

# LEAPFROGGING INTO THE UNKNOWN

## SOUTHEAST ASIA AND THE FUTURE OF JOBS

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# Outline

## **1. Trends in structural transformation (ST)**

Tertiarization and convergence

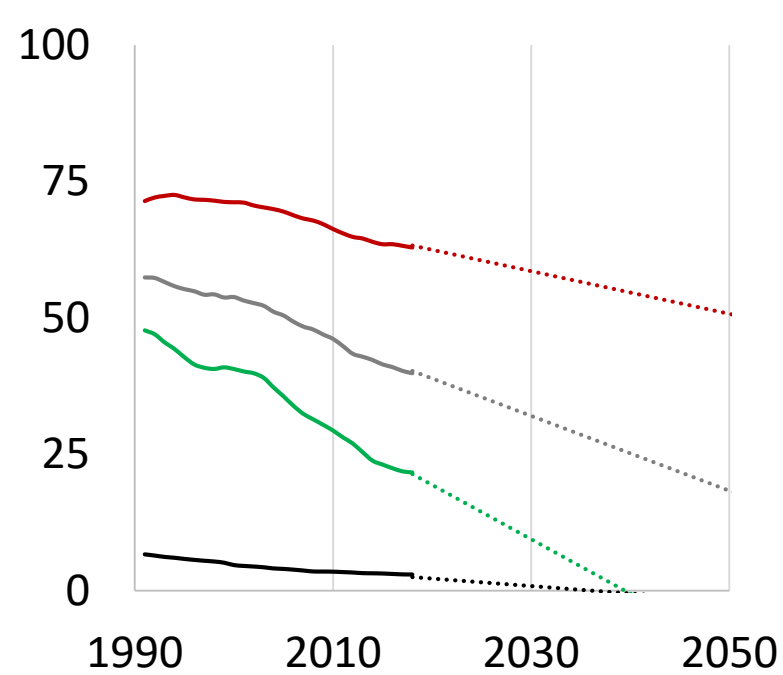
## **2. Future employment challenges**

Technological catch up during late development

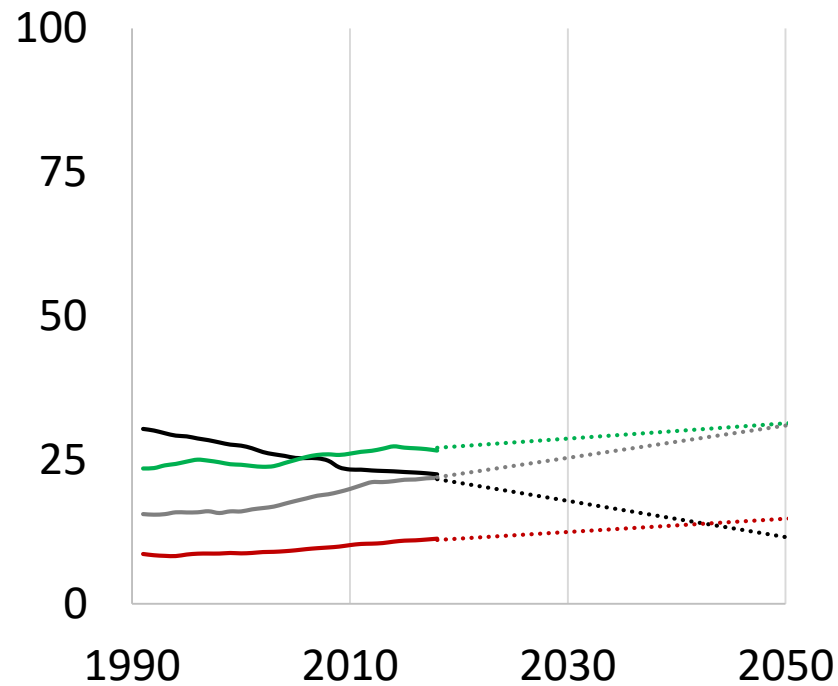
## **3. Conclusions**

# Employment across sectors

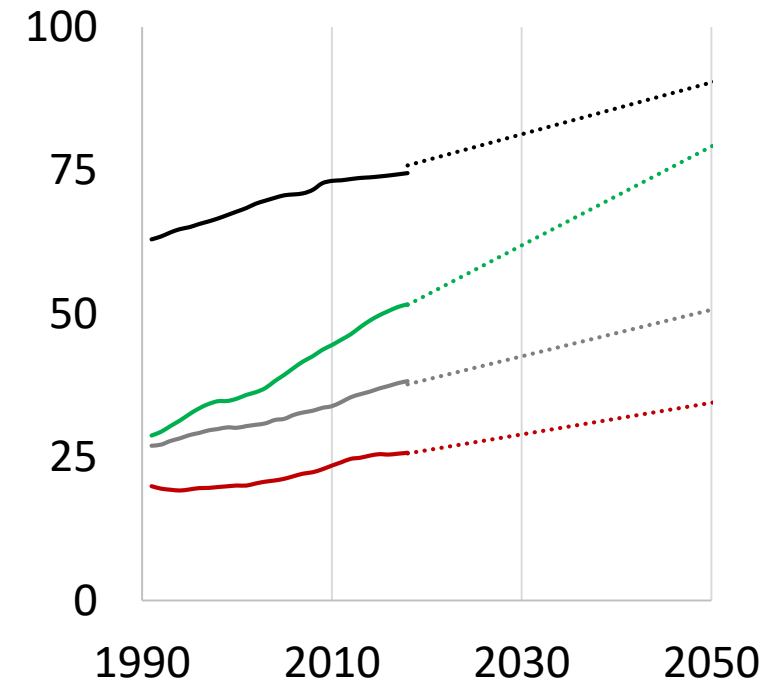
## Agriculture



## Industry



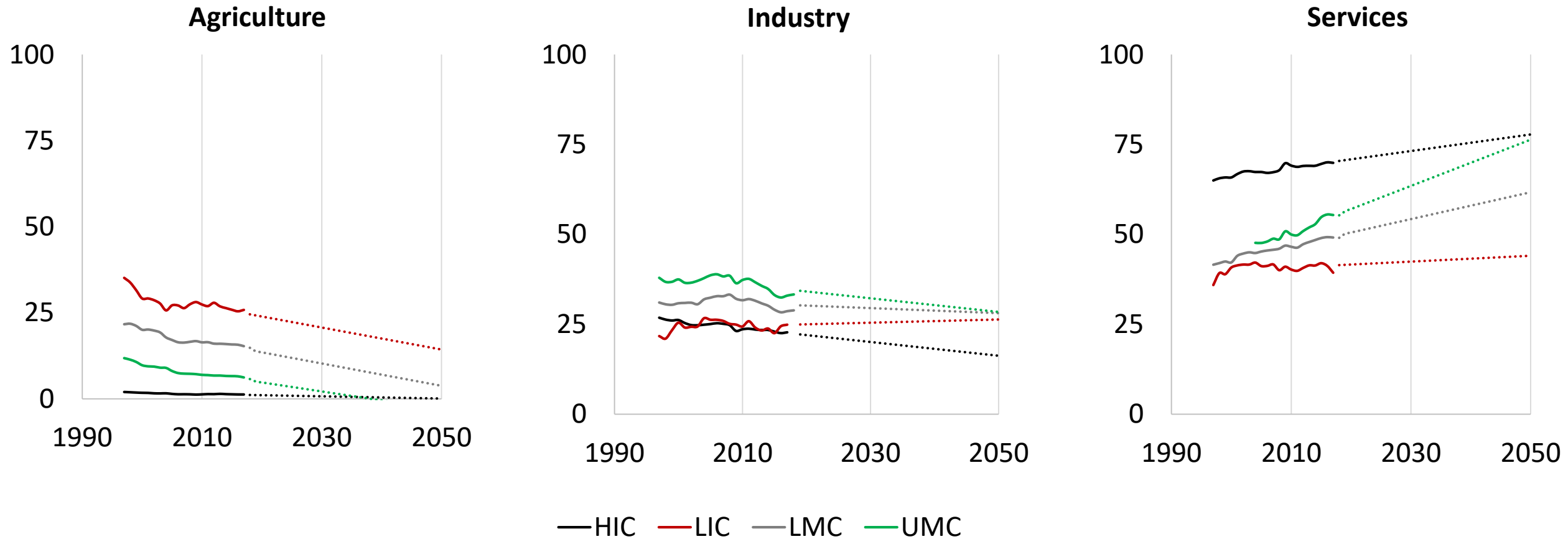
## Services



— HIC — LIC — LMC — UMC

(ILO modelled estimates. Dotted lines are projections based on the linear trend.  
Country aggregates are based on population-weighted averages.)

# Value addition across sectors



(ILO modelled estimates. Dotted lines are projections based on the linear trend.  
Country aggregates are based on population-weighted averages.)

# Structural convergence

- Expansion of service-sector jobs at expense of industrial (HICs) and agricultural (DCs) jobs. Little potential left in HICs for cross-sector ST.
- Industrial employment shares increasingly detached from development level. Congo, Bangladesh, Mexico, Finland have ~20%-25% employment in industry.
- In OECD, industrial employment peaked in 60s/70s at ~30%. If path is followed, UMICs reach Clark turning point in 2030s, LMICs in 2040s.
- Structural change fastest in LICs (Merotto, Weber, & Aterido, 2018)

# The trend in Southeast Asia

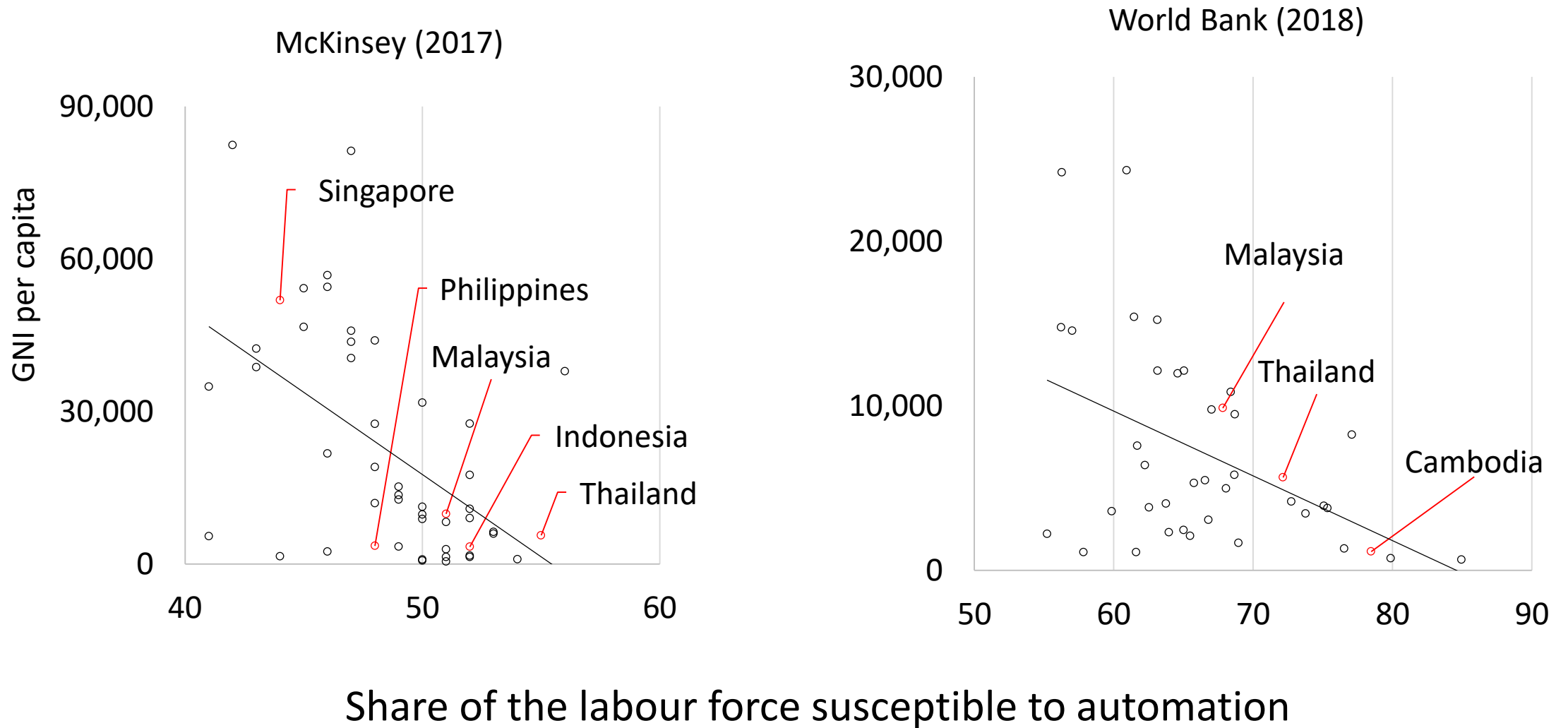
Movement of labour across sectors following similar pattern:

- Employment in agriculture contracting
- Service sector expanding
- Industrial employment mixed
  - Most of SEA still shows expanding employment in industry
  - Rich SEA contracting: Malaysia reached 'Clark turning point' in late 90s, Brunei in early 90s, Singapore earlier. Singapore service sector share now higher than UK or US.

So, business as usual?

Enter the Robots.

# Automatable work across SEA



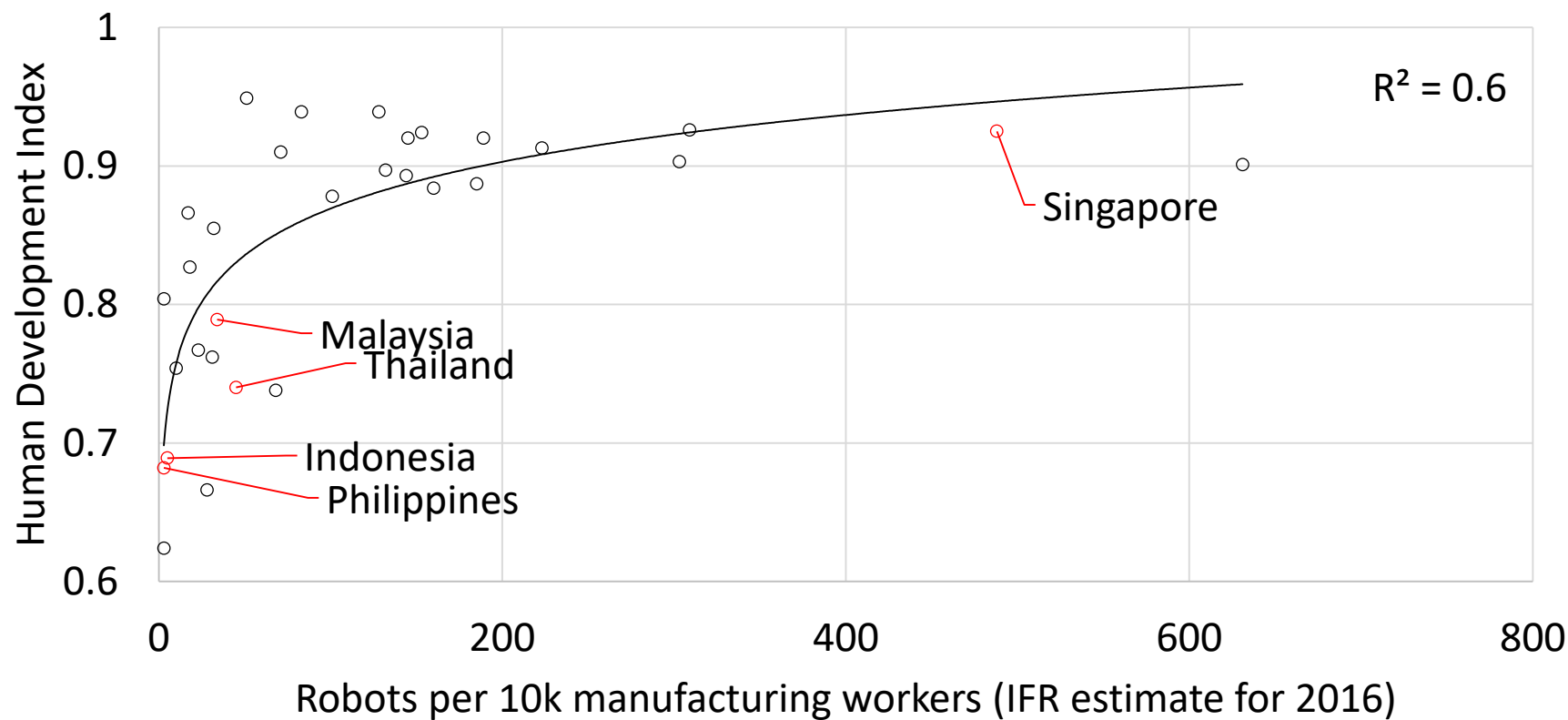
Share of the labour force susceptible to automation



# % of automatable jobs (estimates)

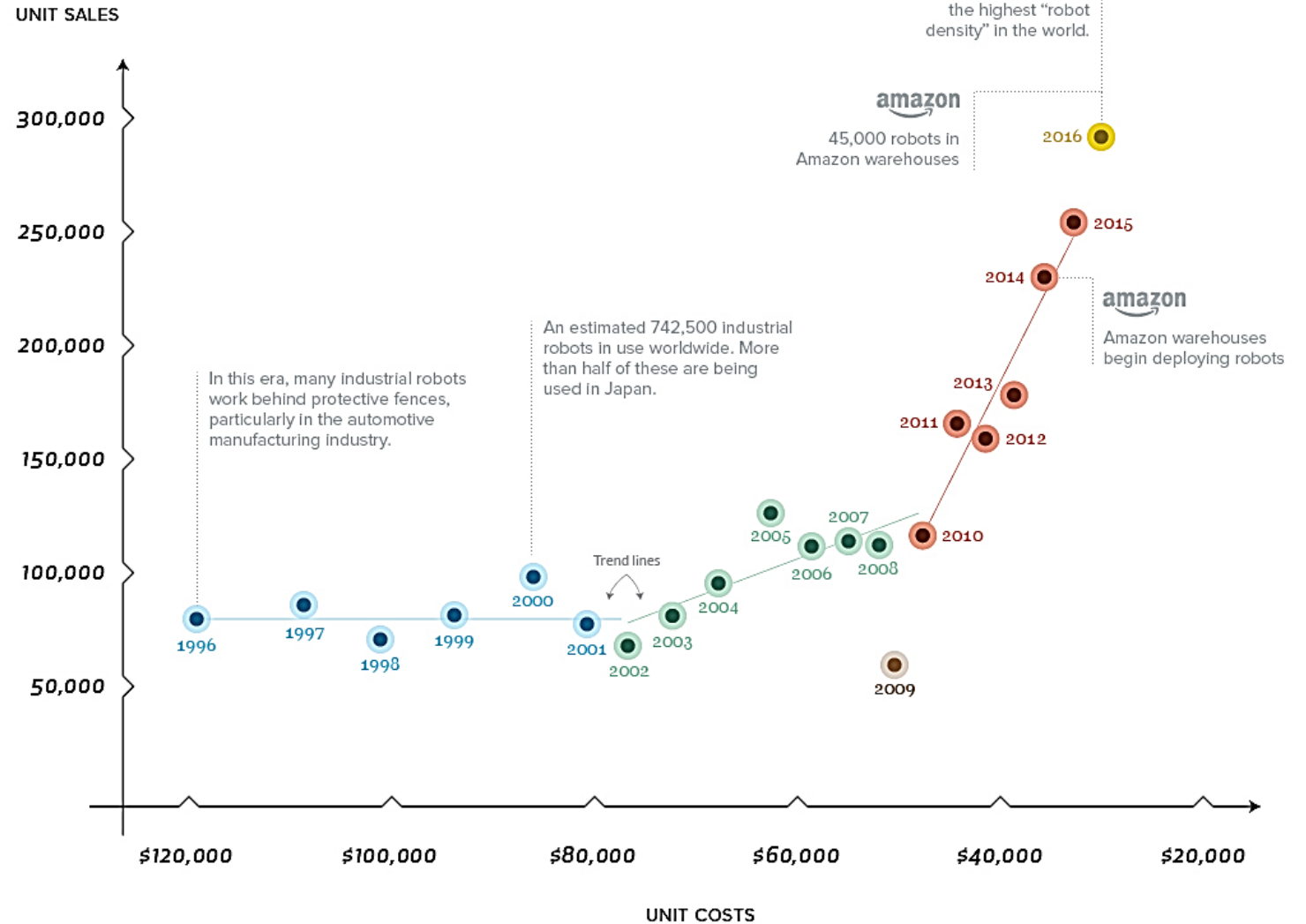
	WB (2016)	MGI (2017)
<b>Cambodia</b>	78%	
<b>Indonesia</b>		52%
<b>Malaysia</b>	68%	51%
<b>Philippines</b>		48%
<b>Singapore</b>		44%
<b>Thailand</b>	72%	55%

# Industrial robot density low but growing fast



# Robot sales: prices ↓ demand ↑

3.1 million industrial robots in operation globally by 2020



# A trend towards service automation

- Indonesian SOE Jasa Marga: phased in e-toll system in 2017 (GOI mandated it)
- Unions feared loss of 20,000 jobs – JSMR denies layoffs
- “Although we do not expect the majority of workers to leave JSMR (...), personnel expense growth should still be limited, as the A-Life [task rotation] program should *reduce the need for additional recruitment in the coming years.*” (Mirae Asset 2018)



# Meanwhile, 40 miles from Silicon Valley...

## Toll Gates at Oakland Bay Bridge



“Gutierrez and other collectors sometimes worry that the FasTrak lanes could replace tollbooth operators altogether. Gutierrez says it’s a question that has been coming up repeatedly at union meetings over the last three months. “The union claims that if it does come to that, they’ll help us get to another job site,” Gutierrez says. But CalTrans officials say—and Gutierrez agrees—that it is just a rumor. No official proposal has been laid out or discussed.” (Waheed 2012)

# Late developers, early adopters

## McDonald's e-Kiosks in Indonesia



- Weak labour protection might make adoption of labour-displacing technology easier in countries where labour costs would otherwise provide little incentive for it

# Late developers, early adopters

## SEA: Rapid rise of gig economy



## HICs: Banning Uber...



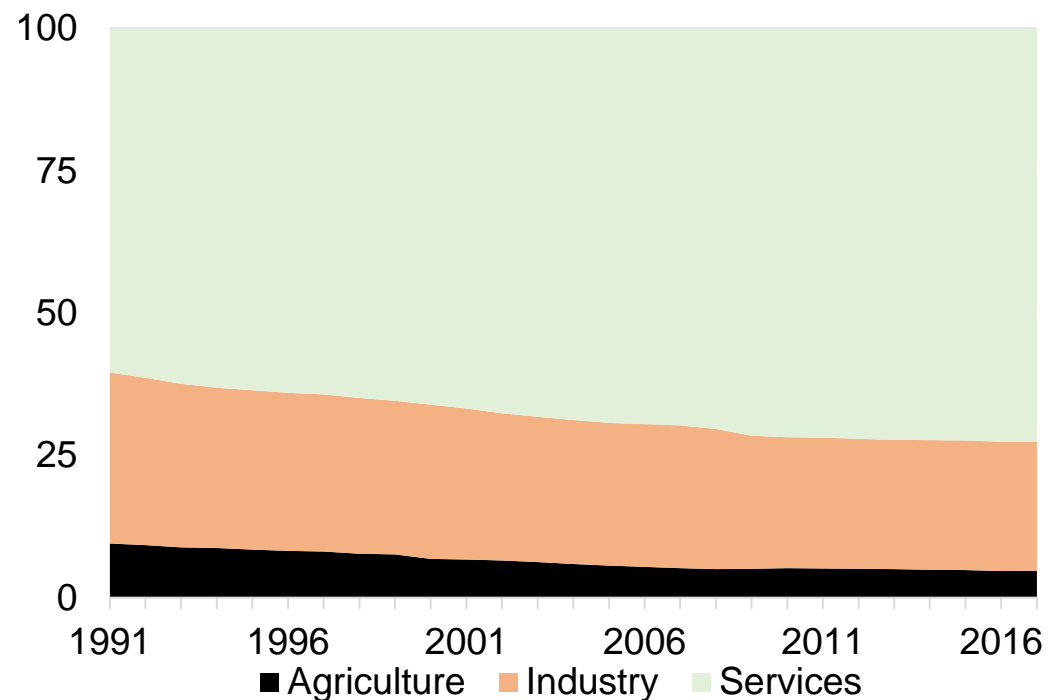
# What's the trouble?



# Lots of agricultural work, despite ST

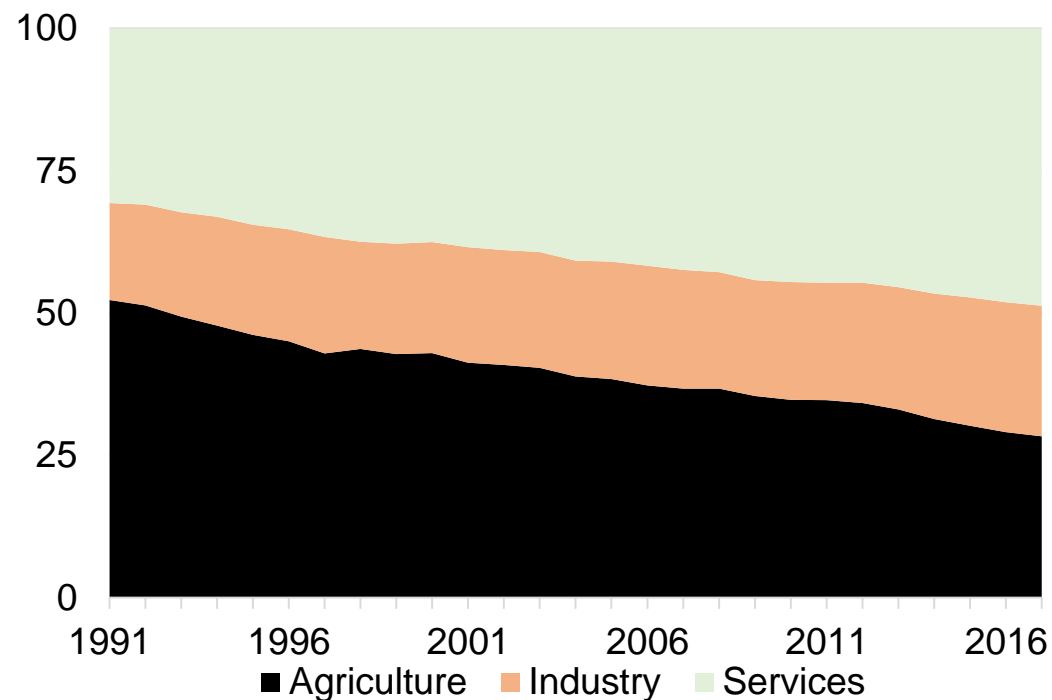
## OECD

(%, OECD, Employment share)



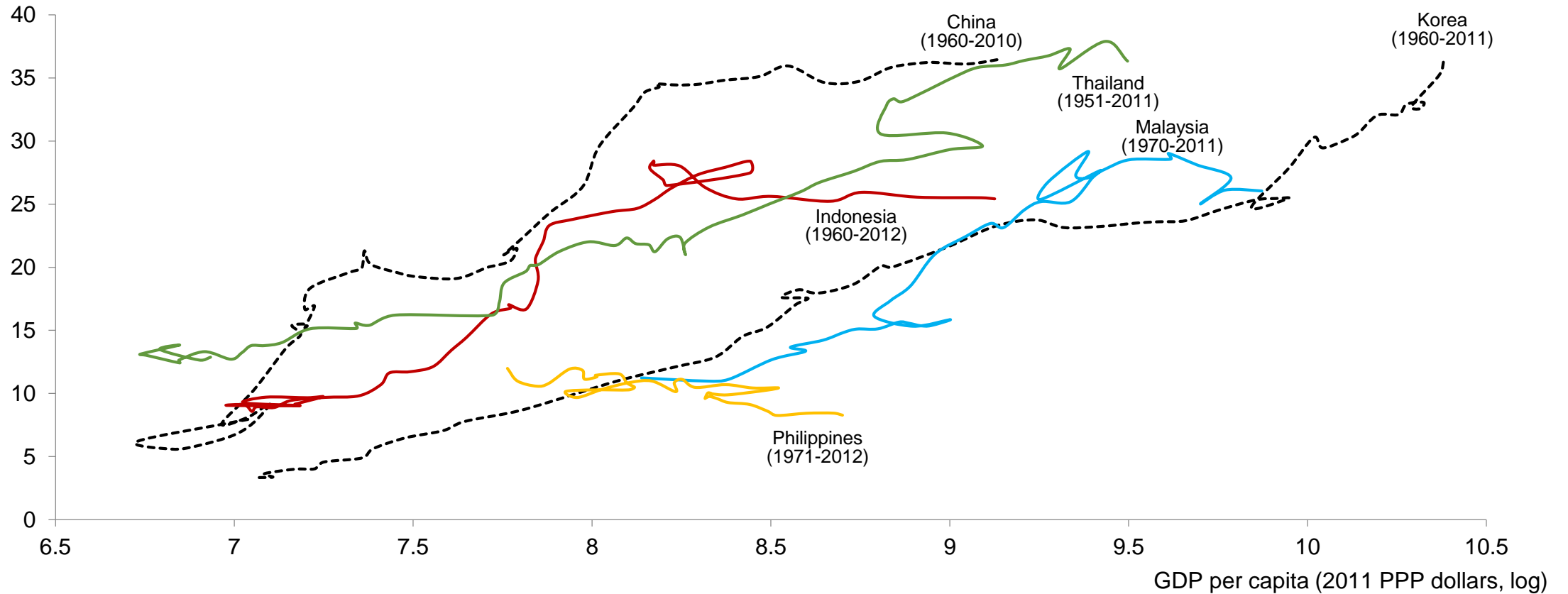
## ASEAN-5

(%, ASEAN-5 (simple ave.), Employment share)



# Premature deindustrialization?

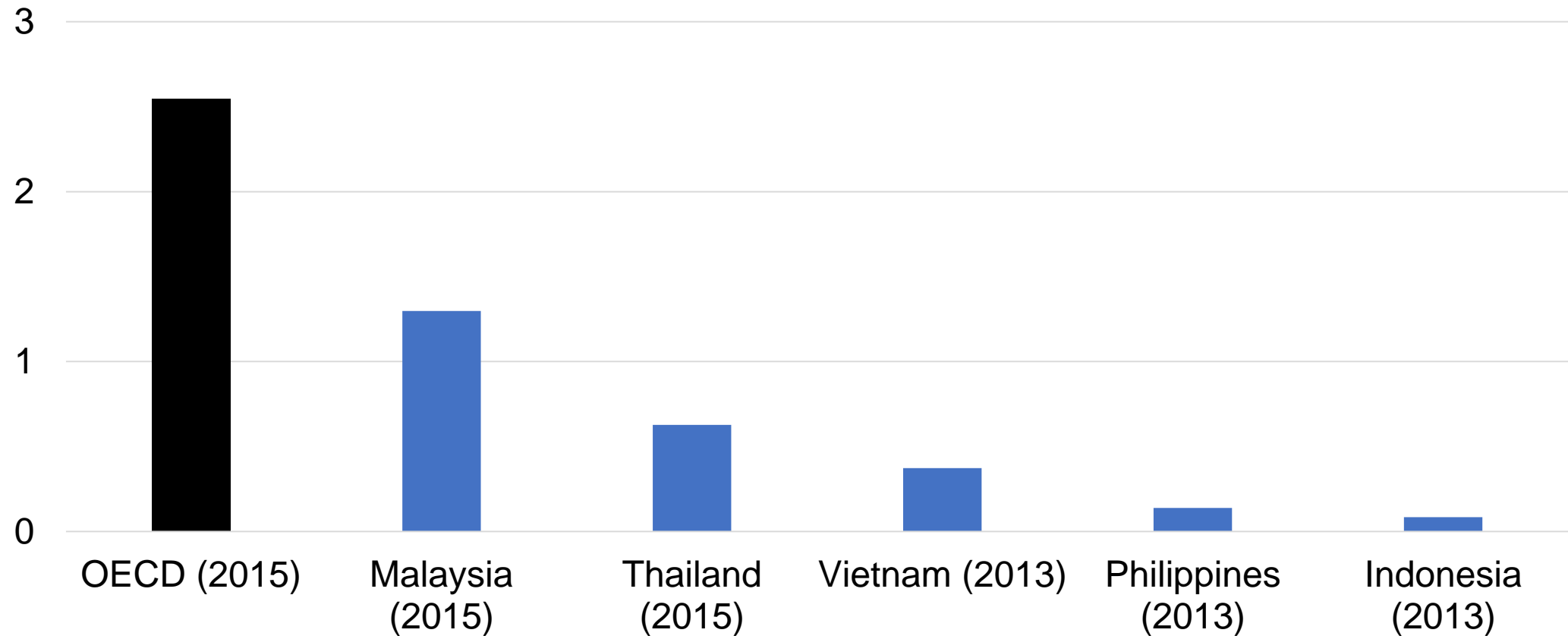
Manufacturing (% of value added, constant prices)



Source: GGDC 10 Sector Database

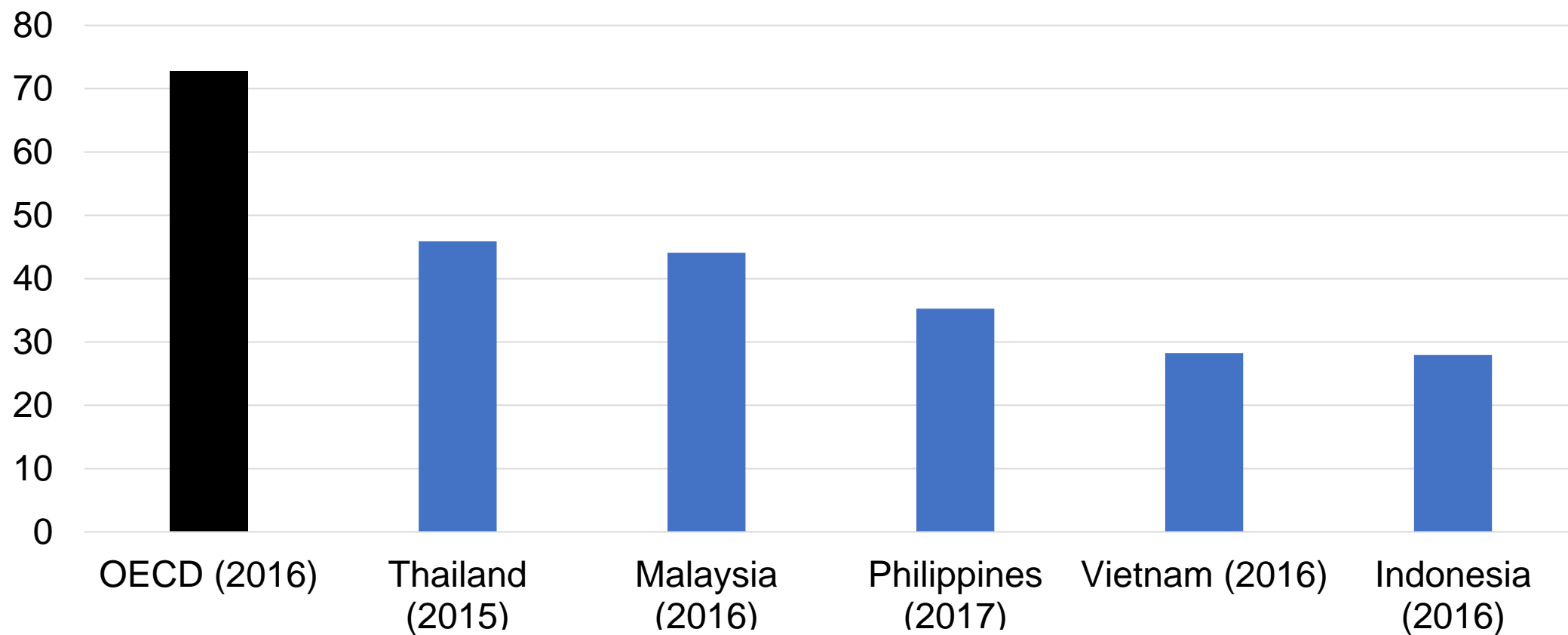
# R&D expenditure

(%, R&D expenditure/GDP)



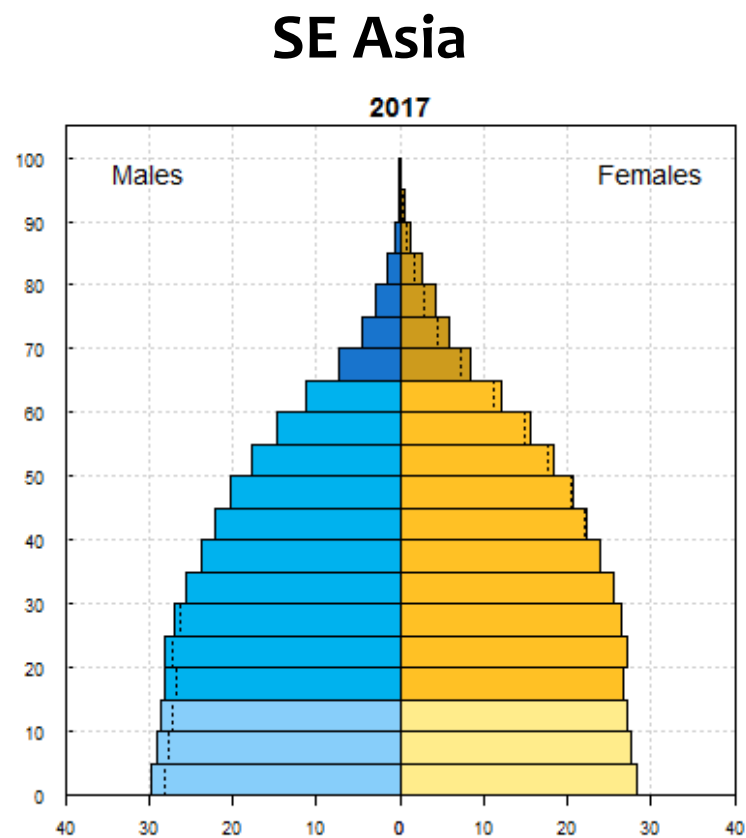
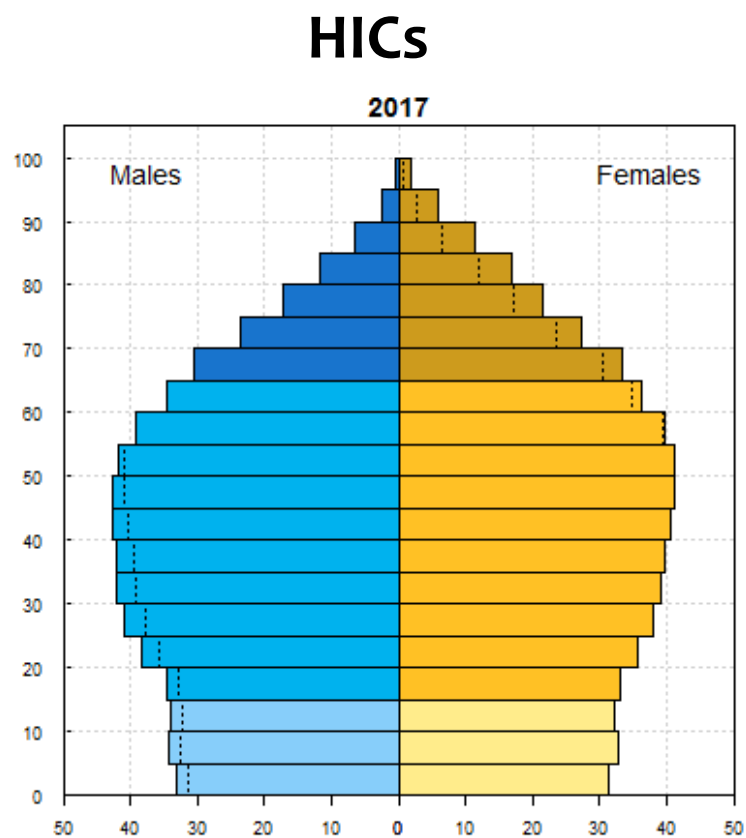
# Skills

(%, Tertiary school enrolment rate)



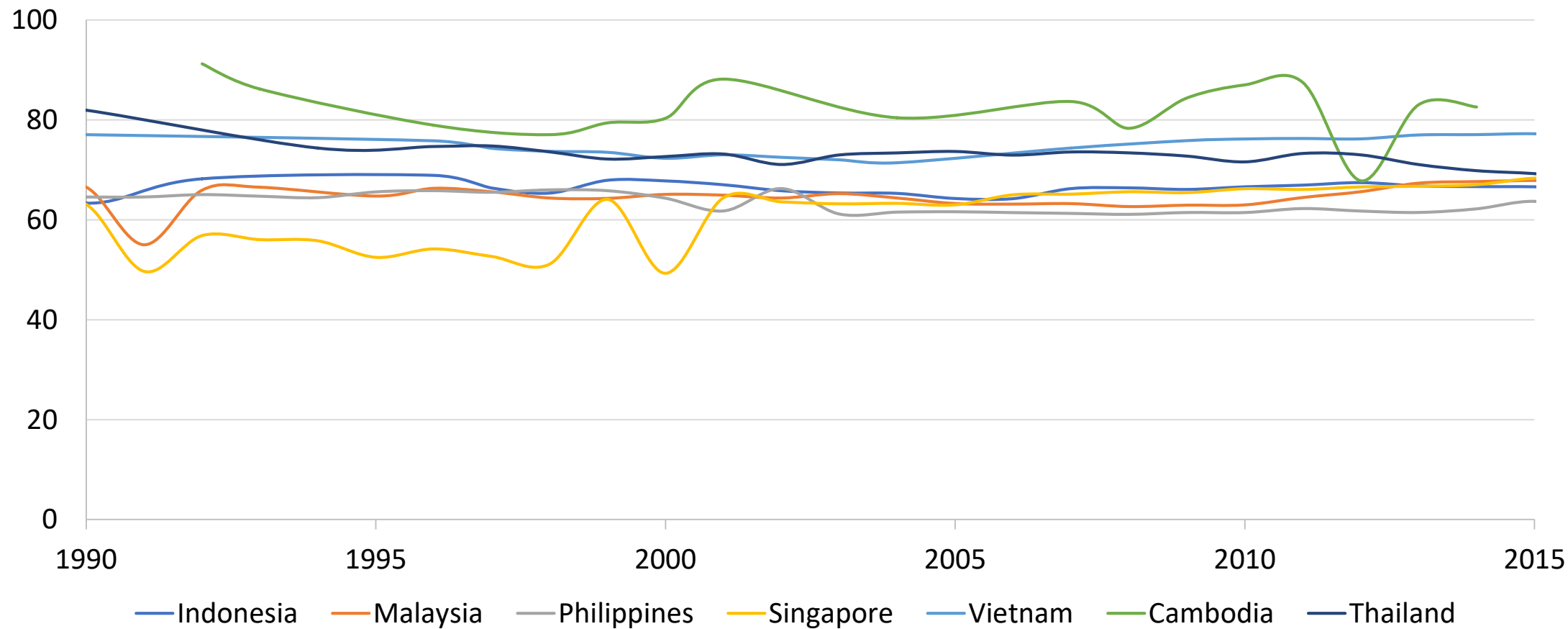
Source: World Bank

# Demographic dividend?



Source: UN World Population Prospects

# But: stable labour force participation



Source: ILO

# Technological catch-up or automation creep?

- Gerschenkron's (1962) 'advantages of backwardness': "It makes sense for latecomers to utilise all the resources from the advanced world that they can acquire" (Mathews 2006). Today's parlance: "successful economic development involves a leapfrogging process" (Burlamaqui and Rainer Kattel 2014). Also a major theme in NSE (Lin).
- Robotisation pressing in tradeable sectors where GVC suppliers face international competition and risk of Reshoring

But...

- Rodrik (2018, p. 14) argues that "The evidence to date, on the employment and trade fronts, is that the disadvantages [of new technologies] may have more than offset the advantages" for developing countries due to erosion of low-cost labour advantage.
- Brynjolfsson and McAfee (2014, p. 184) argue that the "biggest effect of automation is likely to be on workers (...) in developing nations that currently rely on low-cost labor for their competitive advantage".

# Late Development, Early Adoption

## 1. Directed technological change

- Labour saving innovation driven by firms innovating in a high-skill, high-cost, high-social-protection environment of HICs

## 2. Innovation as global public good

- Innovation hard to contain in a hyper-globalised, digitally connected world ('automation creep') unless concentrated political resistance

## 3. Undirected early adoption

- Selective early adoption during late development despite low-skilled, low-cost, low-social protection environment.

## 4. Specialisation towards comparative disadvantage?

- Less inclusive development, a smaller middle class, less democracy?



# The near term future of ST in SEA

## **... will be characterised by:**

- Continued expansion of service sector employment
- MICs reaching Clark turning point, starting job deindustrialisation
- More technological convergence unless labour protectionism

## **... will raise the following questions:**

- Should technological adoption be commensurate to level of econ development? Can you automate prematurely?
- Can the labour force be upskilled fast enough?
- Does automation require a specific (social) policy context?

# Thank you!

Forthcoming with Palgrave as OA:

**Disrupted Development. The Future of Industrialisation  
and Inequality in the Age of Automation (Schlogl & Sumner 2019)**

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