

New Development Challenges in the 21st Century

Keys to a Sustainable Development Path



From 2013 AEDC Keynote at Chiang Mai University
& 2015 UNIDO IDR2016 Tokyo Launch
For I2ID/DE2018 Opening Lectures
April-May 2018

Prof. Shigeru T. OTSUBO
GSID, Nagoya University

Topic 1

The Evolution of a Development Paradigm

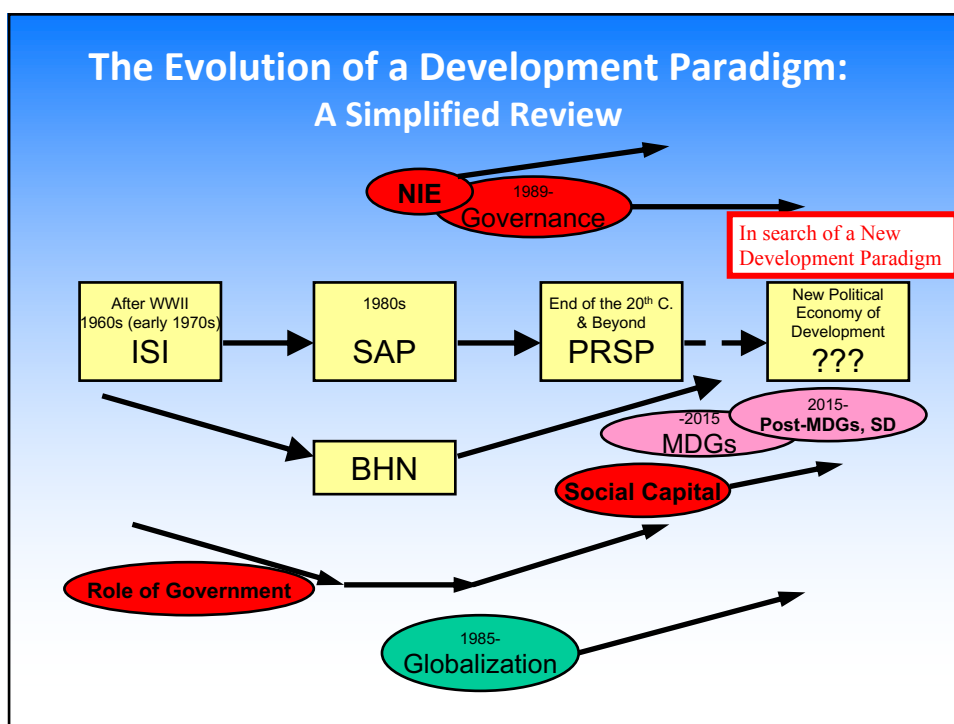
&

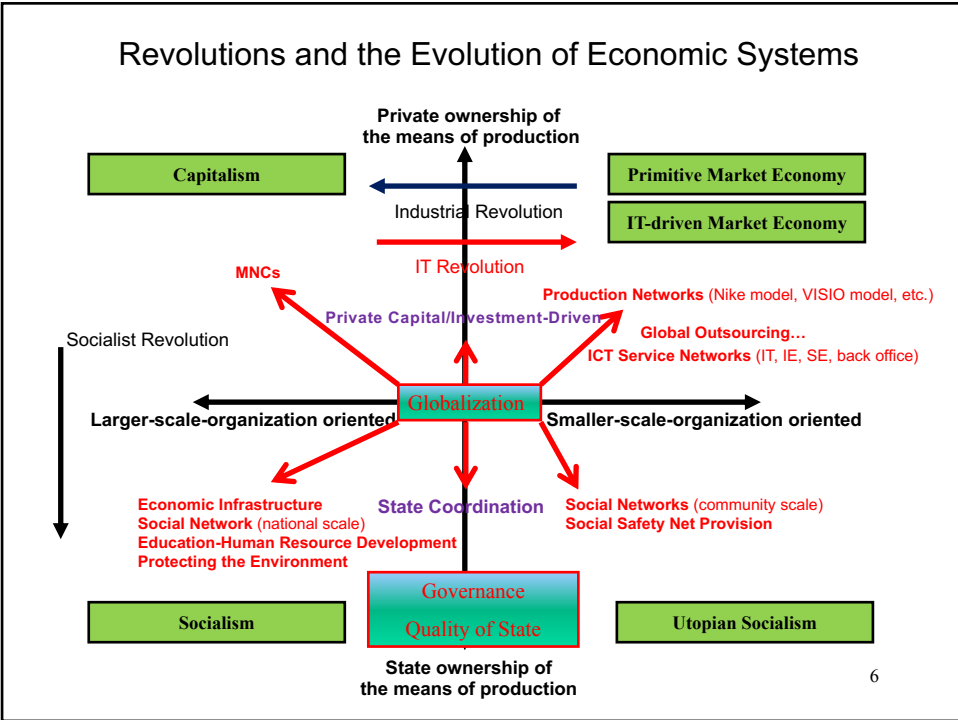
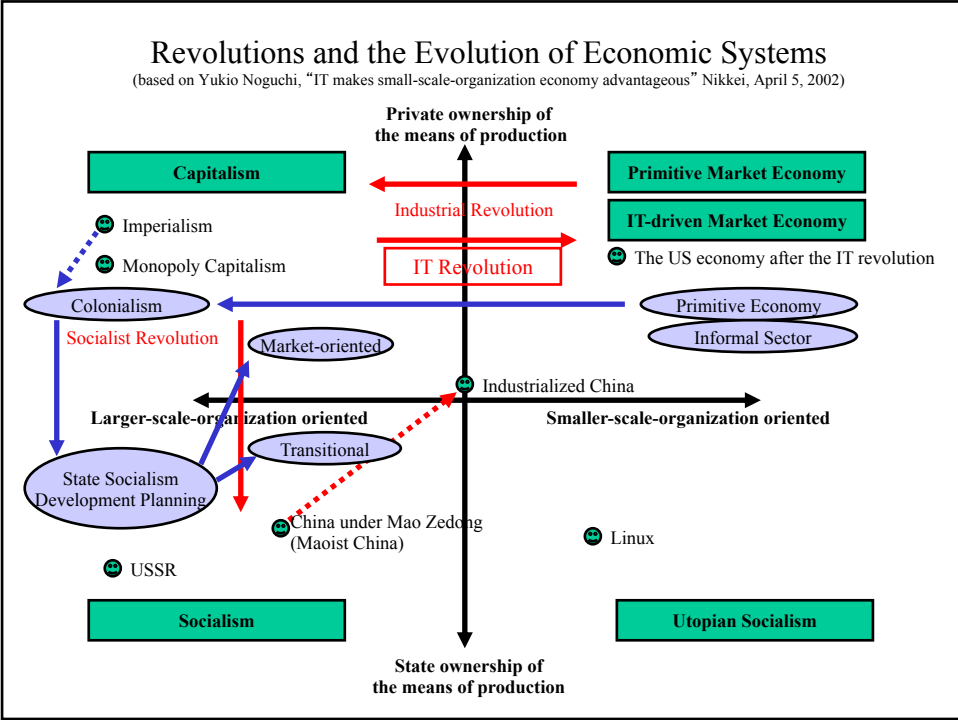
Revolutions and
the Evolution of Economic Systems



This part was presented in the
I2ID_DE_2016_Part I
Lecture/Presentation.

3





Topic 2

New Development Challenges in a Globalizing and Aging World



Topic 2-1

Global (Savings-Investment) Imbalances



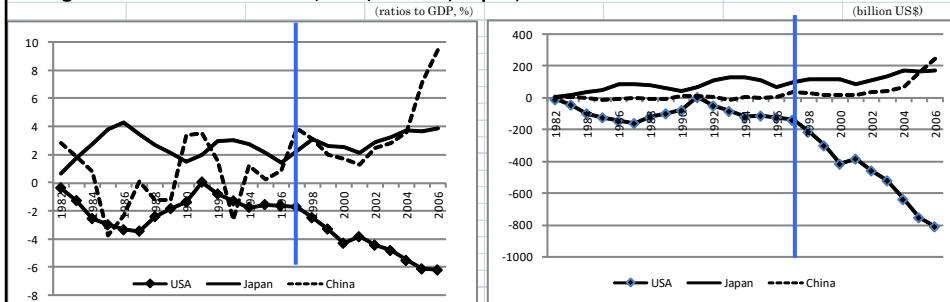
Global Imbalances (Saving-Investment Balance)

Sum of the Absolute Values of CAB across Cos. / World GDP

- = 2-3% (-1997 AFC)
- = near 6% (2006-2007)

Global Imbalances caused the Global Financial Crisis in 2007-2008-

Saving-Investment Imbalances (CABs) of USA, Japan, and China

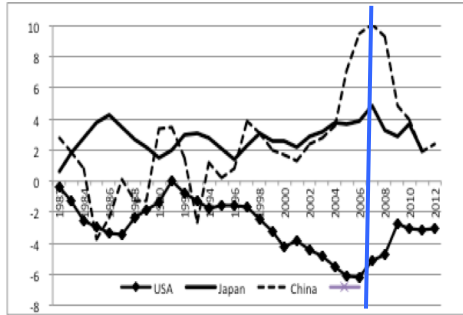


Source: Author's compilation from World Bank, *World Development Indicators 2008*.

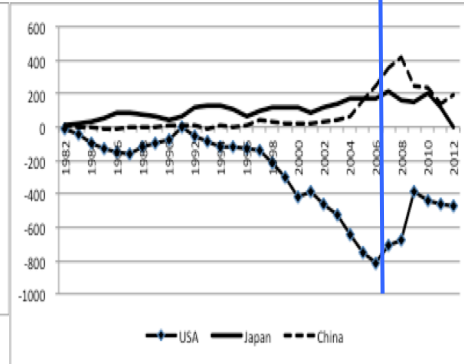
Global Imbalances

Saving-Investment Imbalances (CABs) of USA, Japan, and China

(ratios to GDP, %)



(billion US\$)

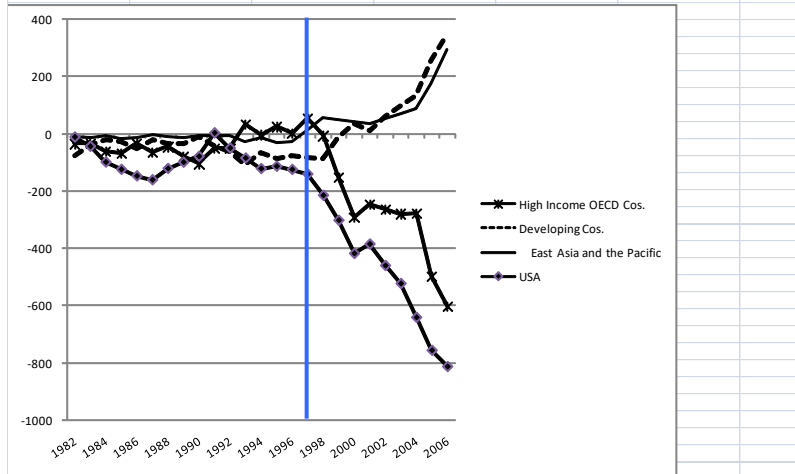


Source: Author's compilation from World Bank, *World Development Indicators 2008 and 2013*.

Global Imbalances

Saving-Investment Imbalances (CABs) of USA, OECD, and Developing Countries

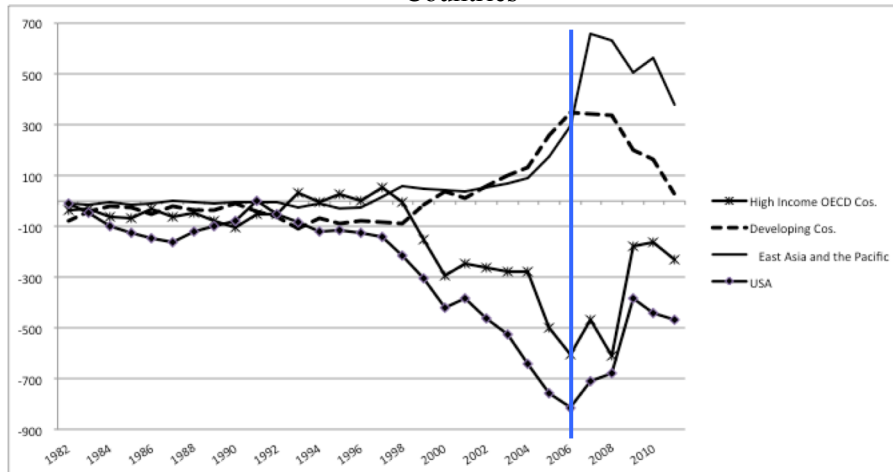
(billion US\$)



Source: Author's compilation from World Bank, *World Development Indicators 2008*.

Global Imbalances

Saving-Investment Imbalances (CABs) of USA, OECD, and Developing Countries



Source: Author's compilation from World Bank, *World Development Indicators 2008 and 2013*.

Topic 2-2

World Population Dynamics

From Population Explosion (the 20th Century)
To Depopulation/Aging



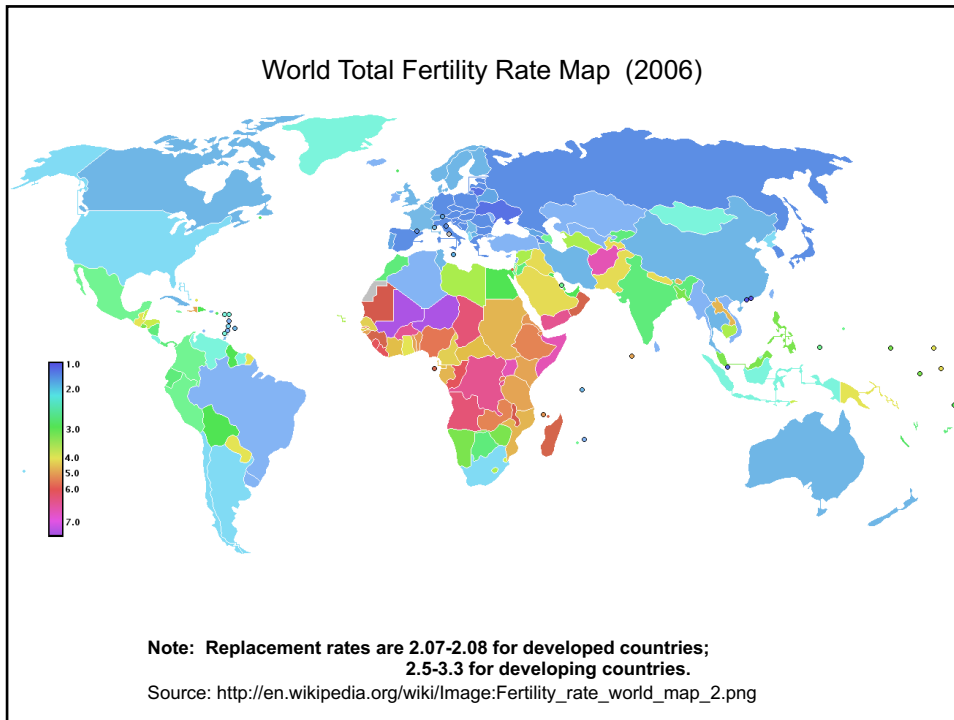
World Population Dynamics (from UN Population Projections)

- World Population: 2.5 bil. (1950); 6 bil. (2000); **9.1 bil. (2050)**
 Developed: 0.81 bil. (1950); 1.19 (2000); **1.25 (2025); 1.24 (2050)**
 Developing: **6.66 (2025); 7.84 (2050)**
- Growth Rate of Population: 1.8% p.a. (1950-2000);
 0.8% p.a. (2000-2050)
- (Gross) Birth Rate: 37.5/1000 (1950-55); 22.5/1000 (1995-2000);
 13.8/1000 (2045-50)
- Total Fertility Rate: 5.02 (1950-55); 2.79 (1995-2000); **2.05 (2045)**
- Life Expectancy: 46.6 (1950-55); 64.6 (1995-2000); **75.1 (2045-50)**
- Rate of Population Aging (% of 65 and over in Population)
 Developed: 7.9% (1950); 14.3% (2000); **25.9% (2050)**
 Developing: 4.1% (1950); 5.9% (2000); **14.6% (2050)**
- Population of 65 and over in Developing Countries:
 66.8 mil. (1950); 250.3 mil. (2000); **1.14 bil. (2050)**
 59.4% ; **78.1%** of World Aged

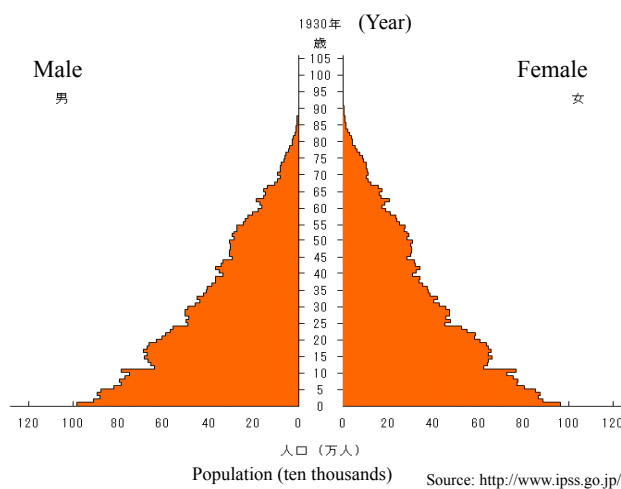
In Need of Changing Mentality

- | | |
|---|---|
| <ul style="list-style-type: none"> • 20th Century • Population Explosion
Low Income
 Equilibrium Trap • Population Bonus
Demographic
 Dividend | <ul style="list-style-type: none"> • 21st Century • Depopulation/Aging
Aging w/o Development
Sustainability of High Income • Burden of Aging
Demographic
 Penalty |
|---|---|

World Total Fertility Rate Map (2006)



Population Pyramid in Japan



Japan is aging at a rapid pace (w/ low fertility rate).

Speed of Aging in East Asia

	(1) Share of Aged 7% Aging Society	(2) Share of Aged 14% Aged Society	Period between (1) and (2)
Japan	1970	1994	24
South Korea	1999	2017	18
Hong Kong	1983	2014	31
Singapore	2000	2016	16
Thailand	2005	2027	22
Malaysia	2019	2044	25
Indonesia	2019	2041	22
Philippines	2026	2049	23
China	2001	2026	25

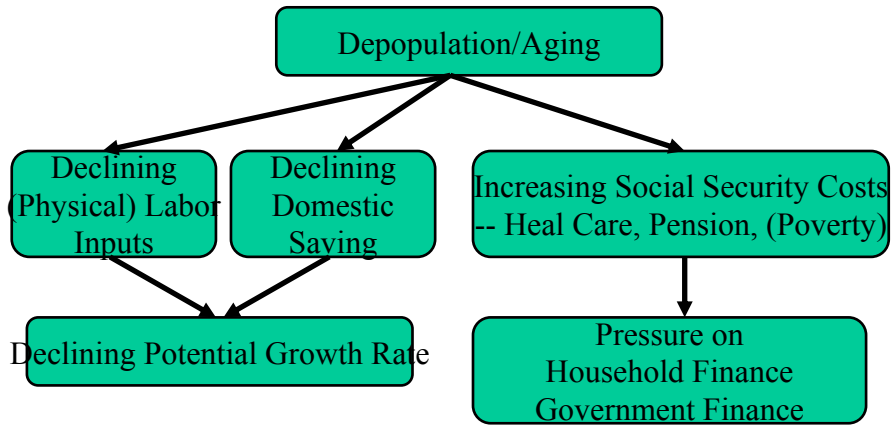
Note: Based on the Medium scenario from the UN population projections.
Based on the assumption of TFR converging to 1.85.
Explanations are added.

Source: Oizumi, Kajiwara, and Niitame (2006). *Aging in Developing Countries: Viewpoints to New Assistance*. Tokyo: JICA. (In Japanese) Table 3-7 (p.57).

Population Bonus – Demographic Dividend (Demographic Economics)

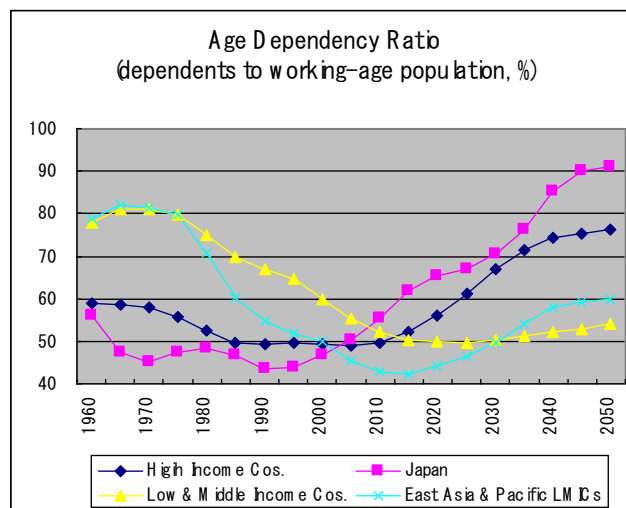
- **Population Conversion Phases**
 - (1) High Birth – High Death
 - (2) High Birth – Low Death
Population Explosion – ‘Low-Level Equilibrium Trap’
 - (3) Declining Birth/Death Rates Population Bonus I
with declining natural rate of population growth
 - (4) Low Birth – Low Death Rates Population Bonus II
rate of population growth decline further Thailand in 1990s
entering the phase of population aging
 - (5) Birth Rate Lower than Death Rate
depopulation with rapid aging Japan after 2005
Thailand in early 2040s

Macroeconomic Impact of Depopulation/Aging (A Summary)



From Growth Accounting: $Y = F(K, L, t)$
contribution from very factor shrinks

Is Doomsday Imminent ?



Determinants of the private saving ratio:

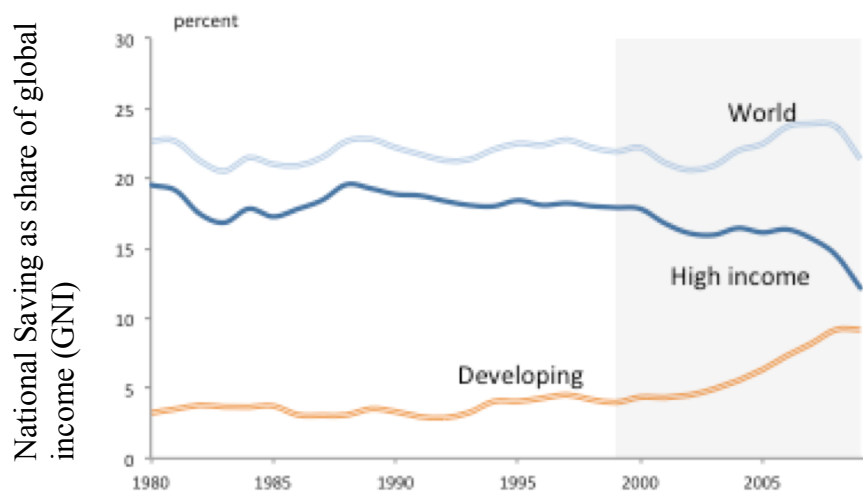
Income (level), rates of return, uncertainty, domestic/foreign borrowing constraints, financial depth, fiscal policy, pension system, income/wealth distribution, and **demographics** ...

Note: Assuming that Japan's Total Fertility declines to 1 by 2035.

Slides from the WB's Global Development Horizons 2013 “Capital for the Future”

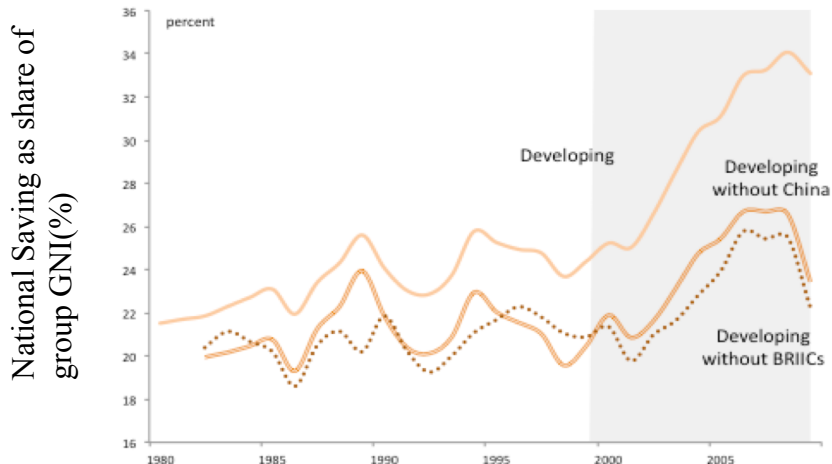
23

Developing countries have accounted for a growing share of global savings since around 2000...



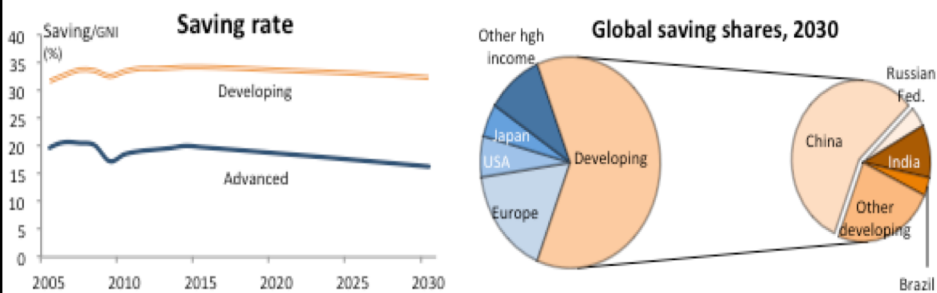
Source: World Bank (2013) Global Development Horizons “Capital for the Future”

Developing countries' saving rates have increased...



Source: World Bank (2013) Global Development Horizons "Capital for the Future"

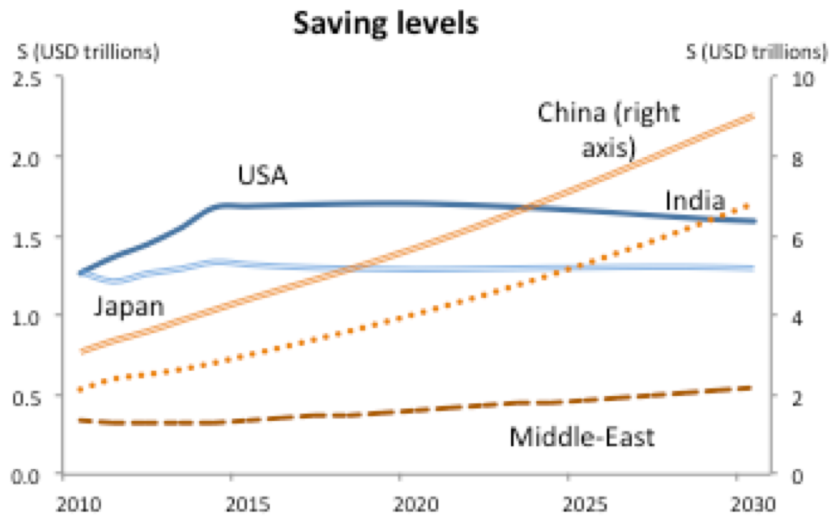
Saving rates will decline more slowly in developing countries...



Source: World Bank (2013) Global Development Horizons "Capital for the Future"

By 2030, those countries will account for two-thirds of global savings...

China will continue to be dominant in the global saving picture...



Source: World Bank (2013) Global Development Horizons "Capital for the Future"

Speed of Aging in East Asia

	(1) Share of Aged 7% Aging Society	(2) Share of Aged 14% Aged Society	Period between (1) and (2)
Japan	1970	1994	24
South Korea	1999	2017	18
Hong Kong	1983	2014	31
Singapore	2000	2016	16
Thailand	2005	2027	22
Malaysia	2019	2044	25
Indonesia	2019	2041	22
Philippines	2026	2049	23
China	2001	2026	25

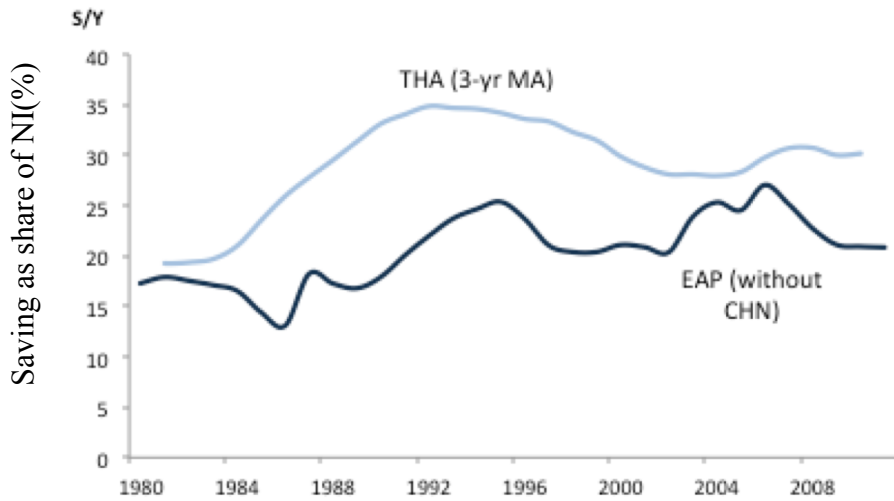
Note: Based on the Medium scenario from the UN population projections.

Based on the assumption of TFR converging to 1.85.

Explanations are added.

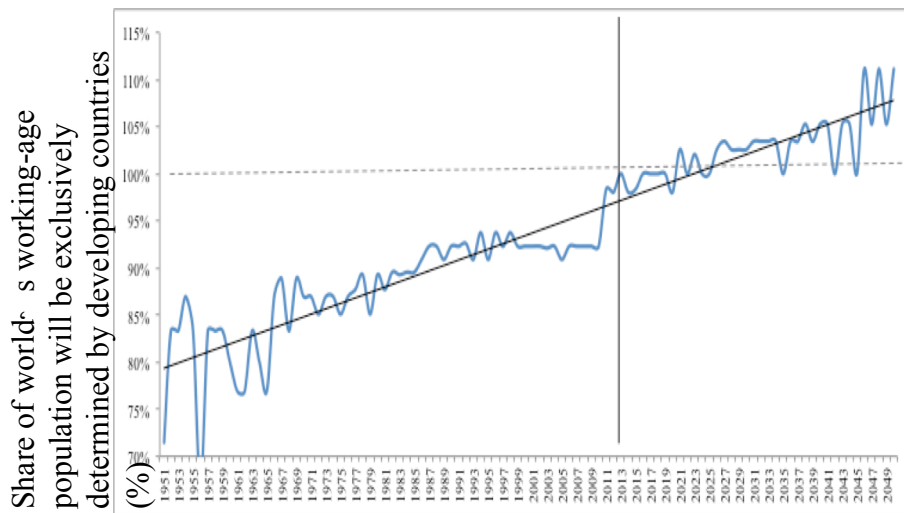
Source: Oizumi, Kajiwara, and Niitame (2006). *Aging in Developing Countries: Viewpoints to New Assistance*. Tokyo: JICA. (In Japanese) Table 3-7 (p.57).

National saving rate of Thailand in comparison to that of the EAP region...

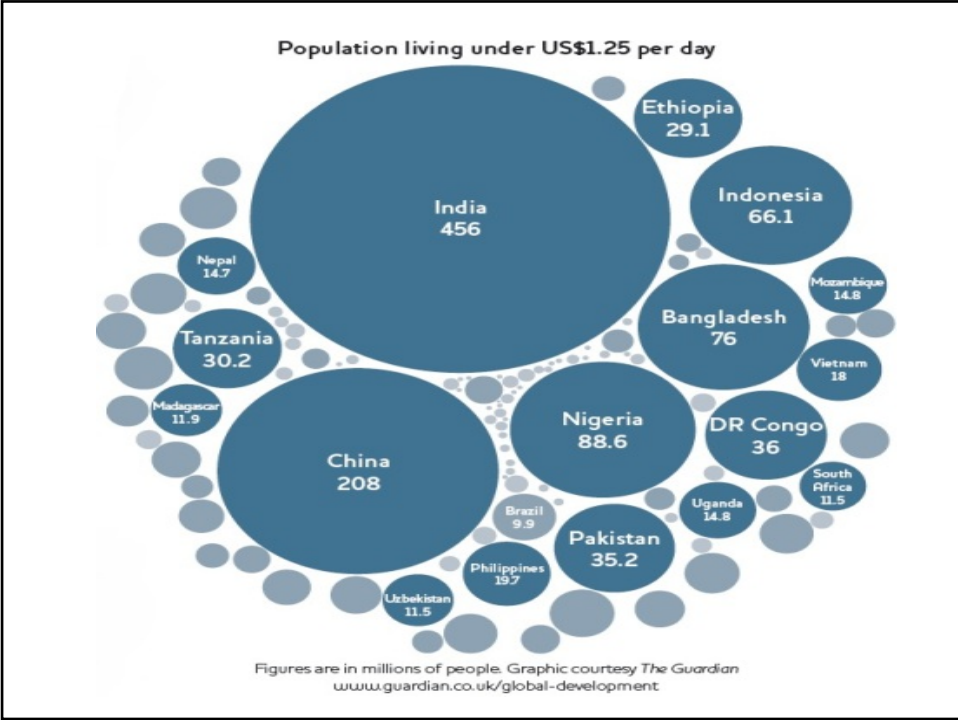


Source: World Bank (2013) Global Development Horizons "Capital for the Future"

By 2020, growth in world's working-age population will be exclusively determined by developing countries



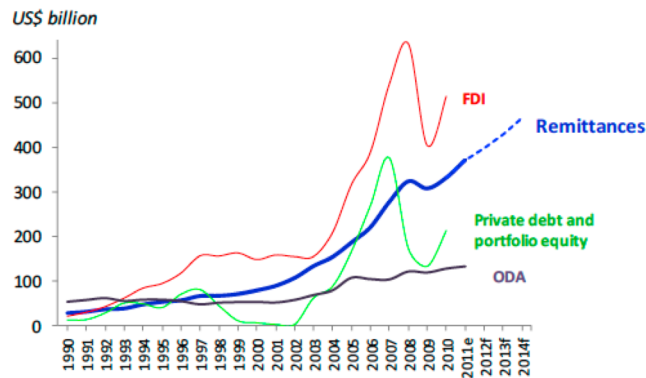
Source: World Bank (2013) Global Development Horizons "Capital for the Future"



Topic 2-3

Global Volatilities

Resource flows to developing countries, 1990-2014



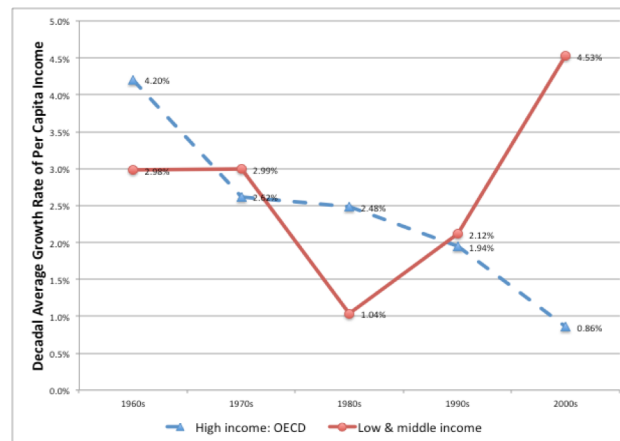
Source: Migration and Development Brief (2012)

Data on FDI, external private debt, and net inflows of portfolio equity are from the World Development Indicators database. ODA data is from OECD DAC. Remittances data is from table 1.

- The amount of FDI and remittances have been greater than that of ODA since the mid 90s.
- Remittances to developing world rose 6.5% in 2012. It is expected to continue to grow.

33

Kinks in Decadal Growth Performance...

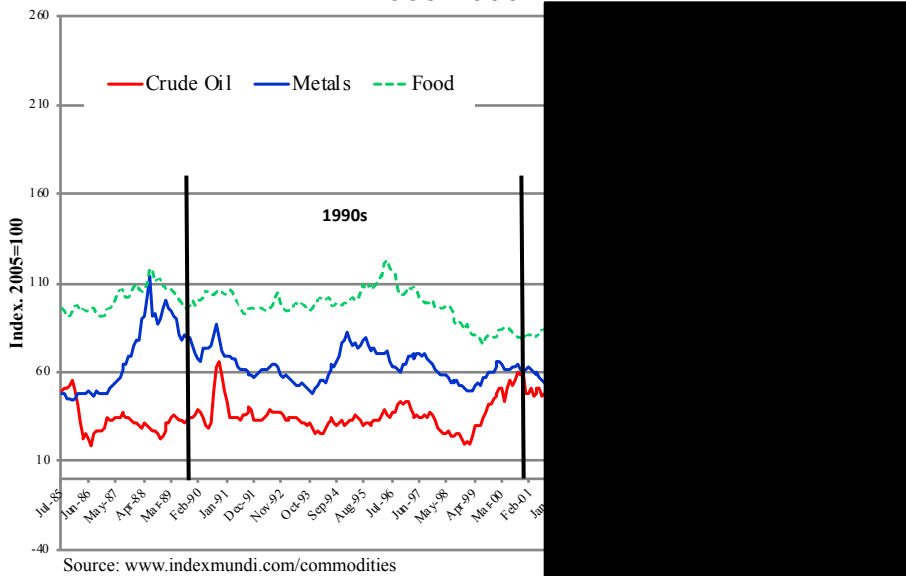


Source: Calculated by author based on WDI database

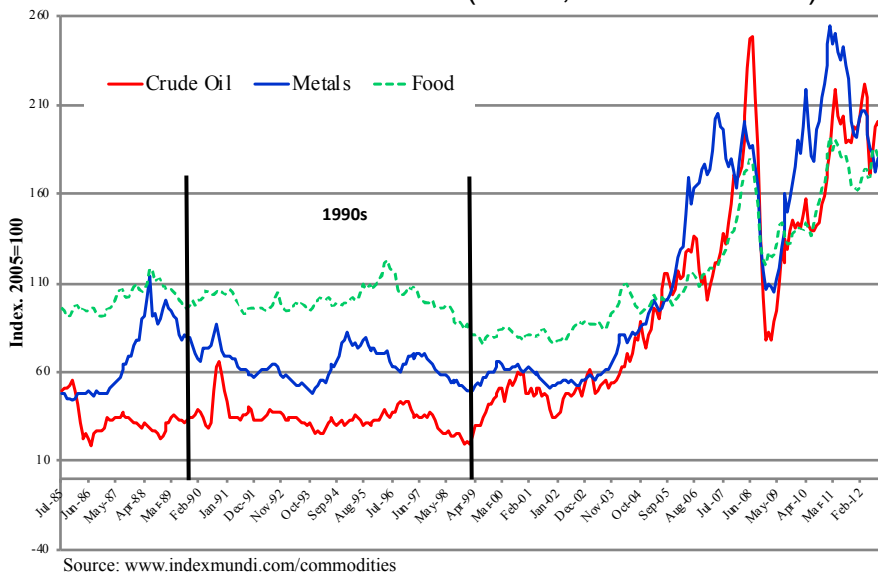
- Developing countries are growing at faster rate from the 1990s.
- There are kinks in decadal growth performance of different income groups.

34

Price indices for selected energy and commodity products 1985-2000



Price indices for selected energy and commodity products 1985-2000-2012 (in fact, 1998/1999 on...)



Topic 3

Middle-Income Trap?

...back to the basics...

Productivity is the Key!



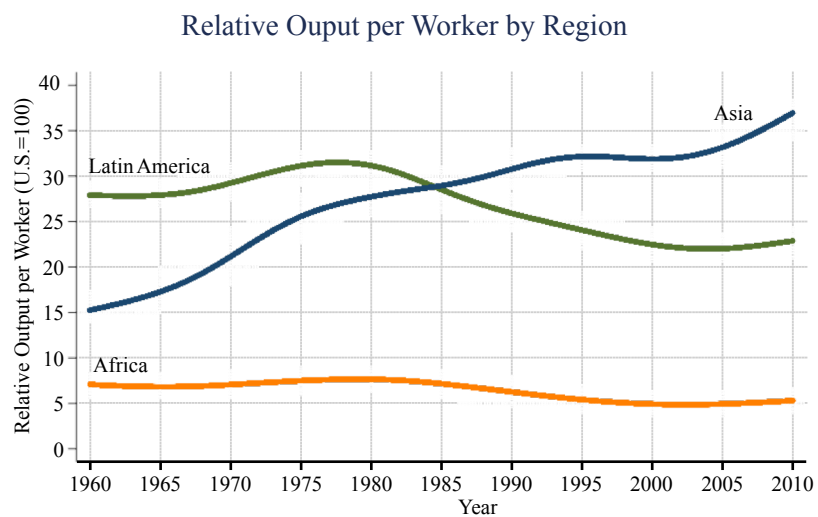
Jump to UNIDO IDR2016 Tokyo Launch Presentation

Based on: Mendez-Guerra C. (2015). Essays on Aggregate Productivity, Structural Change, and Misallocation. Saarbrücken: LAP LAMBERT Academic Publishing (Ph.D. Thesis, Nagoya University).

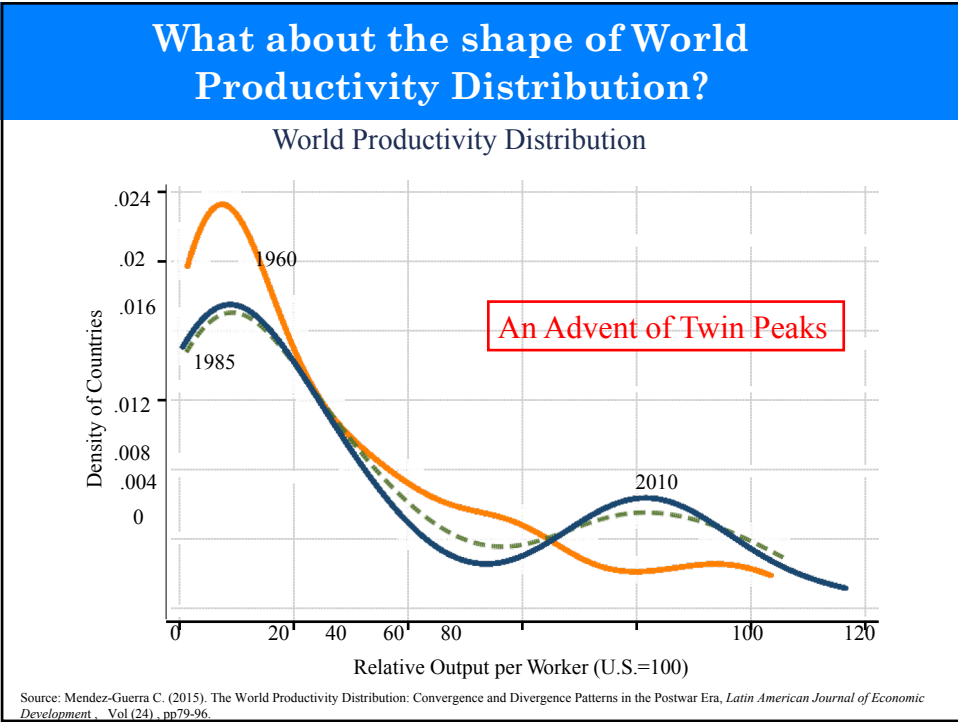
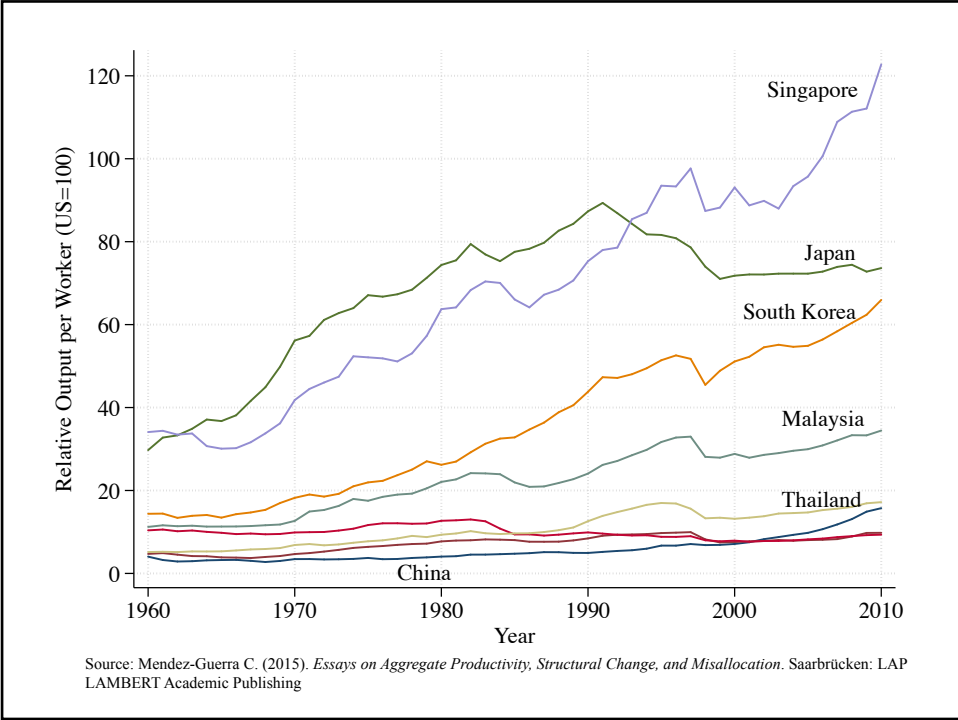
38

The wealth of a nation is not measured by its supply of precious metals, but by the productivity of its labor force.

- Adam Smith, 1776



Source: Mendez-Guerra C. (2015). *Essays on Aggregate Productivity, Structural Change, and Misallocation*. Saarbrücken: LAP LAMBERT Academic Publishing



*Productivity depends on the equipment,
skills, and technology available to workers.*

- Solow, 1957

Model

- Based on Jones (1997), consider the following economy:

$$Y(t) = K(t)^\alpha (A(t)H(t))^{1-\alpha},$$

$$H(t) = e^{\phi S(t)} L(t),$$

$$\dot{k}(t) = s_K(t)y(t) - (n(t) + \delta)k(t),$$

- In steady state:

$$y_i(t) = \left(\frac{s_{K_i}}{n_i + g_A + \delta} \right)^{\frac{\alpha}{1-\alpha}} h_i A_i(t).$$

- In relative terms (USA=1):

$$y_i(t) = \xi_{K_i}^{\frac{\alpha}{1-\alpha}} h_i A_i(t),$$

where $y_i \equiv \frac{y_i(t)}{y_{US}(t)}$, $\xi_{K_i} \equiv \frac{\xi_{K_i}}{\xi_{KUS}}$, $h_i \equiv \frac{h_i}{h_{US}}$, $A_i \equiv \frac{A_i(t)}{A_{US}(t)}$, and $\xi_{K_i} \equiv \frac{s_{K_i}}{n_i + g_A + \delta}$.

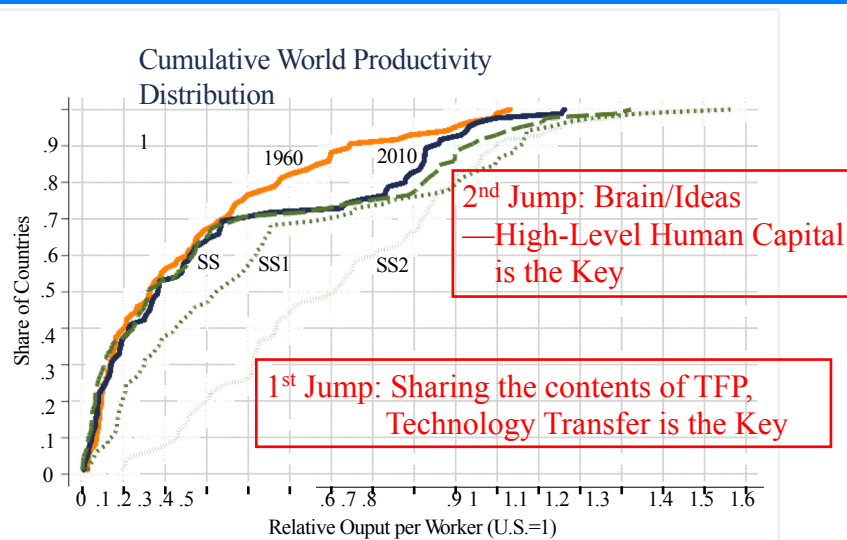
Simulations Scenarios

$$y_i(t) = \xi_{K_i}^{\frac{\alpha}{1-\alpha}} h_i A_i(t),$$

1. Inputs Convergence
 - What if developing countries had the same level of equipment and skills but keep their own level of technology?
2. TFP Convergence
 - What if developing countries had the same level of technology but keep their equipment and skills fixed?

Scenario 2: “TFP” Convergence

How big is this effect?



Source: Mendez-Guerra C. (2015). *Essays on Aggregate Productivity, Structural Change, and Misallocation*. Saarbrücken: LAP LAMBERT Academic Publishing

In Conclusion

Eternal pursuit of the contents of TFP (not as a measurement of ignorance), and then ‘Brain Power’ (with smart government coordination).

**Ideas are subject to IRTS.
Education has positive externality.**

In need of well-coordinated intellectual networks such as this AEDC for ‘brain power.’

The End

