughts

- Provocative paper
- Should spur lots of follow up research
- What's behind the slowdown in Chinese TFP growth?
- Will geopolitics prevent future technology transfer and adoption?
- How will the government respond?
- What can we learn about the role of infrastructure in growth?