# Thai Labor Market Dynamics and Challenges
# พลวัตและความท้าทายของตลาดแรงงานไทย

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BANK OF THAILAND

# Thailand has expected an increase in demand for high skilled workers

5 ปีต้องการแรงงานกว่า 4.7 แสนคน

ครม.ขยายมาตรการภาษี 3 ปี หนุนจ้างงานบุคลากร STEM

อว.เปิด 58 หลักสูตรสะเต็ม พัฒนาโดย 12 หน่วยฝึกอบรมชั้นนำ สอดคล้องอุตสาหกรรมเป้าหมายของประเทศ

อีอีซีผนึกกระทรวงแรงงาน สร้างคนคุณภาพเข้าอุตสาหกรรมเป้าหมาย

รัฐบาลอนุมัติส่งเสริมการลงทุน 6 เดือนแรกปี 65 ก่อให้เกิดการจ้างงานกว่า 44,000 ตำแหน่ง เผยปริญญาตรีสาขาวิศวกรรมศาสตร์ยังเป็นที่ต้องการมากที่สุด

## Targeted industries : 2017-2026

**First S-Curve**
- NEXT-GENERATION AUTOMOTIVE
- SMART ELECTRONICS
- AFFLUENT, MEDICAL & WELLNESS TOURISM
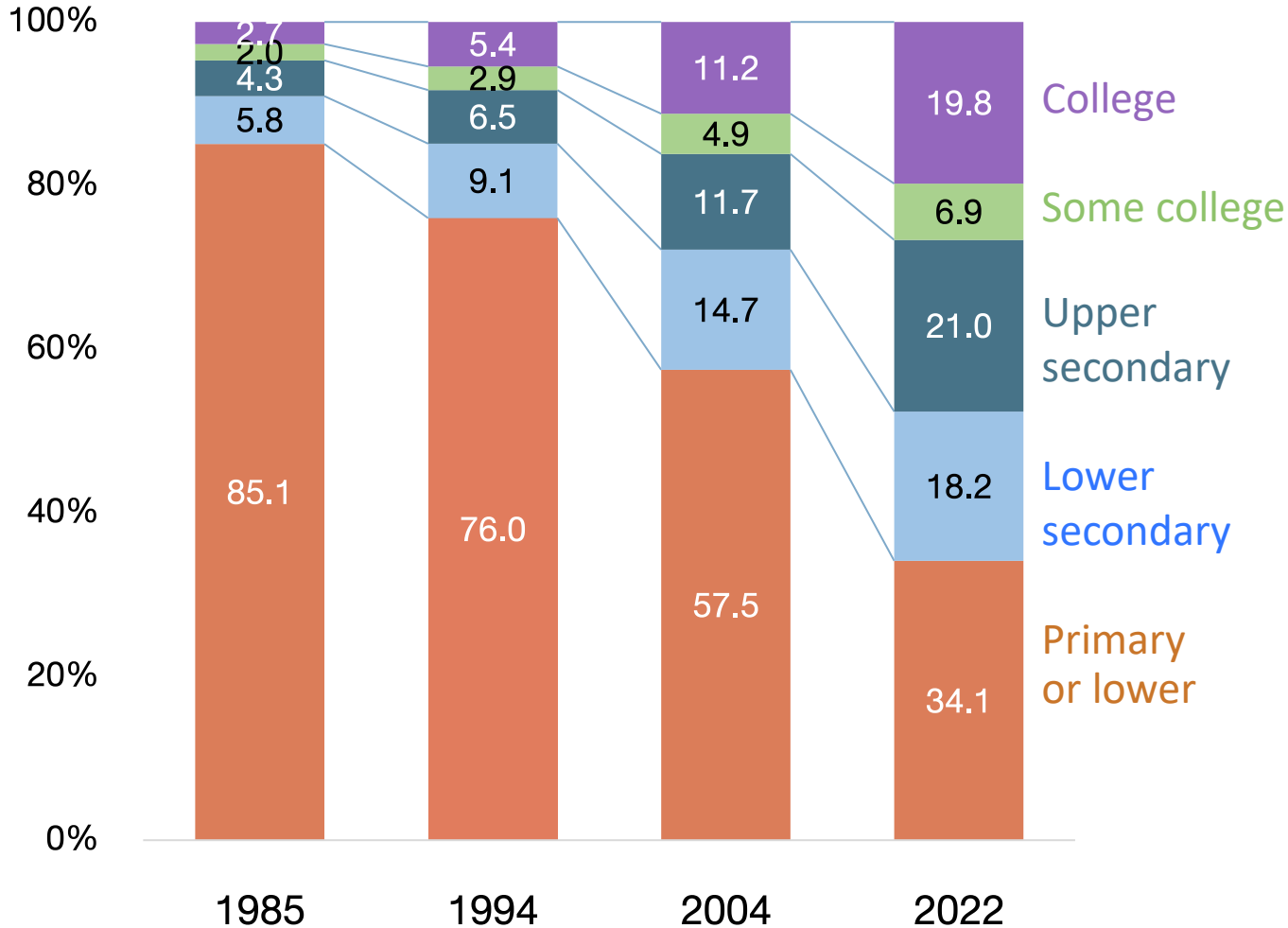- AGRICULTURE & BIOTECH
- FOOD FOR THE FUTURE

**New S-Curve**
- ROBOTICS
- AVIATION & LOGISTIC
- BIOFUELS & BIOCHEMICAL
- DIGITAL
- COMPREHENSIVE MEDICAL

If <u>demand</u> for high skilled workers increases relatively more than <u>supply</u>, <u>wages</u> for high skilled workers should increase.

# Labor supply for higher educated workers has increased

Education shares  (age 15–64 years)
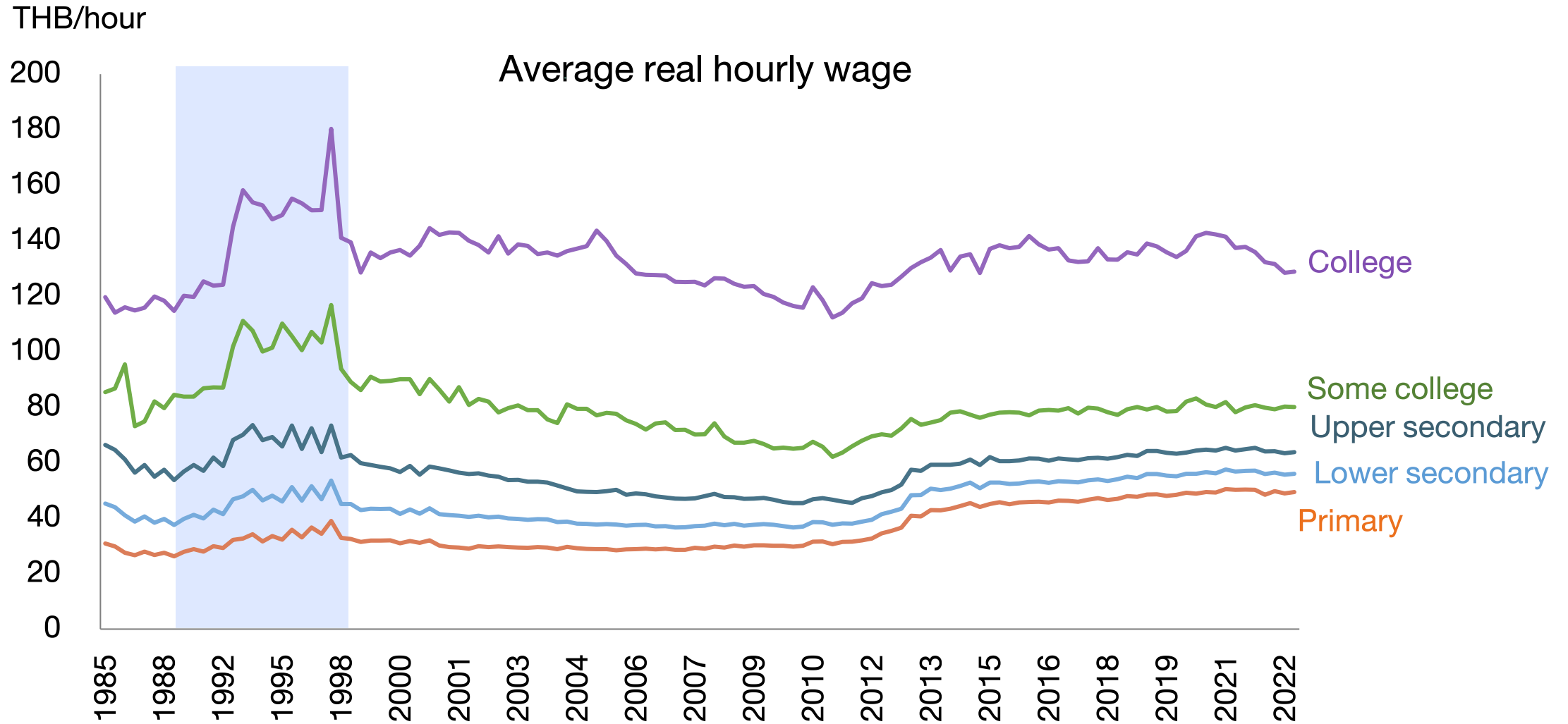


from 1985 to 2022

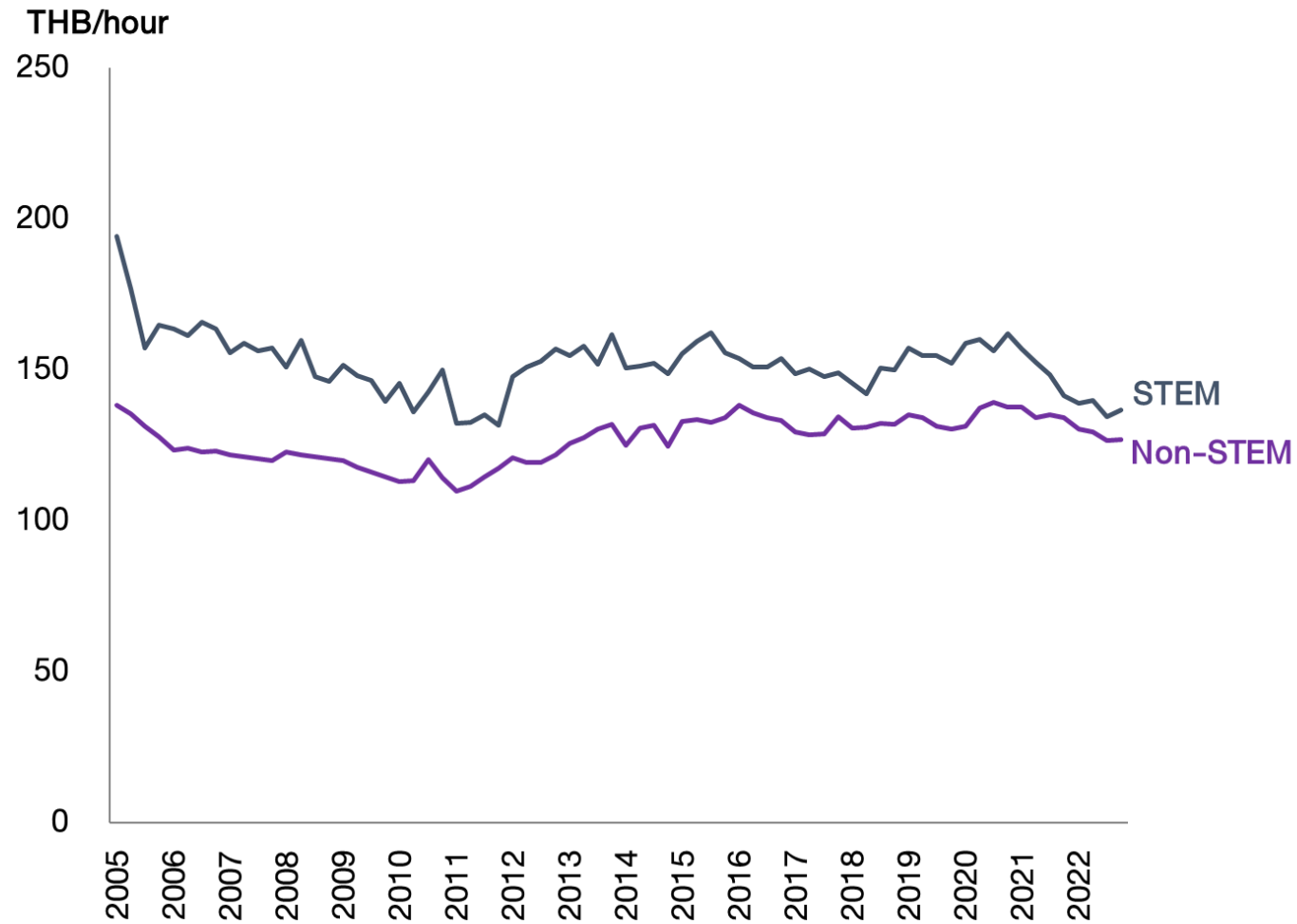secondary 10%  ➡  39%

college      3%  ➡  20%

STEM      1.6%  ➡  3.7%

(Science, Technology, Engineering, Mathematics)

# Average real wages have been flat in the last decade



THB/hour

Average real hourly wage

College

Some college

Upper secondary

Lower secondary

Primary

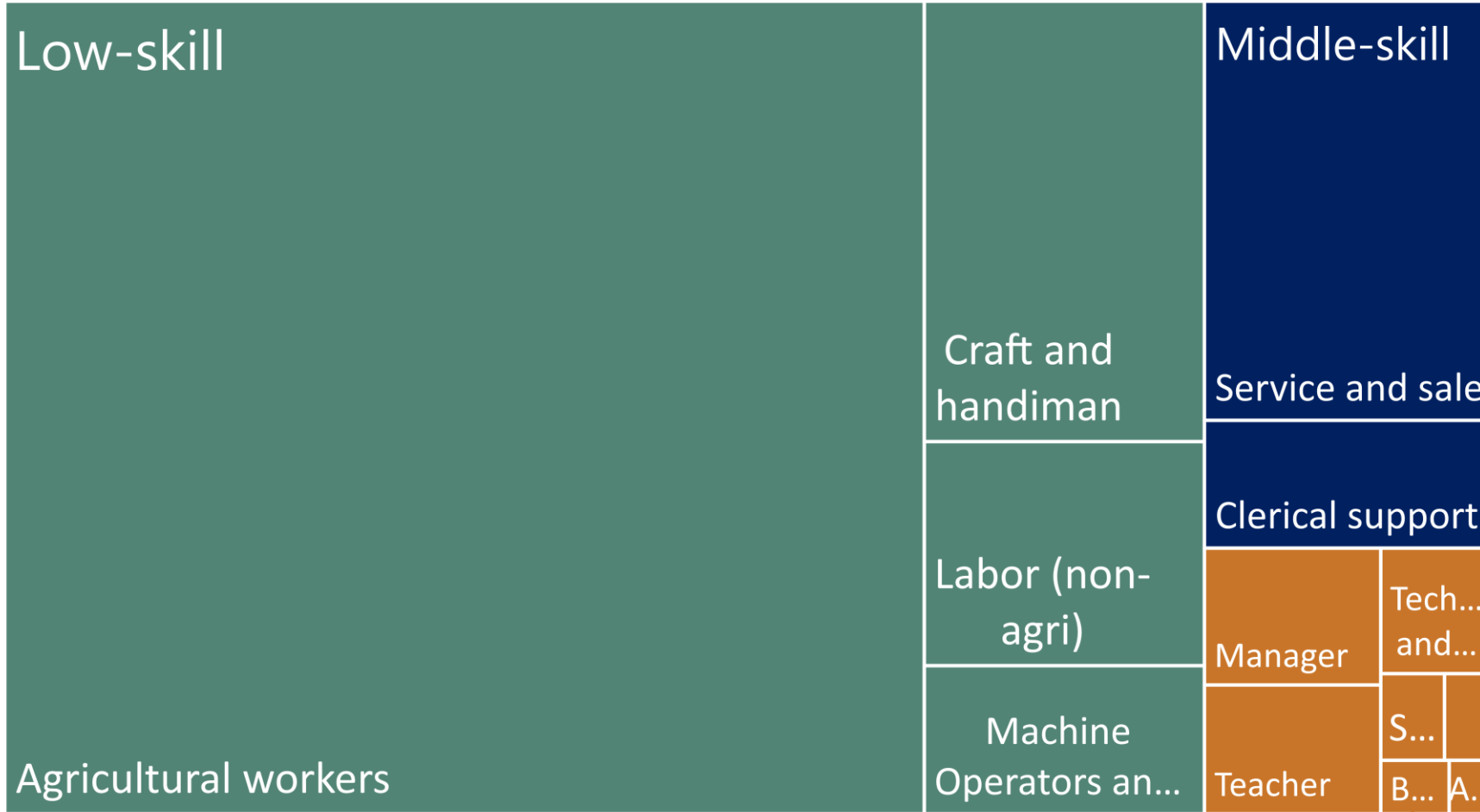# Even those with degrees in STEM subjects, wages have been stable



THB/hour

STEM

Non–STEM

Jobs were mostly low-skill in the past

Occupation shares: 1985 – 1994

Low-skill — 81%
Middle-skill — 13%
High-skill — 6%

Low-skill: Agricultural workers, Craft and handiman, Labor (non-agri), Machine Operators an...

Middle-skill: Service and sale, Clerical support
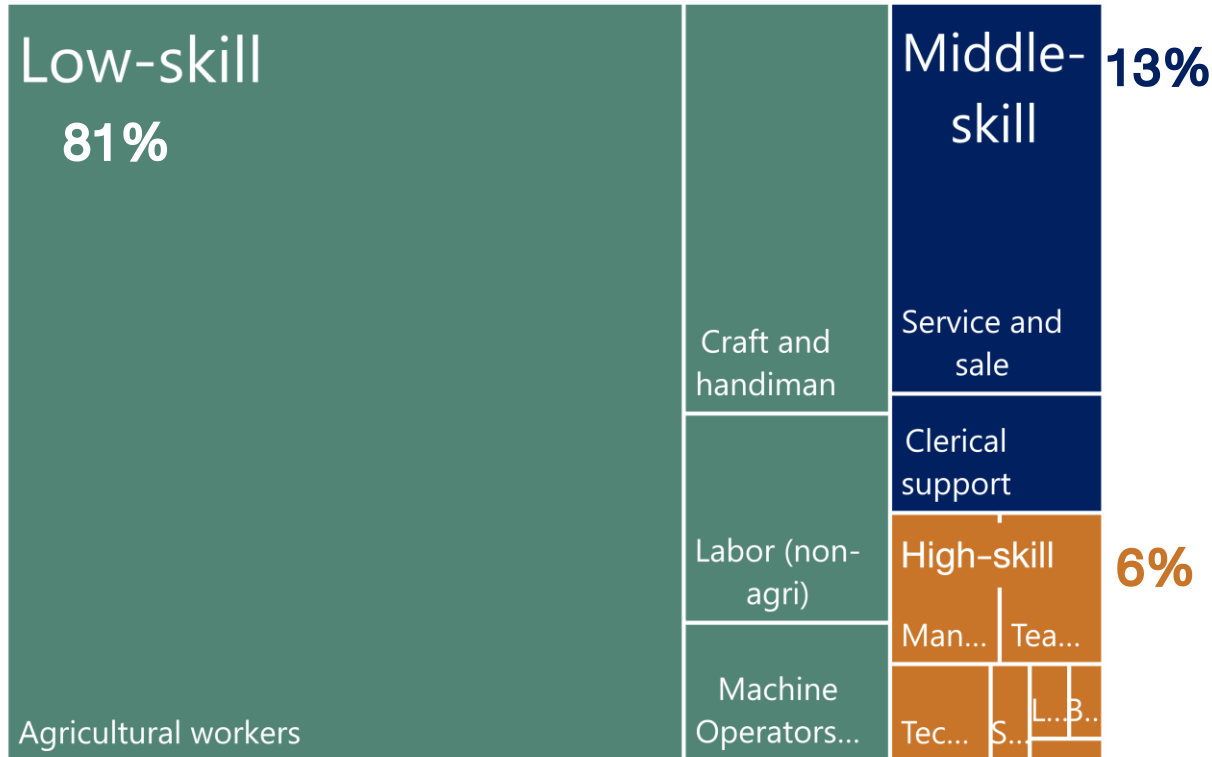
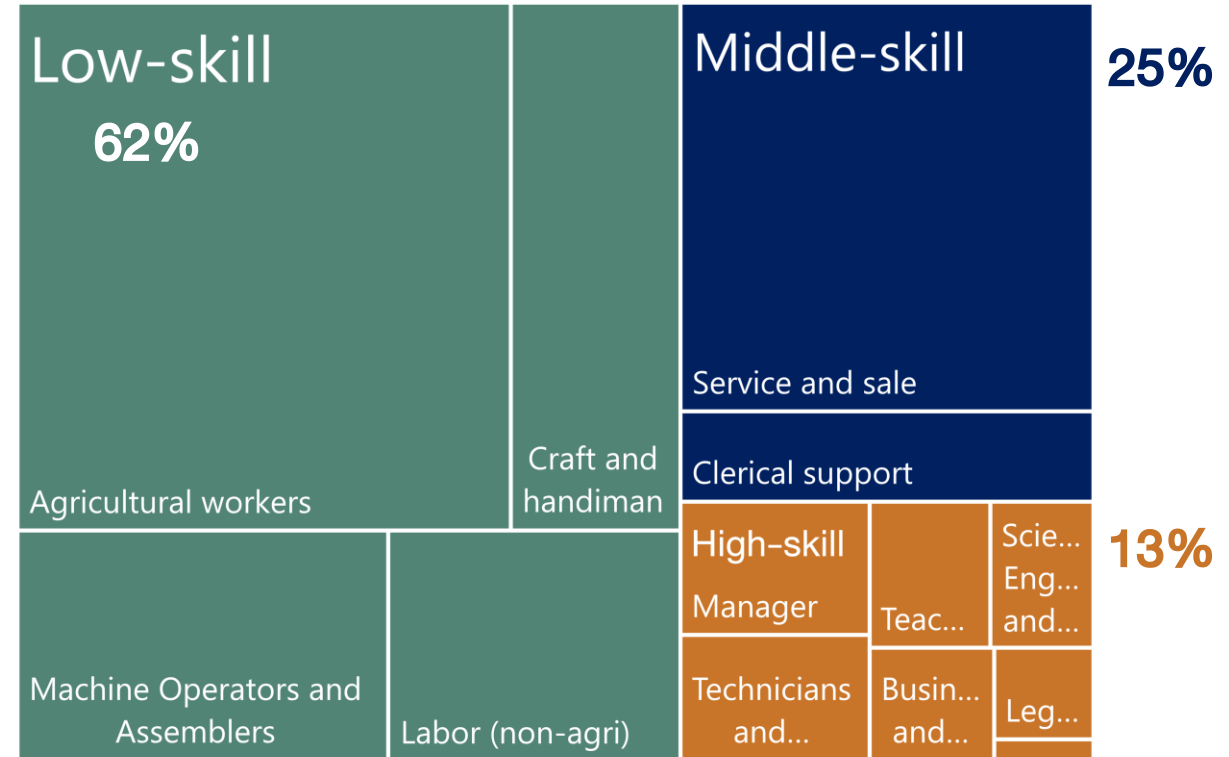High-skill: Manager, Teacher, Tech... and..., S..., B..., A...

Engineers, Medical doctors, Lawyers, Other professional services

# Over time high skilled jobs increased, but still only 13%
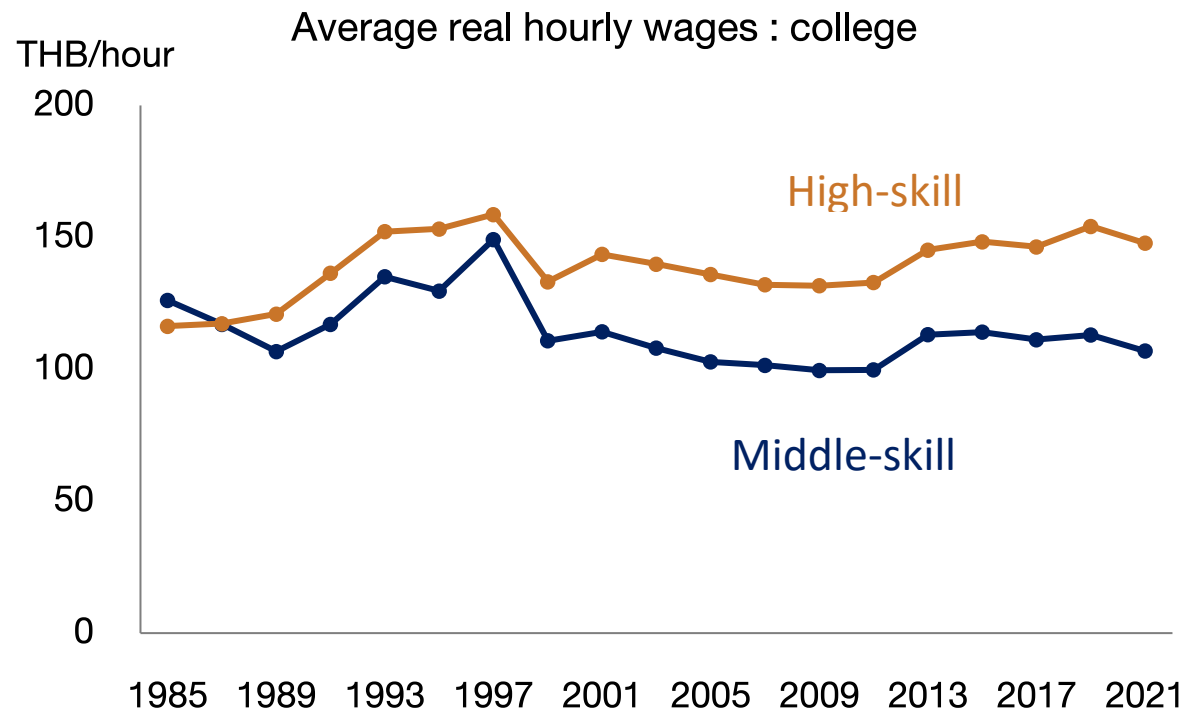
Occupation shares: 1985 – 1994
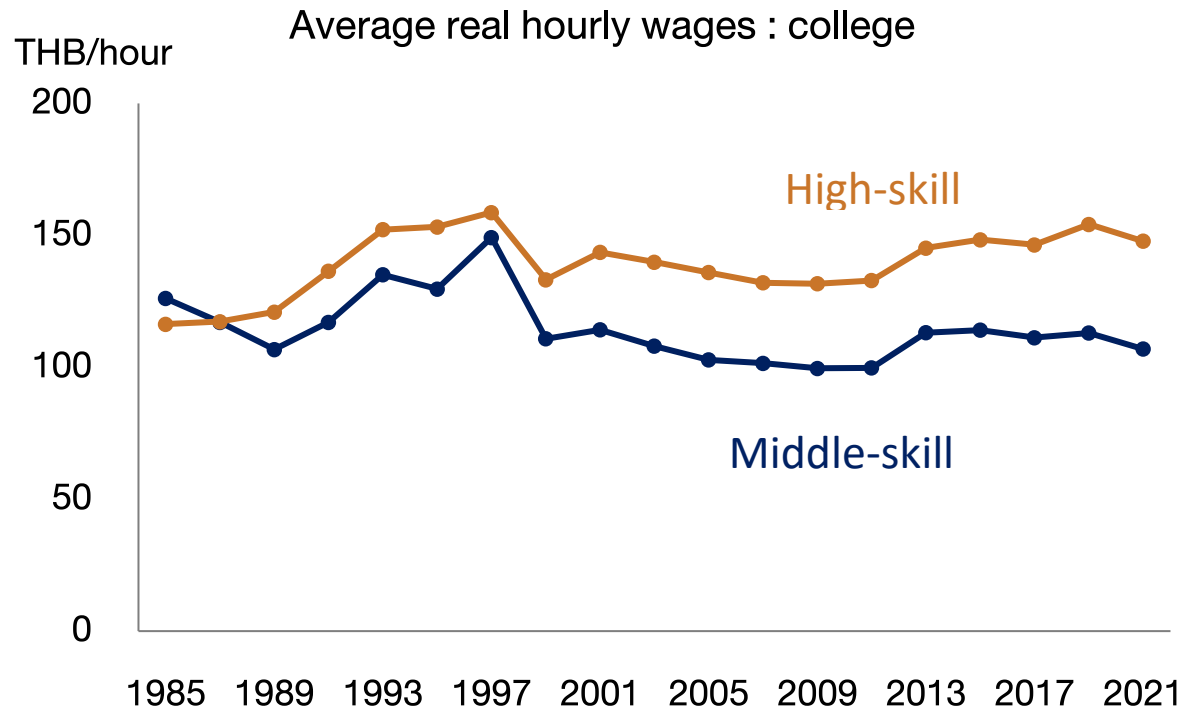


Occupation shares: 2015 – 2022

# College grads work in both high skilled and middle skilled jobs
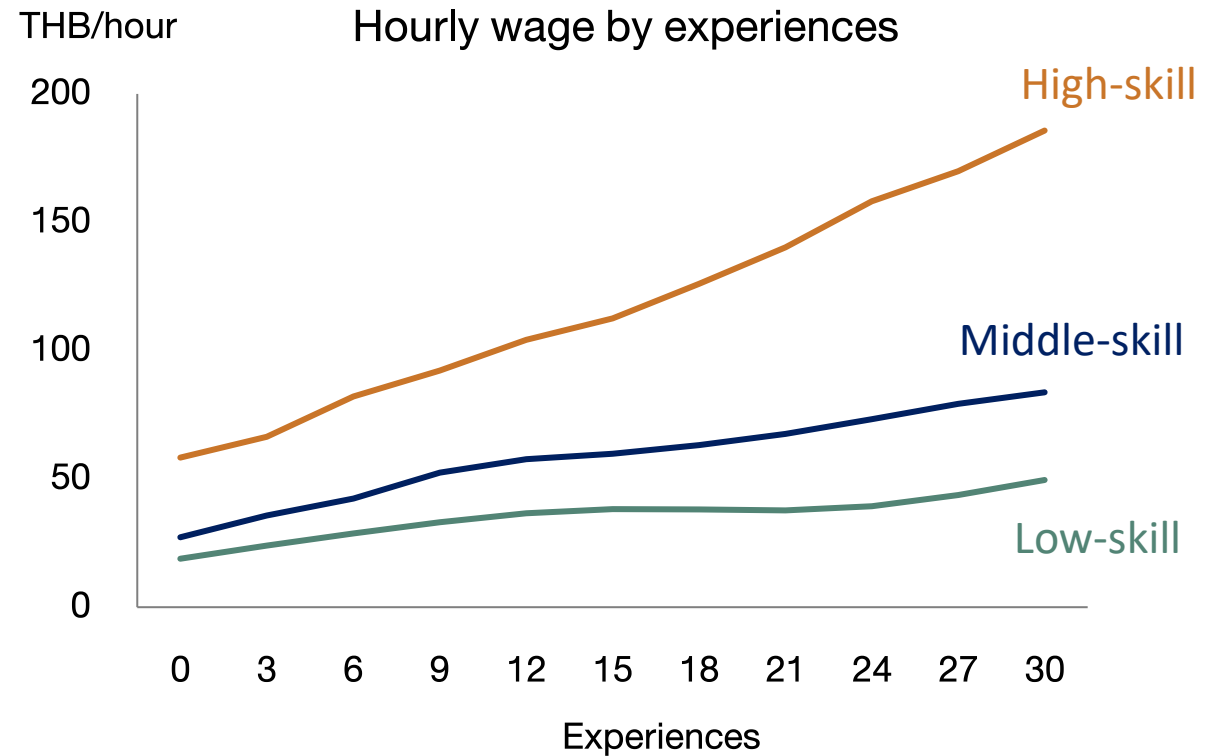
## High skilled jobs pay higher wages

Average real hourly wages : college

THB/hour

High-skill

Middle-skill

200

150

100

50

0

1985  1989  1993  1997  2001  2005  2009  2013  2017  2021

# High skilled jobs : higher wage and higher return to experience

## High skilled jobs pay higher wages

### more experience→ an expert higher wage growth

**Average real hourly wages : college**

THB/hour

- High-skill
- Middle-skill

200
150
100
50
0

1985  1989  1993  1997  2001  2005  2009  2013  2017  2021

**Hourly wage by experiences**

THB/hour

- High-skill
- Middle-skill
- Low-skill

200
150
100
50
0

0  3  6  9  12  15  18  21  24  27  30
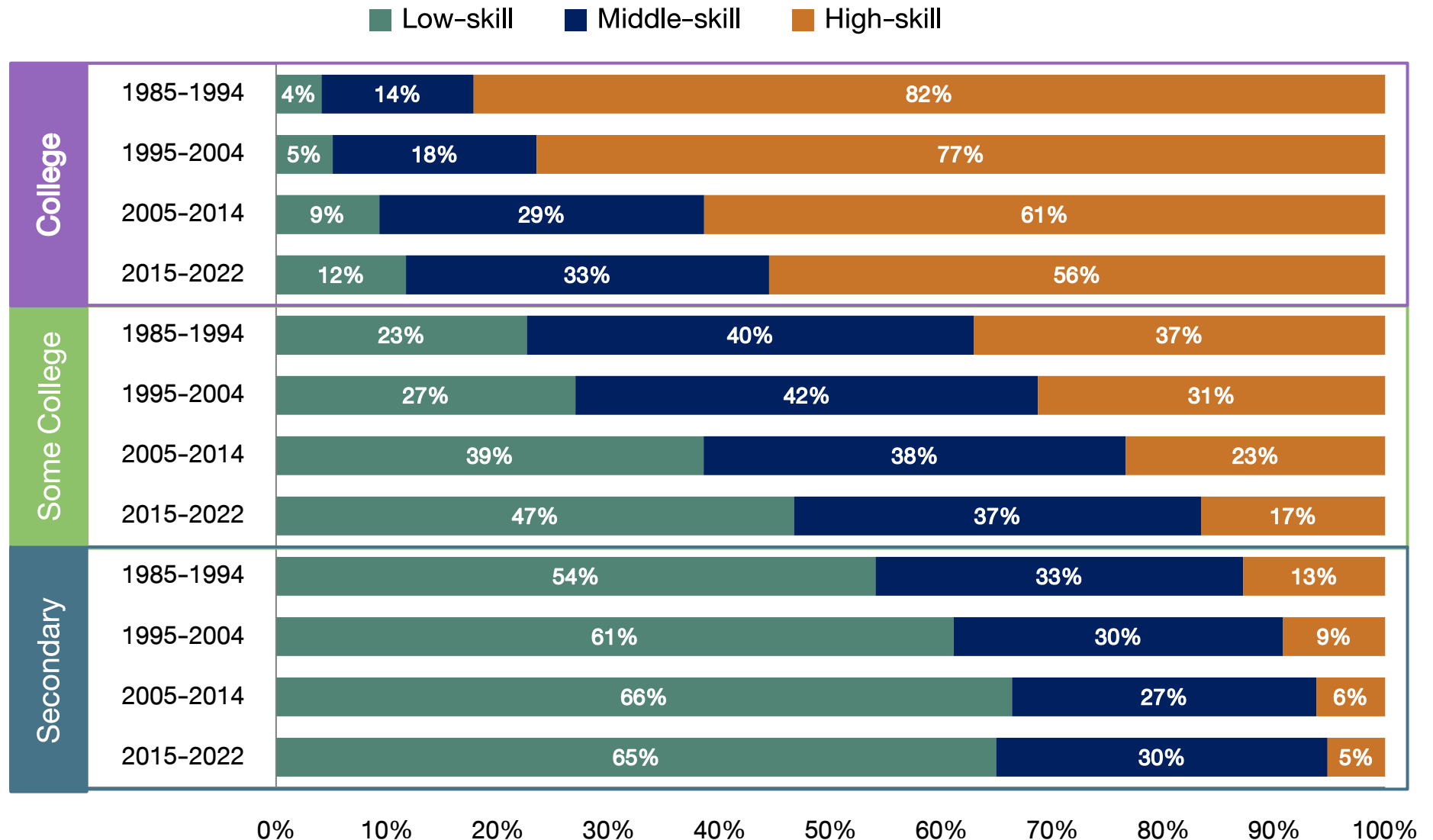
Experiences

# More college grads worked in middle skilled jobs over time



| | Low-skill | Middle-skill | High-skill |
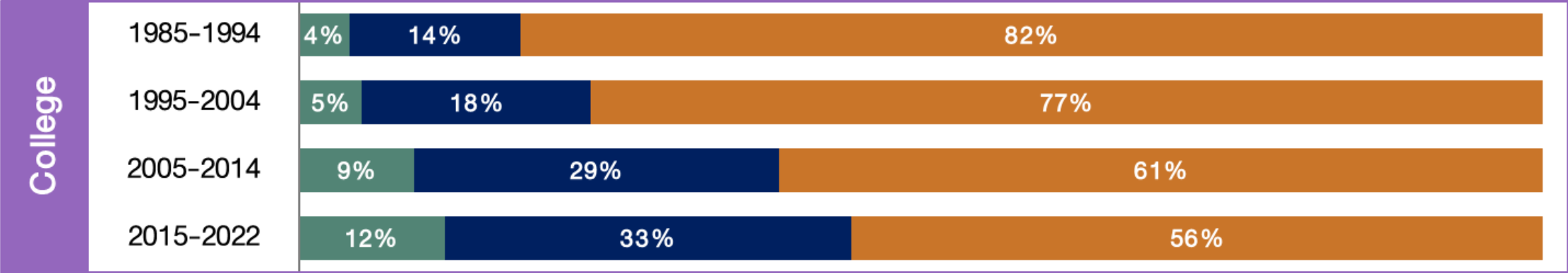
# More college took middle skilled jobs → pushing lower degrees to low skilled jobs

**Legend:** ■ Low-skill ■ Middle-skill ■ High-skill

## College

| Period | Low-skill | Middle-skill | High-skill |
|---|---|---|---|
| 1985–1994 | 4% | 14% | 82% |
| 1995–2004 | 5% | 18% | 77% |
| 2005–2014 | 9% | 29% | 61% |
| 2015–2022 | 12% | 33% | 56% |

## Some College

| Period | Low-skill | Middle-skill | High-skill |
|---|---|---|---|
| 1985–1994 | 23% | 40% | 37% |
| 1995–2004 | 27% | 42% | 31% |
| 2005–2014 | 39% | 38% | 23% |
| 2015–2022 | 47% | 37% | 17% |

## Secondary

| Period | Low-skill | Middle-skill | High-skill |
|---|---|---|---|
| 1985–1994 | 54% | 33% | 13% |
| 1995–2004 | 61% | 30% | 9% |
| 2005–2014 | 66% | 27% | 6% |
| 2015–2022 | 65% | 30% | 5% |

- College supply increased, but college wages have been flat, suggesting a slowdown in overall college demand.

- High skilled jobs pay more, but many college grads cannot find these jobs

Why aren't there more high skilled employment?

# High investment period is correlated with high demand (and hence high wage)

- The pace of capital accumulation has been insufficient for Thailand to upgrade its productive capabilities to the level of sophistication required to enable it to escape from the middle income trap

**Gross investment/GDP**

**Average real hourly wage**
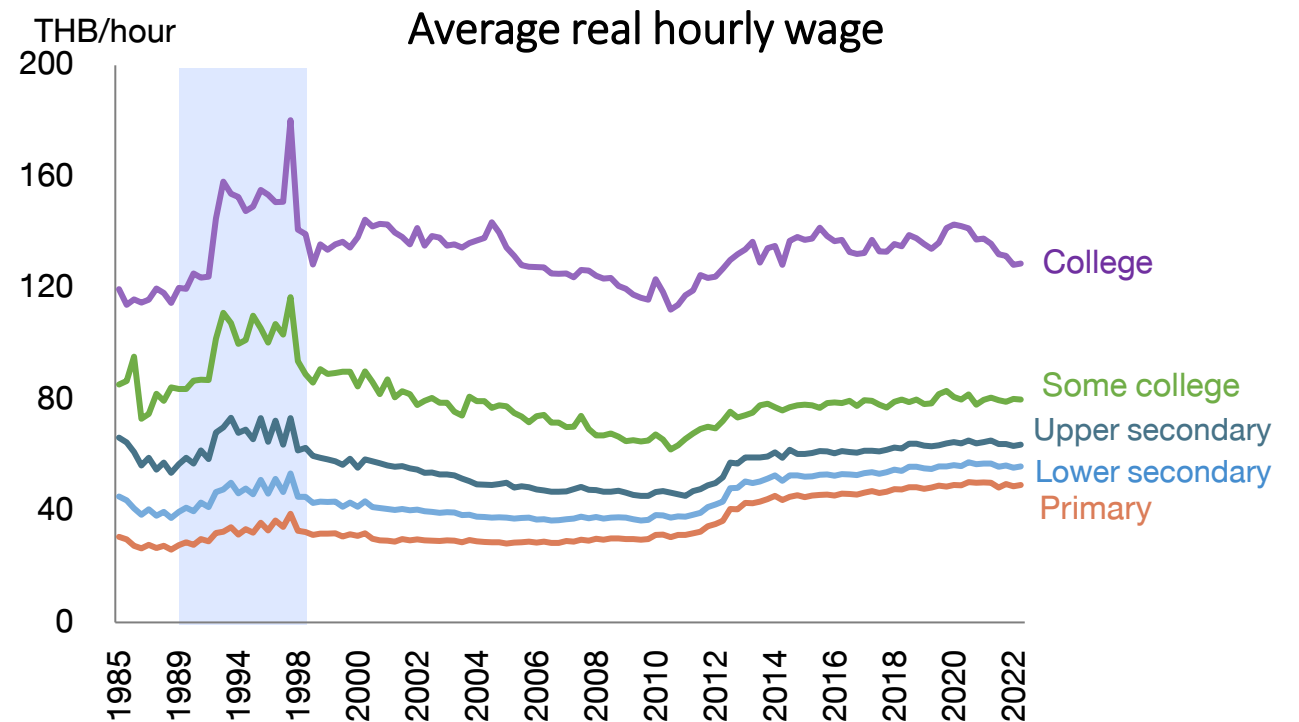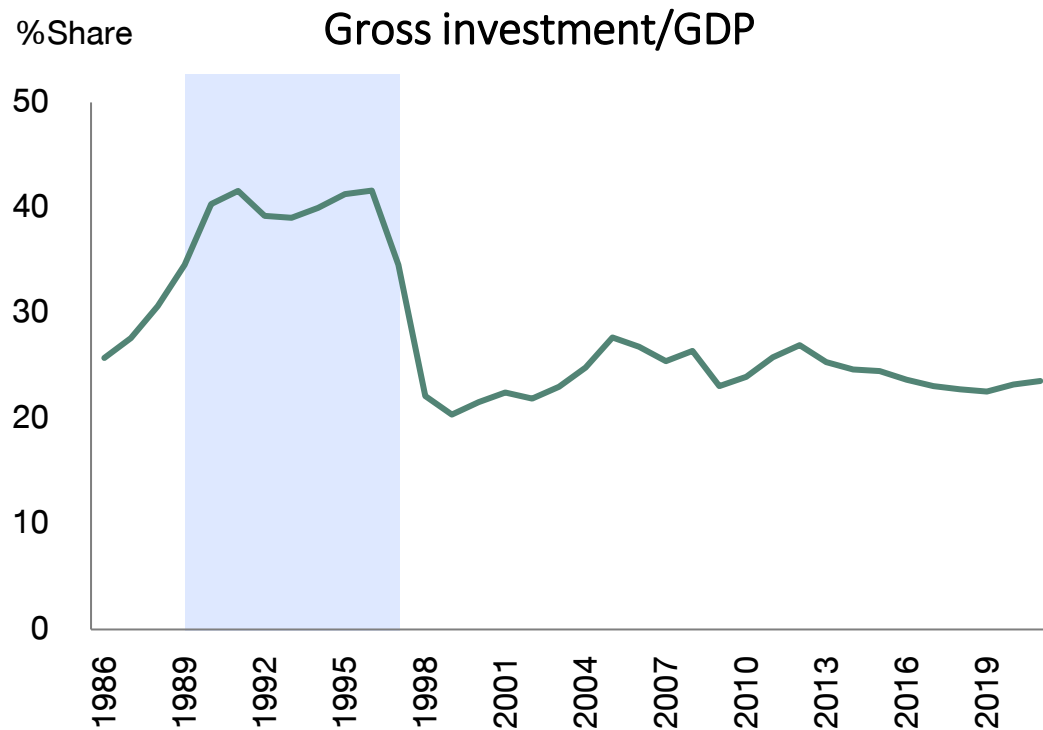
- Thailand's low rate of physical capital investment relative to its peers means that more advanced countries have been surging ahead, while less advanced ones have been catching up

Log Capital-per-Worker Ratio for PISA2018-Participating EAP Economies (const 2014 US$)
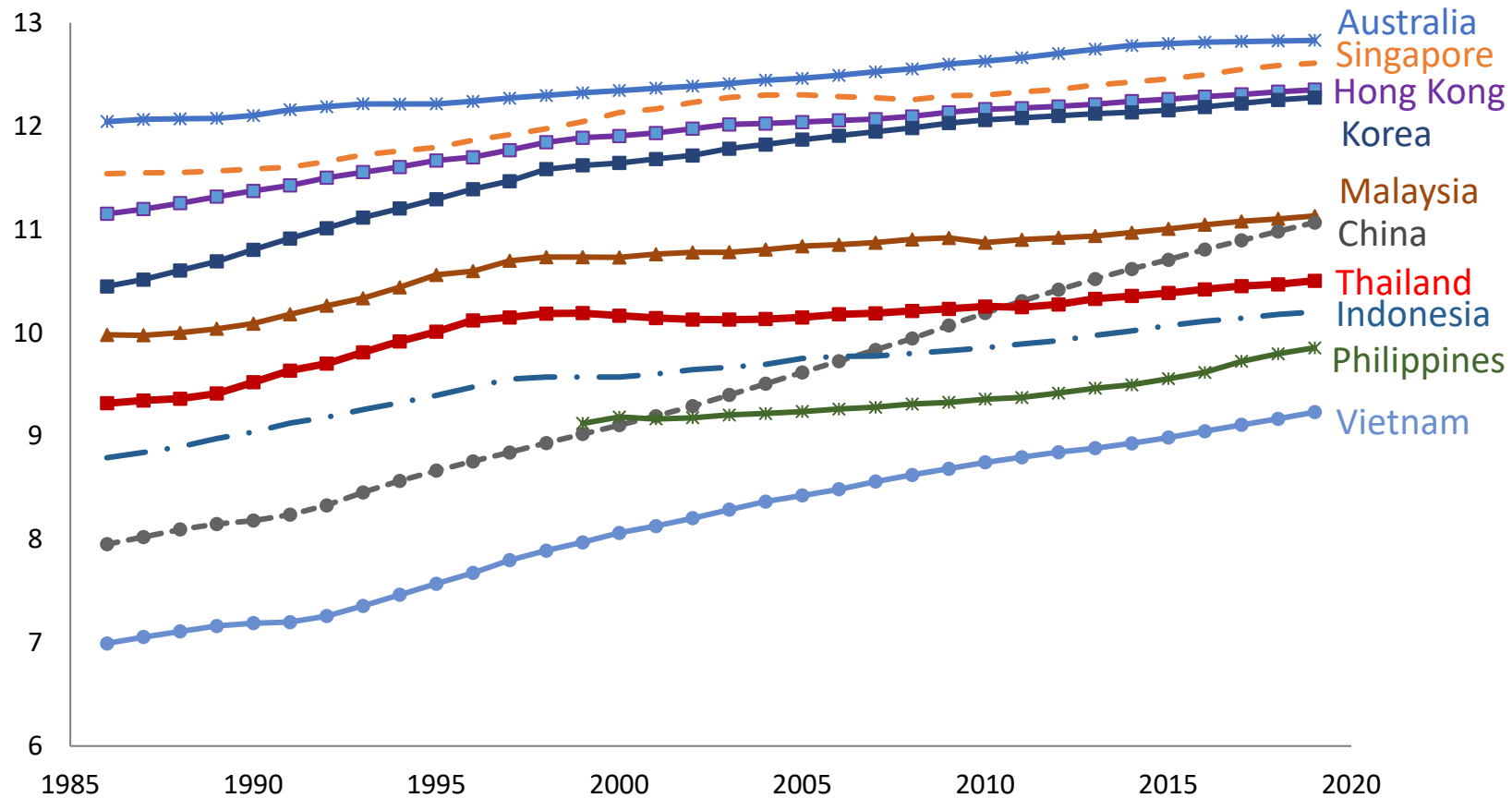
Thailand's participation in global value chains shows that the manufacturing sector has lost market share, particularly in sophisticated and advanced exports (Technical Note, TT RAS – World Bank, 2022)

- Thailand's exports have fallen behind regional peers

- Thailand is losing its edge as an attractive investment destination for advanced electronics

- Thailand's share of medical and pharmaceutical exports remained low

- **HYPOTHESIS** Thailand lacks a critical mass of highly skilled workers (as well as a conducive economic and institutional environment), which hampers investments in technological advancement in production, limits productivity, and erodes competitive advantage

# We test our stated hypothesis by analyzing economic growth within the Knowledge Economy Ecosystem Model

**1. Sufficient Human Capital**

**Supportive environment**
2. ICT infrastructure
3. Innovation infrastructure
4. Financial infrastructure
5. Quality of institutions

Total Factor Productivity ⬆

Economic growth

Higher return

investment in more sophisticated industries ⬆

high value-added jobs ⬆
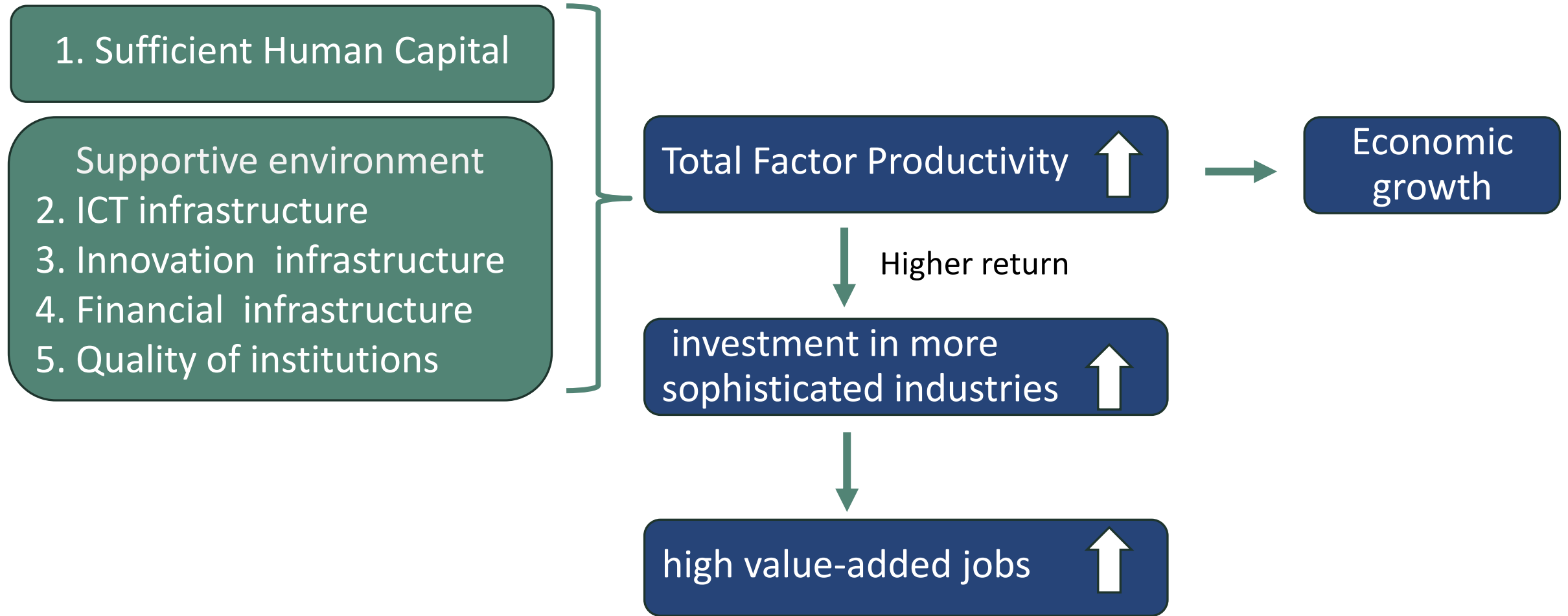
# Assessing the 5 pillars of the Knowledge Economy Ecosystem framework

1. Human Capital

Average learning-adjusted years of schooling for adults aged 25 or more (LAYS) (World Bank, 2018)

2. ICT infrastructure
3. Innovation  infrastructure
4. Financial  infrastructure
5. Quality of institutions

the Knowledge Economy Infrastructure (KEI) Index

This study builds on Chen and Dahlman (2006)'s Knowledge Economy concept

# Assessing the effects of Knowledge Economy Infrastructure (KEI) Index and LAYS on total factor productivity (TFP) and GDP per capita growth

- A dynamic panel data regression framework
- TFP captures efficiency & technological progress that influence the overall productivity of an economy
- A boost in TFP → higher returns on capital investments → attracts more investment

$$\Delta \ln TFP_{it} = \rho \ln \left( \frac{TFP_F}{TFP_i} \right)_{t-1} + \beta HC_{it} + \delta KE_{it} + \sum_j \gamma_j \ln X_{j,it} + \emptyset_i + \emptyset_t + u_{it}$$

- Use first-differenced specification to eliminate the country fixed effects:

$$\Delta^2 \ln TFP_{it} = \rho \Delta \ln \left( \frac{TFP_F}{TFP_i} \right)_{t-1} + \beta \Delta HC_{it} + \delta \Delta KE_{it} + \sum_j \gamma_j \Delta \ln X_{j,it} + \Delta u_{it}$$

- The term $(TFP_F / TFP_i)$ captures the *TFP* gap of country *i* to the global technological frontier

# Main estimation results

The empirical evidence supports the hypothesis that sustained investments in the 5 pillars of Knowledge Economy Ecosystem will result in sustained TFP and income growth
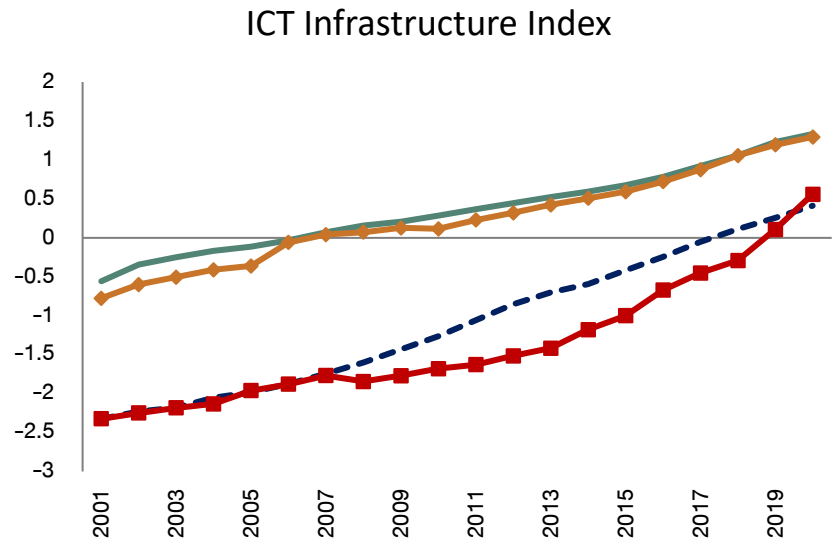
|  |  | TFP growth (percentage point) | GDP per capita (percentage point) |
|---|---|---|---|
| Learning Adjusted Years of schooling | + 1 year | +.54 | +.47 |
|  |  |  |  |
| Knowledge economy infrastructure index | + 1 SD | +1.3 | +1.96 |

# Benchmarking Thailand's Knowledge Economy Ecosystem



**Knowledge Economy Infrastructure Index**

OECD
High Income Country

Upper Middle-income Country
Thailand
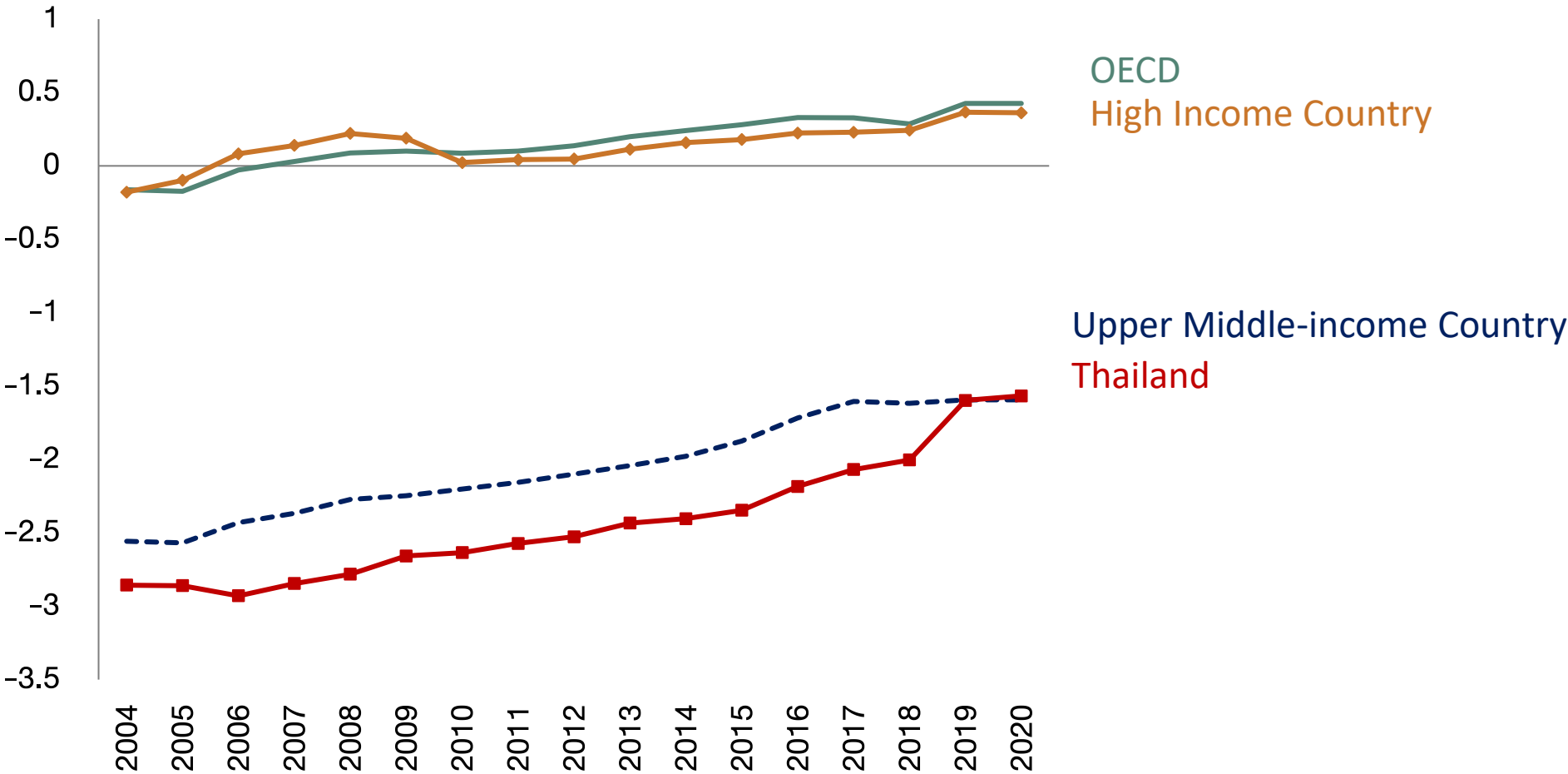
# Thailand has made progress in its knowledge economy infrastructure



### ICT Infrastructure Index

### Innovation Infrastructure Index

OECD

High Income Country

Thailand

Upper Middle-income Country

### Financial Infrastructure Index

### Quality of Institutions Index
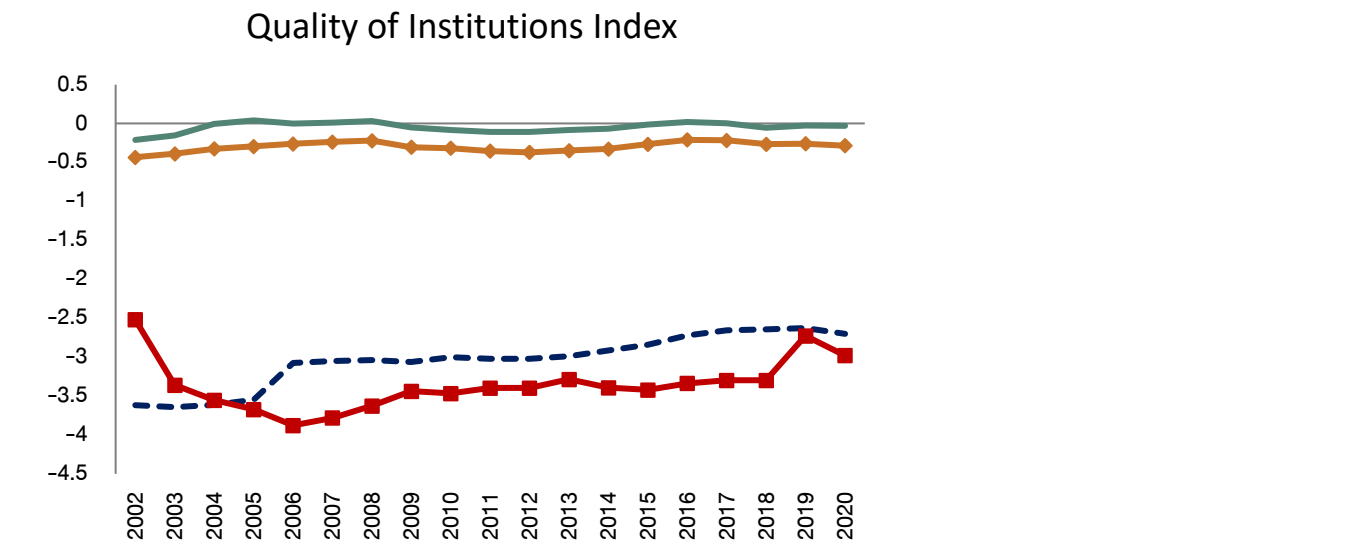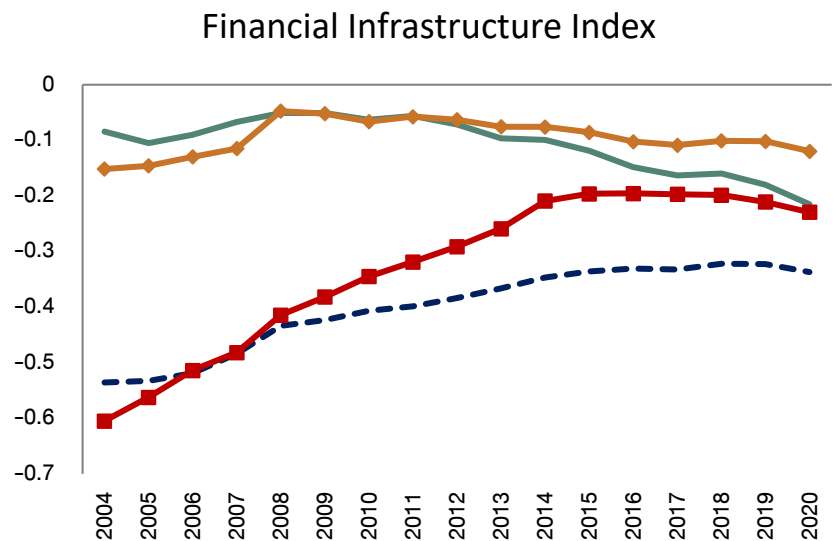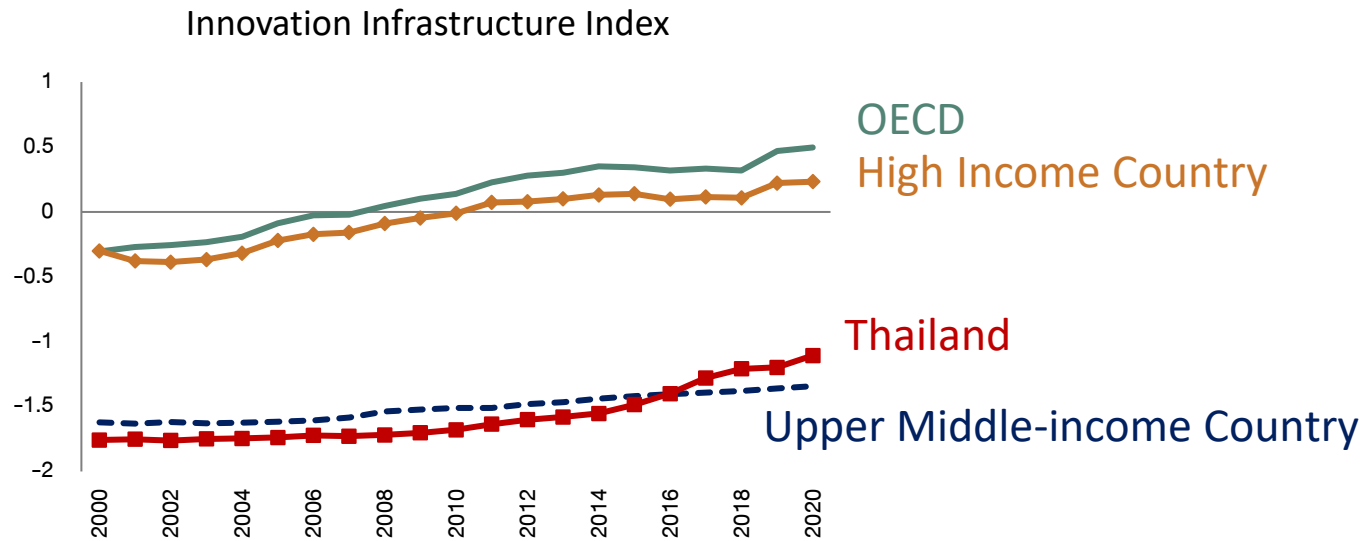
# Thailand has not done well in the human capital domain

## Average Years of Schooling



- OECD
- High Income Country
- Thailand
- 3.4 years

## Learning-Adjusted Years of Schooling (LAYS)
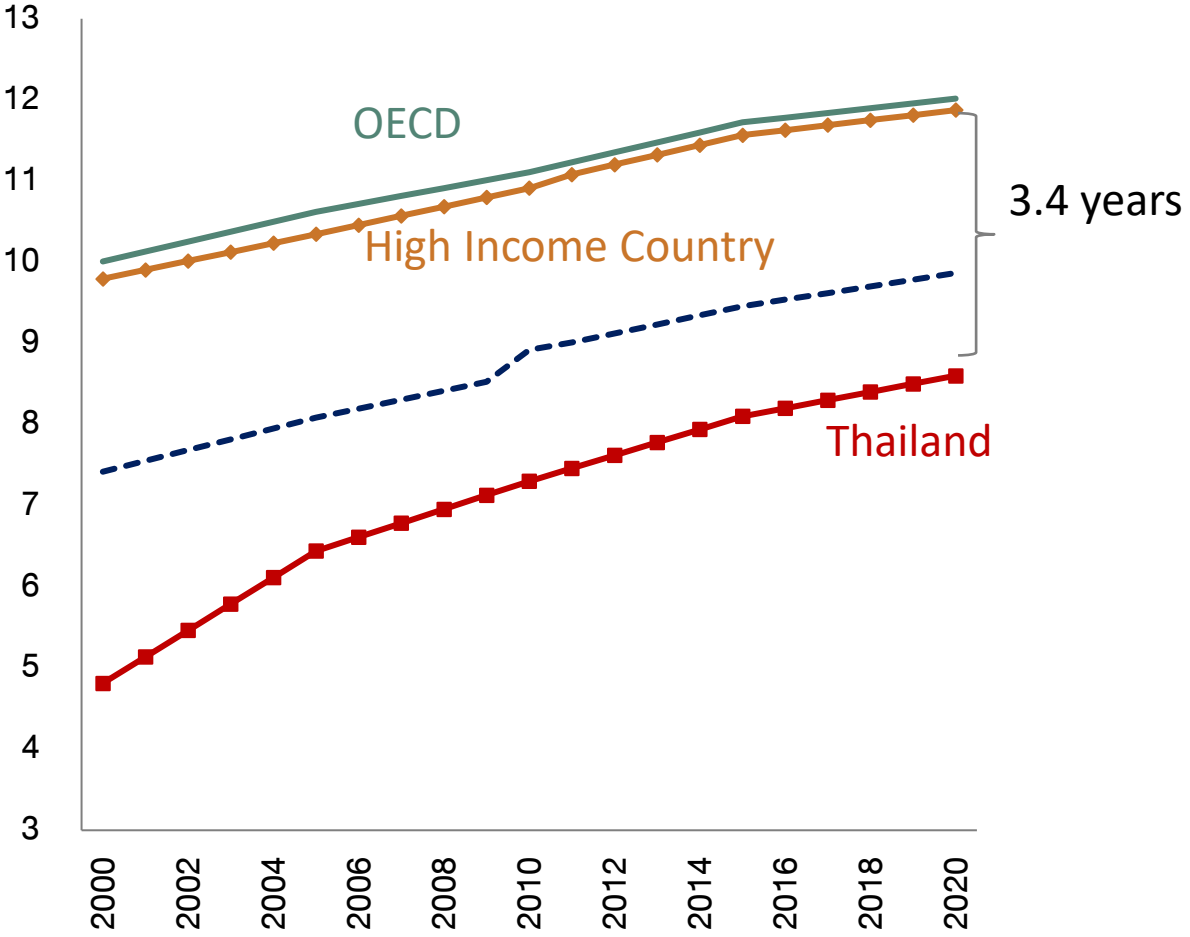


- OECD
- High Income Country
- Thailand
- 3.7 years
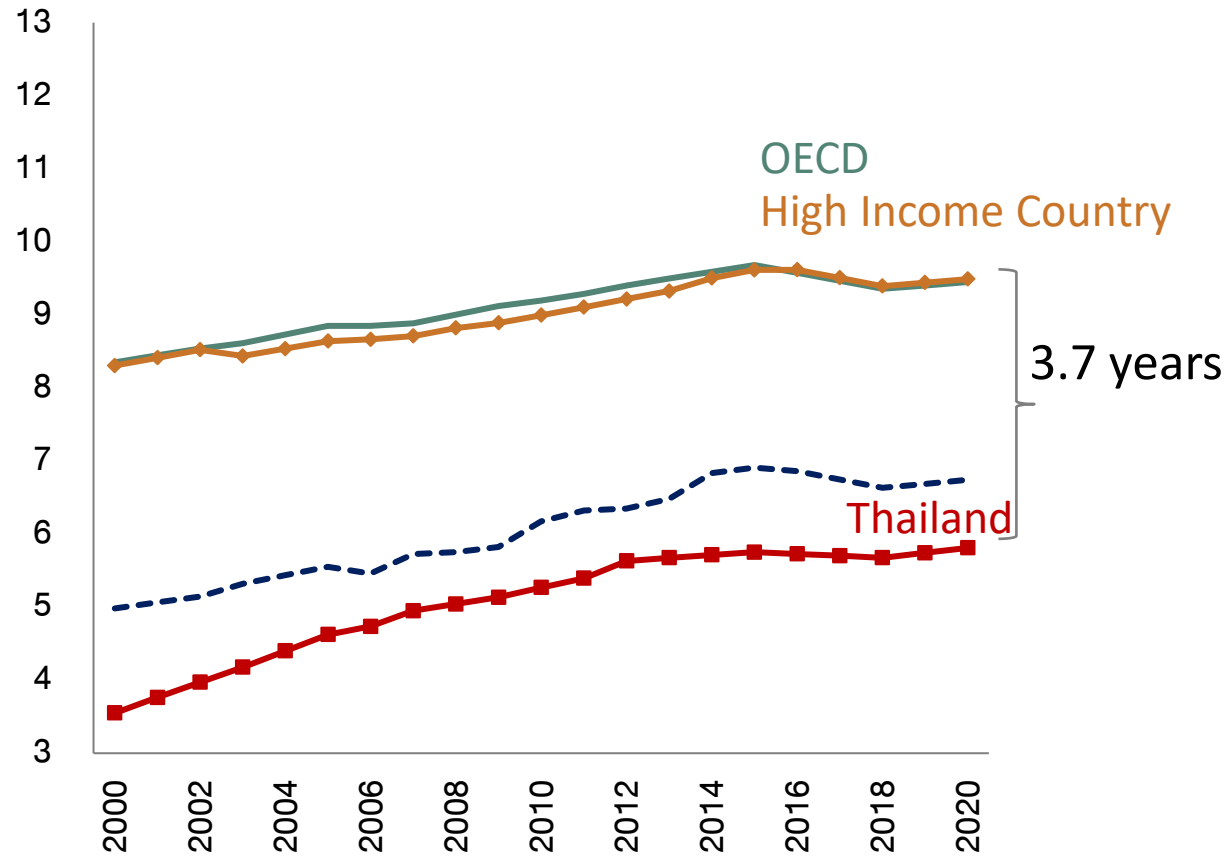
Note: both measures are calculated for age 25+ years old

Innovation infrastructure:
R&D spending increased but R&D outputs have remained subdued

Research and development spending to GDP
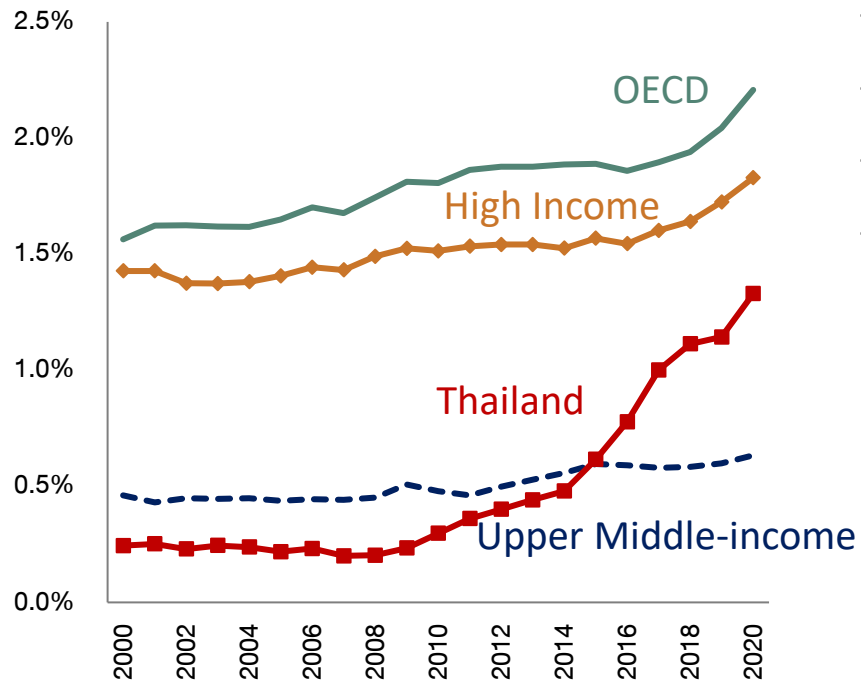
Scientific and technical journal articles (per million people)
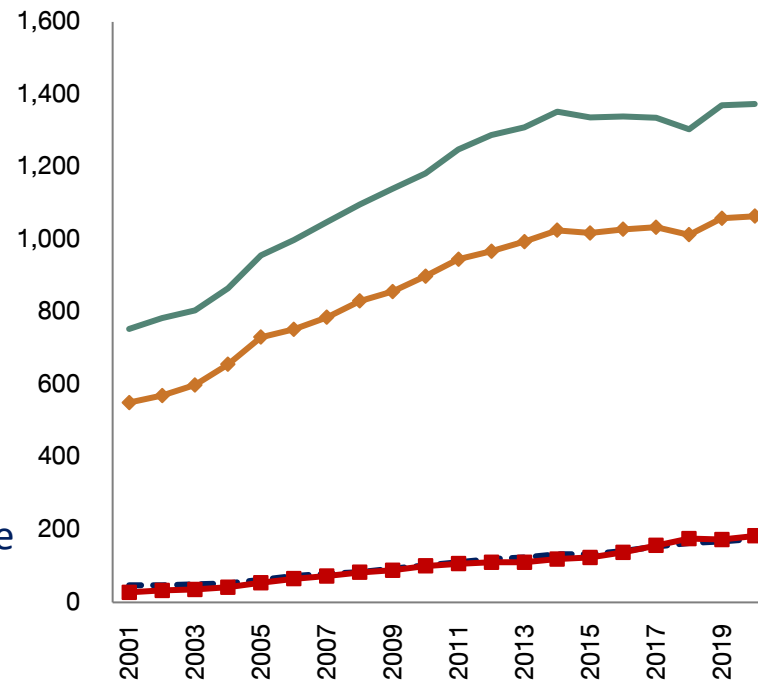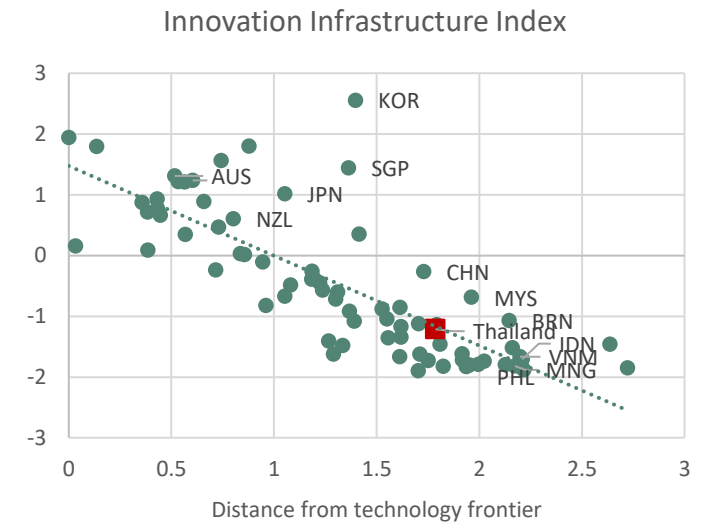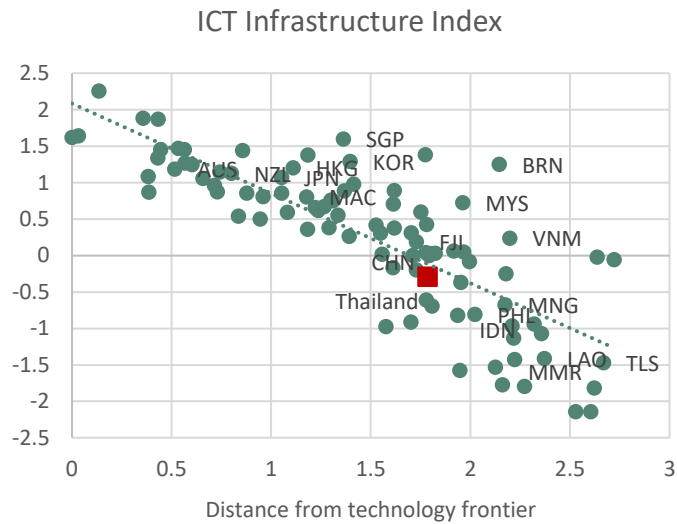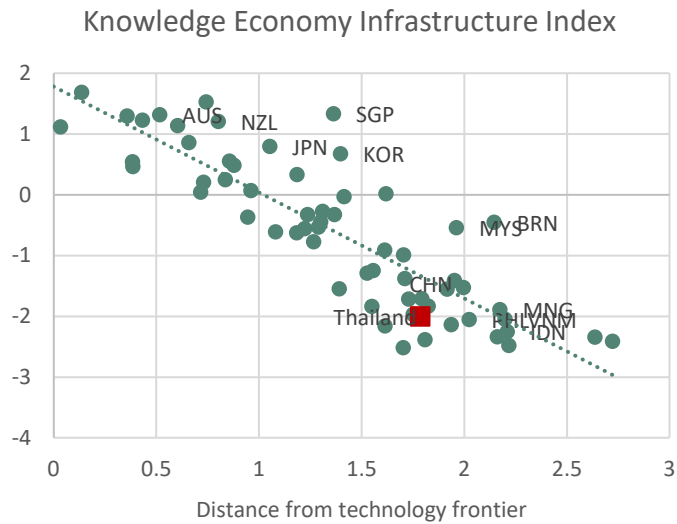
Patent applications (per million people)
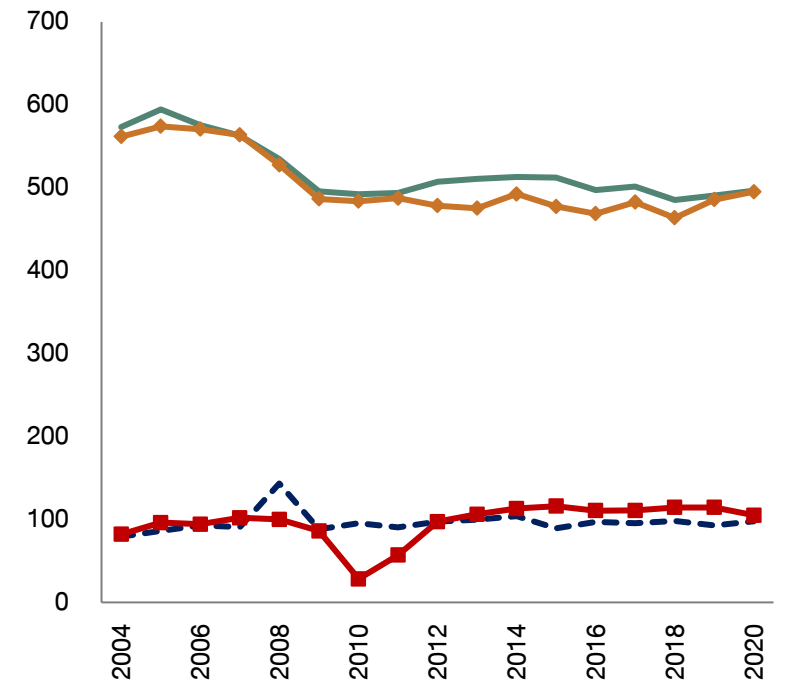
# Comparing Thailand against peers at similar level of technological development



Knowledge Economy Infrastructure Index

Distance from technology frontier

$R^2 = 0.7363$
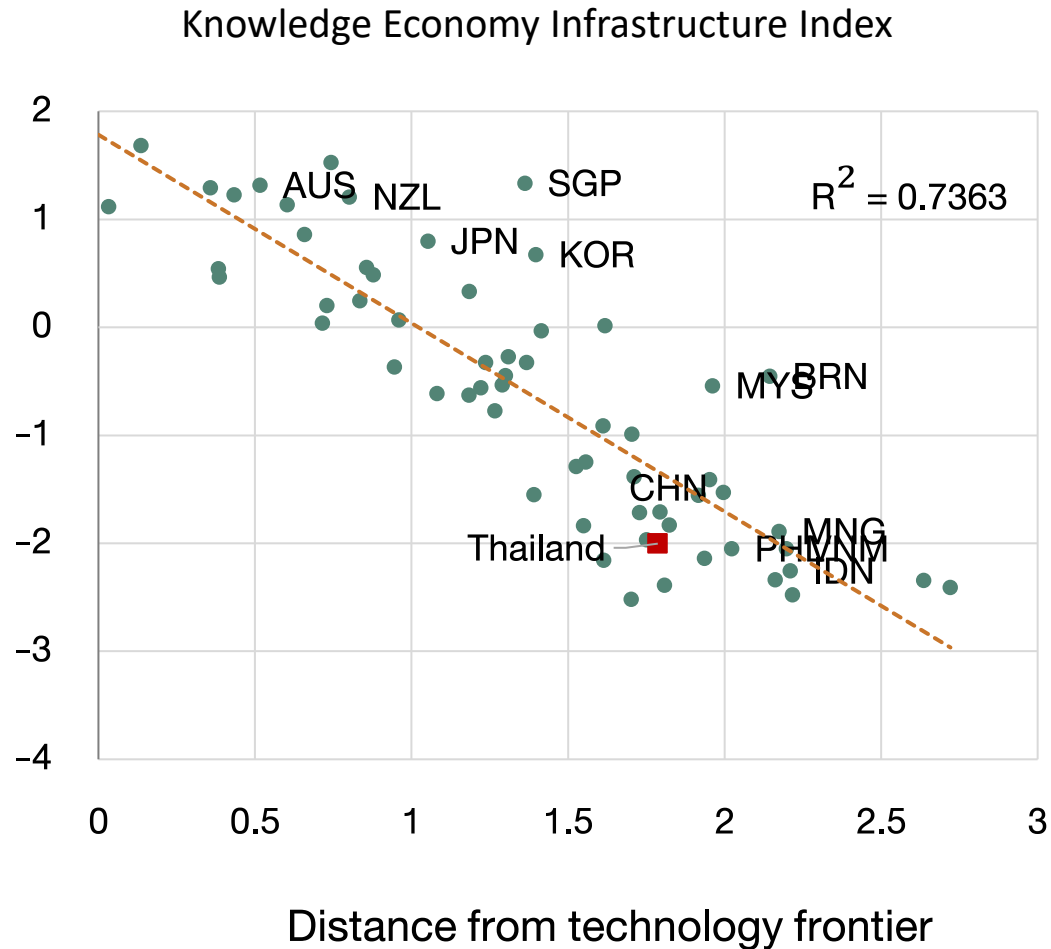
Above the line → better than average

Below the line → worse than average

- A more informative approach to benchmarking Thailand's performance is to compare the country against international peers at similar level of technological development



Knowledge Economy Infrastructure Index

ICT Infrastructure Index

Innovation Infrastructure Index

Financial Infrastructure Index

Quality of Institutions Index

LAYS age 25 plus
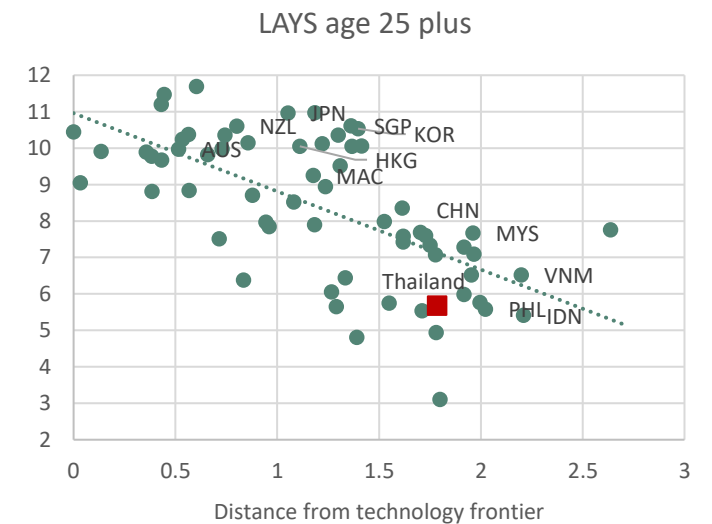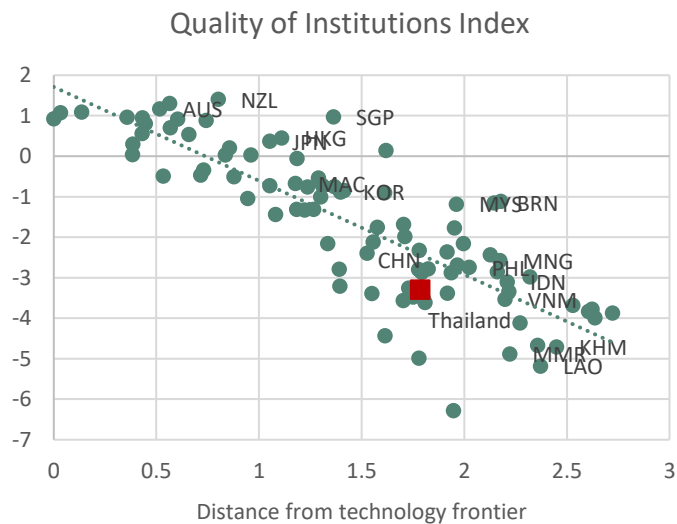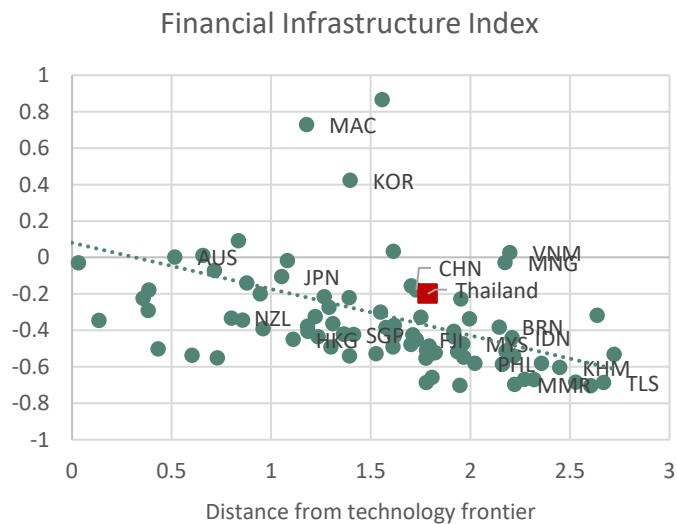
- In addition to its lack of human capital, Thailand also scored poorly in the Quality of Institutions domain (ahead of only Vietnam, Cambodia, Myanmar, and Lao PDR in the region)
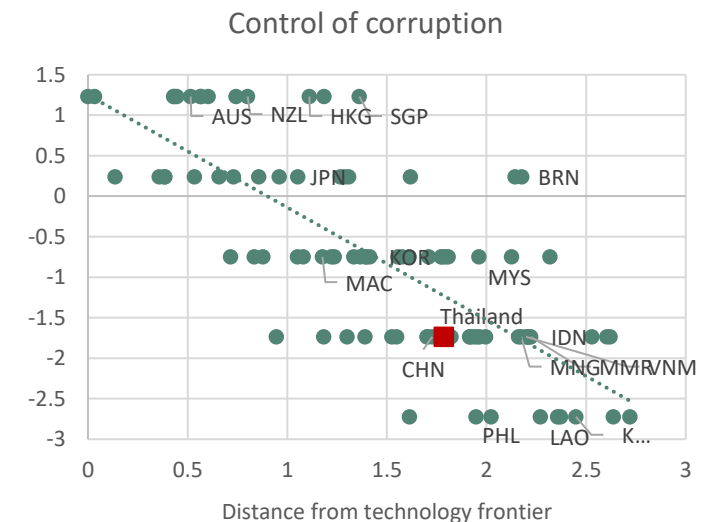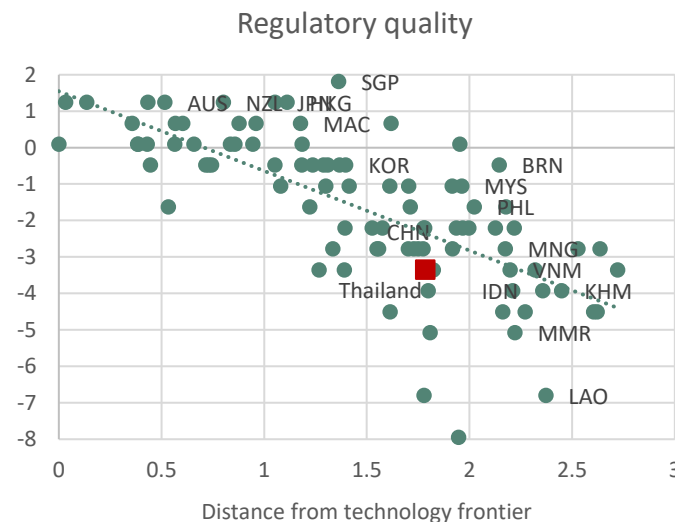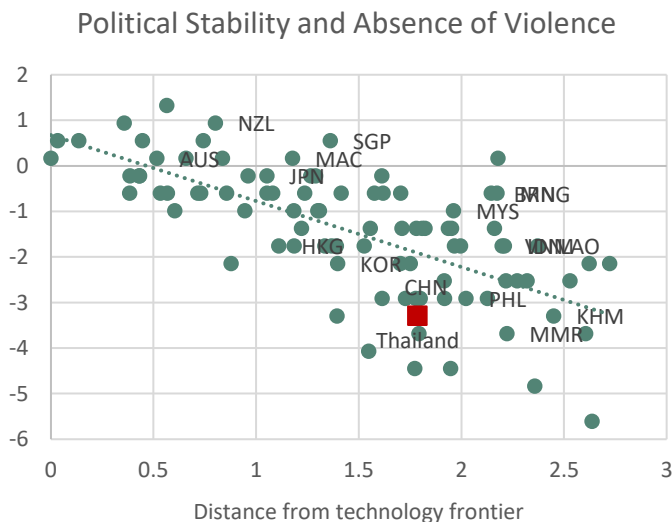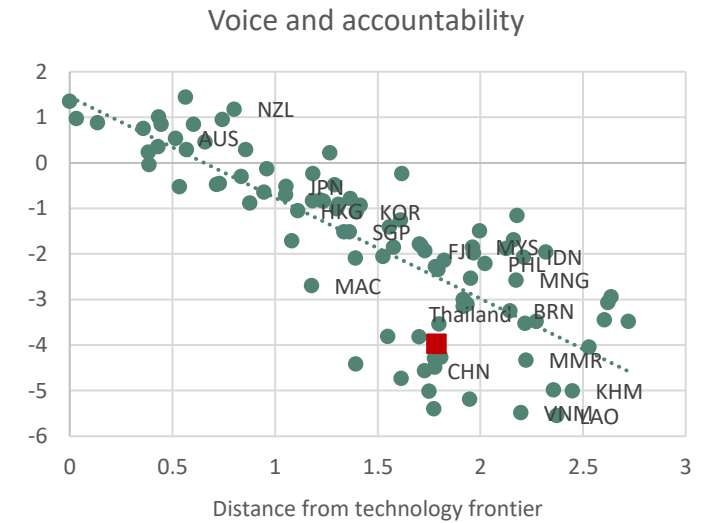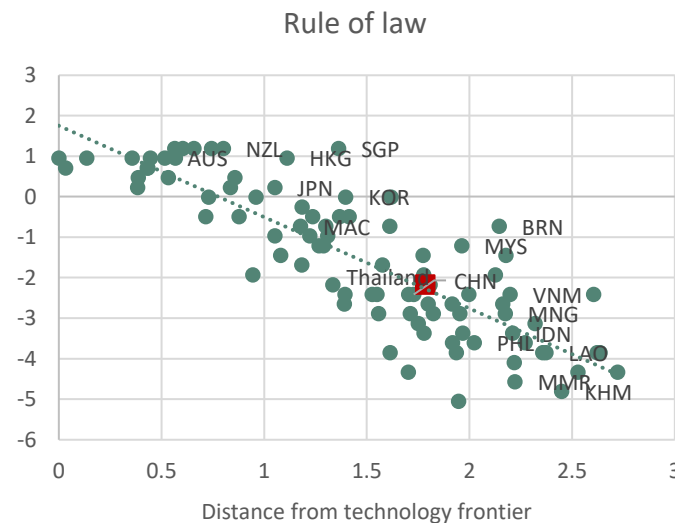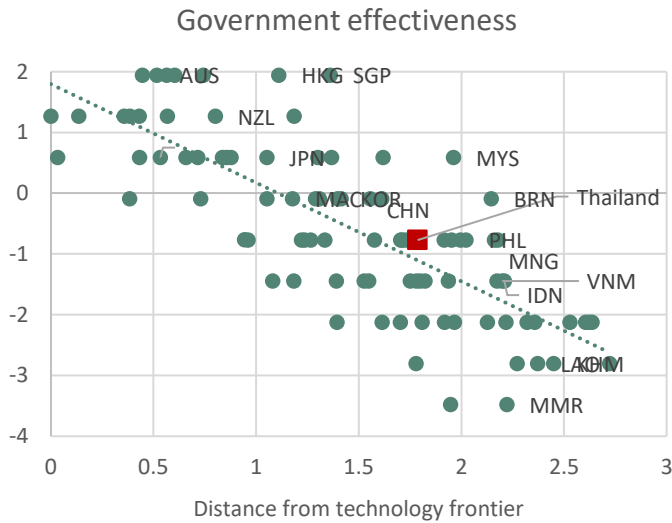
# Conclusion

- Evidence of insufficient demand for "college grads", not even STEM graduates – Unable to create high value-added jobs

- The country has been slow in improving the skills of its workforce

  - LAYS for Thailand is among the laggards in the World
  - Efforts to enhance STEM education, vocational training, and lifelong learning programs to encourage upskilling and reskilling have not been sufficient to meet the demands of a knowledge economy

# Conclusion

- Thailand has made progress in digital transformation, implementing various initiatives to drive digital innovation and adoption across sectors

- The quality of key institutions is lagging behind its peers at similar stage of development, particularly in the realms of i) Political Stability and Absence of Violence, ii) Regulatory quality, iii) Voice and accountability, and iv) Control of corruption

- Investing in human capital is a long-term investment.
  Needs to start now