10th Annual Public Policy Conference "Navigating Global Mega-Trends: Opportunities, Strategies, and Governance for Expanding the Middle Class

19 September 2024

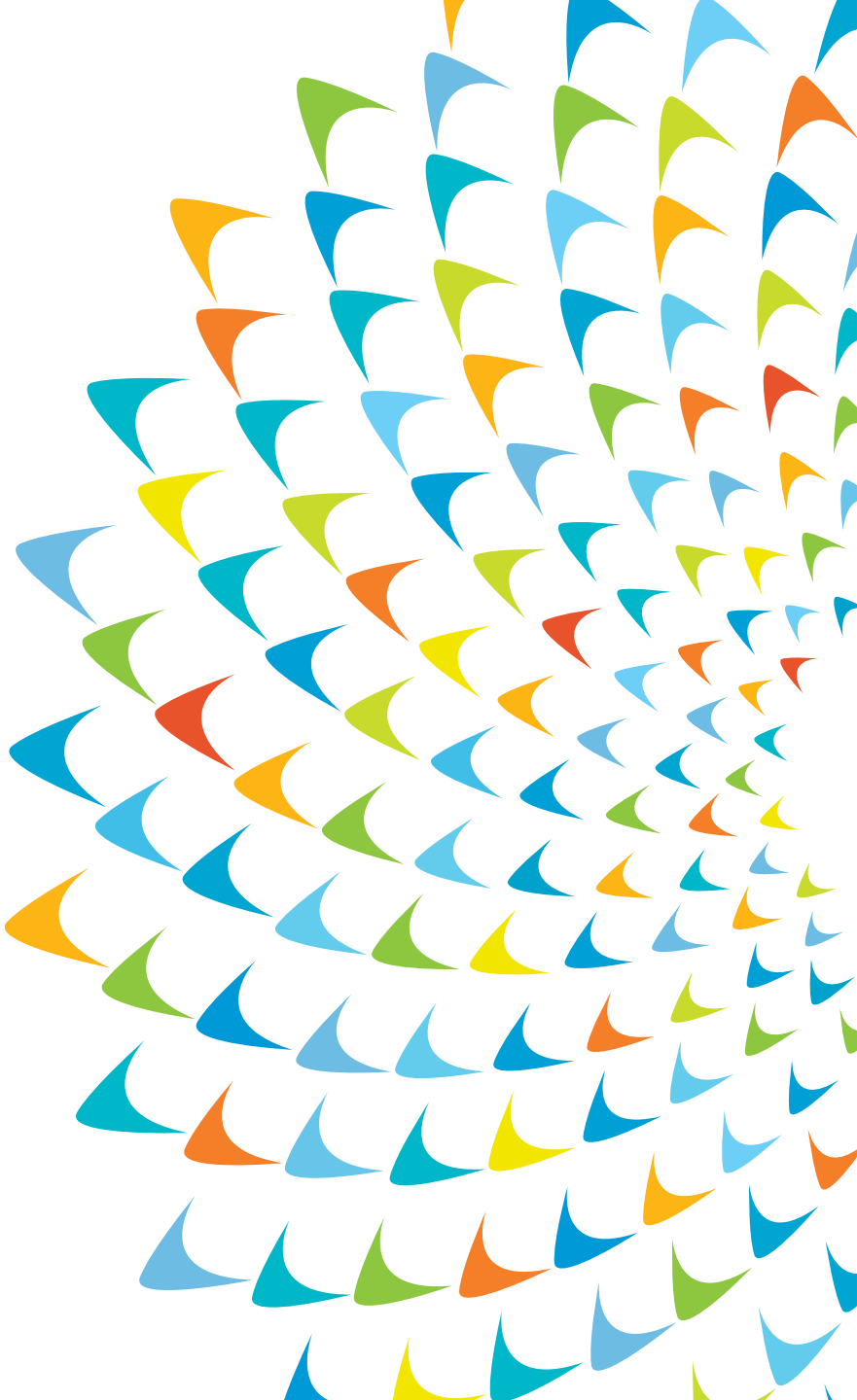
New Opportunities and Old Challenges in Manufacturing, Agriculture, and Services and Trade

Albert Park

Chief Economist

Asian Development Bank

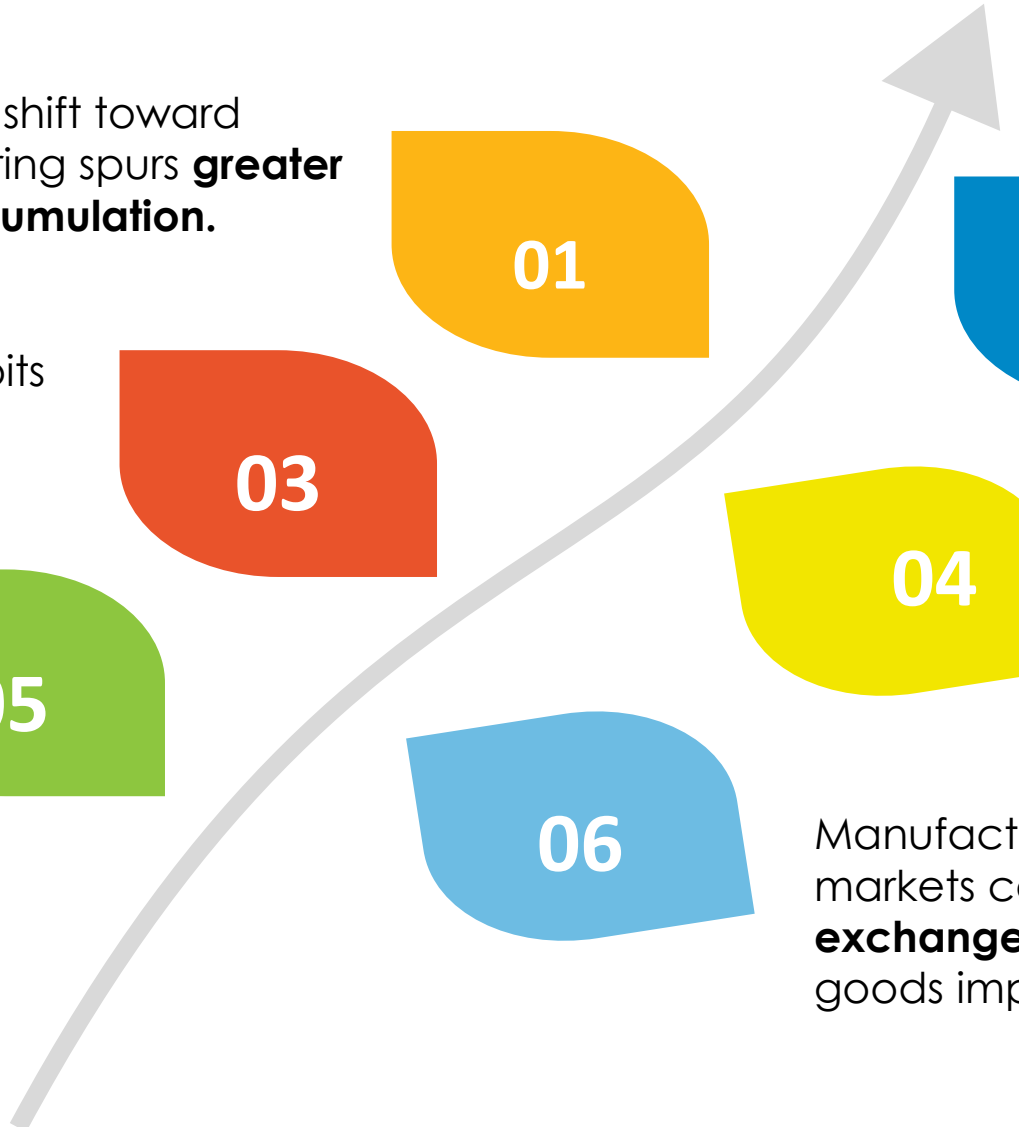
Disclaimer: The views expressed in this presentation are those of the author and do not necessarily reflect the views and policies of the Asian Development Bank (ADB) or its Board of Governors or the governments they represent.



Outline

- Changing nature of industry and services
- Debates over deindustrialization
- Role of globalization
- Innovation and competition
- Industrial and trade policies
- Conclusions

Why is manufacturing important for development?



01 A structural shift toward manufacturing spurs **greater capital accumulation.**

02 It brings **technological** progress.

03 Manufacturing exhibits **economies of scale.**

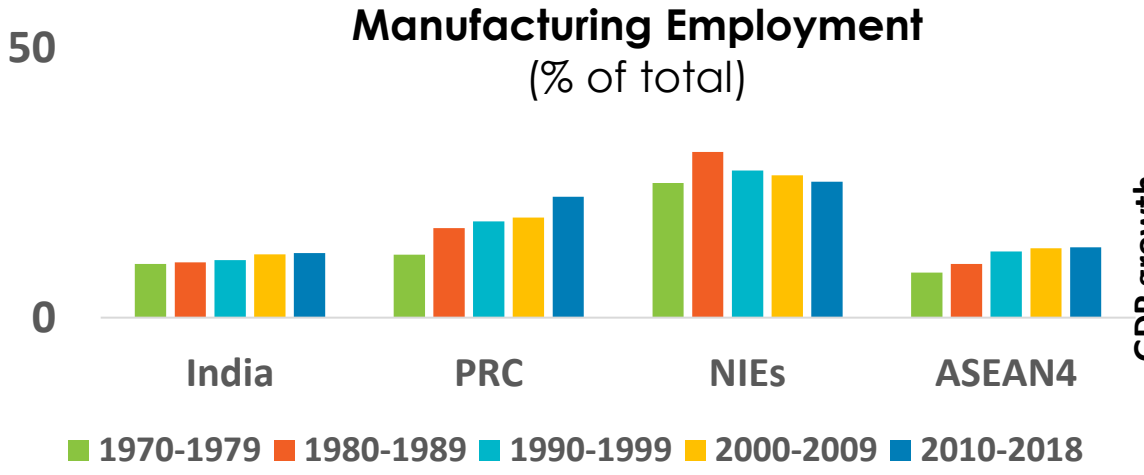
04 It enhances incentives for workers to **acquire skills adapted to new tasks**, which, in turn, strengthens the foundation for future growth.

05 Many manufactured goods have high income elasticities of demand, which **generate strong demand as incomes rise.**

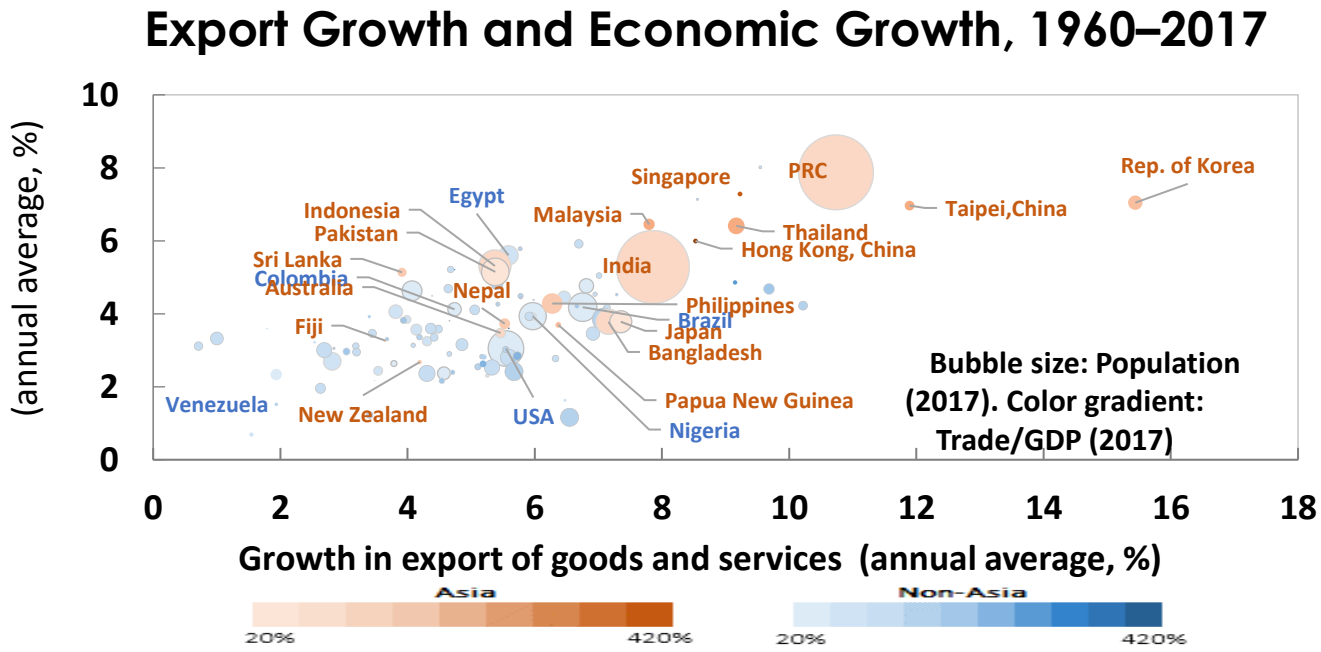
06 Manufacturing geared toward export markets can generate the **foreign exchange** needed to finance capital goods imports.

Can industrialization be bypassed?

- Asian economies achieved high growth by promoting manufacturing and exports through large capital investment, R&D, trade and FDI, education and training, and SEZs.



ASEAN = Association of Southeast Asian Nations, GDP = gross domestic product, NIEs = newly industrialized economies, PRC = People's Republic of China.
Notes: ASEAN4 includes Indonesia, Malaysia, the Philippines, and Thailand. NIEs include Hong Kong, China; the Republic of Korea; Singapore; and Taipei,China.
Sources: International Labour Organization (ILO). ILOSTAT database. https://www.ilo.org/ilostat (accessed 28 August 2019); Timmer, M. P., G.J. de Vries, and K. de Vries. 2015. Patterns of Structural Change in Developing Countries. In Weiss, J., and M. Tribe, eds. *Routledge Handbook of Industry and Development*. Abingdon: Routledge. pp. 65–83 (for the Groningen Growth and Development Center 10-Sector Database) (accessed 28 August 2019); and Asian Development Bank estimates

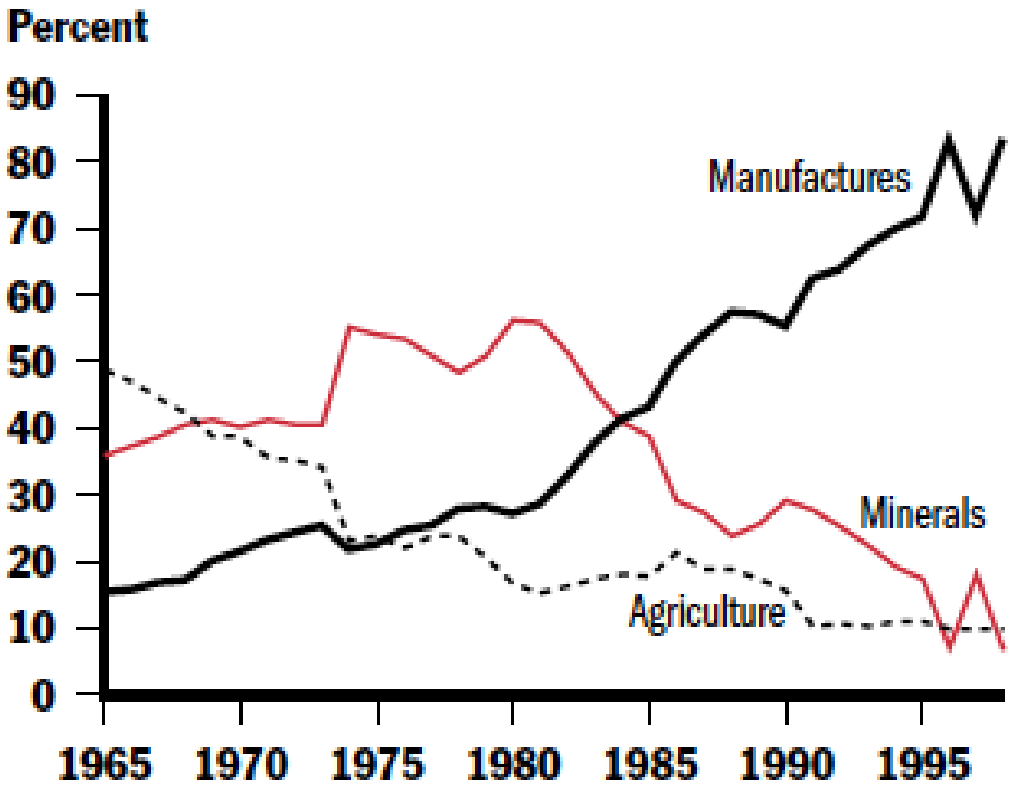


GDP = gross domestic product, PRC = People's Republic of China.
Notes: GDP and exports of goods and services are in constant national 2011 prices. Trade-to-GDP ratio is based on nominal values. Trade refers to exports plus imports of goods and services.
Source: Feenstra, R. C., R. Inklaar, and M. P. Timmer. 2015. The Next Generation of the Penn World Table. *American Economic Review*. 105 (10). pp. 3150–3182. http://www.ggdc.net/pwt.

- Historically, manufacturing was important almost in all high-income countries worldwide before de-industrialization.
- Why manufacturing is important: tradable and generates foreign exchange, has high income elasticity of demand, large scope for innovation, scale economies, and creates better paying jobs.

3rd wave of globalization empowered developing countries through manufacturing

Figure 1.8 Shares in merchandise exports in developing country exports



Source: Martin (2001).

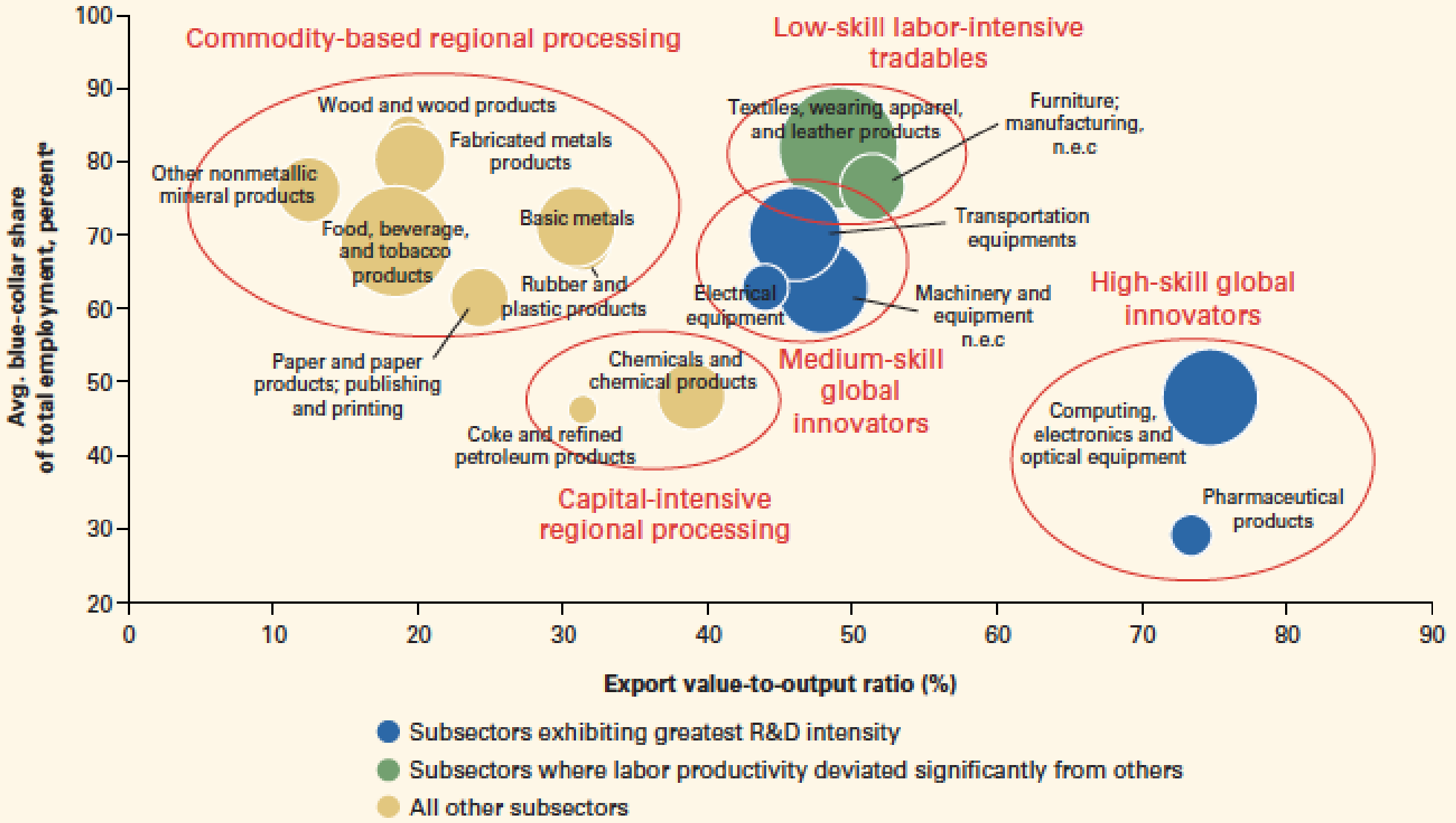
- Periods of increased globalization (1870-1914, 1945-1980, 1980-2007) are characterized by faster growth and convergence among globalizing countries.
- Only the last period of globalization liberalized trade in manufactured goods produced in developing countries

5ource: World Bank, *Globalization, Growth, and Poverty: Building and Incuslive World Econo*my (Oxford), 2002.

Changing Nature of Industry

Source: Hallward- Driemeier and Nayyer (2018)

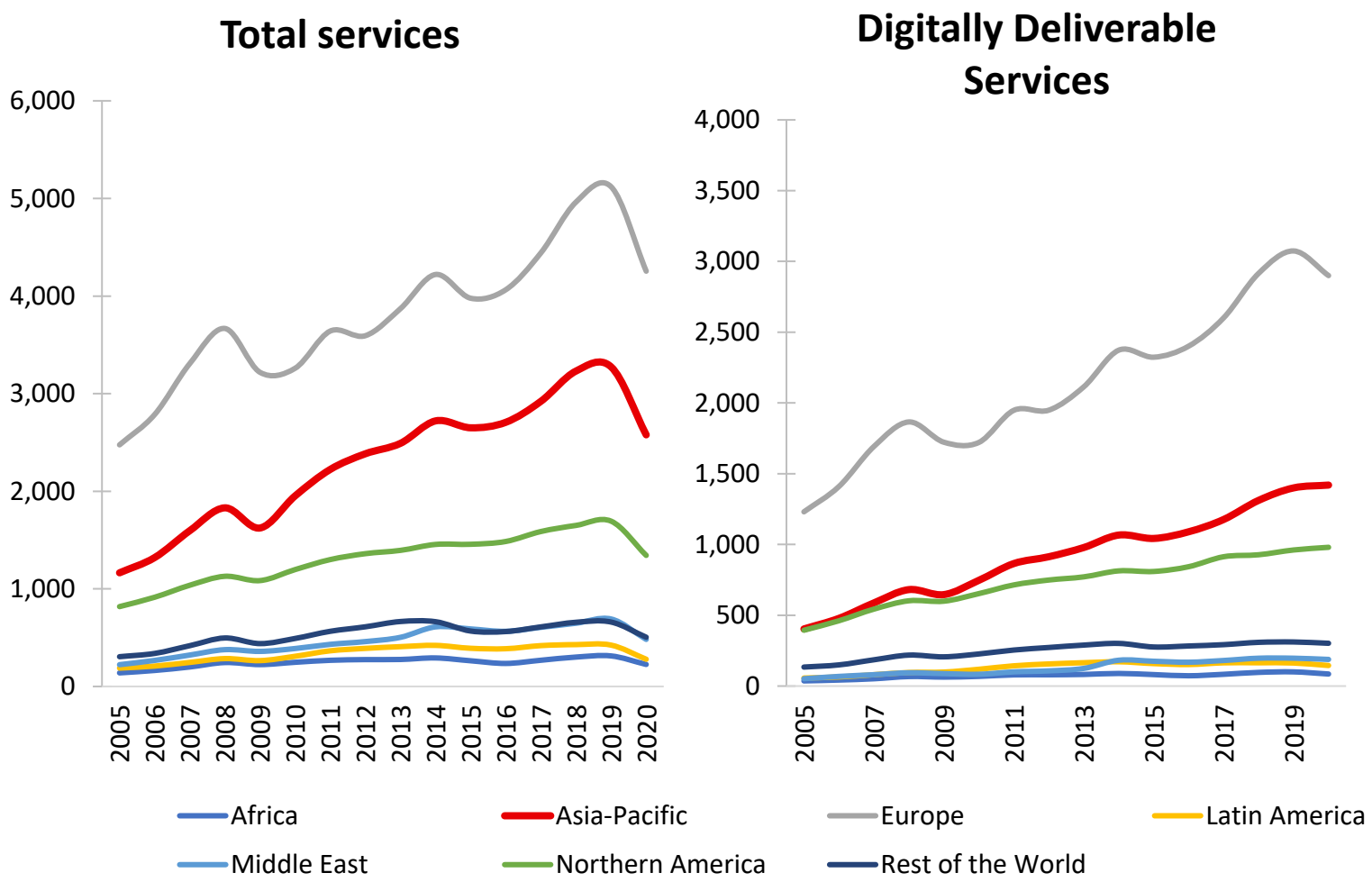
Manufacturing Subsectors Grouped by Pro-Development Characteristics

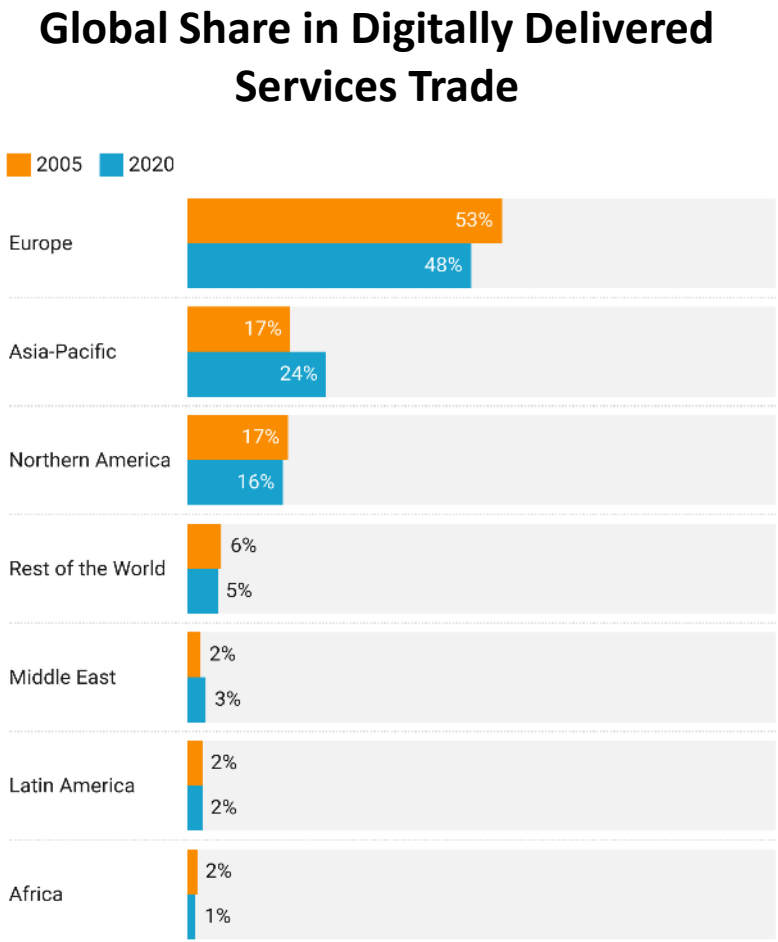


Sources: Calculations based on United Nations Industrial Development Organization (UNIDO) Industrial Statistics (INDSTAT) database; UN Comtrade database; University of Minnesota's Integrated Public Use Microdata Series (IPUMS) International database.
Note: Bubbles colored blue indicate the five subsectors exhibiting the greatest R&D intensity. Bubbles colored green indicate subsectors that deviated significantly from others in terms of labor productivity. Bubble size indicates each manufacturing subsector's share of total manufacturing employment. n.e.c. = not elsewhere classified.

Source: Hallward-Driemeier and Nayyer (2018)

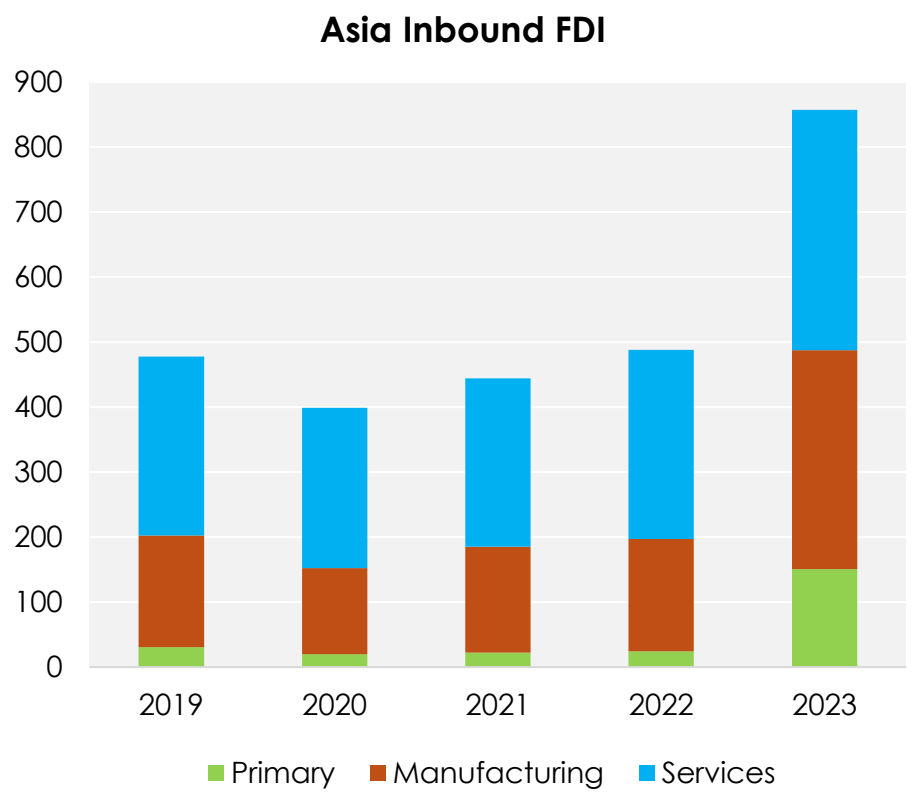
Digital services trade is the most dynamic part of global trade, especially in Asia

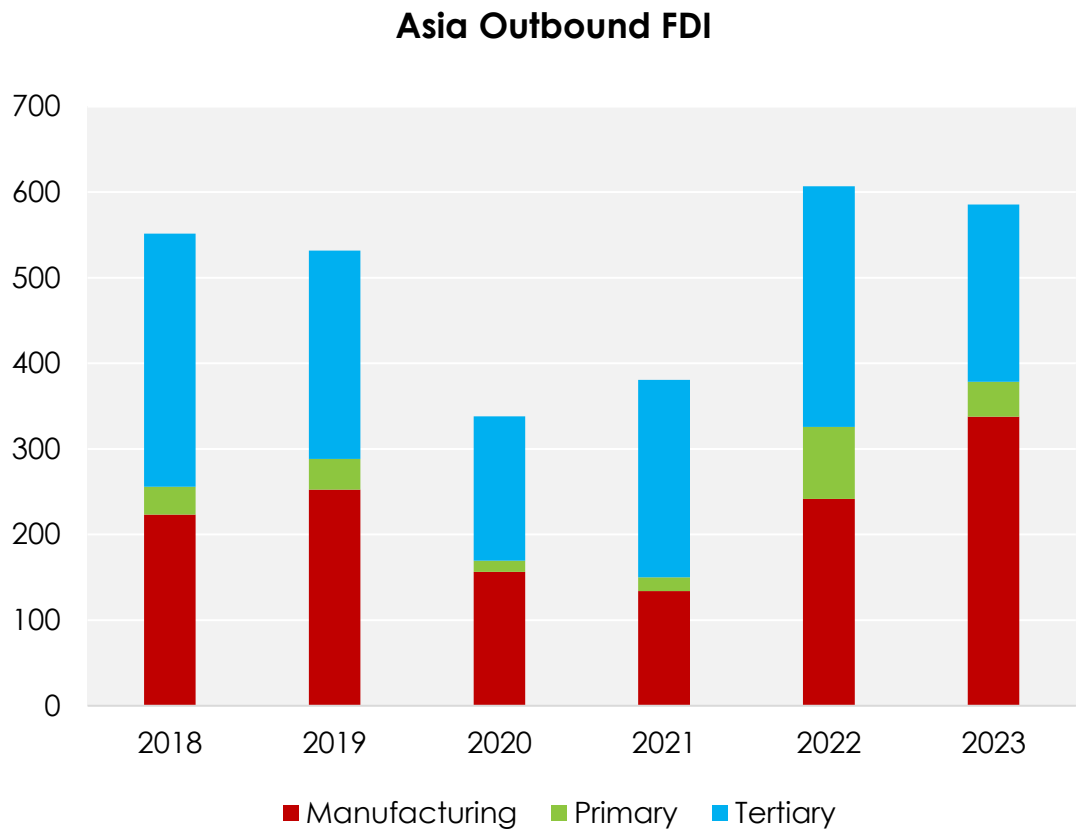




Source: ADB estimates, based on WTO-UNCTAD (accessed 21 July 2021).

Inbound and Outbound FDI in Asia

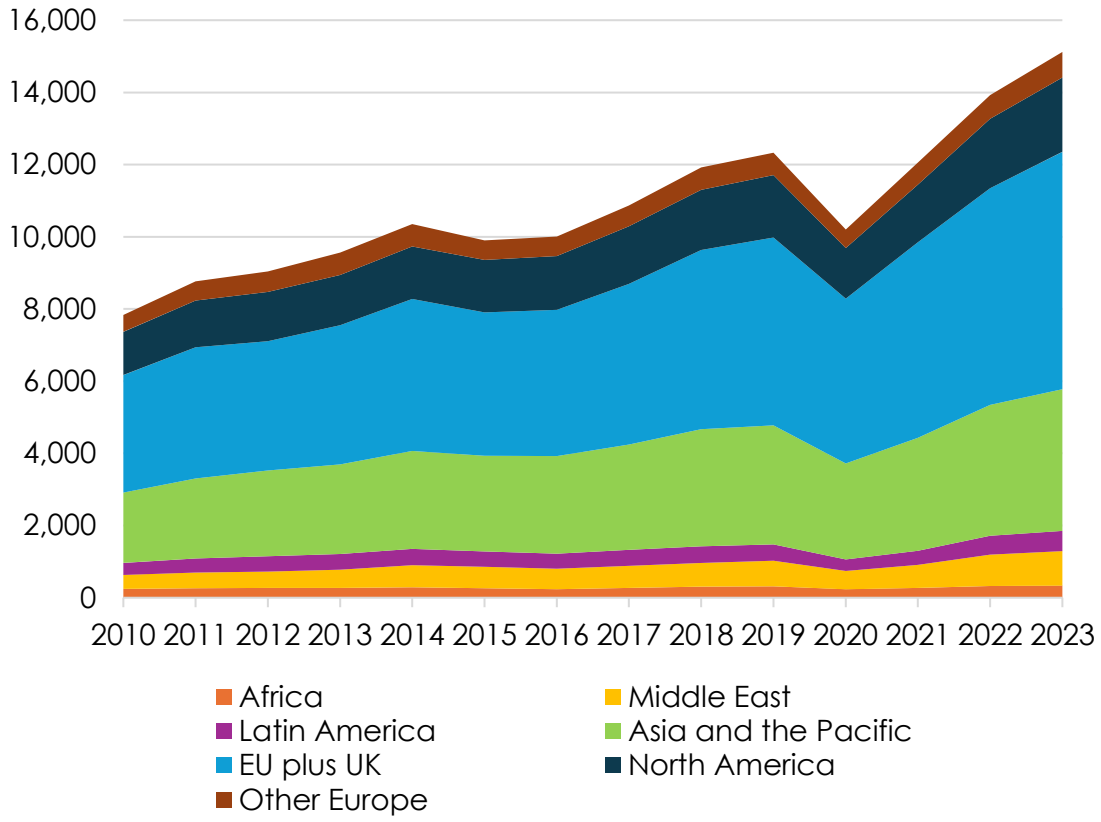




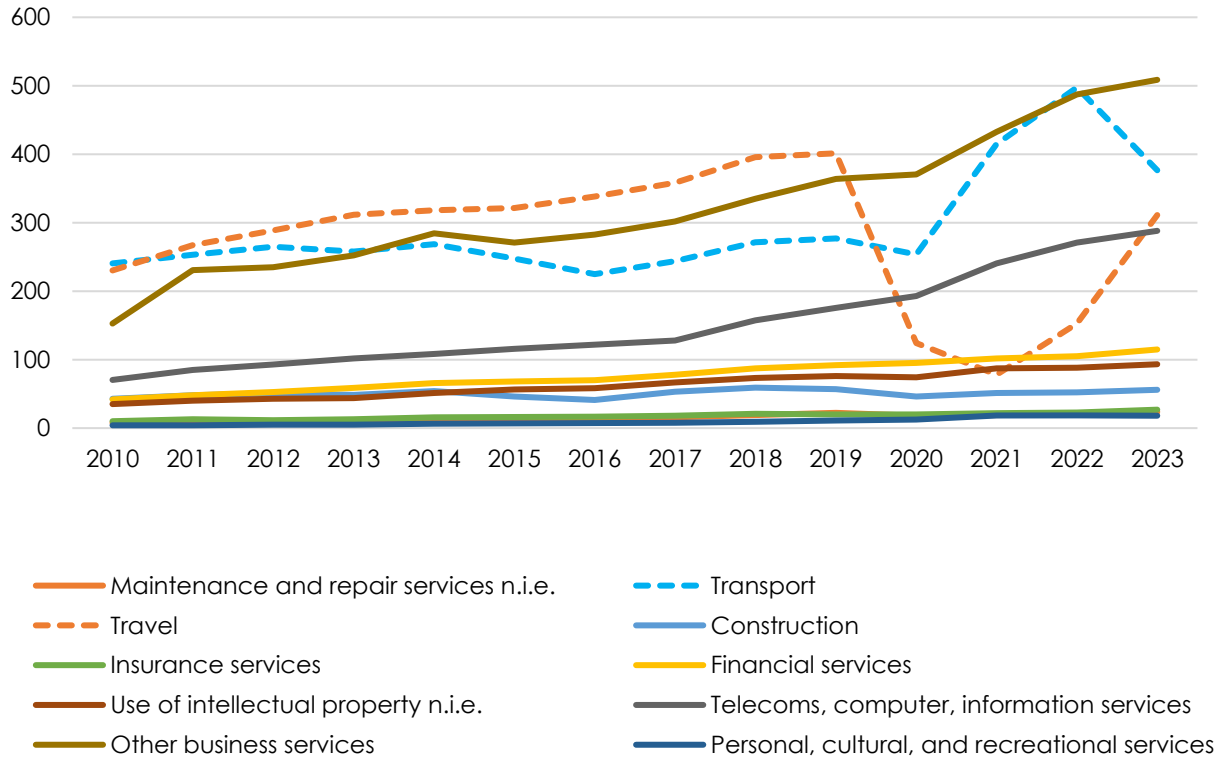
Source: ADB calculations based on Bureau van Dijk, ORBIS M&A and fDi Markets, August 2024.

Trade in Services in Asia and the Pacific continues to grow, especially financial and other business services (including BPO)

Trade in Services 2010-2023 ($ billion)



Services exports by sector, Asia and the Pacific ($ billion)



Source: ADB calculations using WTO-UNCTAD (accessed Aug. 2024).

Note: Solid lines denote digitally deliverable services, dotted lines are non-digitally deliverable service items.

Dualism in Services: Within Sectors (I)

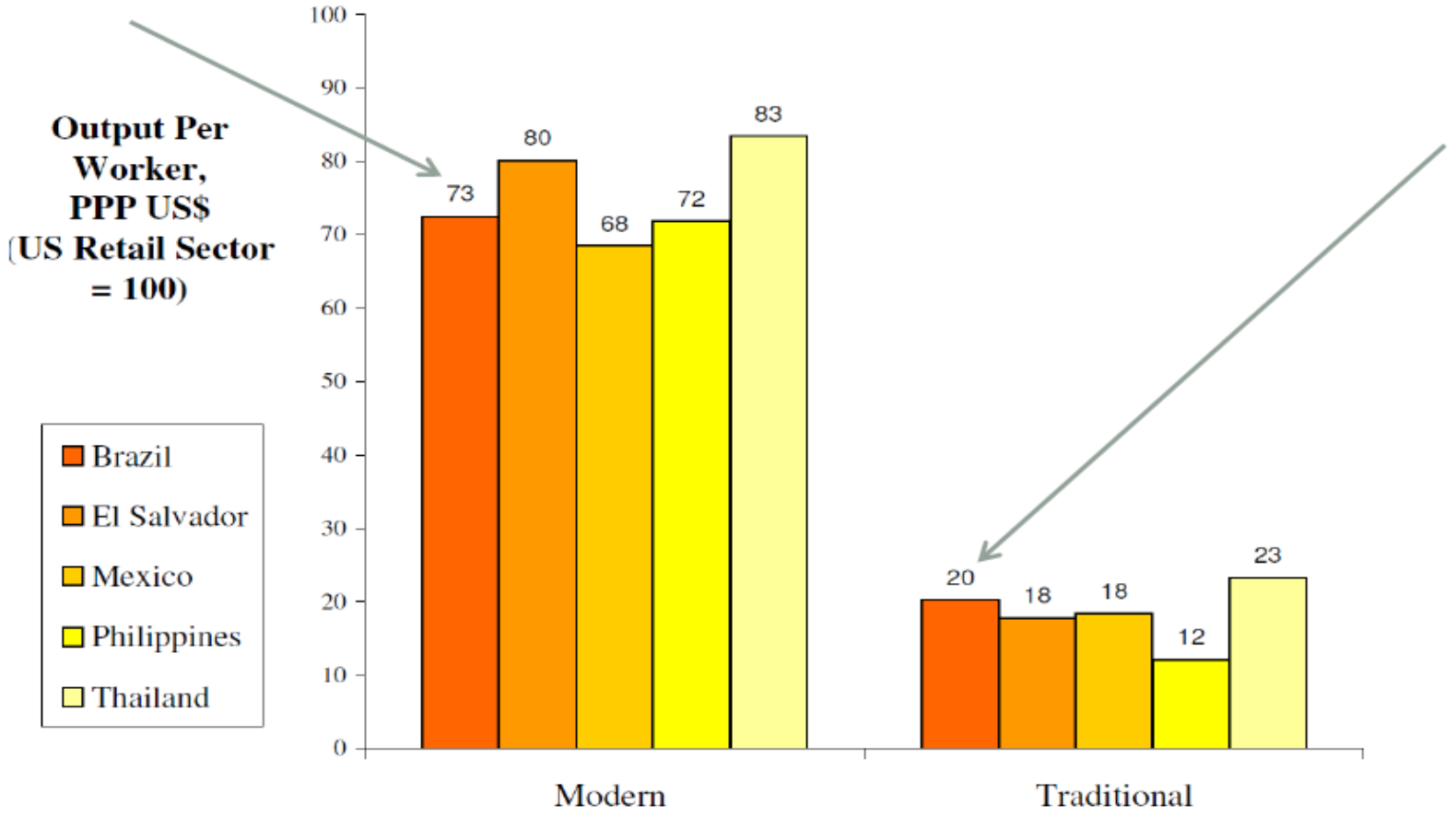
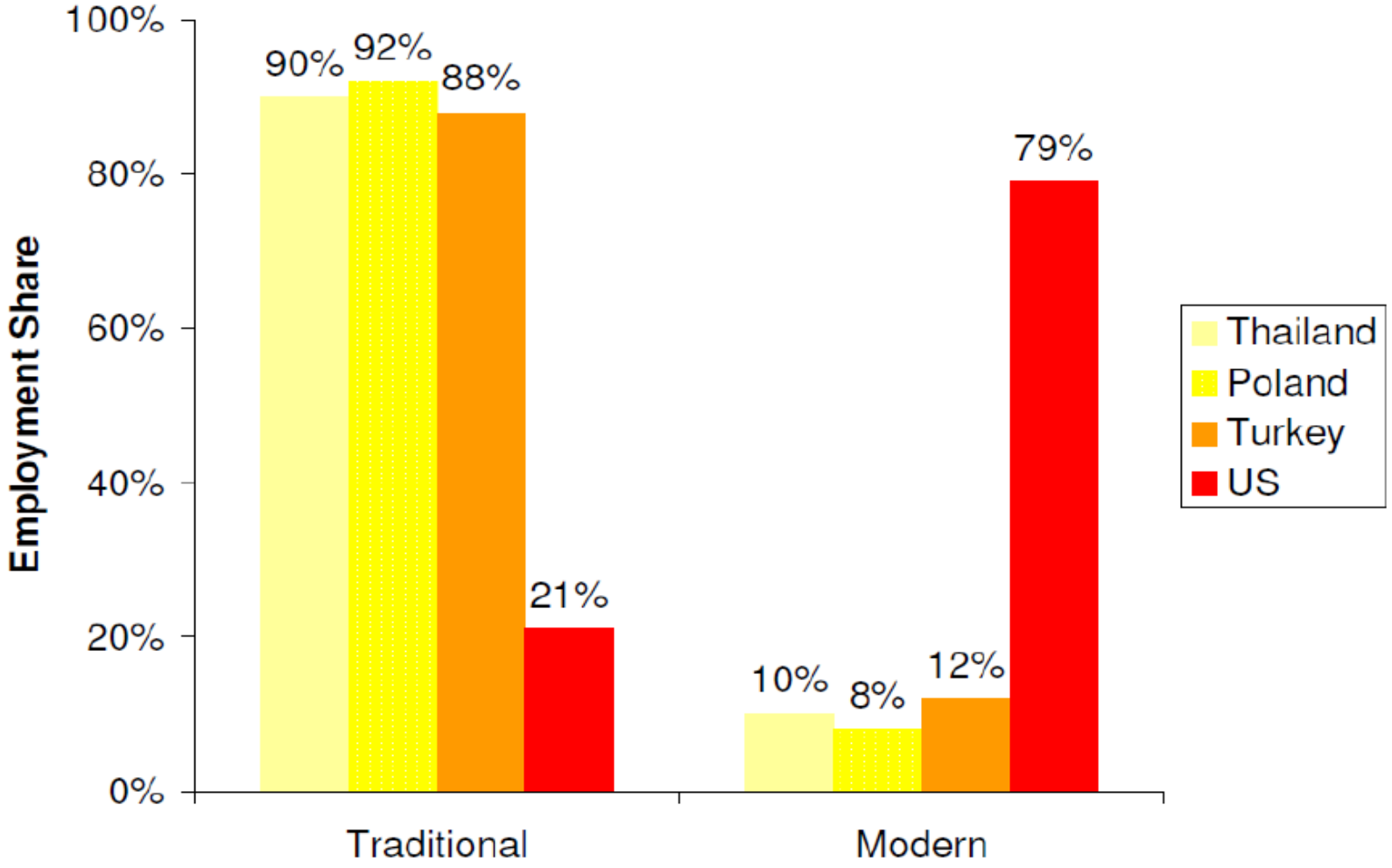


Figure 2: Labor Productivity in Modern and Traditional Stores

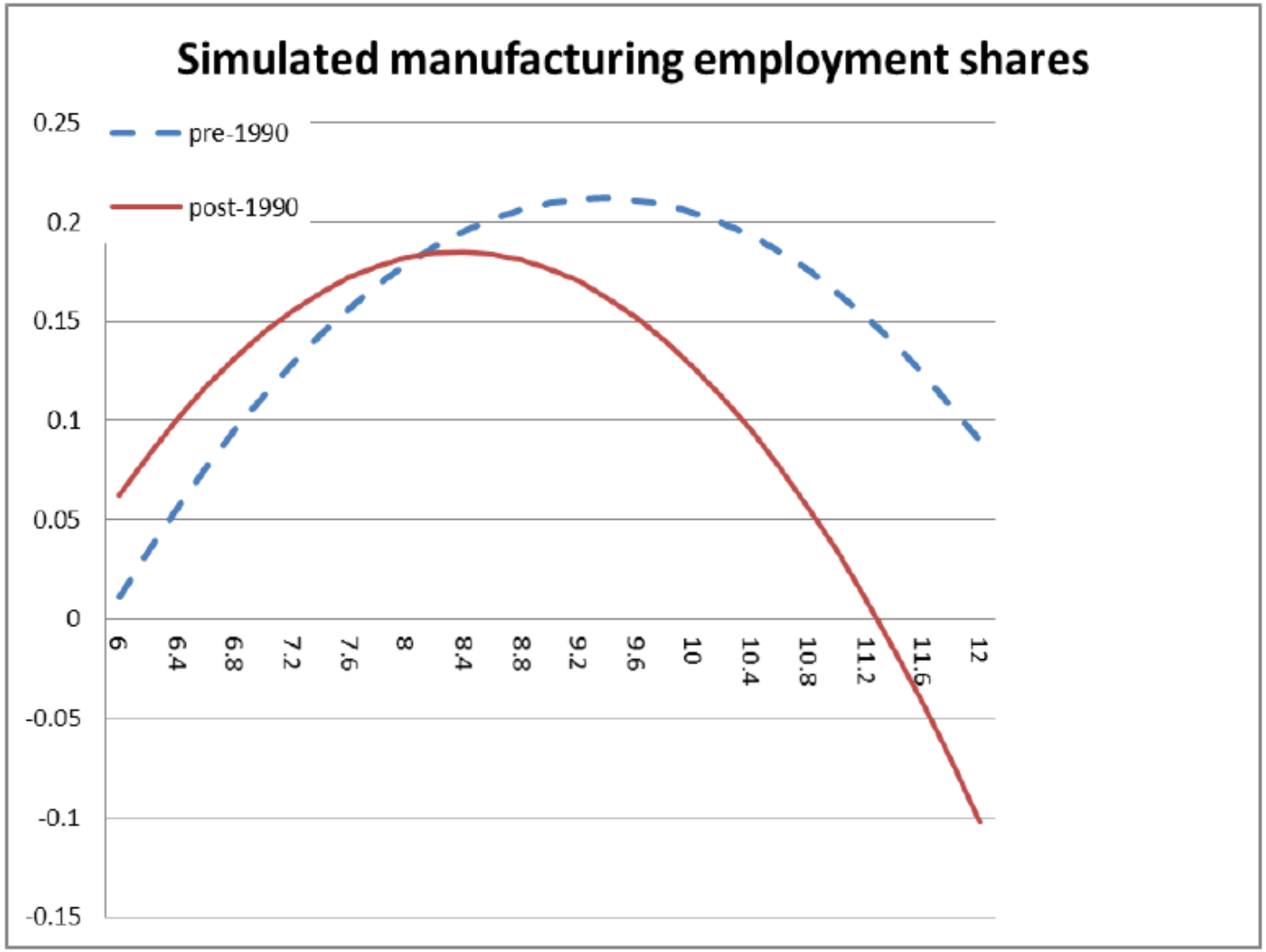
Source: McKinsey country studies, via Lagakos (2007)

Dualism in Services: Within Sectors (II)



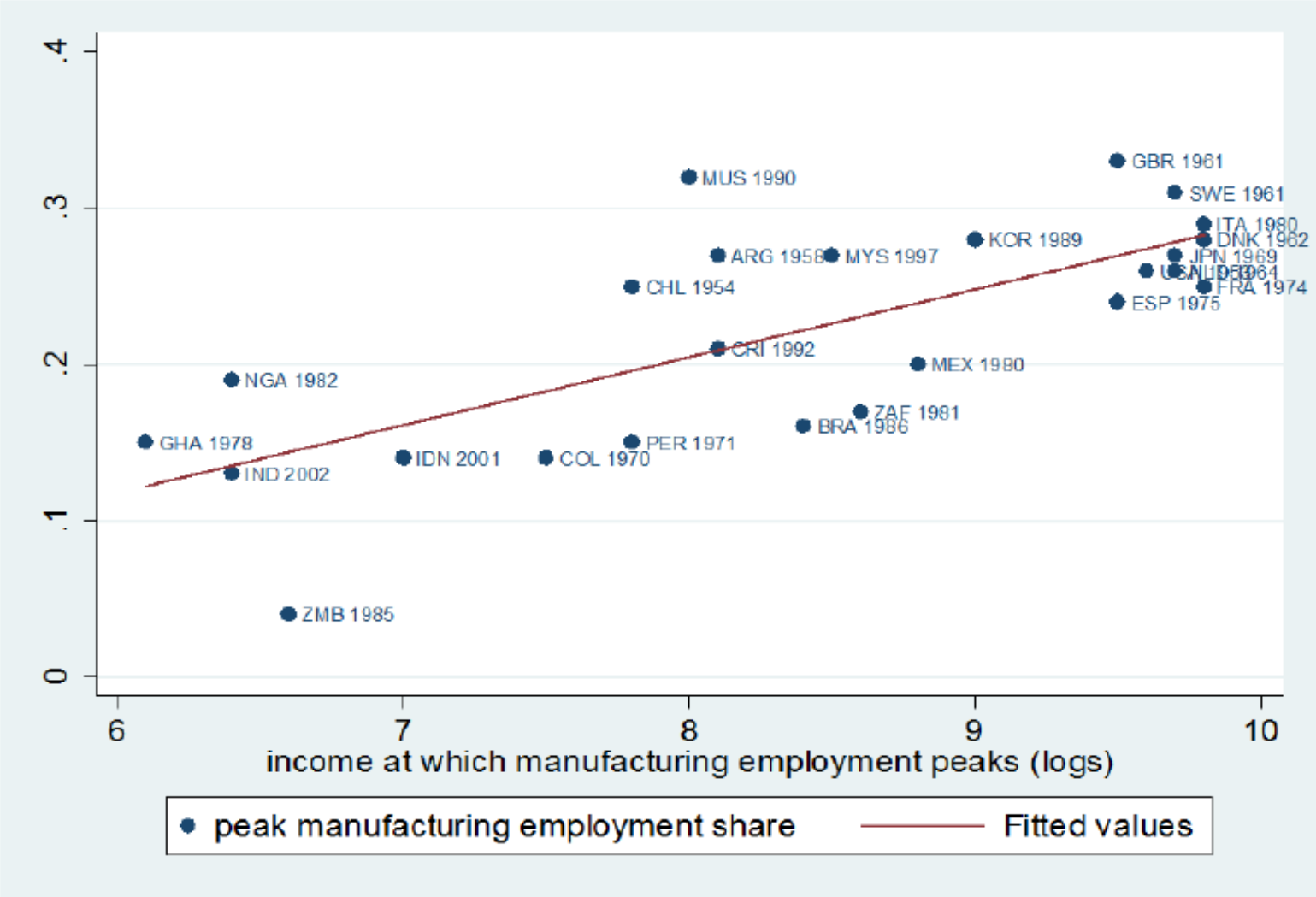
Source: McKinsey country studies, via Lagakos (2007)

Employment: Pre- and Post- 1990



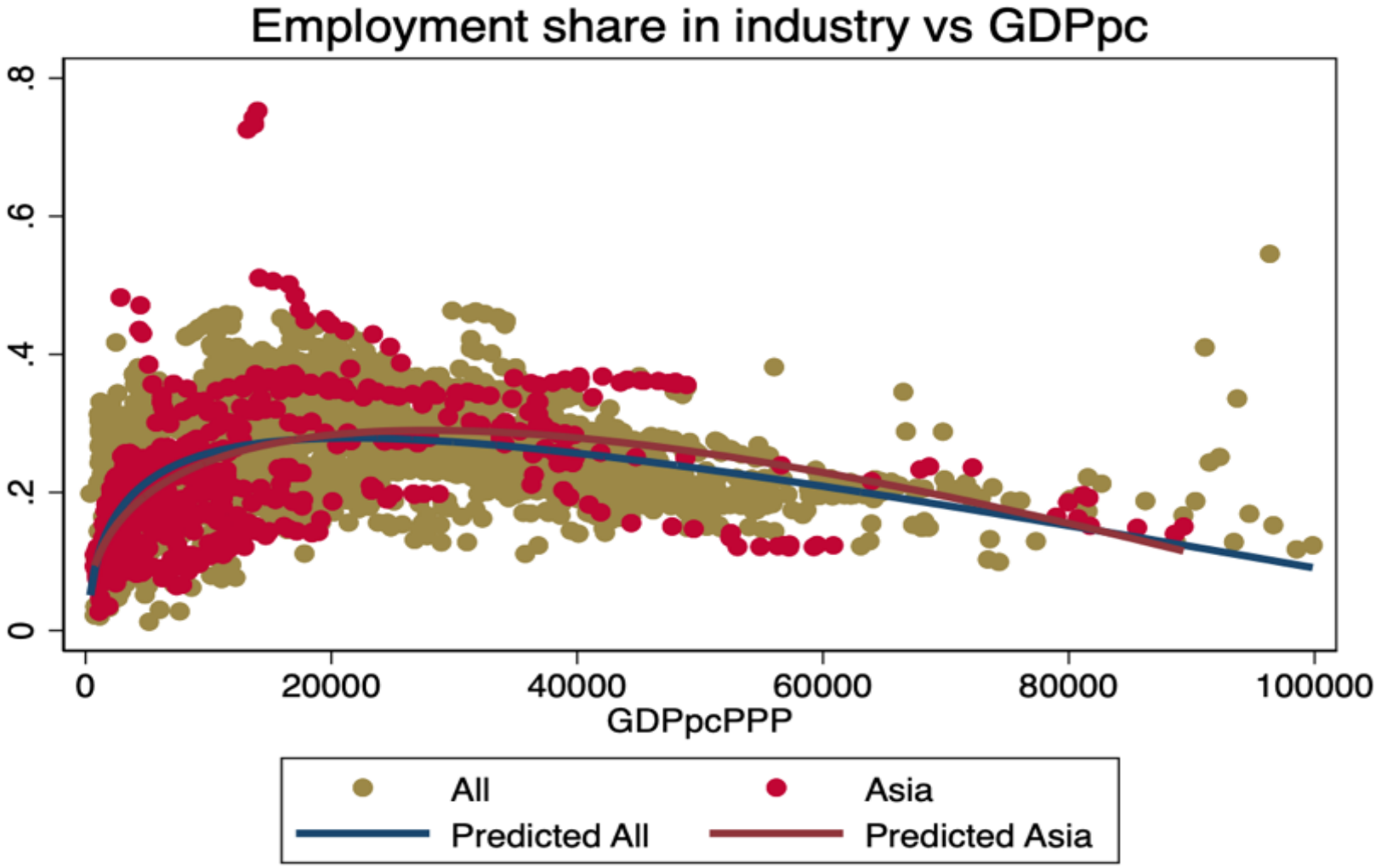
Source: Rodrik (2016)

Premature de-industrialization



Source: Rodrik (2016)

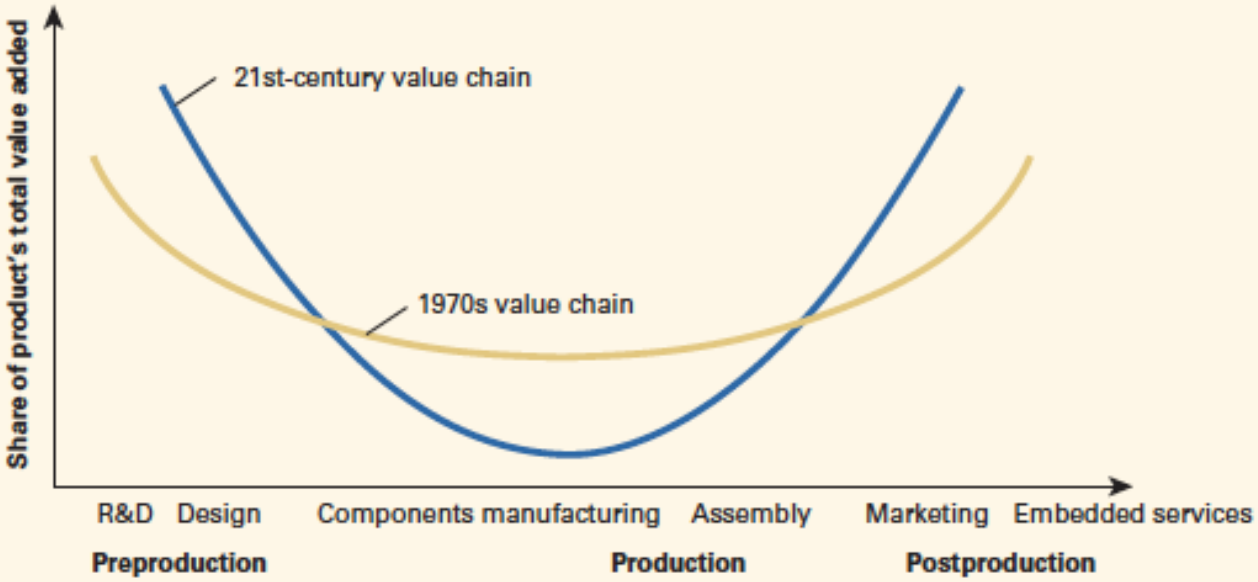
Employment Share in Industry vs GDPpc



Note: Data from ILO and PWT. Unbalanced panel of 150 economies, covering 1970-2019 for advanced economies and 1990-2019 for emerging economies
Source: Leon-Ledesma (2024), Structural Transformation and Productivity in Asia: an Overview. *Forthcoming*.

Manufacturing and Services are Increasingly Interlinked

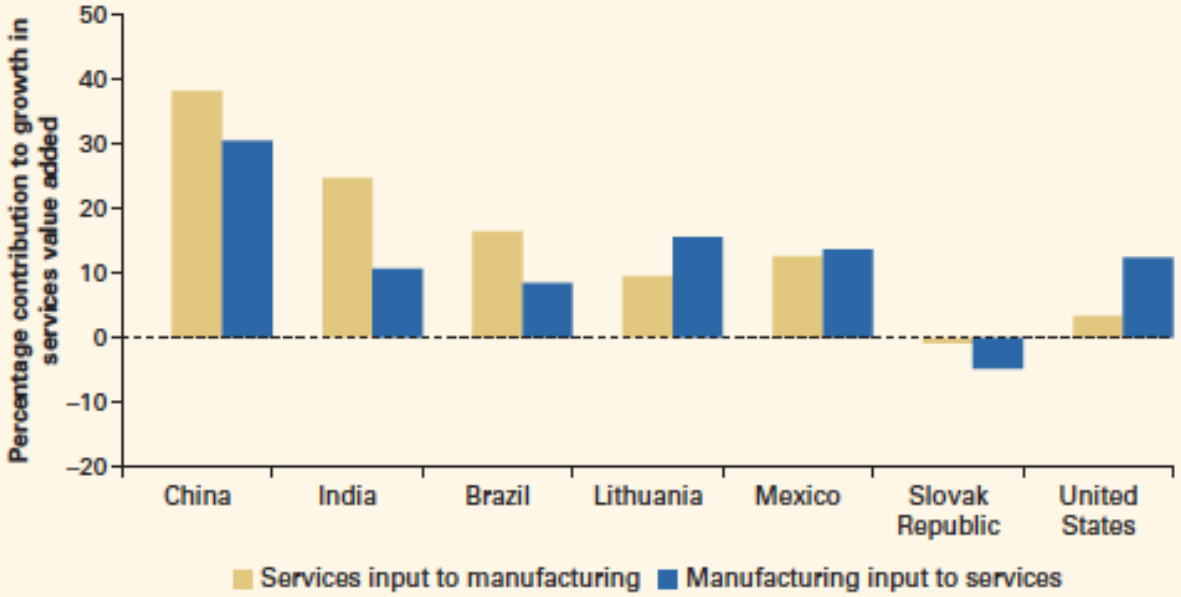
Figure 1.2 Value Added of Services in Manufacturing, 1970s versus 21st Century



Note: Figure adapts the "smile curve" depiction of how value added changes across different stages of bringing a manufactured product to market, as first proposed circa 1992 by Acer Inc. founder Stan Shih; for a more detailed discussion, see Baldwin (2012). R&D = research and development. "Embedded services" refers to services delivered through the manufactured good (for example, apps on a mobile phone).

Figure 5.2 Net Intermediate Demand from the Manufacturing Sector Accounted for a Fraction of Annual Growth in Services Value Added between 2000 and 2014, but This Hides the Fact That These Sectors Buy and Sell from Each Other

Contribution of intermediate demand from manufacturing to services and vice versa to growth in services value added, selected countries, 2000–14



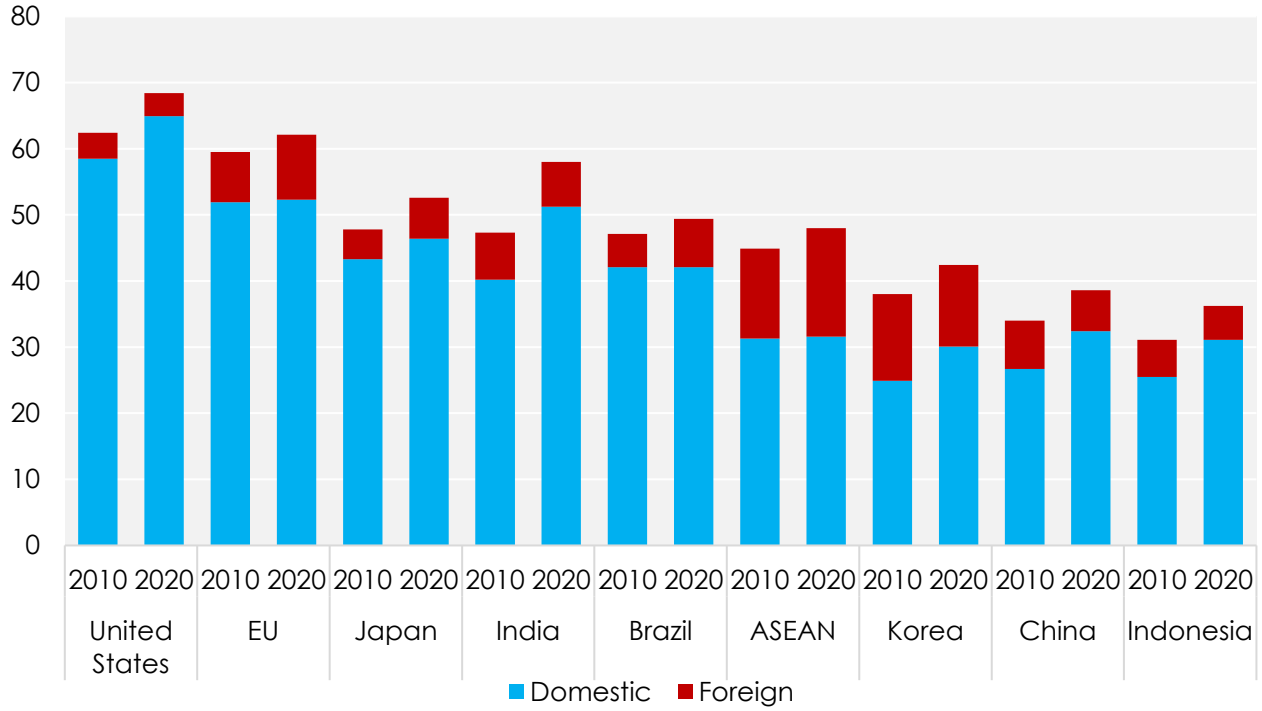
Source: Cruz and Nayyar 2017.
Note: "Net intermediate demand" captures both services input into manufacturing and manufacturing input into services.

Source: Hallward Driemeier and Nayyer (2018)

Services trade is associated with higher GVC participation and productivity growth

Services play a significant role in GVCs by reducing costs, enhancing innovation and product customization

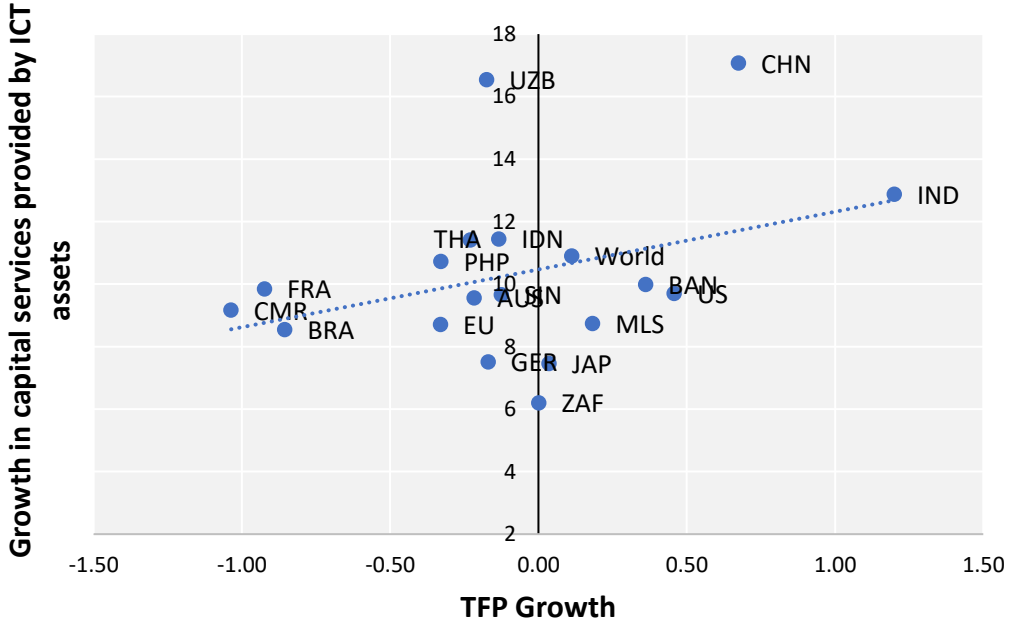
Domestic and Foreign Services content in gross exports, 2010 vs 2020



Source: ADB, on the basis of OECD Trade in Value Added database and ADB MRIO tables, August 2024

Access to quality services can have spillovers for productivity by enhancing efficiency and knowledge

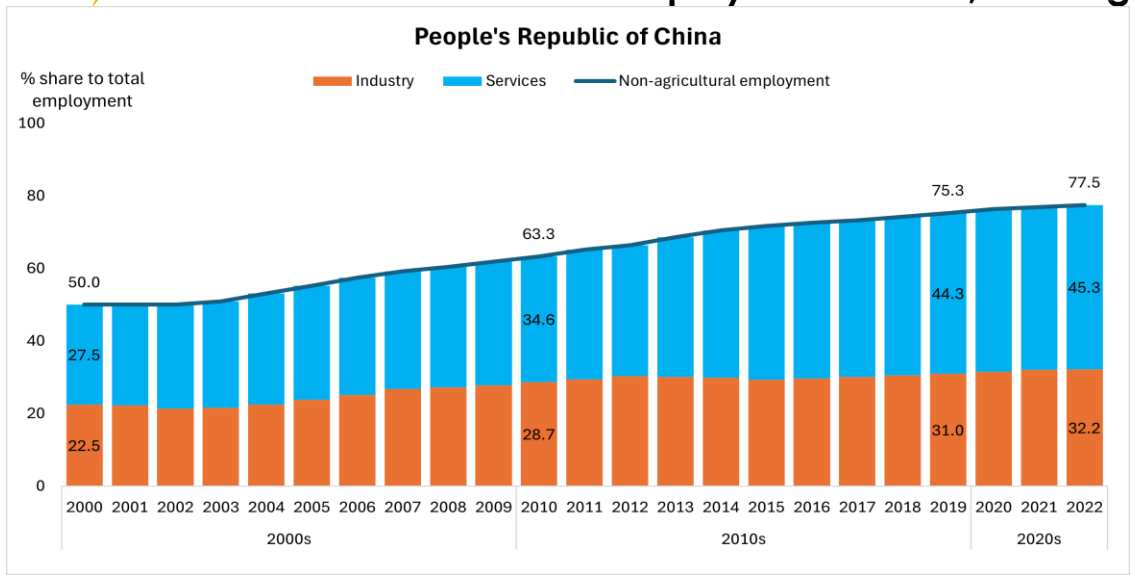
TFP growth and Growth in Capital Services provided by ICT assets

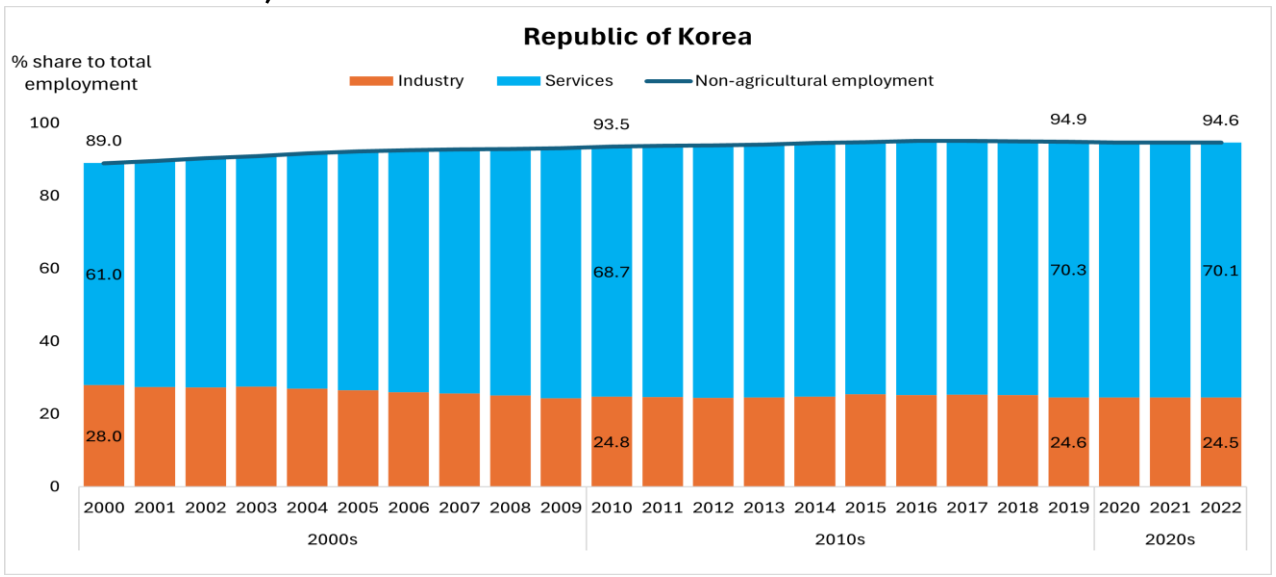


Source: ADB, on the basis of Total Economy Database, the Conference Board, Sep. 2024

Employment Shares (PRC and ROK)

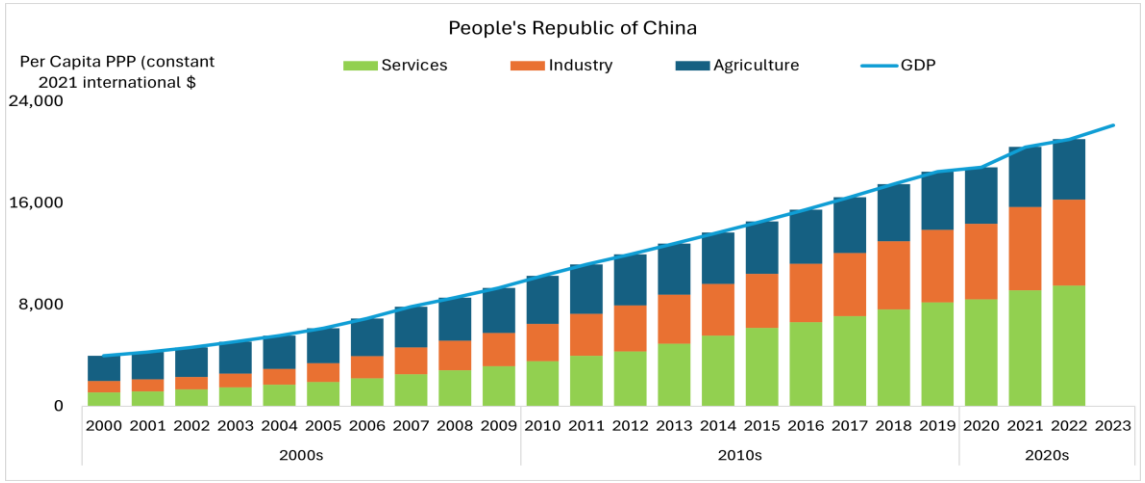
Employment Shares, Non-Agricultural Sector, selected economies

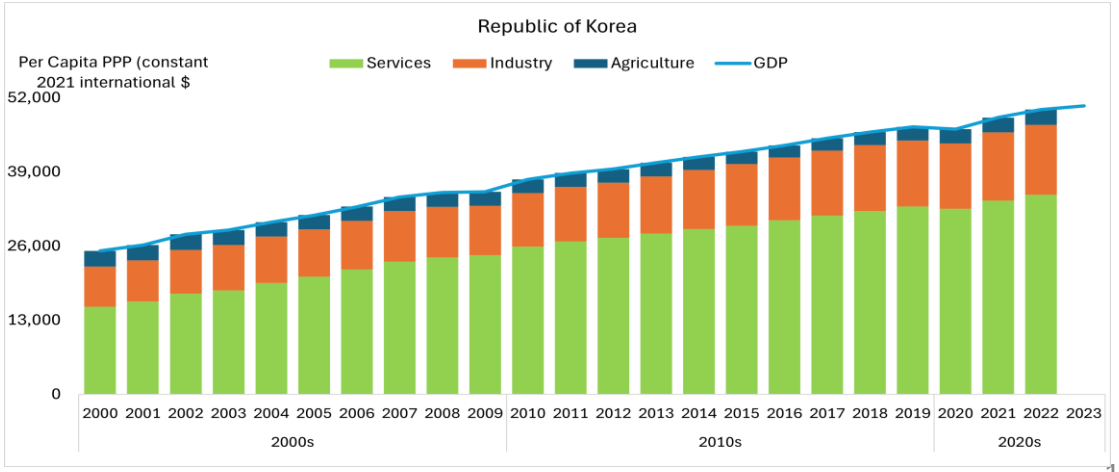




Source: International Monetary Fund, World Development Indicators; Haver Analytics (13 September 2024).

GDP Per Capita, PPP (constant 2021 international $), by sector

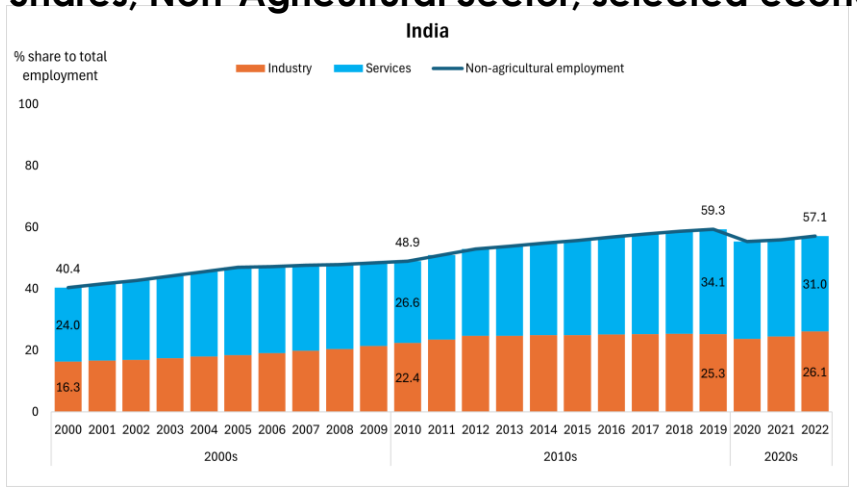




Source: Haver Analytics; World Bank. Available: https://data.worldbank.org/ (14 September 2024).

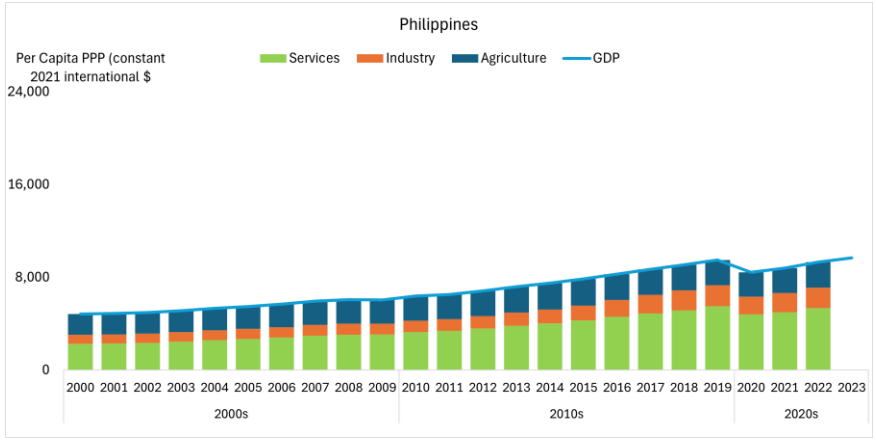
Employment Shares (PHI, IND, and INO)

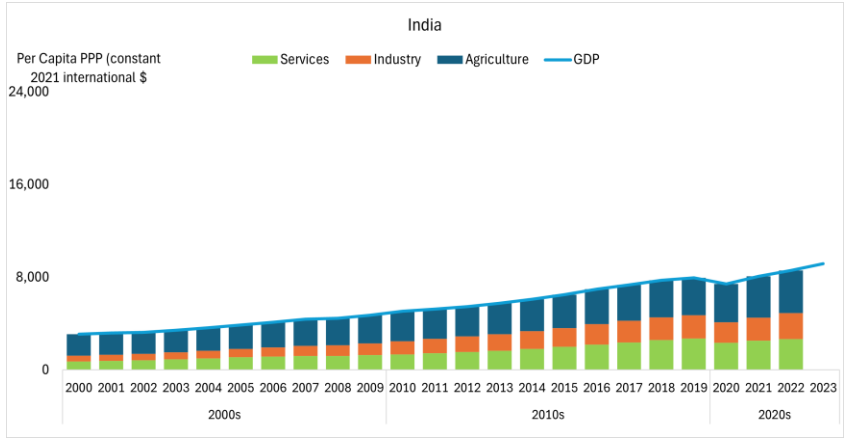
Employment Shares, Non-Agricultural Sector, selected economies

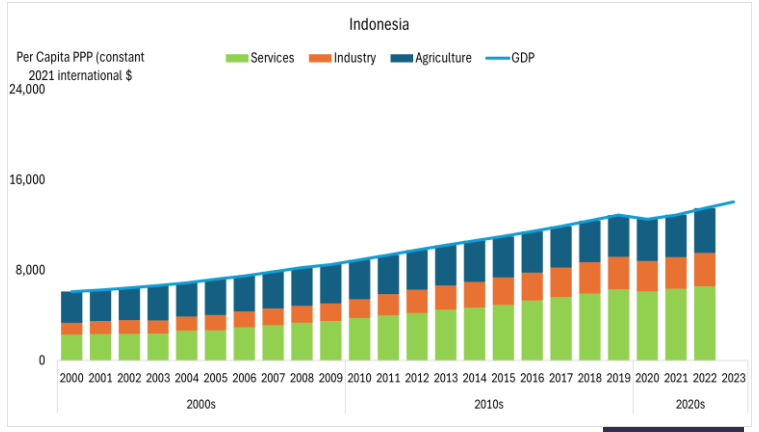


Source: International Monetary Fund, World Development Indicators; Haver Analytics (13 September 2024).

GDP Per Capita, PPP (constant 2021 international $), by sector

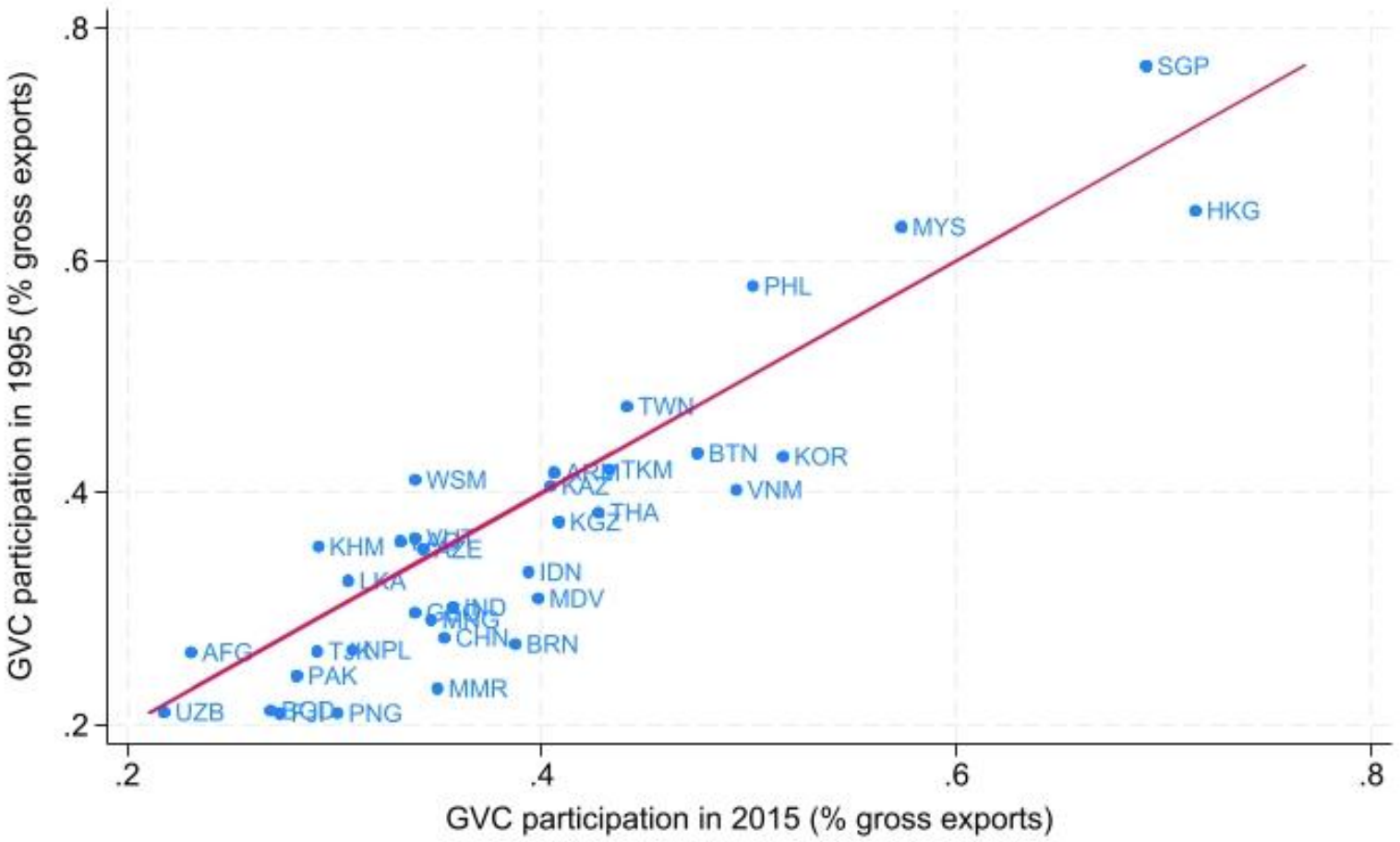




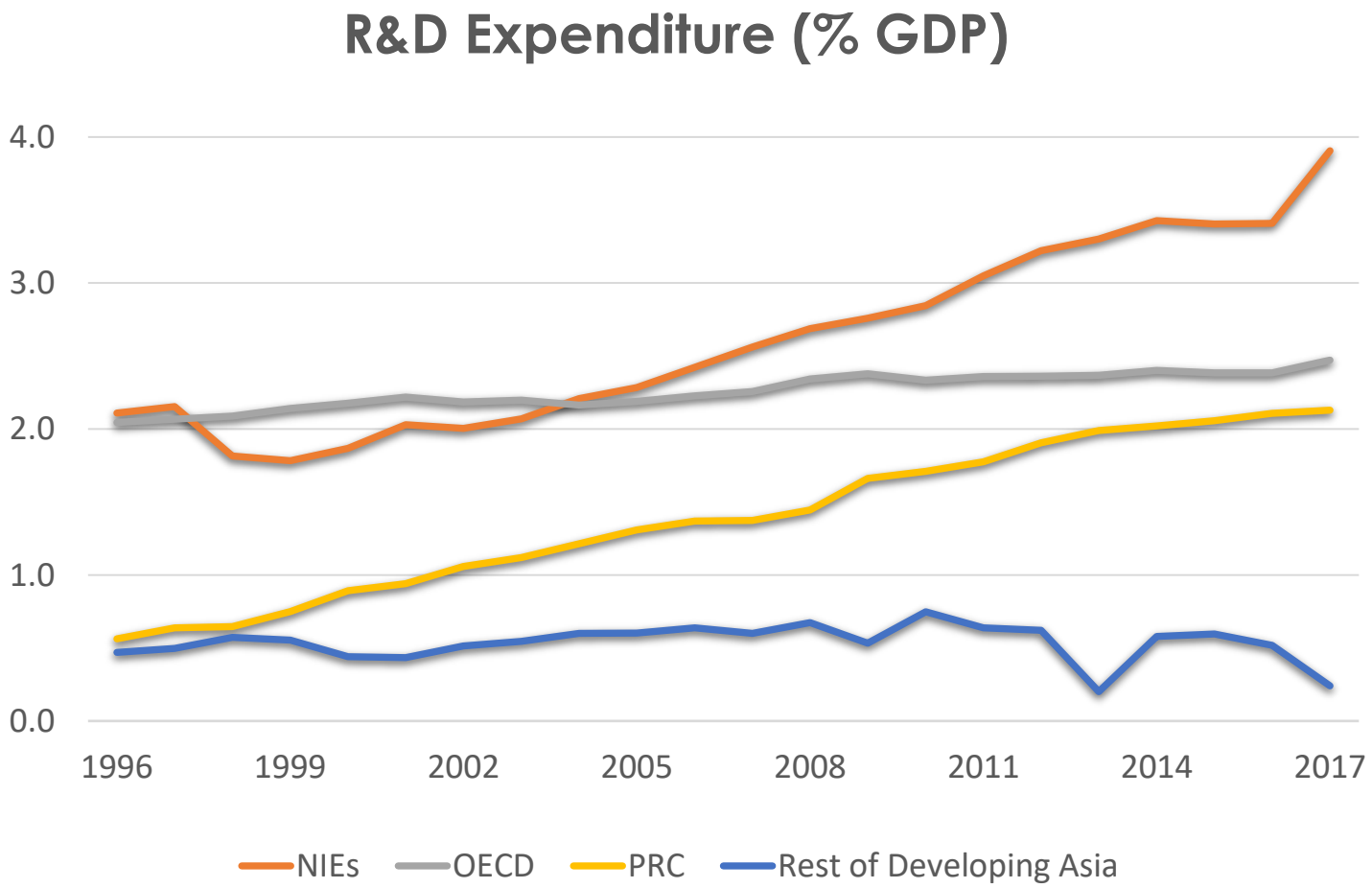


Source: Haver Analytics; World Bank. Available: https://data.worldbank.org/ (14 September 2024).

GVC participation is also increasing for most ADB economies

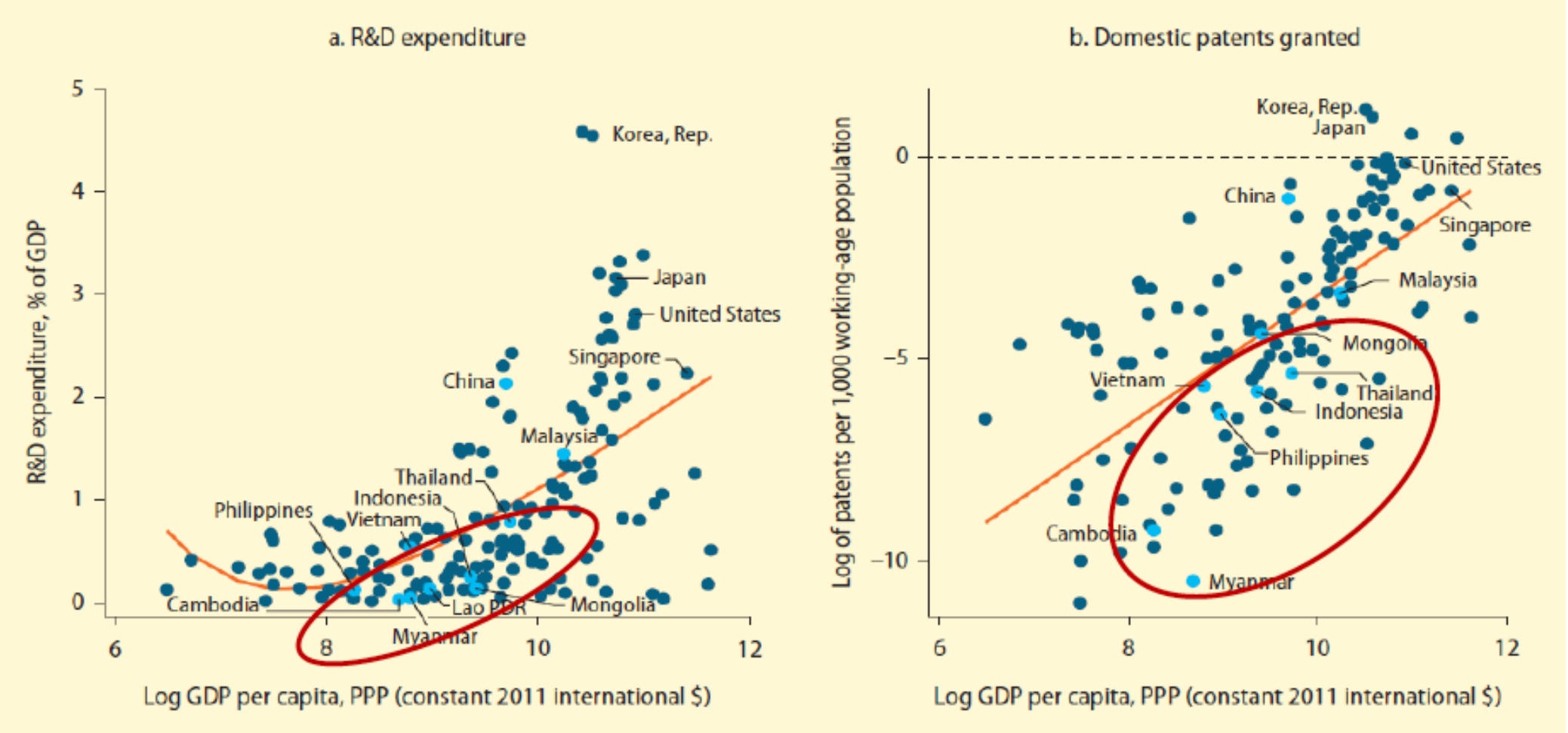


Some Asian economies are rapidly closing the innovation gap … but many others lag behind



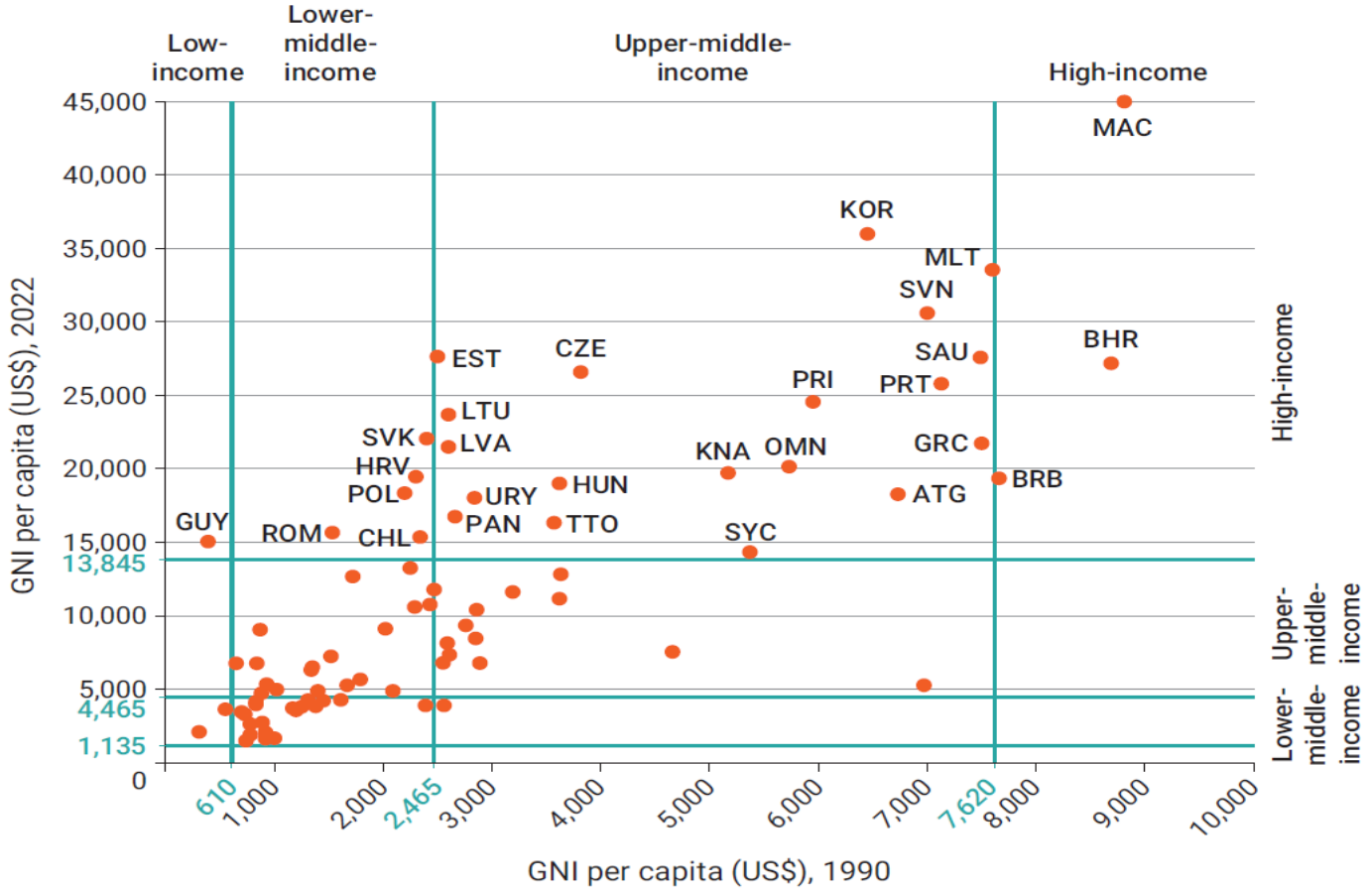
Source: Asian Development Outlook 2020: What Drives Innovation in Asia?

Most countries in Asia perform below predicted levels of innovation



Source: World Bank, *The Innovation Imperative for Developing Asia*, 2021.

A handful of economies have transitioned from middle-income to high-income status over the last three decades



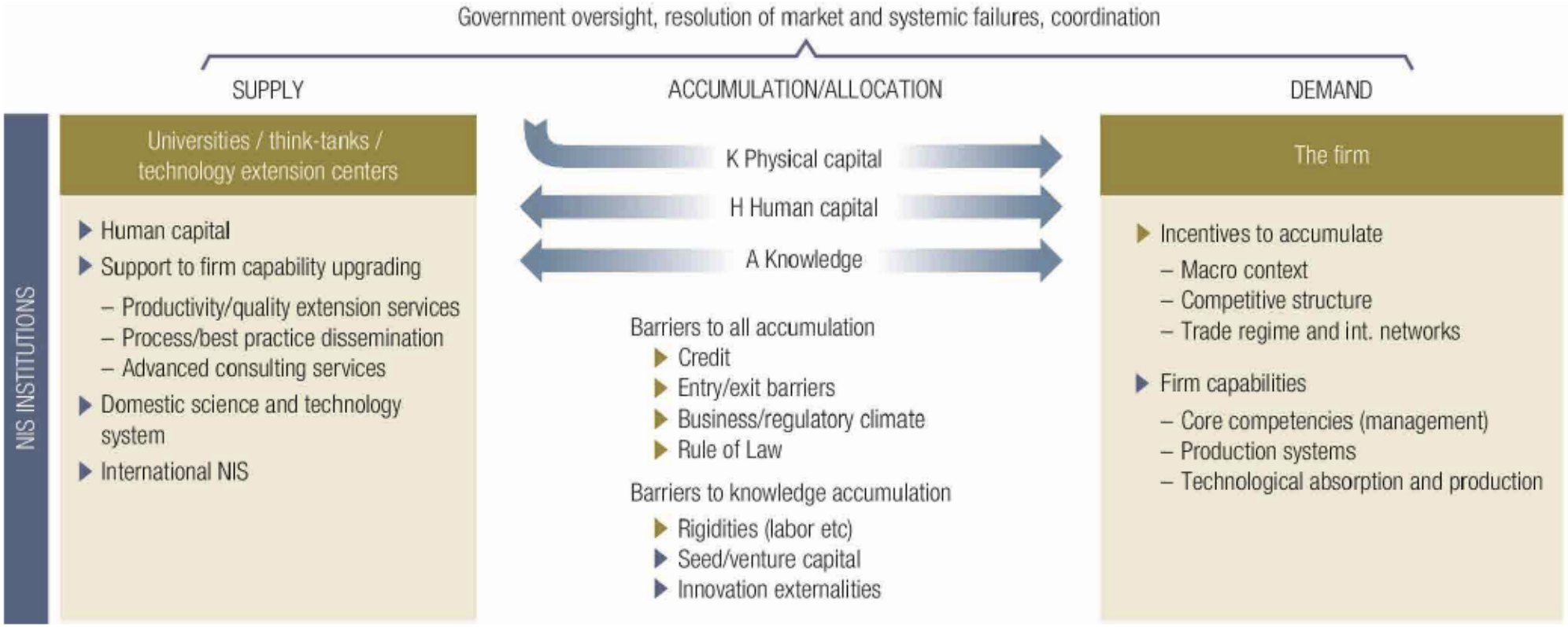
Source: WDR 2024 team using WDI (World Development Indicators) (Data Catalog), World Bank, Washington, DC, https://datacatalog.worldbank.org/search/dataset/0037712.

Note: Each scatter point indicates an economy's 1990 and 2022 gross national income (GNI) per capita in current US dollar terms (using the World Bank Atlas method). The blue vertical lines show thresholds to transition to lower-middle-income status, upper-middle-income status, and high-income status in 1990 (US$610, US$2,465, and US$7,620, respectively), while the blue horizontal lines show these thresholds in 2022 (US$1,135, US$4,465, and US$13,845, respectively) based on the World Bank income classifications (https://datahelpdesk.worldbank.org/knowledgebase/articles/906519-world-bank-country -and-lending-groups). The figure includes only economies at middle-income levels in 1990. For legibility, only economies that have transitioned to high-income status since 1990 are labeled (1990 data were unavailable for six economies).

Innovation Paradox: returns to innovation investment depends on complementary factors

The Expanded National Innovation System

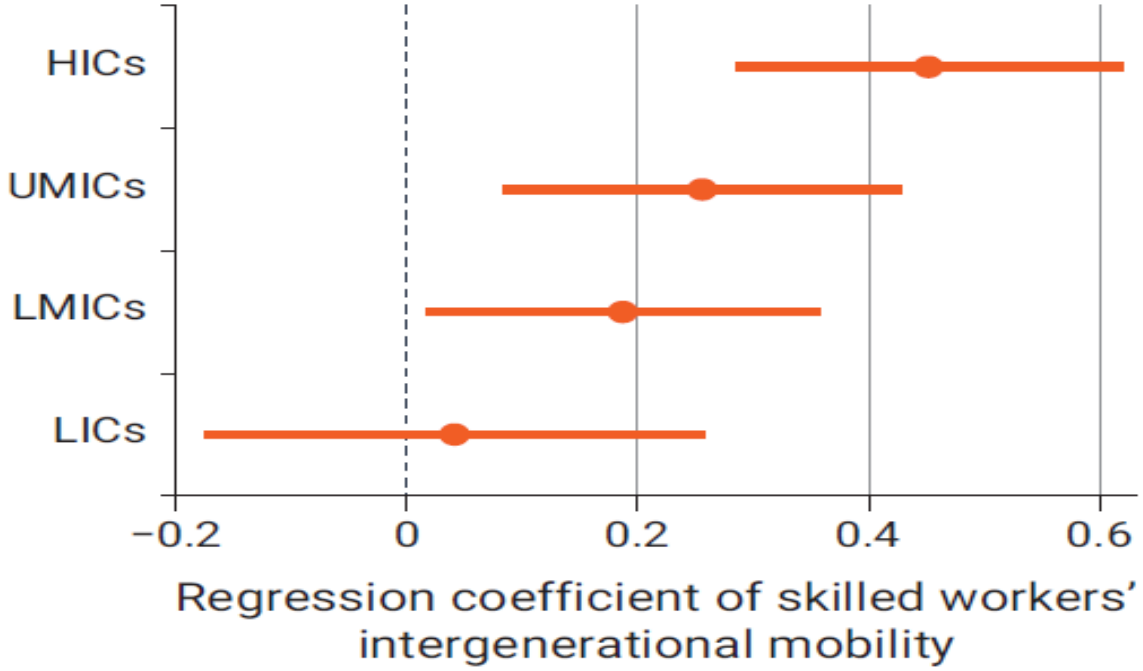
Integrated approach to innovation-maps to EFI



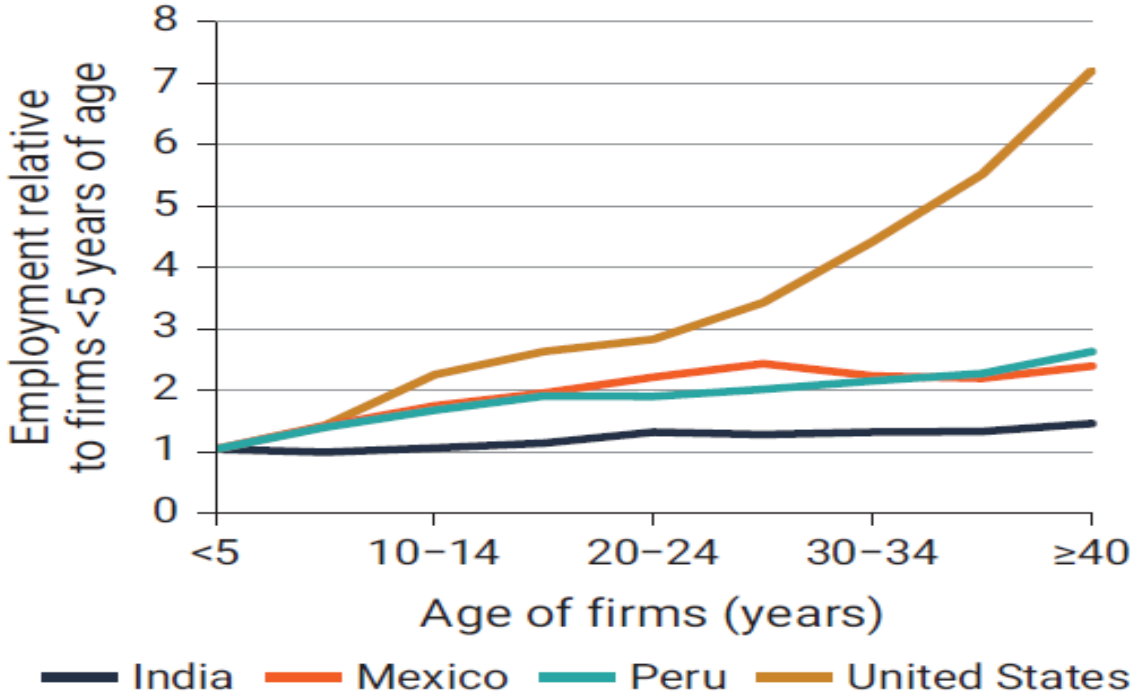
Source: World Bank, *Innovation Paradox*, 2017.

Creation is a weak force in middle-income countries, where it is characterized by a rampant misallocation of resources

b. Intergenerational mobility matters more for skill development in middle-income countries than in low-income countries



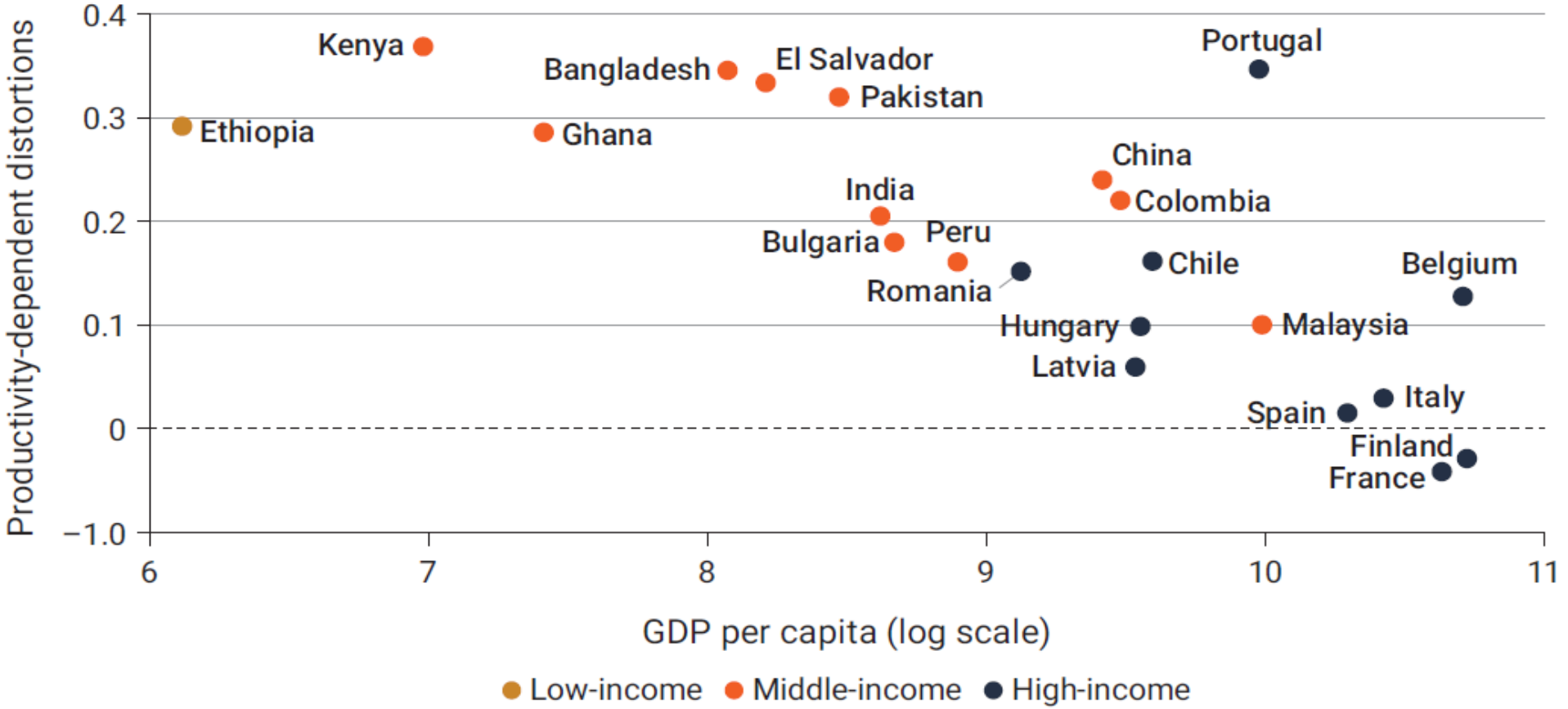
c. "Flat and stay" versus "up or out": Efficient firms do not expand, and inefficient firms do not exit the market in India, Mexico, and Peru



Sources: Panel b: WDR 2024 team estimates based on Global Database on Intergenerational Mobility, World Bank, Washington, DC, https://datacatalog.worldbank.org/search/dataset/0050771/global-database-on-intergenerational-mobility. Panel c: India, Mexico, and the United States: Hsieh and Klenow 2014; Peru: World Bank 2015.

Note: Panel b plots regression coefficients of intergenerational mobility (which is equal to 1 minus the intergenerational relative mobility) for different country groups at the 95 percent confidence interval. The dependent variable in the regression is the share of skilled workers ("Legislators, sr. officials, managers"; "Professionals"; "Technicians and associate professionals"). The regression controls for the log of GDP per capita when the 1980s birth cohort was growing up. Intergenerational] mobility estimates are for educational mobility of the 1980s cohort from the World Bank's GDIM. HICs = high-income countries; LICs = low-income countries; LMICs = lower-middle-income countries; UMICs = upper-middle-income countries. Panel c illustrates the average employment across a cohort of firms of different ages in the cross-section of firms. The number of employees serves as a proxy for firm size. The y-axis axis reports the average employment of each cohort relative to the average employment across firms under five years of age.

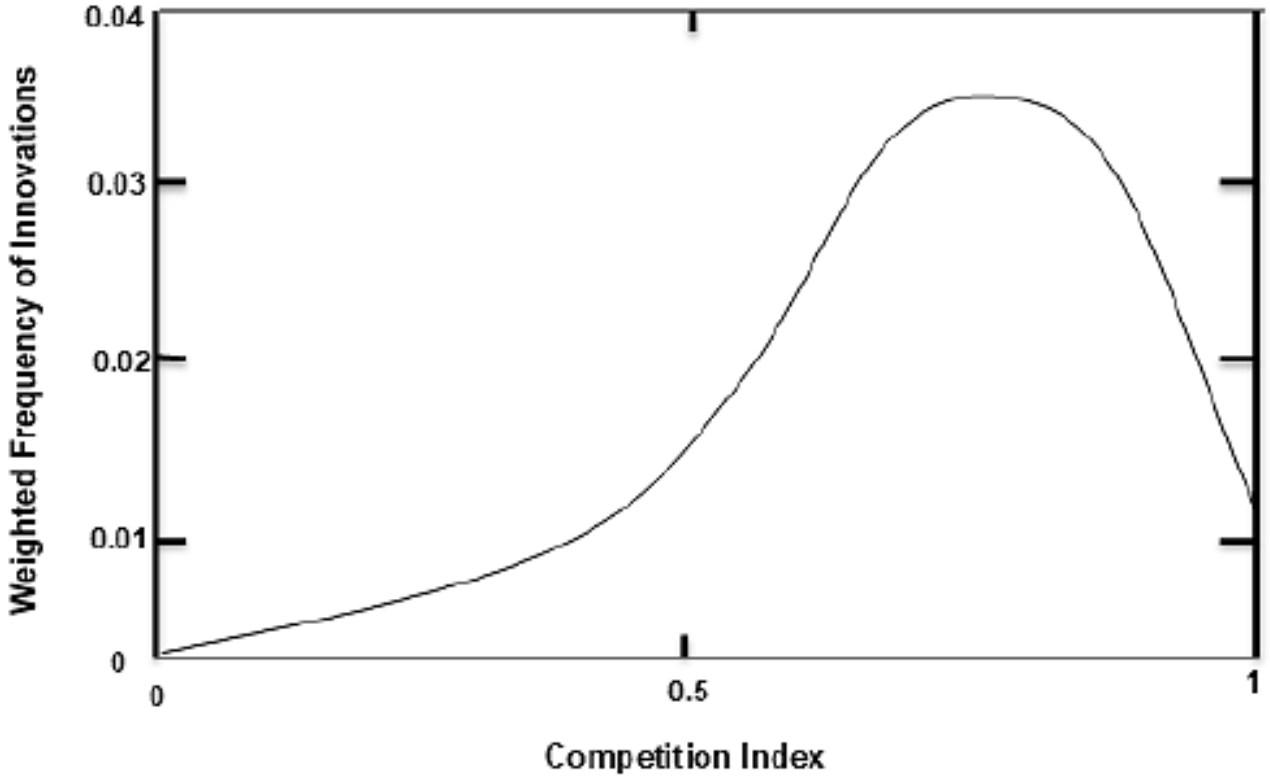
Productivity-dependent distortions are more severe in low- and middle-income countries



Sources: Productivity-dependent distortions: WDR 2024 team calculations and Fattal Jaef (2022). Gross domestic product (GDP) per capita: PWT (Penn World Table) (database version 9.0), Groningen Growth and Development Centre, Faculty of Economics and Business, University of Groningen, Groningen, the Netherlands, https://www.rug.nl/ggdc/productivity/pwt/pwt-releases/pwt9.0?lang=en.

Note: The figure reports the estimates of a regression coefficient between the logarithm of idiosyncratic distortions and the logarithm of idiosyncratic physical productivity across firms, both computed as in Hsieh and Klenow (2009). The corresponding estimate for the United States is subtracted from each country's estimate so that productivity-dependent distortions are reported relative to the level observed in the United States. A high value for this elasticity means that a productive firm confronts higher distortions than less productive ones, and thus there is a weaker relationship between firm productivity and firm size than the output-maximizing allocation would require.

Inverse-U Shape Relationship between Competition and Innovation



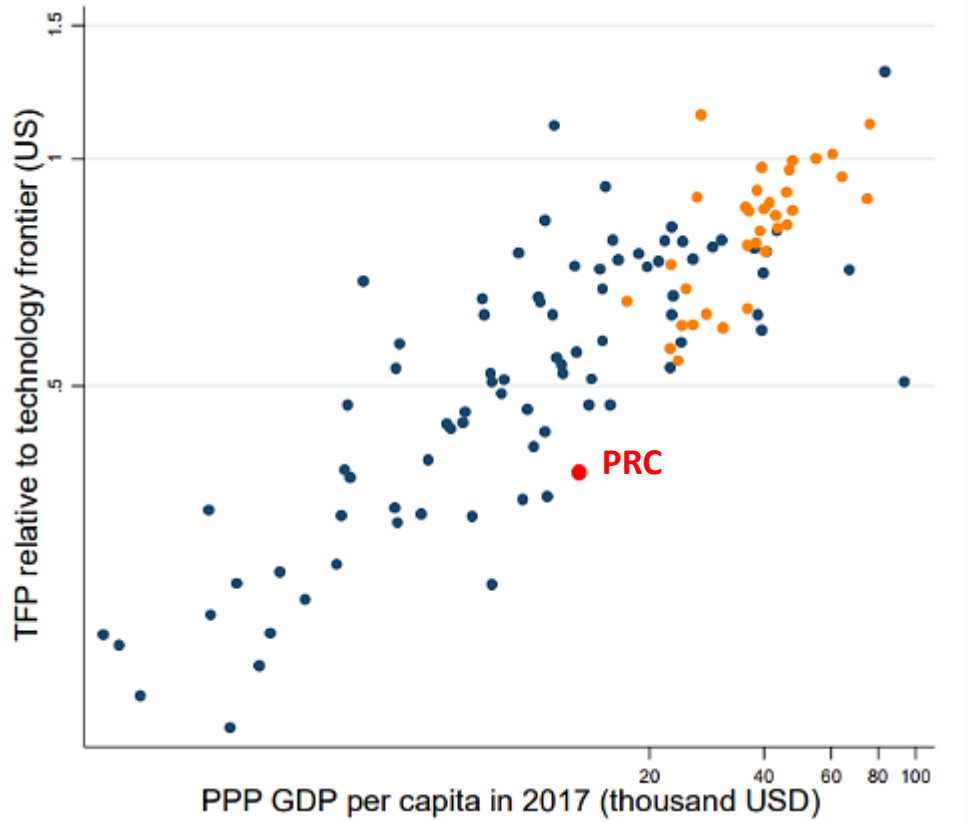
Source: Aghion et al. 2005. Competition and Innovation: An Inverted-U Relationship. *The Quarterly Journal of Economics* 120 (2): 701-28.

- Empirically, competition tends to increase innovation in South America, Asia, and Europe (Shu and Steinwender, 2019)

Lessons from the People's Republic of China: Competition, NOT Industrial Policy Matters

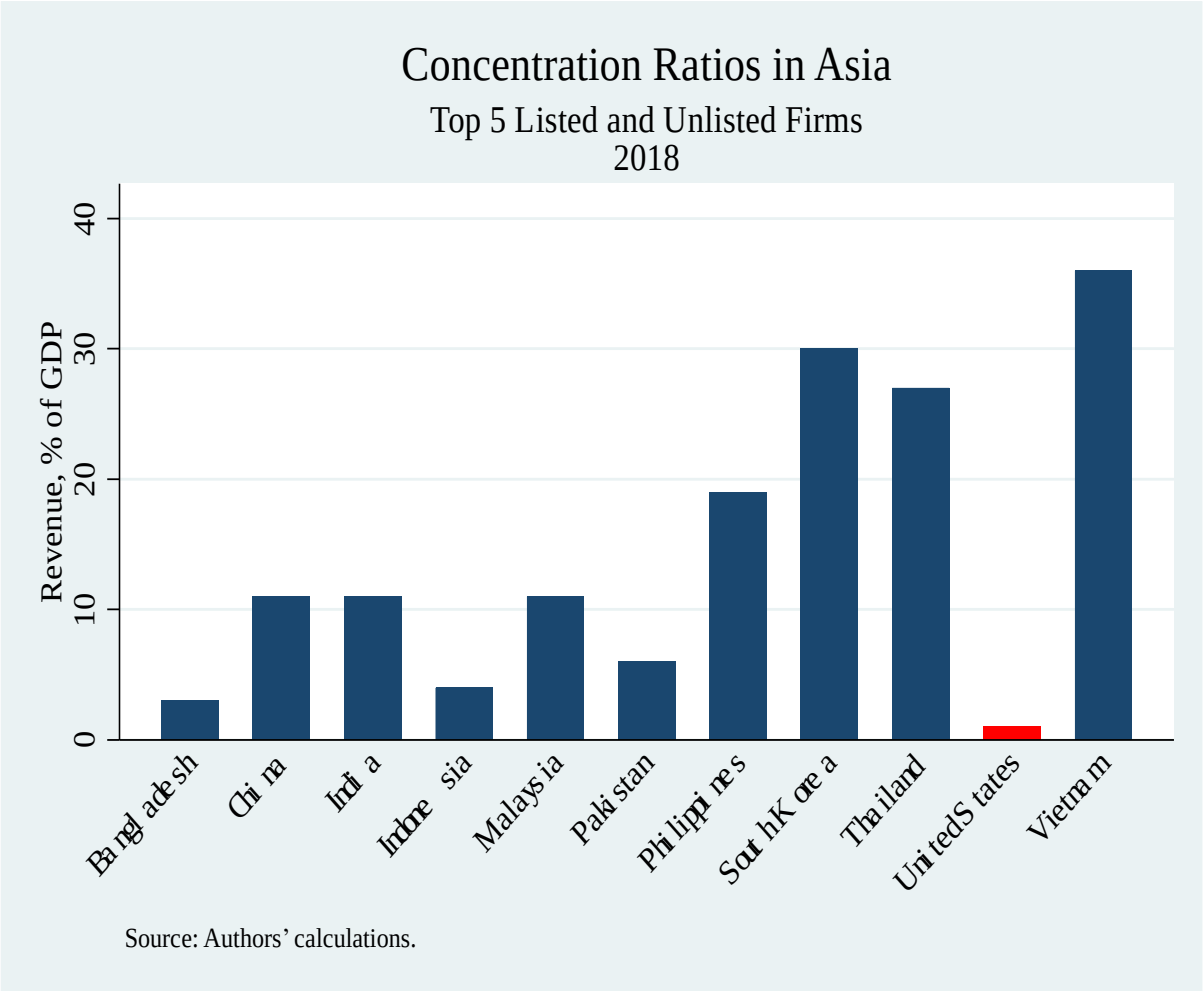
Decomposition of annual TFP growth in manufacturing, 1998–2013
(% per year)

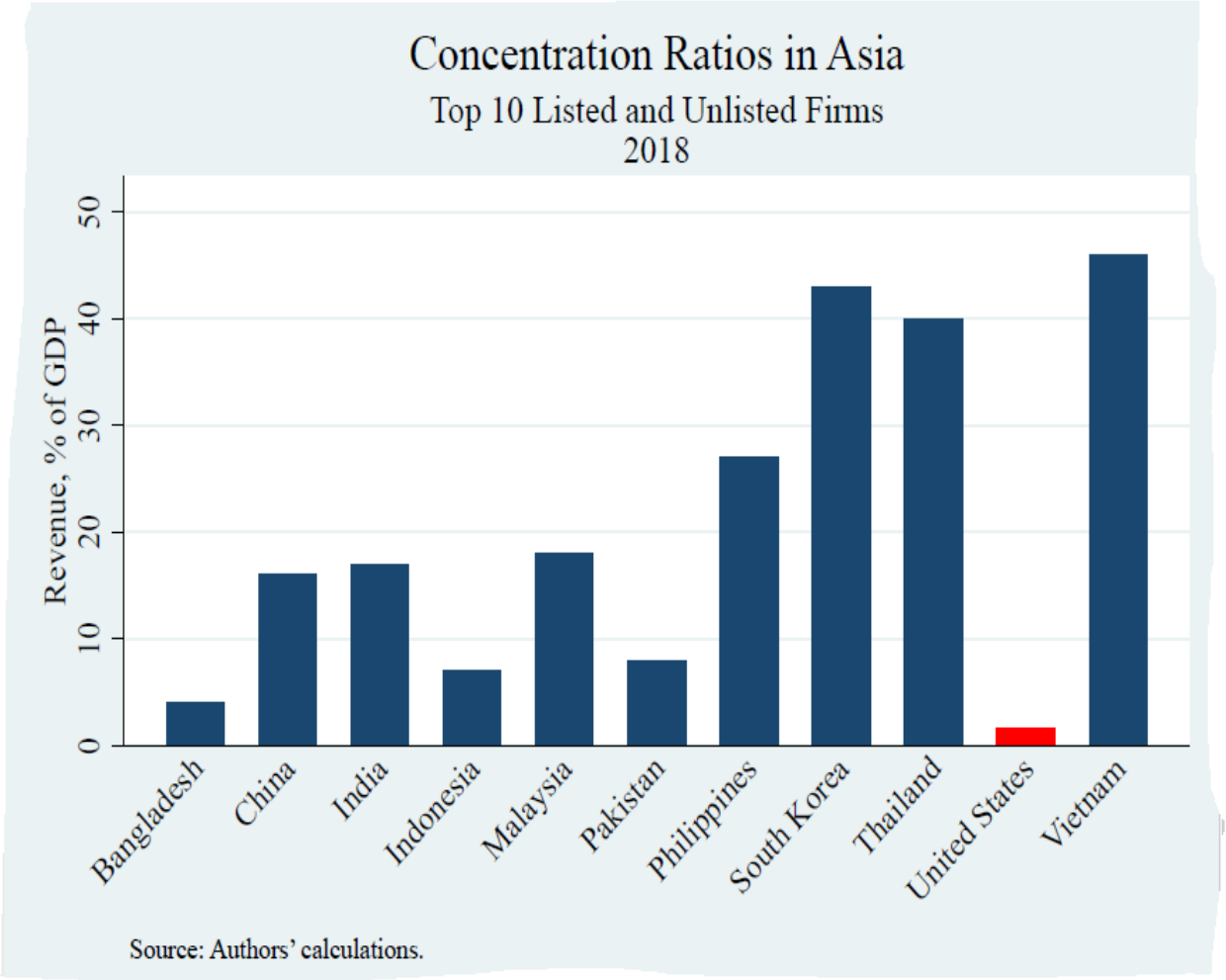
PRC's TFP relative to the global technology frontier, 2017
(both axes in log scale)



Source: Brandt et al. 2020. China's Productivity Slowdown and Future Growth Potential. Policy Research Working Paper 9298. World Bank.

Concentration Ratios: Asia and the United States





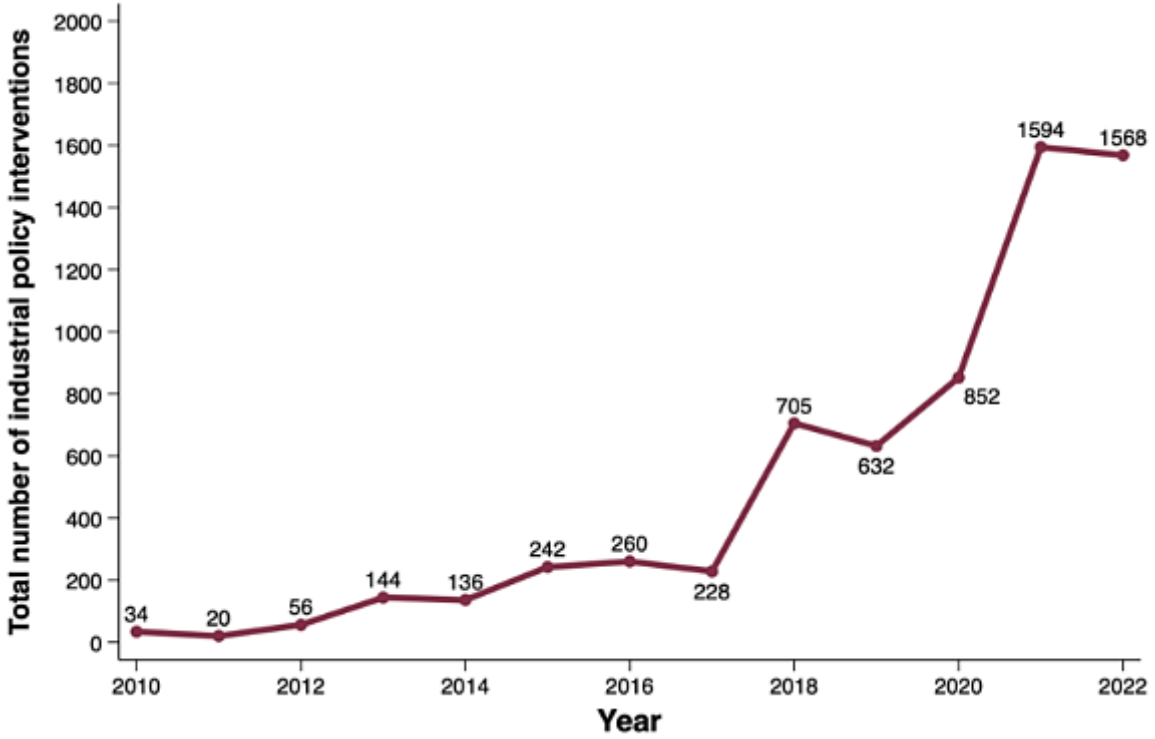
Source: Commander, S., & Estrin, S. 2022. The Connections World: The Future of Asian Capitalism. Cambridge: Cambridge University Press.

Competition Policy is in Early Stages in Asia

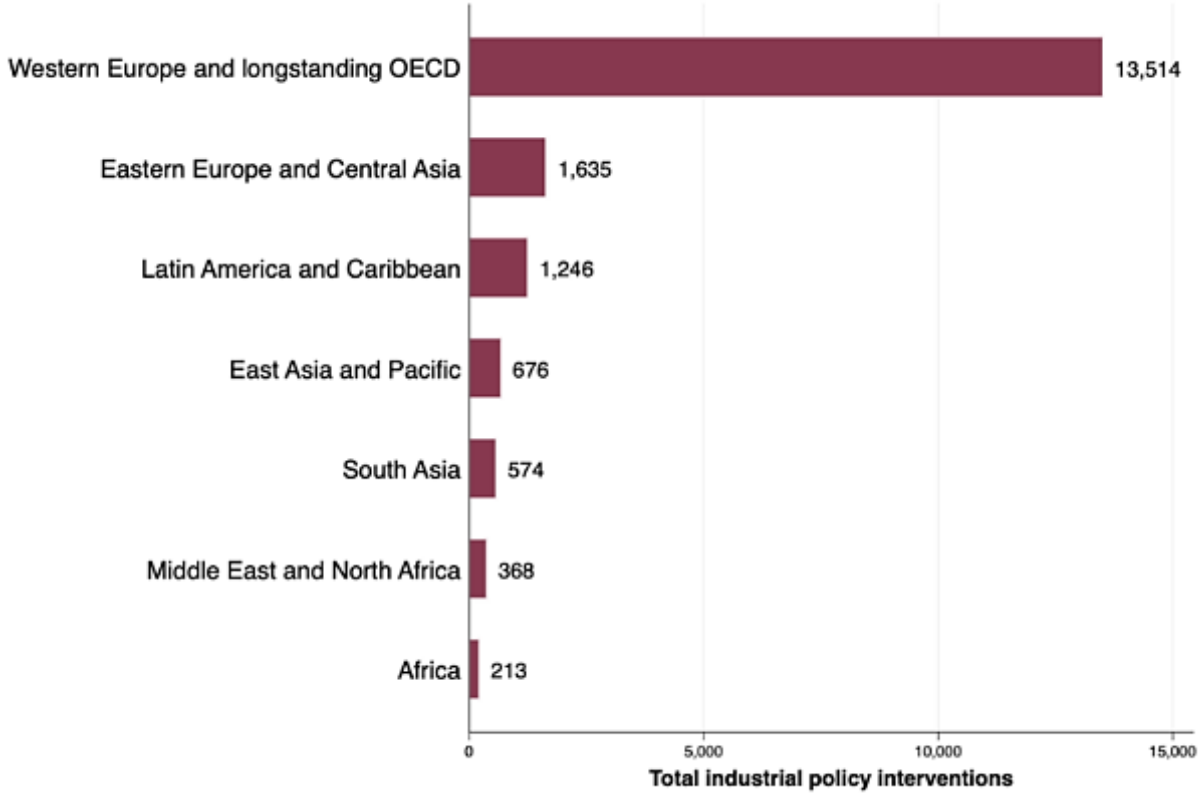
- Important agenda to improve priority and practice of competition policy
- Competition policy must be part of overall development strategy (including trade regime, regulations, etc.)

Rise of Industrial Policy, especially in OECD

Panel A: Total number of industrial policy interventions



Panel B: Total industrial policy interventions by region



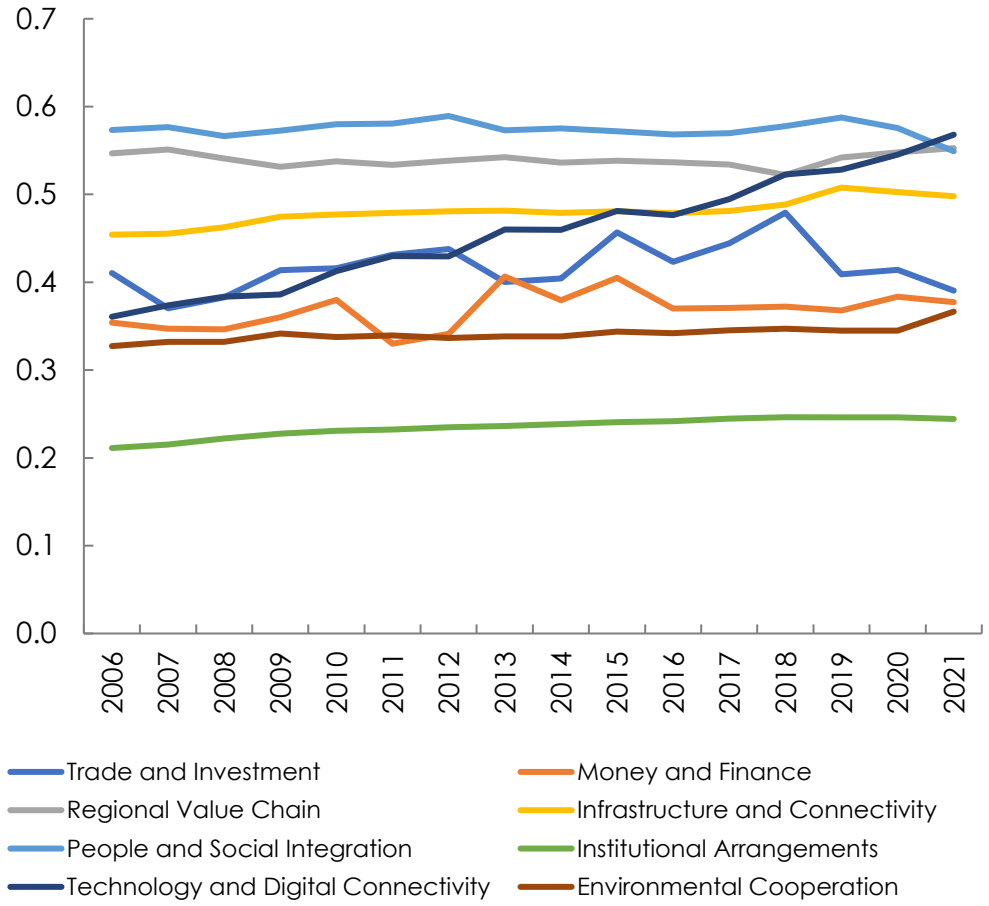
Source: R. Juhász, N. Lane, and D. Rodrik. 2023. The New Economics of Industrial Policy. NBER Working Papers 31538. National Bureau of Economic Research.

What do we know about Industrial Policy?

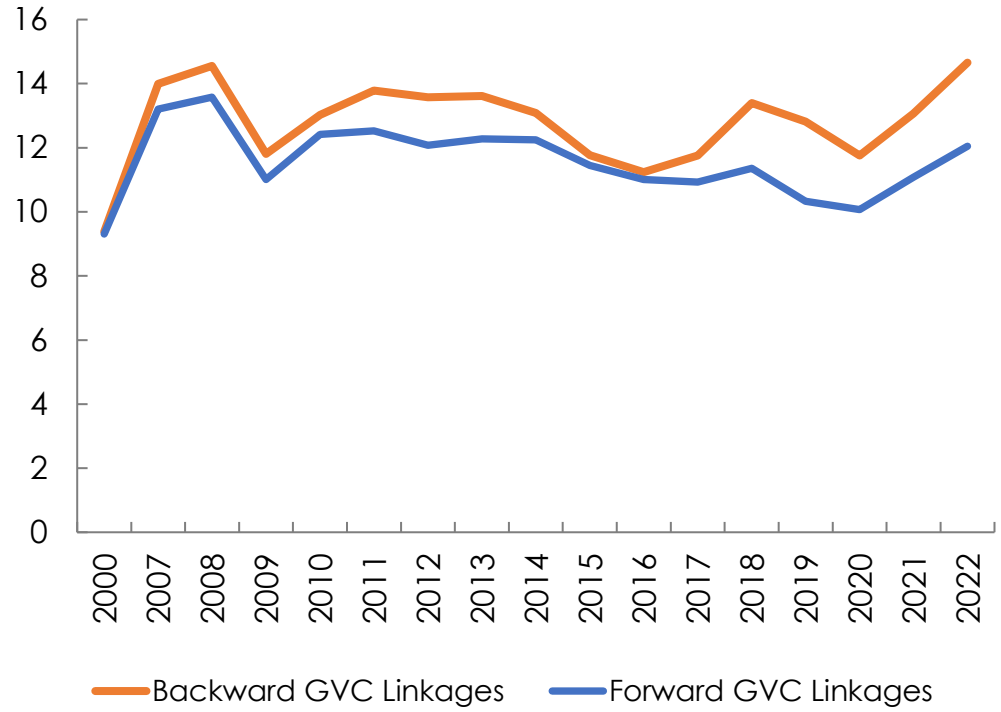
- Industrial policies are ubiquitous, come in different forms, and are hard to measure
- Empirical evidence finds that R&D subsidies increase investment (Cherif et al, 2022; Bloom et al, 2019). Evidence on efficacy of industrial policies increasing (Juhasz, Lane and Rodrick, 2023)
- In promoting innovation, industrial policies are complementary to
  - Competition and fostering competition [China] (Aghion et al, 2015)
  - Export orientation, not tariffs (Juhasz et al, 2023)
  - Close relationship between government and firms (Evans, 1995)
  - Customized public services to address shortcomings in business environment (Bartik, 2020)
- Concerns about the design of new industrial policies?

Regional integration across Asia and the Pacific has grown steadily

Intraregional Integration Index by Dimension—Asia and the Pacific



GVC Participation Rates (%)

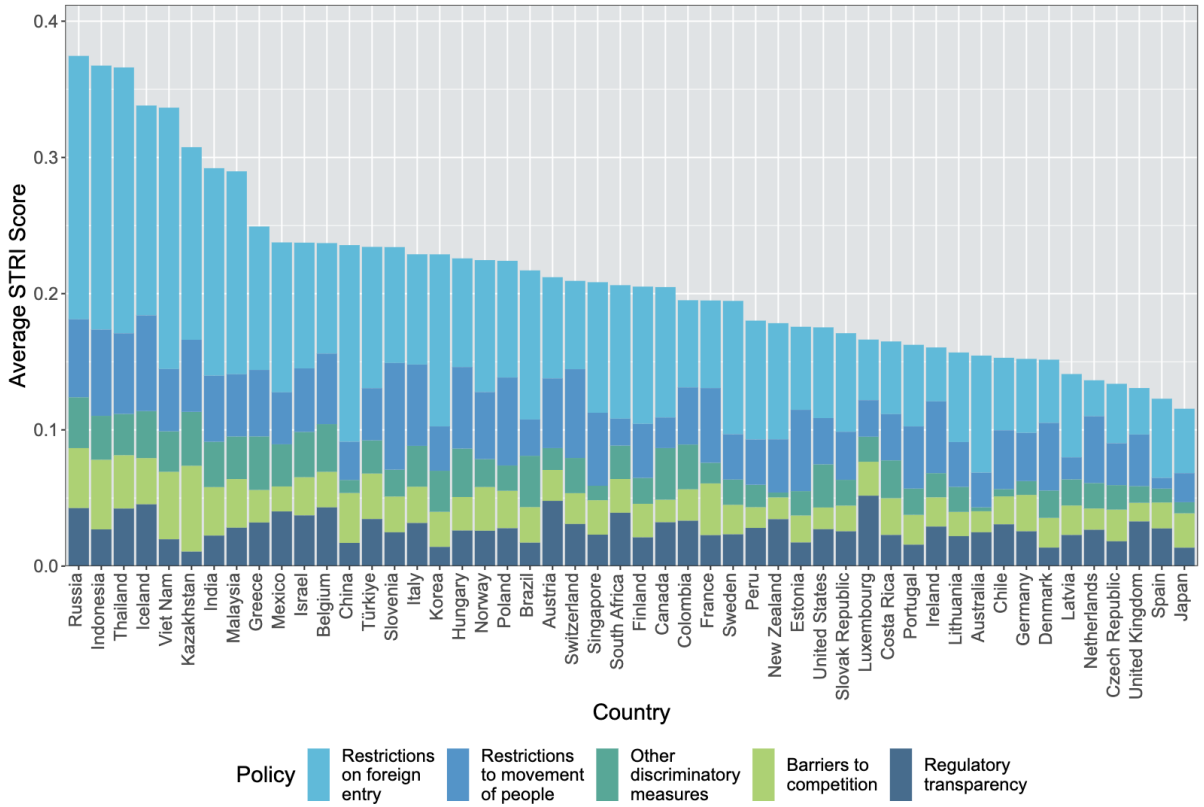


Notes: Worldwide normalization is used for all estimations, where the indicators are normalized using global maximum and minimum values across all regions. Higher values denote greater regional integration.
Source: ADB. Asia-Pacific Regional Cooperation and Integration Index Database (accessed November 2023).

Services trade still faces significant barriers

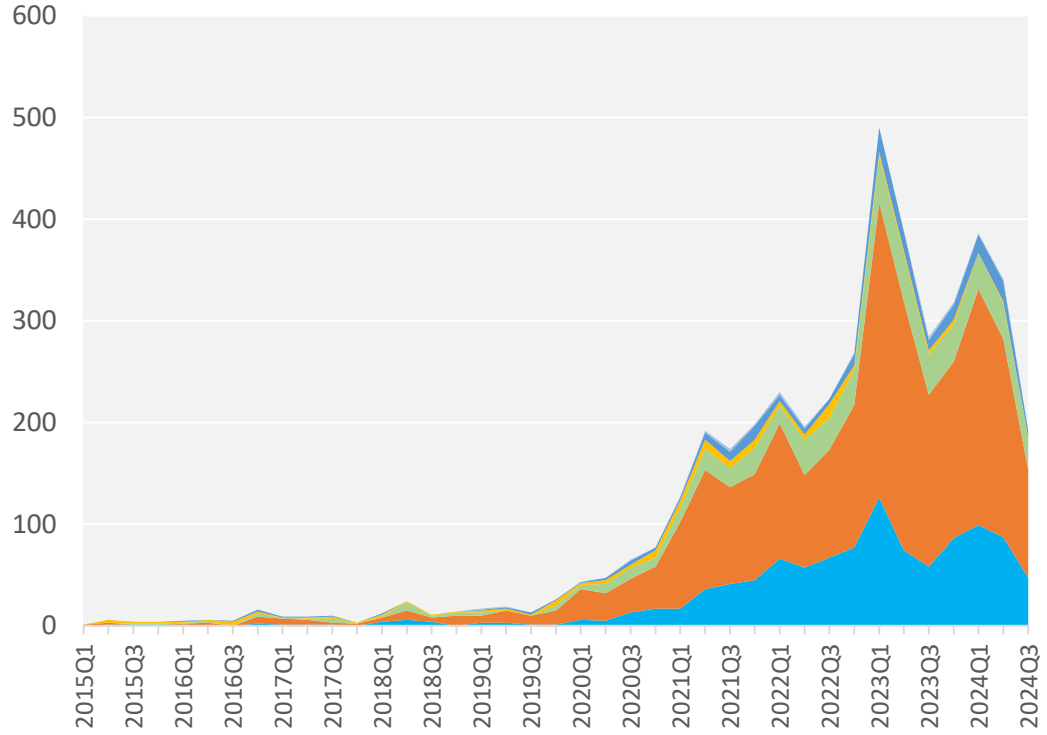
Restrictions to foreign entry remain the dominant restrictive policy for services globally

Services Trade Restrictiveness in 2023, by Country



Source: OECD Services Trade Restrictiveness Index, August 2024.

Global Cross-border Data Flow Restrictions



Source: Authors based on Digital Policy Alert, Sep. 2024

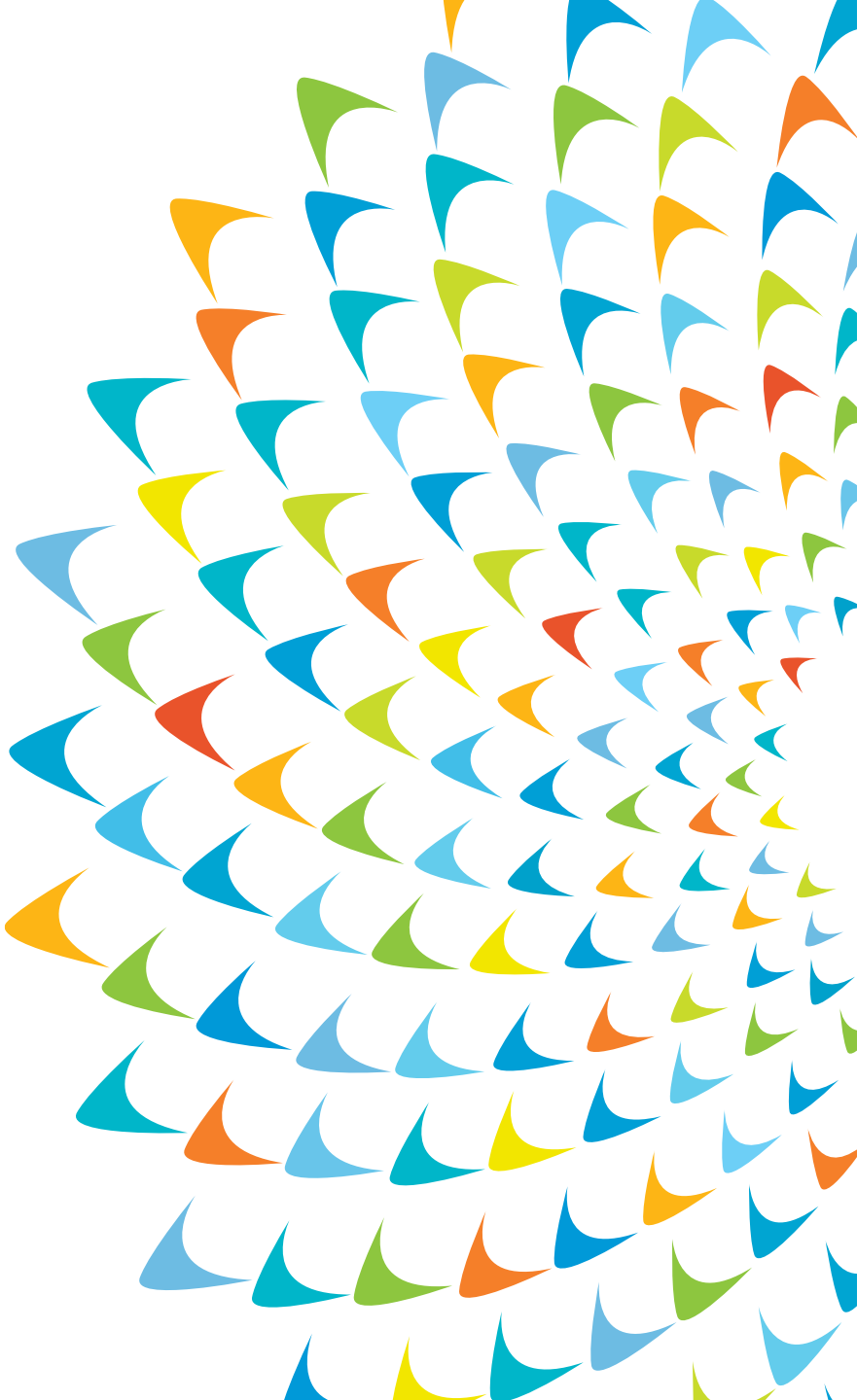
Final thoughts

- Technology is rapidly reshaping development opportunities in manufacturing and services sectors
- Focus on choosing between a manufacturing or services-led growth strategy diverts attention from more important priorities for creating an enabling environment for both sectors
- Globalization remains critical for driving technology transfer and productivity growth
- Keys to advancing beyond middle-income status is developing a national innovation system
- Industrial and trade policies must be carefully designed to avoid undermining competition or global economic integration

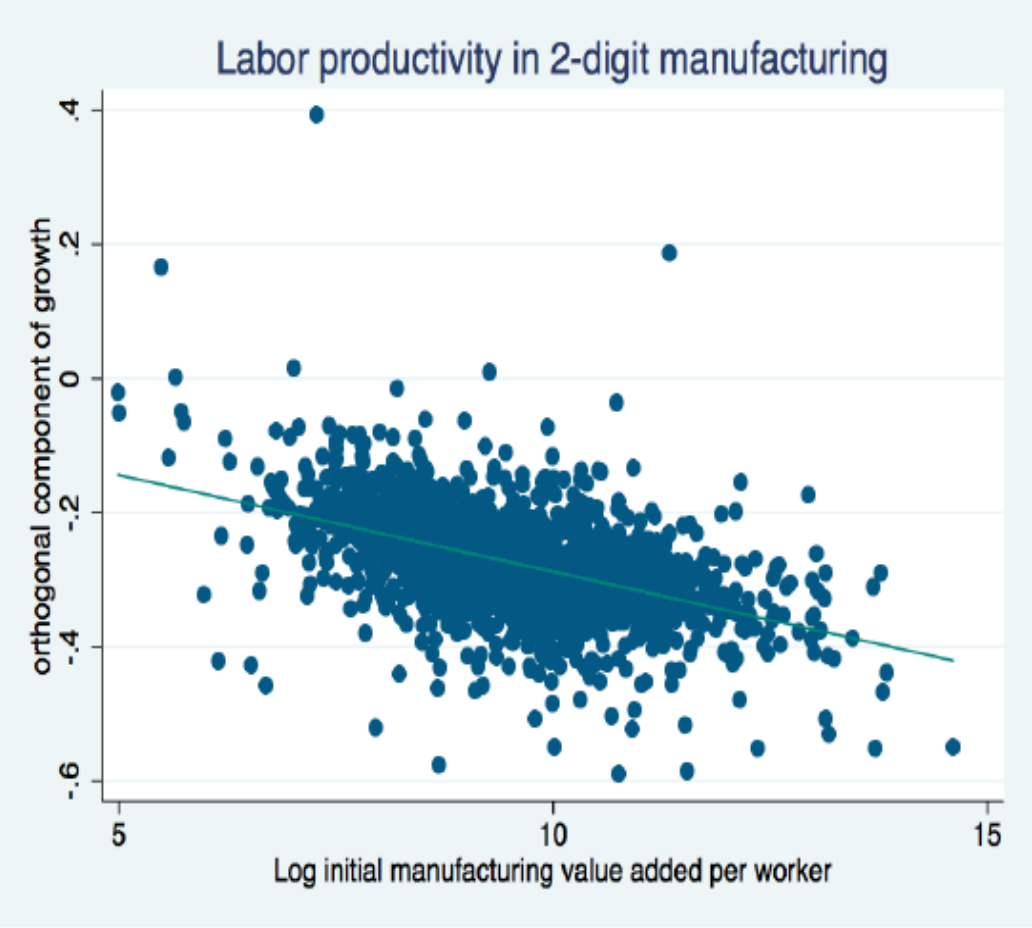
Thank you.

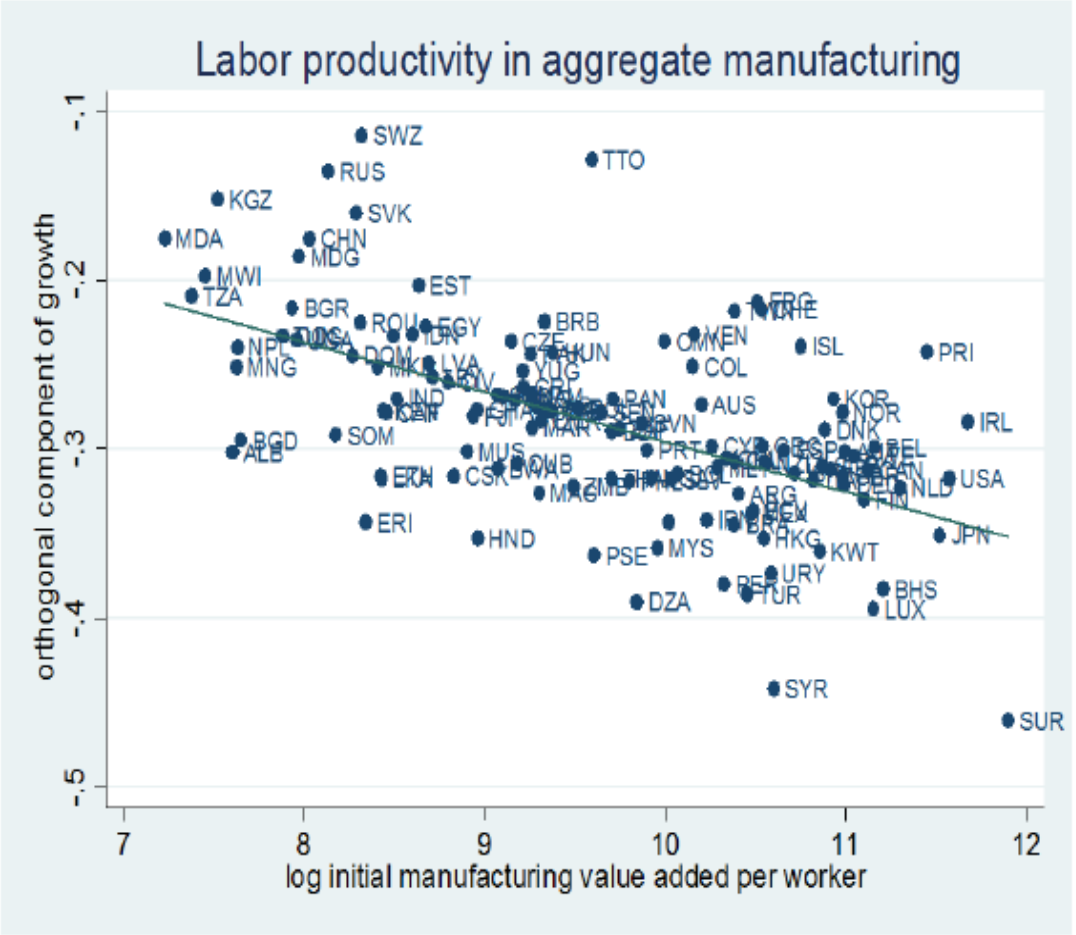
Follow me:

@ADBChiefEcon



Productivity convergence in (formal) manufacturing appears to be unconditional and quite general – regardless of period, region, sector, or aggregation

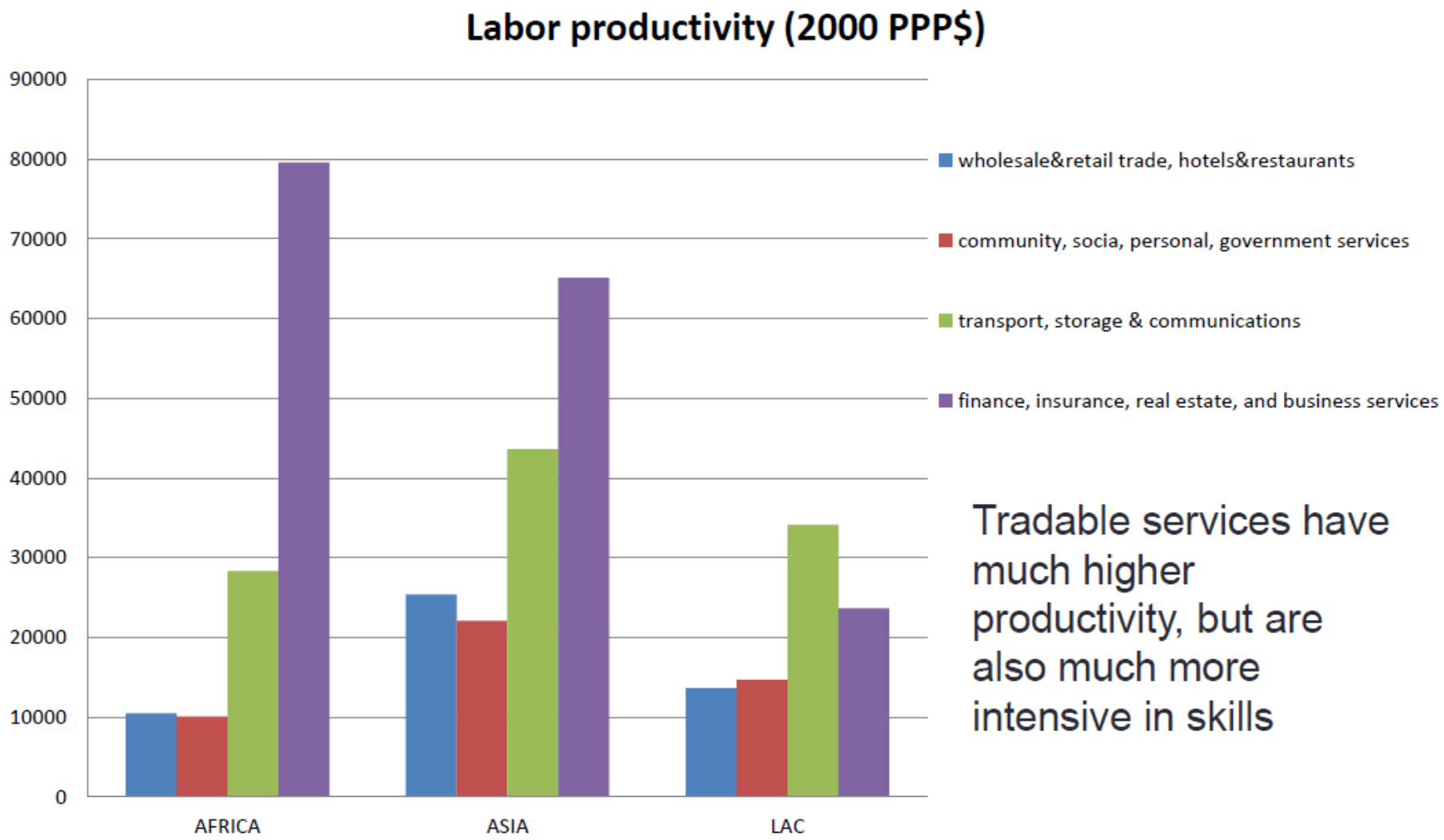




$\beta \approx 3\%$ (t-stat ≈ 7), implying a half-life for full convergence of 40-50 years!

Notes: Data are for the latest 10-year period available. On LHS chart, each dot represents a 2-digit manufacturing industry in a specific country; vertical axis represents growth rate of labor productivity (controlling for period, industry, and period×industry fixed effects).
Source: Rodrik (2013)

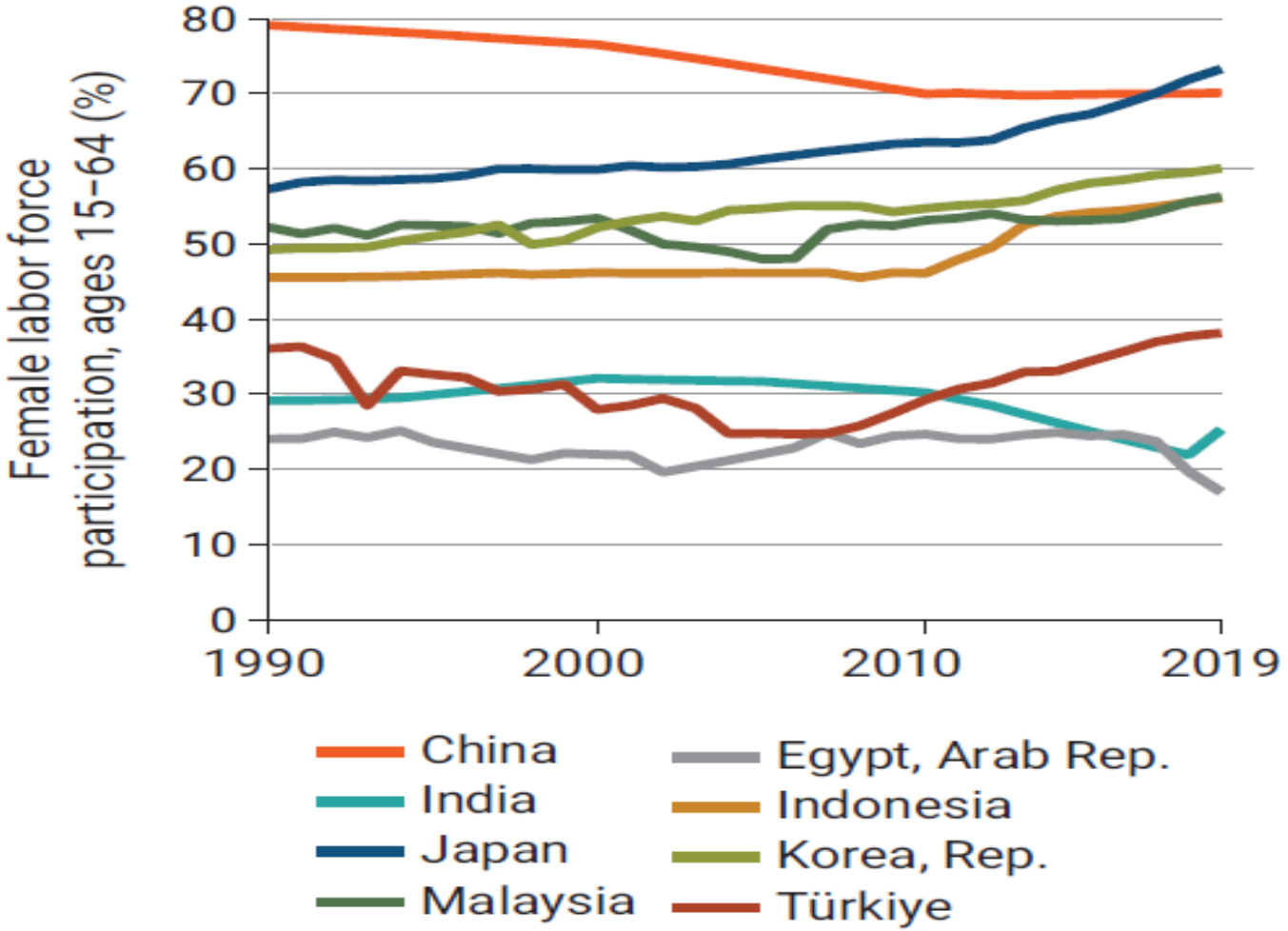
Dualism in Services: Across Sectors



Tradable services have much higher productivity, but are also much more intensive in skills

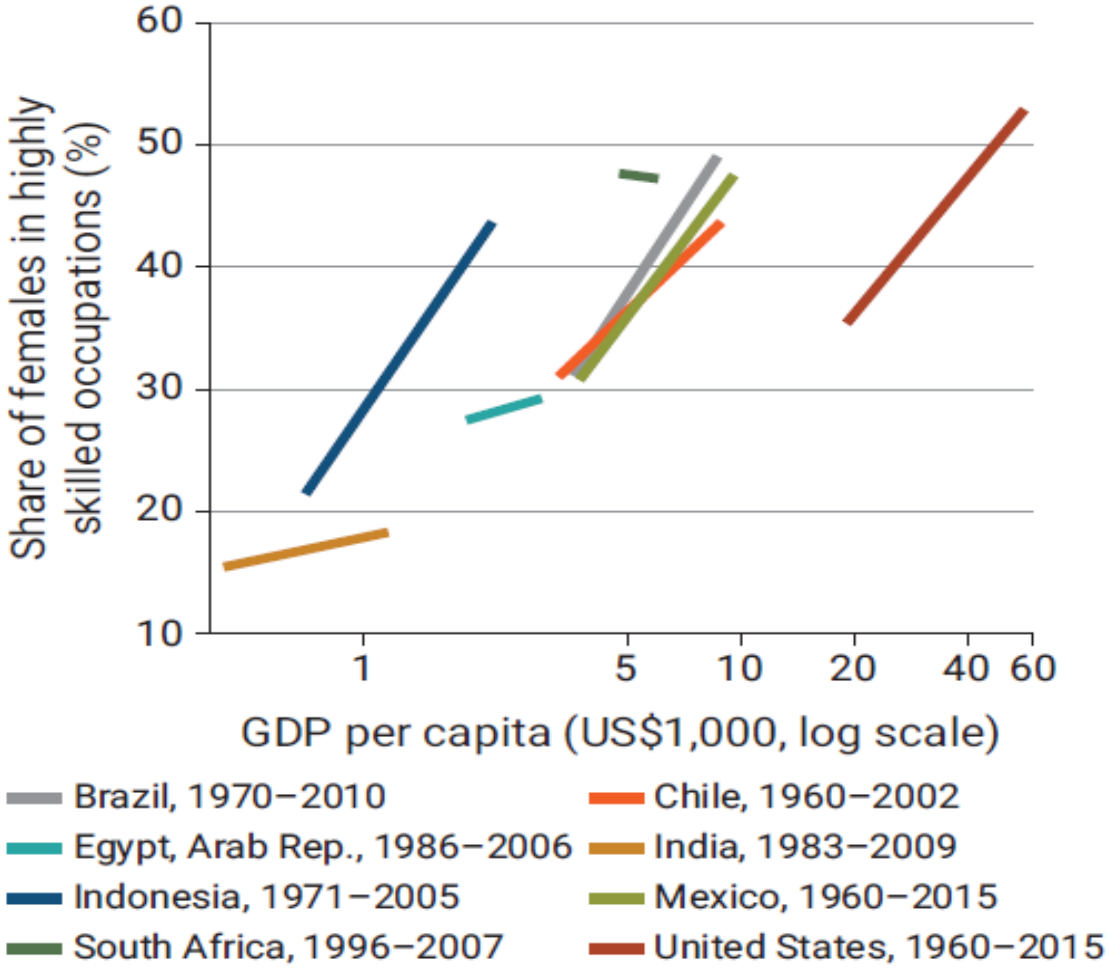
Source: Rodrik (2016)

The share of female professionals has risen in some countries but not others



Source: WDI (World Development Indicators) (DataBank), World Bank, Washington, DC, https://databank.worldbank.org/source/world-development-indicators.

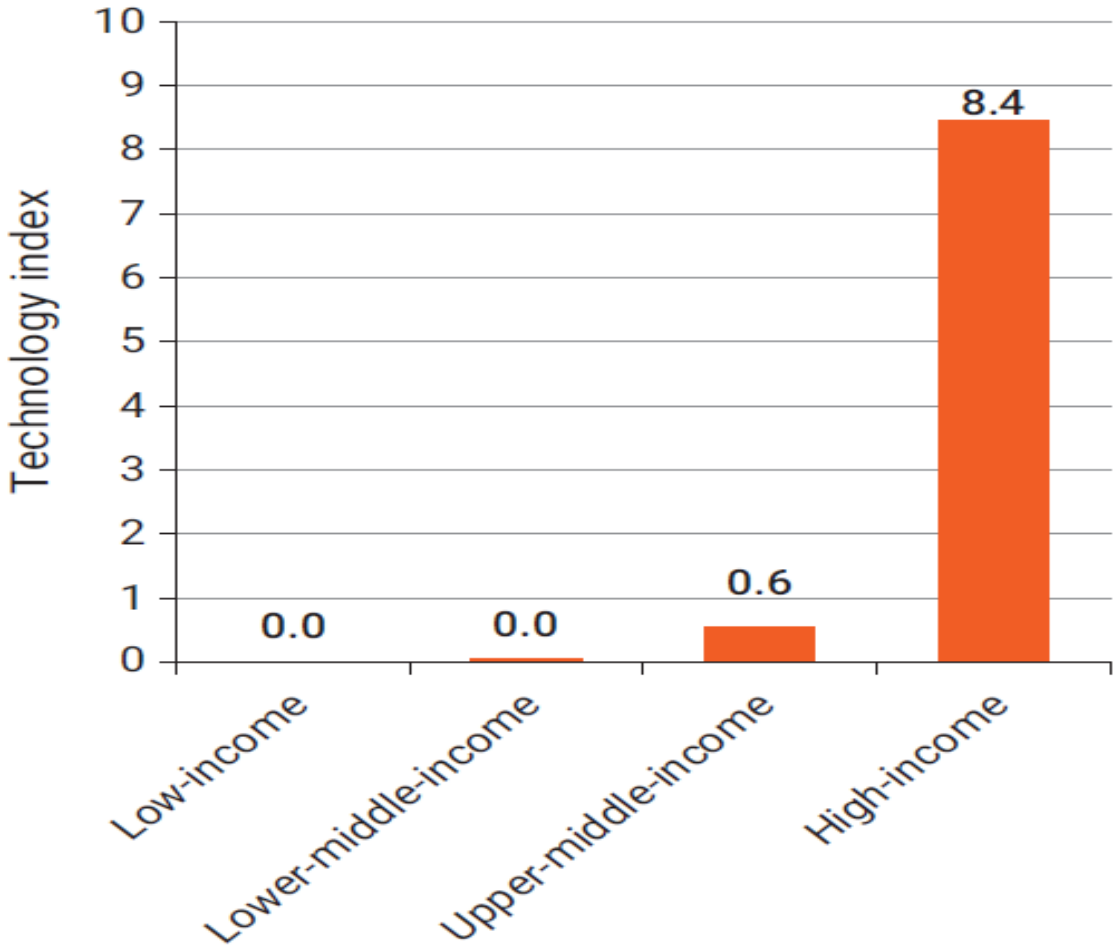
Female labor force participation has evolved differently across countries



Source: WDR 2024 team based on census data of IPUMS International (Integrated Public Use Microdata Series, Harmonized International Census Data for Social Science and Health Research) (dashboard), Minnesota Population Center, University of Minnesota, Minneapolis, https://international.ipums.org/international/..

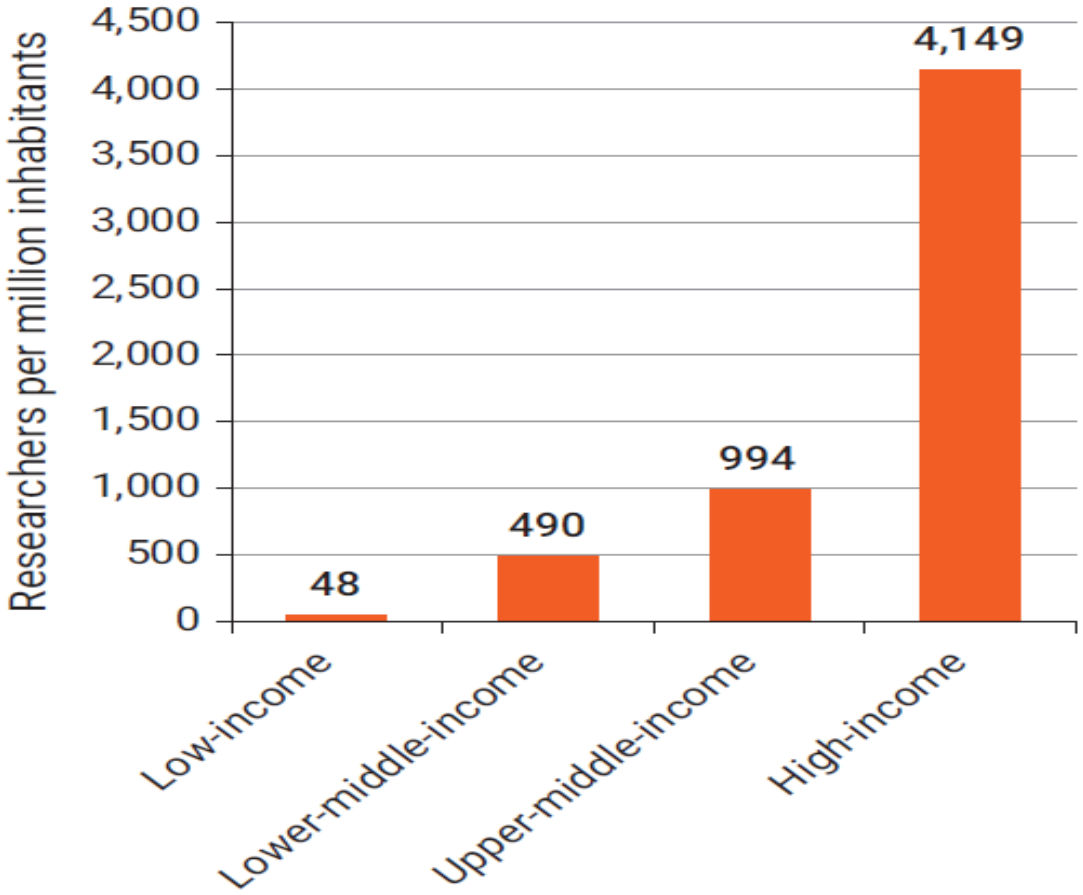
Note: Professional occupations combine the top three1-digit International Standard Classification of Occupations (ISCO) occupation codes ("Legislators, sr. officials, managers"; "Professionals"; "Technicians and associate professionals"). GDP = gross domestic product.

The innovation gap between high-income countries and others is substantial



Source: WDR 2024.
Note: The technology index is constructed using the number of granted patents per capita and network centrality. Network centrality is calculated to measure a country's "frontierness" in technology and is defined by the citations in a country's patents of other countries' patents in a given period. Therefore, the technology

Middle-income countries significantly lag behind high-income countries in research capacity



Source: WDR 2024.
Note: The primary data for number of researchers per million inhabitants are from UIS.Stat (dashboard), Institute for Statistics, United Nations Educational, Scientific, and Cultural Organization, Montreal, http://data.uis.unesco.org.

National innovation policies and institutions have much room for improvement

- Policies not aligned with firm capabilities and needs
- Capacity to design and implement policies is weak
- Needed coordination across agencies remains limited
- Links between research institutions and industry—and incentives to collaborate—are inadequate