

Poverty



THE GLOBAL GOALS

Sustainable Development Goals (SDGs) (UN 2016-2030)



No poverty targets in SDGs

1.1 By 2030, eradicate extreme poverty for all, currently measured as people living on less than \$1.25 a day

1.2 By 2030, reduce at least by half the proportion of men, women and children of all ages living in poverty

1.3 Implement nationally appropriate social protection systems and measures for all

1.4 By 2030, ensure that all have equal rights to economic resources, as well as access to basic services, ownership and control over land and other forms of property

1.5 By 2030, build the resilience of those in vulnerable situations and reduce their exposure to climate-related extreme events

1.A Ensure significant mobilization of resources from a variety of sources, including through enhanced development cooperation

1.B Create sound policy frameworks based on pro-poor and gender-sensitive development strategies

Measuring the poverty (1): Poverty line

- SDGs: By 2030, eradicating extreme poverty, currently measured as people living on less than \$1.9 a day
- International Poverty Line suggested by IBRD: Per capita \$2.15 a day at 2017 international prices
- Poverty Line setting: Food based Lines (Calories based, ex. 2100cal/day), Comprehensive Poverty Line (Basic living needs: Food, Wear, Living, basic education, medi-care...) (Wealth measured by **Household**, not by individuals, measured by **consumption**)
- Beyond income conditions: Living standards, Disease and malnutrition, Education opportunities, Social suppression..
- Low income \$1,025 < Lower middle \$1,026-4,035 < Higher middle \$4,036-\$12,475 < High \$12,476 ~
- Developing countries: Below middle income, ≠ Emerging countries

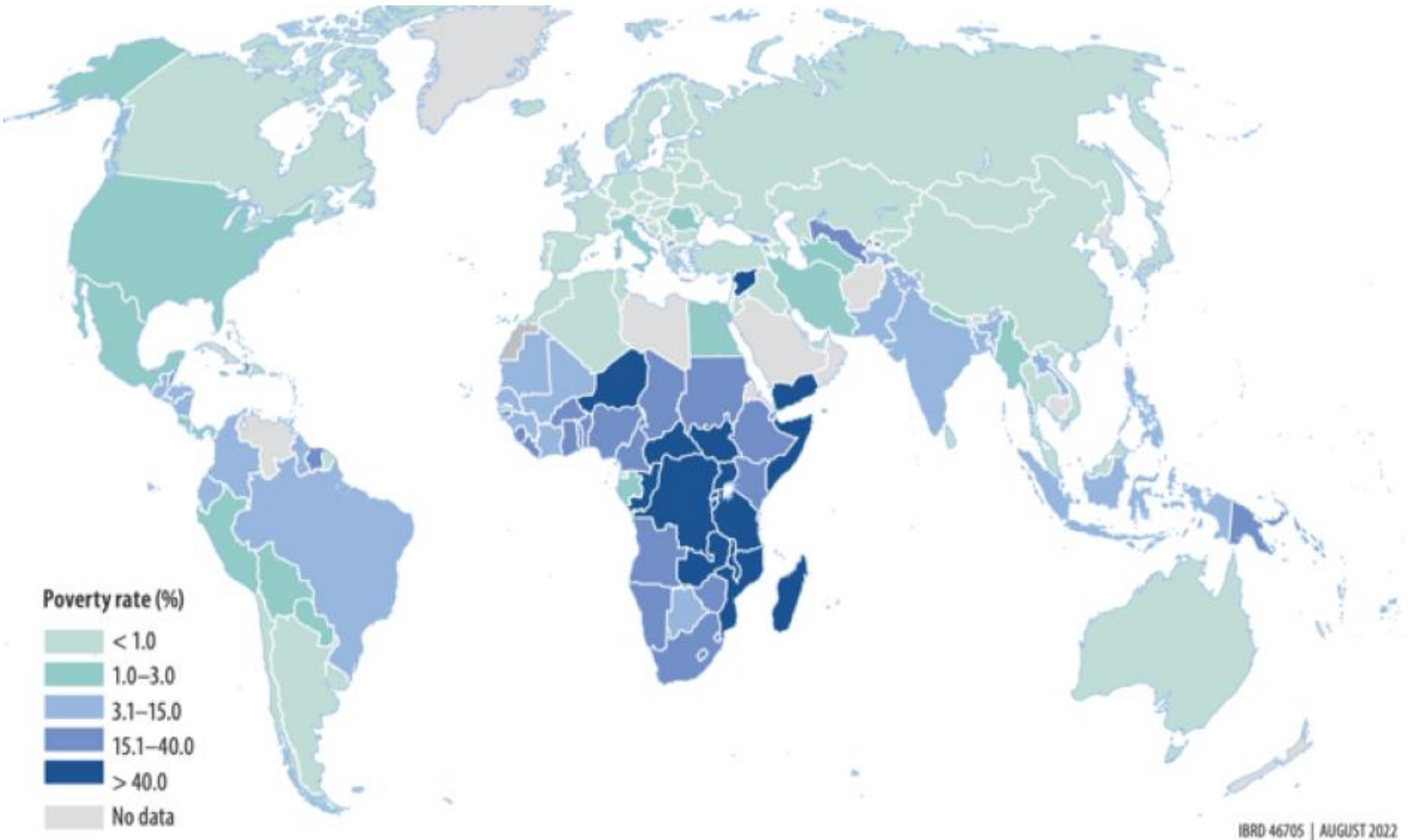
Measuring the poverty (2): Number of people under the Poverty Line

- Poverty ratio: *Population share under the Poverty Line (Head account)*
- Poverty ration by the region

Region	Survey Coverage (%)	\$2.15 (2017 PPP)				\$3.65 (2017 PPP)				\$6.85 (2017 PPP)			
		Headcount ratio (%)		Number of poor (mil)		Headcount ratio (%)		Number of poor (mil)		Headcount ratio (%)		Number of poor (mil)	
		Mar 2023	Sep 2022	Mar 2023	Sep 2022	Mar 2023	Sep 2022	Mar 2023	Sep 2022	Mar 2023	Sep 2022	Mar 2023	Sep 2022
East Asia & Pacific	97.4	1.1	1.2	24	25	7.6	7.6	160	161	32.1	32.1	675	676
Europe & Central Asia	87.4	2.4	2.3	12	11	6.2	6.1	31	30	15	15	74	74
Latin America & Caribbean	86.7	4.3	4.3	28	28	10.6	10.6	68	68	28	28	180	179
Middle East & North Africa	48.3	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Other High Income	82.3	0.6	0.6	7	7	0.8	0.8	9	9	1.4	1.3	15	15
South Asia	96.4	8.5	8.6	156	161	42	42.3	772	788	82.2	82.3	1508	1532
Sub-Saharan Africa	54.3	35.1	34.9	389	391	62.4	62.3	691	698	86.5	86.4	958	969
Eastern & Southern Africa	29.6	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Western & Central Africa	90.5	27.2	27.3	122	124	57.1	57.2	255	260	85.1	85.1	380	387
World	84.6	8.4	8.5	648	659	23.5	23.6	1803	1831	46.7	46.9	3590	3634

Geospatial Poverty Portal 2022 by World Bank

(Source: <https://pipmaps.worldbank.org/en/data/datatopics/poverty-portal/home>)



Changes in absolute poverty (1990-2020)

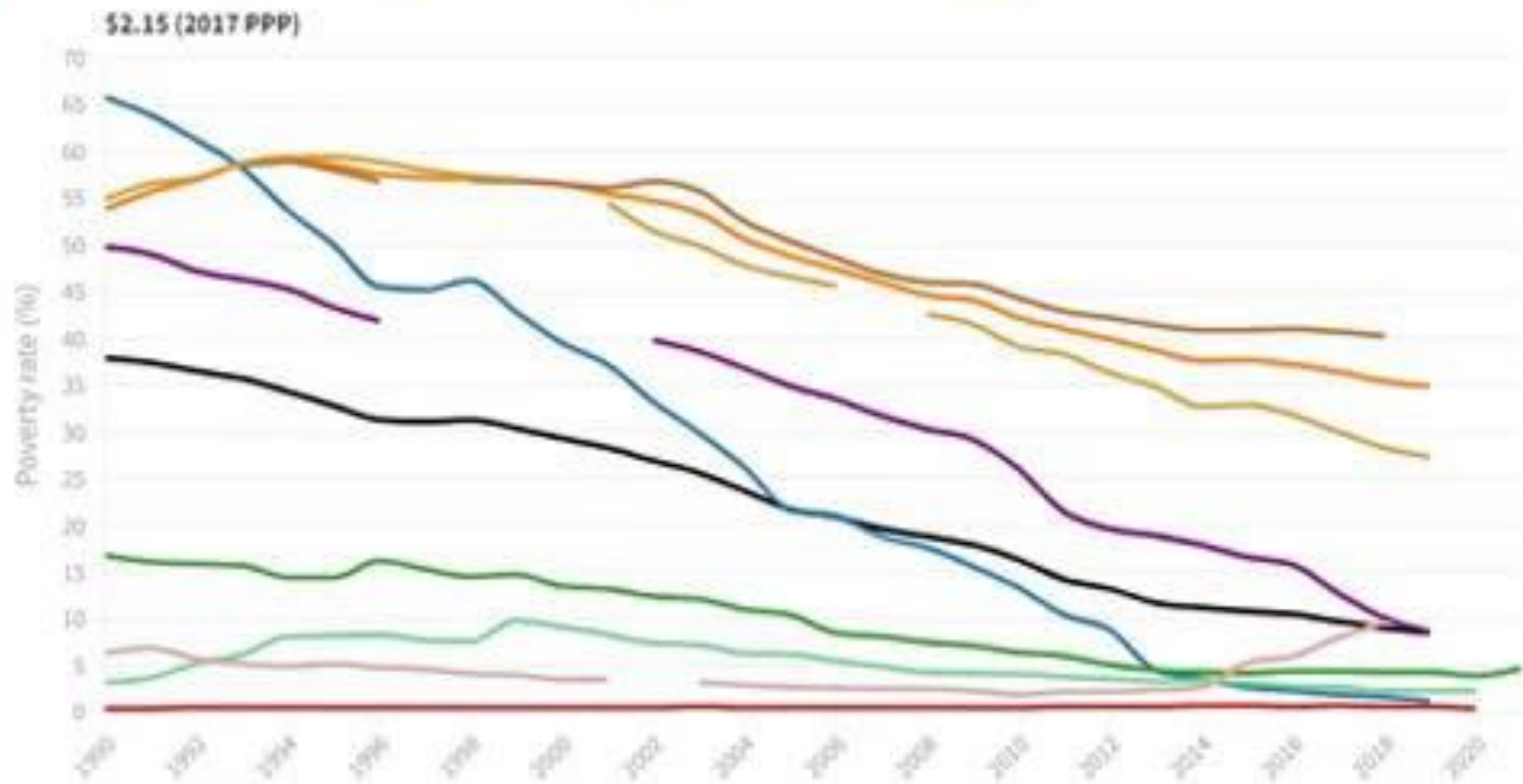
(Source: *Mar. 2023 global poverty update*

(<https://blogs.worldbank.org/en/opendata/march-2023-global-poverty-update-world-bank-challenge-estimating-poverty-pandemic>)

Global and regional poverty estimates, 1990 - 2021

\$2.15 (2017 PPP)

World East Asia and Pacific Europe and Central Asia Latin America and the Caribbean Middle East and North Africa
Other High Income South Asia Sub-Saharan Africa Eastern and Southern Africa Western and Central Africa



Measuring the poverty(3) :

Foster, Greer and. Thorbecke(FGT) Index

- *Head account: $H=Q/N$ (Number of the poor)/Total number*
- *Poverty gap: Gap from the poverty line to the living standard/Necessary income for the whole population to satisfy the poverty line*
- FGT Index: N: Whole population, H: Head accounts for the poor, z : Poverty Line, y_i : Living standard of the poor I (Poverty gap)

$$FGT_1 = \frac{1}{N} \sum_{i=1}^H \left(\frac{z - y_i}{z} \right)$$

Foster-Greer-Thorbeck (FGT)

Index

- Squared Poverty Gap: Squared gap from the Poverty Line to express the gap among the poor $FGT_2 = \frac{1}{N} \sum_{i=1}^H \left(\frac{z - y_i}{z} \right)^2$

- FGT Index in general: Population, H : Head accounts for the poor, z : Poverty Line, c_i : Living standard of the poor I , P_α : Poverty Index (If $\alpha=0$, then the *poverty ratio (Head account)*, If $\alpha=1$, then *poverty gap*, if $\alpha=2$ then *Squared poverty gap*.....)

$$P_\alpha = \frac{1}{N} \sum_{i=1}^H \left(\frac{z - c_i}{z} \right)^\alpha \times 100$$

Why poverty gap matters: the case of 3 persons

- Living standards are A:500 \$、B:300 \$、C:200 \$
- If the Poverty Line is 365\$, then
- Poverty ratio (Head Account) = $2/3 * 100 = 66.7\%$
- Poverty gap = $(365-300) + (365-200)/3 * 365 = 21\%$
- Squared poverty gap =
 $(365-300)^2 + (365-200)^2 / 3 * 365 * 365 = 7.87\%$
- Then if the income changes from 300\$ to 350\$,
200\$ to 150\$?

→ Poverty ratio and Poverty gap remains the same
but double Poverty gap changes from 7.9% to 11.6%

Measuring the poverty (3)

- Foster–Greer–Thorbecke Index

$$P\alpha = \frac{1}{N} \sum_{i=1}^H \left(\frac{z - c_i}{z} \right)^\alpha \times 100$$

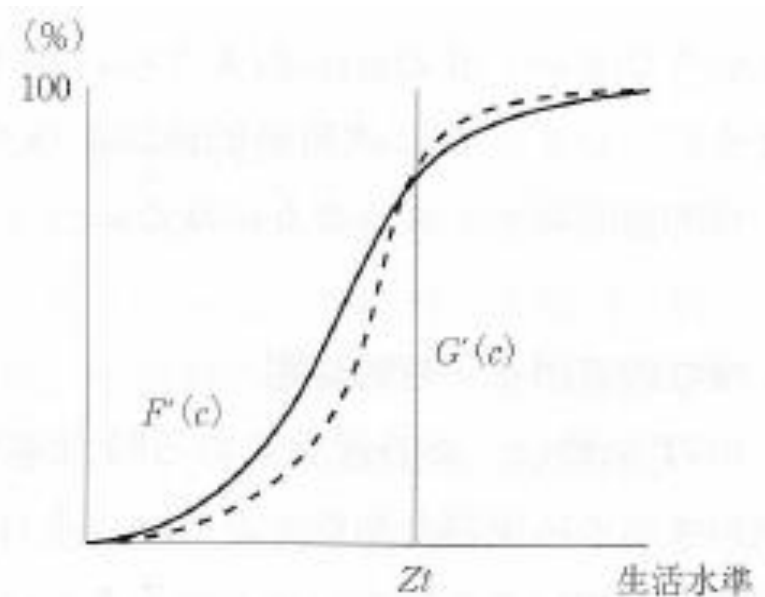
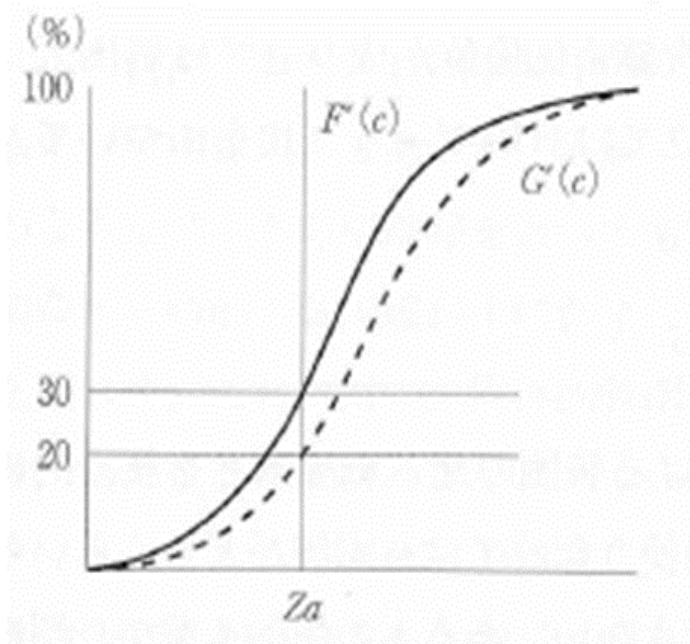
- FGT changes greatly according to the poverty line standards
- Time change regardless the Poverty line:
Stochastic dominance
- Cumulative distribution function on the Living standard (Living standards and the share of the persons below the standards)
- Prior period ($F(c)$)、This period ($G(c)$)
Poverty Line $Z\alpha$
- The 1st probability edge: $F'(c) > G'(c)$ (Overall improvement)

Stochastic dominance

Poverty Line Z_a : 30%
 $\rightarrow 20\%$, $F'(c) > G'(c)$
 in all Z_a

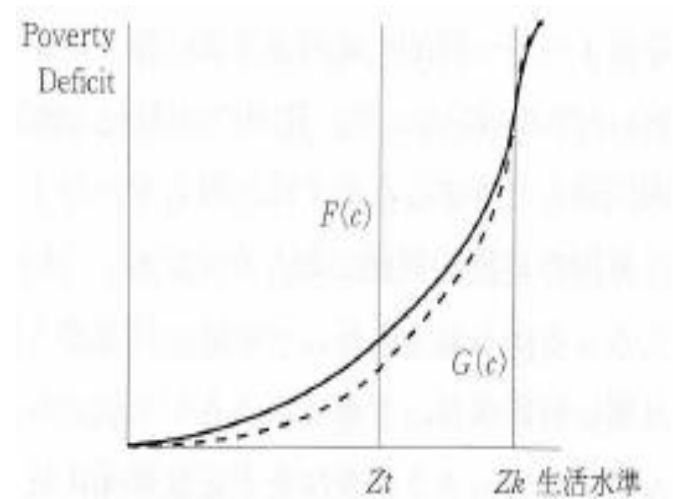
\Rightarrow The first stochastic dominance exists

- Different pattern below the Poverty Line Z_t : Depending on the Z_t , No overall improvement



Stochastic dominance (2)

- The 2nd dominance :Checking the shape of Poverty Deficit Curve \Rightarrow Comparing the size of below $F'(c)$ 、 $G'(c)$, Checking the poverty gap in the two patterns



- The 2nd stochastic dominance exists: If $F'(c) > G'(c)$ continues after Z_t to Z_k , then the poverty gap of $G'(c)$ continued to improve

Measuring the Poverty (4) : Human Development Index

		Human Development Index (HDI)	Life expectancy at birth	Expected years of schooling	Mean years of schooling	Gross national income (GNI) per capita
HDI rank	Country	Value	(years)	(years)	(years)	(2011 PPP \$)
	Human development groups					
	Very high human development	0.896	80.5	16.4	11.8	41,584
	High human development	0.744	75.1	13.6	8.2	13,961
	Medium human development	0.630	68.6	11.8	6.2	6,353
	Low human development	0.505	60.6	9.0	4.5	3,085
	Developing countries	0.660	69.8	11.7	6.8	9,071
	Regions					
	Arab States	0.686	70.6	12.0	6.4	15,722
	East Asia and the Pacific	0.710	74.0	12.7	7.5	11,449
	Europe and Central Asia	0.748	72.3	13.6	10.0	12,791
	Latin America and the Caribbean	0.748	75.0	14.0	8.2	14,242
	South Asia	0.607	68.4	11.2	5.5	5,605
	Sub-Saharan Africa	0.518	58.5	9.6	5.2	3,363

HDI composition: High countries

		SDG 3	SDG 4.3	SDG 4.4	SDG 8.5		
	Human Development Index (HDI)	Life expectancy at birth	Expected years of schooling	Mean years of schooling	Gross national income (GNI) per capita	GNI per capita rank minus HDI rank	HDI rank
	Value	(years)	(years)	(years)	(2017 PPP \$)		
HDI RANK	2019	2019	2019 ^a	2019 ^a	2019	2019	2018
Very high human development							
1 Norway	0.957	82.4	18.1 ^b	12.9	66,494	7	1
2 Ireland	0.955	82.3	18.7 ^b	12.7	68,371	4	3
2 Switzerland	0.955	83.8	16.3	13.4	69,394	3	2
4 Hong Kong, China (SAR)	0.949	84.9	16.9	12.3	62,985	7	4
4 Iceland	0.949	83.0	19.1 ^b	12.8 ^c	54,682	14	4
6 Germany	0.947	81.3	17.0	14.2	55,314	11	4
7 Sweden	0.945	82.8	19.5 ^b	12.5	54,508	12	7
8 Australia	0.944	83.4	22.0 ^b	12.7 ^c	48,085	15	7
8 Netherlands	0.944	82.3	18.5 ^b	12.4	57,707	6	9
10 Denmark	0.940	80.9	18.9 ^b	12.6 ^c	58,662	2	10

HDI Composition: Very low countries

HDI RANK	Human Development Index (HDI)	SDG 3 Life expectancy at birth	SDG 4.3 Expected years of schooling	SDG 4.4 Mean years of schooling	SDG 8.5 Gross national income (GNI) per capita	GNI per capita rank minus HDI rank	HDI rank
	Value	(years)	(years)	(years)	(2017 PPP \$)		
	2019	2019	2019 ^a	2019 ^a	2019		
	2019	2019	2019 ^a	2019 ^a	2019		
180 Eritrea	0.459	66.3	5.0 ^j	3.9 ⁿ	2,793 ^u	-17	180
181 Mozambique	0.456	60.9	10.0	3.5 ^j	1,250	3	181
182 Burkina Faso	0.452	61.6	9.3	1.6 ^p	2,133	-9	183
182 Sierra Leone	0.452	54.7	10.2 ^j	3.7 ^f	1,668	-4	182
184 Mali	0.434	59.3	7.5	2.4 ^m	2,269	-17	184
185 Burundi	0.433	61.6	11.1	3.3 ^p	754	4	184
185 South Sudan	0.433	57.9	5.3 ⁿ	4.8 ⁿ	2,003 ^u	-10	186
187 Chad	0.398	54.2	7.3	2.5 ^p	1,555	-5	187
188 Central African Republic	0.397	53.3	7.6 ^j	4.3 ^f	993	0	188
189 Niger	0.394	62.4	6.5	2.1 ^j	1,201	-4	189

Dynamic change of poverty

- Necessary to check the sequential change
⇒ Characteristics of poverty
- *Chronicle poverty*: Long-term living standard below the poverty line ⇒ Income gaining incapability by lacking in human capital, physical capital (Existence of “Poverty trap”)
- *Temporary poverty*: Business trends, Price shock, Natural disaster, Climate change, Diseases, Injuries... ⇒ Average consumption is above the Poverty Line but the income falls by any kind of shock

Dynamic change of poverty (2)

- Point: Income \neq Consumption, because income fluctuates but the consumption can be soothed relatively easily
- Chronicle poverty: Capacity building, Production related capital investment, Credit extension
 - ⇐ Income fluctuates: Adjustment by saving, Working hours increase, Family/Relatives supports, Child labor, and asset sales
- Temporary poverty: Food supports, Social safety net provision (job insurance, job creation by infrastructural investment etc..)

Why poverty remains?

- Household income = Labor income + Asset income
- Labor income: Net income without material purchase and mortgage, The market value of self consumption of Farmers' production
 - Number of laborers * Labor wage
 - Per capita income = Number of laborer share * Labor wage
- Asset income (Land, building, machinery income plus tenant fees and rent income)
 - ⇒ Why poor? : Laborers' share is low (larger dependent population)
 - Wage is too low (quality of laborer, physical capital, infrastructure, Technology)
 - Asset income is too small or negative

Changes in poverty reduction approaches

- Growth with maintained inequality reduces poverty ratio, but trickle down is never easy
- Structuralism (1950s-60s) : Different mechanism between the matured and developing economies (ex. Trade pessimism, Vicious circles in poverty (ex. Nurkse)
 - ⇒ No “natural development by the market”, the role of government, Big push for aid for saving and investment, Minimum marginal efforts (ex. Rodan, Leibenstein)
 - ⇒ Import substitution
- Reformism (1970s) : Limited trickle down, Basic Human Needs(BHN) ideas, “Fair” distribution, Direct support

Changes in poverty reduction approaches(2)

- Neo-liberalism vs. Structuralism: Stress on “irrational” mechanism including disguised employment
(No abundant laborers without productivity: ex. Schultz)
 - ⇒ Rational ideas in developing economies/ Poor village
→ Productivity increase by technology and knowledge(ex. Green revolution)
- From import substitution to export-led growth (ex. Krueger, Balassa) : East Asia as the successful case of liberalization (foreign exchange control, trade liberalization → market distribution based on the comparative advantage)
 - ⇒ The roles of market, Macro-policies to modify distorted incentive paradigm

Changes in poverty reduction approaches(3)

- Structural adjustment failures in 1980s~1990s:
Sub-Saharan Africa
- Market-Friendly View vs. Neo-liberalism: Naïve liberalization ruins the economies,
Complementary role between the gov. and market
⇒ Positive function in selective industrial policies, Financial restraint
 - Development micro-economics
for the market presumption: Information asymmetry, transaction cost

Changes in poverty reduction approaches(4)

- Change in development economics: From macro (growth theory, trade and finance) to micro (farmer, firms and managers, laborers), from theories to evidences
- Poverty reduction since 1990s: Specific goals, Performance based control (Comprehensive approach)
 - ← Randomized Controlled Trial: RCT, Impact evaluation
- ⇒ Economic entities are rational but not always so
- Market is imperfect (transaction cost for the developing economies)
- ⇒ Full of risks in village (No insurance and developed credit market)

Changes in poverty reduction approaches(5)

- Experiments: Quantitative Impact Evaluation: Project analysis (Comparing the change related the projects)
 - ⇒ Before-After analysis (Depending on controlling conditions)
 - ⇒ With-Without analysis (Comparing samples affected and non-affected by the projects (Bias remains?))
- Non Experimental approach: Propensity Score Matching: PSM), Difference in Difference: DID) approaches
- Growth is *necessary conditions* for poverty reduction but *no sufficient conditions* (UNICEF): Equal opportunities, Risk fragility (Human Development Index), Capability approach

Suggested Readings

- William R Easterly (2002) *The Elusive Quest for Growth: Economists' Adventures and Misadventures in the Tropics*, The MIT Press
- Jeffrey Sachs (2005) *The End of Poverty: How We Can Make it Happen in Our Lifetime*, Penguin
- Paul Collier (2008) *The Bottom Billion*, Oxford University Press
- Abhijit Banerjee and Esther Duflo (2012) *Poor Economics*, Public Affairs