Industrial Policy and Trade

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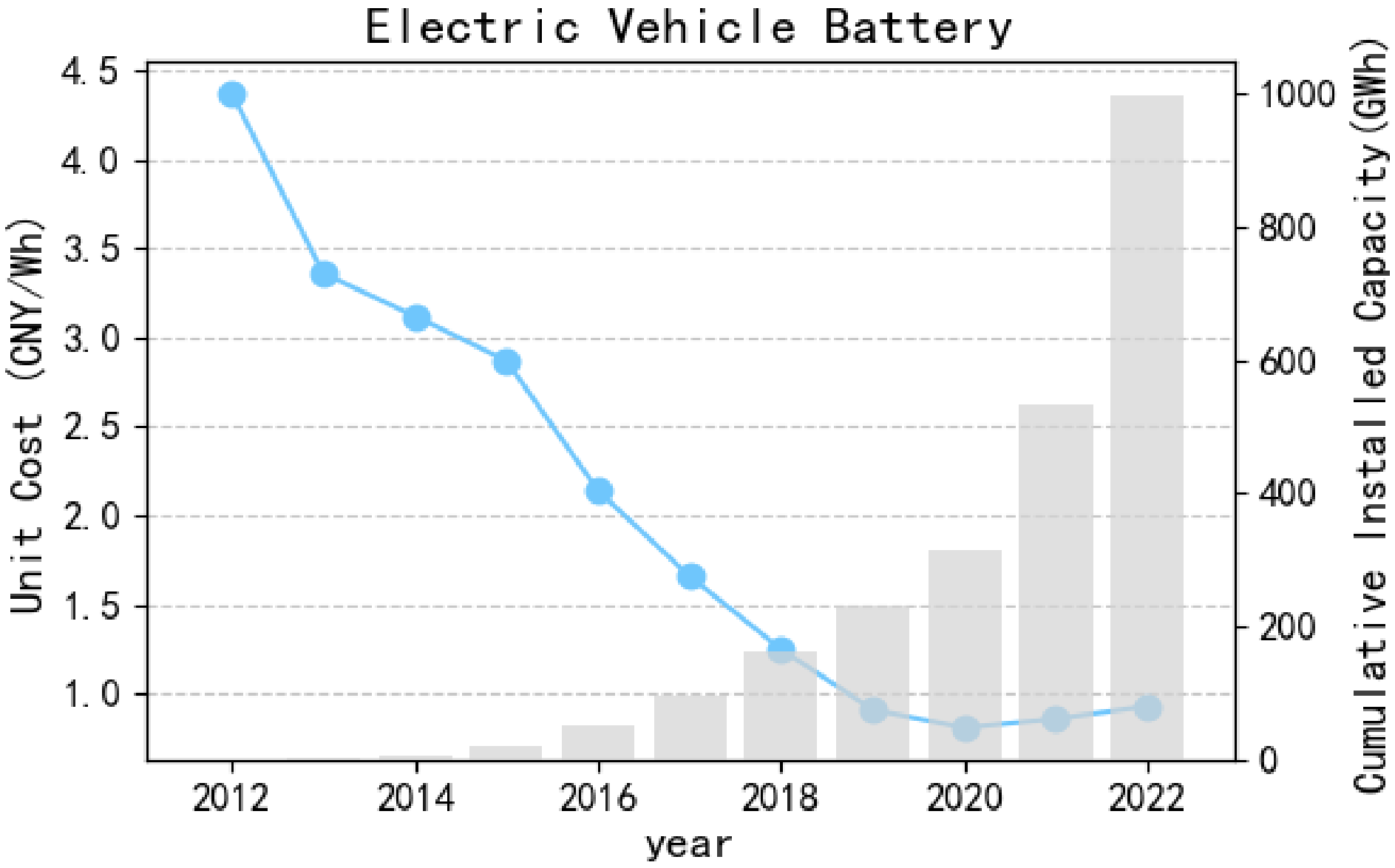
Questions:

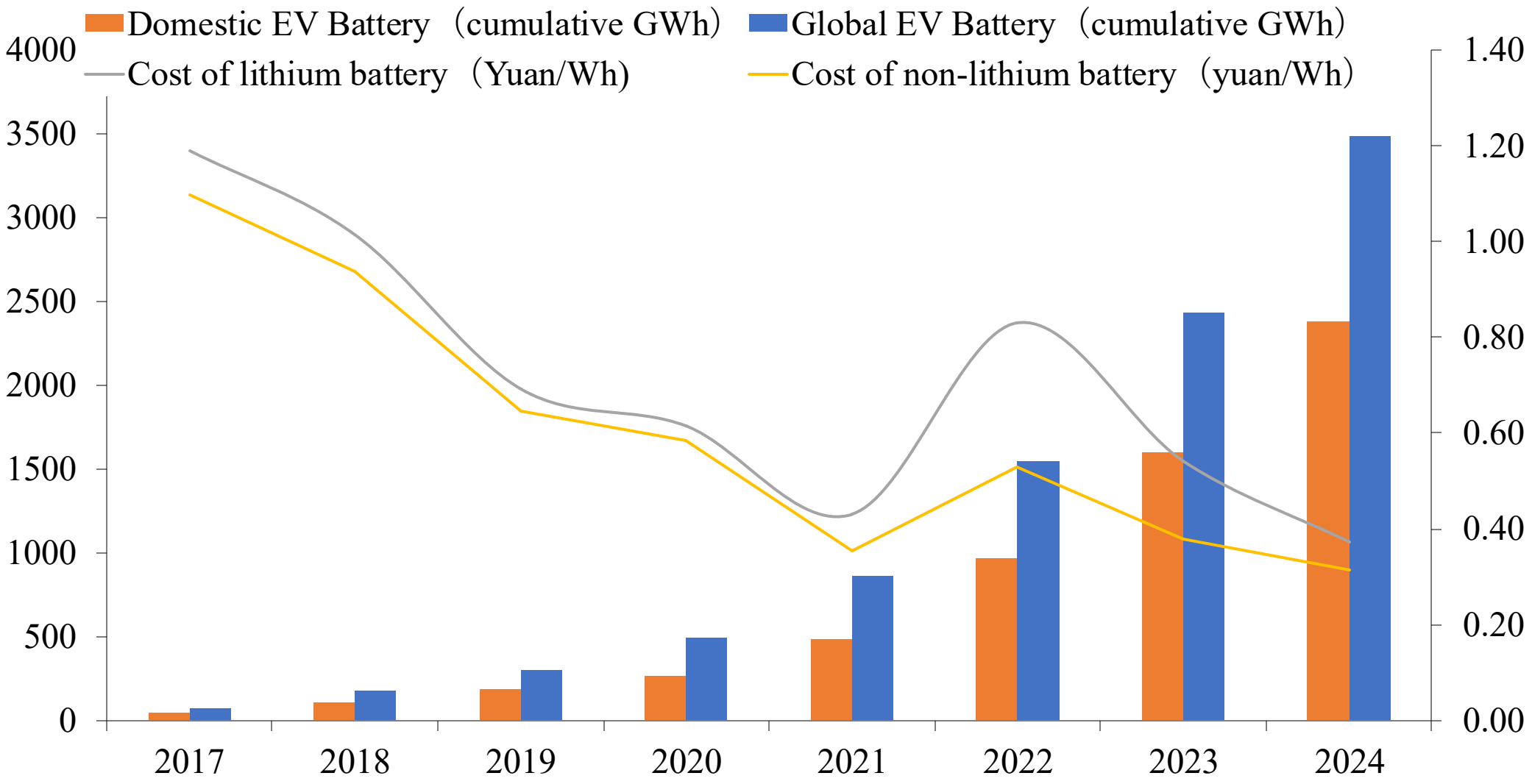
- How do we evaluate industrial policy?
- Are there a reasonable set of rules for dealing with industrial policy in international trade?

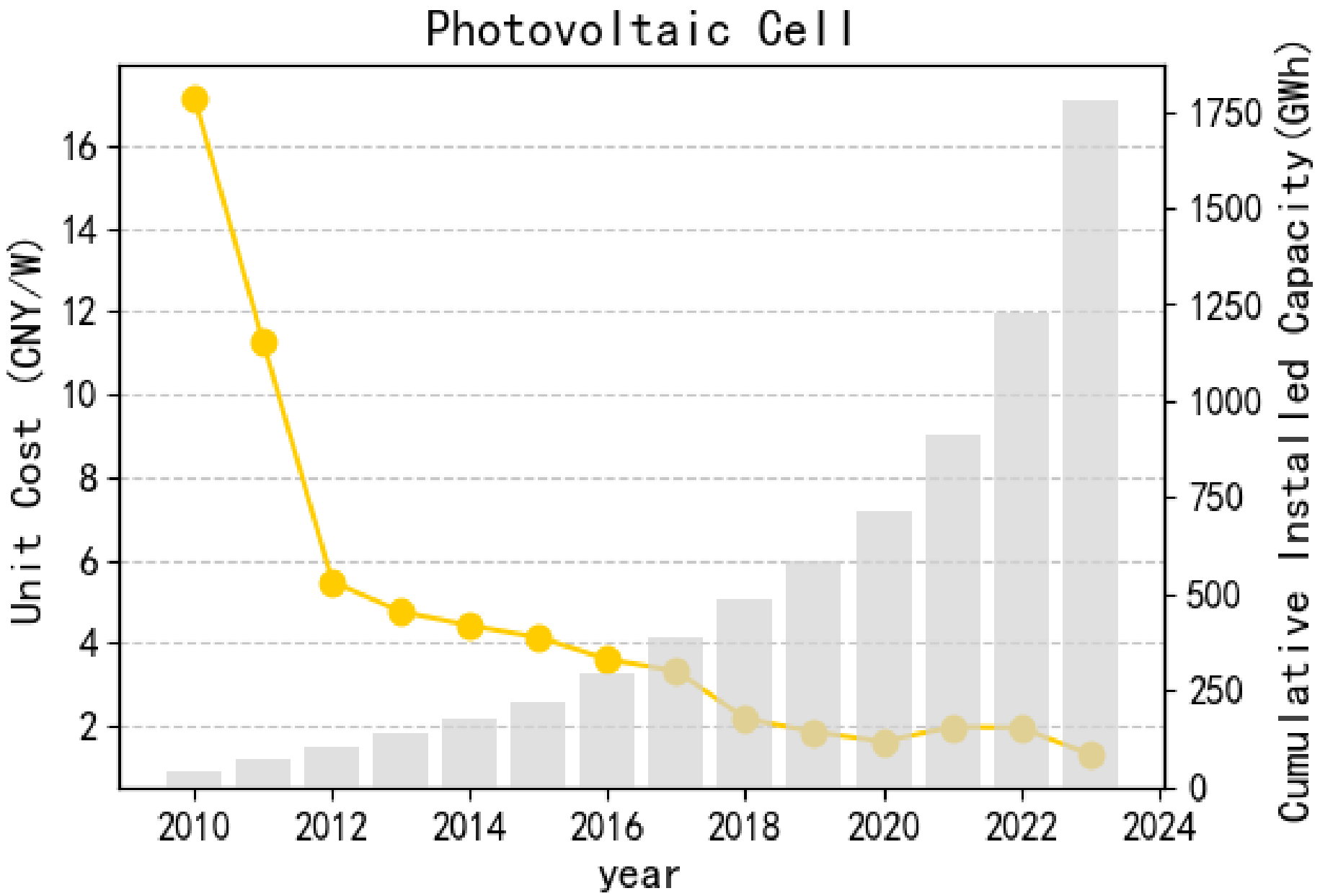
How do we evaluate industrial policy?



Data sources:

Hongliang Zhang, Md Farhan Ishrak, Xiaoqiao Liu, 2024;


Domestic EV Battery （cumulative GWh）
Global EV Battery （cumulative GWh）
Cost of lithium battery （Yuan/Wh)
Cost of non-lithium battery （yuan/Wh）
4000
3500
3000
2500
2000
1500
1000
500
0
1.40
1.20
1.00
0.80
0.60
0.40
0.20
0.00
2017
2018
2019
2020
2021
2022
2023
2024



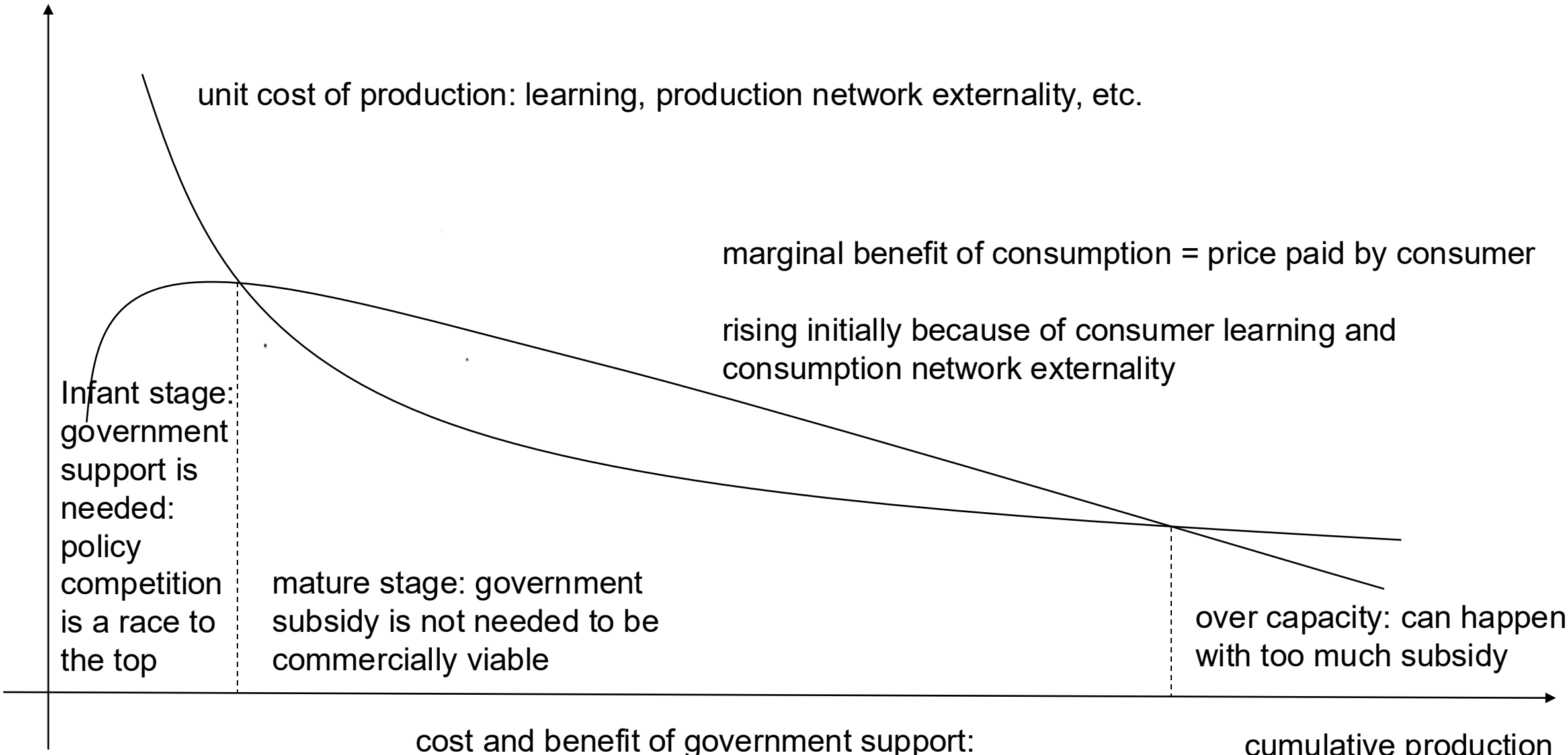
Data sources:

Zhuo Chen, Baihe Gu, Donghui Yu, Chen Wang, 2025;

Arnulf Jäger-Waldau, 2024

Observations

- The initial cost is very high, and there may not be any transaction without extraordinary measures.
- If more experience is accumulated, the cost can drop significantly, and it is worthwhile to accumulate experience.
- If the capital market is not perfect, the producer may not be able to fund the extraordinary measures by itself.
- In this case, government support may be necessary for the market



cost and benefit of government support:

- accelerate green transition
- policy competition can be a race to the bottom

Subsidy should be stopped after the infant stage

- After the infant stage, continued subsidy may lead to overcapacity and it may also lead to trade distortion.
- Industrial policy should set an expiration date. Continuation after the expiration date should be subject to additional review.

Are there a reasonable set of rules for dealing with industrial policy in international trade?

"Normal Characteristics of Trade" A benchmark position

- Current WTO rules：Free trade without any subsidy and tariff except for developing countries
- Additional protection measures:
  - Well defined security considerations
    - Should not view other countries' development as a security threat
    - An example of an acceptable demand: domestic production share of food is above a threshold.
  - Surge protection
    - Domestic production share does not drop too fast
  - Opportunity for development even for developed economies
    - If domestic production share is below a threshold, protective measures can be taken for a finite period of time.

Rules on Subsidy Beyond the Normal

- In the infant stage, subsidy race should be allowed without the threat of countervailing measures, because such race can facilitate learning and lead to mutual benefits ex ante.
- If after the subsidy race in the infant stage, domestic production share is below the threshold set on the last slide, this country should be given the opportunity for development introduced there.
- Even if a country is given such an opportunity for protection, not every country should do it because not every one has to potential to be competitive in the industry even in the long run.

Rules on Subsidy Beyond the Normal

- In the mature stage, countervailing measures can be taken against subsidy. An exporter should pay an export tariff based on the difference between the subsidy it receives and the subsidy received by its competitors in the importing country, restoring the benchmark position.
- Whether an industry is in the mature stage varies across markets:
  - Necessary production scale
  - Necessary consumption scale

Thank you!

Improving TFP Growth—Lessons from China

Presentation at the East Asia Forum 2025

Beijing, 23 September 2025

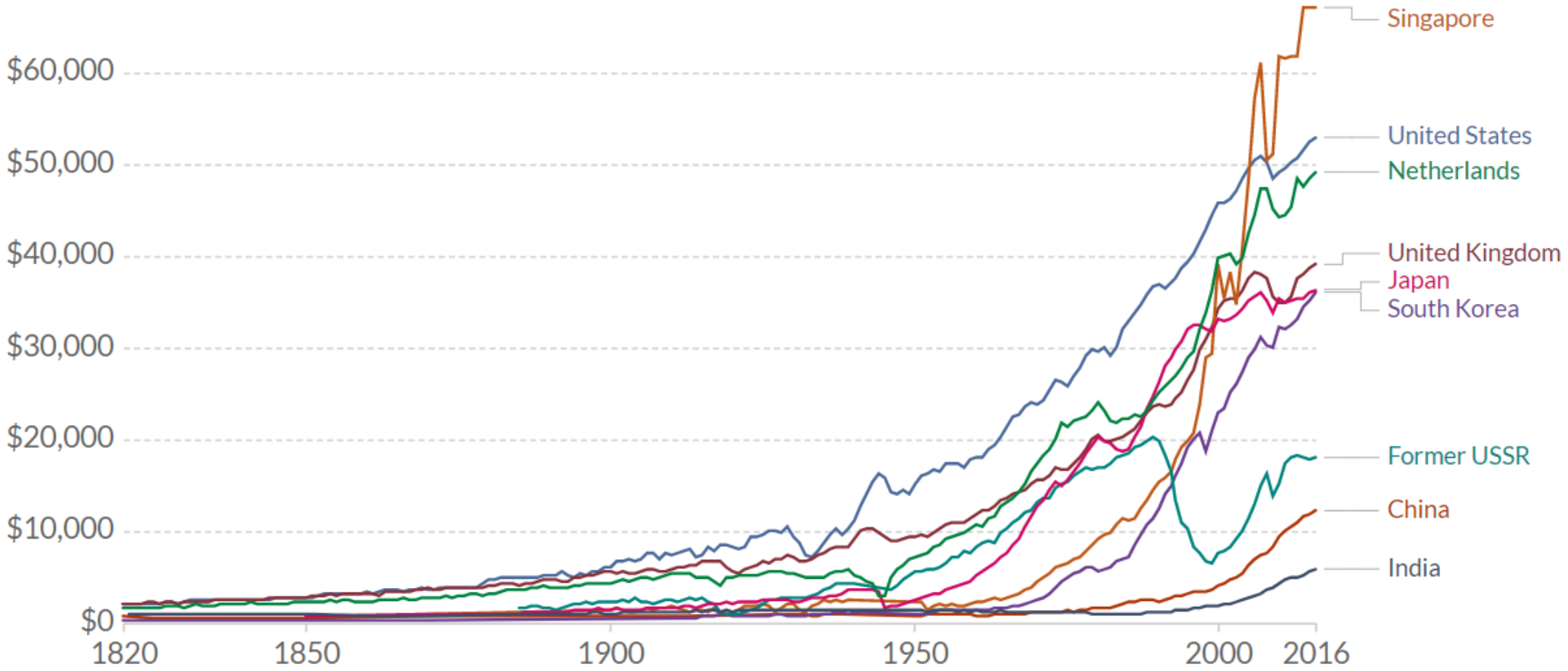
Bert Hofman

East Asian Institute National University Singapore

Asia Society Center for China Analysis

The Great Divergence and Recent Convergence

Income per capita 2011 International $, 1870-2016



Source: Maddison Project Database, version 2018. Bolt, Jutta, Robert Inklaar, Herman de Jong and Jan Luiten van Zanden (2018), "Rebasing 'Maddison': new income comparisons and the shape of long-run economic development", Maddison Project Working paper 10 Via Our World in Data

How to get growth?

Growth

More Inputs:

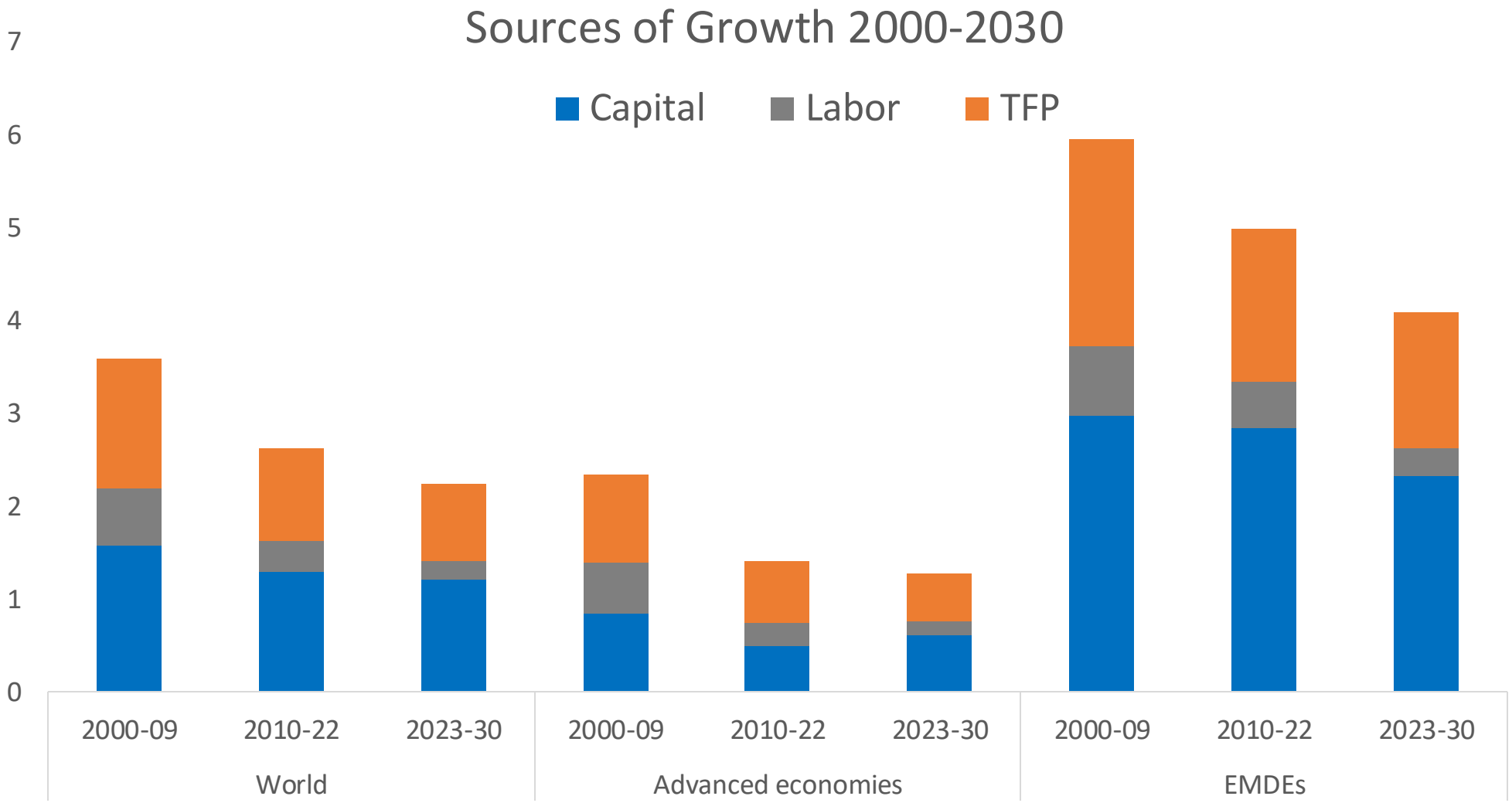
- Labour
- Capital
- (Human Capital)

Increasing Total Factor Productivity (TFP):

- Using better technologies ("true technical progress")
  - New (R&D)
  - Existing (R&D, FDI…)
- Allocating inputs better
  - Across Sectors
  - Across Enterprises
  - Across Locations

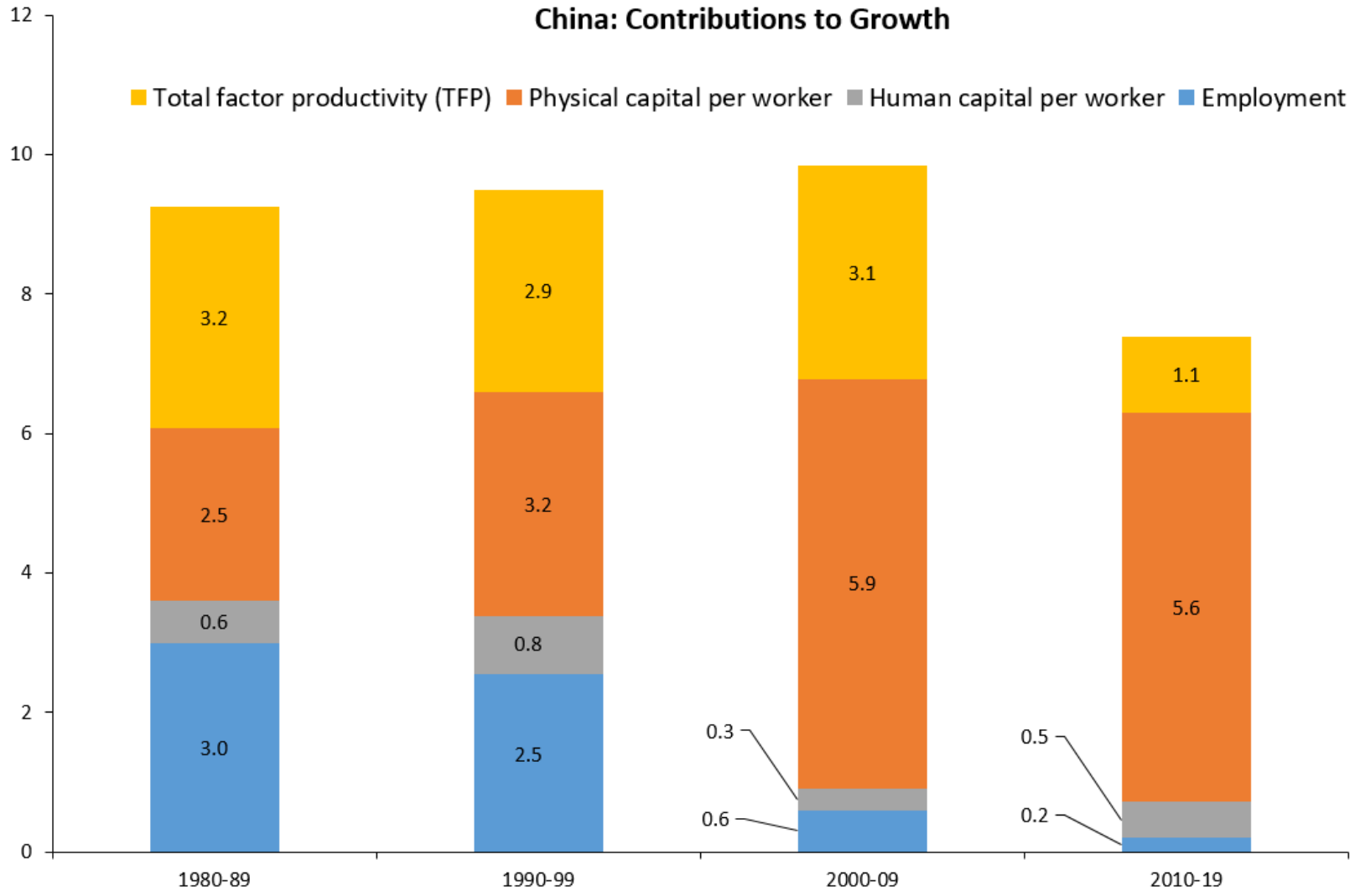
Improving public and private institutions

TFP growth has been declining worldwide, and Set to Decline Further



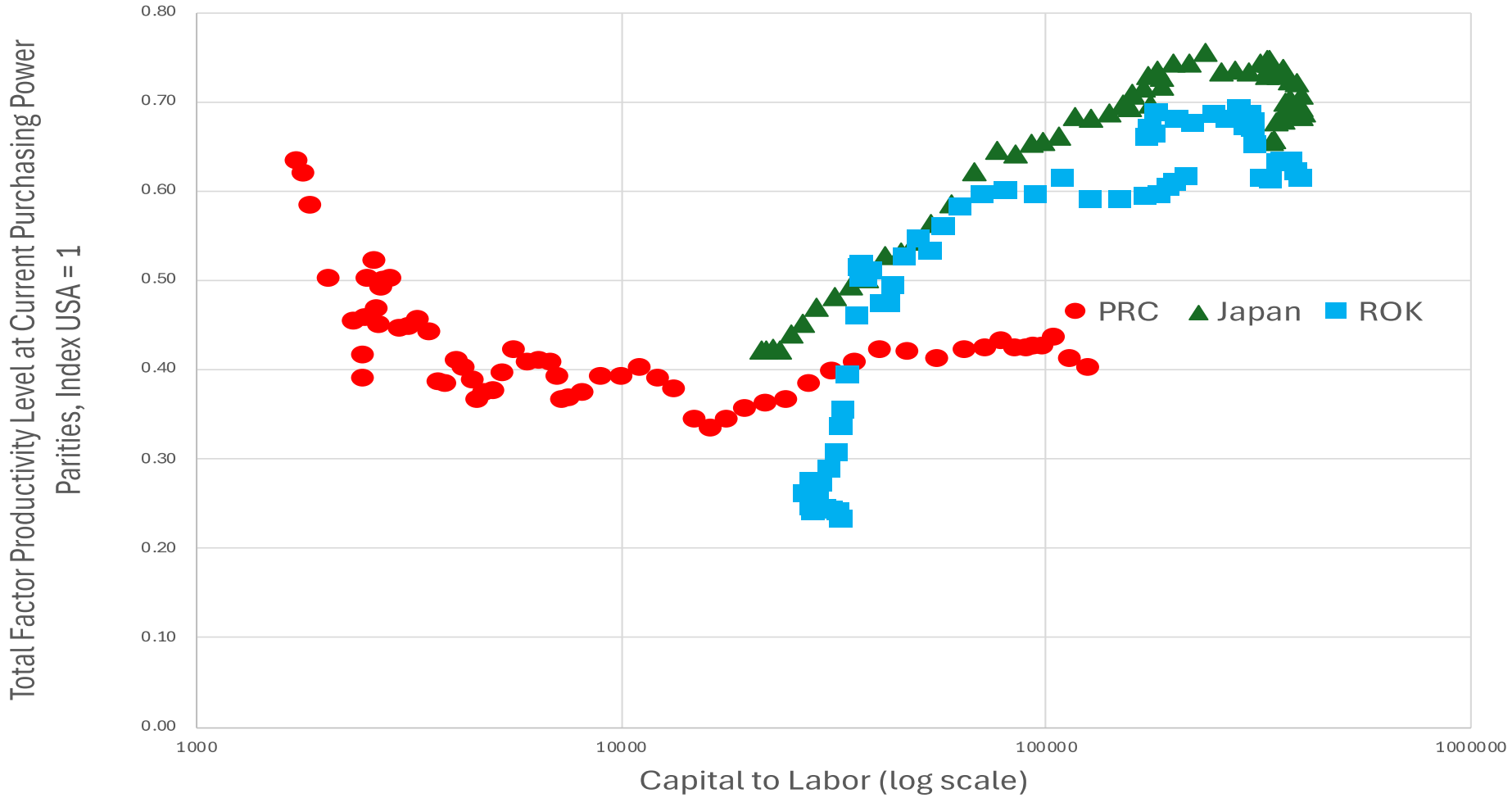
Source: World Bank Global Economic Prospects January 2024 Chapter 3

China’s Growth Decomposed



Source: Brandt et al : China’s Productivity Slowdown and Future Growth Potential. Courtesy Elitza Mileva MAS.
Note: TFP is a measure of overall productivity in the economy

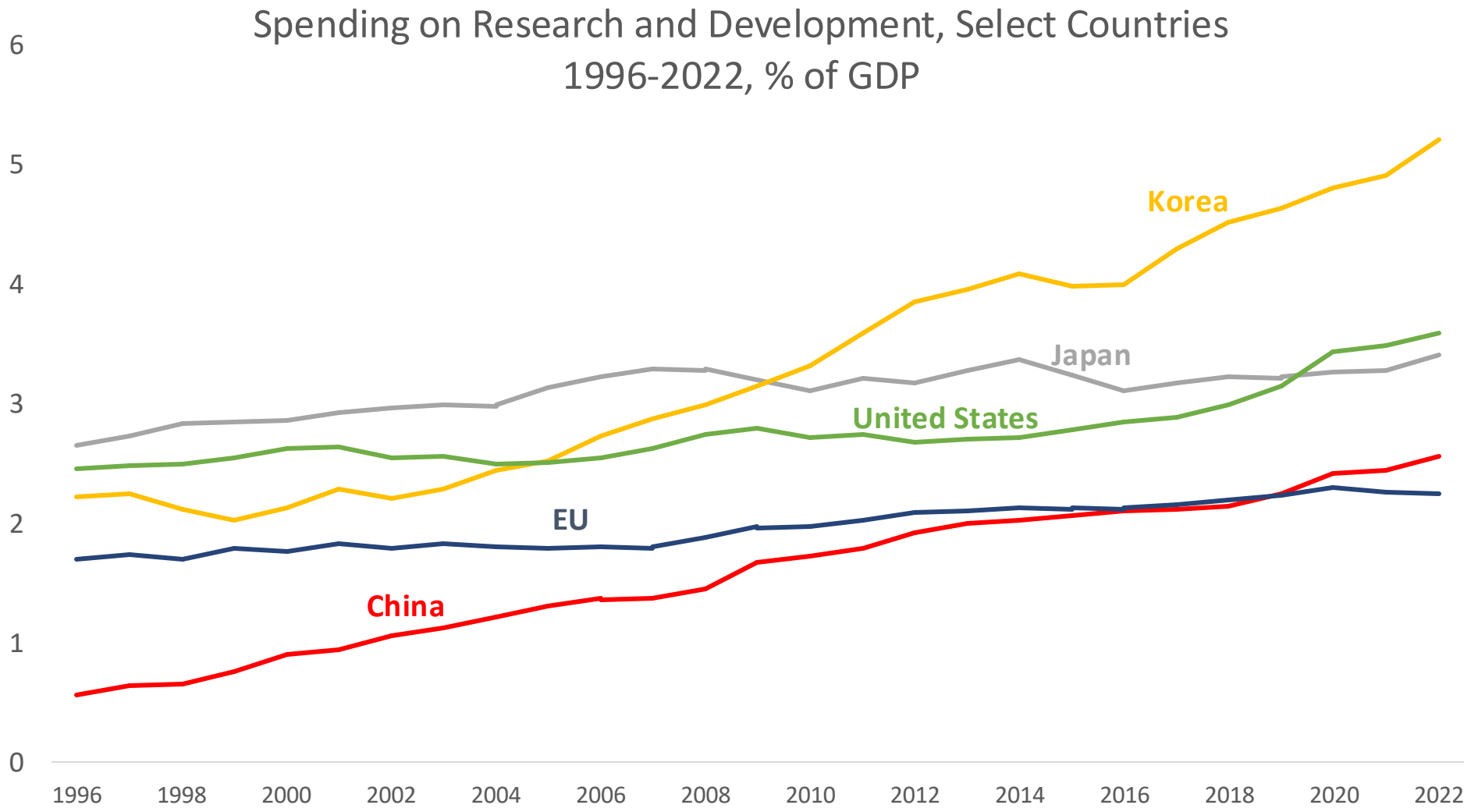
China's growth has been more capital driven than productivity driven compared to Japan and ROK's



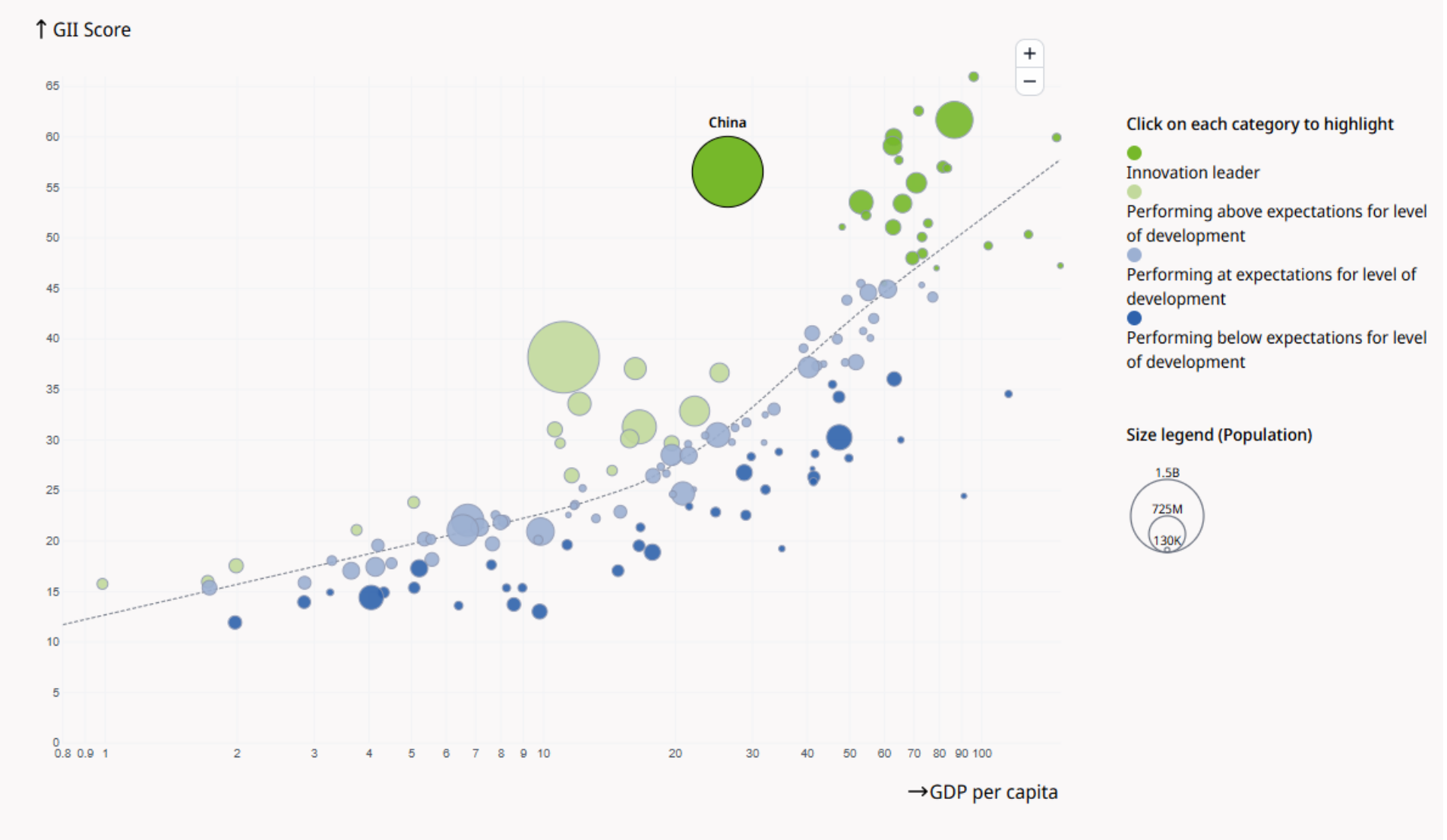
Source: ADB and DRC forthcoming

Investment in technology

China has now overtaken the EU in Spending on R&D



China an Innovation Overperformer



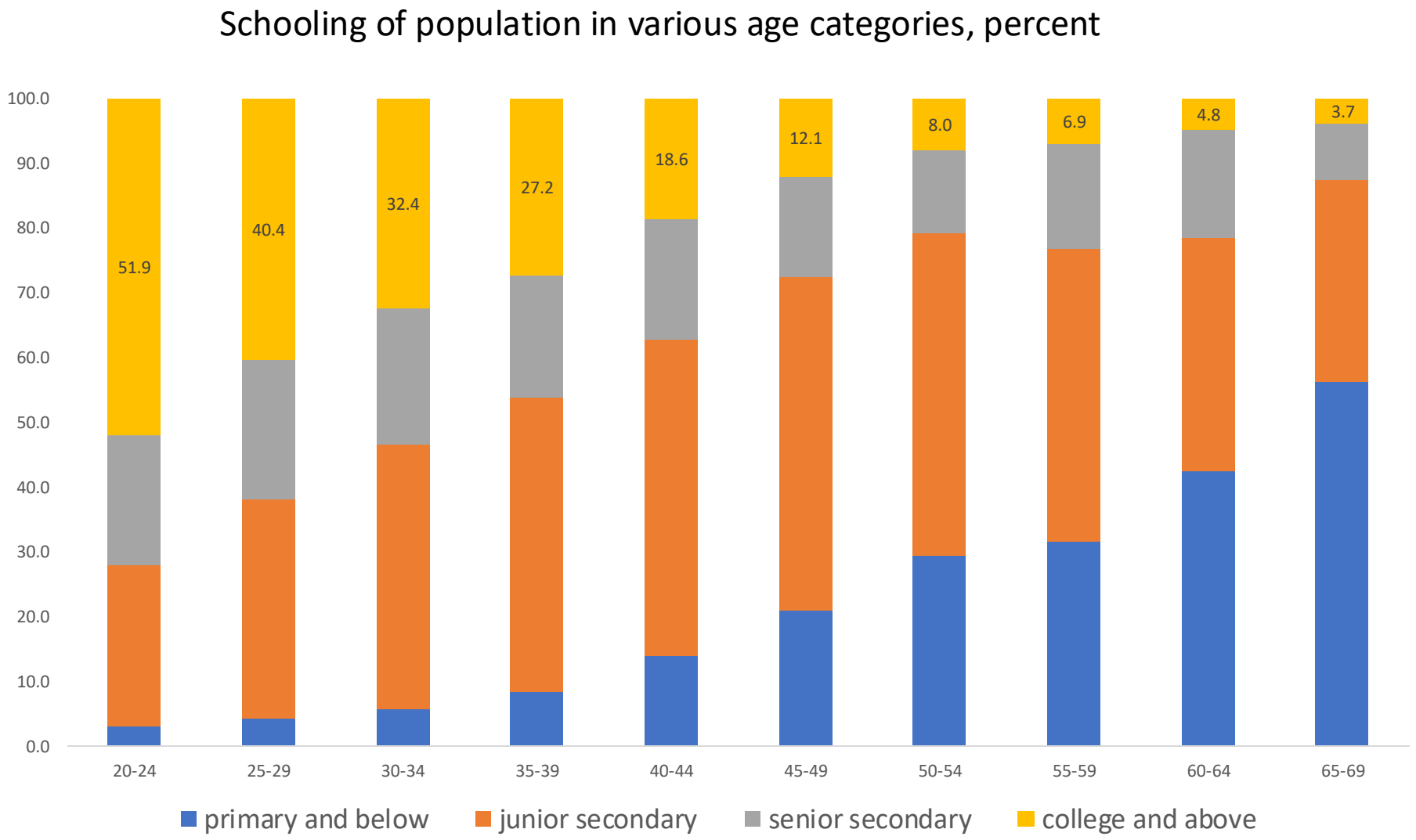
Source: WIPO, 20205, Global Innovation Index Report

China's Research and Development Funding largely Experimental

Research	PRC	US
Fundamental	7%	15%
Applied	11%	18%
Experimental Development	82%	67%

Source: ADB and DRC forthcoming

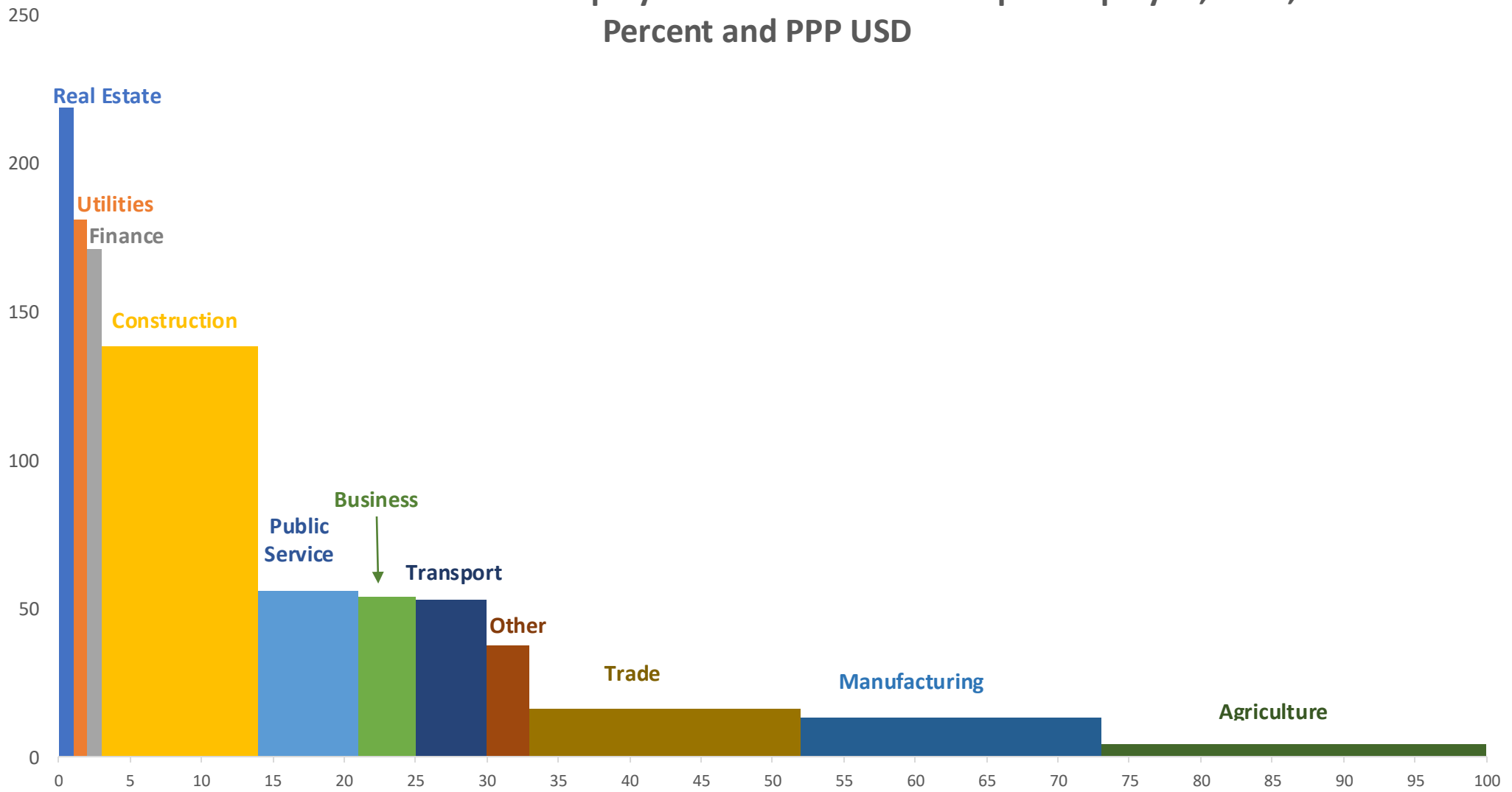
China’s future workers will be vastly better educated



Source: Zhao Litao (EAI) based on China Population Census Yearbook 2020

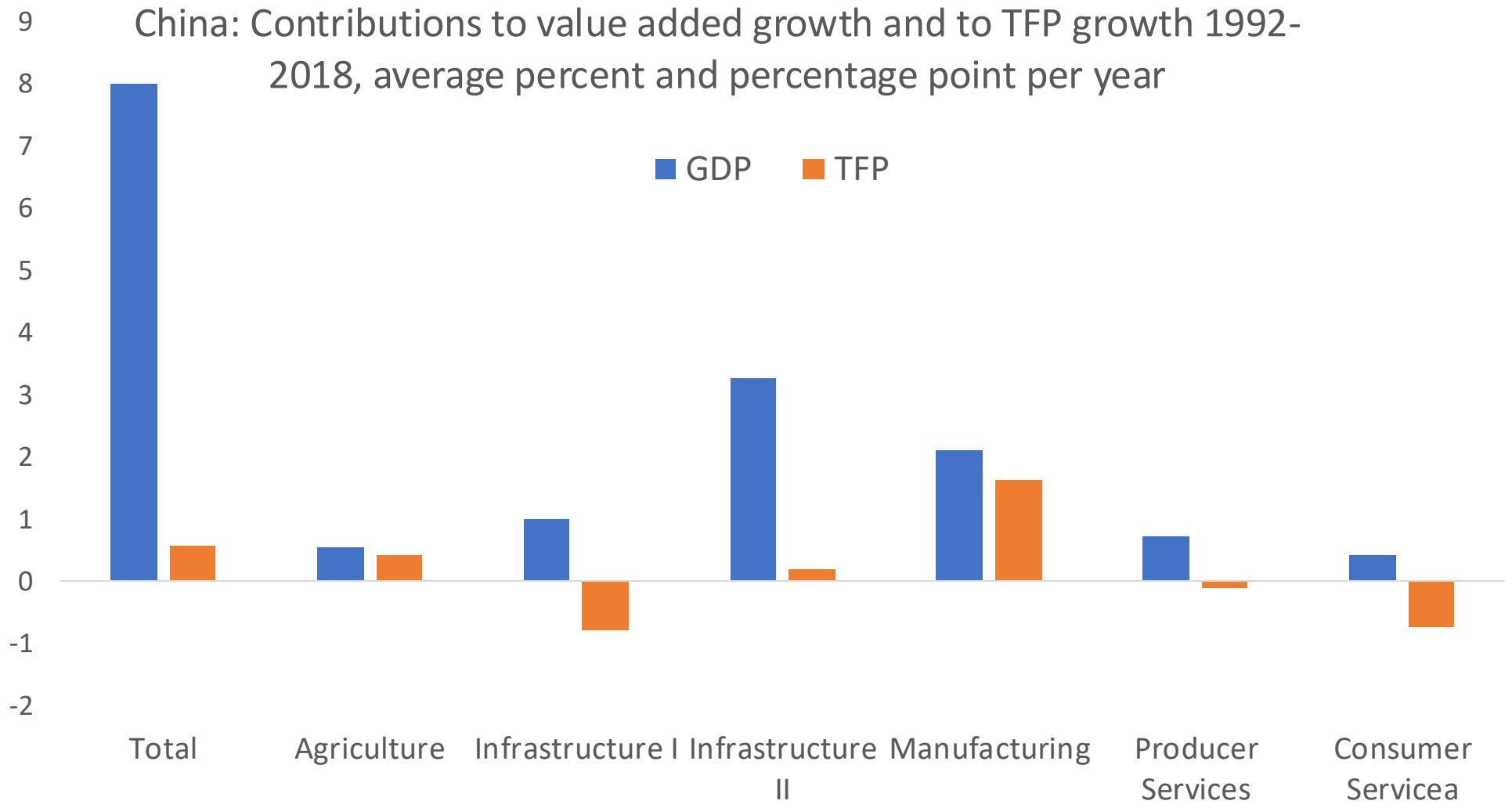
Reallocating resources

High employment share of low productivity activities



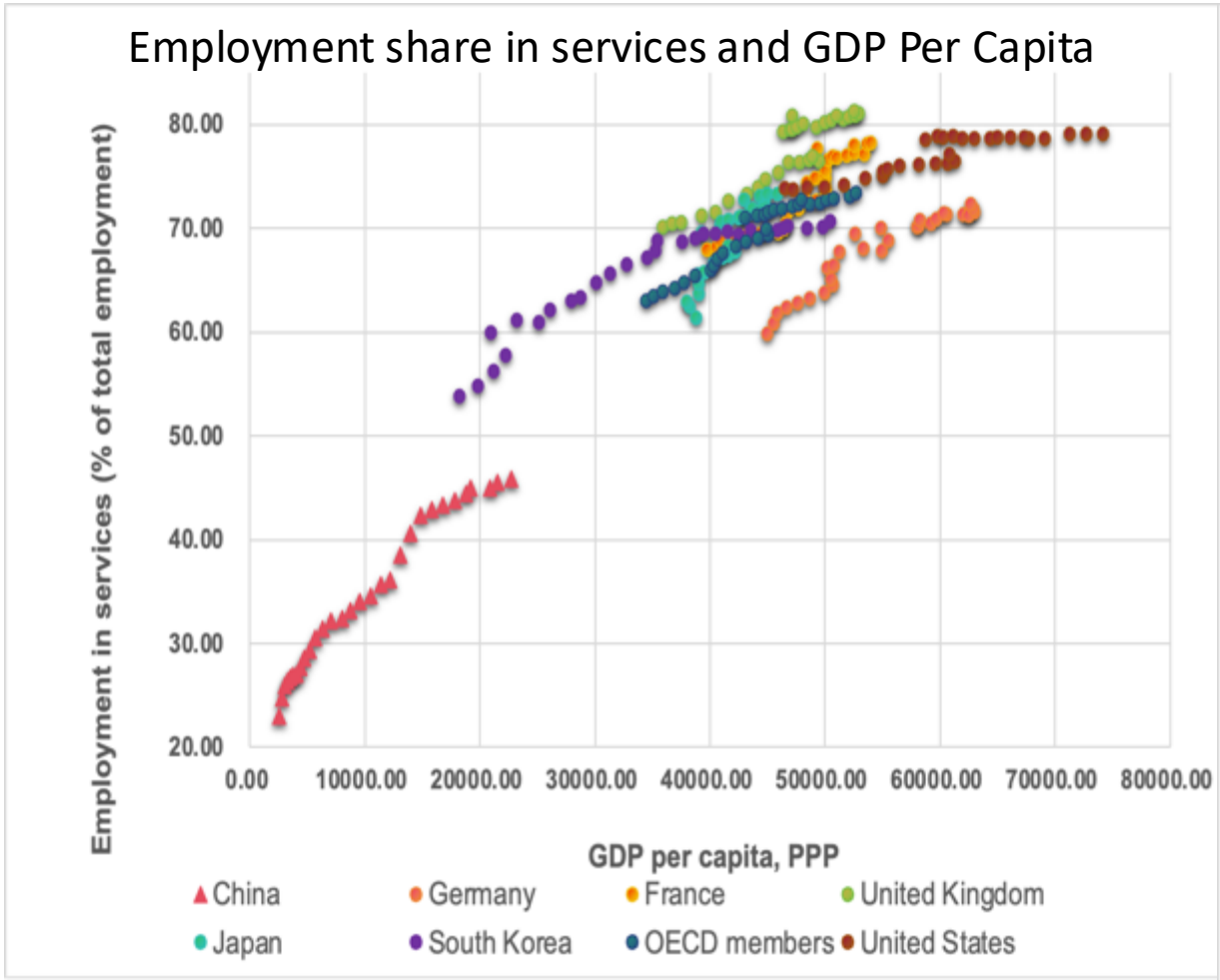
Source: Author's Calculation and chart based on Robert Inklaar, Ryan Marapin, and Kaira Gräler (2023), "Tradability and sectoral productivity differences across countries", GGDC Research Memorandum 195

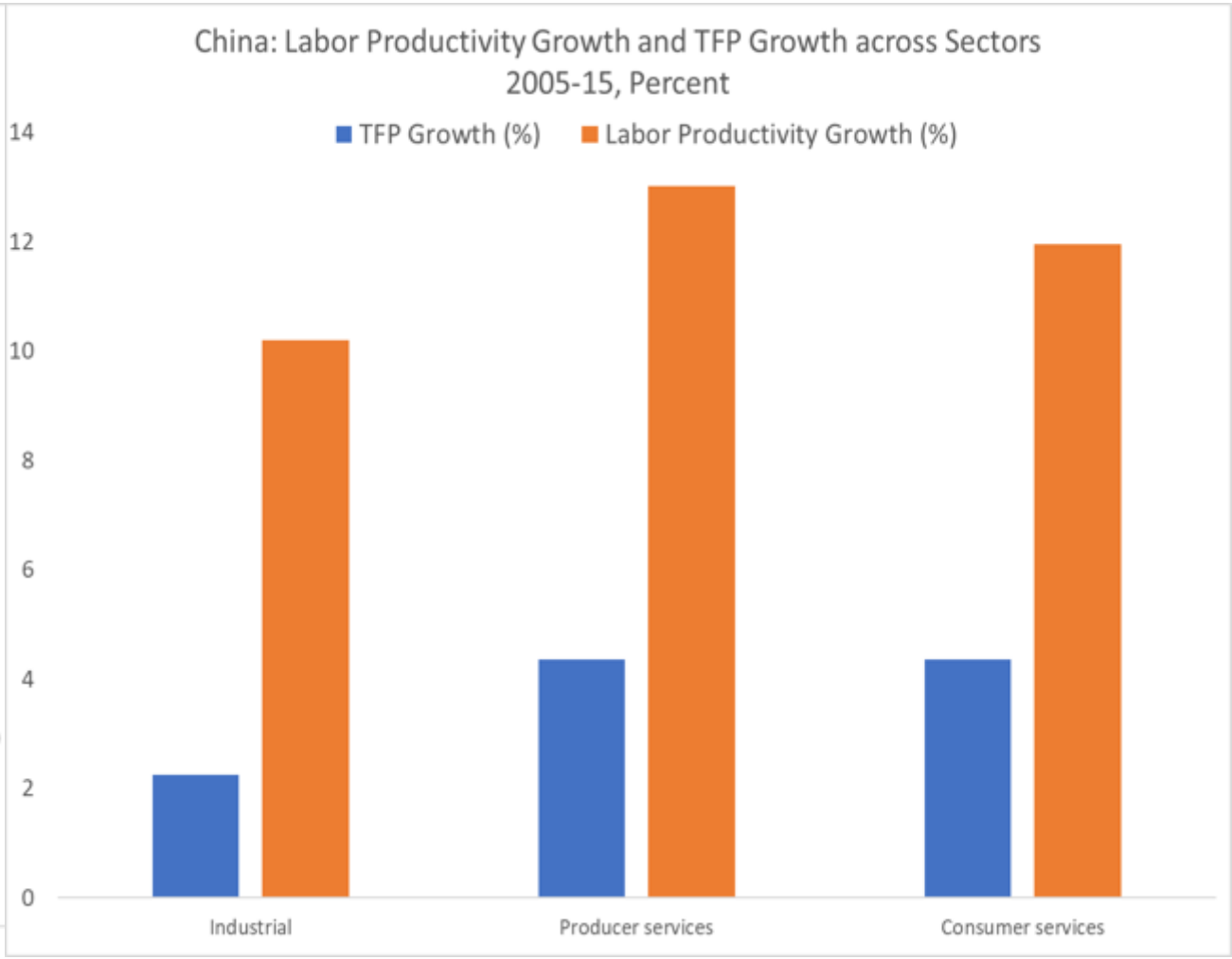
Contributions to growth and to TFP can differ



Source: Harry X. Wu and Zhongwen Zhang (2024): China's Investment In Infrastructure: Growth Driver Or Productivity Dragger? https://iariw.org/wp-content/uploads/2024/08/Wu_IARIW.pdf . Note: Infrastructure I: utilities (CIP 25), transport, storage and post services (CIP 29), real estate services (CIP 32), and government services (CIP 34); Infrastructure II: coal mining (CIP 2), oil mining and processing (CIP 18 3 and CIP 13), basic chemicals (CIP 14), basic metals (CIP 17), building materials (CIP 16), machinery (CIP 19), transport equipment (CIP 23), construction (CIP 26), commerce (CIP 27), and financial services (CIP 31)

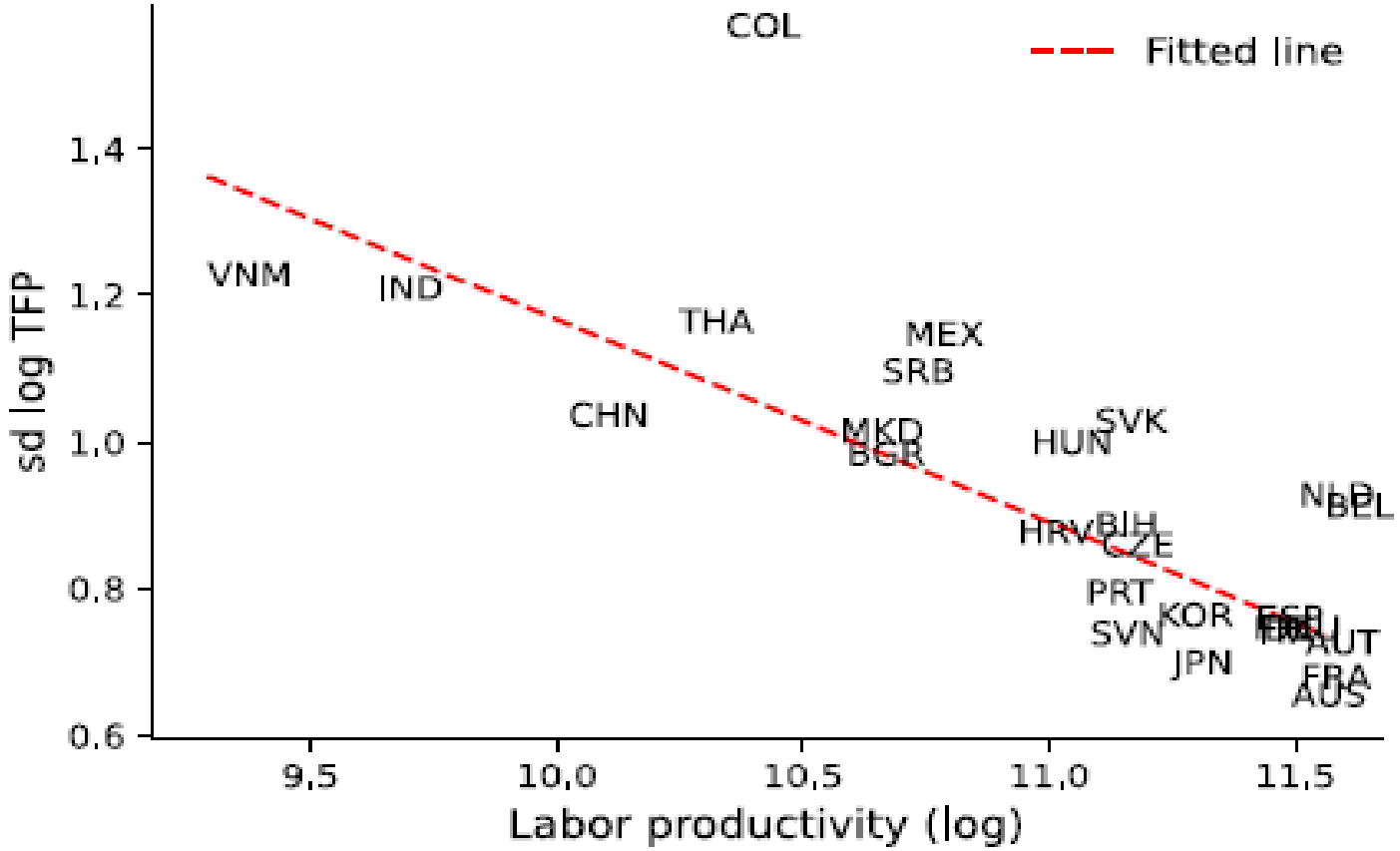
Demand is shifting to services as incomes grow





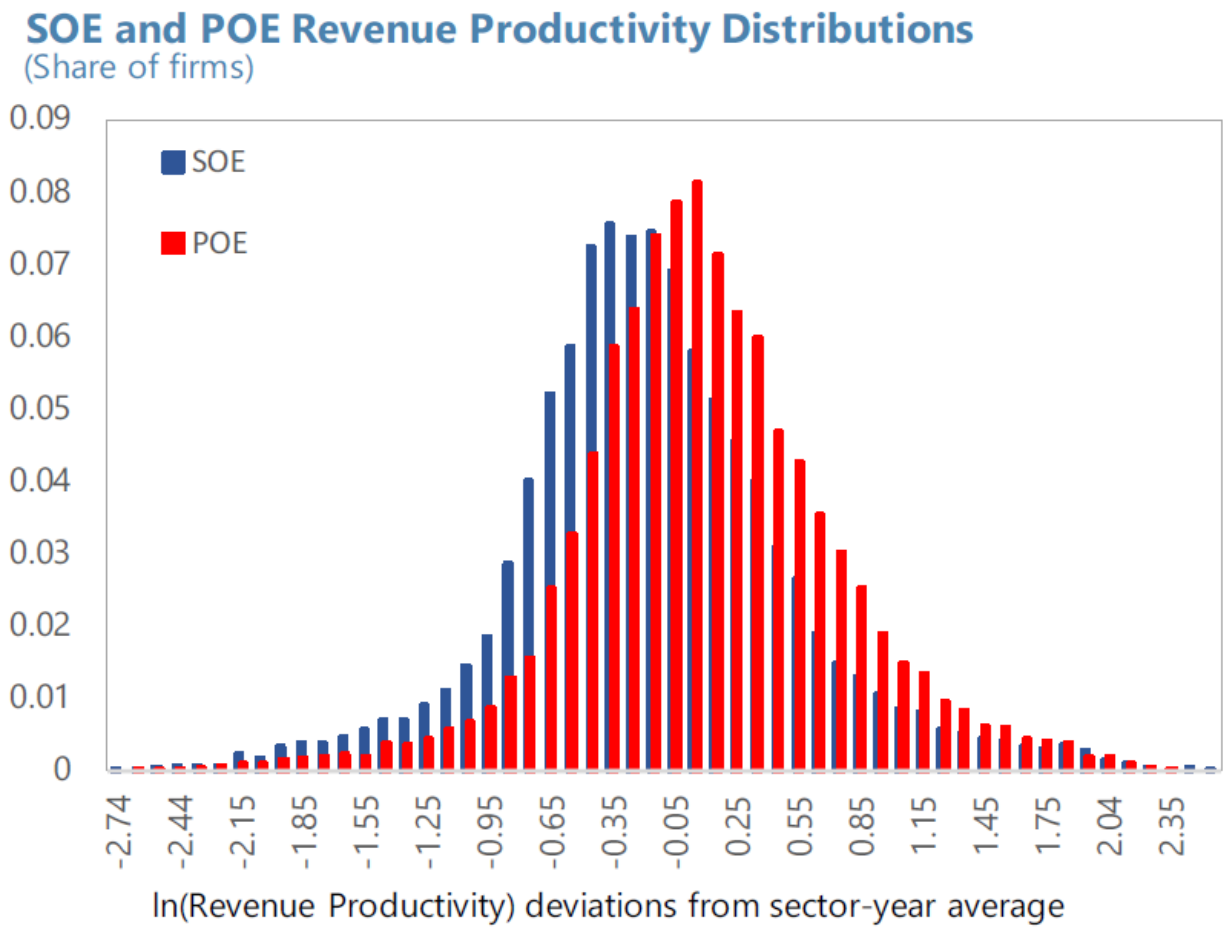
Source: ADB and DRC forthcoming

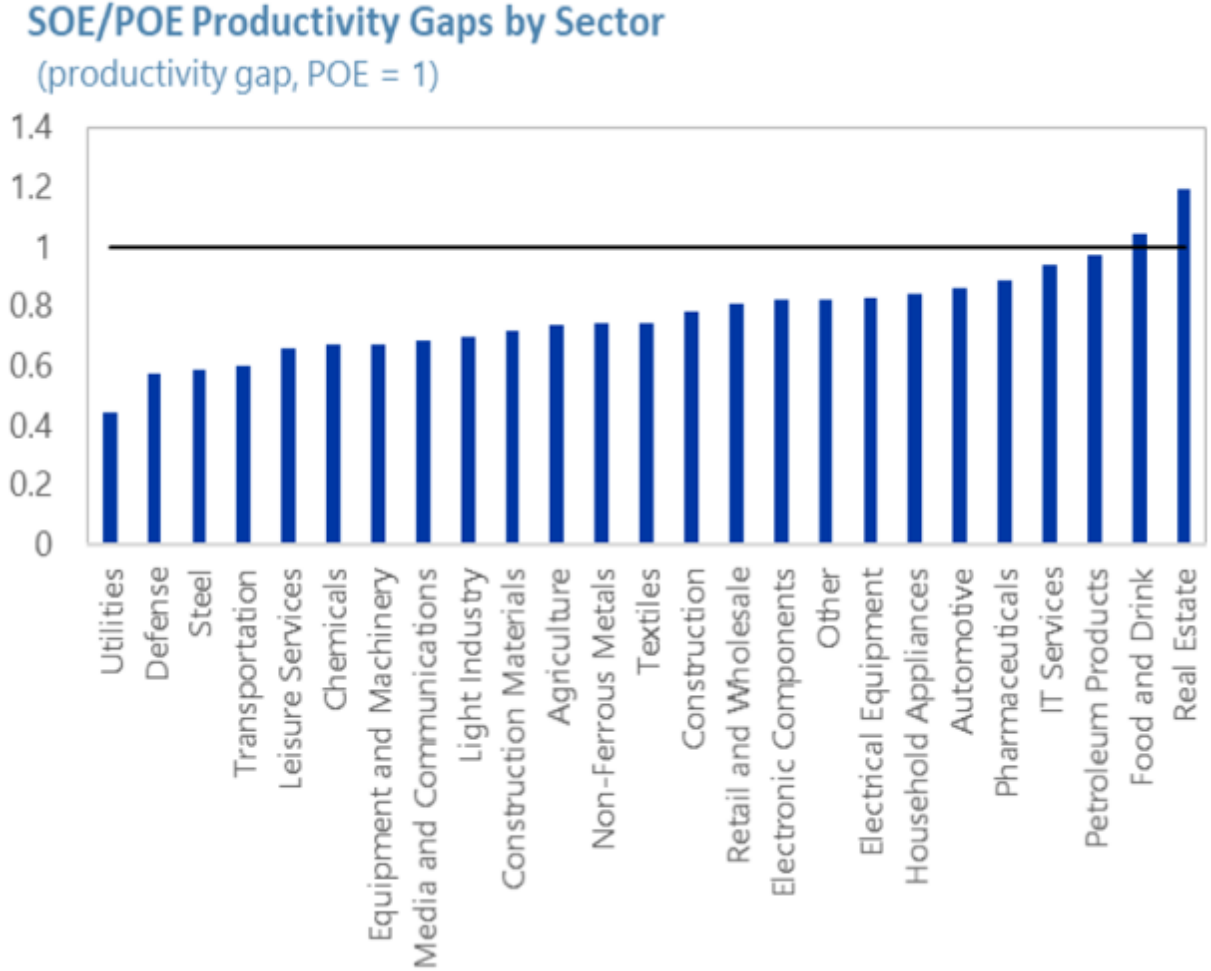
Productivity gap between top and bottom enterprises large, but declining with income



Source: Stephen Ayerst et al, 2024, The Micro and Macro Productivity of Nations, NBER Working Paper 32750, July.

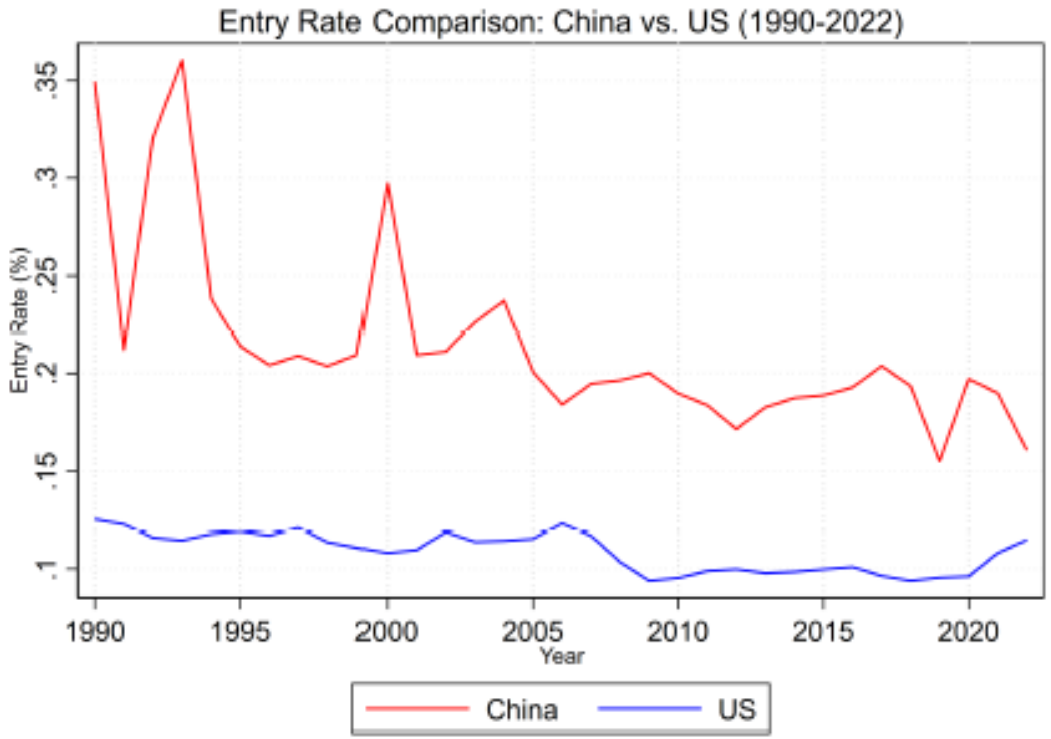
Productivity differences between enterprises is large

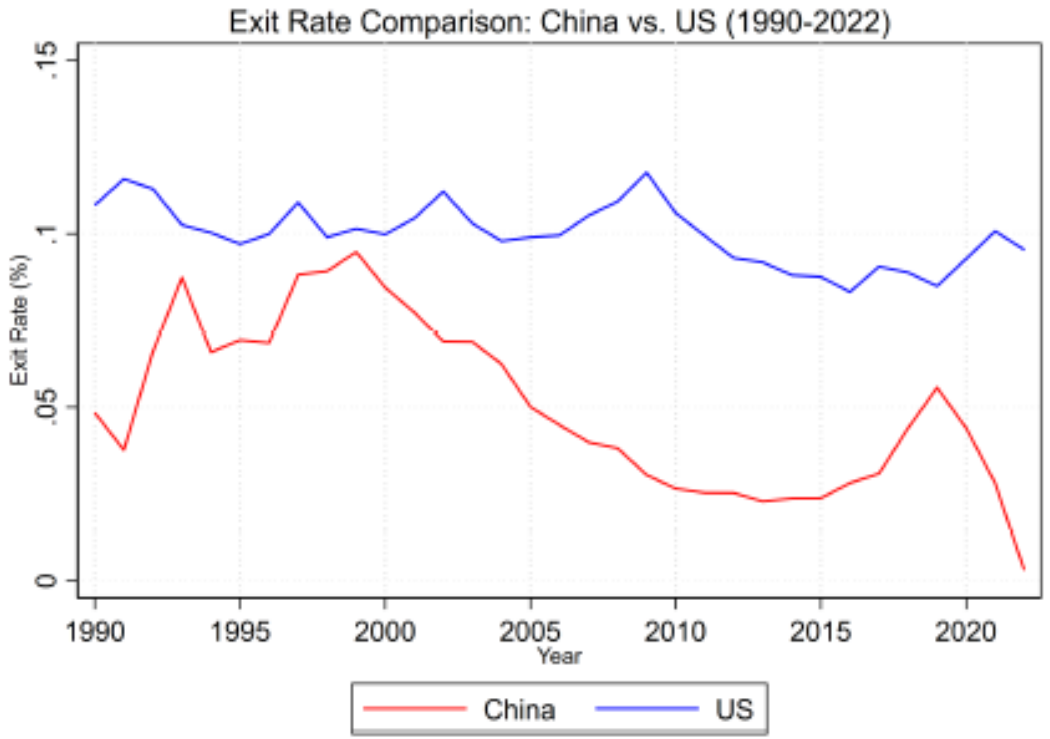




Source: Wei Guo, Fei Han, Sarwat Jahan, Emilia Jurzyk and Cian Ruane (2021) Chinese State-Owned Enterprises, Resource (Mis) Allocation and Productivity, IMF Article IV Selected Issues.
Note: The database covers over 3700 listed firms in the Shenzhen and Shanghai stock exchanges between 2002 and 2019. Revenue productivity is an average of labor and capital productivity.

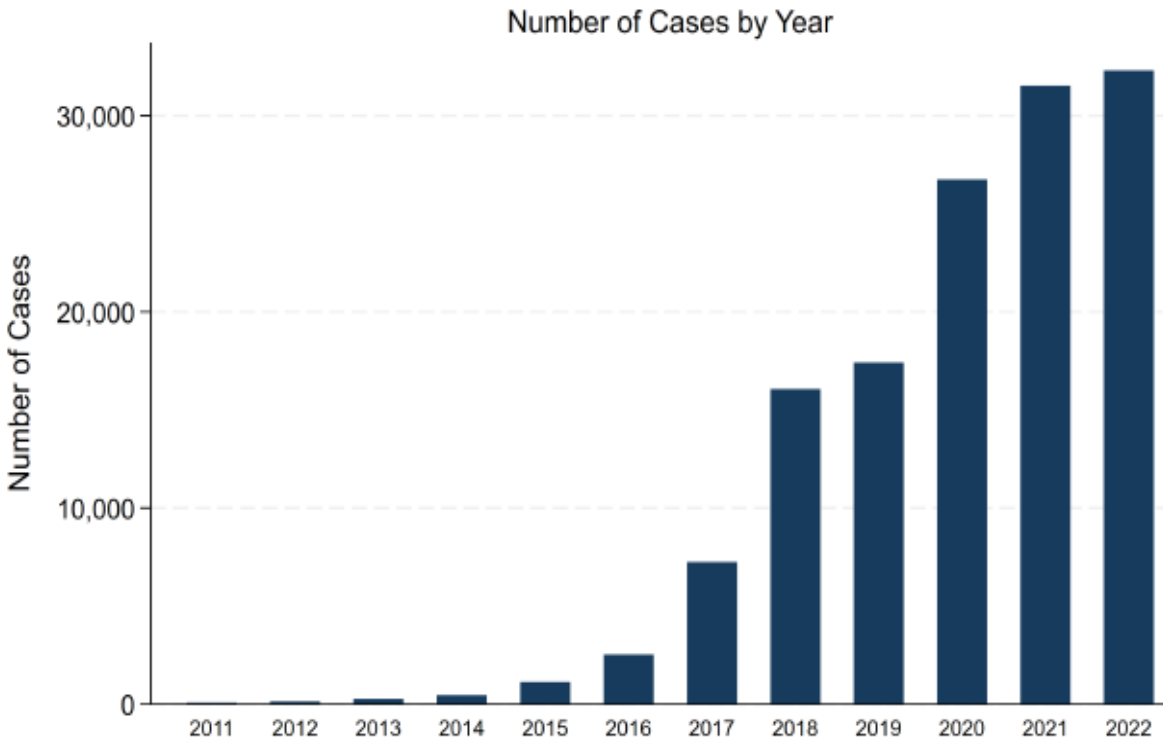
Compared to the US, China is more dynamic on entry of new firms, but less on exits

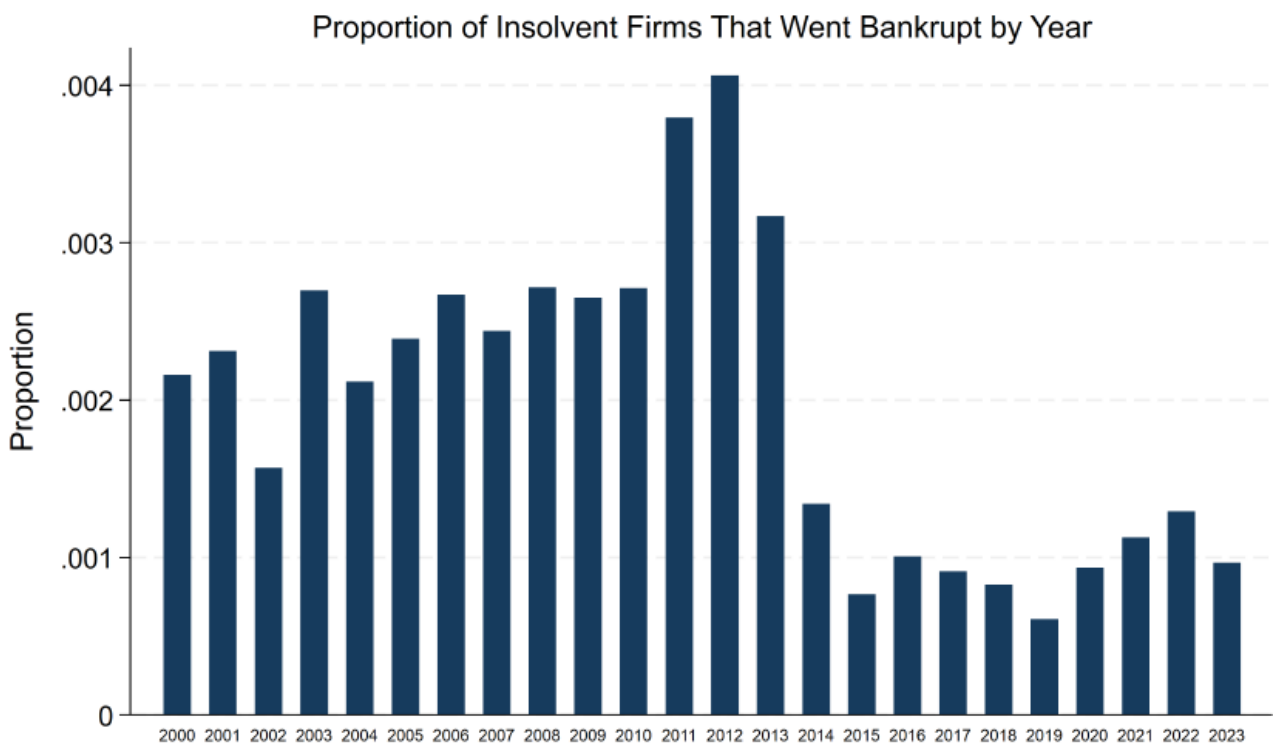




Source: Bo Li, 2025 Facts of Entry, Exit and Bankruptcy in China, Mimeo, Beijing

The number of bankruptcy cases is on the rise, but it is a declining proportion of insolvent firms

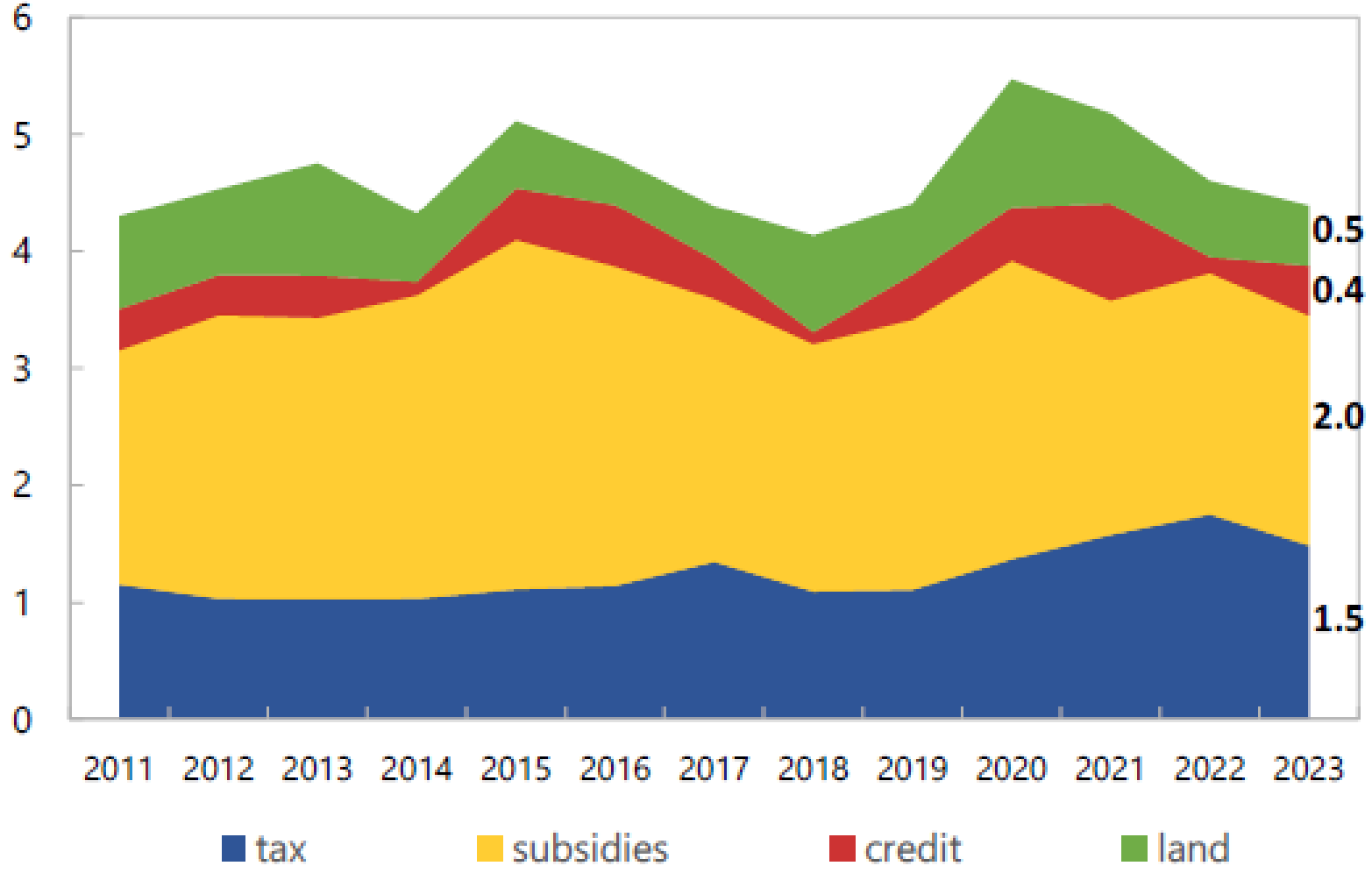




Source: Bo Li, 2025 Facts of Entry, Exit and Bankruptcy in China, Mimeo, Beijing

China has a wide array of industrial policies

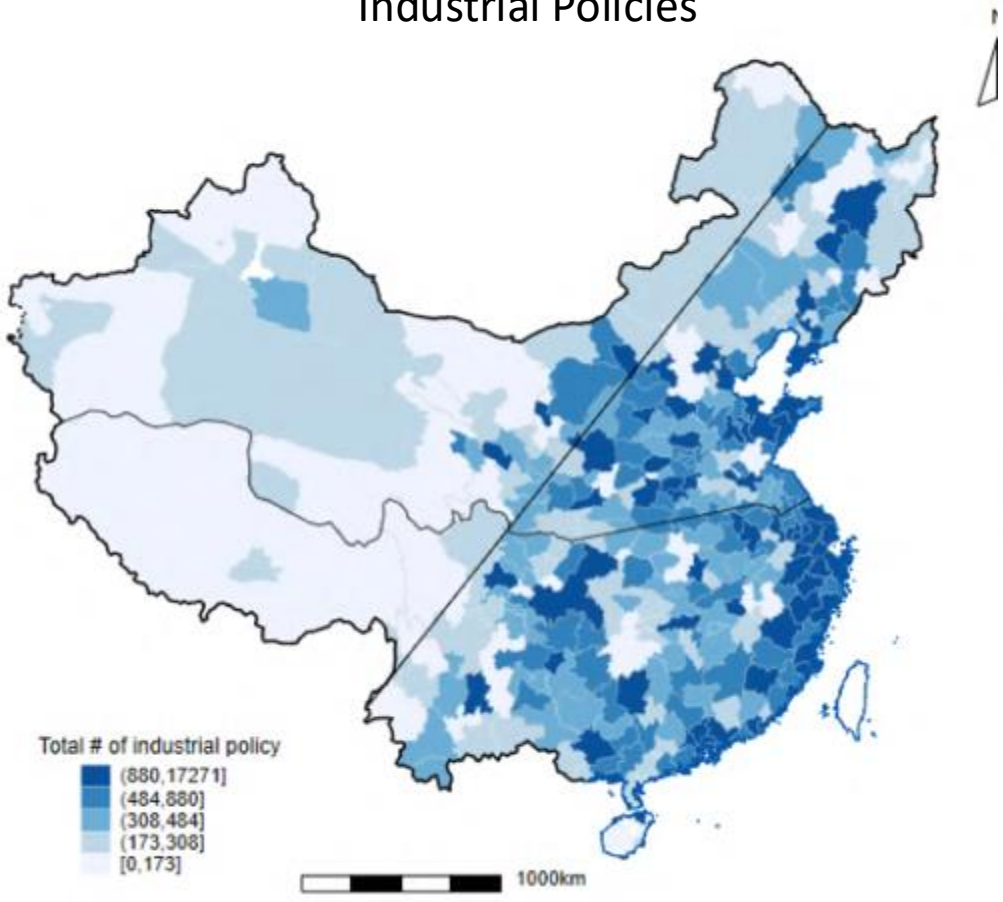
Costs of Industrial Policy, Percent of GDP, 2011-23



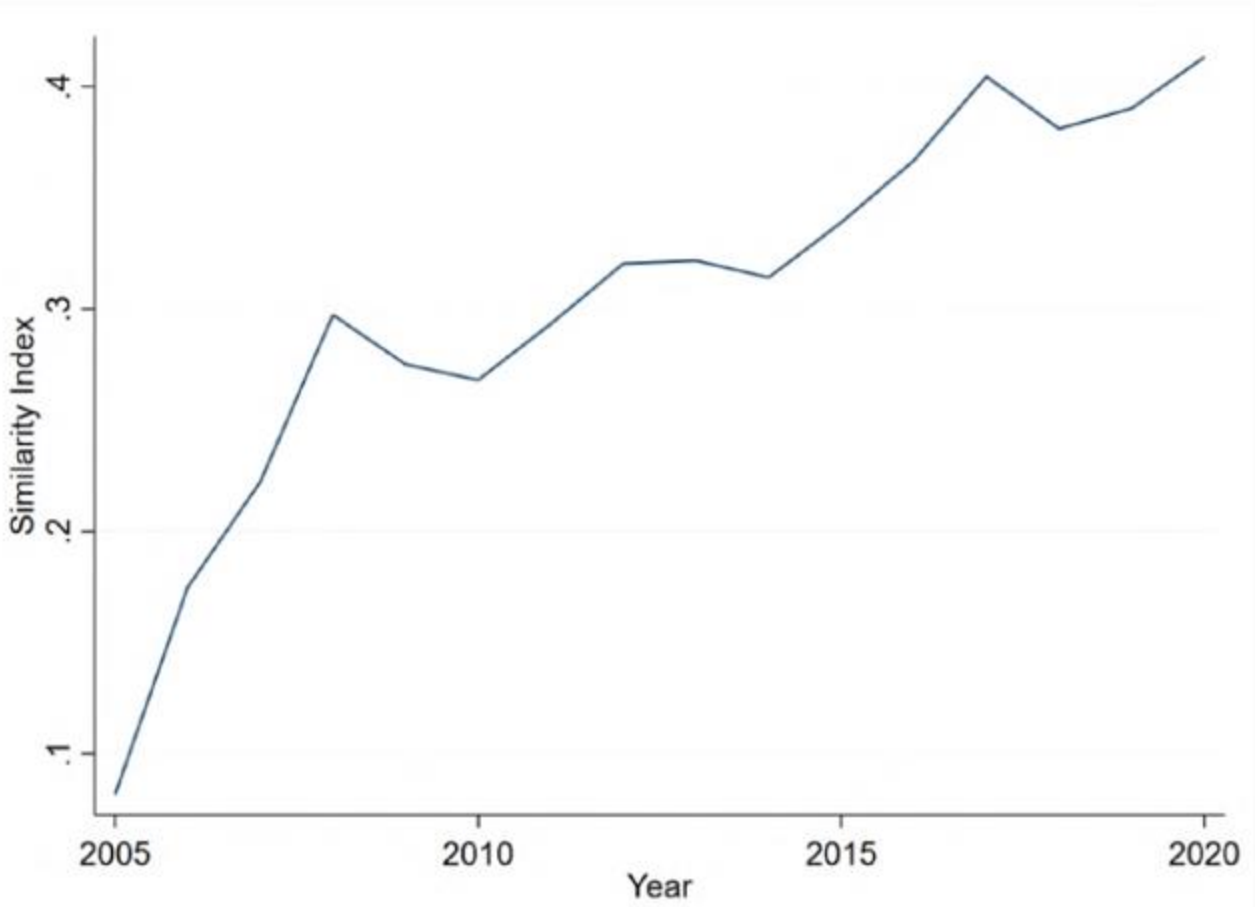
Source: Daniel Garcia-Macia, Siddharth Kothari, and Yifan Tao, 2025, Industrial Policy in China: Quantification and Impact on Misallocation, IMF WP/25/155

Industrial policy is widespread, and becoming more similar

Geographic Distribution of the City-Level Industrial Policies

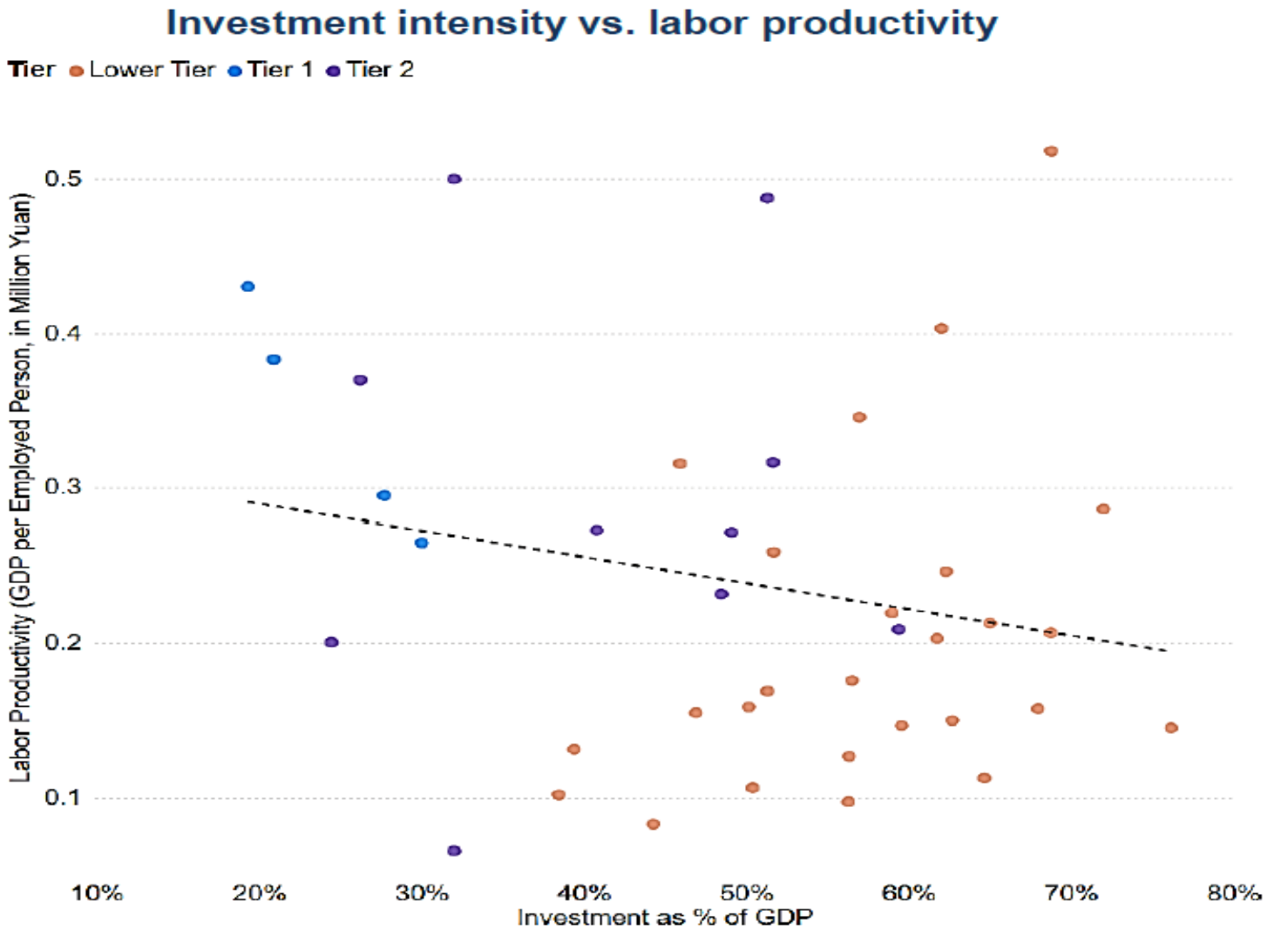


Policy Sector Similarity



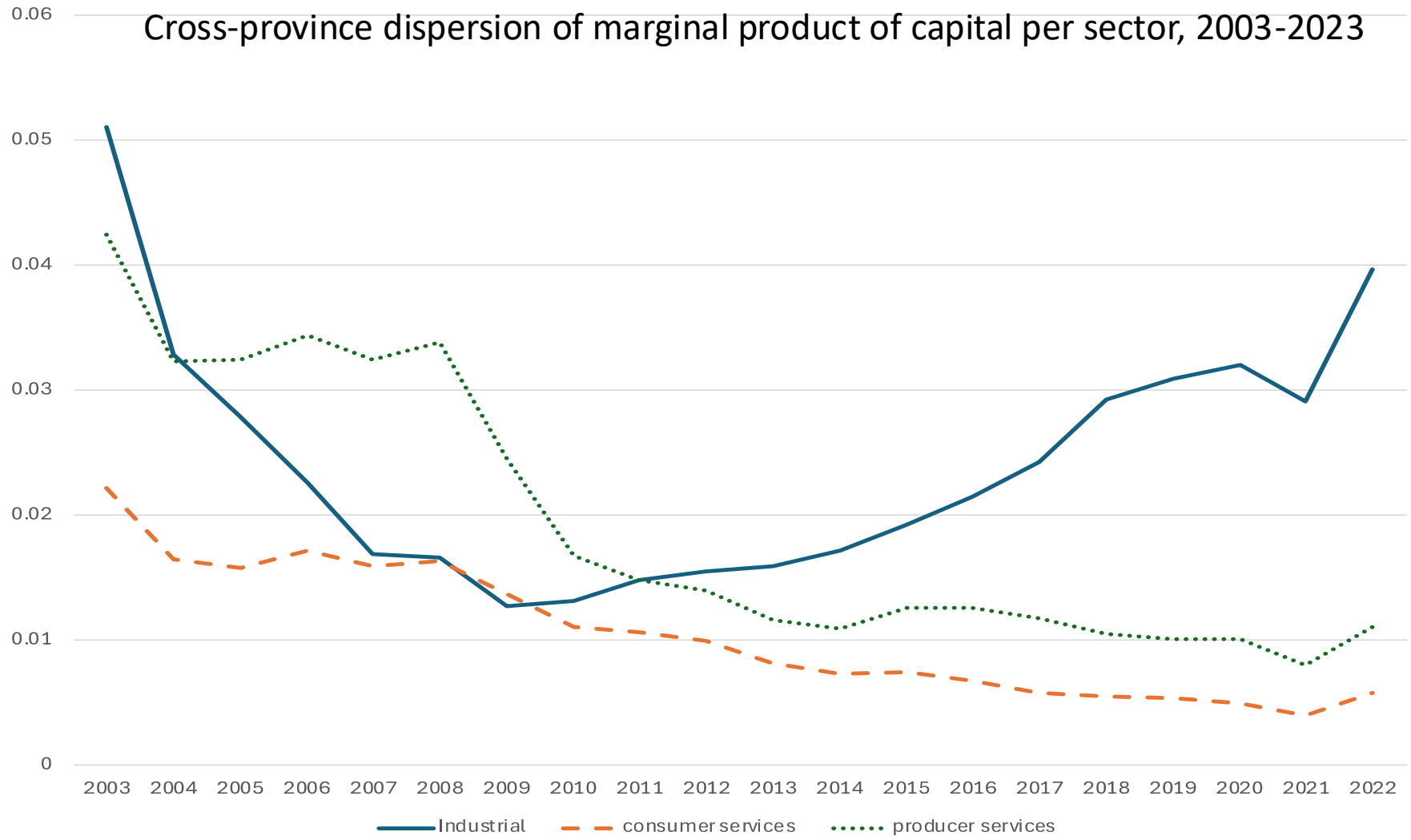
Source: Hanming Fang, Ming Li, Guangli Lu (2025), Decoding China's Industrial Policies, NBER WP 33814, May.

Investment higher in low labour productivity cities



Note: The unit of Labor Productivity in the chart is in million renminbi per employed person.
Source: The Conference Board, based on CEIC, Gotohui, and local statistics bureau data and online news; July 2025

A growing amount of capital allocated to less productive places



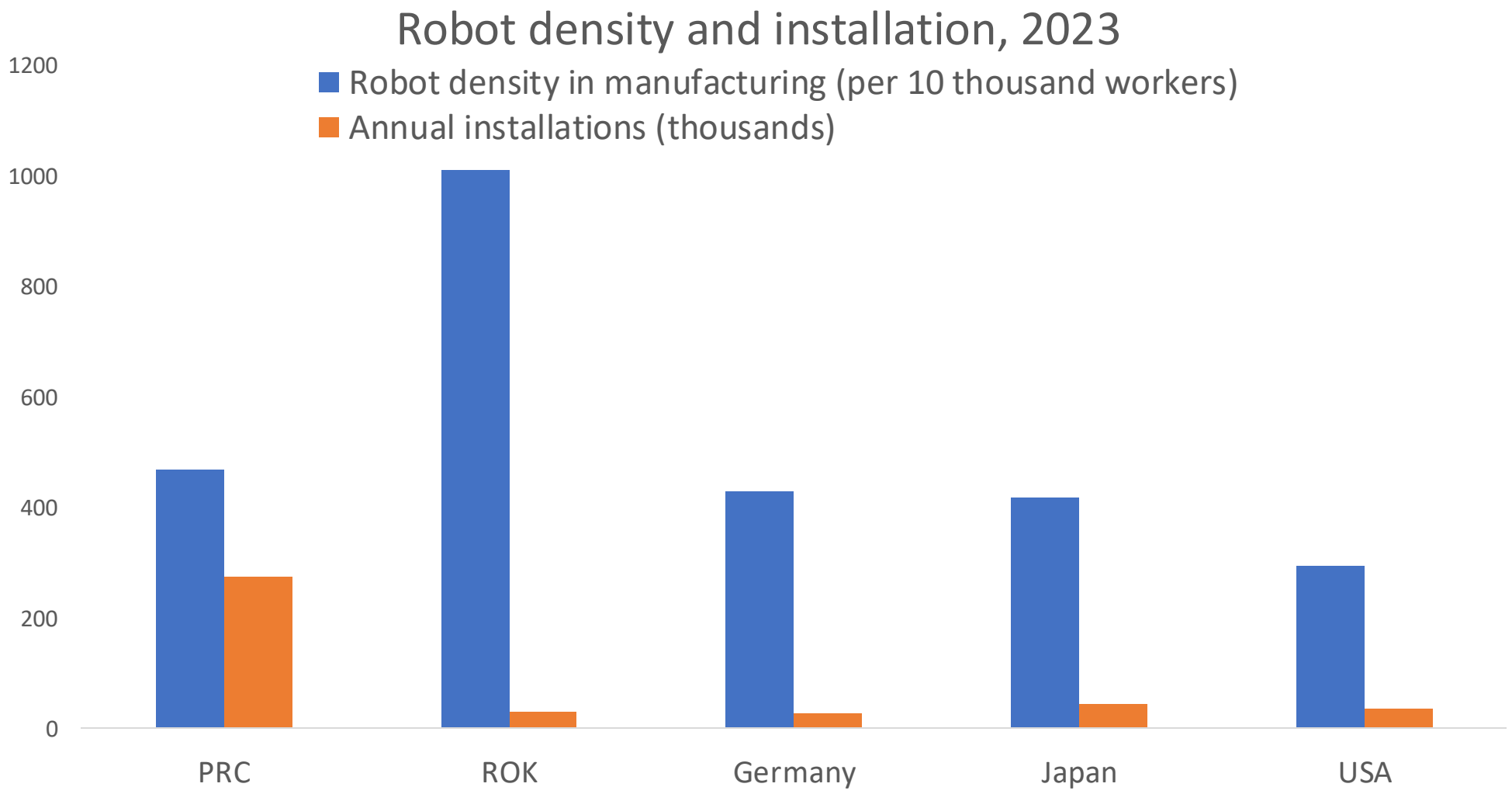
Source: ADB and DRC forthcoming, based on Song (2024).

Some preliminary conclusions

- The slowdown in China's TFP growth in recent years coincides with a global slowdown in TFP growth. We only have partial explanations
- China's future growth will have to rely more and more on TFP growth, especially because high savings rates will not last with aging
- China has been doing very well in adapting existing technologies and developing new ones.
- Better allocating resources to more productive uses will be an important source of TFP growth
  - Within knowledge production a shift to more basic research
  - Among sectors, the services sectors are underexplored sources of TFP growth
  - Among enterprises, the mechanisms to reallocate resources to the best use (bankruptcy, M&A….)
- With the prominent role of the state, China would need to reconsider how the incentives of local governments can best be aligned with national goals (fiscal system, planning system, state support, government officials evaluation….)

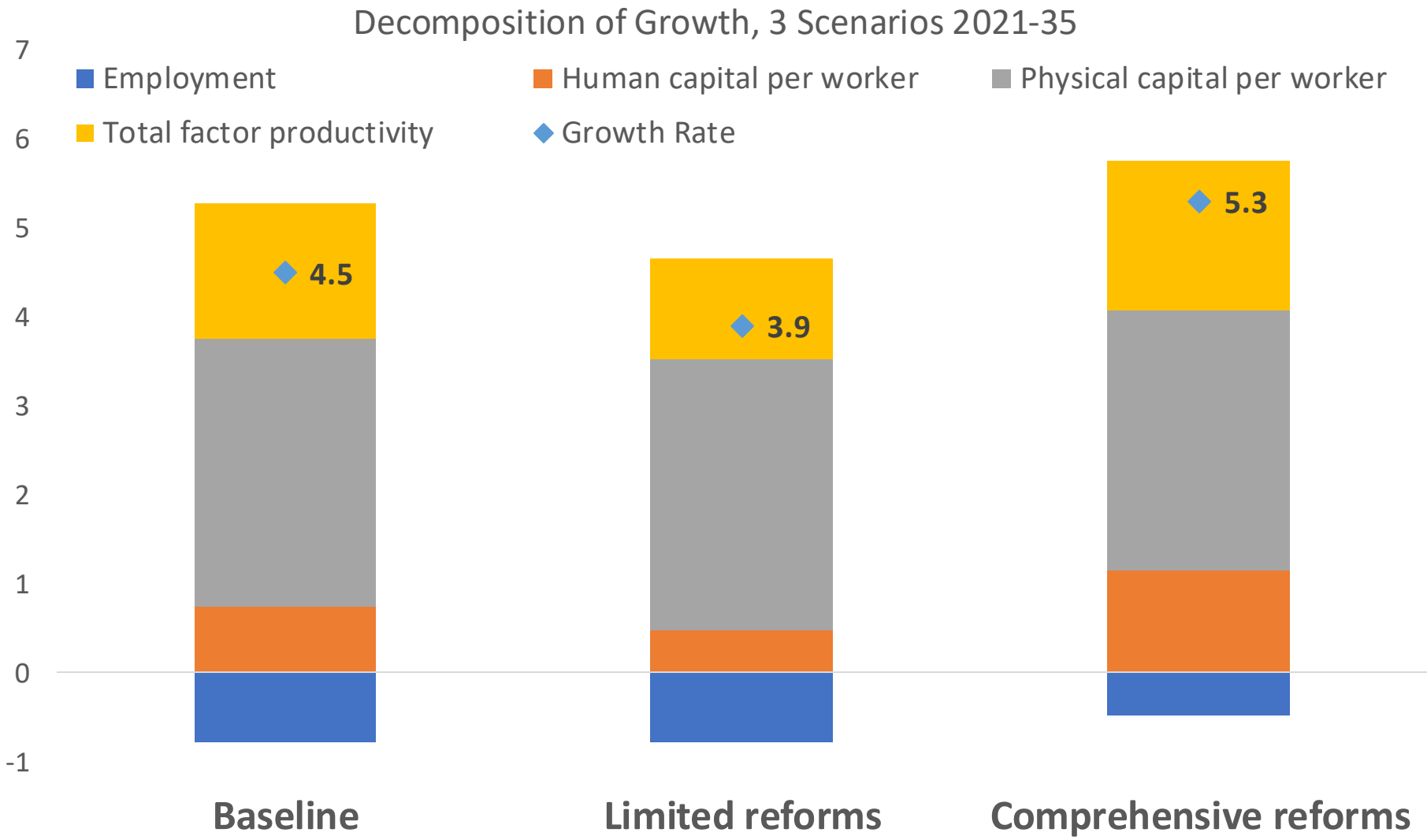
Additional Slides

Robots are coming



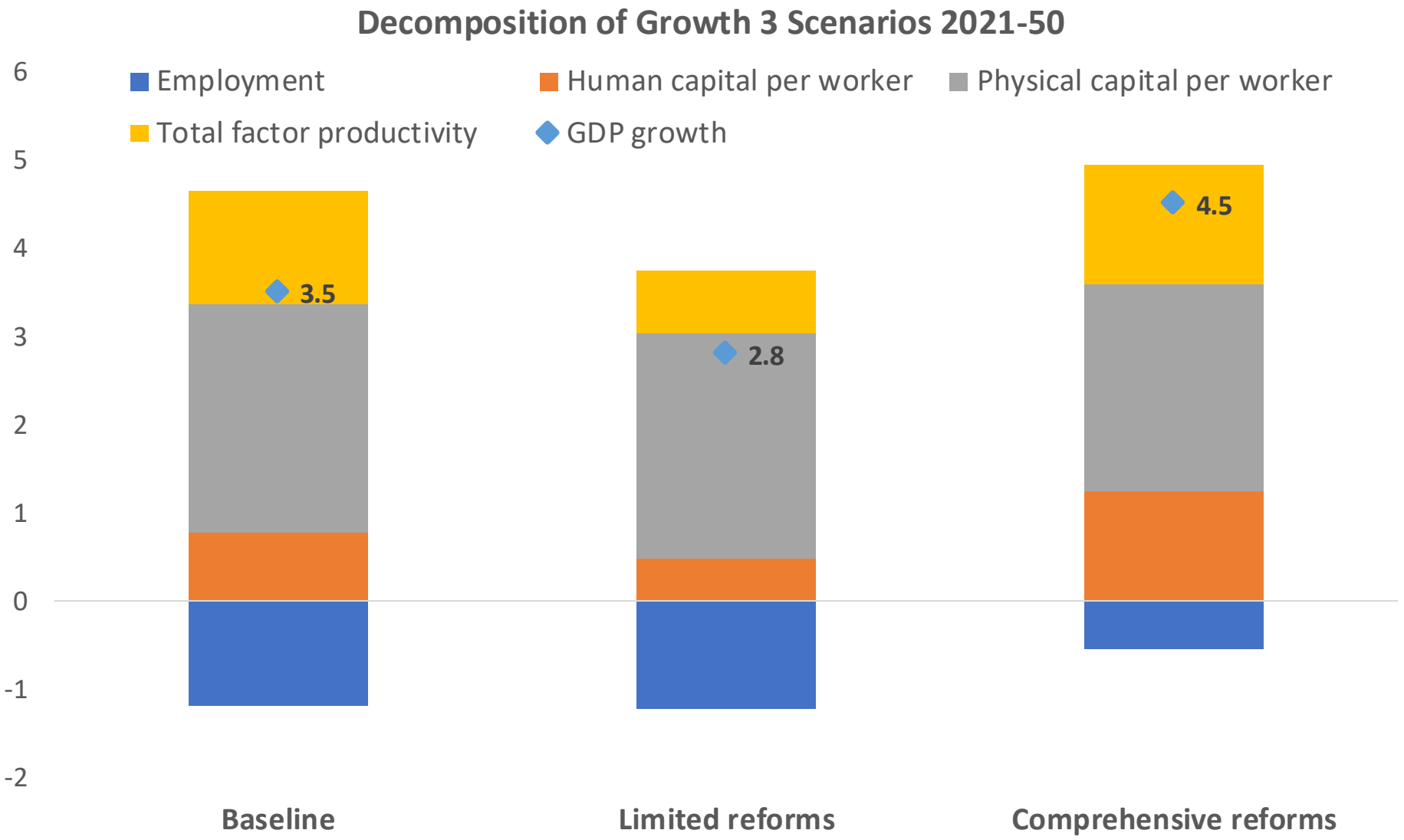
Source: ADB and DRC forthcoming

Three scenarios



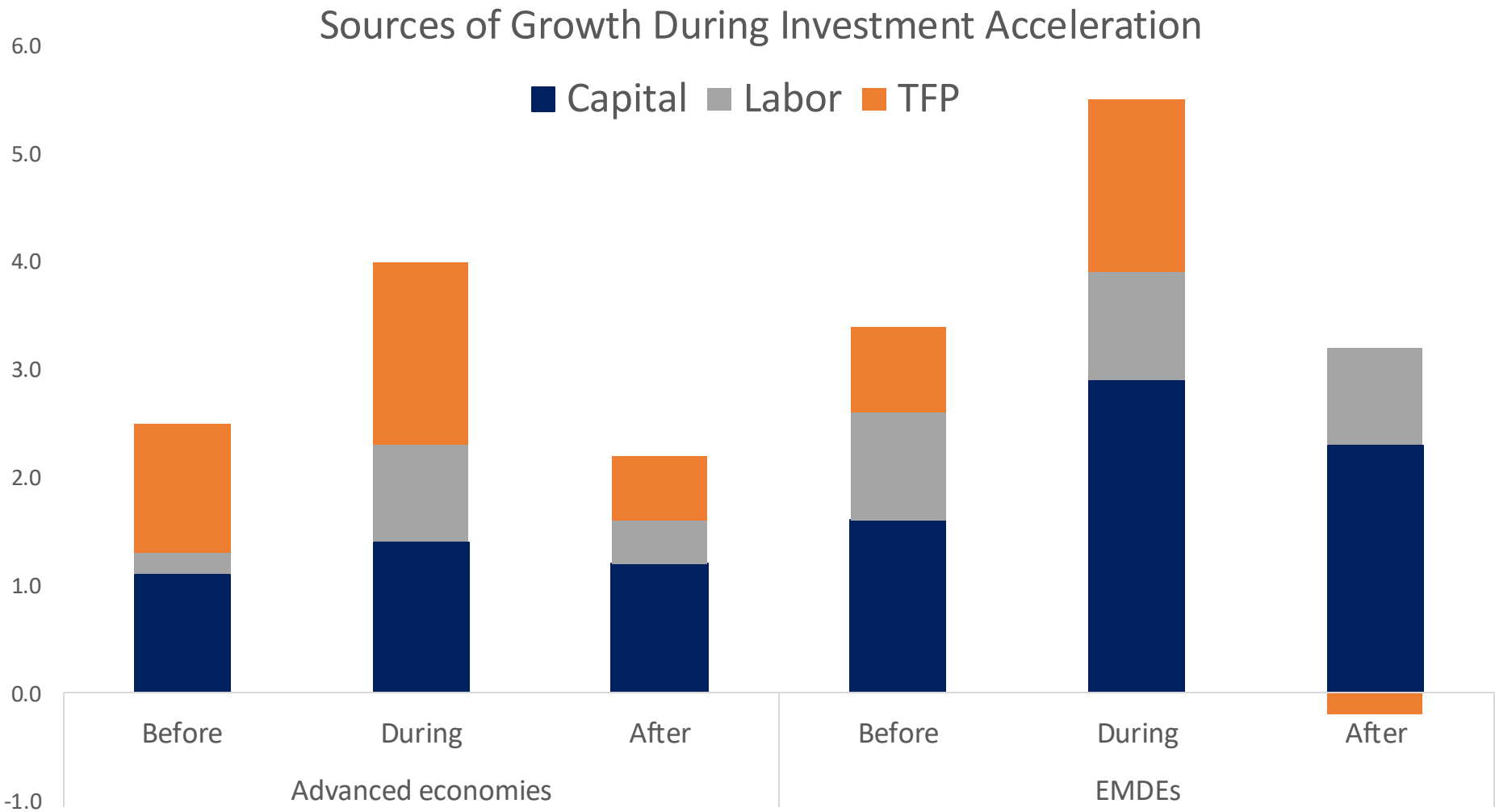
Source: Authors' calculation

Scenario decomposition of growth 2021-50



Source: Authors' calculation

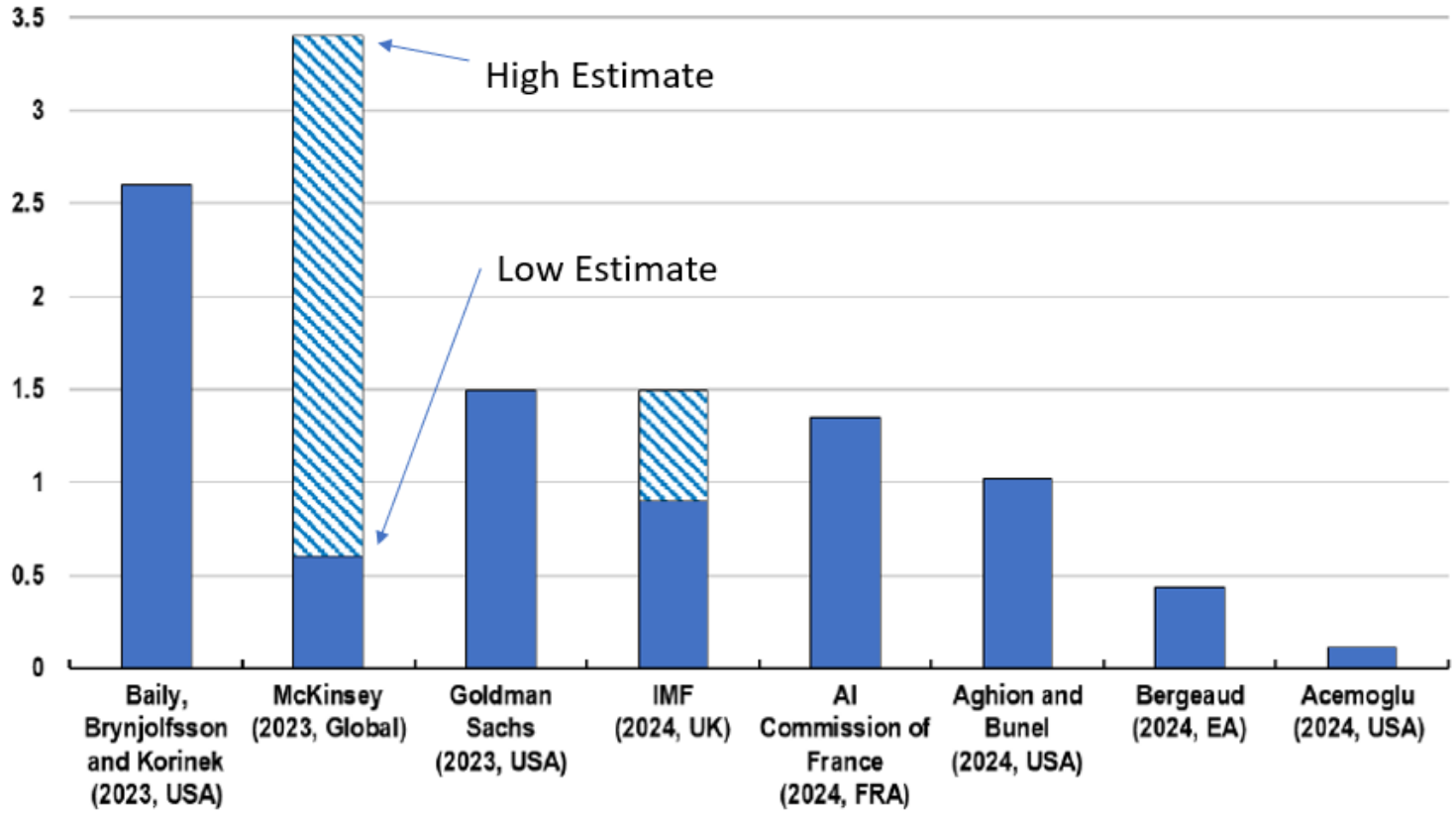
TFP Surges During Investment Booms, but Falls Thereafter



Source: World Bank Global Economic Prospects January 2024 Chapter 3

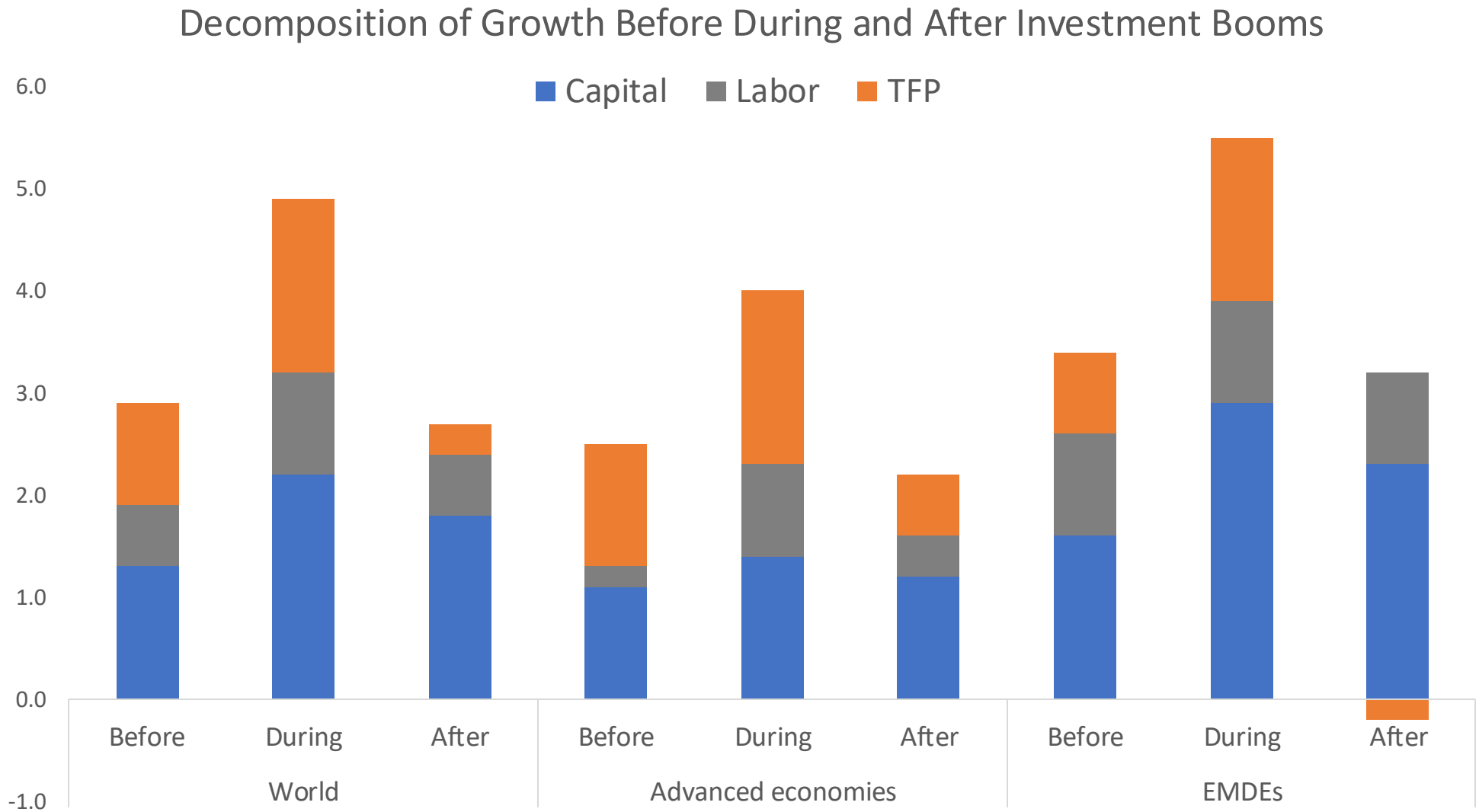
AI To the Rescue?

Predicted increase in annual labour productivity growth over a 10-year horizon due to AI (in percentage points)



Source: Filippucci, F., P. Gal and M. Schief (2024), "Miracle or Myth? Assessing the macroeconomic productivity gains from Artificial Intelligence", *OECD Artificial Intelligence Papers*, No. 29, OECD https://doi.org/10.1787/b524a072-en.

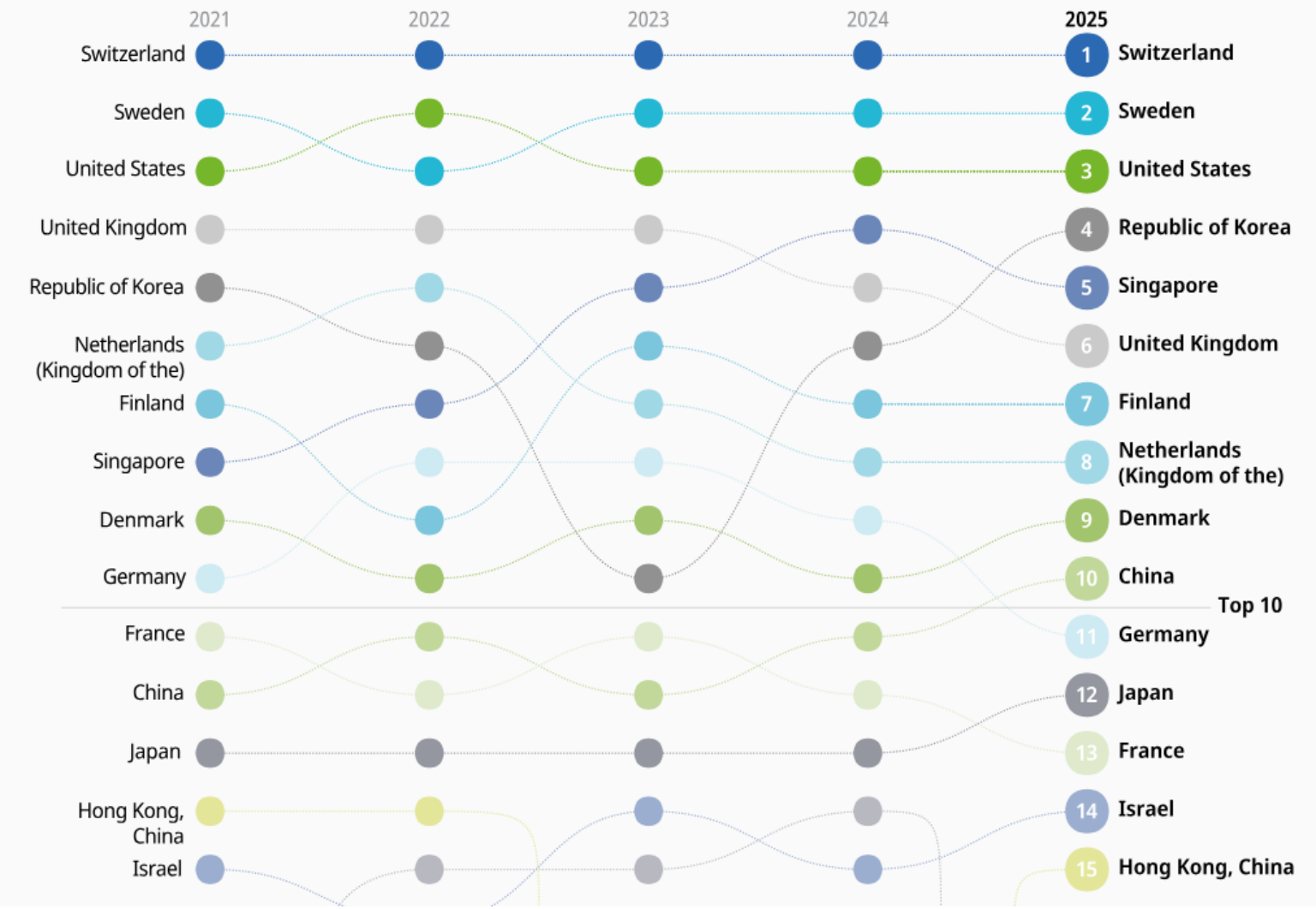
TFP Surges During Investment Booms, but Falls Thereafter



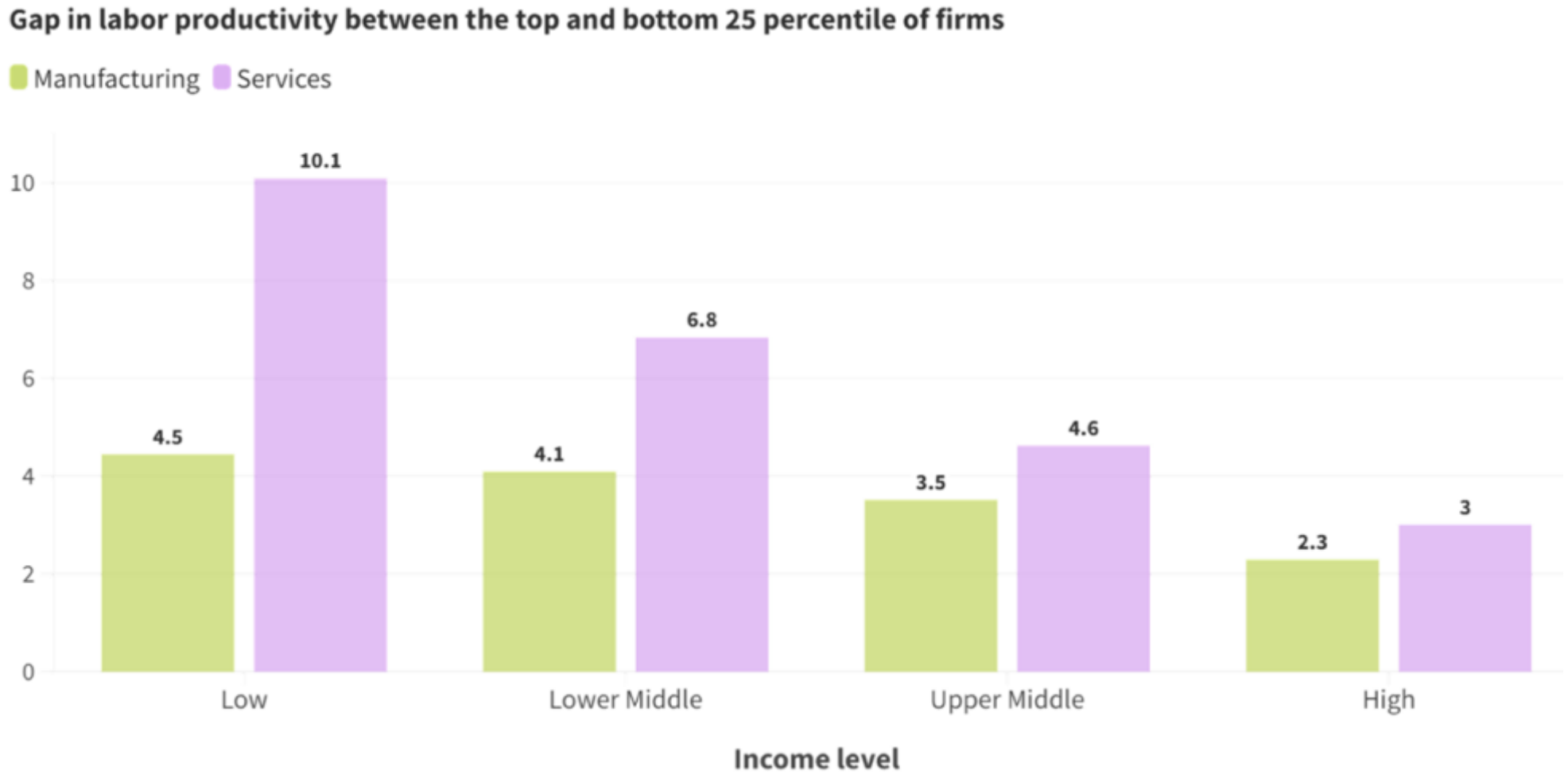
Source: World Bank Global Economic Prospects January 2024 Chapter 3

Getting better at innovation

Global Innovation Index 2021-25



Globally, productivity gap between top and bottom performers large, but declining with income



Source: Jorge Rodriguez Meza 2025, Main findings from the latest 103 World Bank Enterprise Surveys

Australian Government
Productivity Commission

Australia's experience in boosting productivity and competitiveness

East Asia Forum, 23 September 2025

Catie Bradbear

Assistant Commissioner

pc.gov.au

A snapshot of the Commission

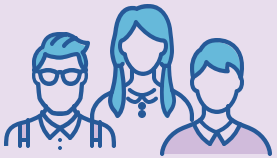
Independent research and advisory body

Economic, social and environmental issues

Evidence-based analysis

Policy ideas actionable outcomes

Inform and educate



Better policies in the long-term interest of the Australian community

The broader institutional landscape

A long history and widening remit

1921
Tariff Board

- Trade focus
- Manufacturing industry development objectives

1974
Industry Assistance Commission

- All sectors
- Facilitate adjustment

1990
Industry Commission

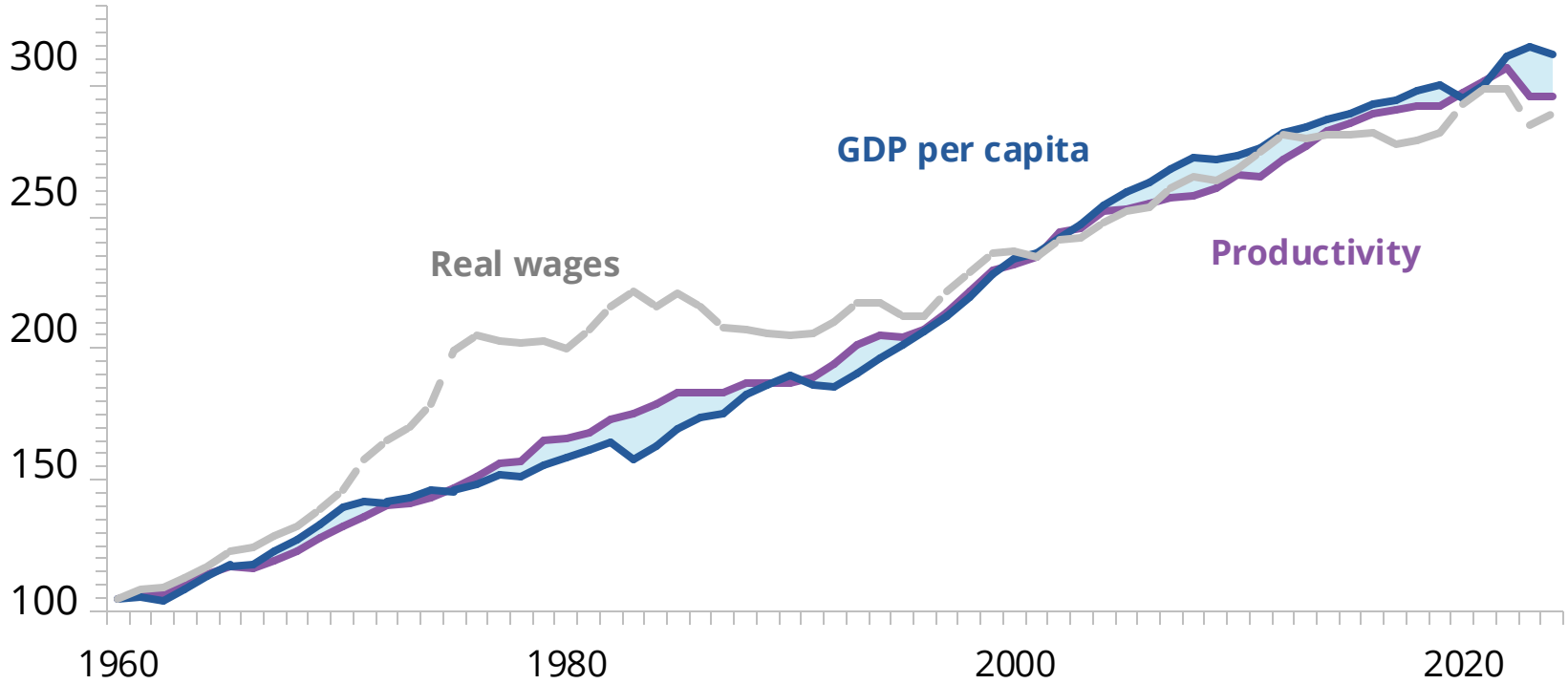
- ***+ plus***
- Infrastructure
- Barriers to competition
- Social and environmental implications

1998
Productivity Commission

- ***+ plus***
- Human capital and regulation
- Social environmental and economic interaction

Productivity drives improvements in living standards

Index = 100 in 1960, 1960 - 2024



Notes: Consumer wages shown. Producer wages demonstrate a similar trend. See Productivity Commission 2023, *Productivity growth and wages – a forensic look,* PC Productivity Insights, Canberra, September, for more information. Source: Productivity Commission estimates using ABS national accounts data.

Productivity isn't just about more money or more 'stuff'

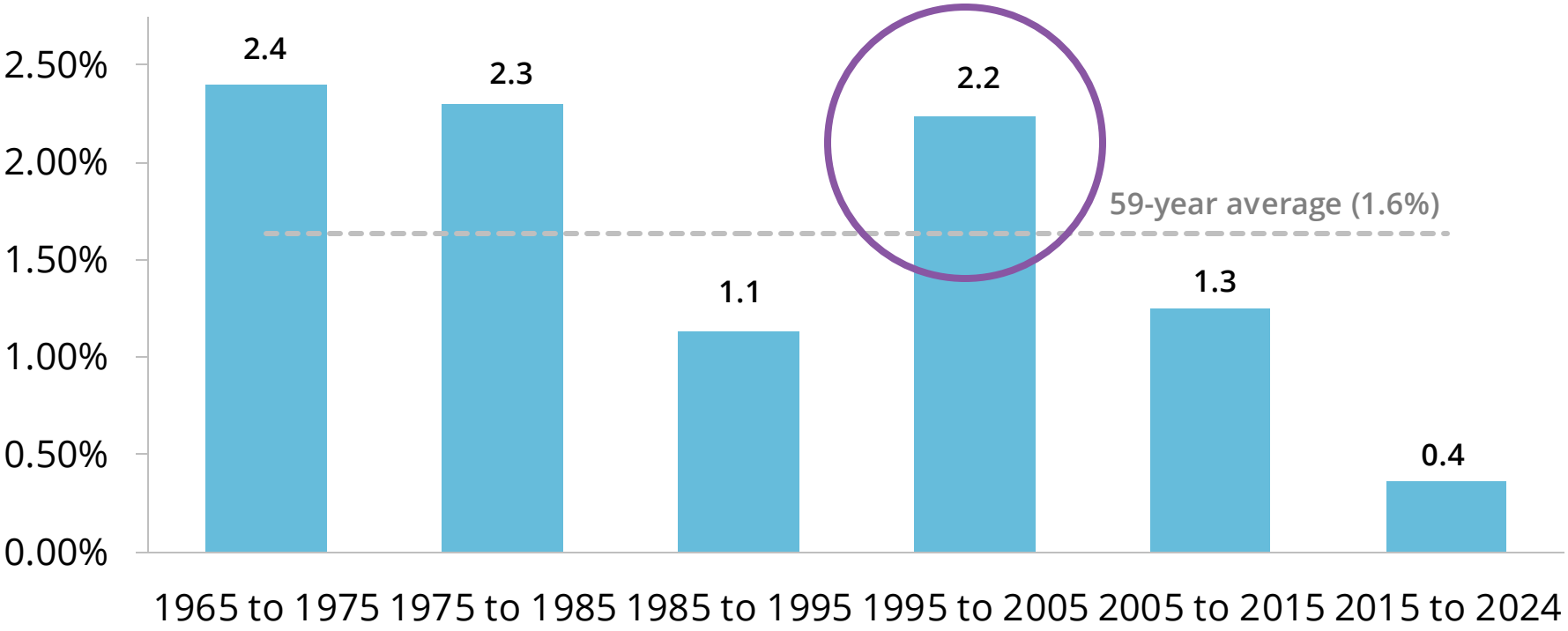
The benefits of productivity growth over time

Direct results since 1960	Indirect outcomes (correlates)
Real income growth 3-fold increase in GDP per capita, and almost a 3-fold increase in average wages	**Reduced poverty** 3-4-fold reduction in share of population living in absolute poverty since 2001
More goods and services Consumption of almost all household goods and services up around 3-fold	**Longer, healthier lives** Life expectancy increased by 11 years (females) and 13 years (males) since 1960
Better goods and services 3% p.a. quality-driven increase in healthcare productivity in some sectors since 2011. Goods have also improved	**Safer lives** Nearly 3-fold reduction in per-capita annual crime rate since 1990
More leisure time Average worker spends 5 fewer hours per week at work	**More satisfied lives too** Countries with higher productivity levels report higher life satisfaction

Source: Productivity Commission, *Growth mindset: how to boost Australia's productivity,* Canberra.

Productivity growth has fluctuated over time

Average labour productivity growth



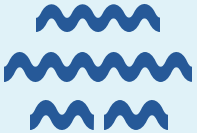
Note: * 2015 to 2024 average is calculated over a nine-year period. Labour productivity calculated as GDP per hour worked, GDP data sourced from the ABS between 1964-65 and 2022-23. Hours worked data from Penn World Tables for between 1964-65 and 1973-74 and from the ABS between 1974-75 and 2023-24. Sources: ABS (Australian System of National Accounts, 2023-24 financial year, Cat. No. 5204.0., table 1); [Penn World Tables] Feenstra, Robert C., Robert Inklaar and Marcel P. Timmer (2015), "The Next Generation of the Penn World Table" American Economic Review, 105(10).

Looking back …

- Wages set centrally
- AUD pegged to the GBP
- Government intervention in pricing, opening hours and output
- Government ownership of banks, Qantas, Telecom, power, water
- No foreign banks and limitations on domestic banks
- Iron ore exports banned

… and now

Tariffs some of the lowest in the world



Floating exchange rate

Wages determined at enterprise level

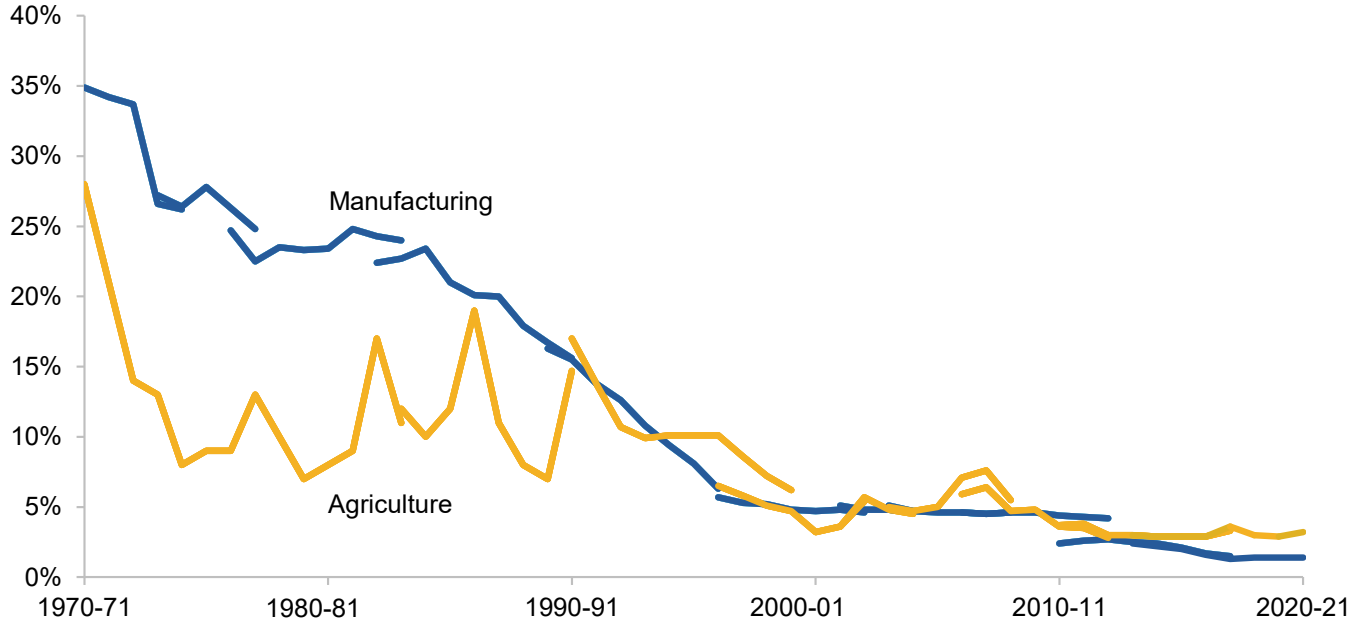
Public ownership is uncommon

Competition in banking and other sectors

Government provides core services

Example 1: Tariff cuts

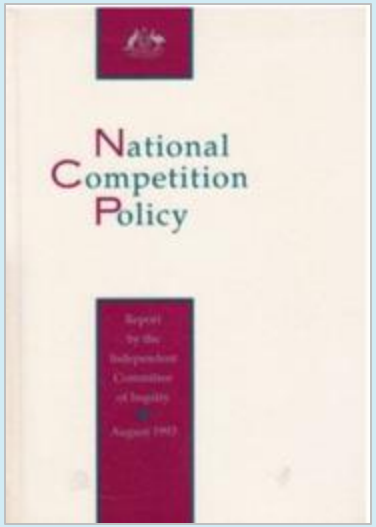
Figure – PC estimates of combined assistance[a,b,c]
Effective rates of assistance to manufacturing and agriculture, 1970-71 to 2020-21



a. Effective rates of assistance is combined tariff assistance and budgetary assistance. **b.** 'Agriculture' refers to selected agriculture activities up to and including the year 2000-01. From 2001-02, estimates refer to division A of the Australian and New Zealand standard industrial classification, which covers agriculture, forestry, fishing and hunting activities (ABS 2013). **c.** Breaks and overlapping series represent a change of methodology and/or data sources.
Source: Productivity Commission estimates.

Example 2: National Competition Policy

- In 1991, Federal and State government leaders agreed to purse a **national approach to competition policy**
- In 1992, the Prime Minister announced an **independent inquiry** into a national competition policy for Australia
- A broad range of reforms were proposed….



The focus of NCP

General reforms

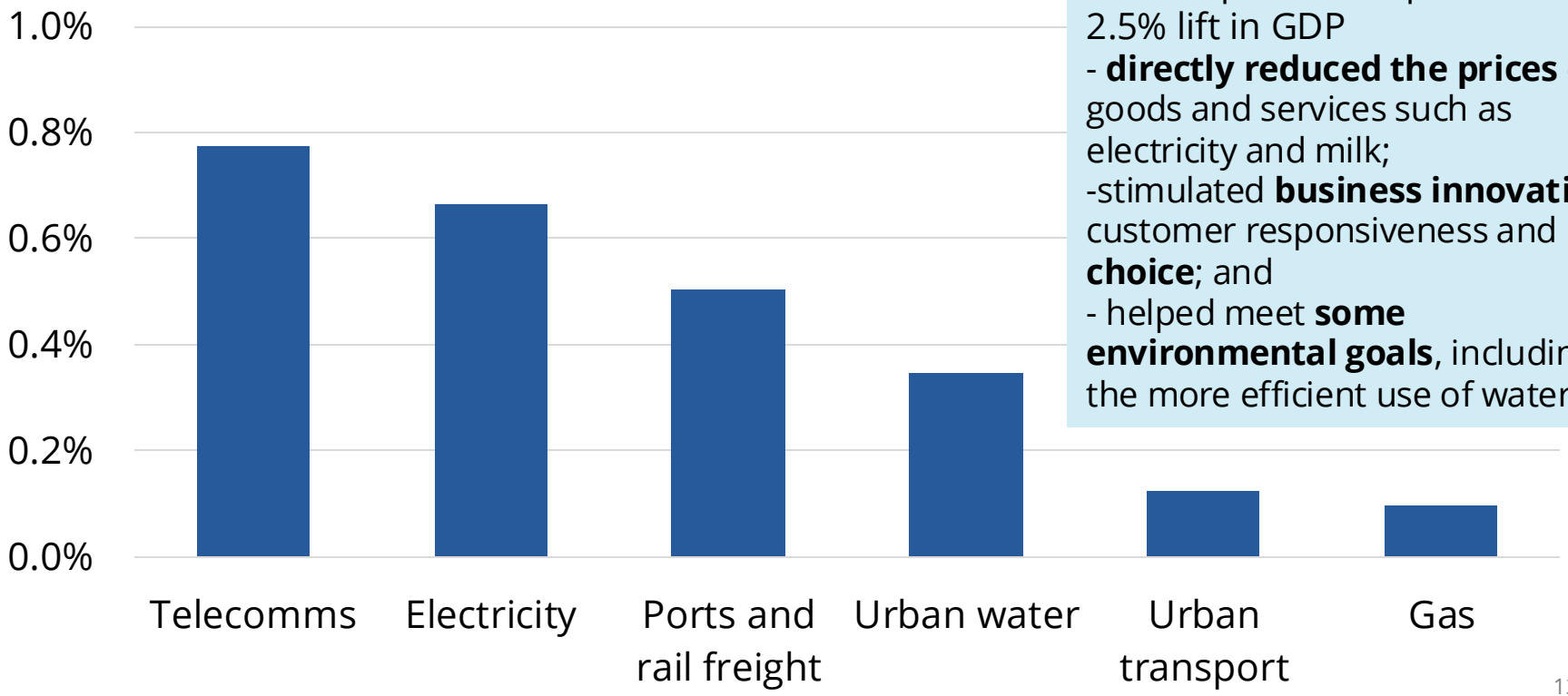
- Reforms to **public monopolies** including structural separation in some cases
- A **national third-party access regime** for essential infrastructure
- A **Legislation Review Program** assessing whether regulatory restrictions on competition are in the public interest. Examples included the professions and occupations; marketing of agricultural products; and retail trading.
- Extending **reach of the Corporations law** to government and unincorporated businesses

Sector-specific reforms

- **Electricity**: Reforms to introduce greater competition into electricity generation and retailing
- **Gas**: Reforms to facilitate more competitive supply arrangements and to promote greater competition at the retail level.
- **Road transport**: Heavy vehicle charges and a uniform approach to regulating heavy vehicles.
- **Water**: Institutional, pricing and investment measures, and arrangements for the permanent trading of water allocations

Reforms boosted GDP

Estimated impact on GDP of productivity from key infrastructure industries, 1989-90 to 1999-00, percentage point change

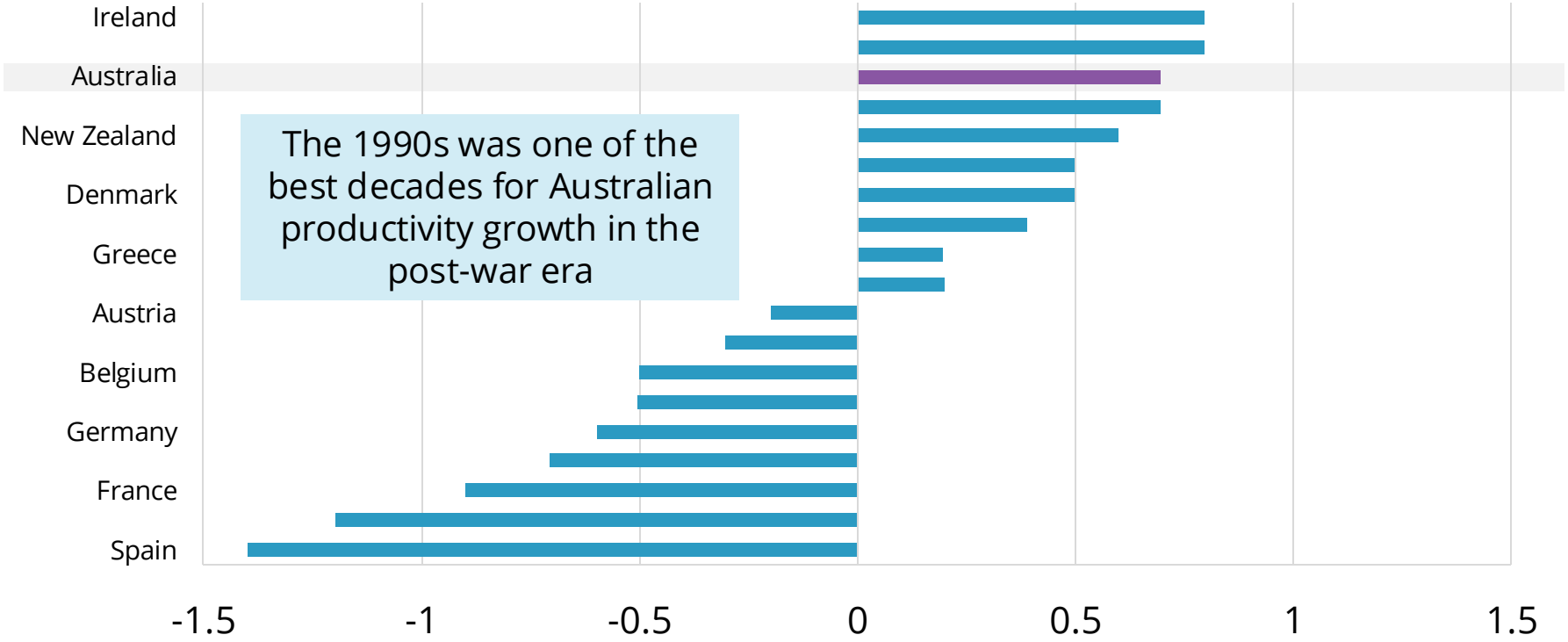


Total impact was a permanent 2.5% lift in GDP
- **directly reduced the prices** of goods and services such as electricity and milk;
-stimulated **business innovation**, customer responsiveness and **choice**; and
- helped meet **some environmental goals**, including the more efficient use of water

Source: Productivity Commission 2005, *Review of National Competition Policy Reforms*, Report no. 33, Canberra, Figure 3.3.

Australia's productivity grew strongly

Average annual percentage point change from 1980-90 to 1990-2000



Source: Productivity Commission 2005, *Review of National Competition Policy Reforms,* Report no. 33, Canberra, Figure 3.2.

What contributed to NCP's success?

Strong evidence base

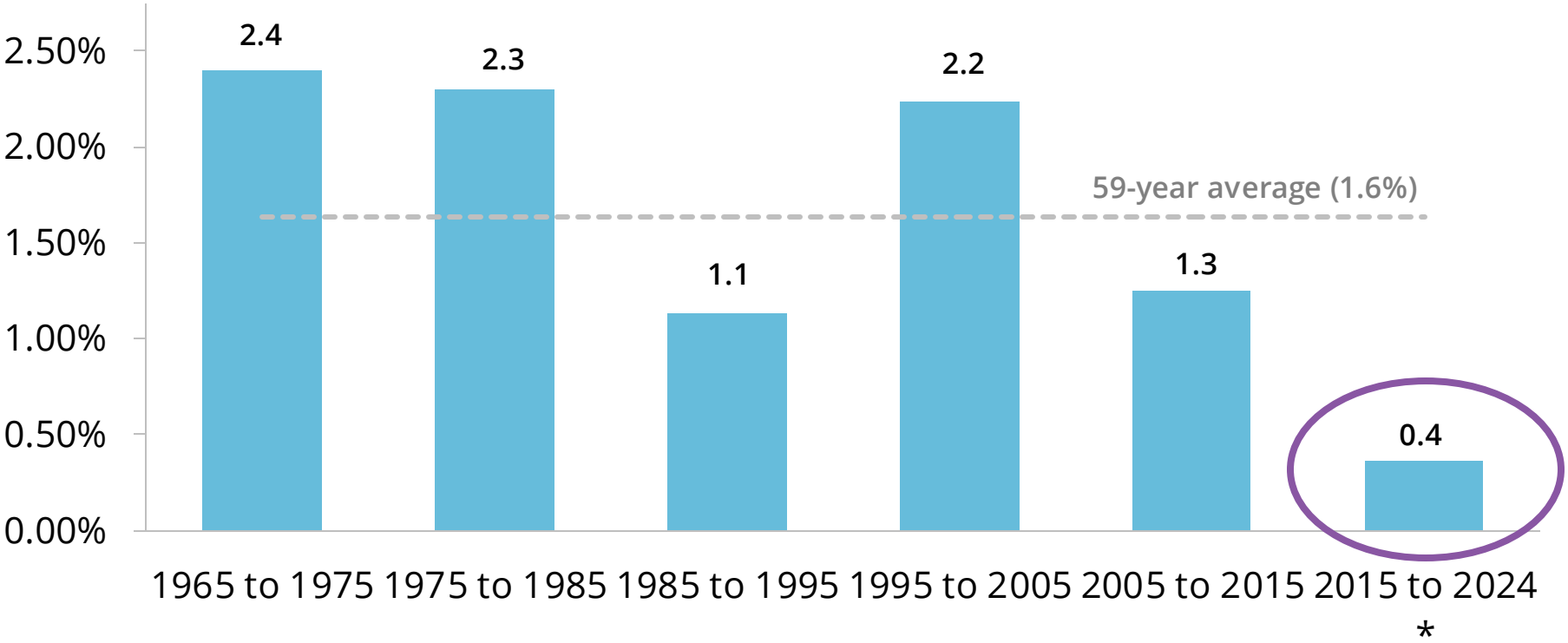
Political leadership supported by NCP being a broad-based reform program

Transparency and accountability built in

Financial incentives for states and territories to undertake reform

Australia's productivity challenge

Average labour productivity growth



Note: * 2015 to 2024 average is calculated over a nine-year period. Labour productivity calculated as GDP per hour worked, GDP data sourced from the ABS between 1964-65 and 2022-23. Hours worked data from Penn World Tables for between 1964-65 and 1973-74 and from the ABS between 1974-75 and 2023-24. Sources: ABS (Australian System of National Accounts, 2023-24 financial year, Cat. No. 5204.0., table 1); [Penn World Tables] Feenstra, Robert C., Robert Inklaar and Marcel P. Timmer (2015), "The Next Generation of the Penn World Table" American Economic Review, 105(10).

Why did productivity growth slow?

Shift to less capital-intensive industries – the march of the services sector

Reduced boost from technological change

Low investment

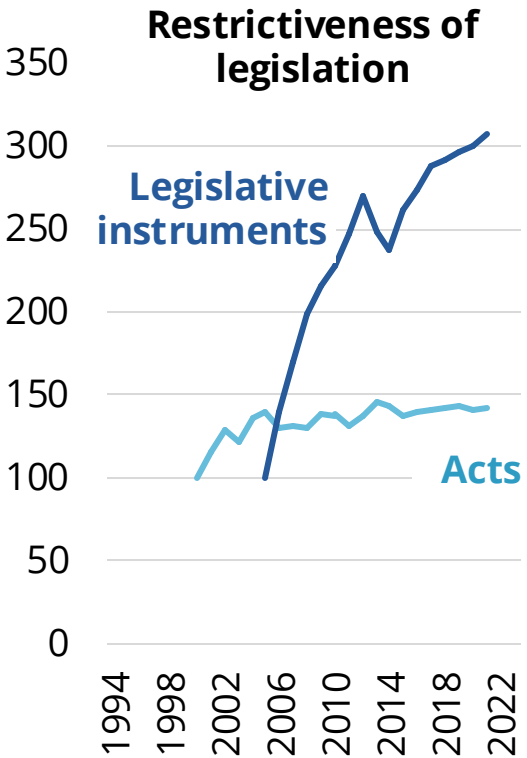
Reduction in economic dynamism?

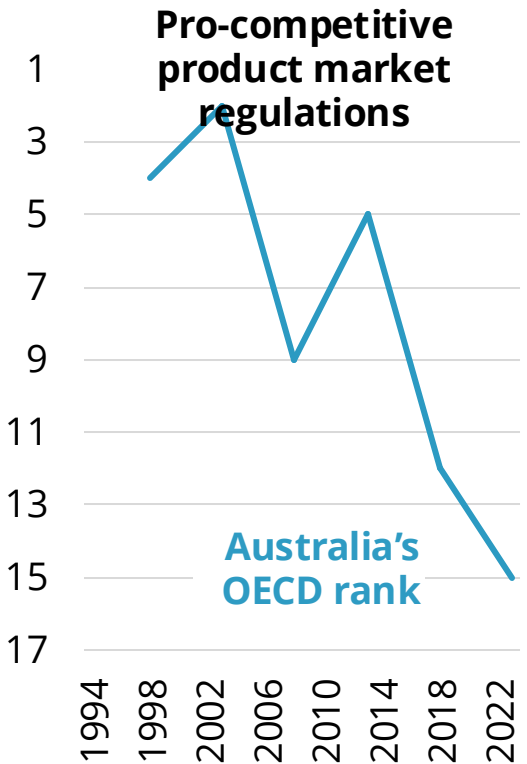
Lack of policy reform / declining emphasis

The PC's proposals to improve productivity

Creating a dynamic and resilient economy		Support business investment through **corporate tax reform**	**Reduce regulatory burden** through new leadership approach for government and the public service	Enhance road service provision through **road user charging**
Investing in cheaper, cleaner energy and the net zero transformation		**Reduce the cost of meeting emissions targets**	**Speed up approvals for new energy infrastructure**	**Encourage adaptation** by addressing barriers to private investment
Harnessing data and digital technologies		**Right size regulatory approach to AI**	**Unlock benefits of consumer data**	Reduce burden through **outcomes-based approach to privacy regulation** / Enhance reporting efficiency, transparency and accuracy through **digital financial reporting**
Building a skilled and adaptable workforce		**Improve curriculum resources and ed-tech** to boost school student outcomes	**Boost lifelong learning** by recognising prior learning/credit and providing better **workplace training incentives**	**Fit-for-purpose occupational entry regulations**
Delivering quality care more efficiently		**More consistent quality and safety regulation** to support a more cohesive care economy	**Collaborative commissioning of health services** to improve health outcomes	A national framework to **support government investment in prevention**

Example 3: Regulating with a 'growth mindset'





Notes: 'Restrictiveness of legislation' is defined as the number of restrictive clauses such as 'if', 'but', 'except' in federal acts of parliament and legislative instruments. 'Acts' series is indexed to 2000 and legislative instruments series is indexed to 2005. Ease of doing business series measures Australia's global ranking for ease of doing business, and 'Pro-competitive product market regulations' is Australia's rank among 28 OECD countries on the OECD's Product Market Regulation indicators. A falling rank for Australia suggests Australia is performing less well on these measures compared to other countries. Source: World Bank (2005, 2020, 2024) and QuantGov (n.d.).c

Regulatory failure comes in many forms

Band-aid regulation	Regulation that does not address underlying cause of the problem
Duplicate/inconsistent regulation	Multiple regulations that impose repetitive or inconsistent requirements on a business
Overly prescriptive regulation	Regulation that specifies processes rather than outcomes, constraining adaptation
Overly risk-averse regulation	Regulation that aims to eliminate all risk at the expense of a disproportionate regulatory burden
Regulatory delay	Where regulators do not make timely decisions
Cumulative burden	Where multiple regulations together create a disproportionate burden, even if each individual regulation is justifiable in isolation

The policy choices governments make matter to productivity and economic growth.

Takeaways from Australia's experience

- Independent advice can make the case for necessary reforms
- A strong evidence base can inform good public policy
- Transparency and accountability allow progress to be monitored and outcomes reported
- Take a community-wide perspective, to meet the interests of the economy and community as a whole
- Reform should take a growth mindset, to elevate economic growth in policy decision making

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Opening up the PRC's services industry for innovative and shared development

Presentation at East Asia Forum 2025 and Talk China Seminar

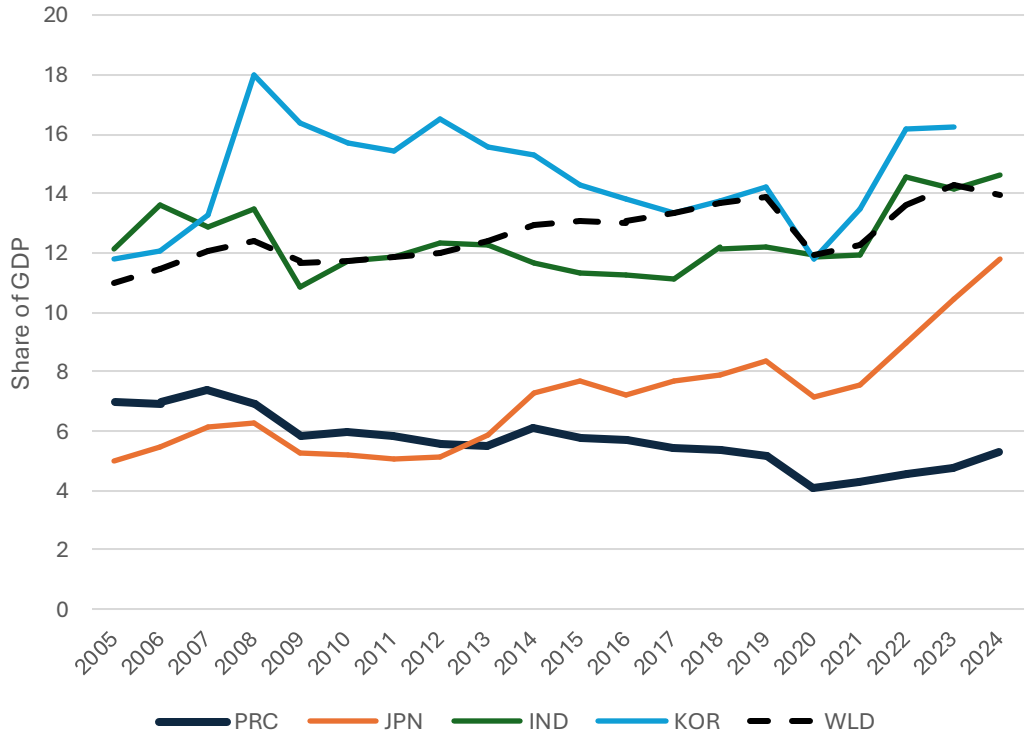
23-24 September

Hildegunn Kyvik Nordås

Opening up

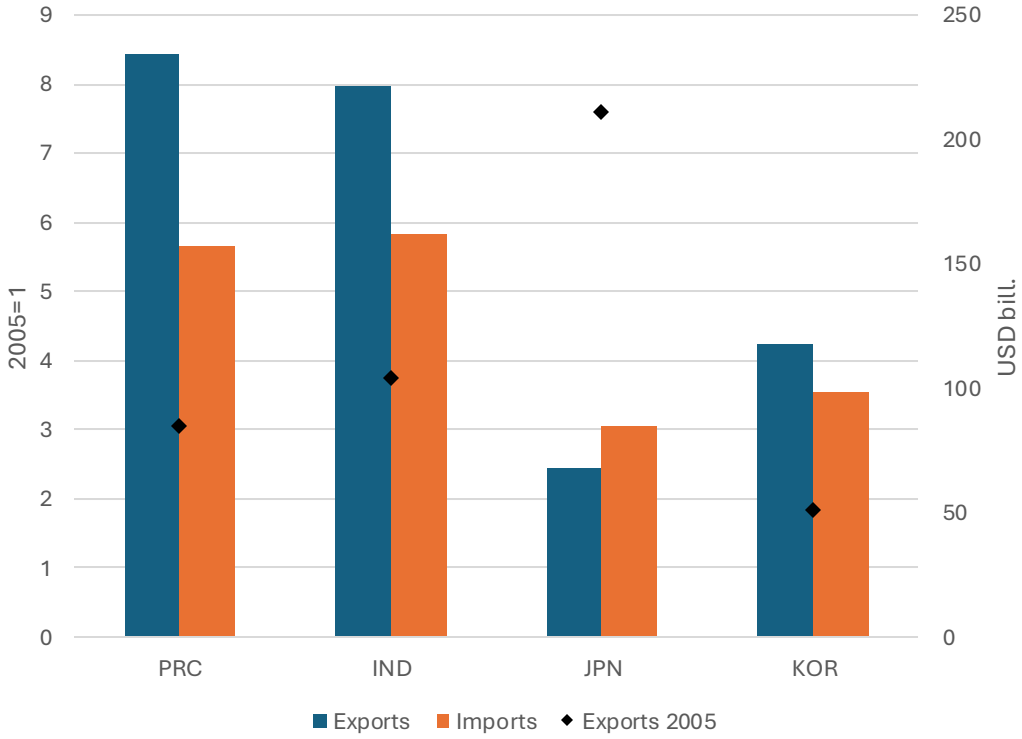
Services trade

Total services trade % of GDP



Source: WDI

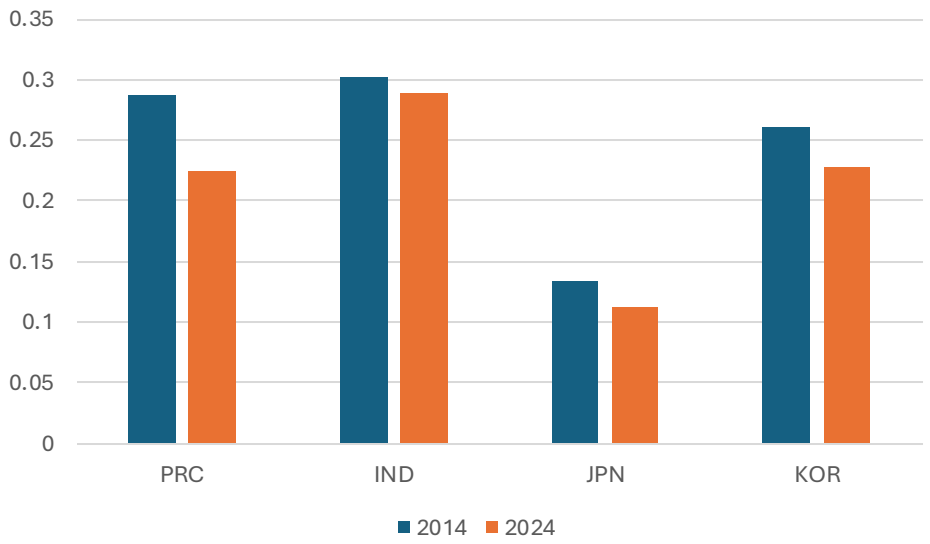
Digitally deliverable services growth, 2005-2023



Source: Author based on BaTiS

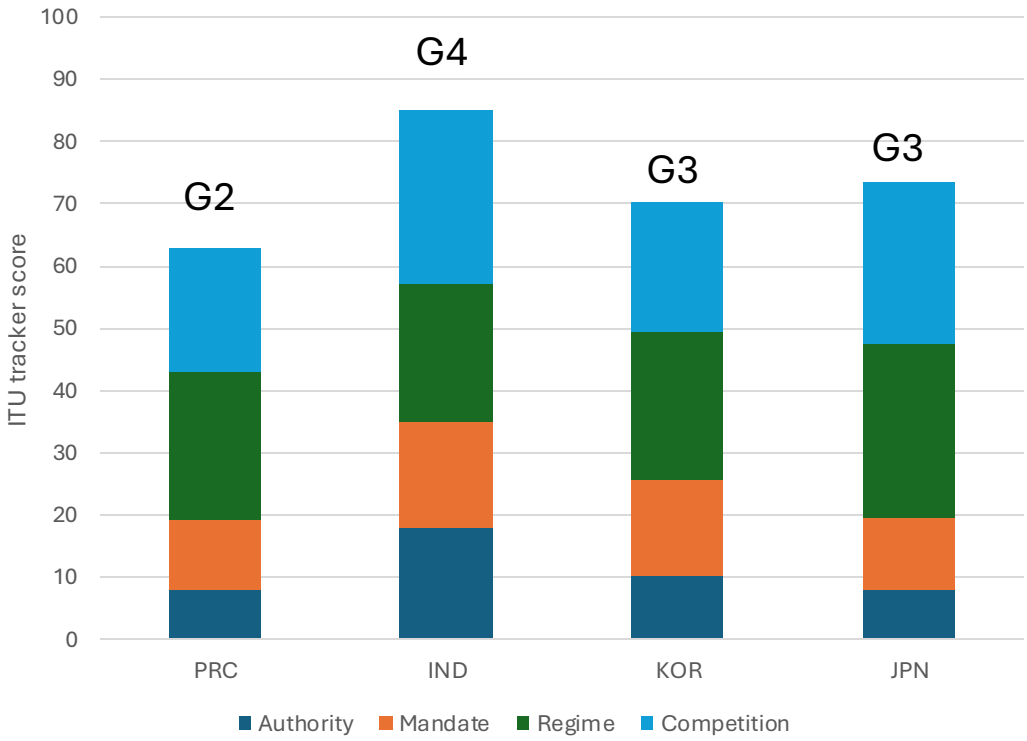
Policy indicators of openness

STRI, all sectors



Source: OECD

ITU tracker, 2022



Source: ITU

Two opening-up scenarios

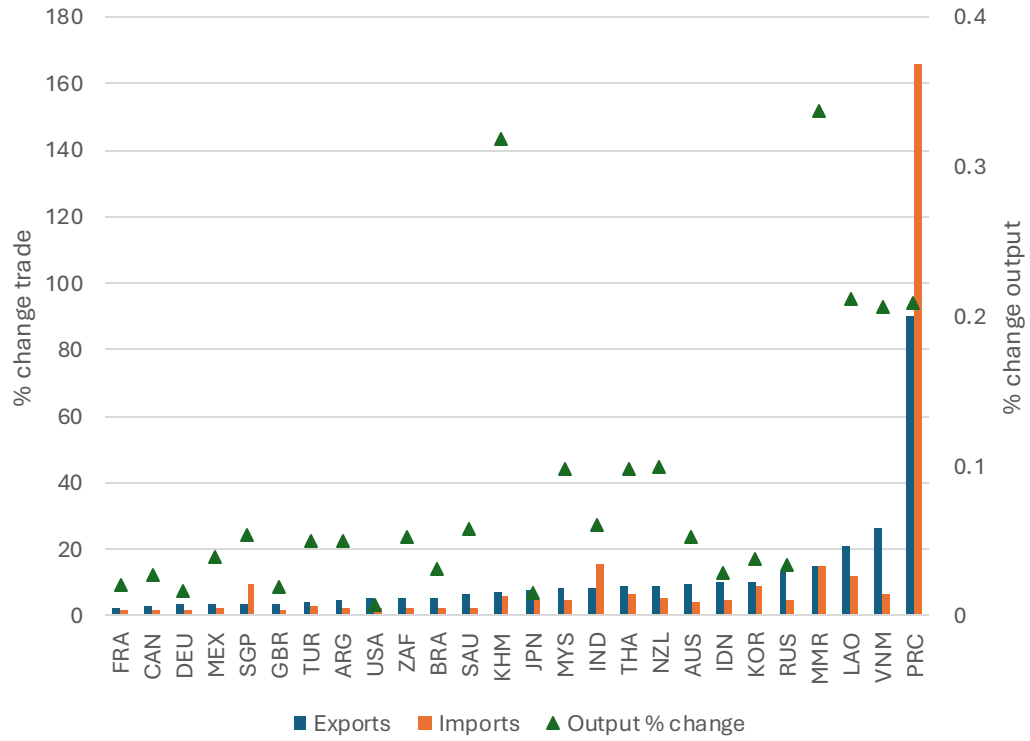
- Unilateral reforms in the ICT sector
- RCEP

Unilateral reforms to the ICT sector

Scenario:

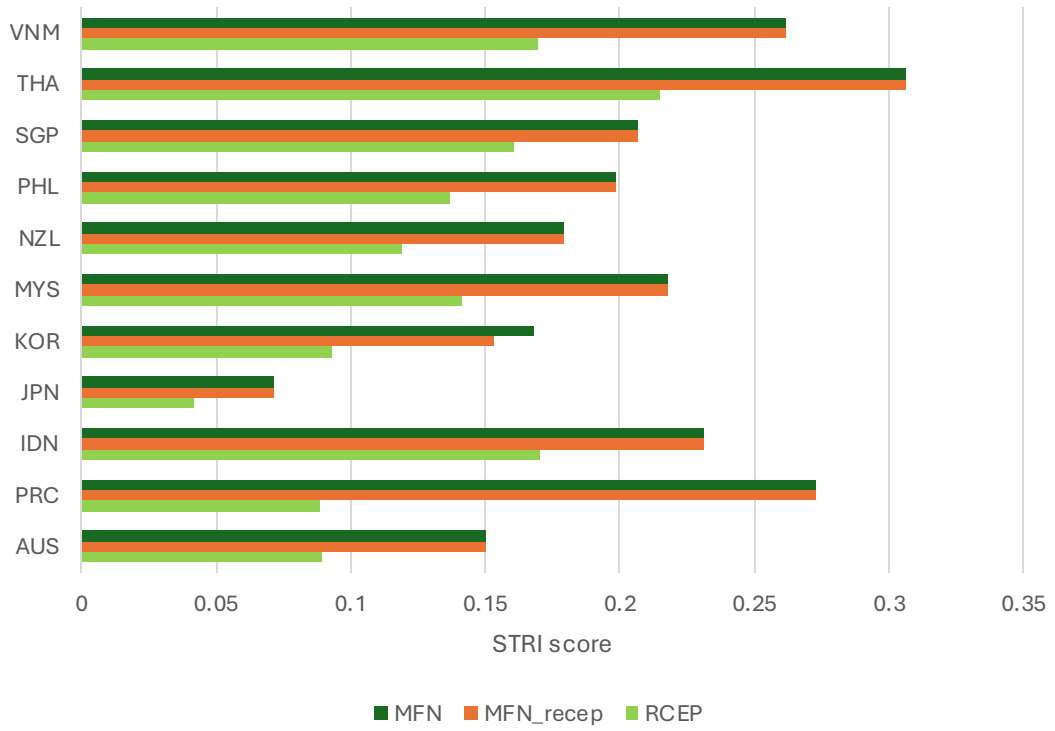
- The PRC reforms the ICT sector:
  - Generation 2 to Generation 4 on ITU's tracker
- Methodology: General equilibrium gravity
- Outcome:
  - A large increase in the PRC's services trade – particularly imports
  - Global services trade increases
  - All countries gain

Long run change in services trade: G20, RCEP

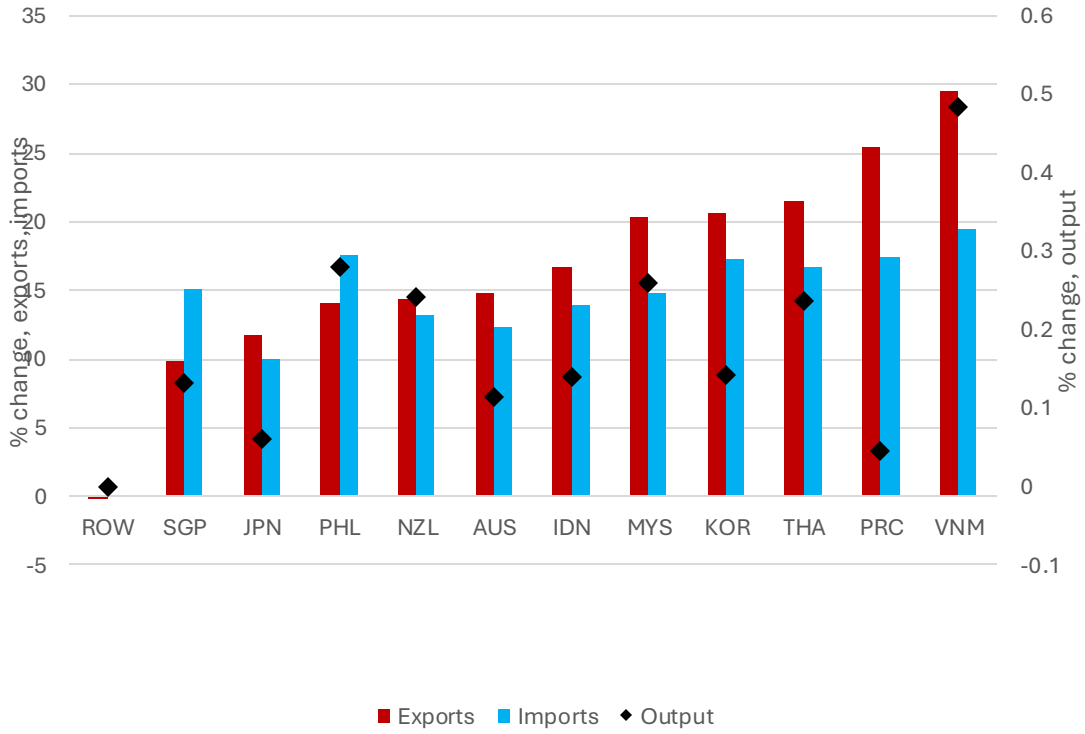


The RCEP services chapter is fully implemented (including soft law, not including annexes)

Horizontal Policy changes (based on the STRI)

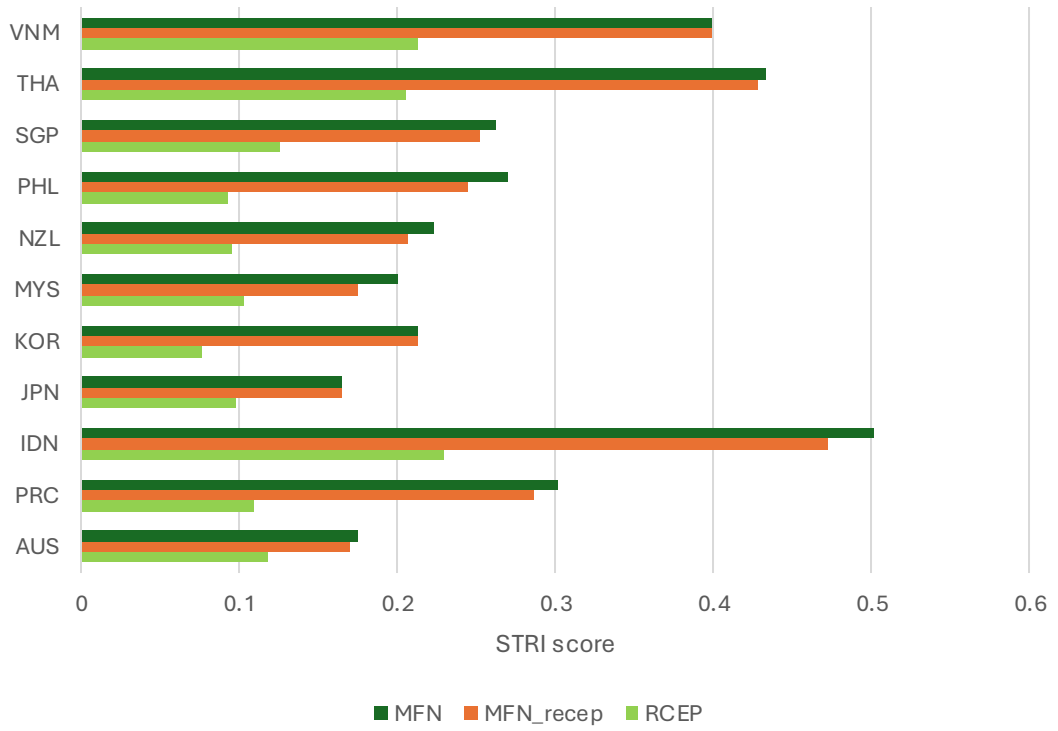


Predicted outcome, total services

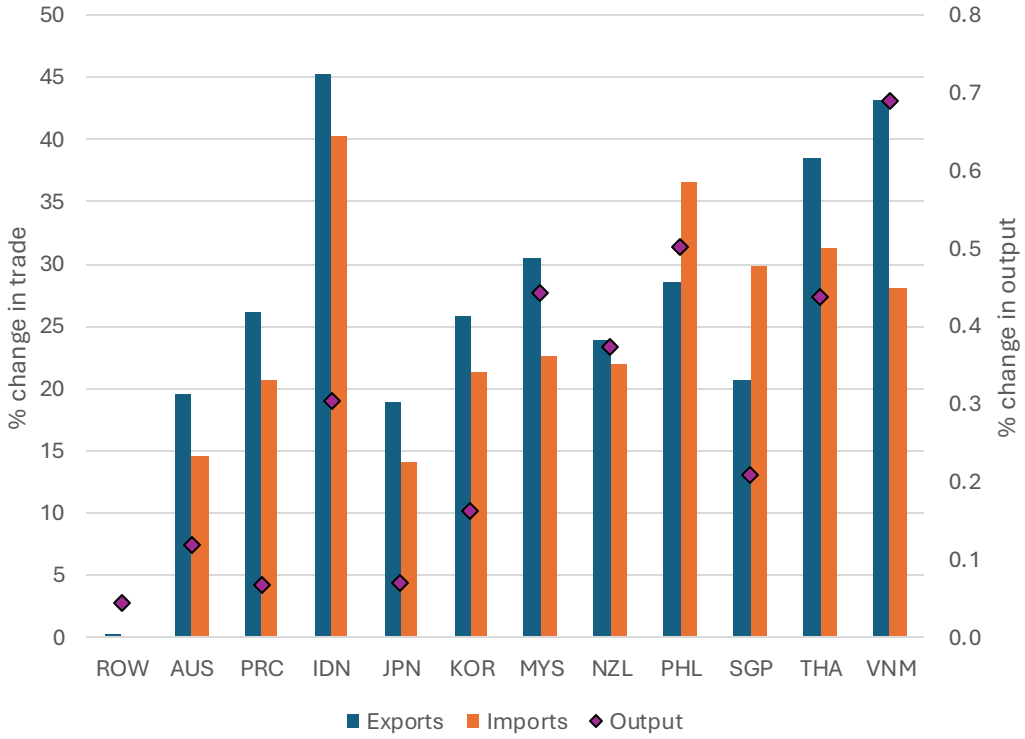


+ full implementation of the Annex on Finance

Commercial banking policy changes (based on STRI)



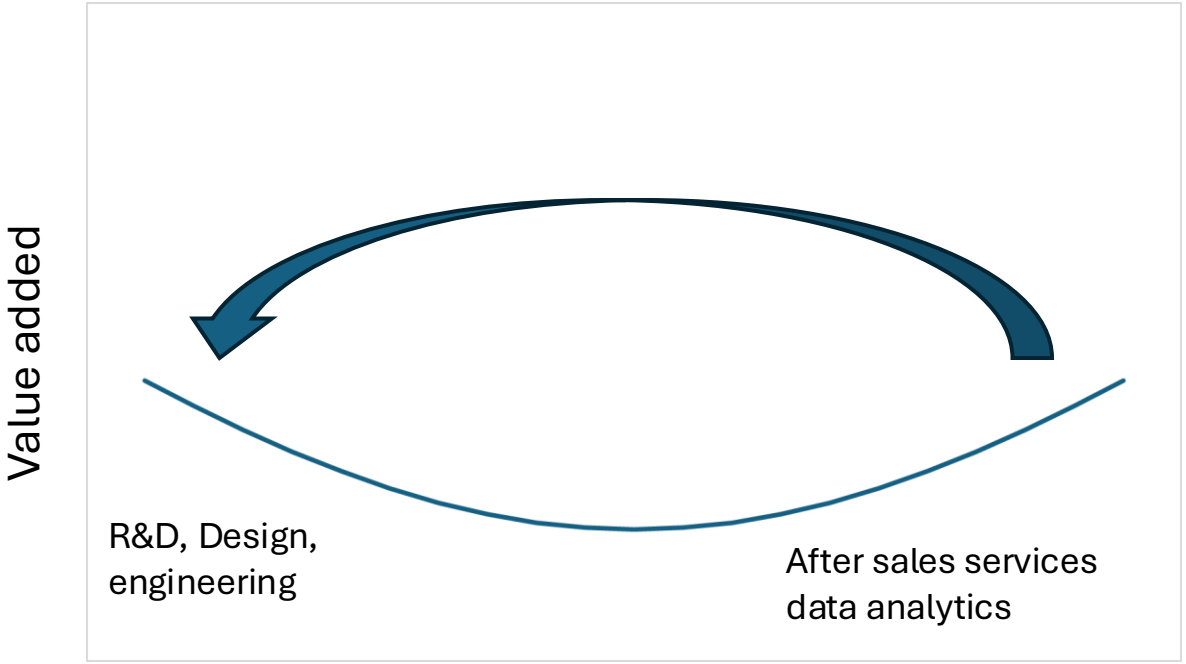
Predicted outcome, total services

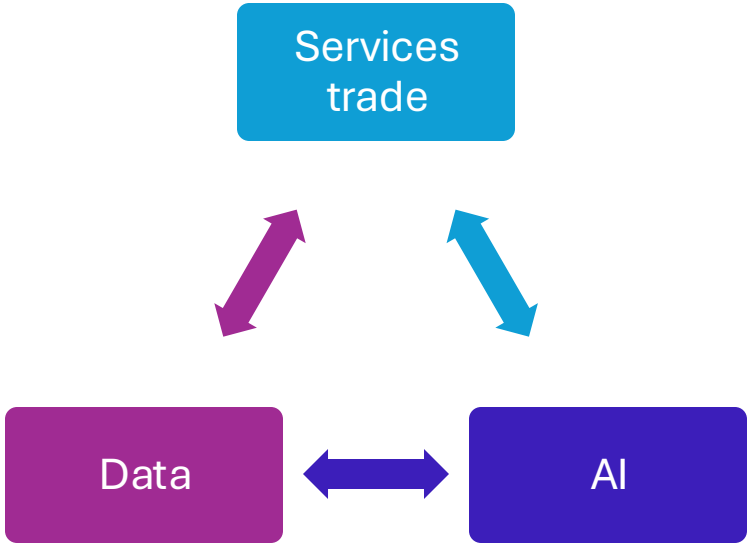


Innovation and shared development

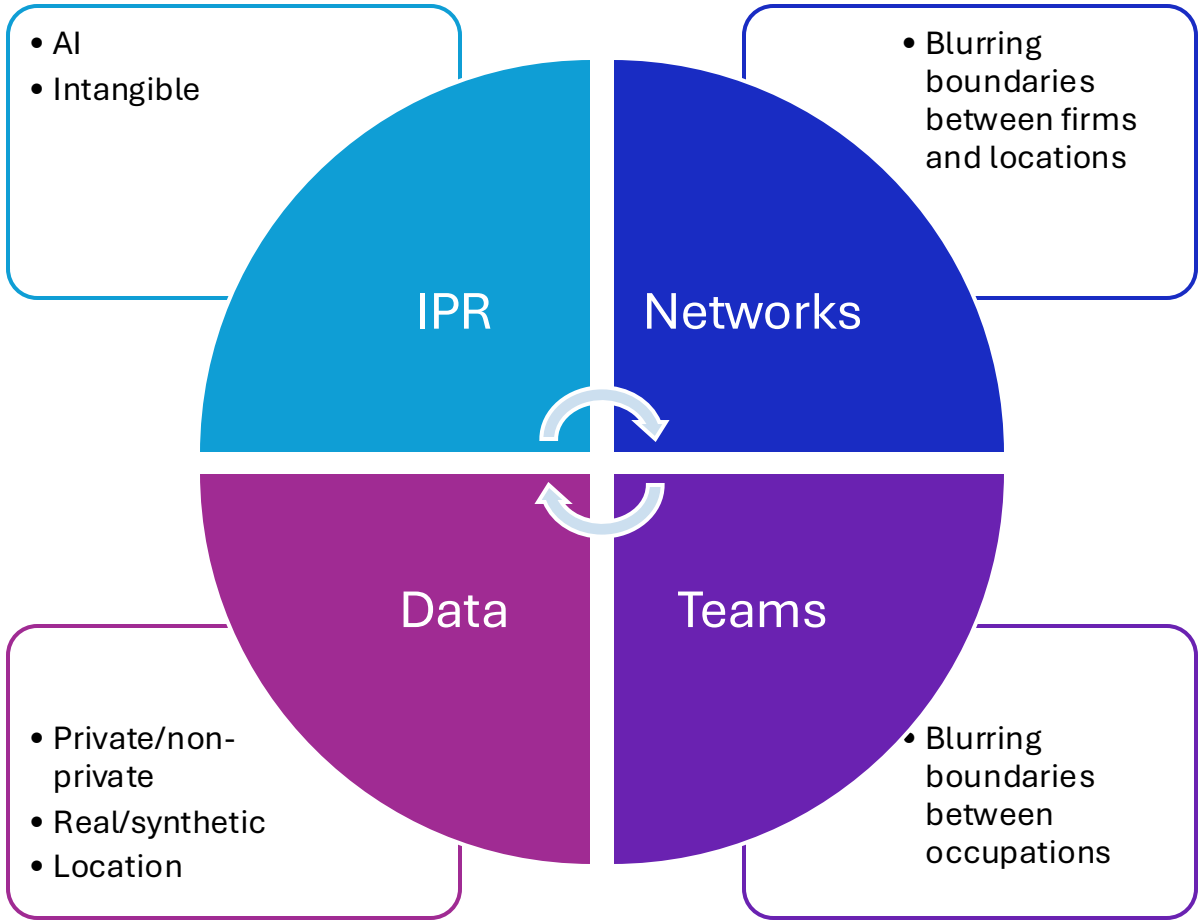
Digital services trade spurs innovation

The “smile curve”





Open innovation and the architecture of trade governance



A blended approach to services opening up

Opening-up to Commercial Presence	Structural Reforms in key HQD sectors	Horizontal implementation	Digital/Data Governance
• Gradual opening via FDI in targeted services in Pilot Free Trade Zones. • Trade facilitation measures including single windows. • Focus on financial services (fintech, e-payments), professional and technical services.	• Review of sectoral domestic service regulations. • Roadmap for ICT sector upgrade from G2 to G4 regulatory regime. • Expand modes of supply in health and education services, i.e., online provision and franchising.	• Align economy-wide domestic regulations with trade commitments (e.g. RCEP) and standards. • WTO E-commerce. • Pursue comprehensive bilateral and regional negotiations	• Engage in forward-looking initiatives in e-payments, cross-border data flows, AI and standards, a threshold for CPTPP and other • Engage through 2024 Guideline on Data Governance and with potential DEPA partners.

Source: ADB (forthcoming)

Thank you!