New evidence on sectoral labor productivity: implications for industrialization and development

by

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Recap

- Billion-dollar question: do countries need to industrialize in order to increase aggregate productivity growth?

- The paper uses data on sectoral labor productivity for 64 countries in 1990-2018 to assess relevance of 2 channels:
  - manufacturing productivity gaps being smaller than aggregate productivity gaps
  - manufacturing productivity catching up faster to frontier than other sectors' productivity

General assessment

- Paper super clear and includes pedagogical comparison of patterns to those using FAO data (Restuccia et. al, 2008) and UNIDO data (Rodrik, 2013)

- Data is main contribution (along with novel facts)
  - Expanded Economic Transformation Database: ***comparable*** employment and sectoral labor productivity for 64 countries covering full income spectrum over 3 decades
  - Builds on Groningen Growth and Development Centre data based on national accounts and employment from labor force surveys and census data
  - 2 key challenges addressed: **including small informal firms and self-employed**
  - Use reliable imputation methodology to **construct measures of sectoral productivity in international prices for countries with no sectoral PPPs**

- Data will be very useful for World Bank country work

Additional facts and robustness

- Missing (implicit) fact: magnitude of reallocation of workers from agriculture into manufacturing along income spectrum and over time
- Assess claim that agricultural labor has moved to informality in manufacturing or services in poor countries: using current employment data or contrasting to earlier versions without informality/self-employment?
- Could differences in quality of human capital (skills, occupations) be accounted for?
  - Kruse, Timmer, de Vries and Ye (2022) embedded skills project
- Robustness: use gross value added at constant 2015 prices and redefine frontier (top 5 or top 1)

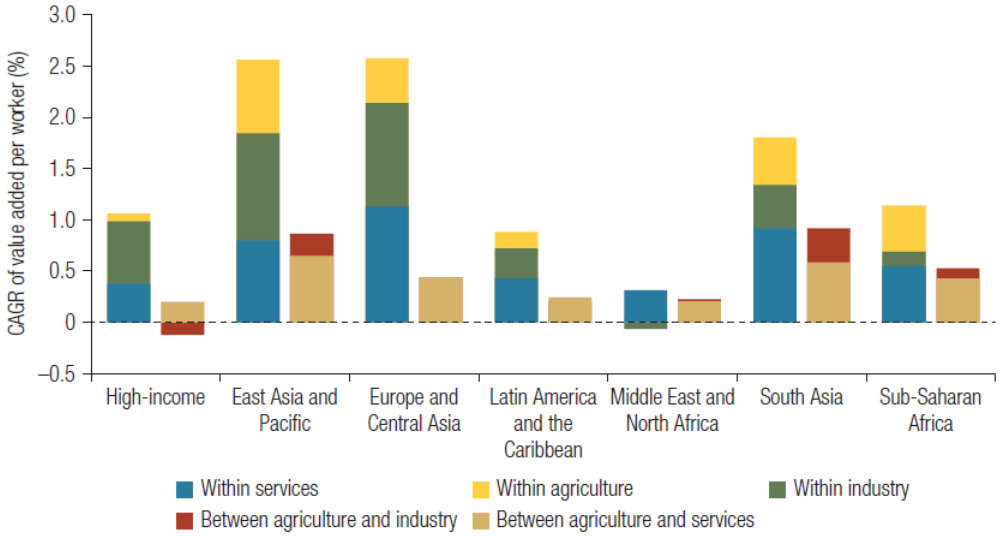
Decomposing aggregate productivity growth

- Construct aggregate labor productivity based on EETD to contrast with PWT
- Decomposition of its growth into role of structural change and sectoral productivity changes
  - Add to Nayyar, Hallward-Driemeier and Davies (2021) results based on PWT

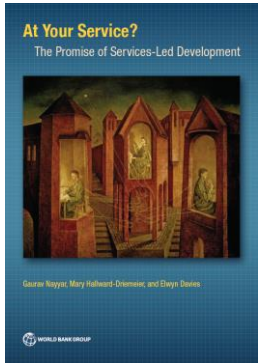
Services productivity growth key contributor to aggregate productivity growth for most developing countries

FIGURE 1.5 **Among LMICs in Most Regions, Services Have Contributed More Than Industry to Aggregate Labor Productivity Growth since the 1990s**

Decomposition of aggregate productivity growth "within" and "between" sectors in LMICs, by region and relative to high-income countries, 1995–2018



Source: Calculations based on World Development Indicators database.



Sectoral and firm heterogeneity

- Structural transformation literature generally focuses on labor productivity measures for coarse sectors and does not emphasize role of firms
  - Possibly for modelling simplicity
  - Exceptions: Diao, McMillan, and Rodrik (2021), Ding, Fort, Redding, and Schott (2022); Bustos, Castro-Vincenzi, Monras, and Ponticelli (2022)

- Paper's key finding: challenge view that manufacturing is only recipe for successful development
- But to understand the potential of services-led development we need to study within-country productivity dynamics across services subsectors and within-services sub-sectors productivity dynamics across firms
  - Requires switching to more granular data

Services data agenda

- Data coverage
  - We need time series on value added and employment in services across countries and over time for sub-sectors ideally ISIC 2-digit (and sectoral PPPs)
  - We need firm-level panel data for services sectors ideally with informal firms

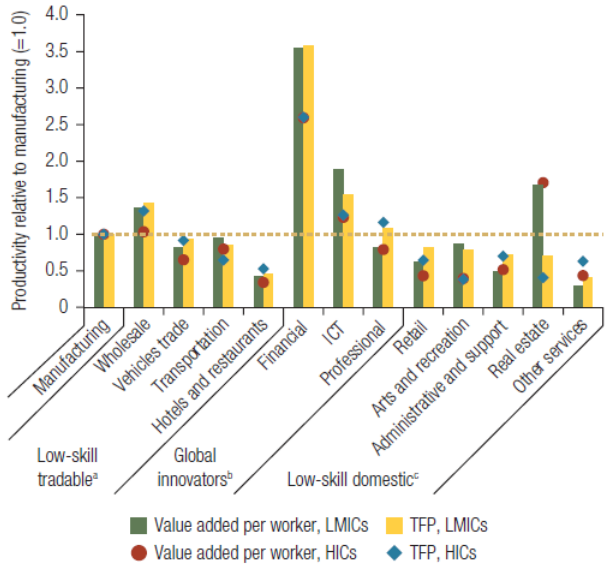
- Measurement
  - Output: services are nonstandardized, dematerialized, heterogeneous in quality, deflators are crucial (but what is a unit?)
  - Inputs: intangible capital (what is the value of data?)
  - Blurring of manufacturing and services
    - Embodied: manufacturing firms purchasing services
    - Embedded: Apple selling software assistance with iphones, Toyota selling cars and providing loans and after-sales maintenance (Ariu, Mayneris, Parenti, 2020)
  - Productivity: many services are capital and data intensive so how to think about labor productivity? But TFP measures are challenging to estimate (Cusolito and Maloney, 2018)

Progress on productivity dynamics *within* services

- Nayyar, Hallward-Driemeier and Davies (2021) compile firm-level data for services in 20 developing countries

FIGURE 2.1 **Labor Productivity and TFP Vary across Services Subsectors, with Global Innovators Being the Most Productive**

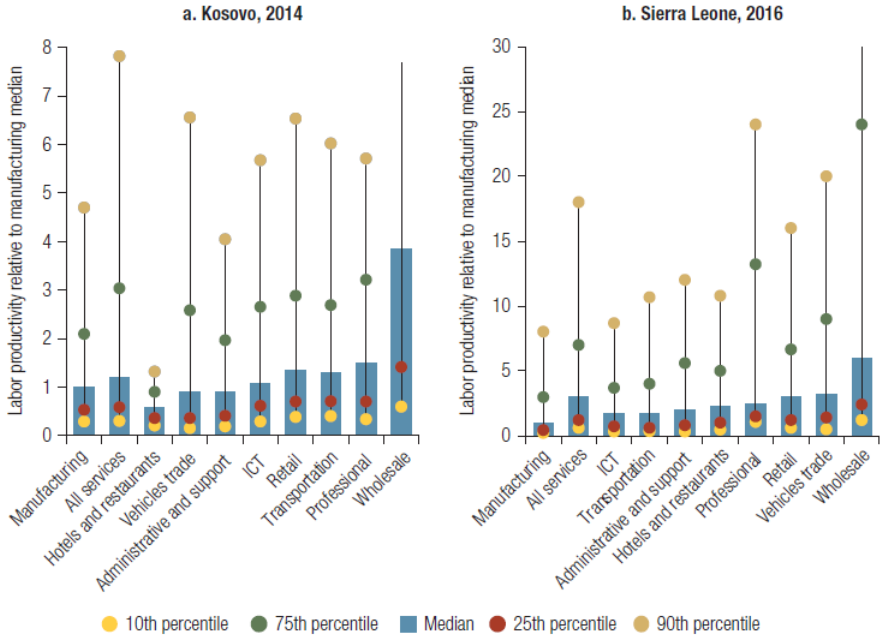
Labor productivity and TFP of selected services subsectors relative to manufacturing, by country income group, latest available year, 2010–17



Source: Calculations based on administrative firm-level data, supplemented with aggregated data from the Organisation for Economic Co-operation and Development (OECD) and the European Union's statistical office, Eurostat.

FIGURE 2.11 **Dispersion in Labor Productivity Is Higher in Services Than in Manufacturing**

Labor productivity dispersion in selected sectors, Sierra Leone and Kosovo



Source: Calculations using administrative firm-level data (detailed in annex 2A).

Source: Nayyar, Hallward-Driemeier and Davies (2021).

Importance of sectoral linkages

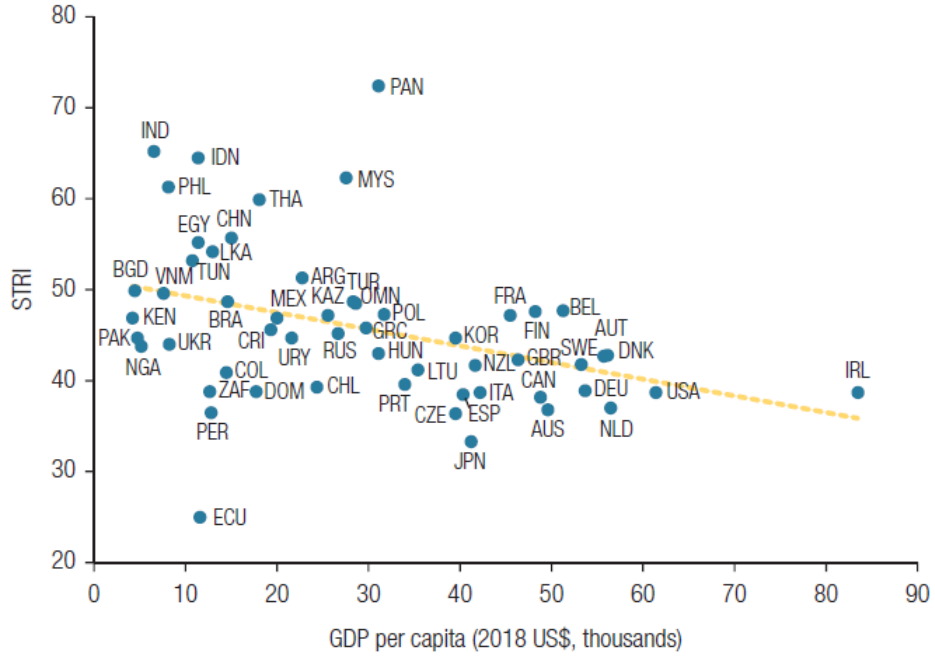
- Paper's key finding: manufacturing productivity growth is strongly correlated with productivity growth in certain sectors (trade, transportation, business services)
  - Micro evidence for India: growth in firm manufacturing productivity accelerated growth in services firm productivity, especially for services whose output is used as a manufacturing input (Dehejia and Panagariya 2016)

- Stronger intensity in use of services improves productivity of downstream manufacturing
- Productivity in services increases with linkages to other sectors (selling to firms rather than final consumers)
- Crucial agenda: understanding determinants of productivity across sectors

Trade regulatory restrictions: potential determinant of productivity growth in services

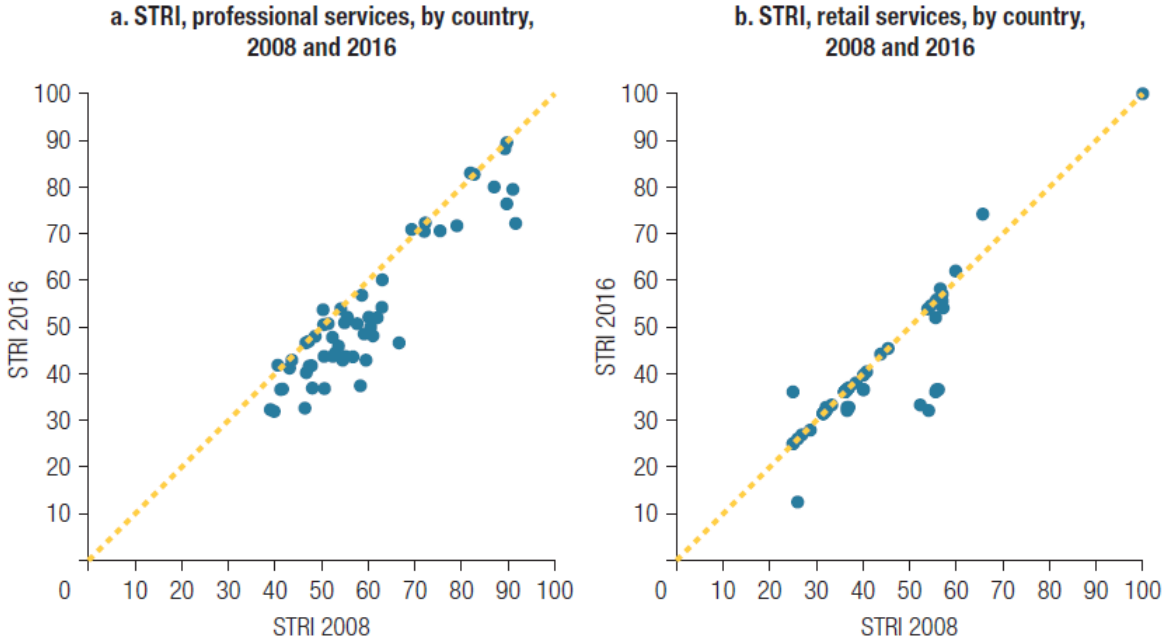
FIGURE 5.1 **Services Trade Restrictions Show Considerable Variation but Are Higher in LMICs Than in HICs**

Services Trade Restrictiveness Index by country income level, 2016



Source: Calculations based on Borchert et al. 2019 and World Development Indicators database.

FIGURE 5.3 **Trade Restrictions Have Declined on Professional Services but Not on Retail Services**



Source: Calculations based on Borchert et al. 2019.

Source: Nayyar, Hallward-Driemeier and Davies (2021).

World Bank's trade and international integration research unit jointly with WTO are updating on all African countries and 65 additional countries