

AN AGENDA FOR INNOVATION AND PRODUCTIVE TRANSFORMATION

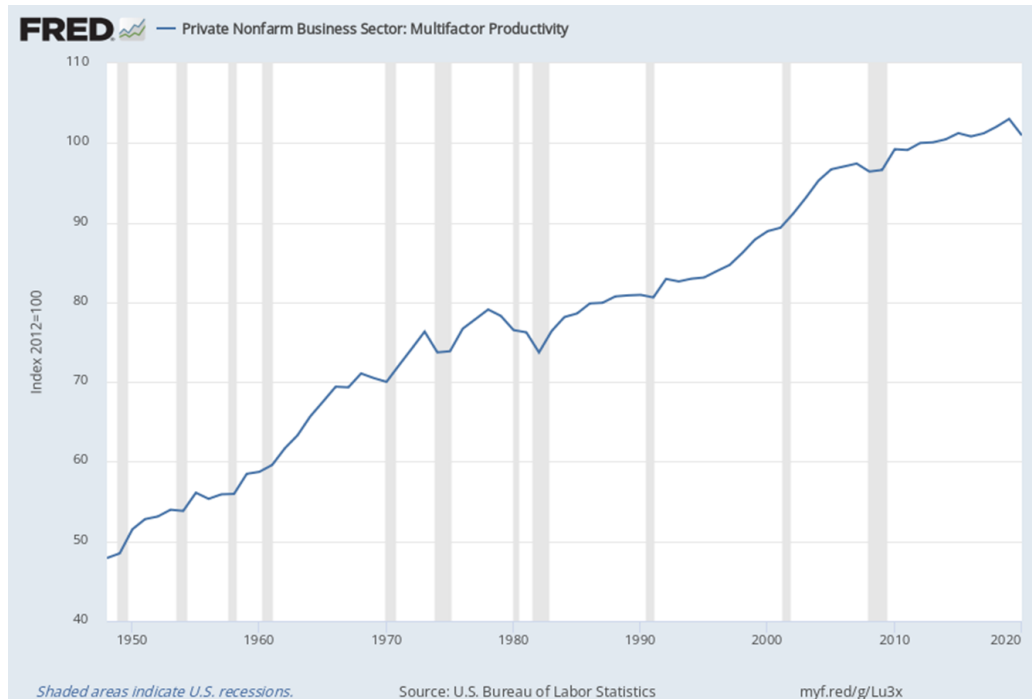
DANI RODRIK

MARCH 2022

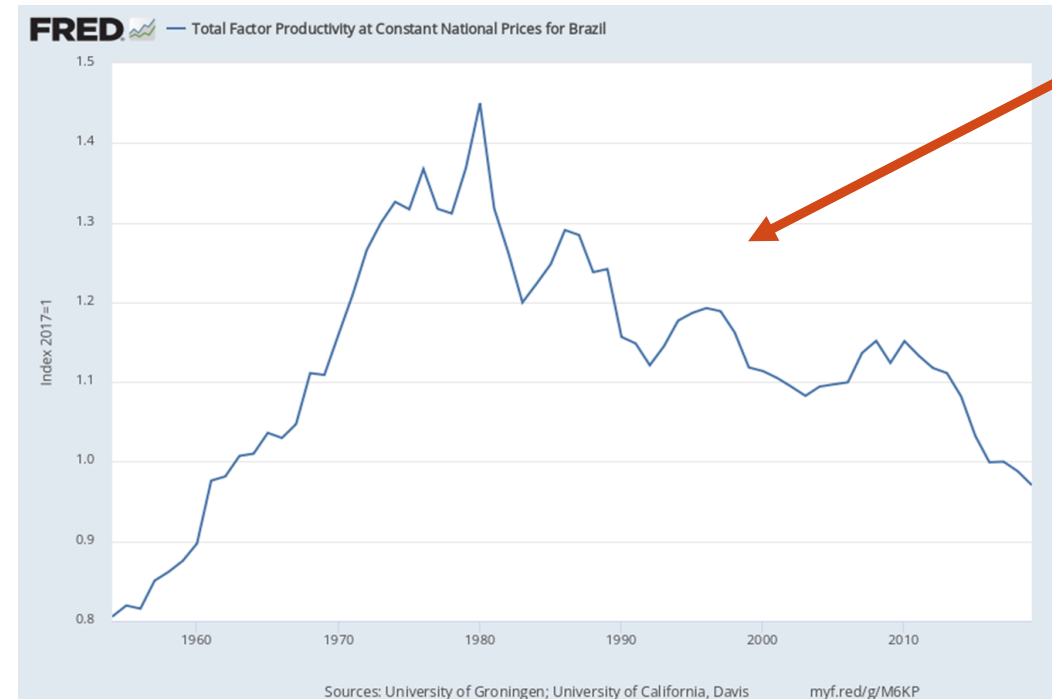
A solid orange horizontal bar spanning the width of the slide at the bottom.

Trends in total factor productivity ...

United States

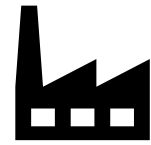


Brazil



How is this possible?

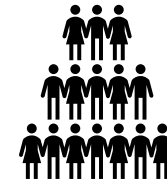
What does (total factor) productivity measure?



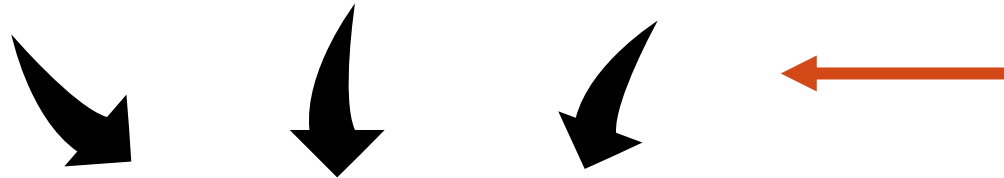
capital



skills



workers



goods and
services

productivity (TFP) =

efficiency with
which economy's
primary resources
are converted into
final goods and
services

How does (total factor) productivity increase?

Technological progress within firms

- innovation, R&D, adoption of new techniques

Structural change across firms & sectors

- closing of the gap between productively dynamic firms/industries and others, through
- diffusion of technology to other firms, industries
- movement of labor from low-productivity to high-productivity activities
 - such as formal manufacturing

What's been going right in Brazil?

Technological progress within firms (in advanced sectors)

- innovation, R&D, adoption of new techniques

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What's been going wrong in Brazil?

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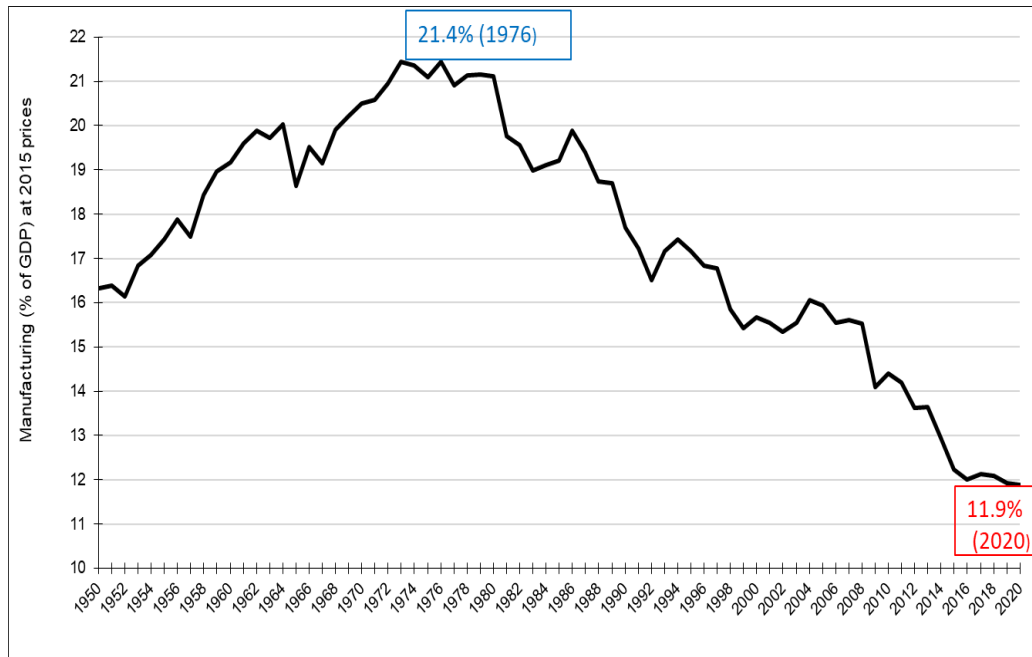


Structural change across firms & sectors

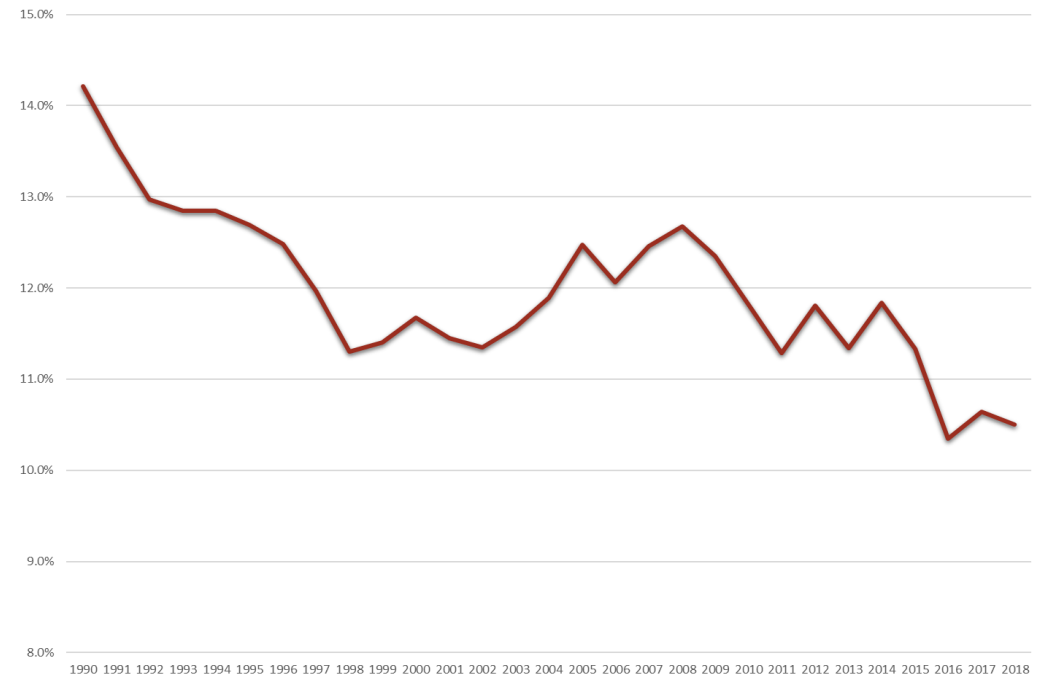
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De-industrialization

Manufacturing value added share in GDP, Brazil



Manufacturing employment share, Brazil



Sources: Nassif and Morceiro (2021) and de Vries et al. (2021).

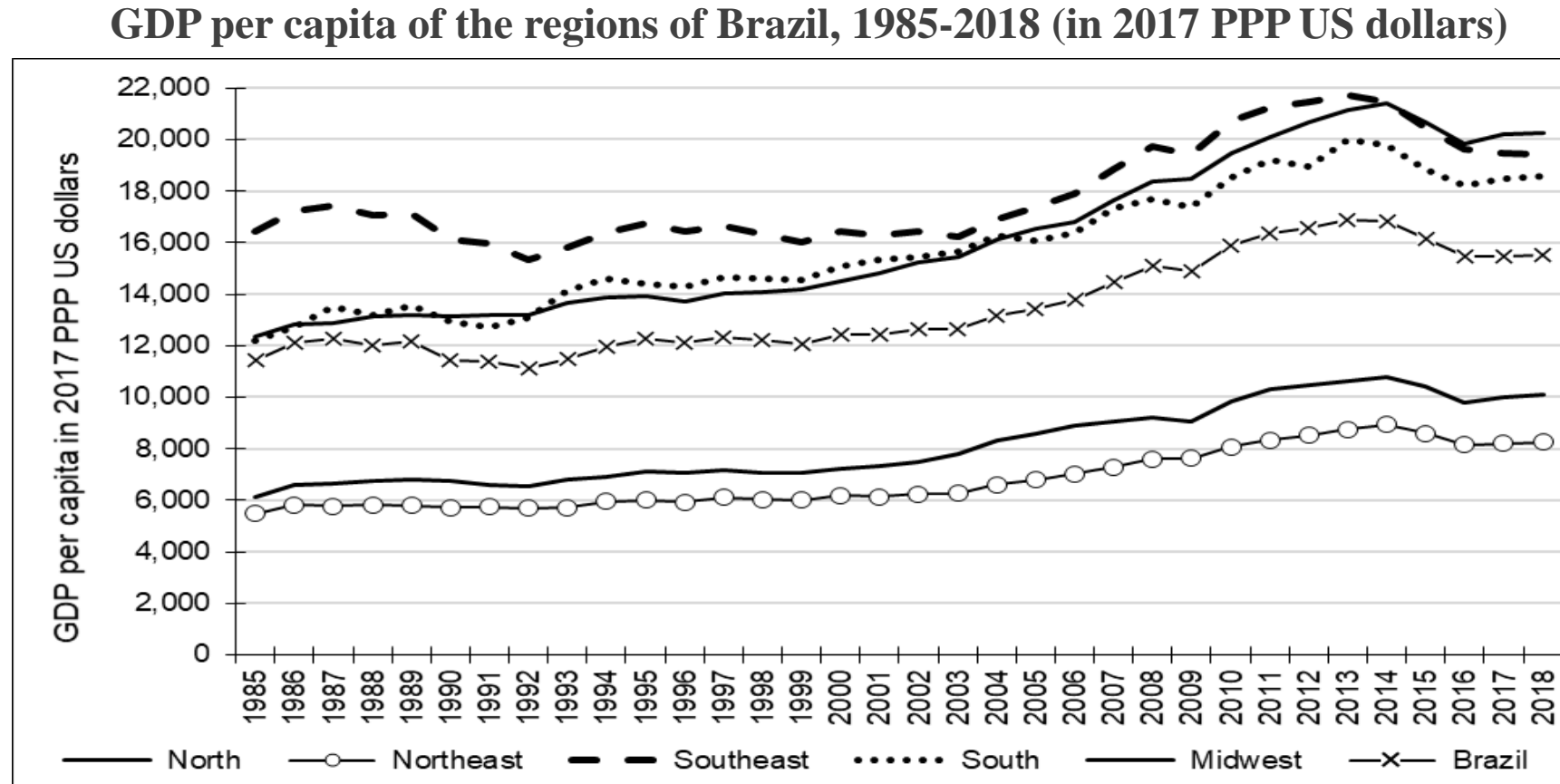
High and persistent levels of informality

Formal employment share of total employment in Brazil, in %			
	2010	2015	2018
Agriculture, forestry and fishing	12.8	12.3	12.7
Total Industry	53.3	52.3	49.6
Mining and quarrying	76.8	84.0	83.8
Manufacturing	67.4	67.3	65.2
Electricity and gas, water, sewage, waste management activities	65.5	73.2	70.8
Construction	30.5	30.2	24.2
Services	58.0	61.5	58.4
Wholesale and retail trade	50.9	55.7	54.9
Transportation, storage and courier activities	51.5	55.7	49.1
Information and communication	67.5	76.8	76.3
Financial and insurance activities	90.7	92.9	92.6
Real estate activities	42.7	47.4	54.4
Other service activities	48.2	52.0	47.6
Public administration and defence; public health and education; compulsory social security	94.0	94.4	94.2
Total Economy	49.9	53.3	50.9



Source: Nassif and Morceiro (2021).

Large and widening regional disparities



Source: Nassif and Morceiro (2021).

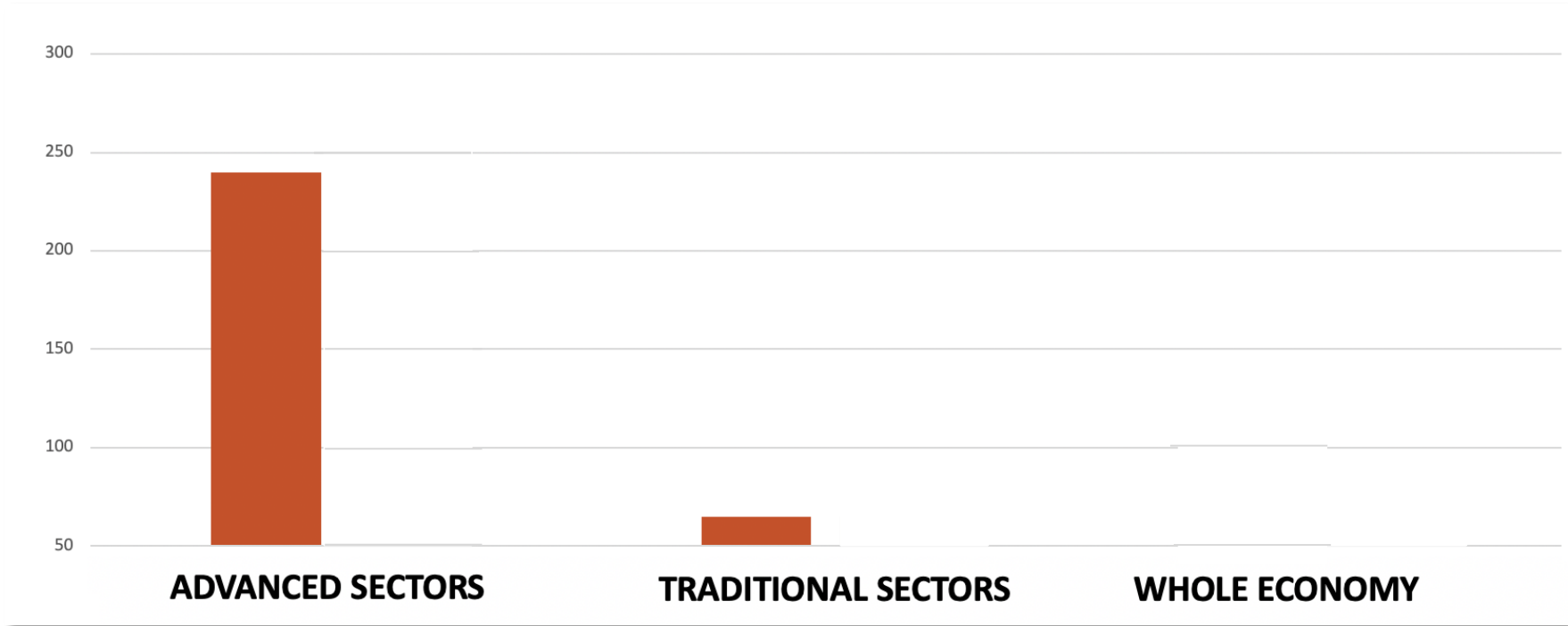
Productive dualism ...



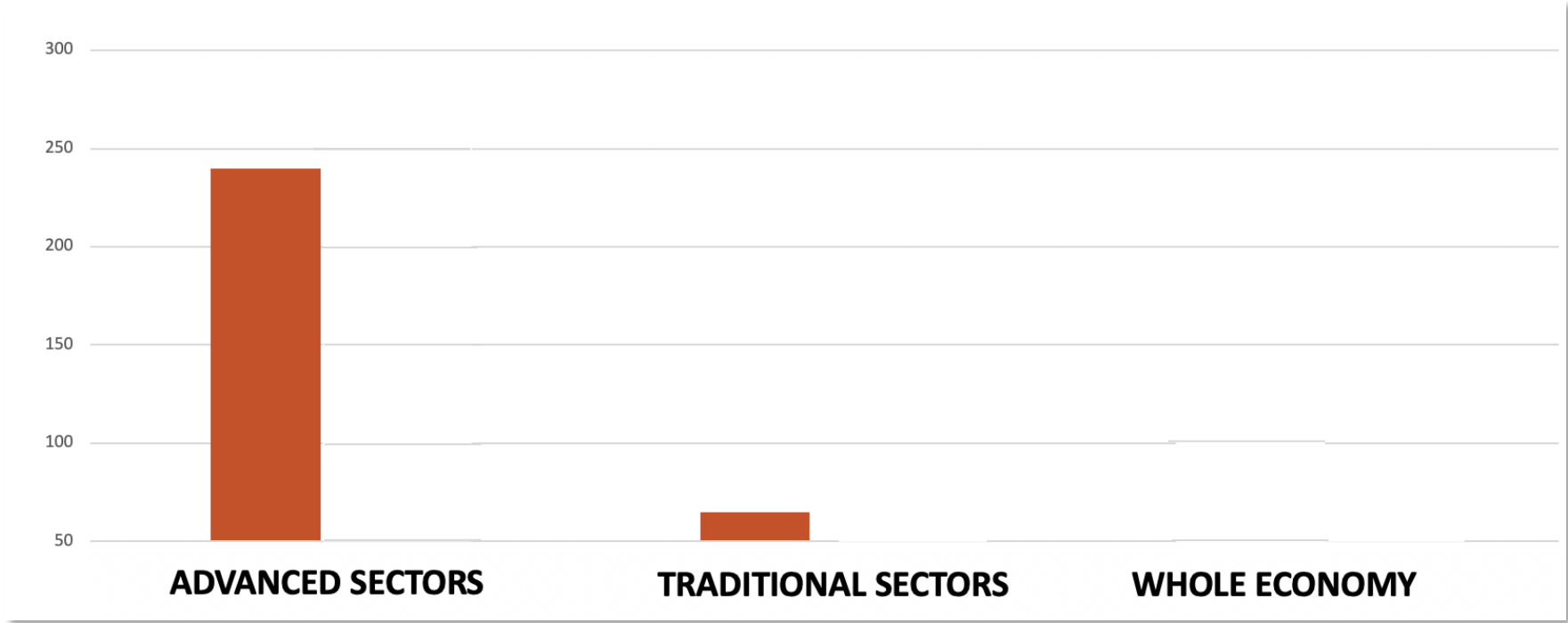
ADVANCED SECTORS



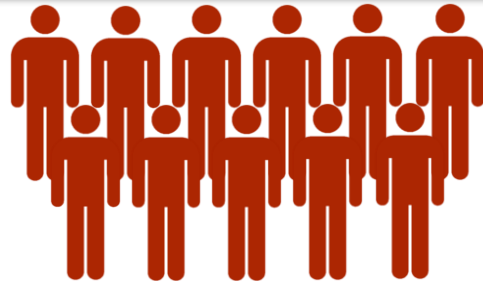
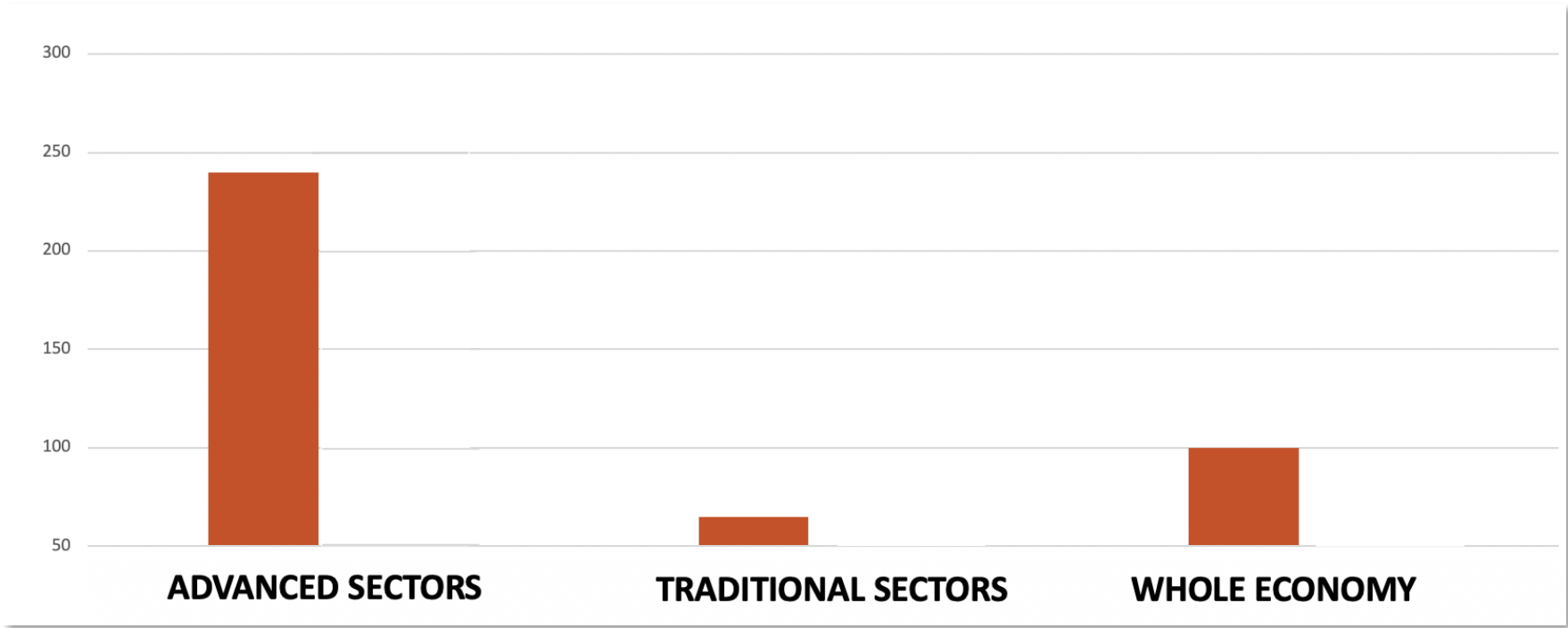
TRADITIONAL SECTORS



PRODUCTIVITY



PRODUCTIVITY



PRODUCTIVITY



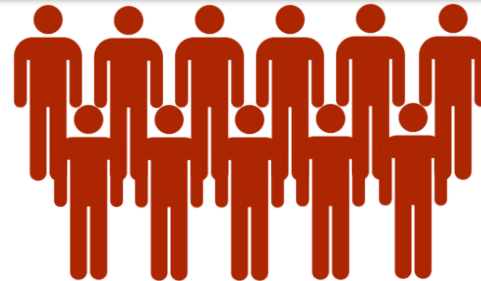
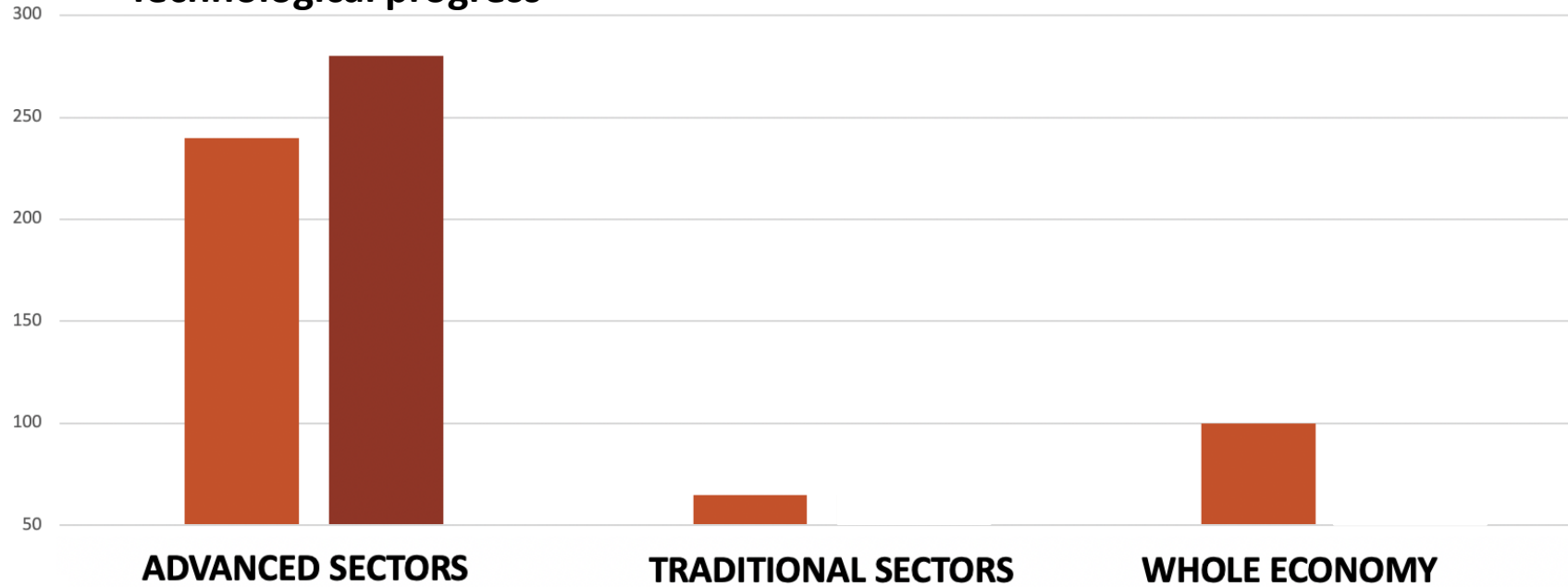
Technological progress



PRODUCTIVITY



Technological progress



PRODUCTIVITY



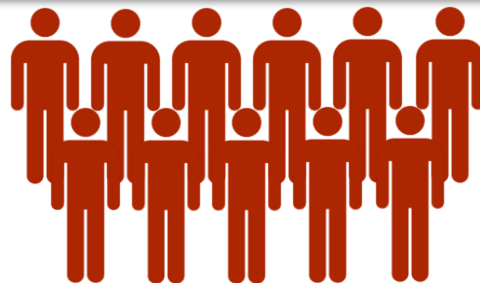
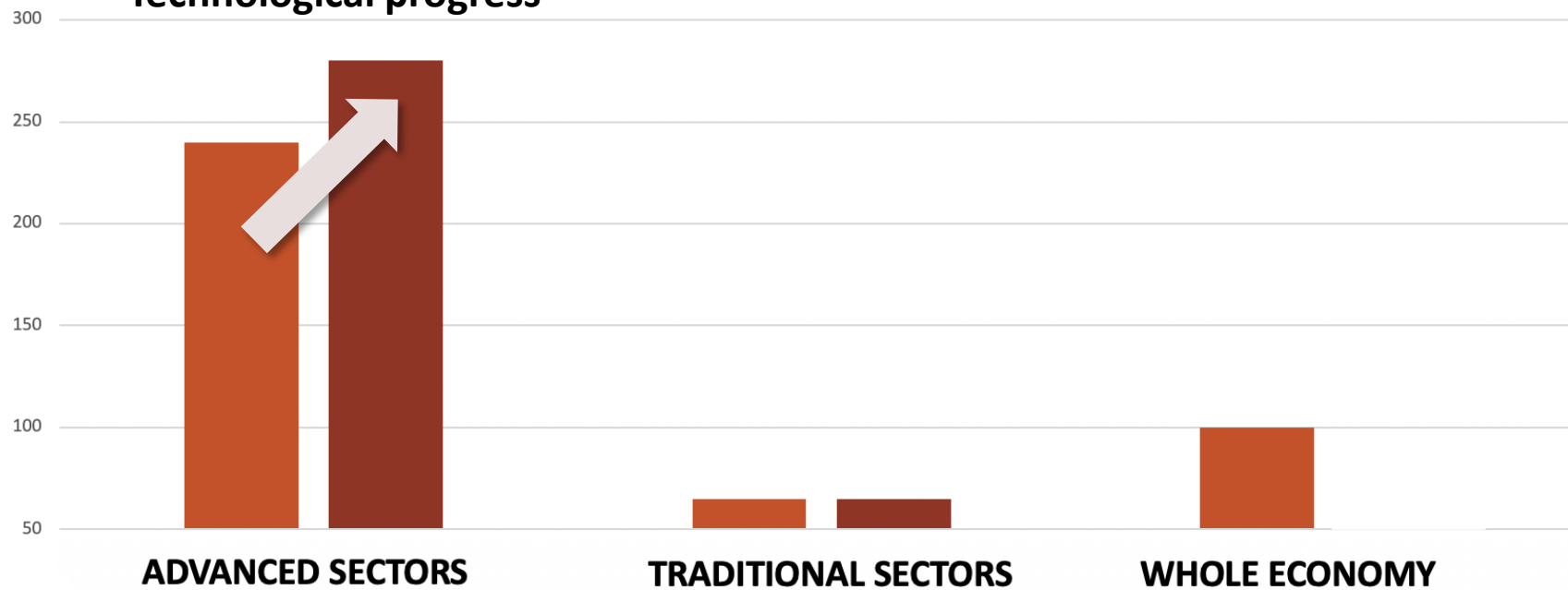
Technological progress



PRODUCTIVITY



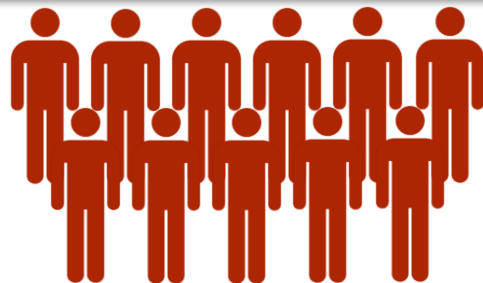
Technological progress



PRODUCTIVITY



Technological progress



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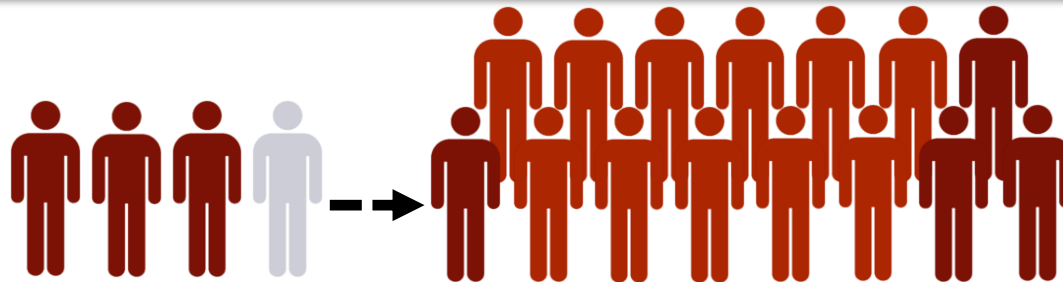
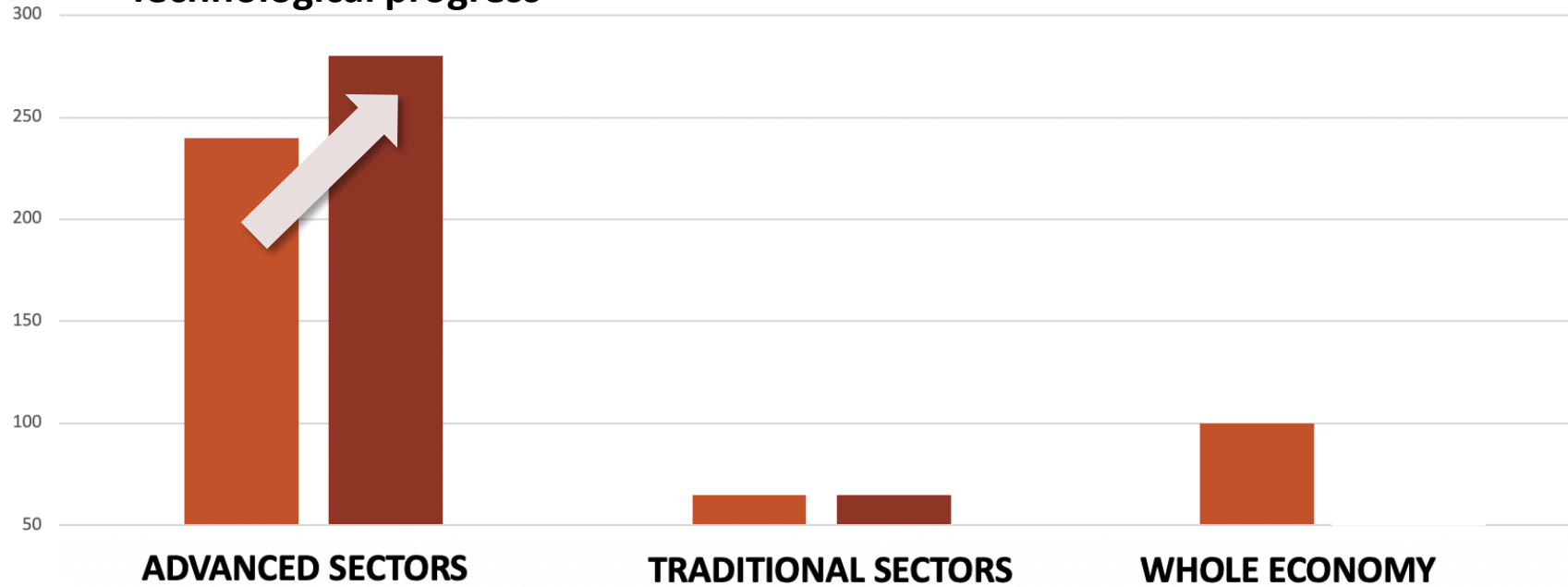
Technological progress



PRODUCTIVITY



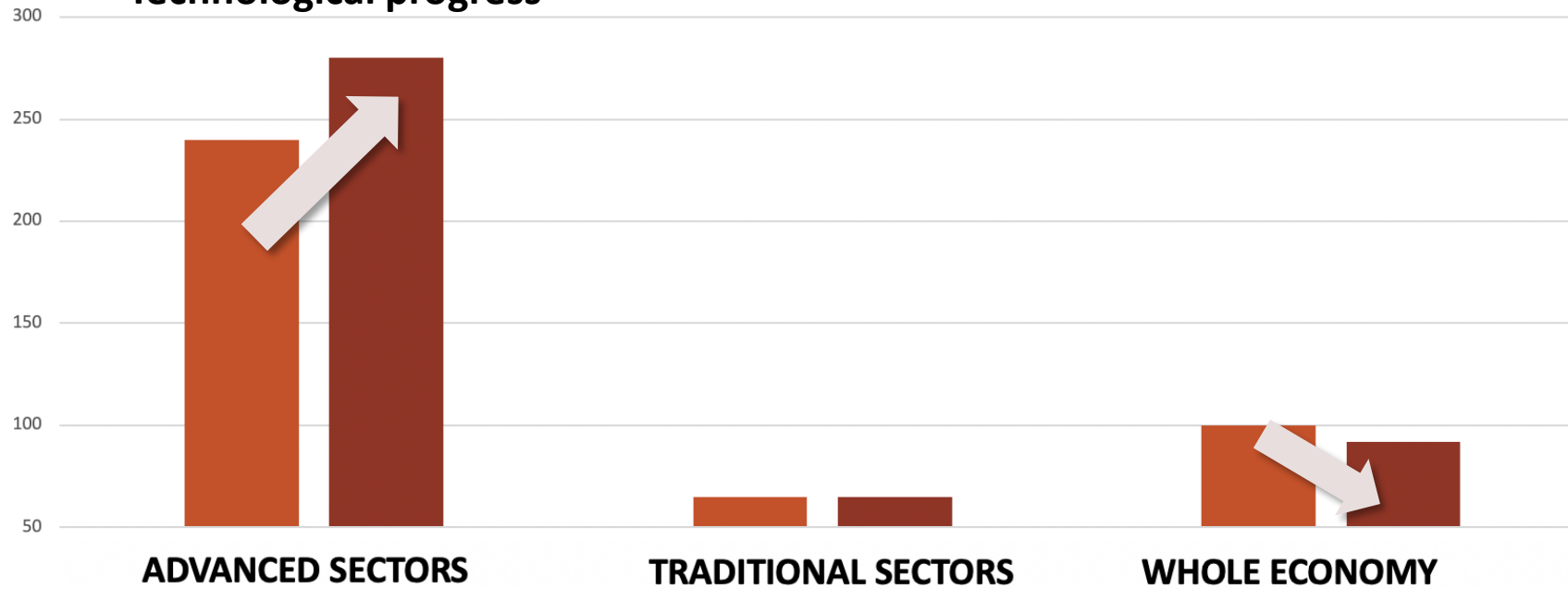
Technological progress



PRODUCTIVITY



Technological progress



PRODUCTIVITY

Need to go beyond ...

Focus on frontier technologies from advanced countries

- problem is with diffusion within the country, not with adoption from abroad
- and frontier technologies do not generate much labor demand

Conventional investments in education

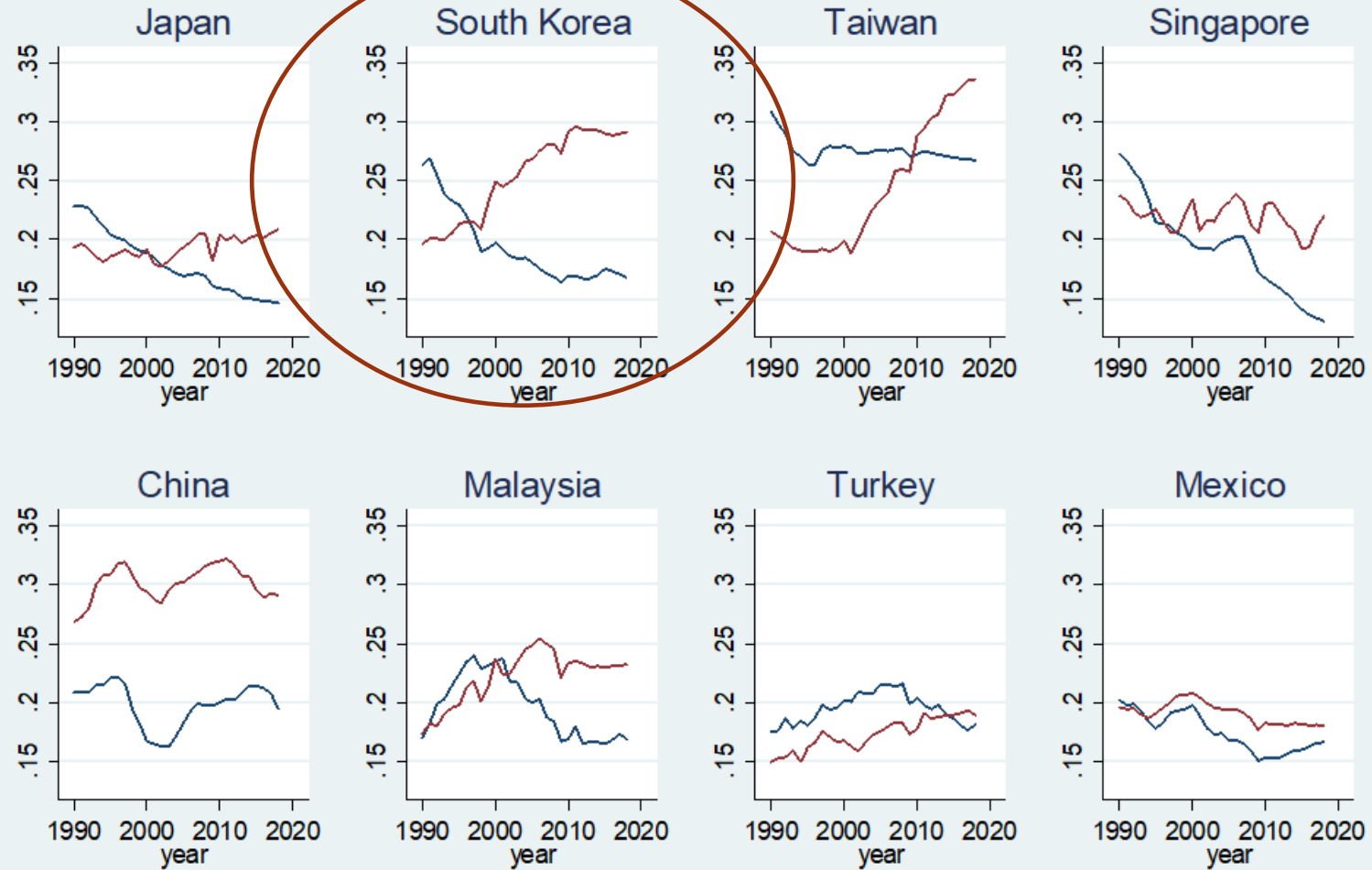
- time lags make it unlikely gap between skills and technology can be closed

Re-industrialization

- no country has been able to reverse employment de-industrialization

Manufacturing Trends in Various Countries

blue line = manufacturing employment share; red line=MVA share in GDP at constant 2015 prices



Source: De Vries et al. (2021), "The Economic Transformation Database."

Successful firms have a wide range of requirements



And need a variety of non-market institutions to provide them



Three key areas of priority

1. Equipping workers
 - lessons from successful sectoral training programs: importance of wrap-around services, and dual-client approach
 - SENAI?
2. Creating good firms
 - modern industrial policies: from top-down subsidies/tax incentives to collaborative arrangements focused on provision of customized public services and inputs
 - SEBRAE?
3. Re-directing innovation
 - from labor-replacing to labor-enhancing technologies
 - Innovation Institutes?

Importance of coordination and collaboration among these three; political support; overall vision & strategy

Key take-away

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