Convergence and Welfare in ASEAN and Beyond

IMF Asia and Pacific Department

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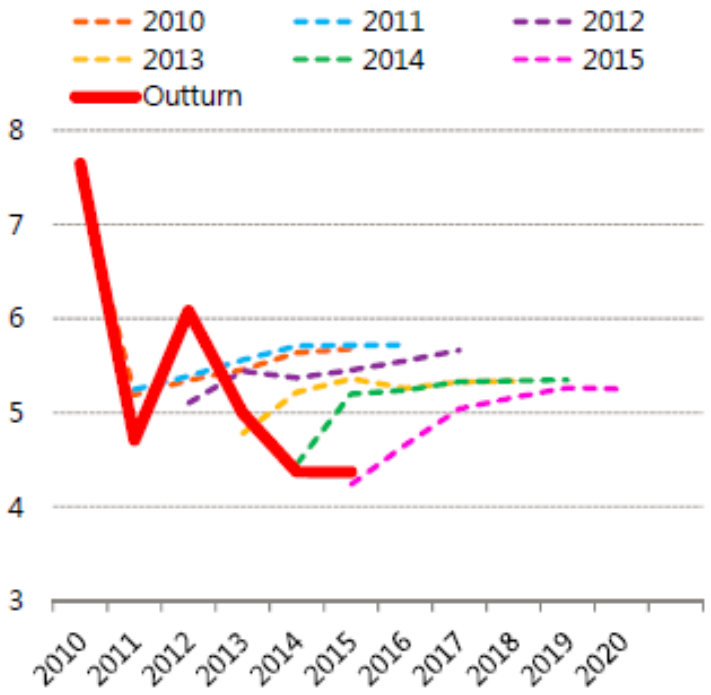
Key Takeaways

- The record of growth and development in ASEAN is a qualified success: within convergence and convergence to AEs…
- …but slower than growth in Korea, Japan, China at a similar level of development.
- Key ingredients for faster growth are improvements in infrastructure, human capital, and institutions while maintaining sound macro policies.
- GDP per capita is an excellent measure, but welfare goes beyond this: environment, equality, health, leisure etc.

I. Growth and Income Convergence in ASEAN

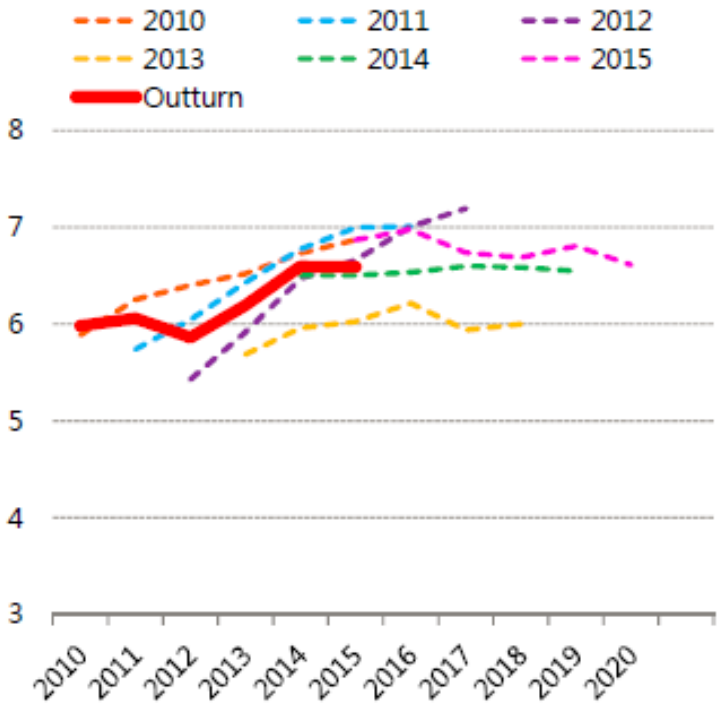
Amid global slowdown, ASEAN-5 growth has moderated while CLMV growth remains strong.

ASEAN-5: GDP Growth Outturn v.s. WEO Projections 1/
(Year-over-year percent change)



Sources: IMF, WEO database; and IMF staff calculations.
1/ 5-yr forward projections from October WEO in each year.

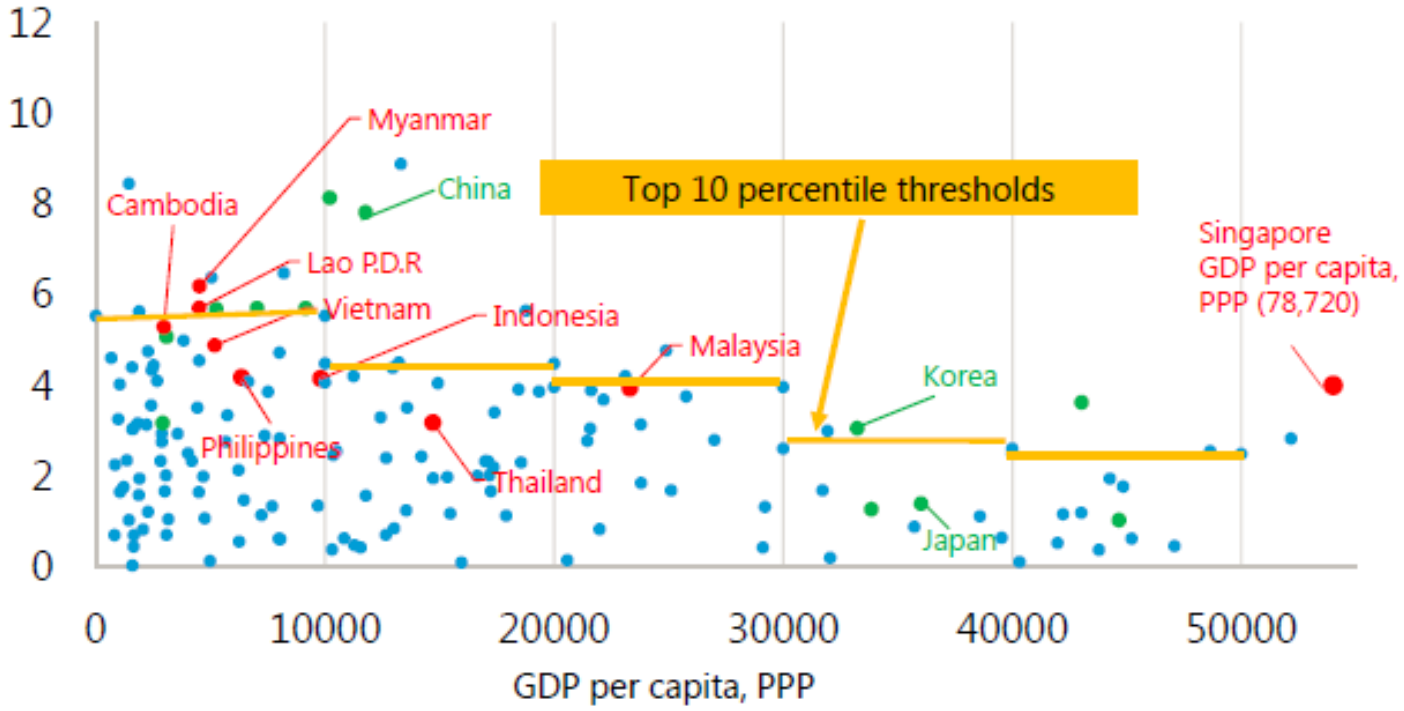
CLMV+Brunei: GDP Growth Outturn v.s. WEO Projections 1/
(Year-over-year percent change)



Sources: IMF, WEO database; and IMF staff calculations.
1/ 5-yr forward projections from October WEO in each year.

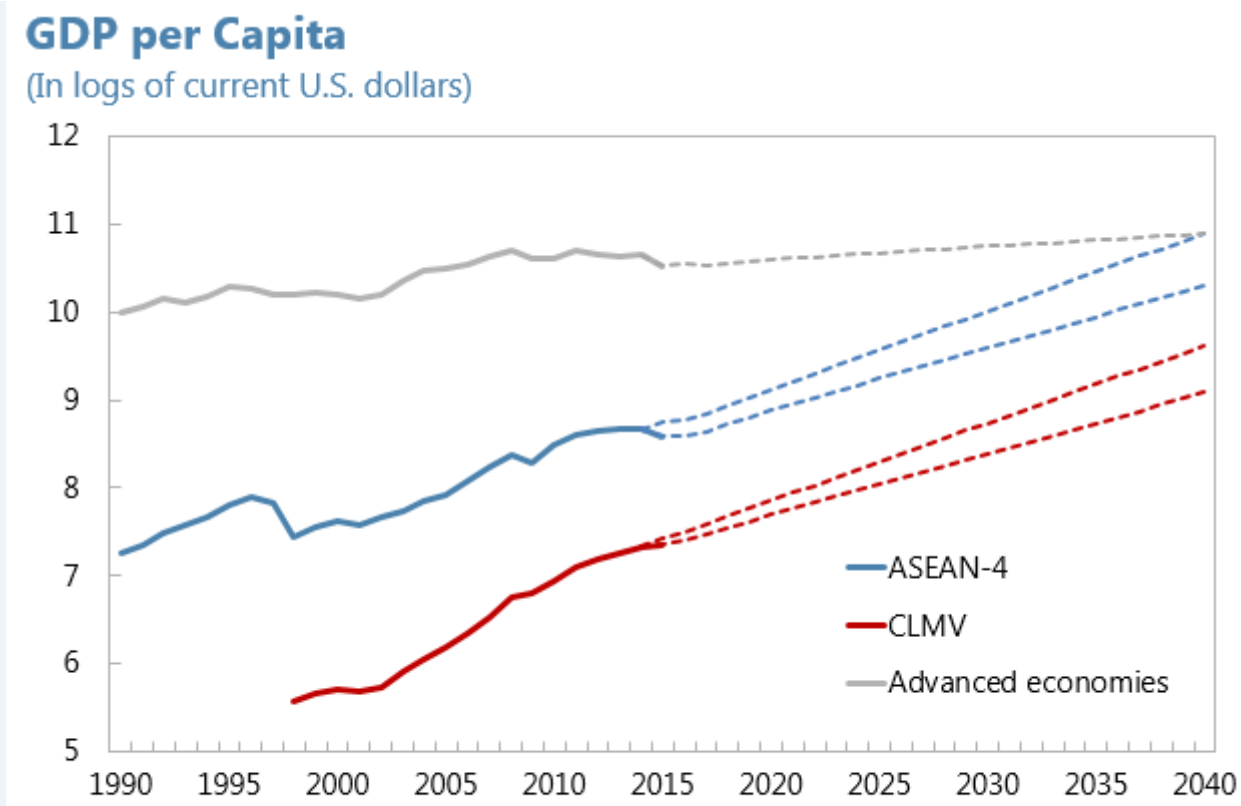
ASEAN countries have grown faster than their peers...

Real GDP per Capita Growth: 2010-2015 (percent)



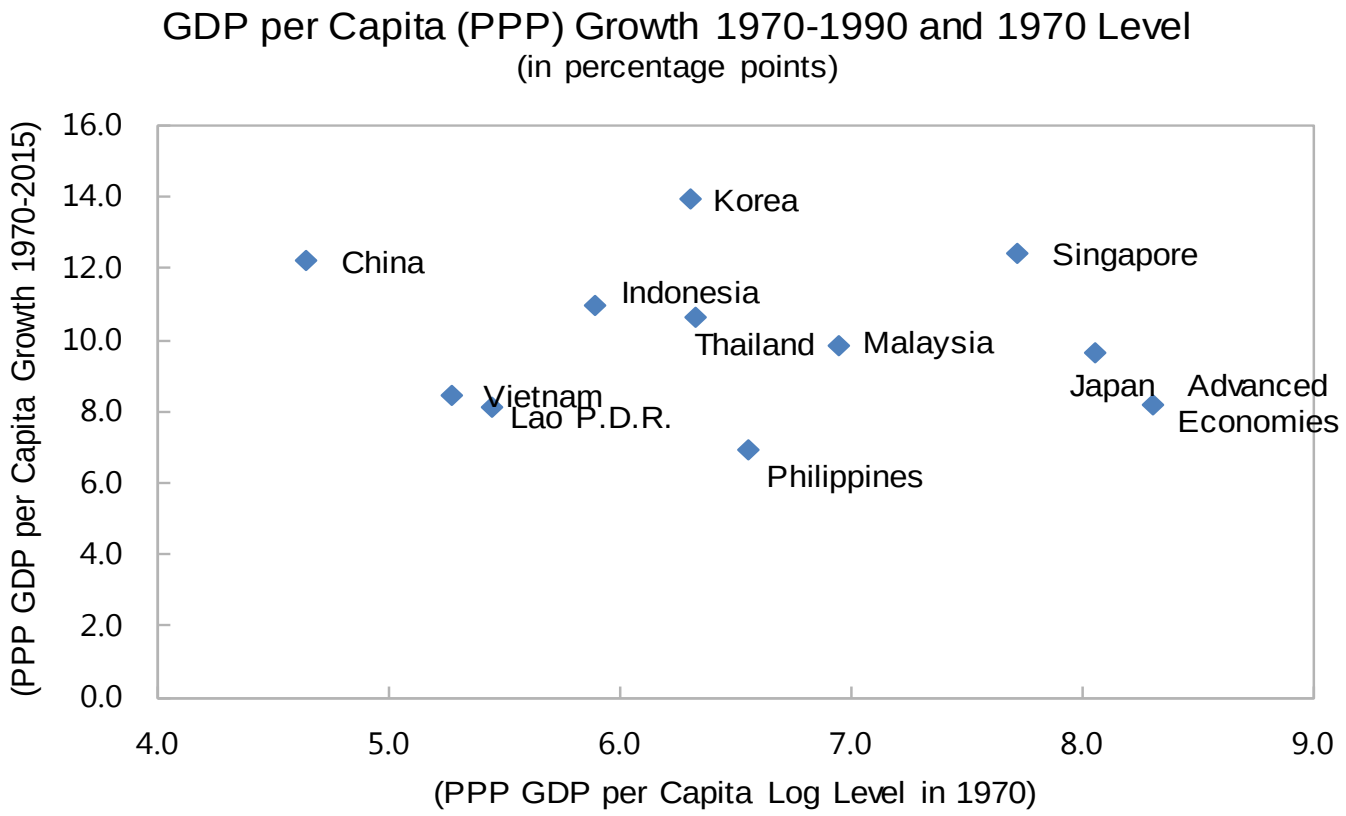
Sources: IMF, WEO database; and IMF staff calculations.
Note: Red dots represent ASEAN countries, green dots are other major Asian countries and yellow lines indicate top 10 percentile GDP growth rate within each income group.

WEO projections show gradual ASEAN convergence in sight



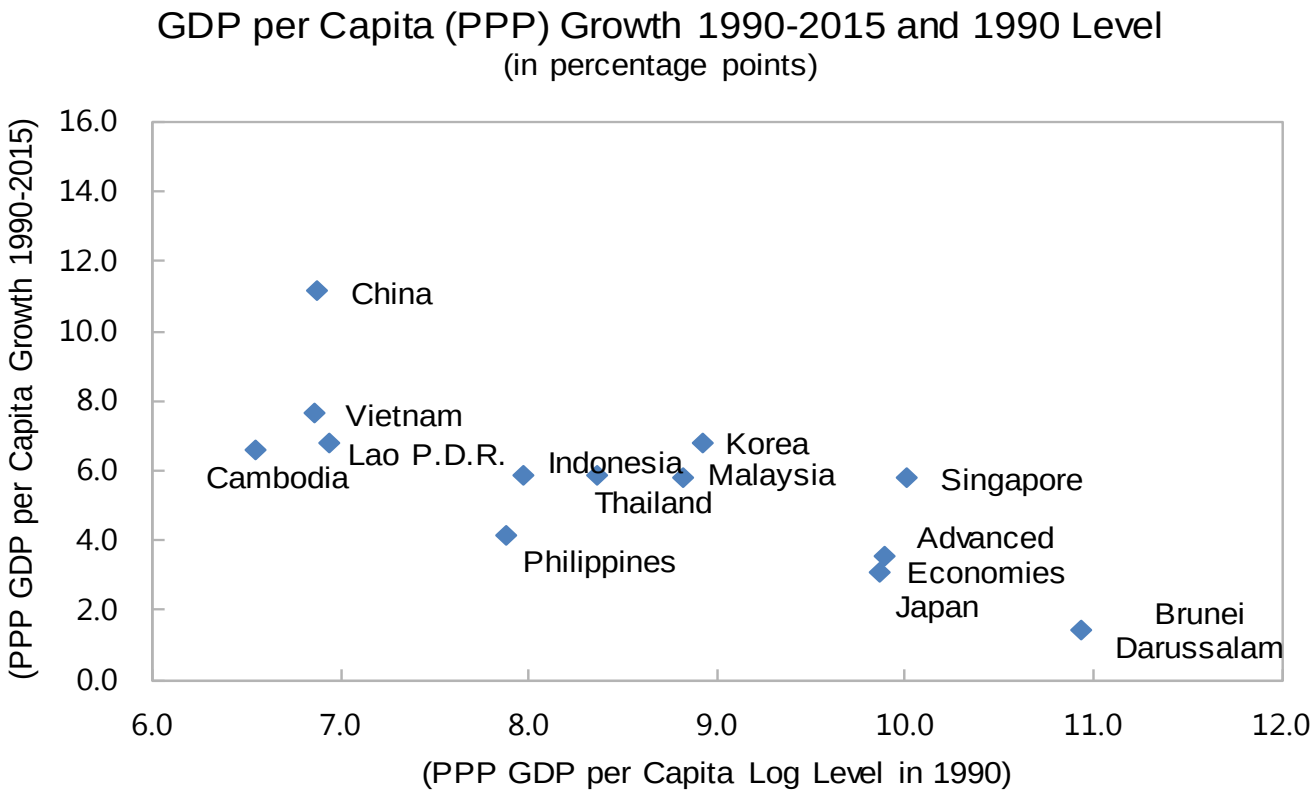
Sources: IMF, *World Economic Outlook*; and IMF staff calculations and projections.
Note: Advanced economies includes France, Germany, Italy, Japan, and the UK; ASEAN-4 includes Indonesia, Malaysia, Philippines and Thailand; CLMV includes Cambodia, Lao PDR, Myanmar, and Vietnam.

Historically, there was little income convergence in ASEAN between 1970 and 1990.



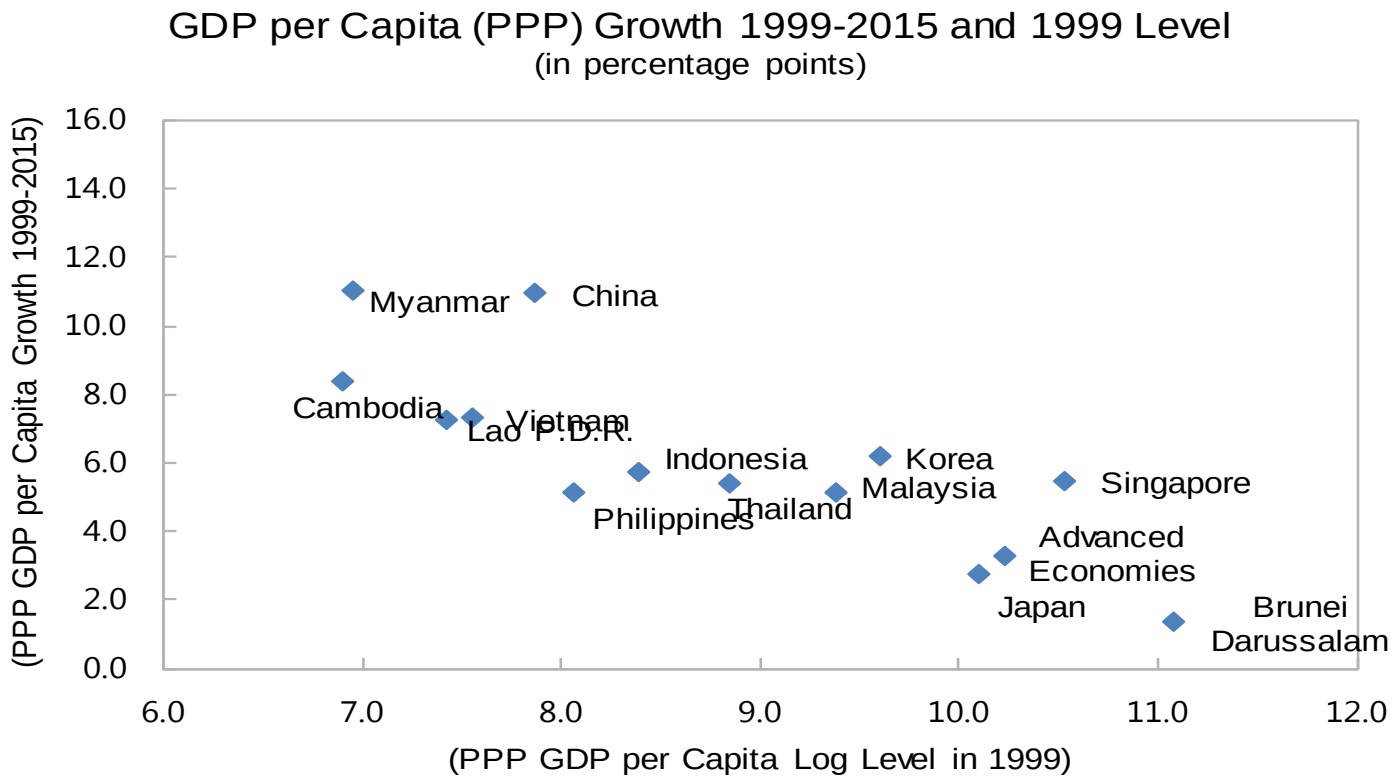
Source: IMF staff calculations.

…but the pace of convergence picked up starting around 1990…



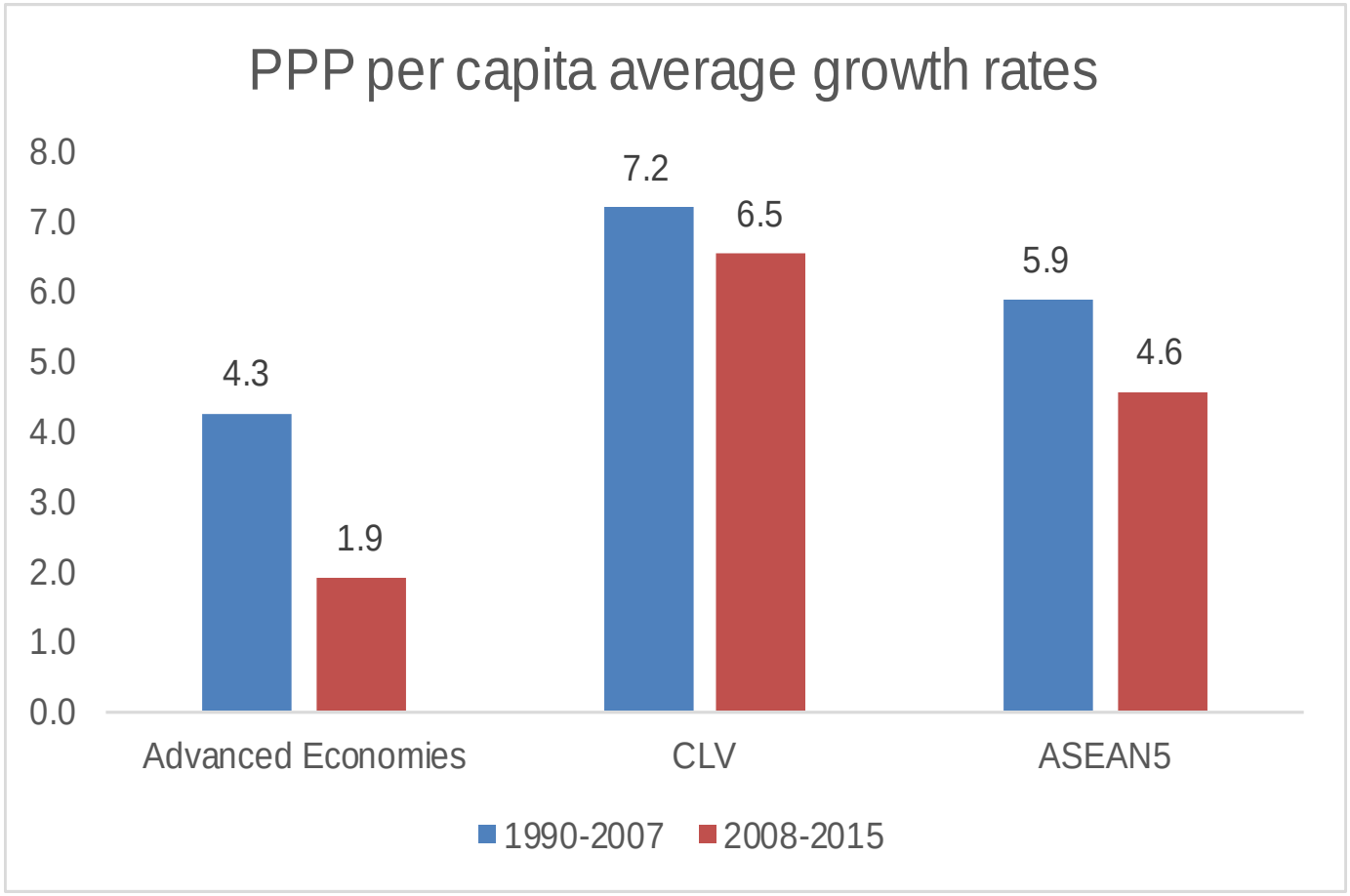
Source: IMF staff calculations.

…and has remained strong in the last 15 years. (Similar based on USD GDP).

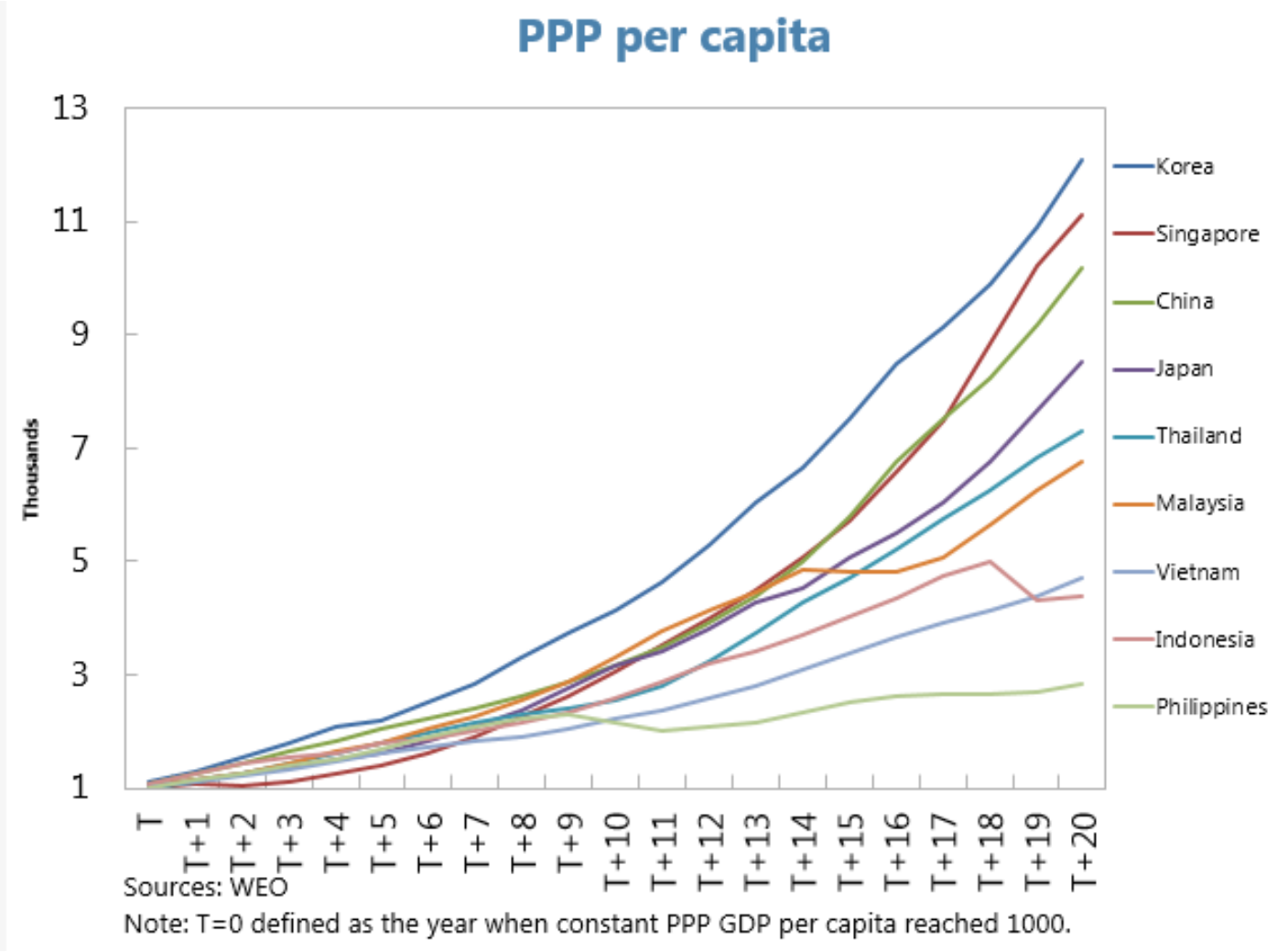


Source: IMF staff calculations.

However, in absolute terms growth rates have slowed also for LICs in ASEAN. [similar in USD and real terms]



Most ASEAN countries are falling short of China, Korea, Japan, and Singapore at the same stage of development.



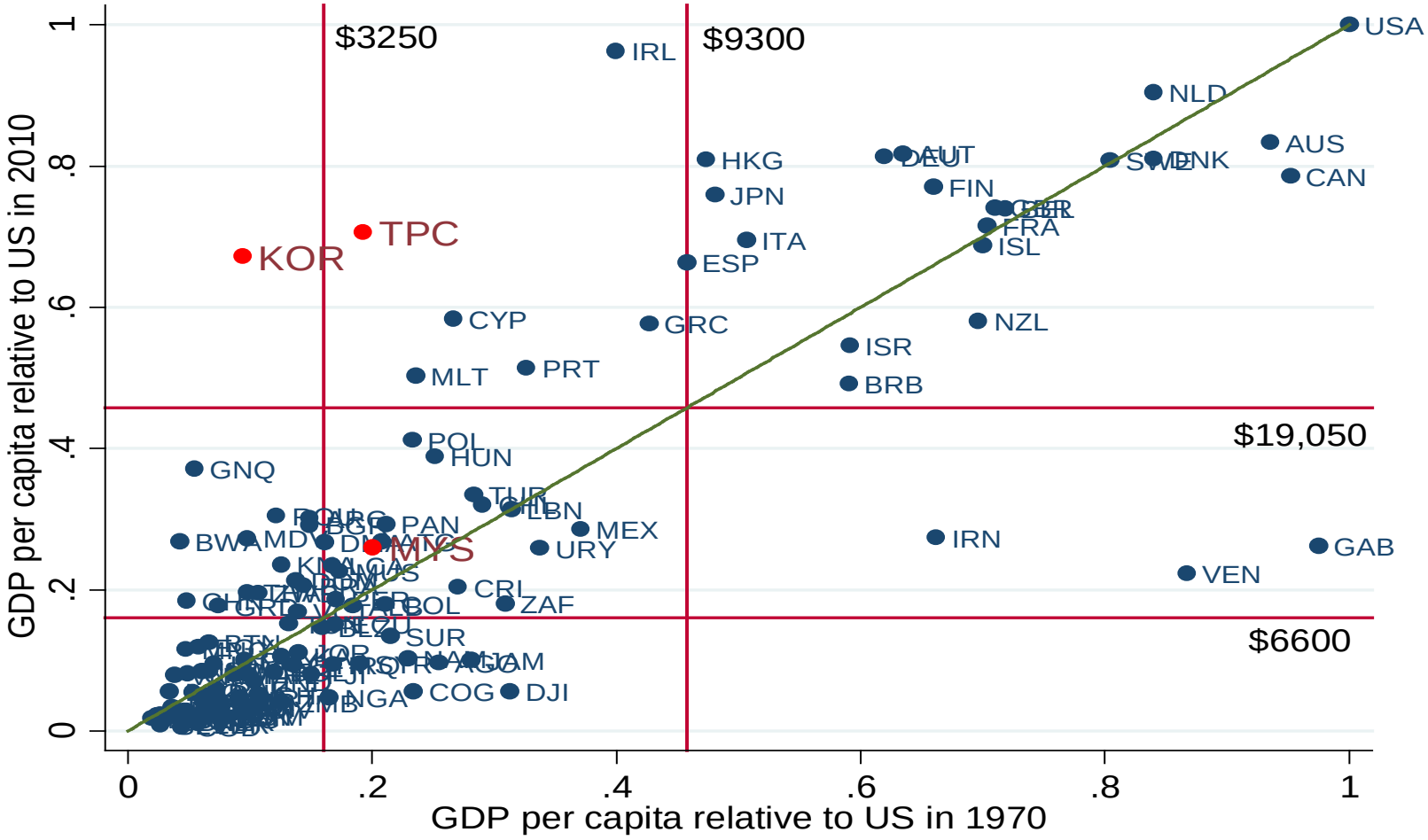
Sources: WEO

Note: T=0 defined as the year when constant PPP GDP per capita reached 1000.

Moreover, growth has become more factor intensive, while the contribution of TFP has fallen…

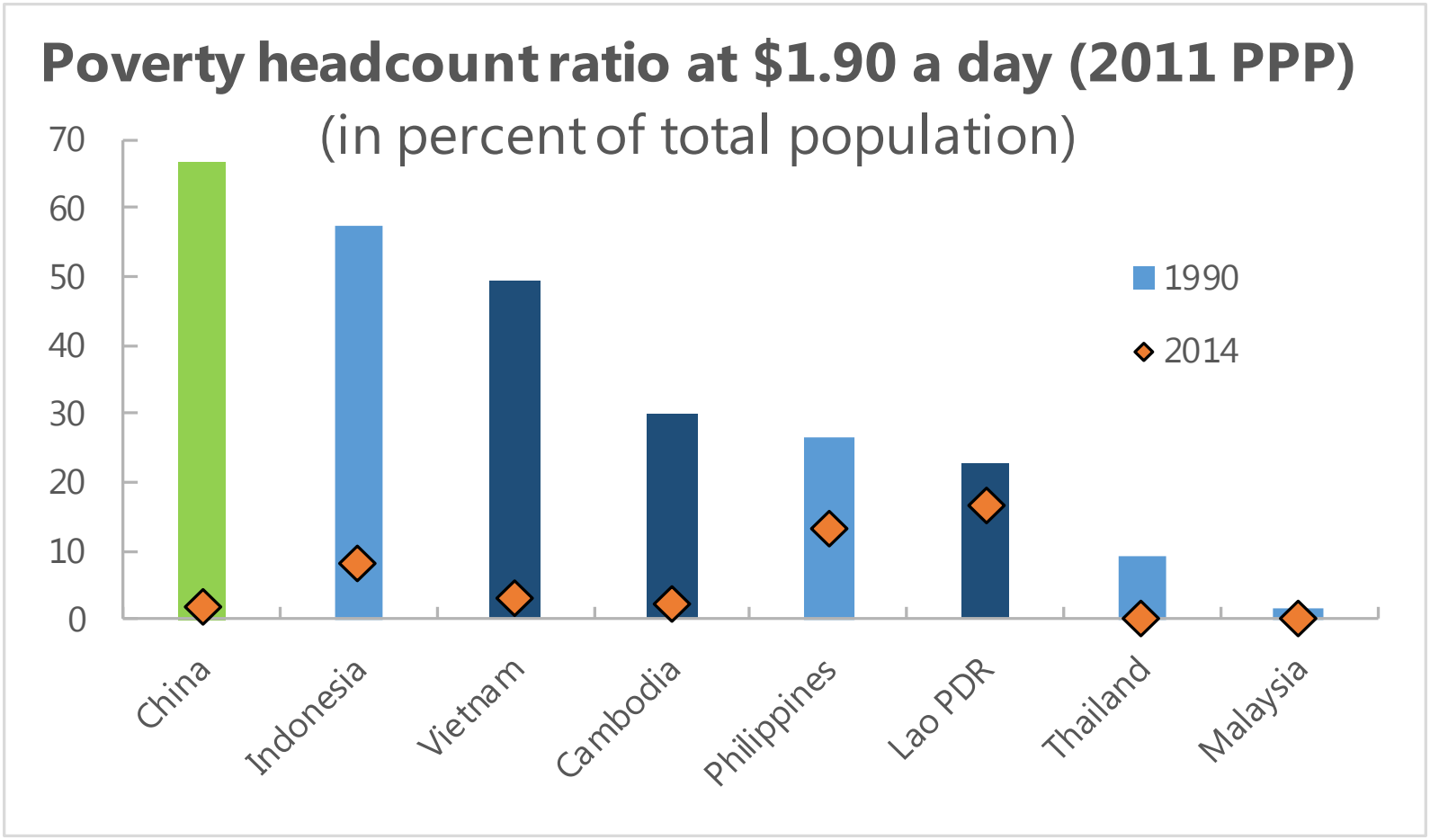
Growth Accounting, 1986–2015			
	1986–95	**1996–2005**	**2006–15**
ASEAN-5			
Growth	7.1	4.1	4.9
Capital	2.6	1.7	1.7
Labor	1.9	1.3	1.8
Human Capital	0.8	0.6	0.6
TFP	1.8	0.6	0.8
CLV			
Growth	6.3	7.3	7.0
Capital	1.7	2.7	3.2
Labor	1.8	2.1	1.0
Human Capital	0.3	0.6	0.7
TFP	2.5	2.0	2.1

…and there is evidence of a middle income trap

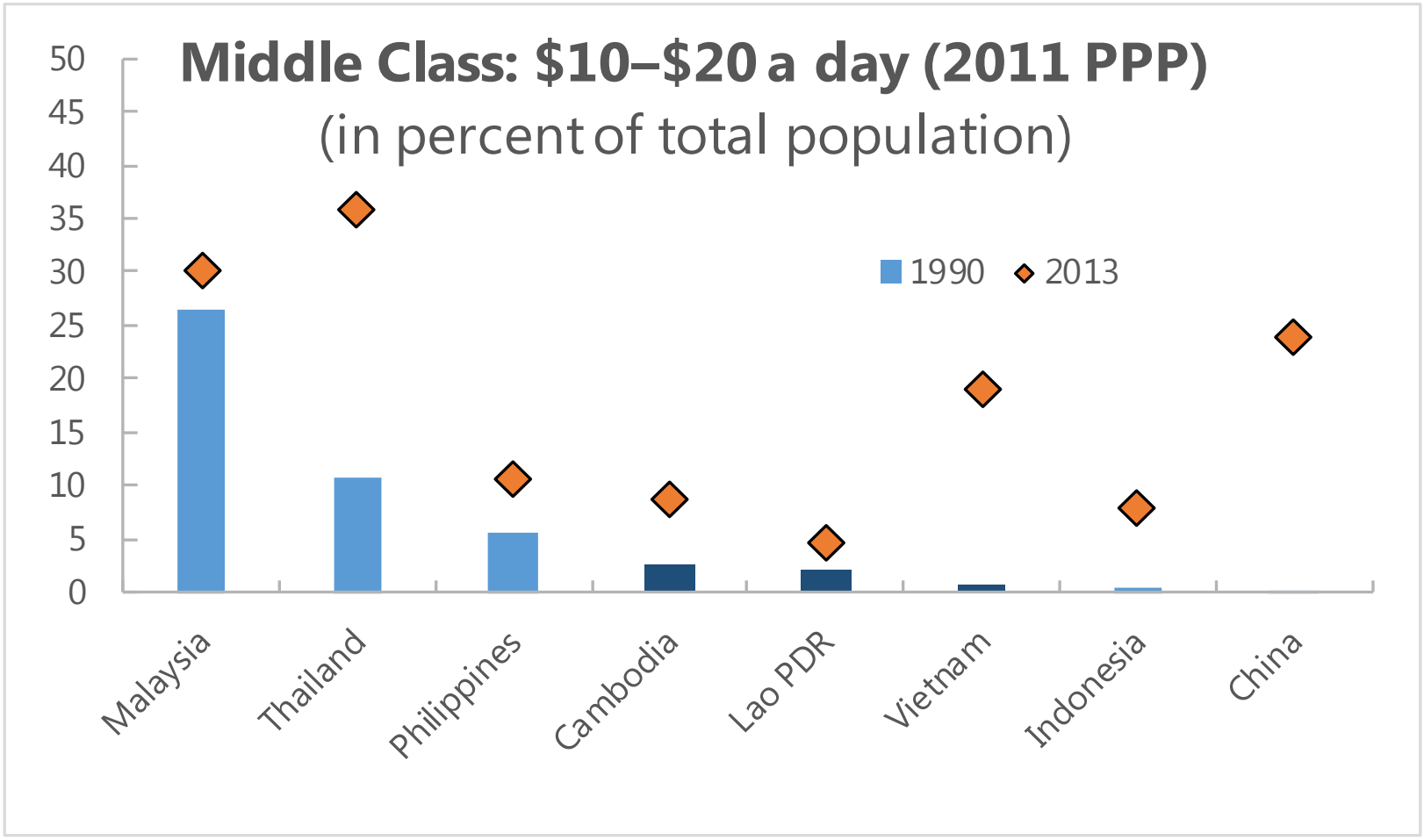


II. Has Income Convergence Been Inclusive?

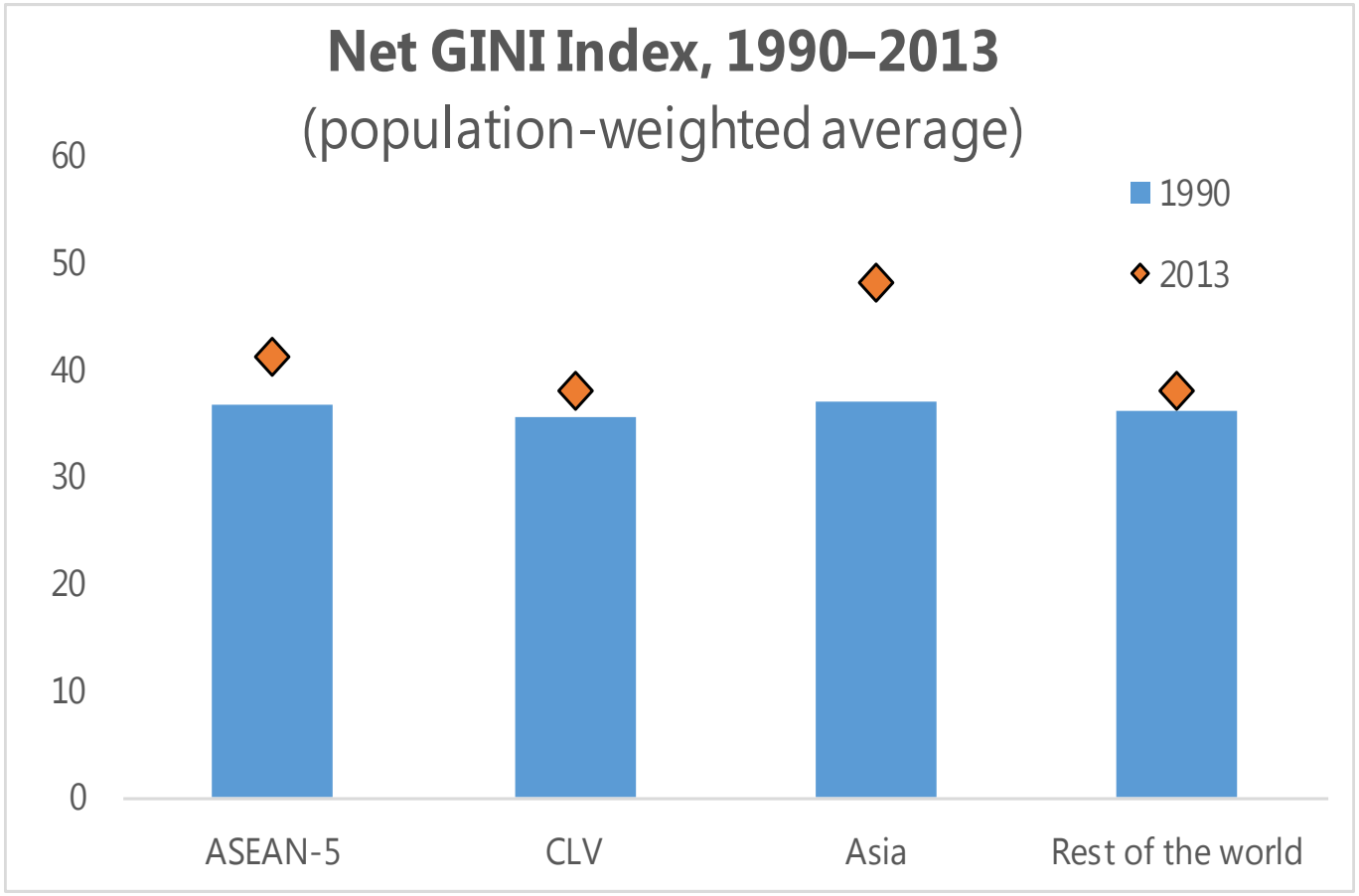
Most countries have achieved drastic reductions of extreme poverty…



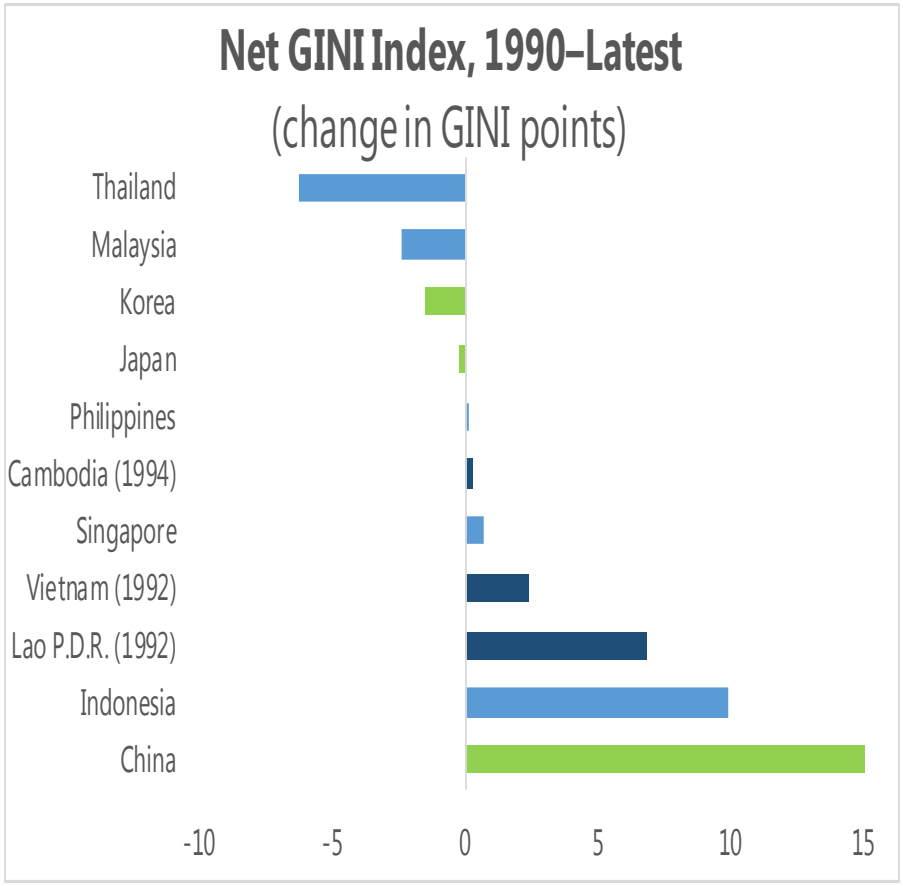
…and a middle class has emerged.

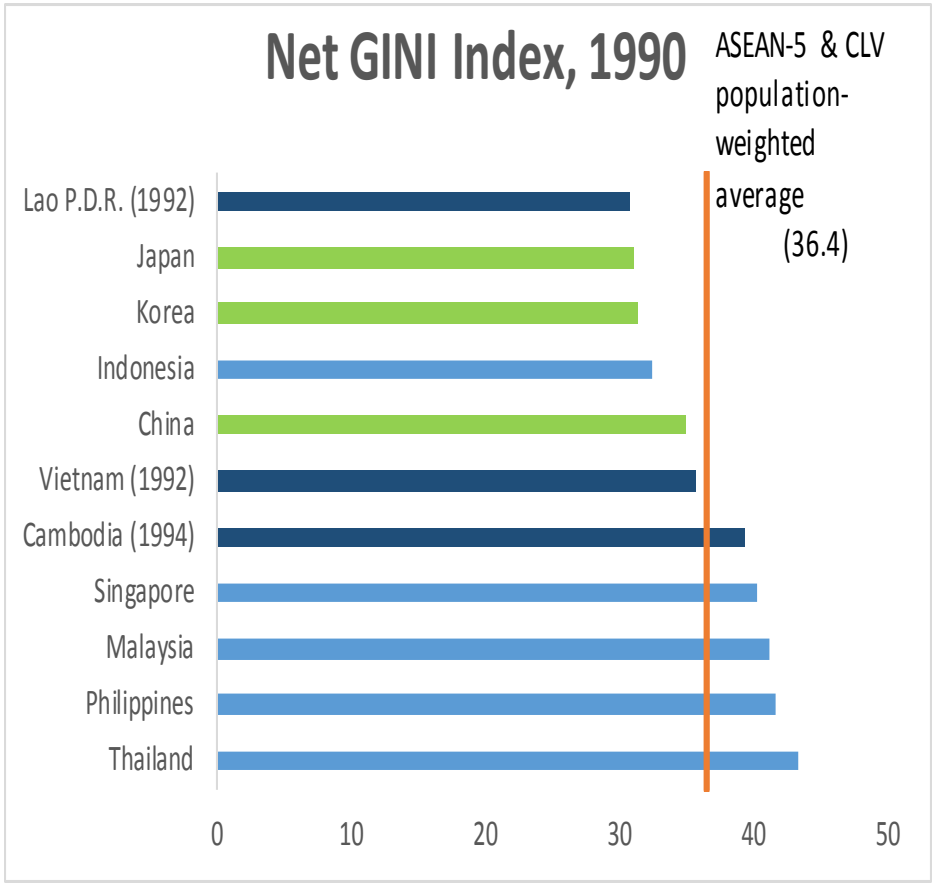


…but inequality has increased more in Asia than in the rest of the world since 1990…

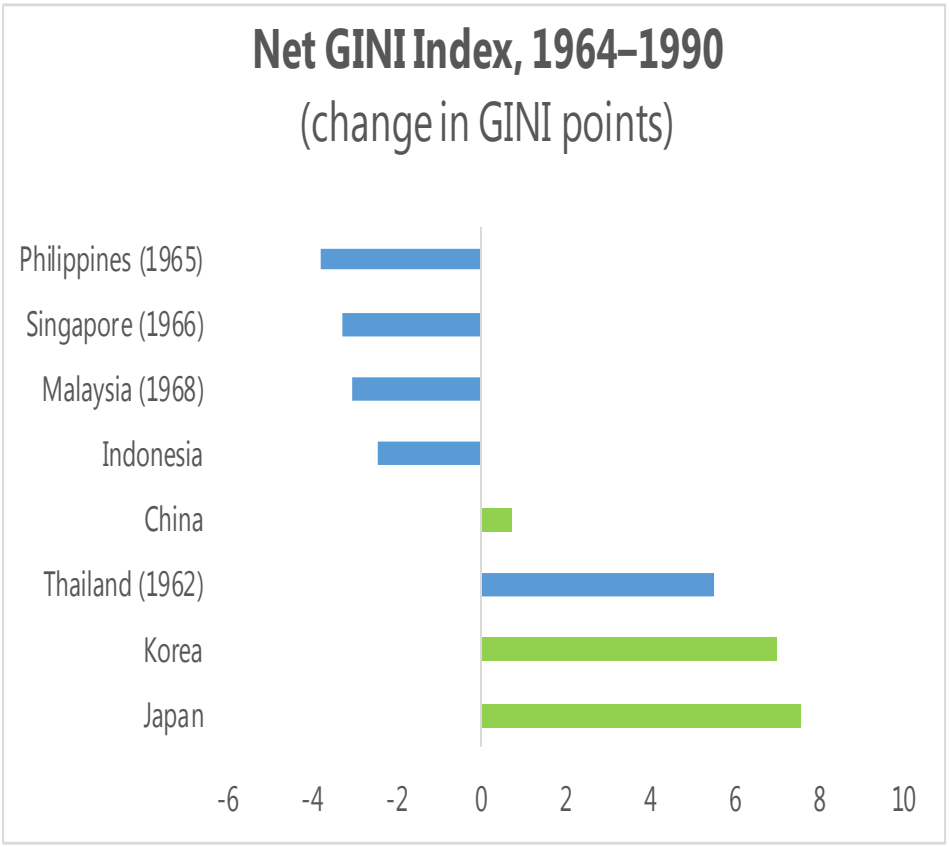


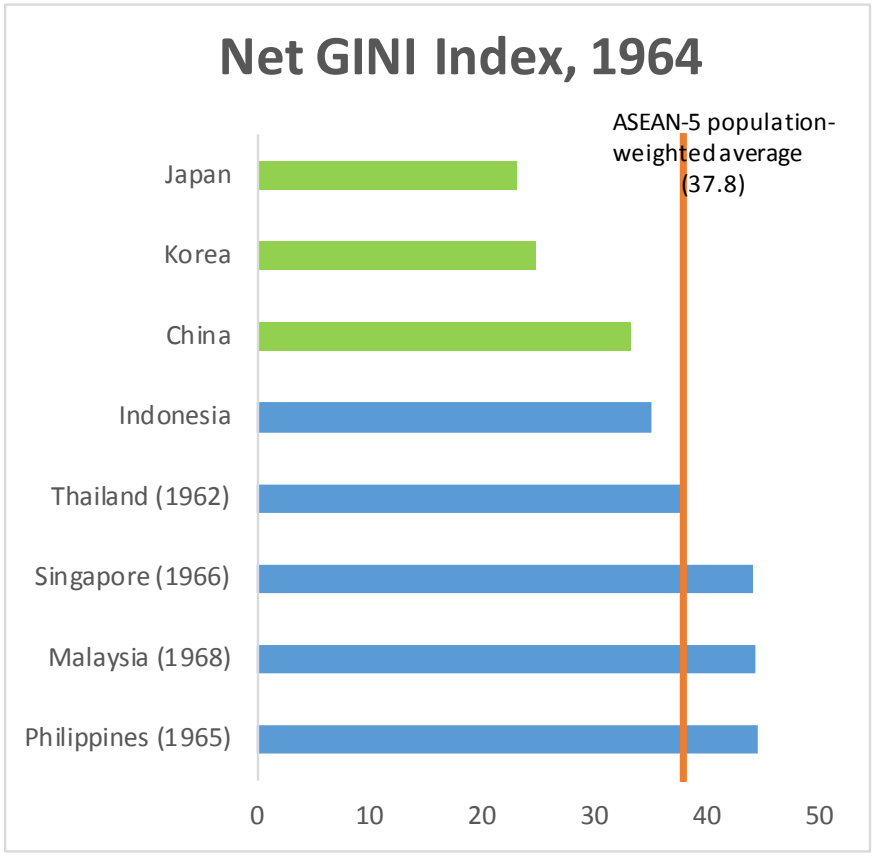
Changes in inequality 1990-latest and 1990 level:





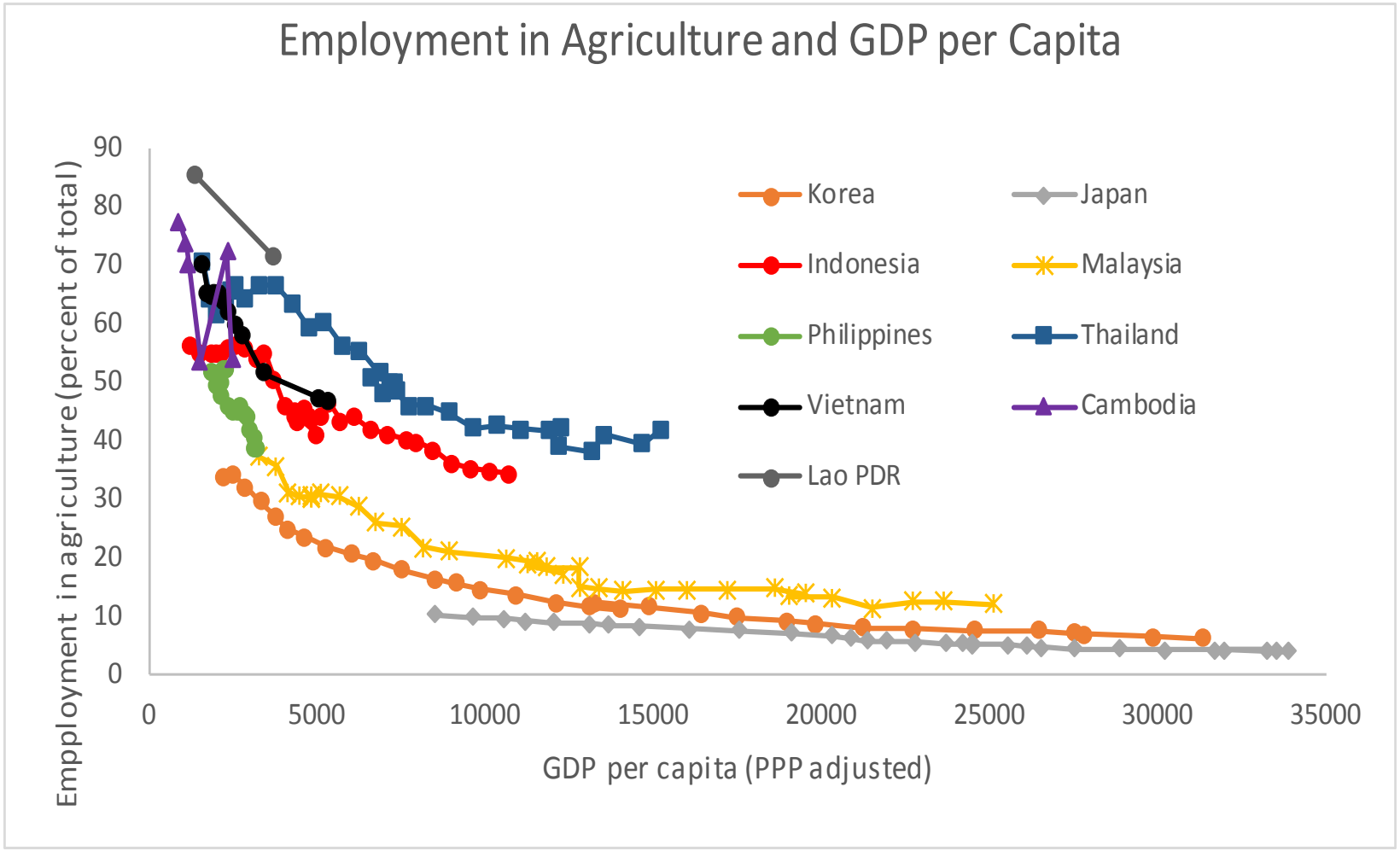
Changes in inequality prior to 1990 and level in 1964:



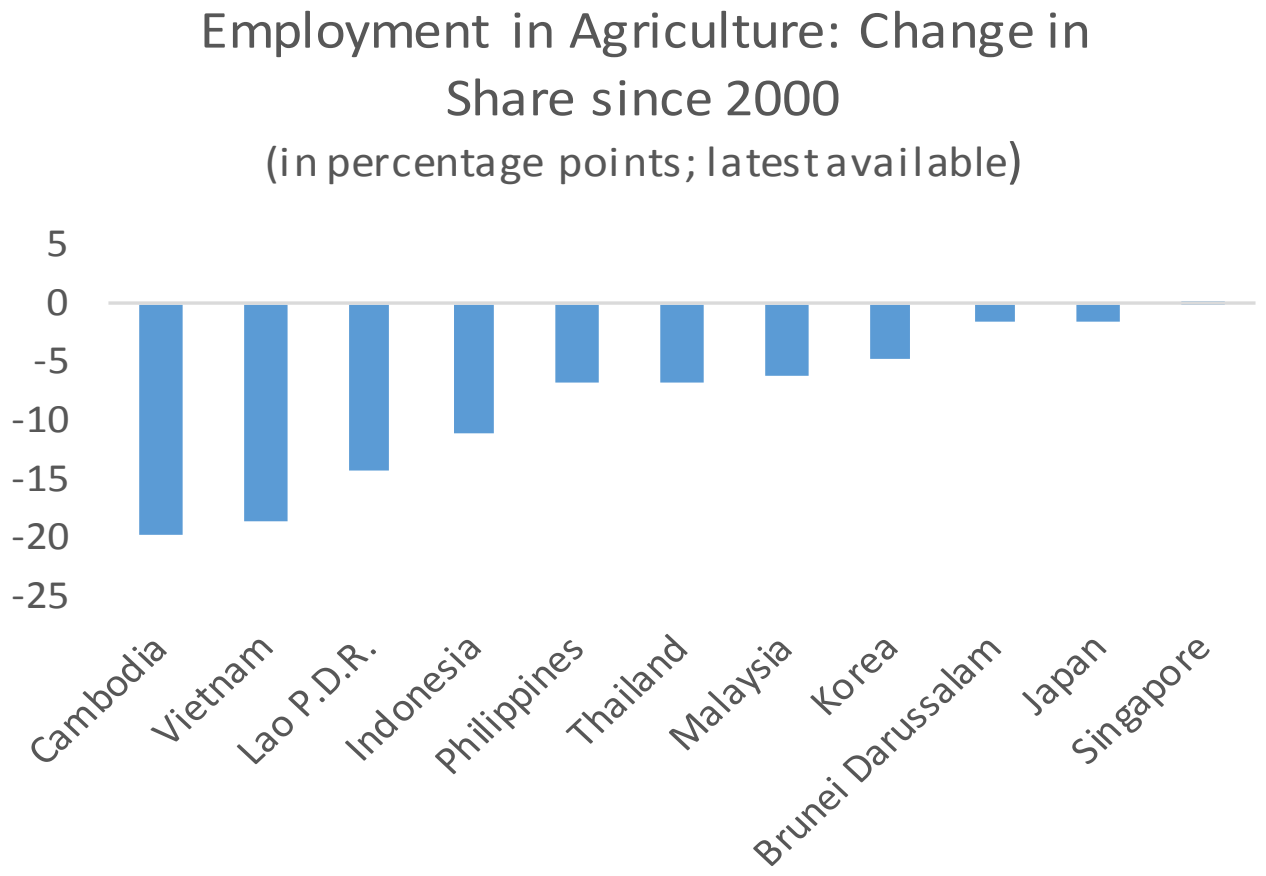


III. Structural Transformation as a Driver of Convergence

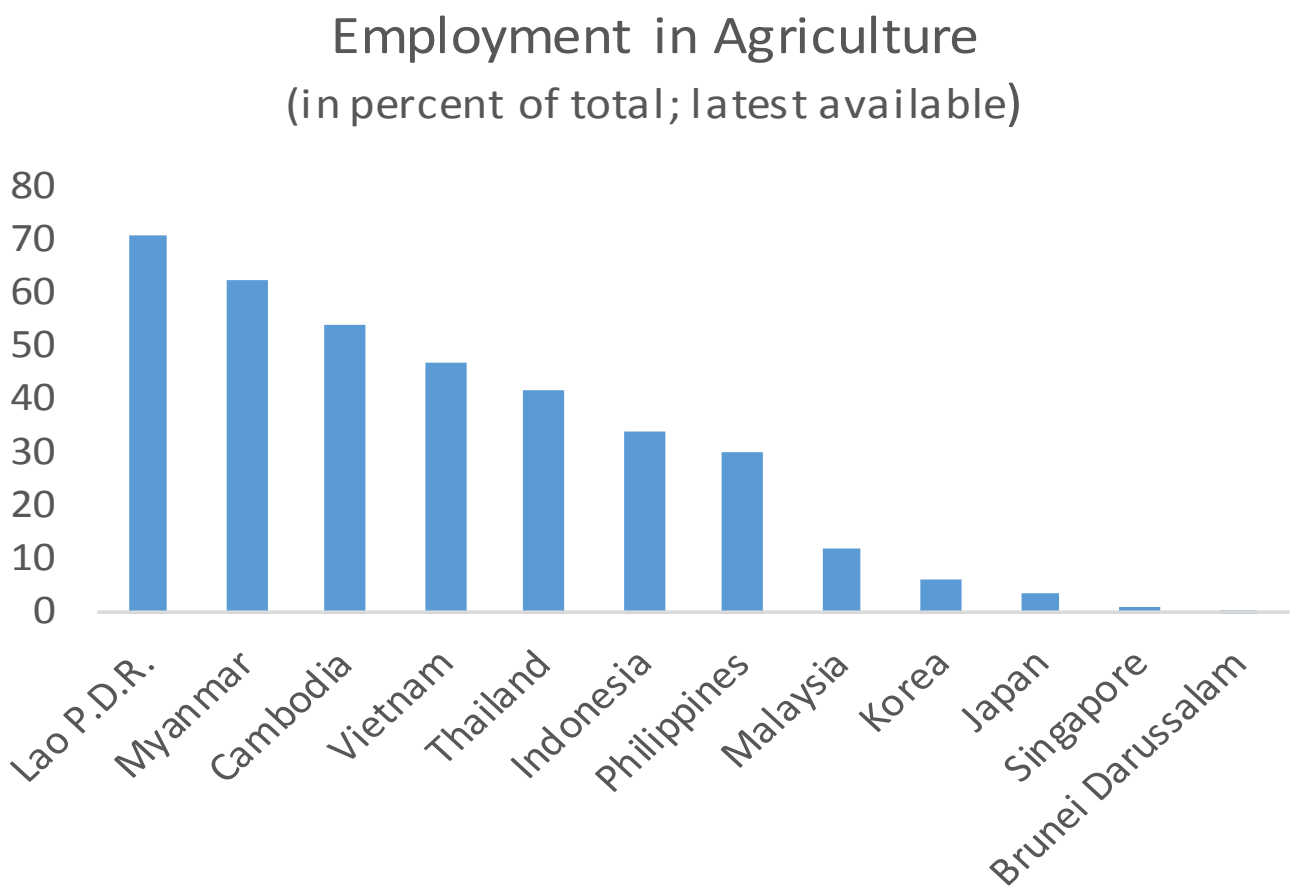
Reallocation of labor from low productivity to high productivity activities is crucial in development. Some ASEAN countries are part the way through this transition.



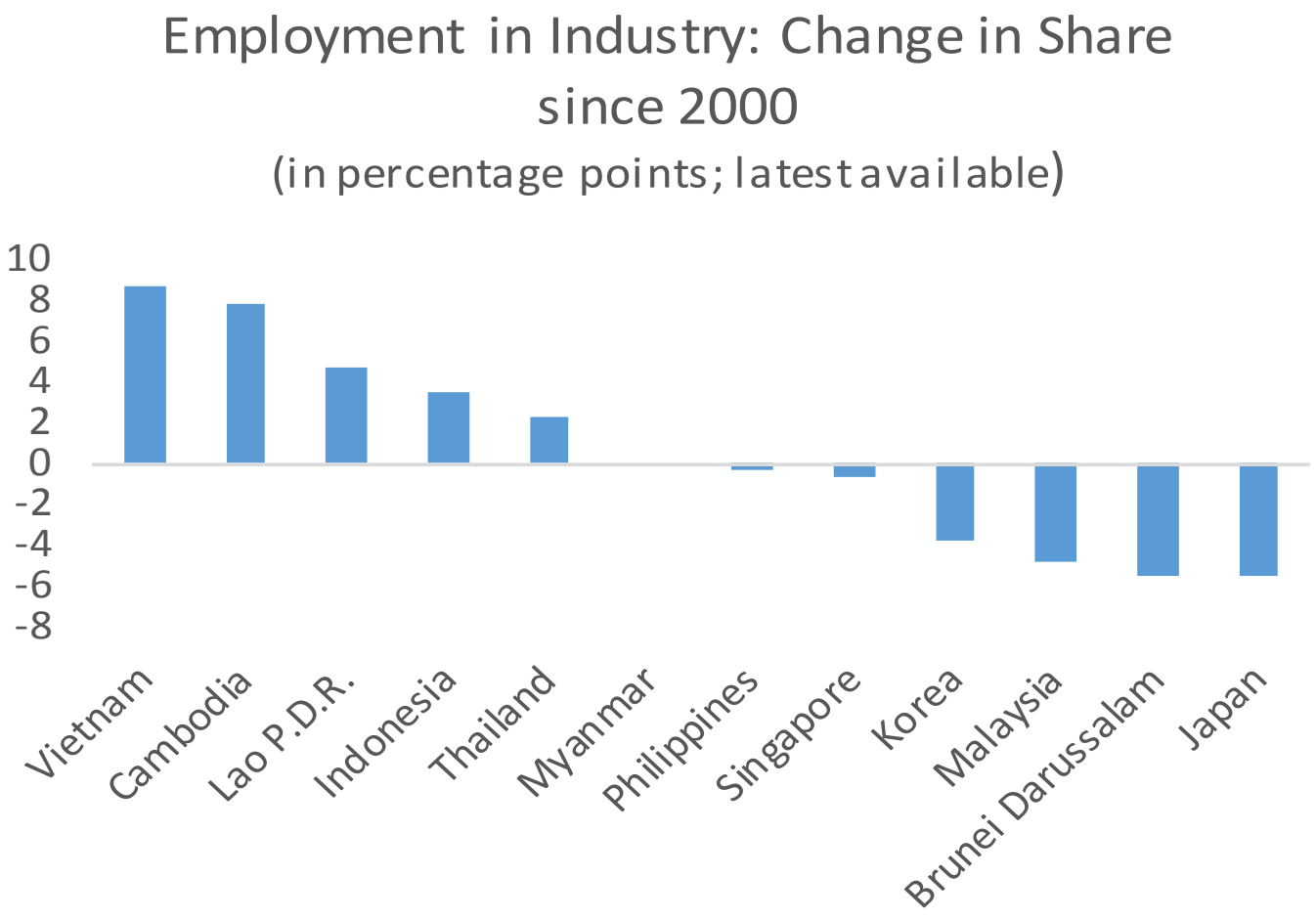
A substantial move out of low productivity agriculture has already taken place…



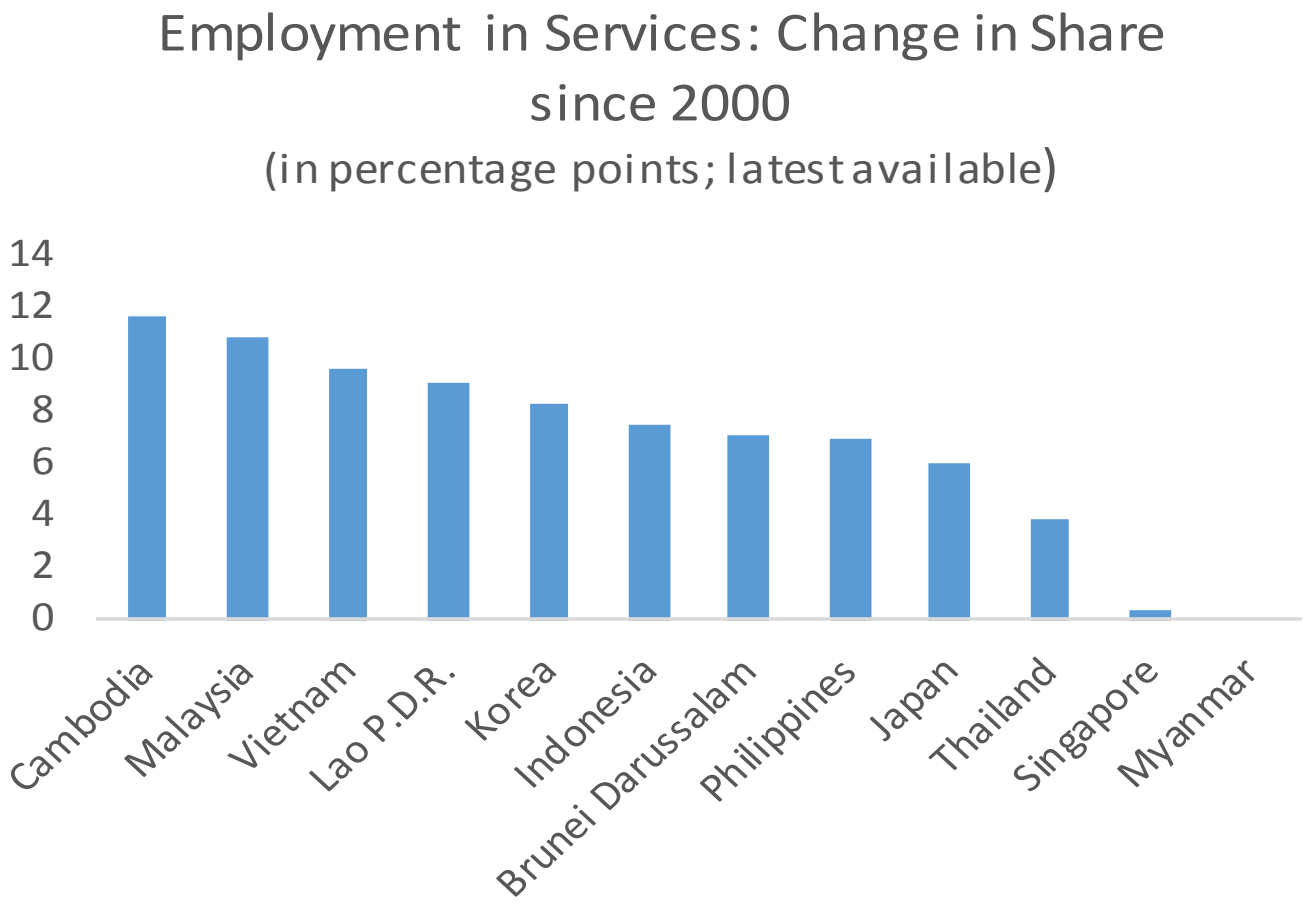
…but there remains ample room for further shifts toward higher productivity sectors in poorer countries.



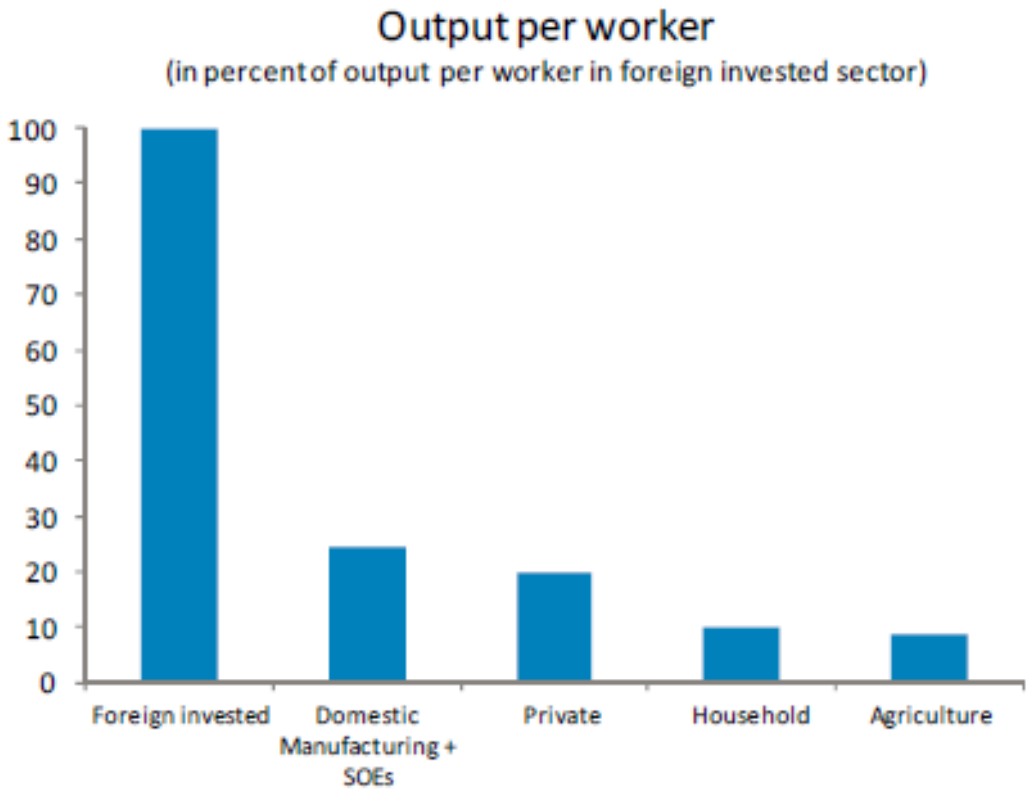
In the poorer countries, employment in industry has increased…



…while employment in services has increased across all countries.



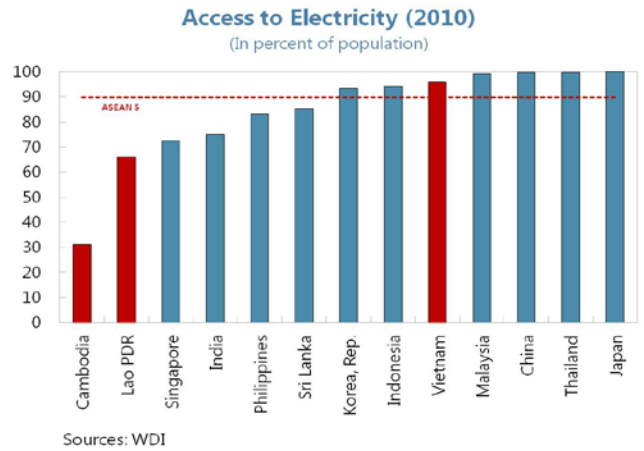
The potential of structural transformation: example of Vietnam

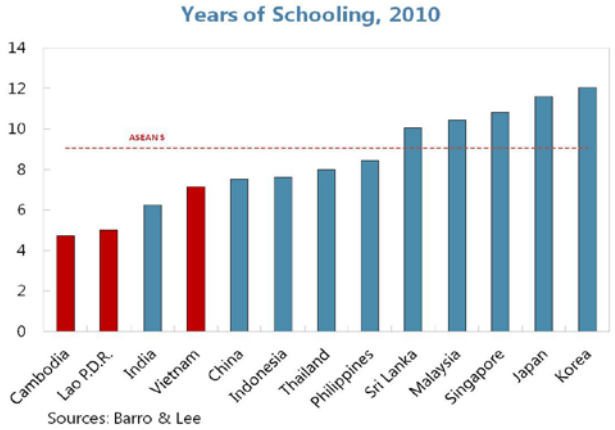


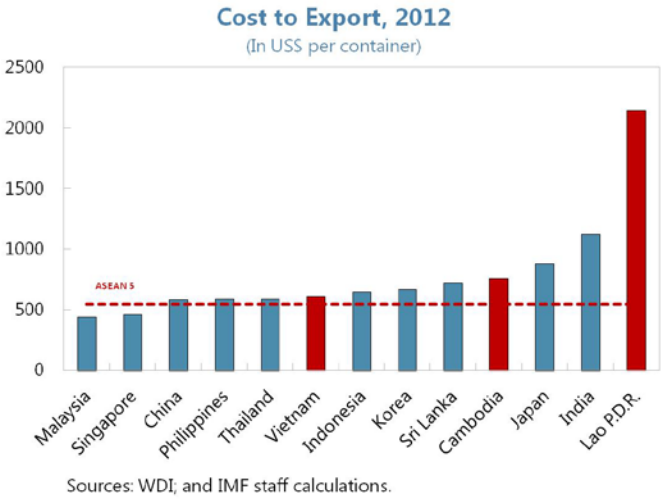
- In Vietnam, labor productivity in agriculture is less than 1/10 of productivity in the modern FDI manufacturing sector.
- Close to 50% of the labor force are still employed in agriculture.
- A continued reallocation of labor can sustain high long-term growth.

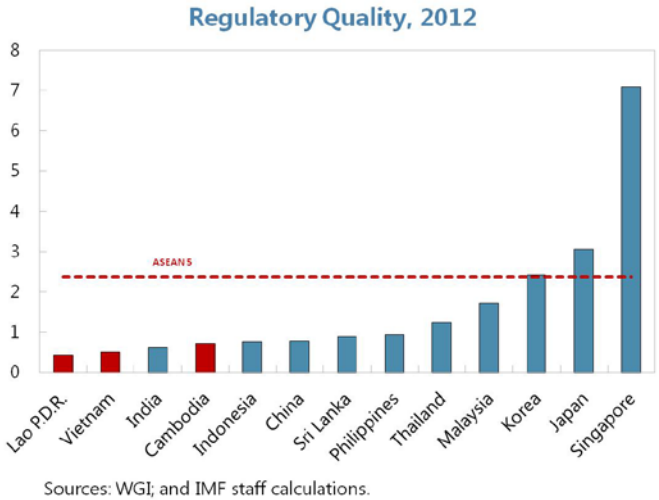
IV. ASEAN Structural Indicators

Agreement that structural factors matter for long-term growth, with varying needs across Asia.







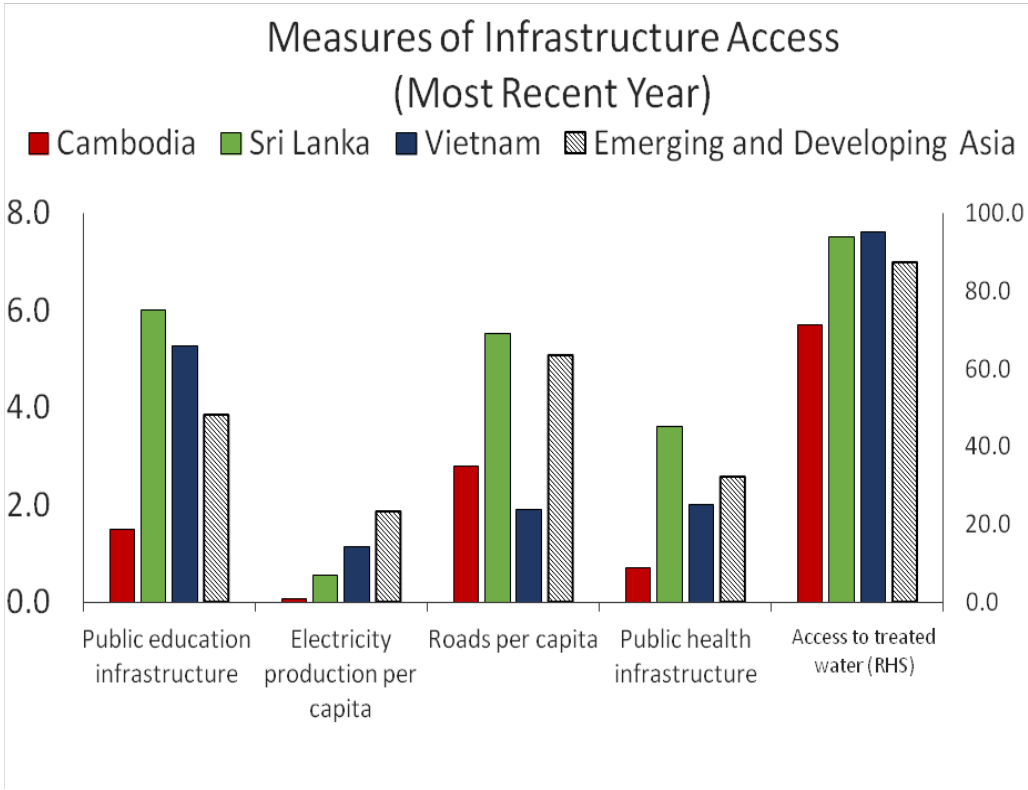


Example 1: gaps in access to infrastructure in Asian developing countries

-- **Cambodia features the lowest measures of infrastructure access**

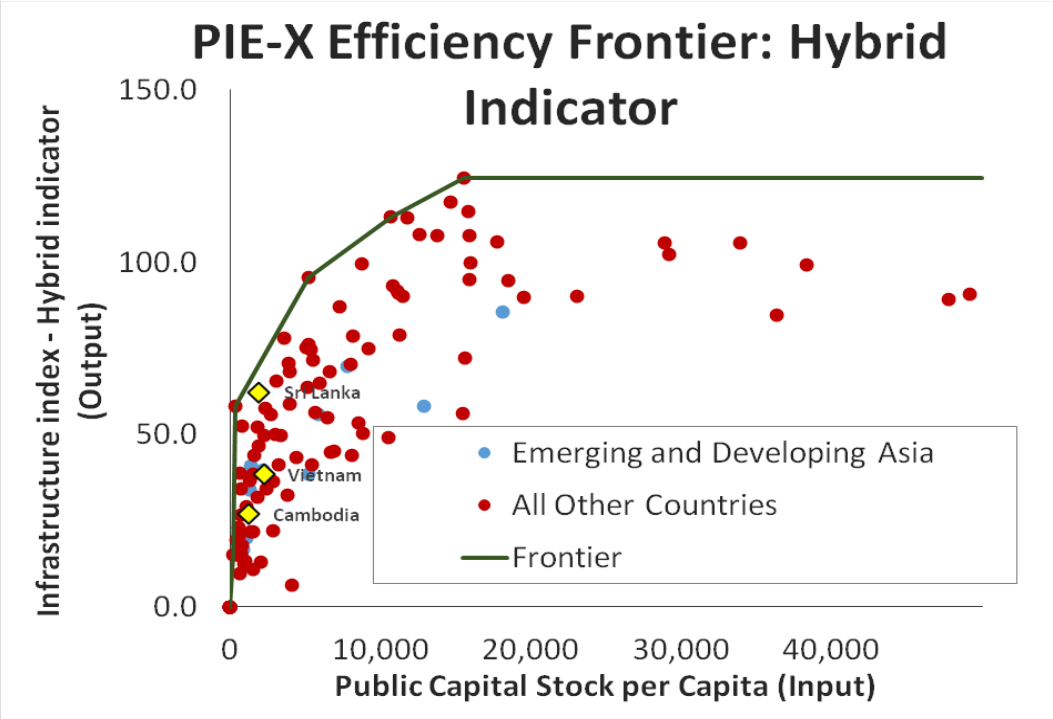
-- Owing to recent increases in public investments on roads, Sri Lanka does the best on roads per capita, and also in public health infrastructure

-- Vietnam's infrastructure parameters are lower than the EDA average, except for public education and access to water

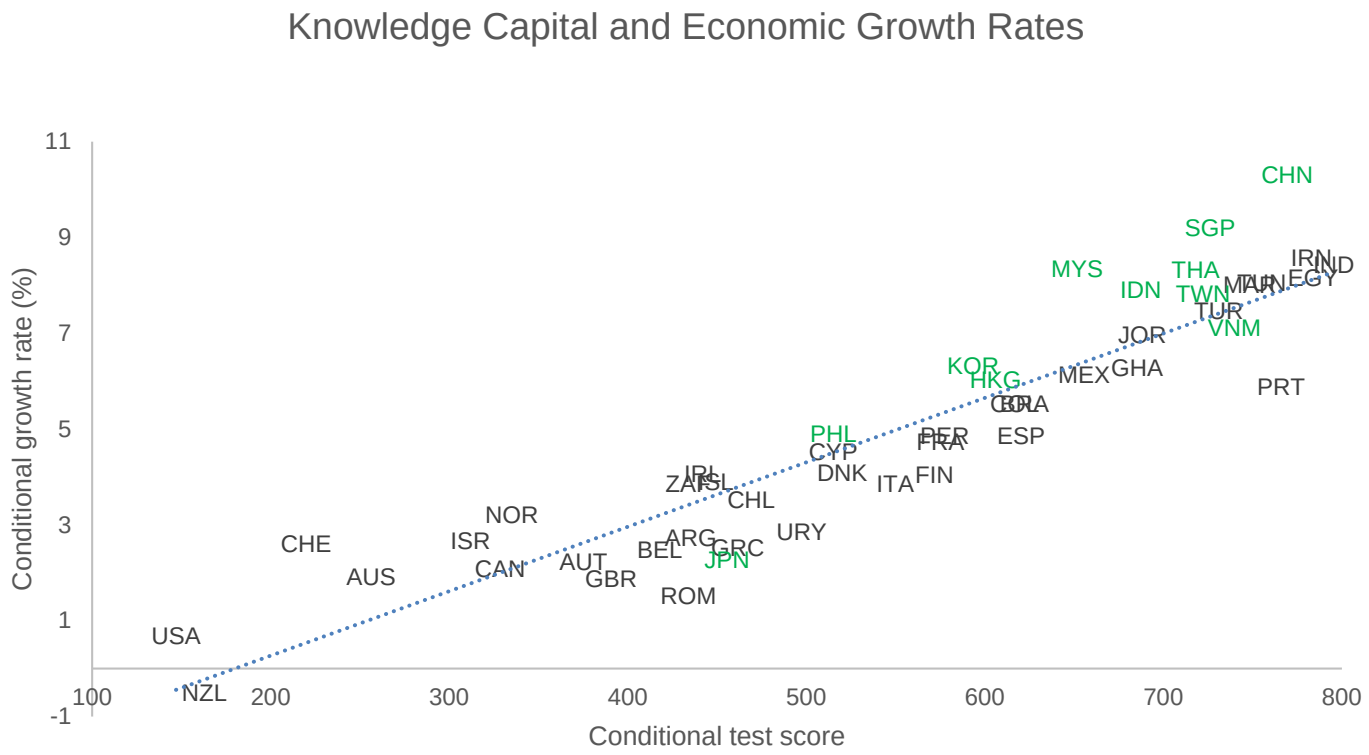


Example 2: gaps in public investment efficiency

The public capital efficiency gap is generally greater in Asia's LIDCs

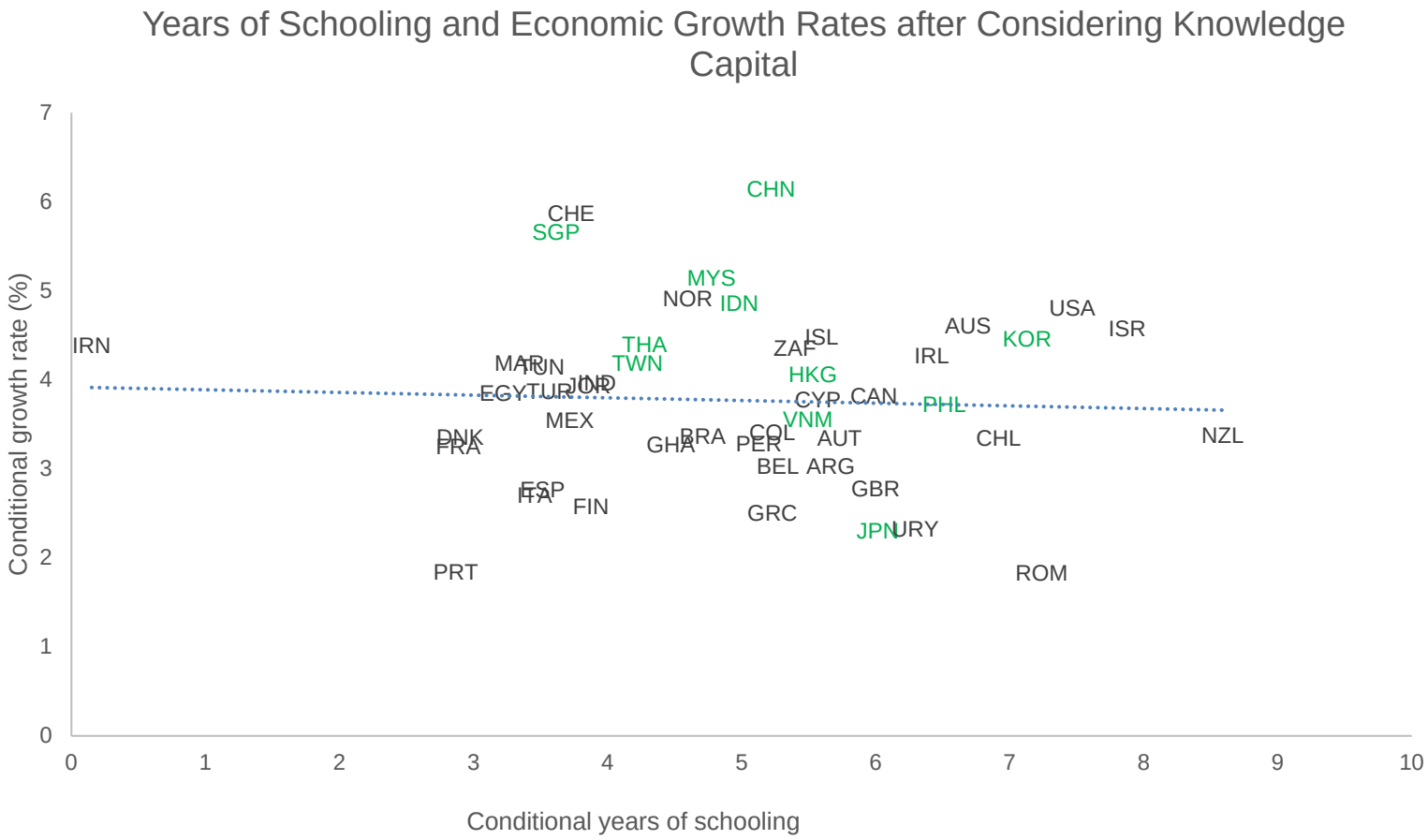


Economic growth is closely related to cognitive skills as measured by PISA scores…



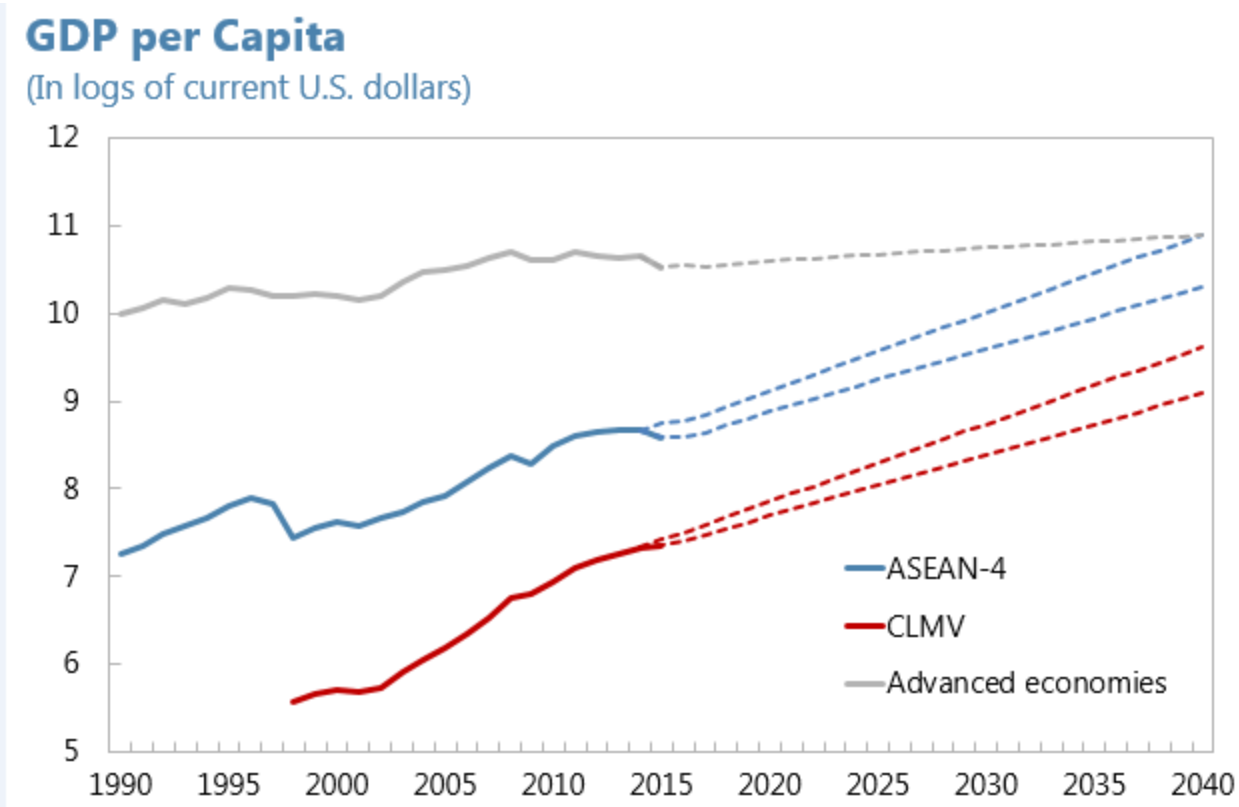
Sources: OECD PISA scores, Barro and Lee; and IMF staff estimates.

Years of schooling and economic growth after considering cognitive skills



Source: OECD PISA scores 2015, Barro and Lee; and IMF staff estimates.

Reforms needed to accelerate convergence



Sources: IMF, *World Economic Outlook*; and IMF staff calculations and projections.
Note: Advanced economies includes France, Germany, Italy, Japan, and the UK; ASEAN-4 includes Indonesia, Malaysia, Philippines and Thailand; CLMV includes Cambodia, Lao PDR, Myanmar, and Vietnam.

Policies for faster, safer convergence (1): Sound macro-financial environment

- Internally consistent macro policies
- flexible exchange rates
- Reserves and fiscal buffers
- macroprudential policies to rein in credit growth,
- monitor financial stability risks, bolster crisis management frameworks

Policies for faster, safer convergence (2): Promote inclusive, sustainable growth

- Avoid poverty traps: speed up structural transformation; scale up infrastructure investment, invest in human capital,…
- Avoid middle income traps: raise educational attainment, diversify economy promote home-grown innovation,…
- Create fiscal space to invest in overcoming development traps: mobilize domestic revenue, raise investment efficiency,…
- Remove impediments to trade and investment
- In many countries, raise domestic savings to finance development effort domestically

IV. Convergence and Welfare: A Broader View

From Income to Consumption-equivalent Welfare

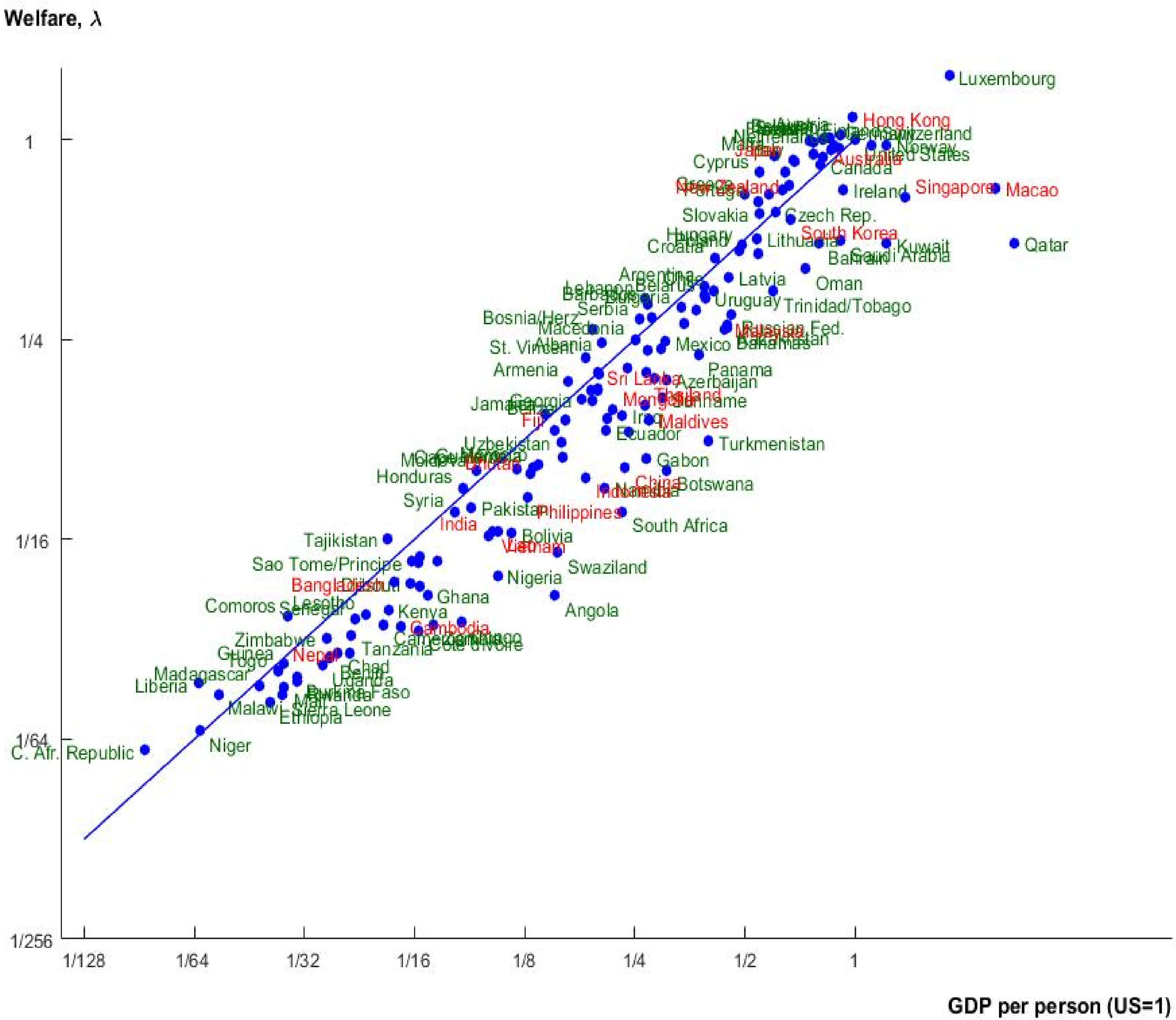
- GDP per capita is an excellent indicator of economic wellbeing, but with limitations.

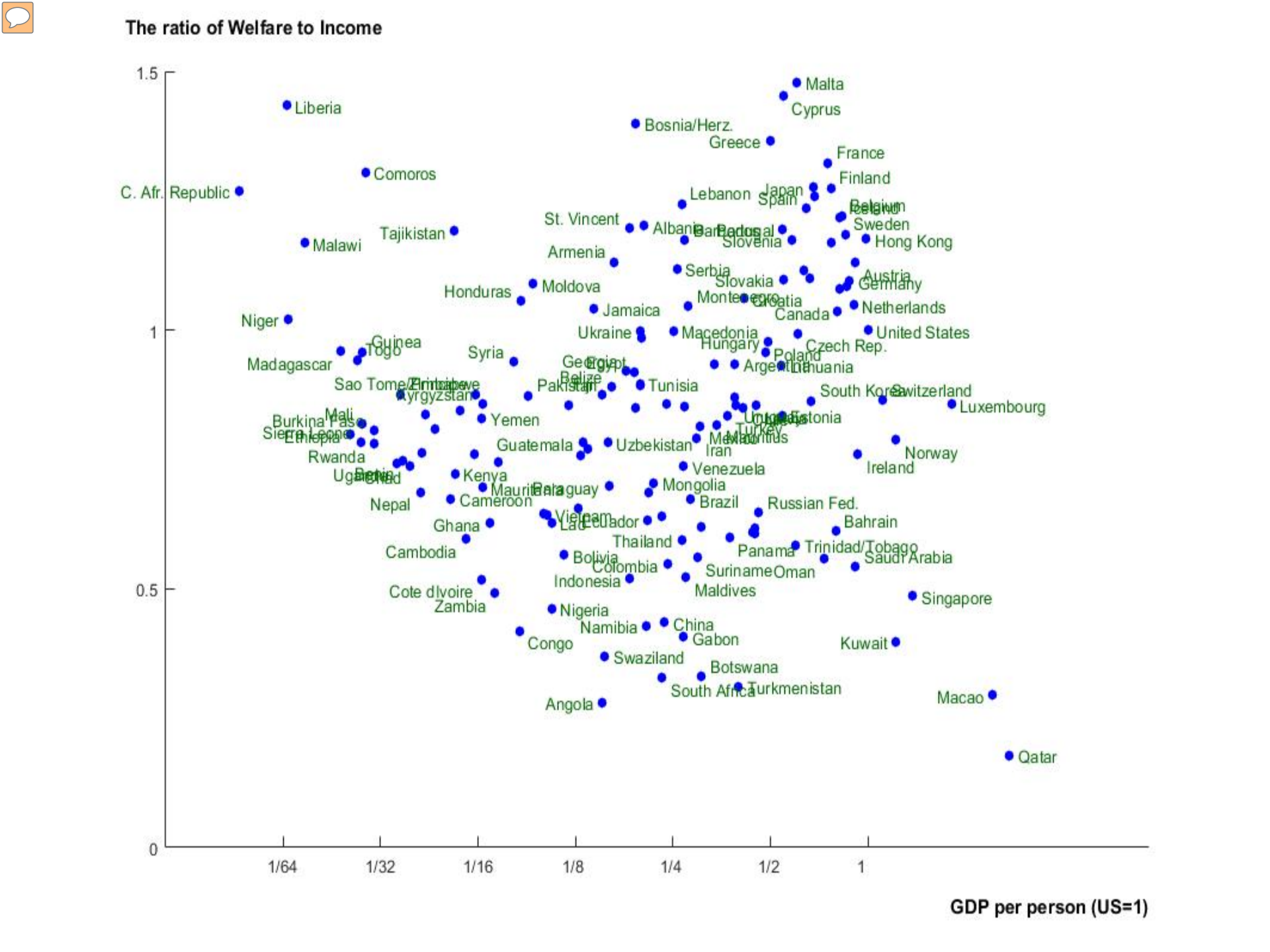
- Broader measure of welfare take into account consumption, leisure, inequality and health based on Jones-Klenow (AER, 2016).
- Cross-country comparisons of consumption equivalent welfare

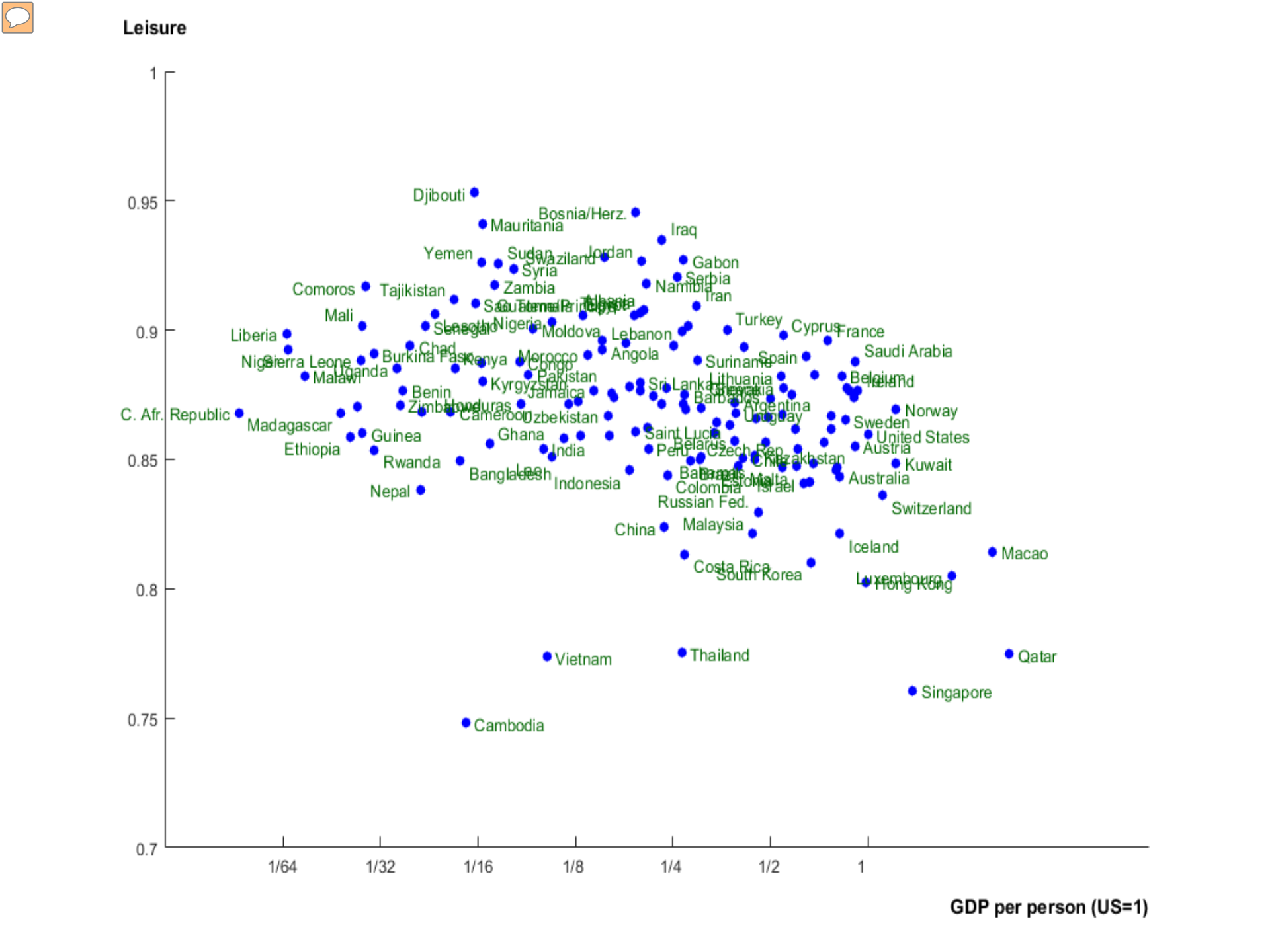
- Work in progress: next step is to add resource/env sustainability in consumption-equivalent welfare index.

Highlights

- GDP per capita is closely correlated with welfare but with important differences.
- For countries with low consumption share, shorter lives and high inequality, welfare index is lower than income per capita.
- Rebalancing that raises consumption share, and policies that promote inclusion and resource and environmental sustainability all raise welfare.


Welfare, λ
1
1/4
1/16
1/64
1/256
1/128
1/64
1/32
1/16
1/8
1/4
1/2
1
GDP per person (US=1)
Luxembourg
Hong Kong
Norway
United States
Canada
Australia
Cyprus
Ireland
Singapore
Macao
Qatar
Slovakia
Czech Rep.
Croatia
Lithuania
South Korea
Kuwait
Saudi Arabia
Bahrain
Oman
Latvia
Uruguay
Trinidad/Tobago
Serbia
Bosnia/Herz.
Macedonia
Albania
St. Vincent
Mexico
Armenia
Panama
Sri Lanka
Azerbaijan
Suriname
Iraq
Maldives
Fiji
Ecuador
Turkmenistan
Uzbekistan
Gabon
Honduras
Botswana
Syria
Pakistan
Philippines
India
South Africa
Tajikistan
Bolivia
Sao Tome/Principe
Swaziland
Nigeria
Ghana
Comoros
Angola
Kenya
Cambodia
Zimbabwe
Tanzania
Guinea
Nepal
Togo
Chad
Madagascar
Benin
Uganda
Liberia
Burkina Faso
Malawi
Sierra Leone
Ethiopia
Niger
C. Afr. Republic


The ratio of Welfare to Income
1.5
1
0.5
0
1/64
1/32
1/16
1/8
1/4
1/2
1
GDP per person (US=1)
Malta
Liberia
Cyprus
Bosnia/Herz.
Greece
France
Comoros
Finland
C. Afr. Republic
Lebanon
Japan
Spain
Belgium
Iceland
St. Vincent
Albania
Sweden
Tajikistan
Slovenia
Hong Kong
Malawi
Armenia
Serbia
Austria
Slovakia
Germany
Honduras
Moldova
Montenegro
Croatia
Jamaica
Canada
Netherlands
Niger
Ukraine
Macedonia
United States
Hungary
Czech Rep.
Guinea
Togo
Syria
Poland
Madagascar
Argentina
Lithuania
Belize
Tunisia
South Korea
Switzerland
Kyrgyzstan
Luxembourg
Yemen
Mali
Burkina Faso
Estonia
Ethiopia
Guatemala
Uzbekistan
Mauritius
Turkey
Iran
Rwanda
Norway
Venezuela
Ireland
Kenya
Mongolia
Nepal
Cameroon
Paraguay
Brazil
Russian Fed.
Vietnam
Ecuador
Bahrain
Ghana
Thailand
Panama
Trinidad/Tobago
Cambodia
Bolivia
Saudi Arabia
Colombia
Suriname
Oman
Indonesia
Maldives
Cote d'Ivoire
Singapore
Zambia
Nigeria
Namibia
China
Congo
Gabon
Kuwait
Swaziland
Botswana
South Africa
Turkmenistan
Macao
Angola
Qatar


Leisure
1
0.95
0.9
0.85
0.8
0.75
0.7
1/64
1/32
1/16
1/8
1/4
1/2
1
GDP per person (US=1)
Djibouti
Bosnia/Herz.
Mauritania
Iraq
Yemen
Sudan
Swaziland
Jordan
Gabon
Syria
Serbia
Comoros
Tajikistan
Zambia
Namibia
Iran
Mali
Turkey
Cyprus
France
Liberia
Nigeria
Moldova
Lebanon
Saudi Arabia
Chad
Angola
Spain
Sierra Leone
Burkina Faso
Kenya
Morocco
Congo
Surinam
Uganda
Malawi
Pakistan
Lithuania
Belgium
Kyrgyzstan
Sri Lanka
Benin
Jamaica
Argentina
Norway
C. Afr. Republic
Zimbabwe
Honduras
Cameroon
Uzbekistan
Madagascar
Sweden
Guinea
Ghana
Saint Lucia
United States
Ethiopia
India
Peru
Belarus
Czech Rep.
Austria
Rwanda
Kazakhstan
Kuwait
Bangladesh
Indonesia
Colombia
Malta
Israel
Australia
Nepal
Russian Fed.
Switzerland
China
Malaysia
Iceland
Macao
Costa Rica
South Korea
Luxembourg
Hong Kong
Vietnam
Thailand
Qatar
Singapore
Cambodia

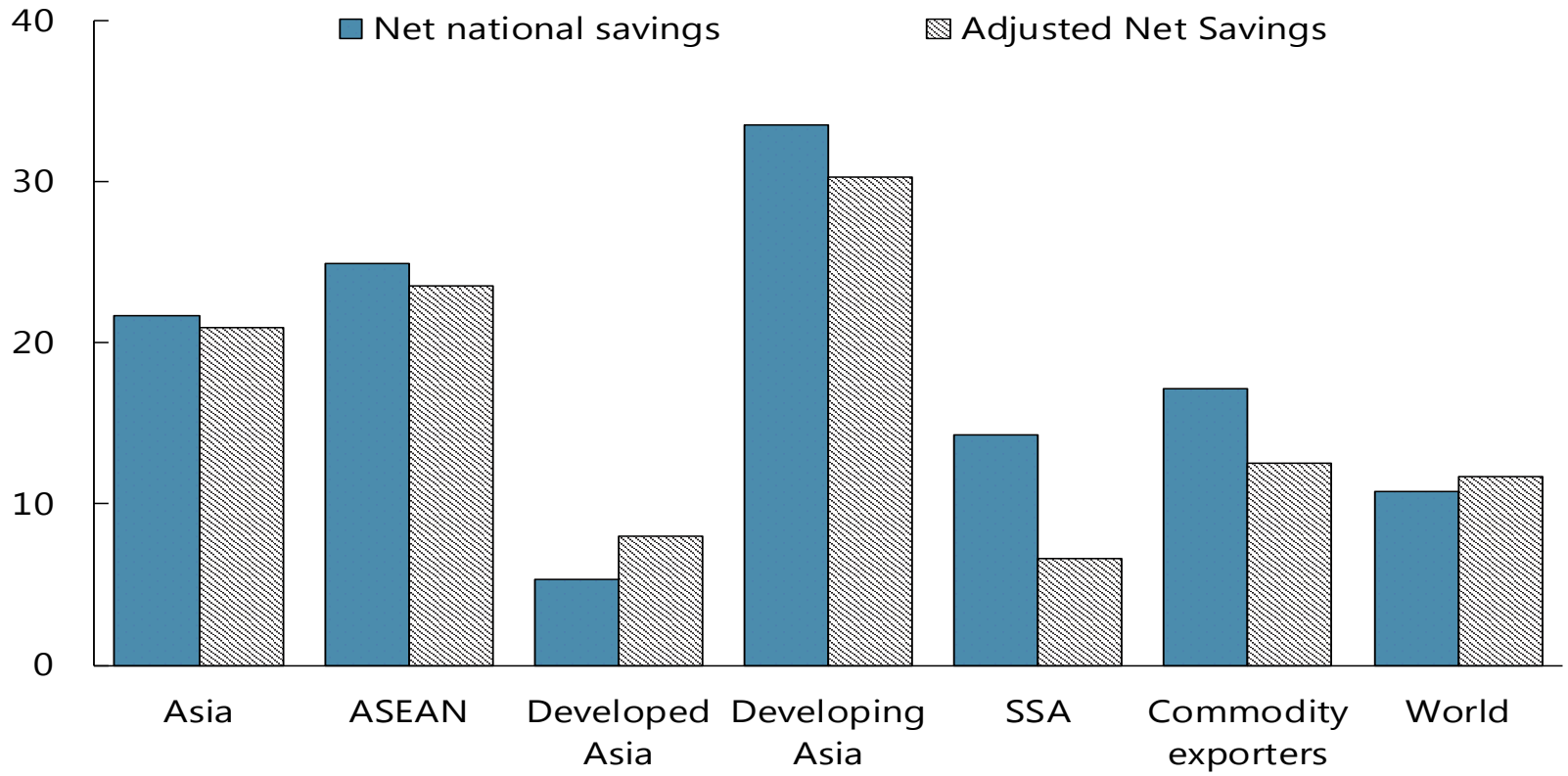
Resource Sustainability and Genuine Saving

- Adjust national saving to take into account resource depletion and pollution damage costs makes to arrive at genuine saving.
- Sustainable development: build national wealth (K,H,N,F).
- Genuine Saving (Adjusted Net Saving) = change in National Wealth. The Hartwick Rule
- Focus on Asia

ANS exceeds NNS in Developed Asia but falls short of NNS in Developing Asia

Net National Savings vs Adjusted Net Savings

(In percent of GNI; 2010-14 average)

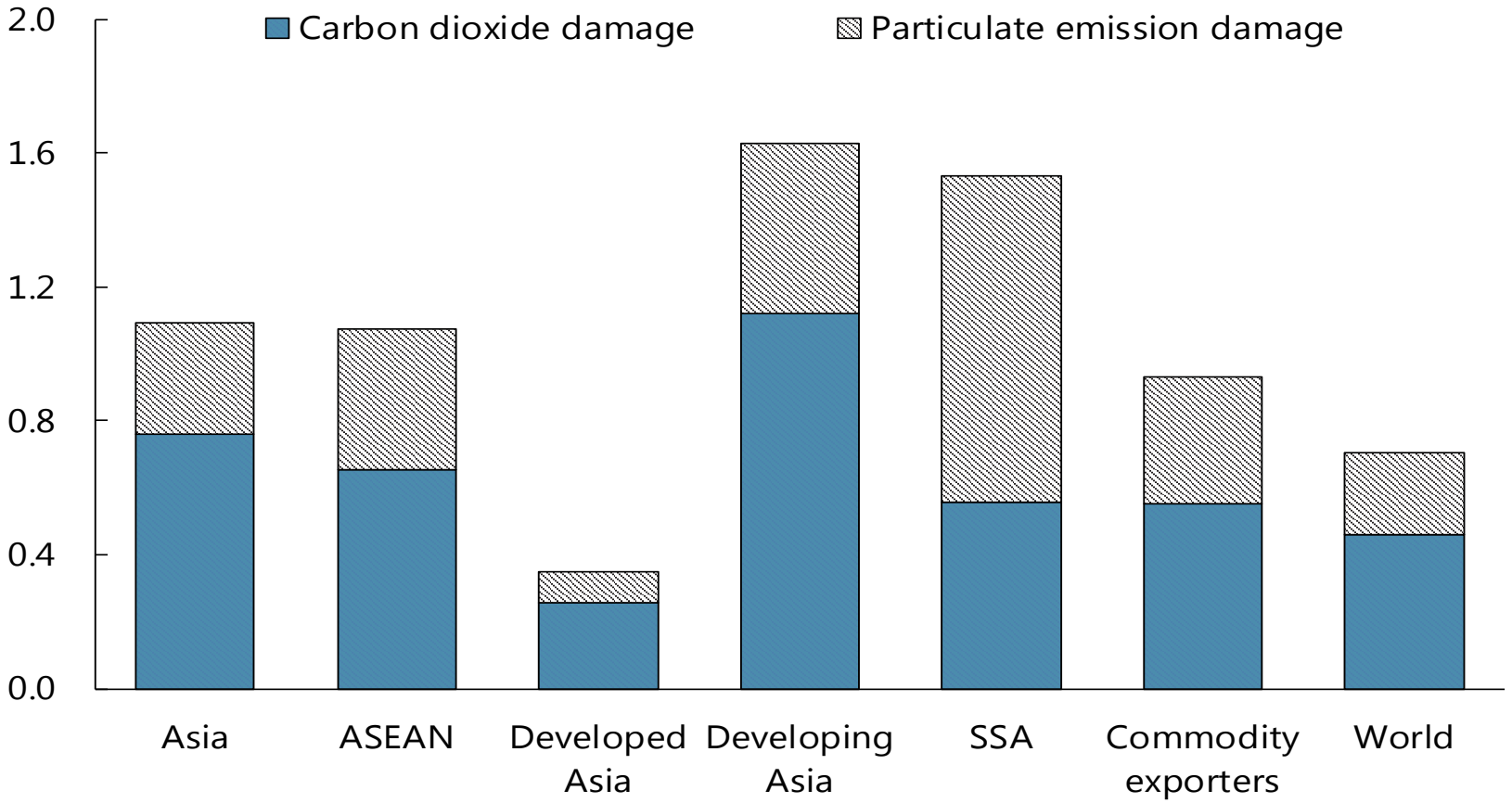


Sources: WDI; and IMF staff calculations.

Pollution damage costs lower in advanced Asia, higher in developing Asia

CO_2 and PM damage

(In percent of GNI; 2010-14 average)

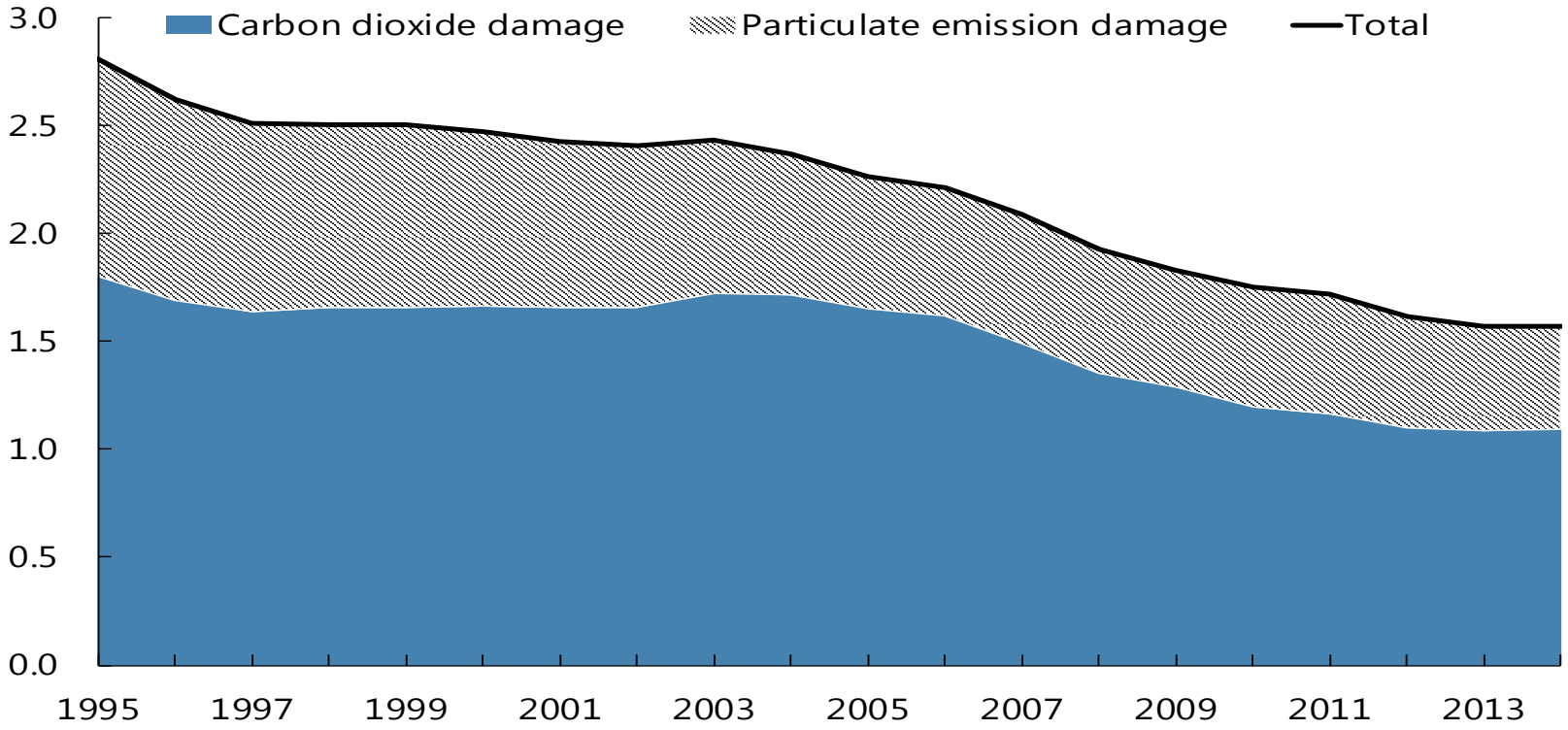


Sources: WDI; and IMF staff calculations.

While relatively high in developing Asia, pollution damage costs are declining over time.

Pollution damage, Developing Asia

(In percent of GNI)



Sources: WDI.

Policy Implications

- Hartwick rule: Maintain positive Genuine Saving.
- Fiscal rules: save resource rents; intergenerational equity
- Revenue mobilization: broad, diversified revenue bases; develop instruments to capture resource rents
- Effective public investment in infrastructure, education.
- Sound public financial and investment management.
- Taxation and market instruments to deal with externalities due to national and global environmental externalities.

Additional Slides

Scaling up infrastructure investment in Cambodia, Vietnam, and Sri Lanka

An application of the DIG model

Based on IMF WP/17/10
by Ghazanchyan, Marto, Jonas and Douglass

Scaling Up Public Infrastructure Investment

- DIG model links public investment and growth; contains
  - adjustment costs to investment
  - inefficiencies in revenue collection
  - investment management.

- Scaling up public infrastructure:
  - Gradual vs frontloaded
  - Tax vs debt-financed
  - The role of raising revenue collection efficiency

Summary of Results

- A gradual scaling up of public investment is preferable: governments learn how to invest, gradually raising efficiency, and accelerating public capital accumulation.

- Front-loaded investment is costly because of absorptive capacities, low collection efficiencies, higher tax rates needed.

- Less distortionary tax financing (VAT), together with (mainly external) debt financing of public investment are best for growth, though debt increases.

The crucial role of higher tax collection efficiency

- Crucial to raise together public investment efficiency and tax collection.
- Allows more revenue to be collected at unchanged tax rates, through strengthened tax compliance, broadened tax bases, fewer tax exemptions, special rates.
- As a result of revenue improvements, the gap between effective tax rates and statutory rates narrows.

Model Calibration

Table 1: Selected Initial Values (%)

Definition	Param.	Cambodia	Sri Lanka	Vietnam
Public investment to GDP	$i_{z,o}$	8.1	4.8	7.4
Public domestic debt to GDP	b_o	0.4	43.7	23.7
Public concessional debt to GDP	d_o	33.4	21.0	2.5
Public external (commercial) debt to GDP	$d_{c,o}$	0.0	8.3	21.6
Real interest rate on domestic debt	r_o	1.5	1.5	1.5
Real interest rate on concessional debt	$r_{d,o}$	0.0	0.0	0.0
Real interest rate on public external debt	$r_{dc,o}$	0.2	0.6	0.6
Grants to GDP	G_o	3.0	0.1	3.5
Remittances to GDP	R_o	1.3	10.1	7.4
Private external debt to GDP	b^*_o	8.0	22.2	7.1
Corporate income tax (CIT)	τ^p_o	20.0	17.5	20.0
Labor income tax (PIT)	τ^l_o	20.0	15.0	20.0
Consumption tax (VAT)	τ^c_o	10.0	15.0	10.0
CIT revenue loss	θ^p_o	90.0	81.0	62.7
PIT revenue loss	θ^l_o	96.5	78.2	92.6
VAT revenue loss	θ^c_o	46.0	74.6	7.0
Public investment efficiency	s_o	32.1	85.2	70.4
Return on public infrastructure investment	R_o	34.0	27.0	22.0

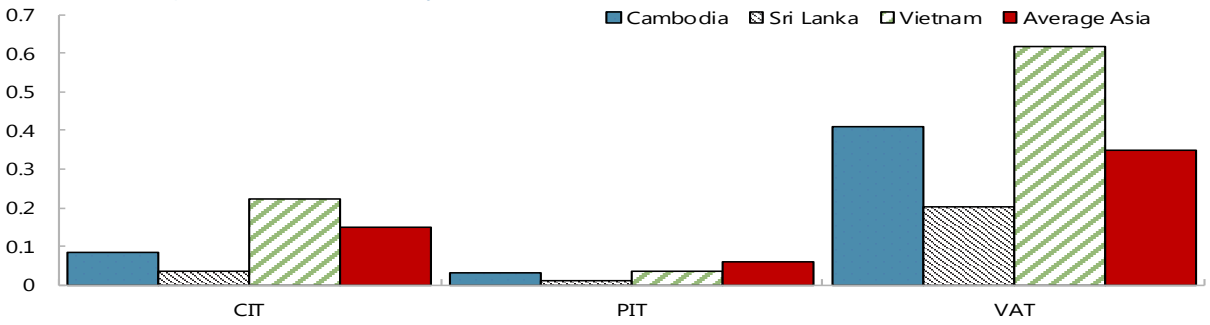
Baseline Results – Summary Table

Table 2: Impact on growth and public debt after 15 years

Scenario		Taxes only	Dom. Debt	Ext. debt	CIT/Debt	PIT/Debt	VAT/Debt	Taxes/Debt
				Cambodia				
Gradual	Avg. growth	0.25	0.24	0.31	NF	NF	0.26	0.21
	$\Delta\left(\frac{Debt}{GDP}\right)$	-0.62	23.65	17.41	NF	NF	15.32	17.56
Aggressive	Avg. growth	0.14	0.13	0.22	NF	NF	0.12	0.09
	$\Delta\left(\frac{Debt}{GDP}\right)$	-0.34	26.30	18.25	NF	NF	21.78	21.95
				Sri Lanka				
Gradual	Avg. growth	0.57	0.56	0.65	0.56	0.53	0.60	0.56
	$\Delta\left(\frac{Debt}{GDP}\right)$	-3.02	20.26	12.70	13.47	13.71	14.42	13.42
Aggressive	Avg. growth	0.36	0.35	0.44	NF	NF	0.37	0.33
	$\Delta\left(\frac{Debt}{GDP}\right)$	-1.89	25.32	14.77	NF	NF	19.70	18.15
				Vietnam				
Gradual	Avg. growth	0.39	0.36	0.45	0.42	0.38	0.42	0.40
	$\Delta\left(\frac{Debt}{GDP}\right)$	-1.34	18.57	11.04	6.68	8.12	5.32	5.95
Aggressive	Avg. growth	0.23	0.21	0.30	0.25	0.26	0.27	0.24
	$\Delta\left(\frac{Debt}{GDP}\right)$	-0.79	23.29	12.75	15.70	16.07	12.94	10.64

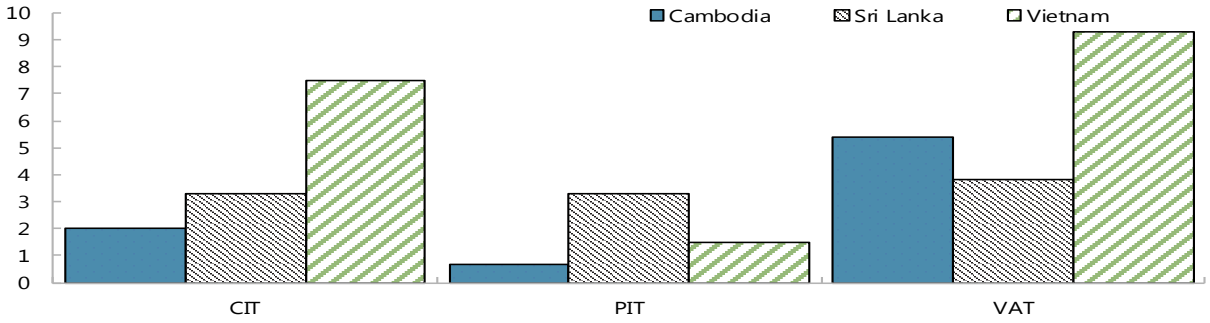
Higher revenue collection efficiency enables countries to address large infrastructure needs while maintaining debt sustainability

Selected Asian Countries: Tax Revenue Productivity
(Revenue in percent of GDP divided by tax rate)



Sources: Staff calculation

Effective Tax Rates
(in percent)



Sources: Staff calculations

Adjusted Net Saving in Asia and ASEAN

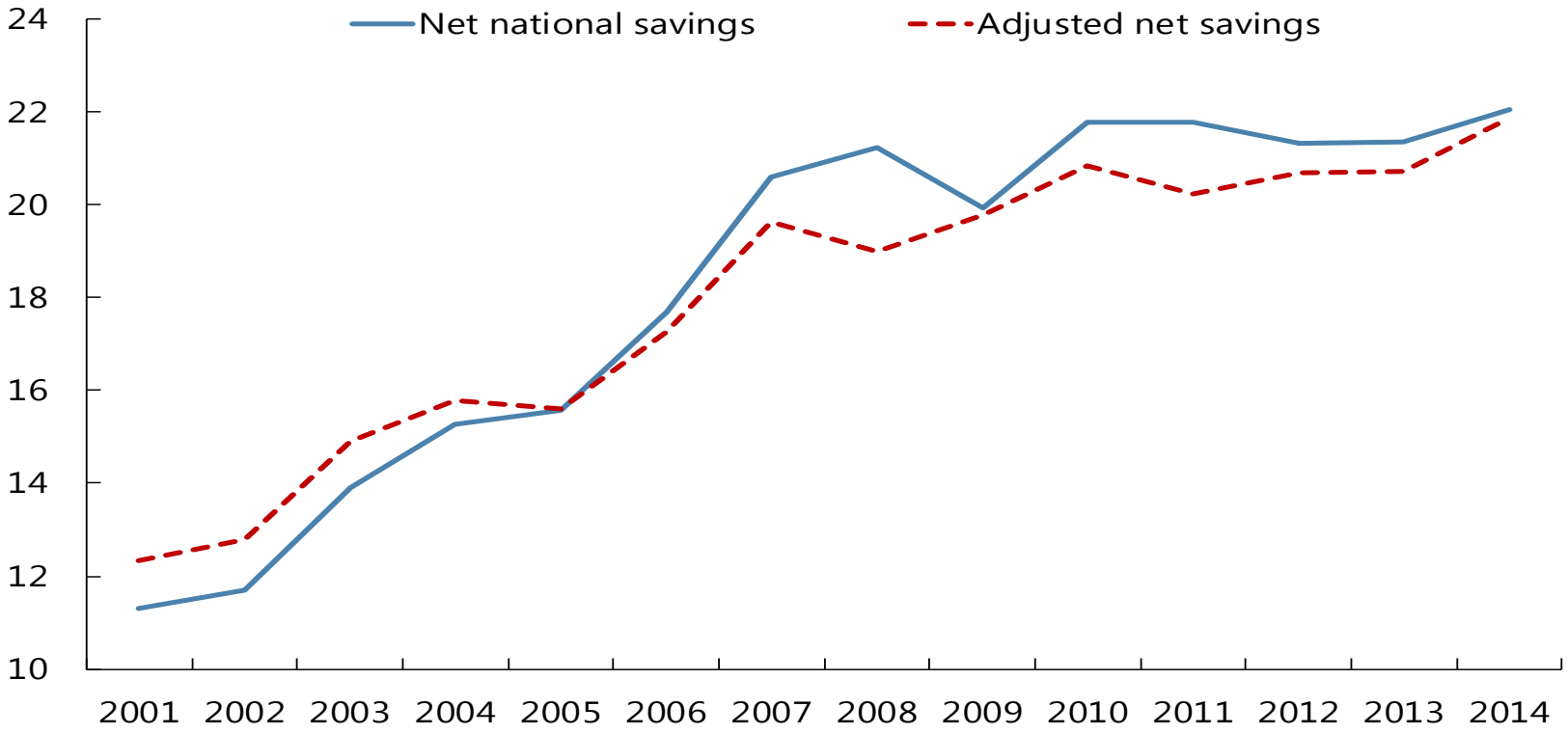
Accounting for Genuine Saving

- GNS = GNI – C + TR
- ANS = GNS – Consumption of Fixed Capital (or Depreciation) + Education Expenditure – Natural Resource Depletion – Pollution Damage
- Natural Resource Depletion = Net Forest Depletion +Net Energy Depletion + Net Mineral Depletion
- Pollution Damage = CO_2 damage + particulate emissions damage

Asia: Small gap between ANS and NNS overall

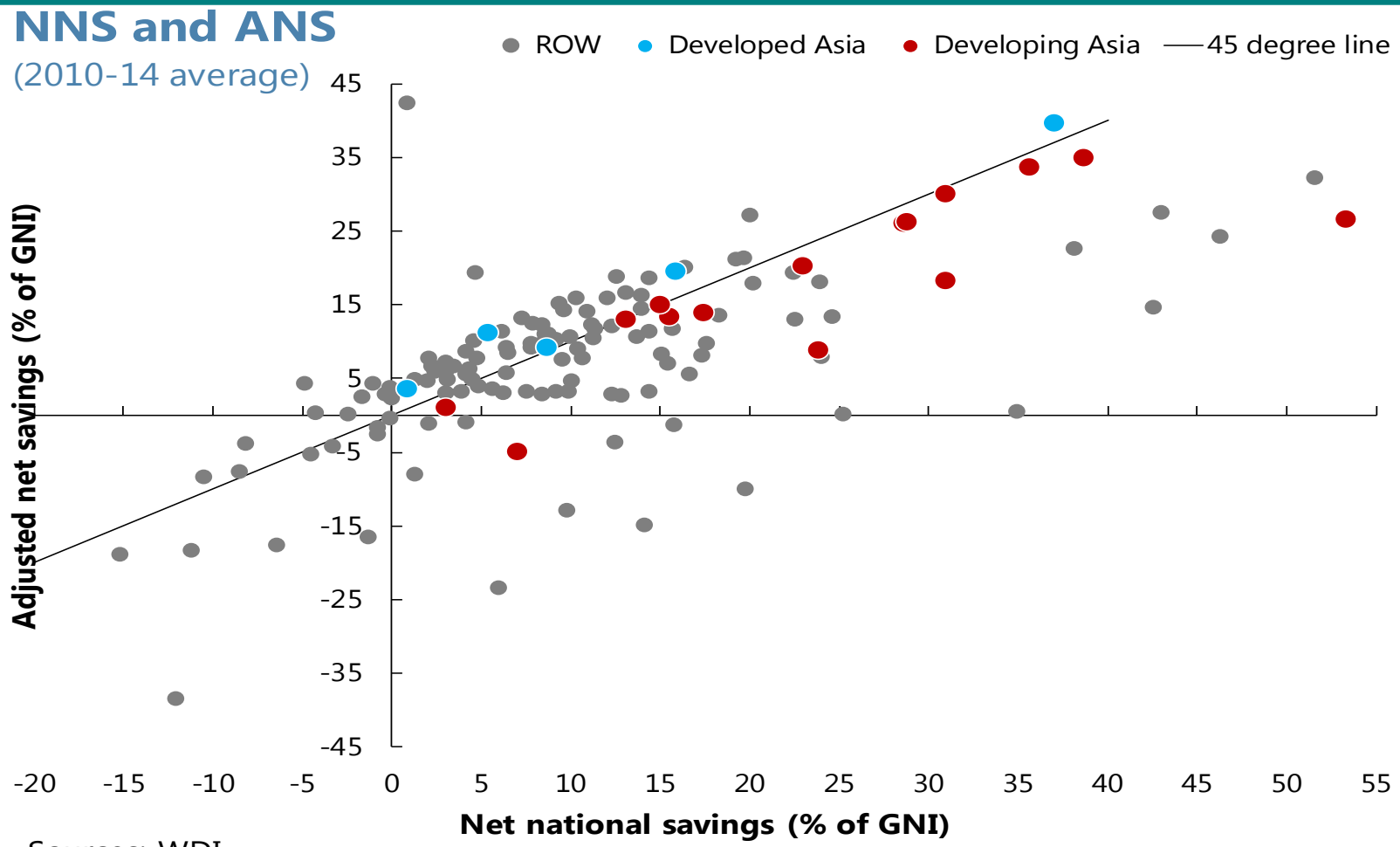
NNS and ANS, Asia

(In percent of GNI)



Sources: WDI.

But ANS is lower than NNS in developing Asia

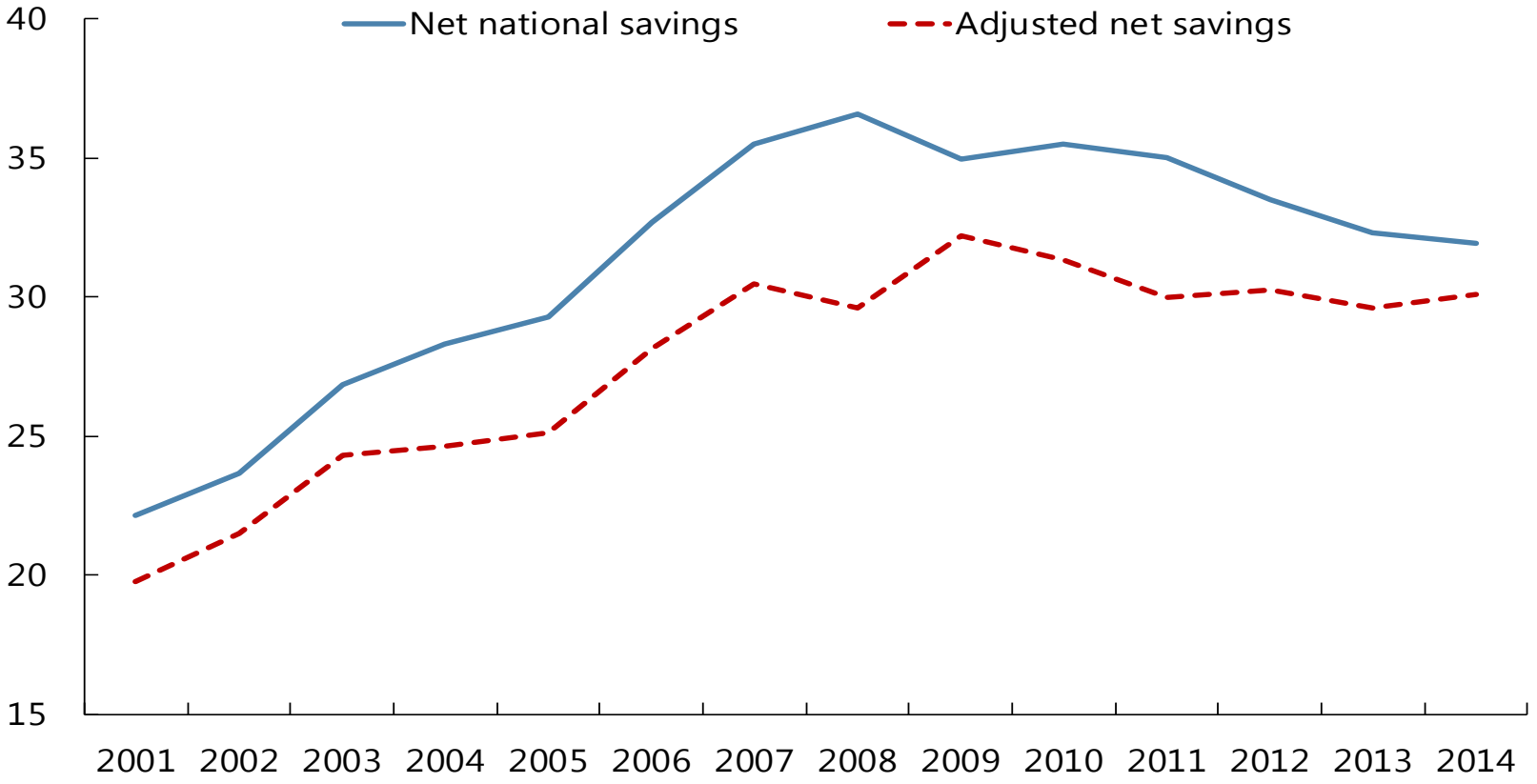


Sources: WDI

ANS and NNS in developing Asia over time…

NNS and ANS, Developing Asia

(In percent of GNI)

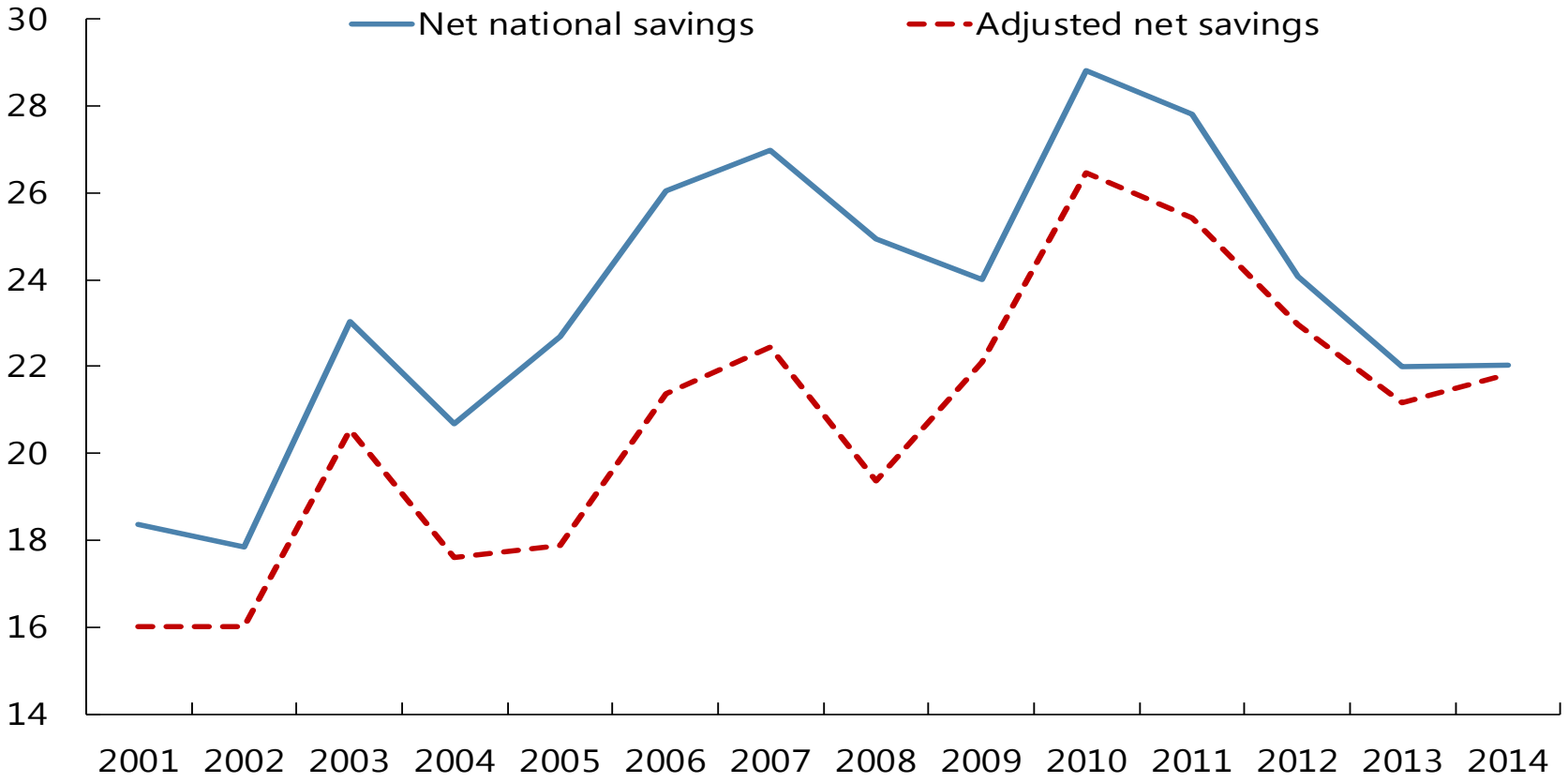


Sources: WDI.

…and in ASEAN

NNS and ANS, ASEAN

(In percent of GNI)

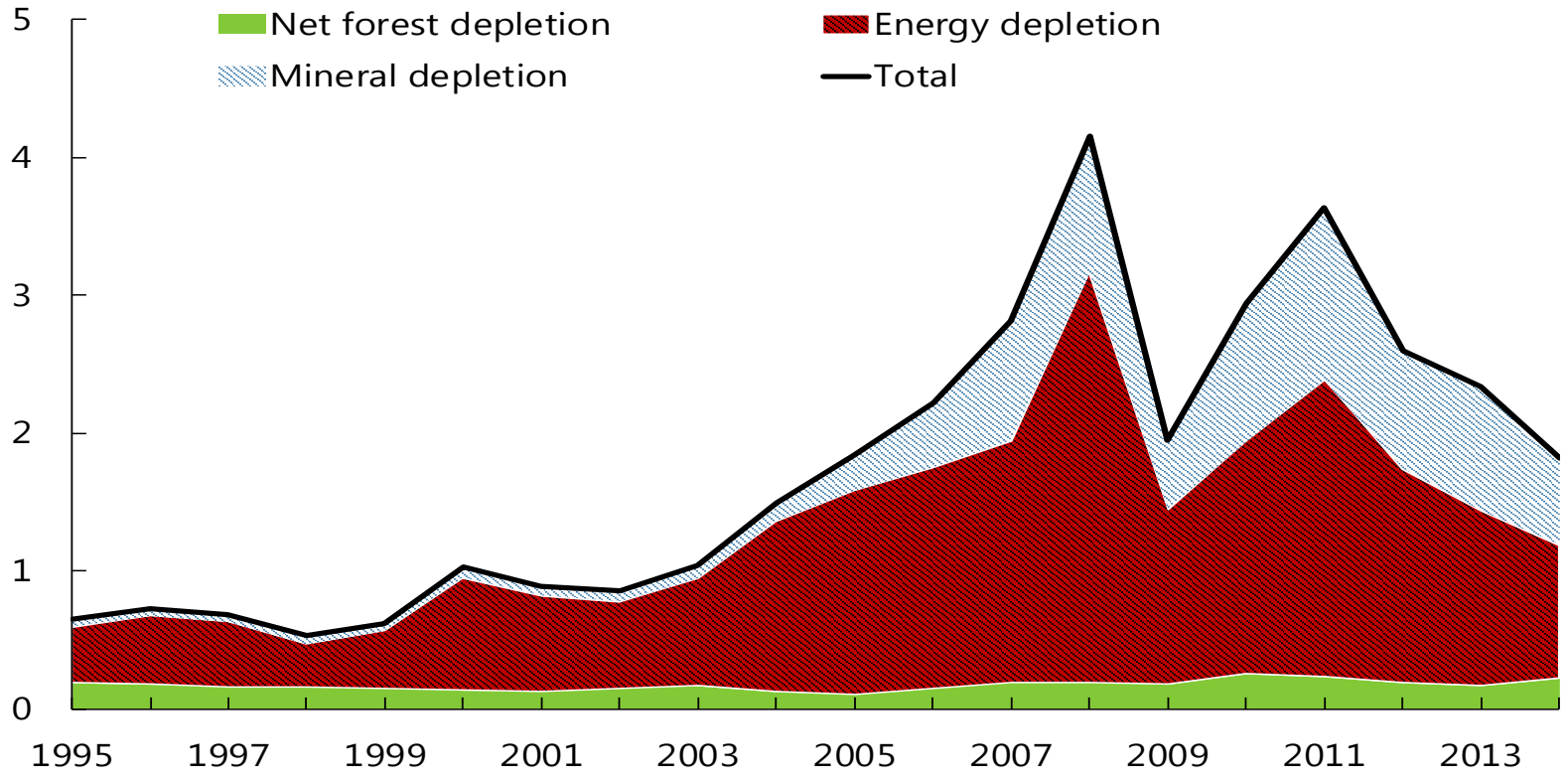


Sources: WDI.

A Look at Natural Resource Depletion: Asia

Natural resource depletion, Asia

(In percent of GNI)

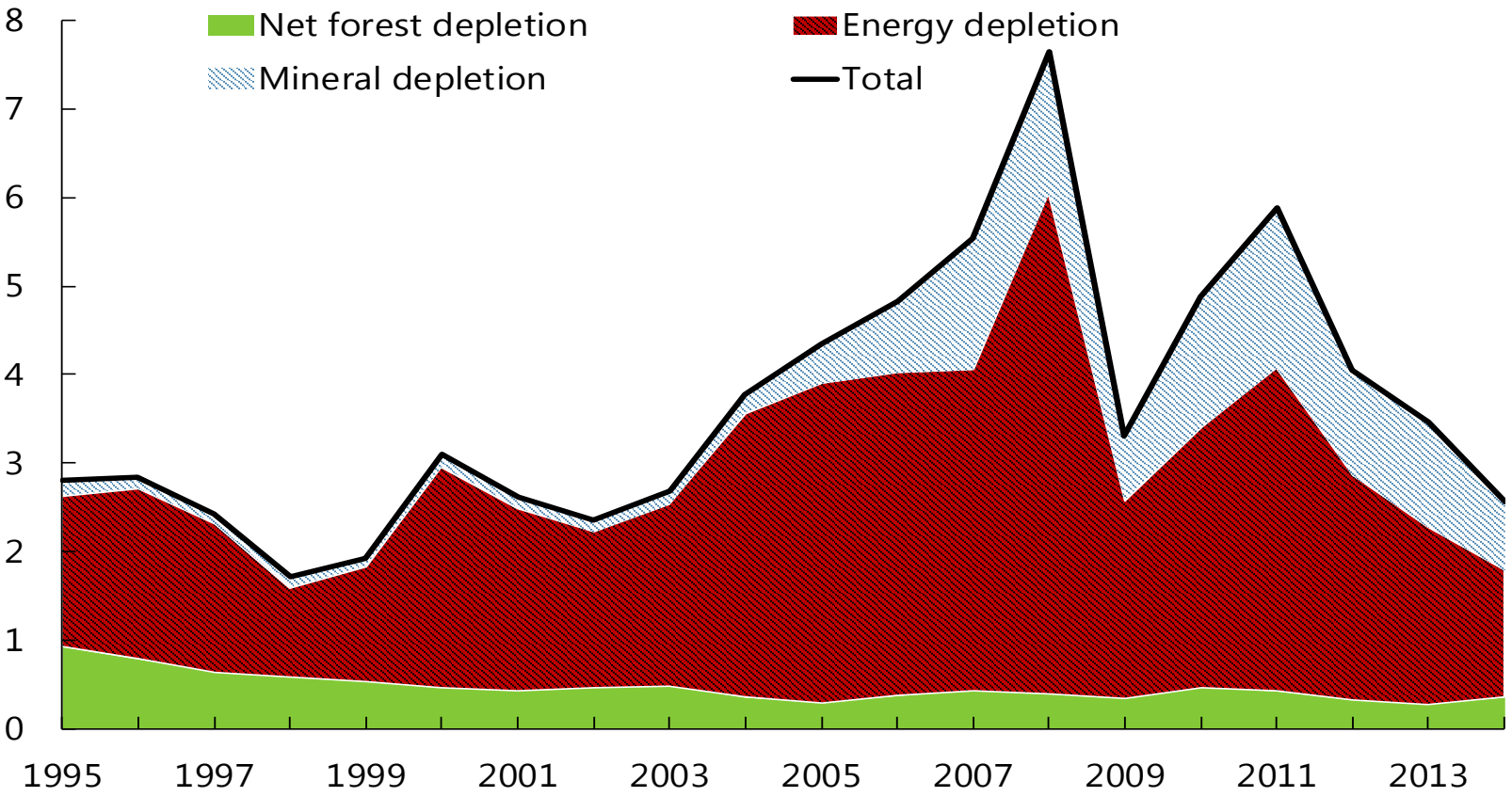


Sources: WDI.

Developing Asia: Energy Resource Depletion

Natural resource depletion, Developing Asia

(In percent of GNI)

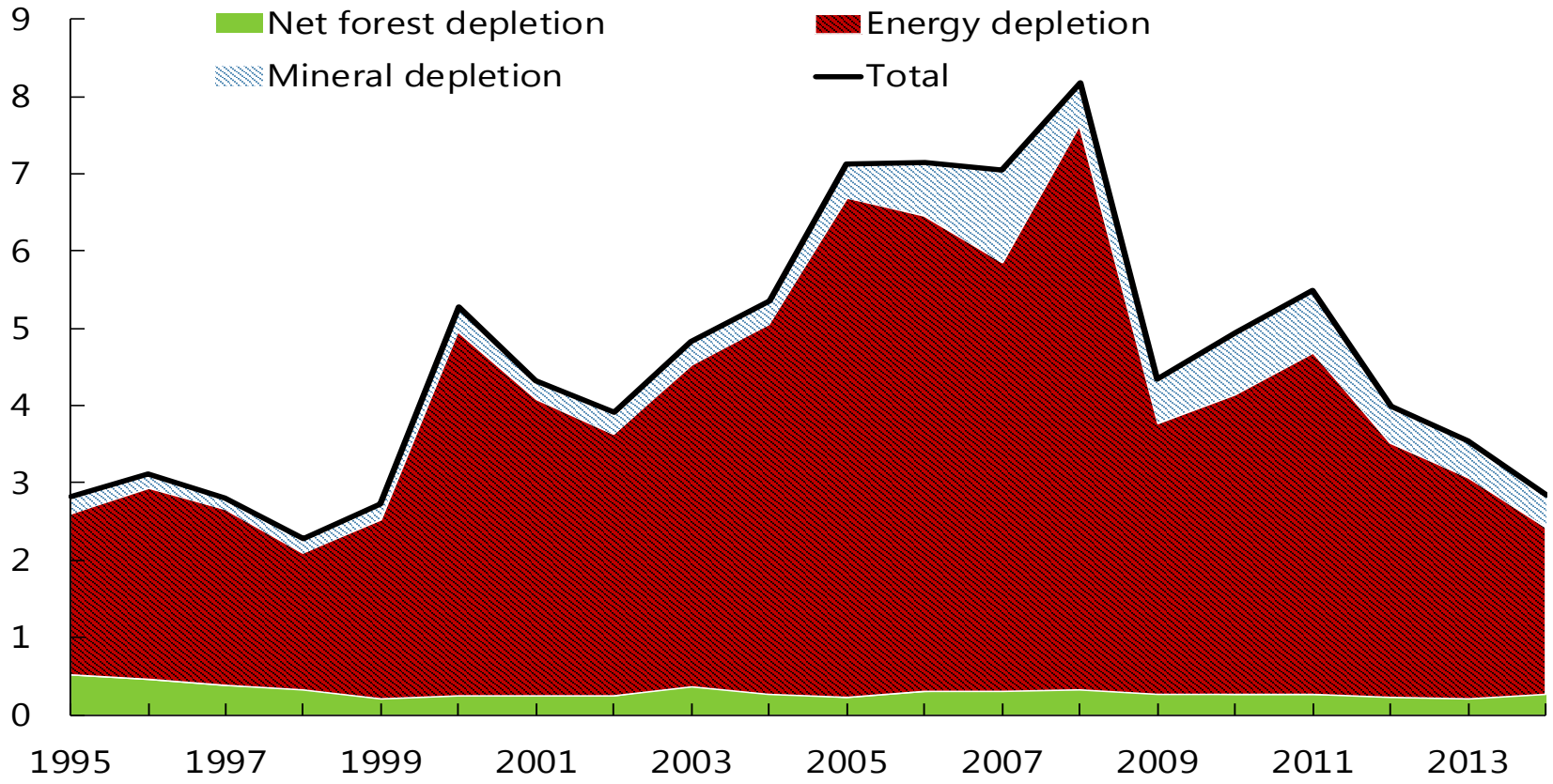


Sources: WDI.

ASEAN: Natural Resource Depletion

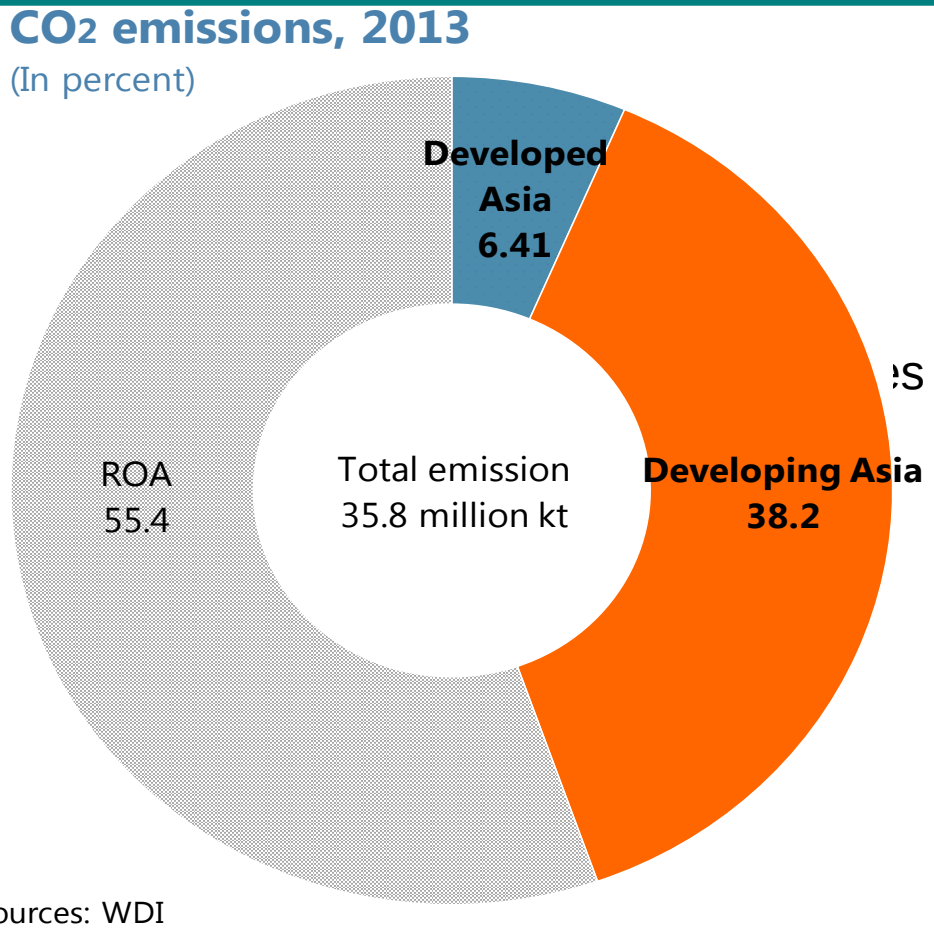
Natural resource depletion, ASEAN

(In percent of GNI)



Sources: WDI.

Asia accounts for 45 percent of CO_2 emissions



Sources: WDI