

Poverty and Inequality in a global economy: Poverty measures & trends

World Poverty and Economic Development

ECRG 3240 Spring 2014

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Poverty and Inequality Measures



- *What is meant by poverty and how is it measured?*
- *How to best to measure living standards: the “best” poverty measure.*
- *What about inequality— should we worry about inequality?*

Two poverty concepts dominate, one in Europe, one outside the EU

Absolute Poverty

- **Absolute deprivation:** less than some physical minimum (malnutrition)
- Poverty line consumption or income constant for long periods of time (50 years in U.S.)
- U.S. and UK and World Bank use this concept

Relative Poverty

- **Relative deprivation:** inequality, not enough compared to others or social norm
- Typically 1/3 of median (middle class income or consumption).
- Europeans use relative poverty measures.

A practical definition: deprivation so severe you may need help to escape poverty

- **Everyone or more than half of population may be poor**, but this is not a practical poverty line....
- **Example \$2.50/day poverty means over 2.5 billion over \$1.25 per day**: but this is “too many to help” (TMTH) ... India in the 1960s
- **A useful poverty rate should be under 30% :**
when the poverty rate gets under 5%, raise the poverty line...

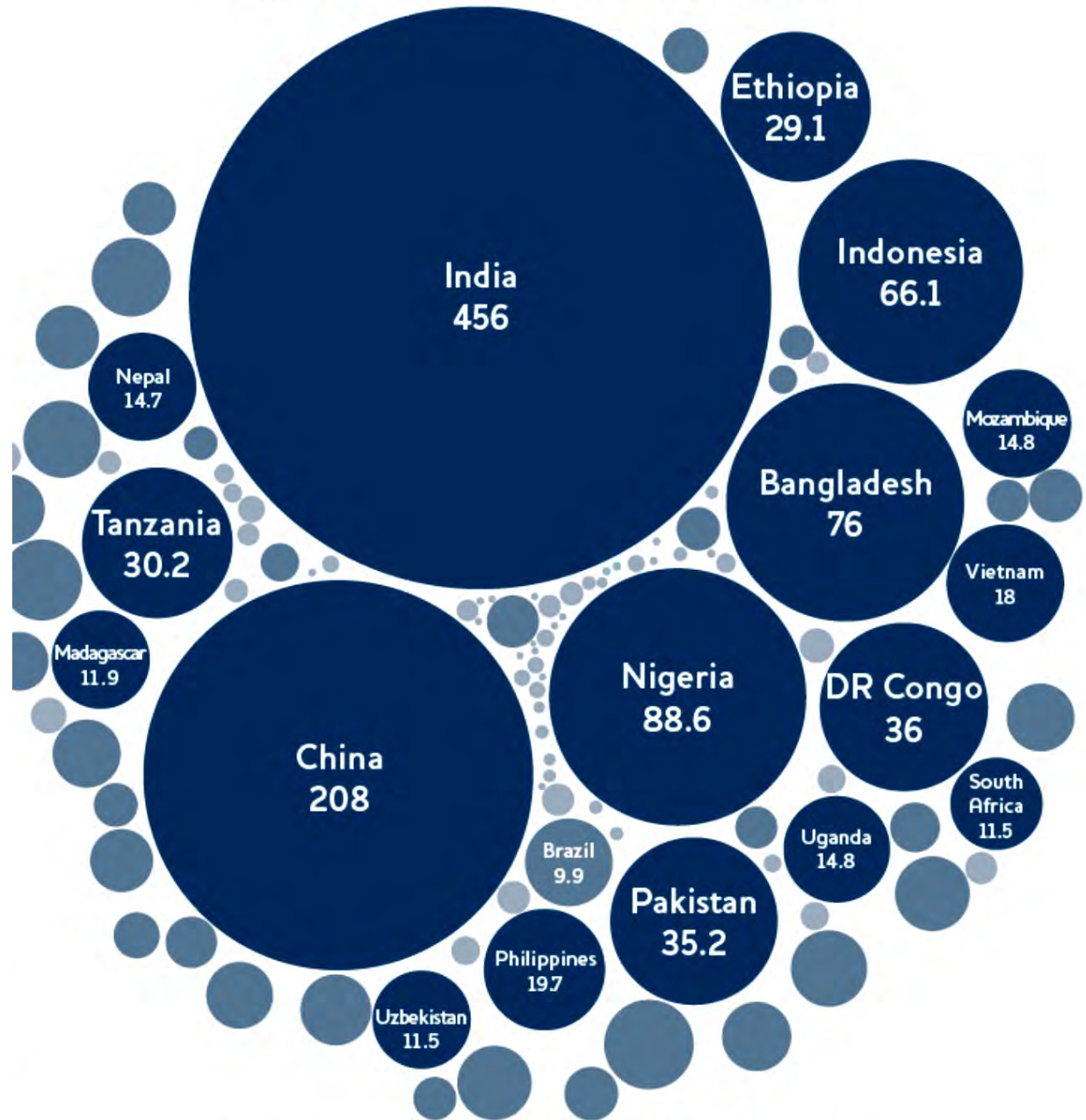
Social justice perspective

- **Social deprivation: lack of capabilities** (Amartya Sen all should be capable of participating in basic civil and social events, w/o **humiliation** (e.g. having no shoes) [Example: MDGs are multidimensional](#))
- **Unjust deprivation:** Rawlsian justice for example, the least of always comes first **OWS??**
- **lost human capital:** poor health or education means your ideas and innovations may be lost to all of us: an inability to produce: lost potential growth. [Example: barriers to undocumented Dreamers.. 1.5 students in the U.S. \(except in California and Texas\)](#)

When, how and who should improve the lives of others?

- **When and how?** what NGO/government policies help? foreign aid, in-kind donations, conditional cash transfers minimum wages: what can be done?
- **Who should do it: Private charities**, national governments (bilateral aid) or international institutions: IMF, World Bank, United Nations... WTO, ILO, UNCTAD & so on.

Population living under US\$1.25 per day



Figures are in millions of people. Graphic courtesy *The Guardian*
www.guardian.co.uk/global-development

Where are the \$1/day poor? due to recent progress in many large poor countries, most of the \$1.25/day poor now live in middle income countries...see the [two page IDS focus](#) linked to this graphic (click it) and this [recorded IDS debate](#) between Paul Collier and Andy Sumner.

Poverty reduction as the key metric of human progress (MDG goal 1 is to reduce \$1/day poverty in half,)

Physical and social deprivation should be reduced whenever and where ever possible. But if most people are poor the idea of poverty as one group helping another may not be operational or feasible.

This is why poverty is a relatively new metric of human progress...practically speaking the poor should be less than 50% and more that 5% of the total population...

How to draw a poverty line? start with some minimum diet... for example

- **Official U.S. poverty definition:** Income less than \$20k year for an urban family of 4 (or roughly \$50/day in 2006)
- **UN/World Bank international poverty line:** 2250 calories per day or \$1/day in **consumption** spending (same for all poor countries— except perhaps LatAm where \$2/day) – to make prices comparable in various countries, ICP surveys different countries: rents and wages are lower in poor countries, the new 2005 survey is just coming out this year... a mess but good for you, and me).

Concern about poverty starts with prosperity...

- 1. Absolute poverty** involves physical deprivation: malnutrition is a universal poverty indicator: absolute measures always start with some biologically defined but socially acceptable minimum diet and then adds a bit more: some clothes, shelter, etc.
- 2. Relative poverty** focus on relative deprivation: no one should be too far from average or the middle household... this is why for example the U.S. and India use very different poverty lines, Europe uses a relative poverty measure... mixes ideas of inequality, fairness and poverty... a 2nd order concern?
- 3. Poverty fighting policy is a by-product of mass affluence:** the notion that one large group should help another large group is only feasible in an age of mass affluence: economic prosperity makes it politically and economically feasible for one group to help another (not philanthropy where the very rich help the very poor) not about millionaires helping the poor, it is about the middle class in Sri Lanka, Brazil, India, the U.S. and China taxing itself to make transfers to the poor...

Europe takes inequality as seriously as poverty...

- **European poverty measures are relative**, a % of the median income, no one should be more than 50% below the median
- **Growth cannot reduce relative poverty**, only redistribution in the bottom half of the income distribution can: make everyone “middle class”
- **Eurostat measures how long people are poor**: the persistence of poverty: chronic vs. transitional poverty.

Issues in measuring poverty across countries and over time:

- 1. *Define a measure of welfare: income? consumption? Human rights? Freedom?***
- 2. *Define a poverty line: is poverty absolute or relative? Should the poverty line be fixed, over time, across countries? Or should we look at many poverty lines?***
- 3. *Which poverty indicators (example the poverty rate) are best, what are the pitfalls of relying on one indicator?***

History of UK poverty is instructive: starting in 1899 with Seebohm Rowntree's York survey

Absolute Poverty defined: In 1899 Rowntree conducted a survey in the village of York. His poverty line started with a minimum diet based on American biologist Atwater's minimum nutritional requirements: Breakfast: porridge and skim milk

- Lunch: bread and cheese Dinner: Soup (very little meat).

Professor Rowntree and his students went back to York in 1936 and 1951, they found that poverty dropped from 31% to 3%, though 22% still relied on government transfer payments to escape poverty...

1952 UK headline: Labour Party ends poverty in the UK...poverty is no more.

- Based on Rowntree research in York, in 1952 with some fanfare, Britain's new Labour government declared poverty and destitution defeated in UK— poverty was no more...
- But many people in the UK still thought of themselves as “poor” leading to a long (and ongoing debate) over **whether poverty is really relative as opposed to some “absolute” threshold everyone can cross...**
- **Perhaps poverty is always intrinsically “relative” such that anyone who is “too far” from middle class living standards feels poor, even if compared to the poor in India, one is relative affluent. (see Sen's “Poor relatively speaking” on the class web page for a very nice overview of this debate...”)**

Sen's answer: poverty should reflect absolute deprivation in achievements socially defined

- The standards for poverty remain the same: a socially determined minimum set of achievements or “capabilities:” i.e., attend school, vote, housing, etc.
- The minimum achievements stay the same across nations: what changes in the goods and services required to achieve these minimum social norms (this is why the U.S. poverty line income is \$5000, while in poor countries it is 400).
- Once this social defined minimum standard of living is defined, the poverty line should be fixed, absolutely over time.. this is what the U.S. and World Bank do...
- But Europe went to relative poverty rates...(see Francois Bourguignon's article on “social exclusion”)

But minimum living standards depend on when and where you live.... Adam Smith (1776) on socially determined necessities vs. luxuries:

“By necessities I understand *not only the commodities which are indispensably necessary for the support of life*, but whatever the custom of the country renders it indecent for creditable people, even of the lowest order, to be without. A linen shirt, for example, is, strictly speaking, not a necessary of life. The Greeks and Romans lived, I suppose, very comfortably though they had no linen. But in the present times, through the greater part of Europe, a creditable day-laborer would be ashamed to appear in public without a linen shirt, the want of which would be supposed to denote that disgraceful degree of poverty which, it is presumed, nobody can well fall into without extreme bad conduct. Custom, in the same manner, has rendered leather shoes a necessary of life in England. The poorest creditable person of either sex would be ashamed to appear in public without them...” see Amartya Sen (1991) *Poor Relatively Speaking*, Oxford Economic Papers

Three Steps to Measure Poverty

1. Determine how to measure well being:

- Income or consumption? Pre or post government transfers?
- Include wealth (education), social networks, human rights?
- International prices vs. local prices the PPP issue.
- By individuals or households? equivalence scales

1. Define a poverty Line:

- *Relative Poverty* such as 1/3 the median consumption
- Or *Absolute Poverty* line such as 2250 calories.
- Standardizing poverty lines across countries

3. Choose an aggregate Poverty Measure:

- **Incidence:** Poverty Rate $H = (\text{number of the poor})/(\text{total population})$
- **Depth of Poverty:** the Income Gap Ratio or I
- **Incidence and Depth:** Poverty Gap or $H * I$ $p(1)$
- **Severity:** “gap-squared” (FGT) or Sen index...or just a lower poverty line (e.g. 75 cents per day)

poverty measures

(see [problem set 1](#) for examples)

- **H or headcount ratio w/ absolute poverty line:** the share of the population that is below a given poverty line in consumption or income, or $p(0)$ using FGT notation.

$$H = \frac{\text{Number of people below the poverty line}}{\text{Total Population}}$$

- **H or headcount w/ relative poverty line:** same as above except poverty line is $\frac{1}{2}$ or $\frac{1}{3}$ of median income (this is how OECD & EU measure/define poverty)
- **Poverty Gap: is** $H \cdot I$ where I measures the depth and H the incidence of poverty, $p(1)$ using FGT notation.

$$I = \frac{Y_p - Y_{Avg}}{Y_p}$$

- **Poverty Gap Squared** or $p(2)$ is sensitive to inequality among the poor, that is the severity of poverty. The poorest count more so $p(2)$ falls fastest if you help the poorest, whereas helping the poorest would have no impact on H and whoever you help would reduce I by the same amount.

$$P_2 = \frac{1}{N} \sum_{i=1}^Q \left(\frac{Y_p - Y_i}{Y_p} \right)^2$$

Inequality Measures

- **Inequality Ratio:** the income share of the top 10 or 20% divided by the income share of the bottom 20 or 40%
- **The Gini coefficient:** see Problem set #2 and typical Latin American Lorenz curve.
- **Average Log standard deviation of income:** easy to compute and interpret, see Dollar and Kray, 2000.

Click to see
online pdf
with notes
At point B,
the top 90%
of HH has
40% of
income, at
point A the
bottom 20%
have about
4% of total
income

**Figure 1. Typical Lorenz Curve
in Latin America**

(In percent)

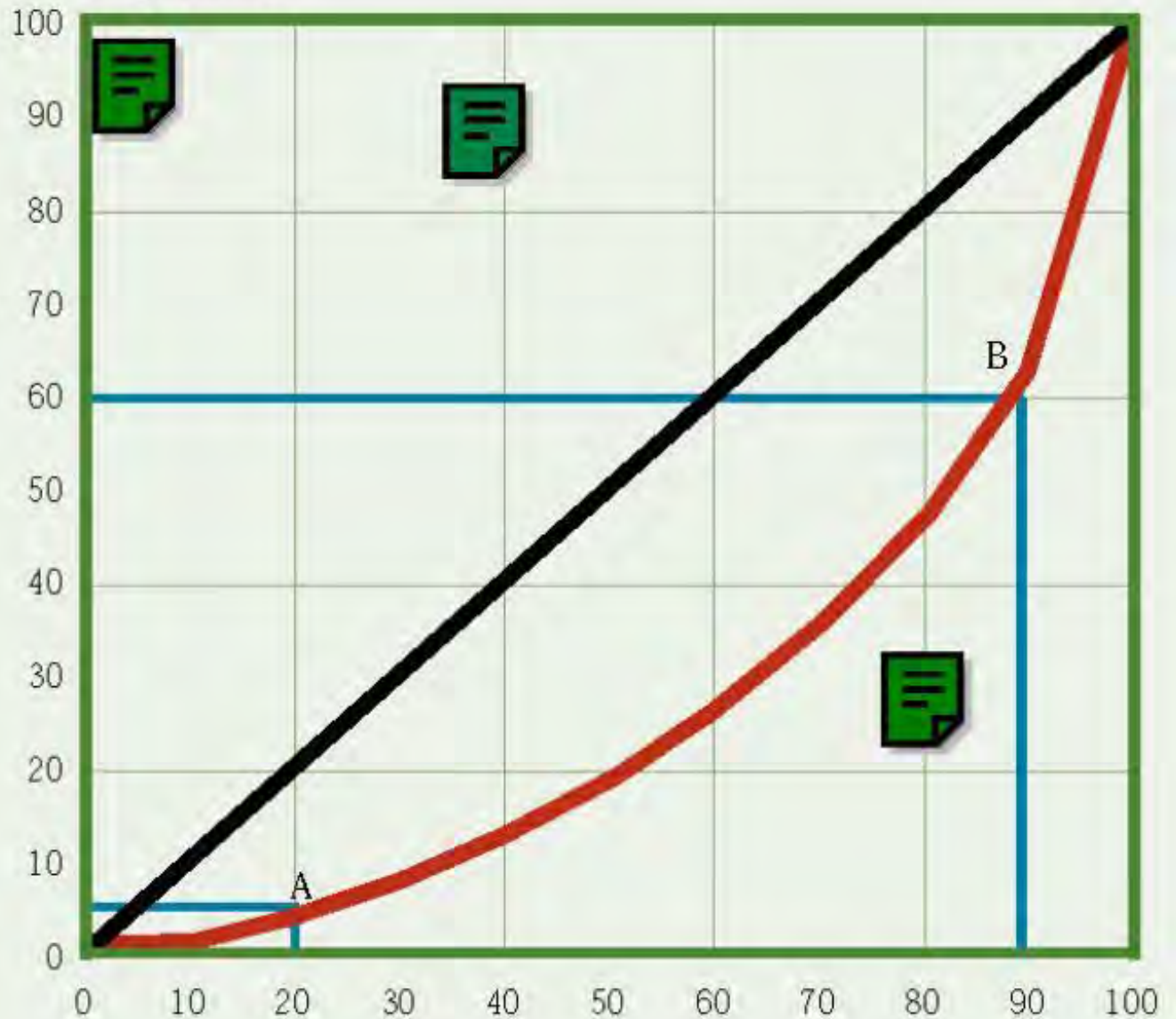
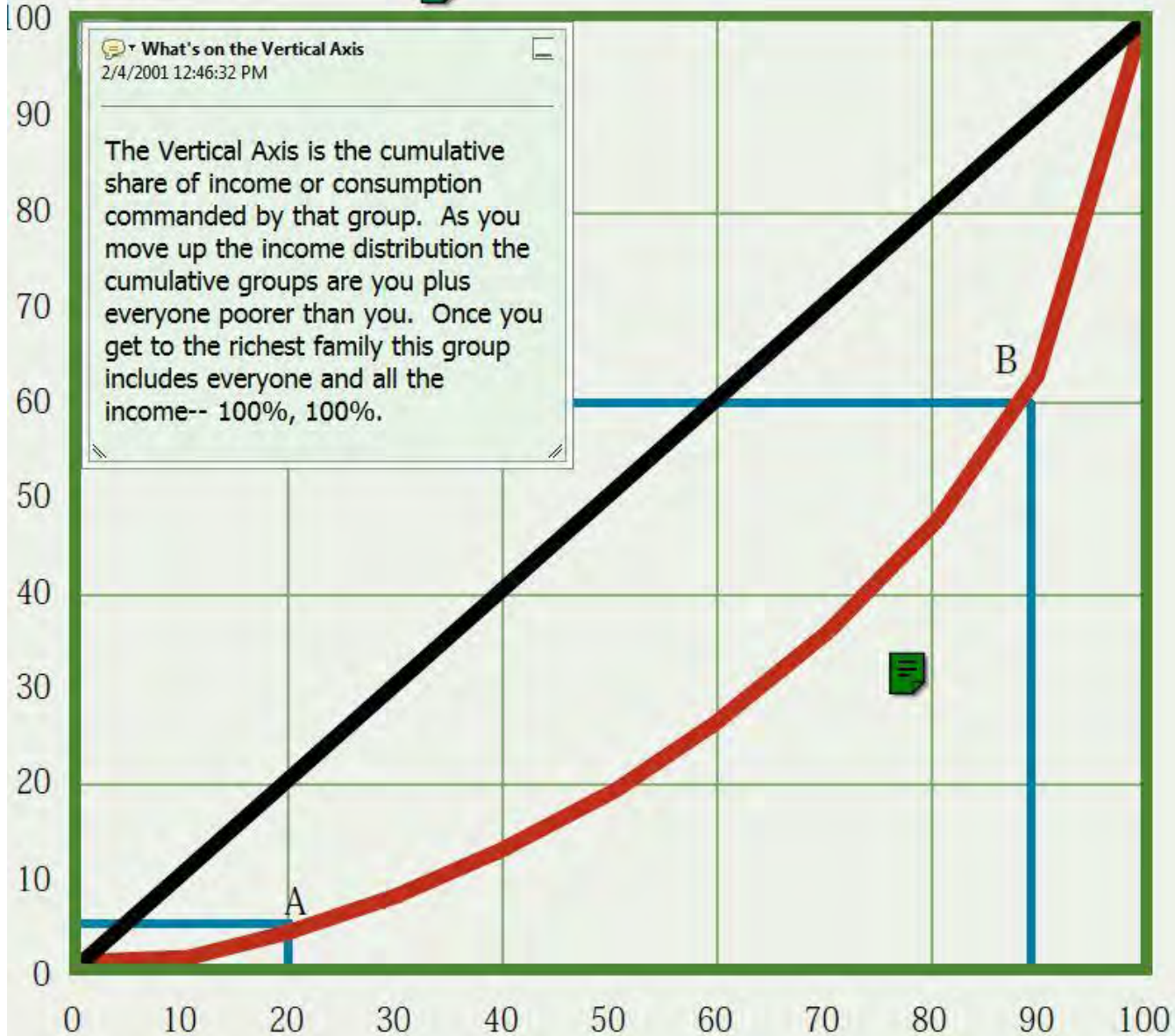


Figure 1. Typical Lorenz Curve in Latin America

(In percent)



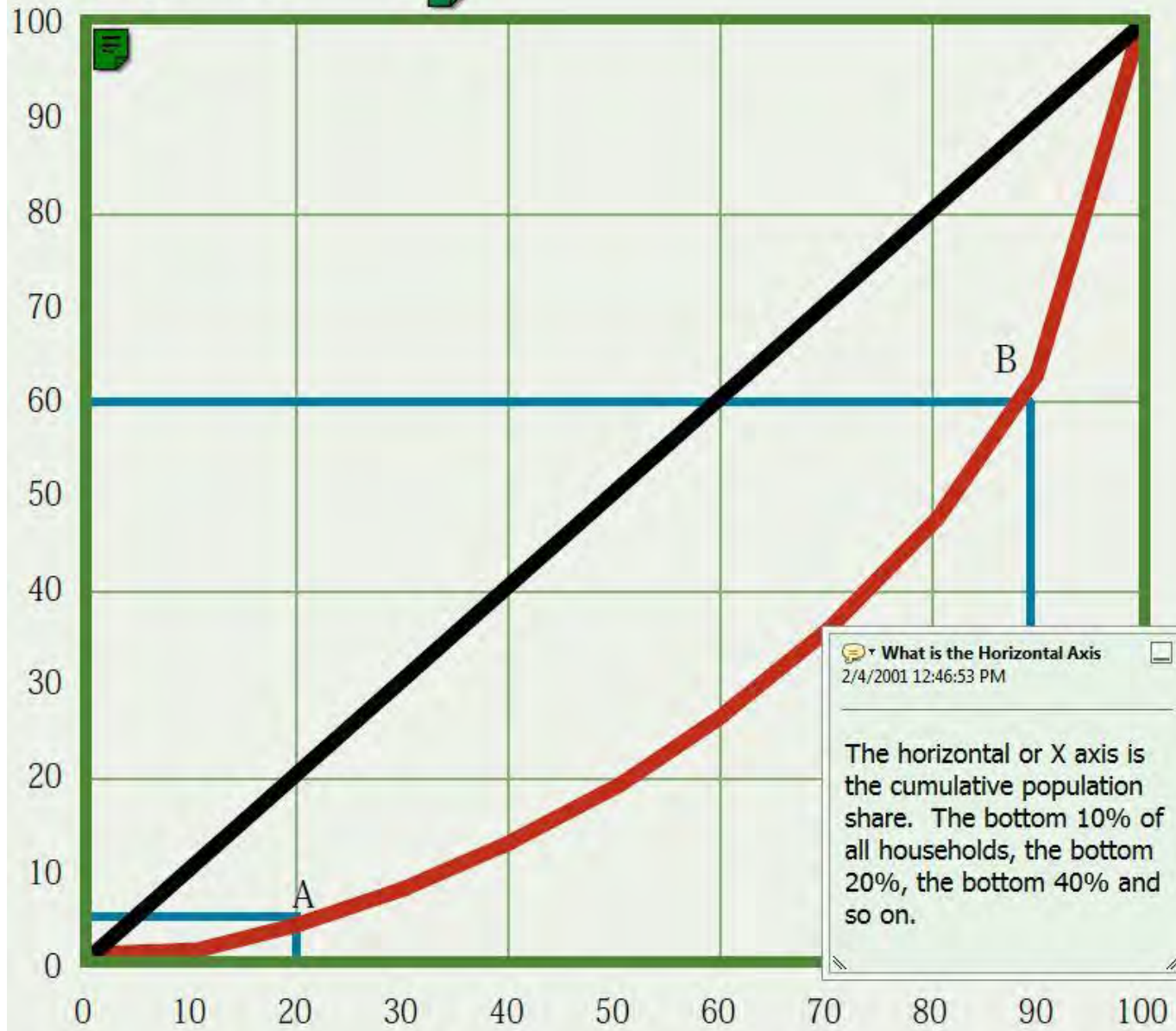
What's on the Vertical Axis
2/4/2001 12:46:32 PM

The Vertical Axis is the cumulative share of income or consumption commanded by that group. As you move up the income distribution the cumulative groups are you plus everyone poorer than you. Once you get to the richest family this group includes everyone and all the income-- 100%, 100%.

What is on the vertical axis of the Lorenz Curve?

Figure 1. Typical Lorenz Curve in Latin America

(In percent)



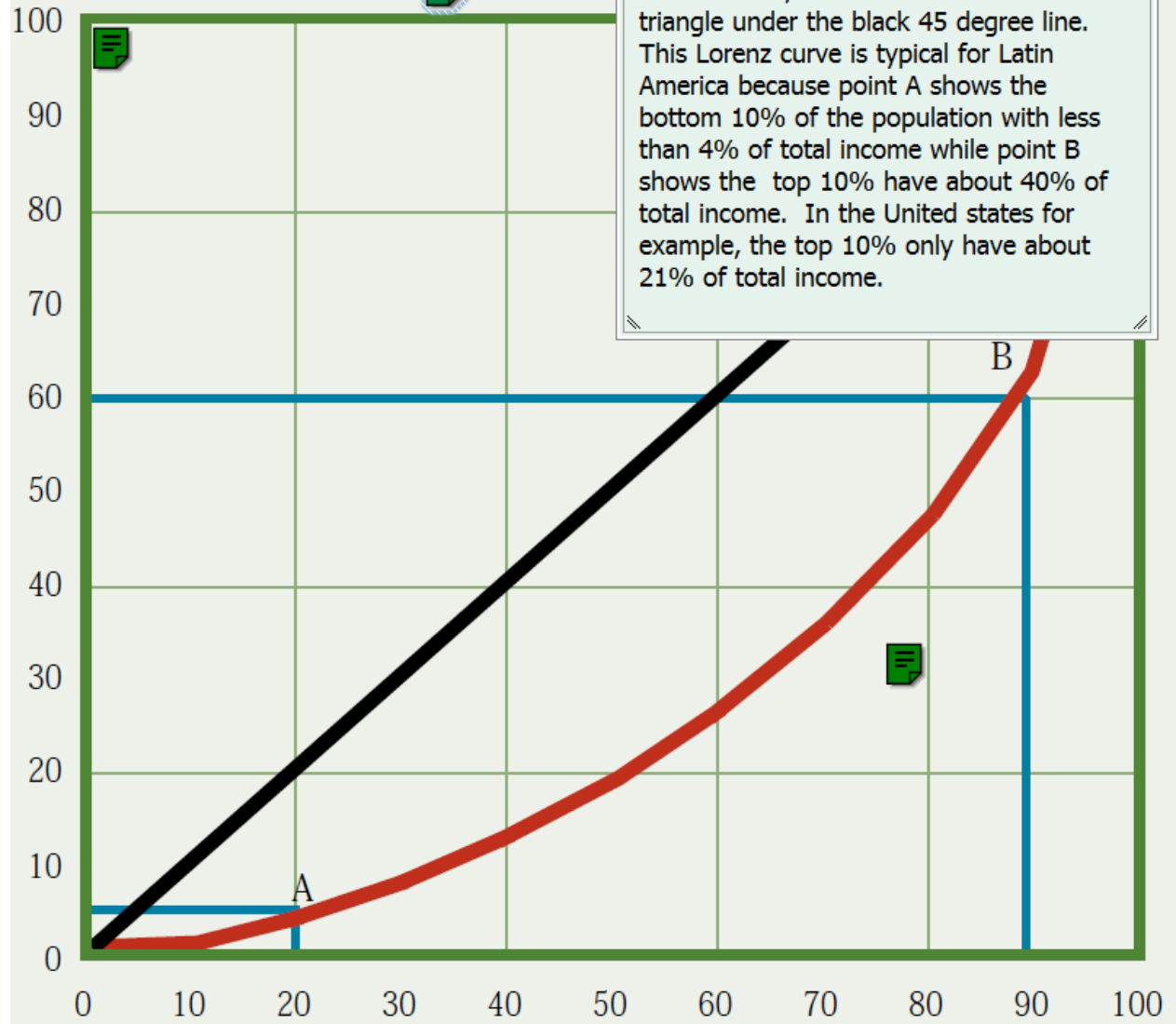
What is on the Horizontal axis of the Lorenz Curve?

What is the Horizontal Axis
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The horizontal or X axis is the cumulative population share. The bottom 10% of all households, the bottom 20%, the bottom 40% and so on.

What is the Gini Coefficient?

Figure 1. Typical Lore
in Latin America
(In percent)



What is the Gini & Lorenz Curve?
1/19/2015 10:09:58 PM

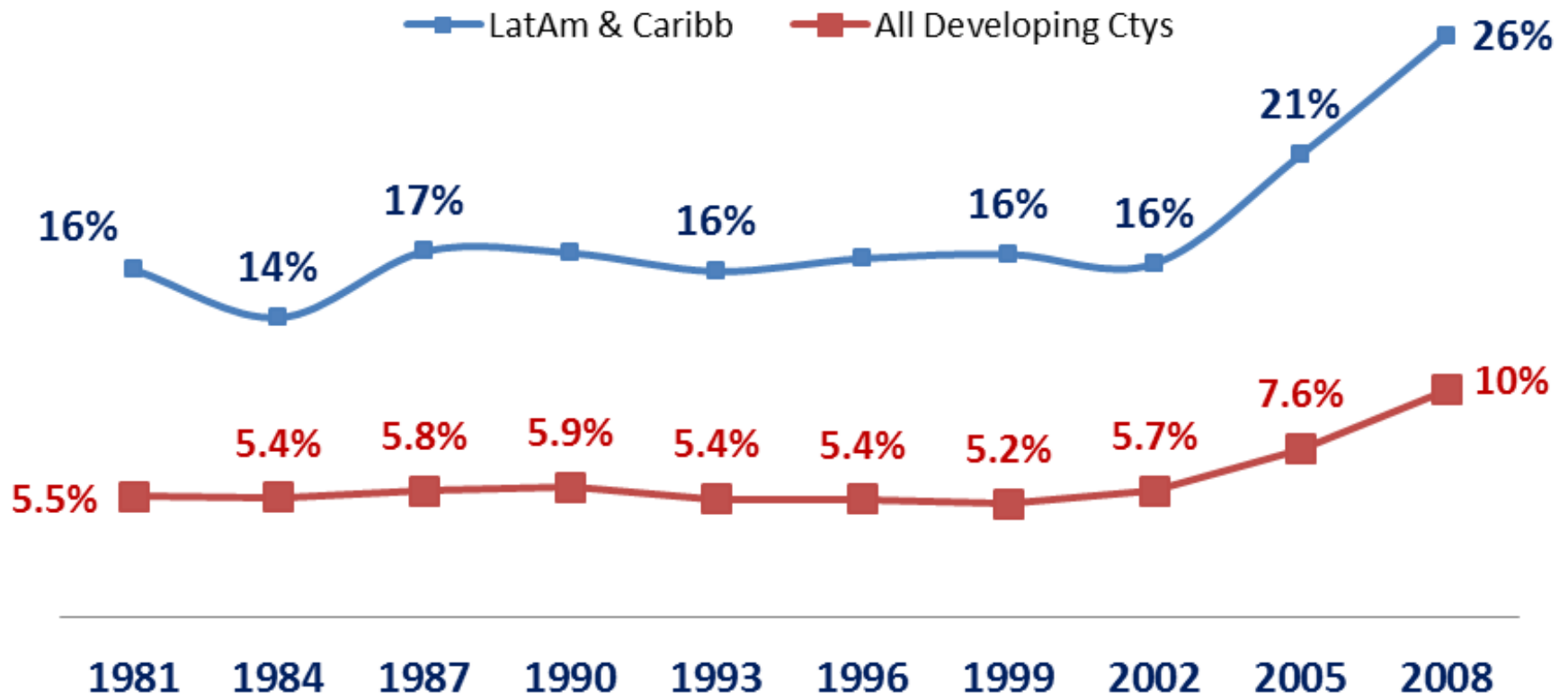
The Gini coefficient is the area between the black 45 degree line and the orange Lorenz curve, as a share of the entire triangle under the black 45 degree line. This Lorenz curve is typical for Latin America because point A shows the bottom 10% of the population with less than 4% of total income while point B shows the top 10% have about 40% of total income. In the United states for example, the top 10% only have about 21% of total income.

What about the Middle Class?

- **Relative poverty:** only falls when the poor begin to enter the middle class, the poor “catch up” with the median household, that is
- **Birdsall, 2010:** the share of the population with incomes above \$10 ppp per day, but not in the top 5% of the population (not elite).
- **Luis Lopez Calva:** arrives at similar cutoff as Nancy Birdsall, \$10/day PPP but using a vulnerability definition: what income is need to reduce risk of becoming poor again... implies access to assets or credit, no?

What about the Middle Class?

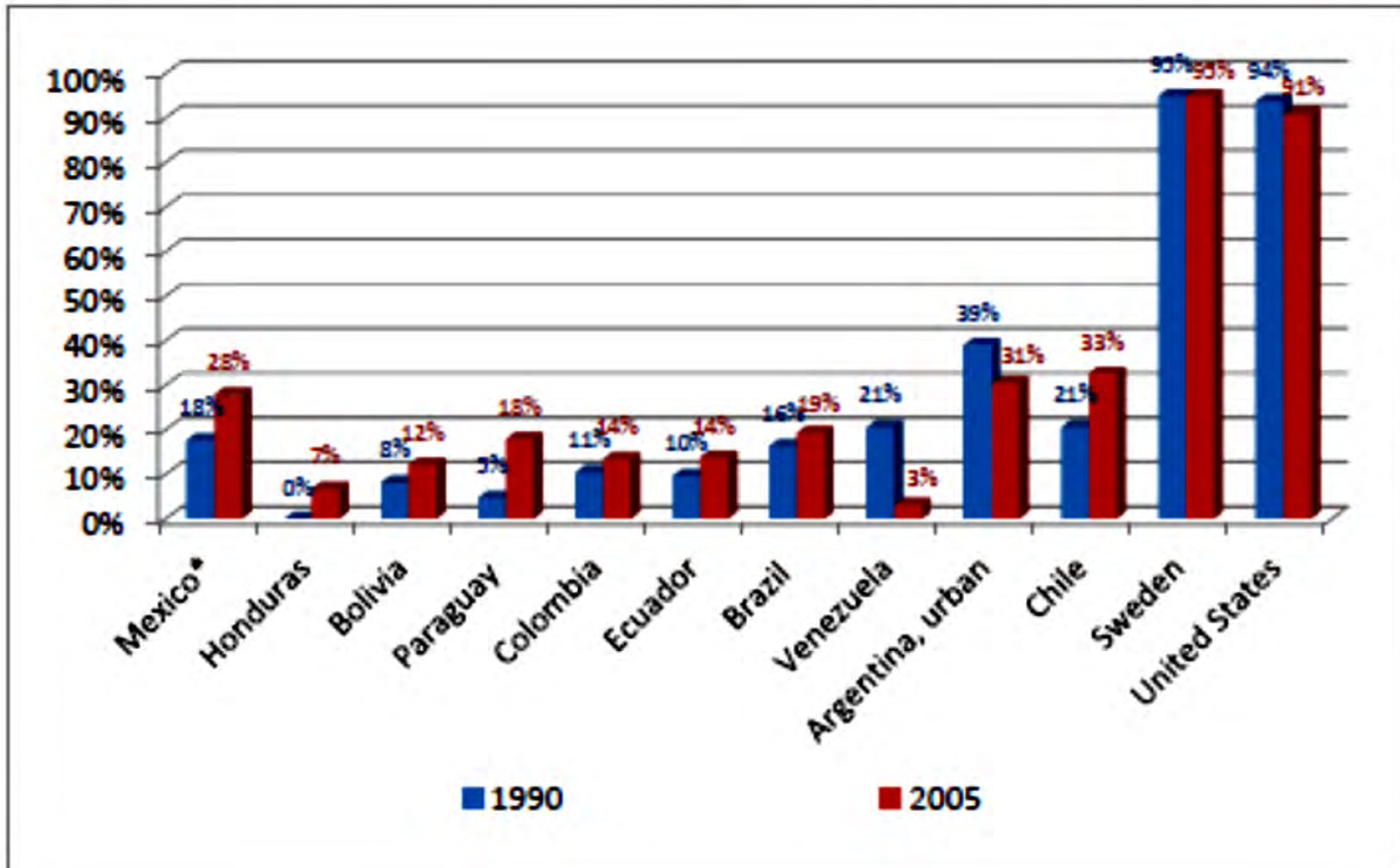
**Figure 2B LatAm & Caribbean middle class
(% >\$10/day \$PPP 2005)**



Source: World Bank, Povcalnet March 2012
(<http://iresearch.worldbank.org/PovcalNet/index.htm?1>)

What about the Middle Class?

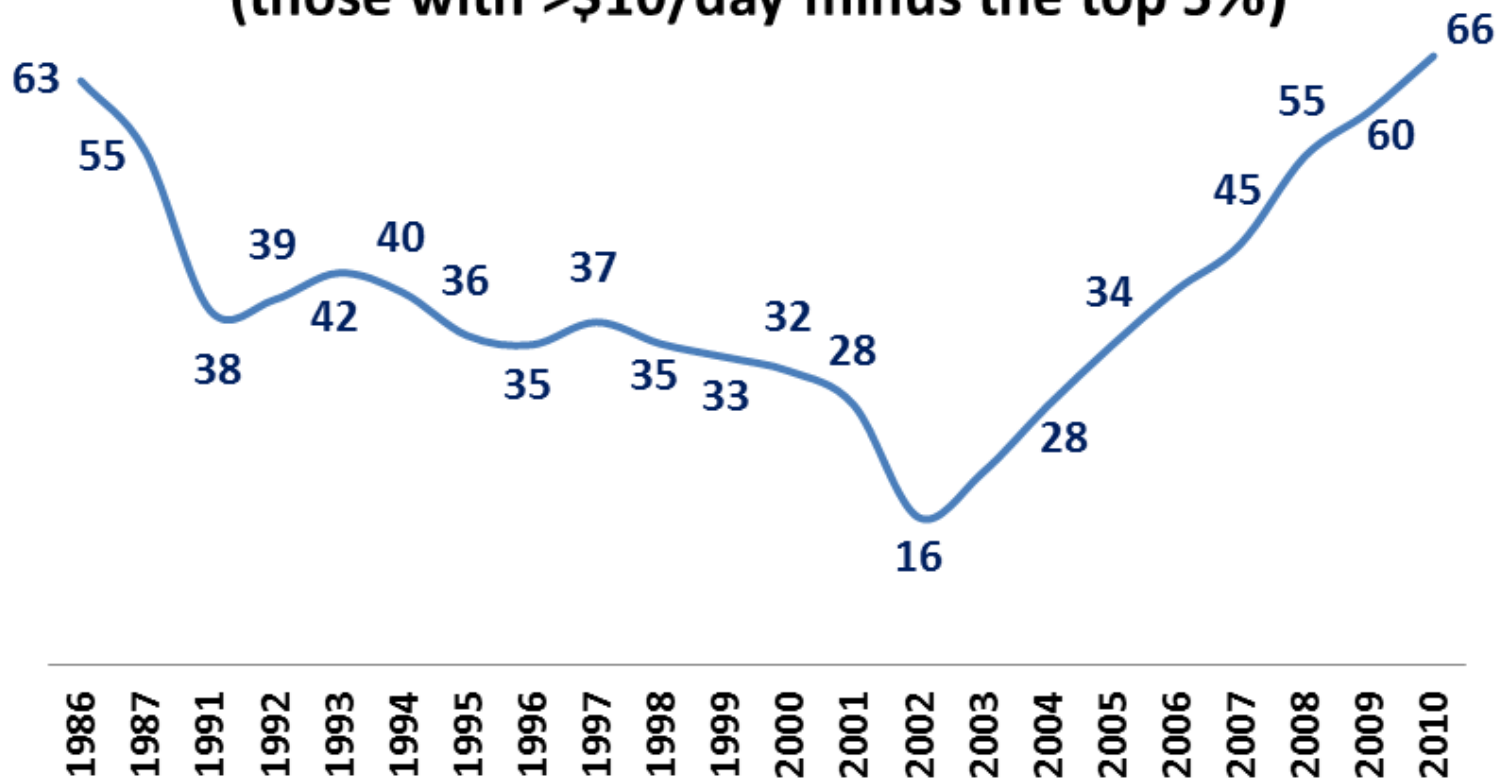
Figure 11: Change in Middle Class Size (proportion of population) between 1990 and 2005



Source: Birdsall (2010)

What about the Middle Class?

**Figure 5A: Argentina Urban Middle Class
(those with >\$10/day minus the top 5%)**



Source: World Bank, Povcalnet March 2012
(<http://iresearch.worldbank.org/PovcalNet/index.htm?1>)

THE POVERTY CURVE: FROM TWO HUMPS TO ONE

A half-century ago, the distribution of income in the world looked like a camel with two humps. The first hump represented the so-called developing world. The second hump represented people in wealthier countries (mostly in the West). But the world is no longer separated into the West and the rest. More than a billion people have risen out of extreme poverty, and most of humanity is now in the large dromedary-like hump in the middle.

Relative poverty, most closer to middle class, more similar... from Gates 2014 letter



Source: Gapminder, drawing on Jan Luiten van Zanden et al., "The Changing Shape of Global Inequality 1820–2000: Exploring a New Dataset," Working Paper 1, Center for Global Economic History, Utrecht University, January 2011. Poverty Measures Spring 2015

Every absolute poverty measure should:

1. Provide a **comparable measure** of living standards across regions, countries and provinces and over time— to identify the neediest groups -- \$ppp factors help here.
2. Be sensitive to the **incidence** (how many are poor?) and the **depth** (how poor are they?) of poverty?
3. Be sensitive to **severity** of poverty— are some people really much poorer than others? They need more help.
4. **Rise when the status of the poor deteriorates**, but if nothing happens to the poor population the poverty measure should not change either.

The Headcount Measure (H)

- How many people are poor as a % of the total population? ..the **incidence** of Poverty.
- **Easy to understand but has limitations:**
 - Says **nothing** about the **depth of Poverty**
 - Creates an incentive to help those closest to the line
 - Severely poor could be worse off as poverty falls
- **Measurement Issues:**
 - Households or Persons?: Equivalency Scales
 - Prices/incomes must be comparable– the \$ppp issue.
 - Consumption or Income? Capabilities?
 - Surveys or National accounts? A big difference...

Setting a world poverty line:

- The World Bank estimates one billion people still get by on less \$1/day (\$1 buys about 2250 calories).
- Raising the line to a modest \$2/day raises the number of poor to 2.7 billion, about half the people alive today.
- About 70% of these very poor people live in rural areas, and mainly in Africa and Asia.

Why it is hard to reduce poverty

- Population growth is rapid in poor countries.
- Poverty Traps: Aids and Malaria + political instability in newly independent states.
- Bad development policies, e.g. the resource curse
- Lack of globalization, geographic or **political isolation...**

Income Gap and the Poverty Gap

- How poor is the average poor family?:
 - I is the gap between the average income of the poor and the official poverty line.
- The glass is ___% empty -- useful but:
 - **1. Says nothing about how many or poor.**
 - **2. There may be great inequality among the poor.**
 - **3. Not sensitive to redistribution of income among poor-- still misses the severely poor.**
- The poverty Gap Index or H*I address issue #1 but not limitations #2 and #3 above.

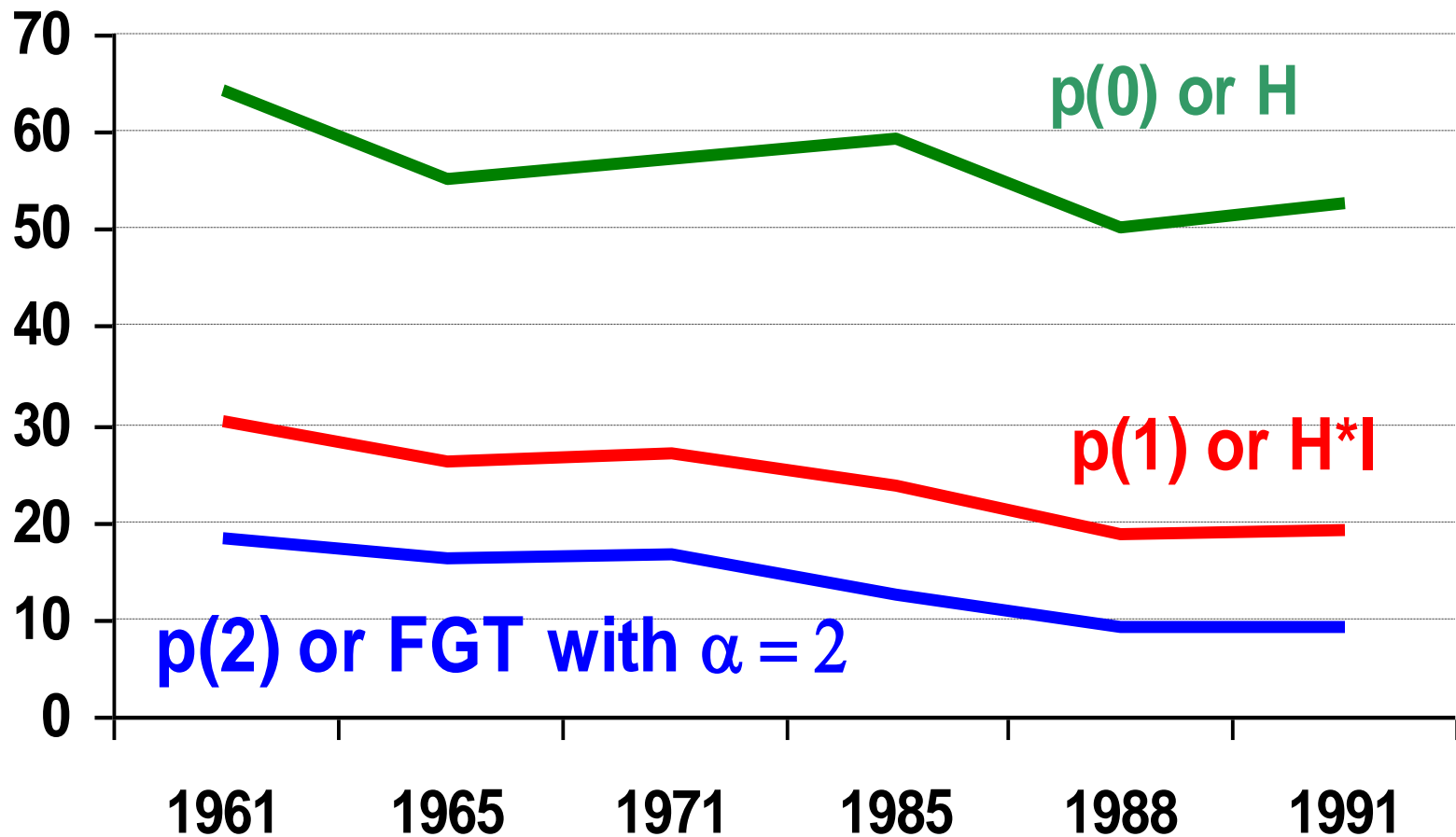
How Long the Escape from Poverty Takes depends on the Depth of Poverty and the Average Growth Rate of the country:

Mean Crossover Time:

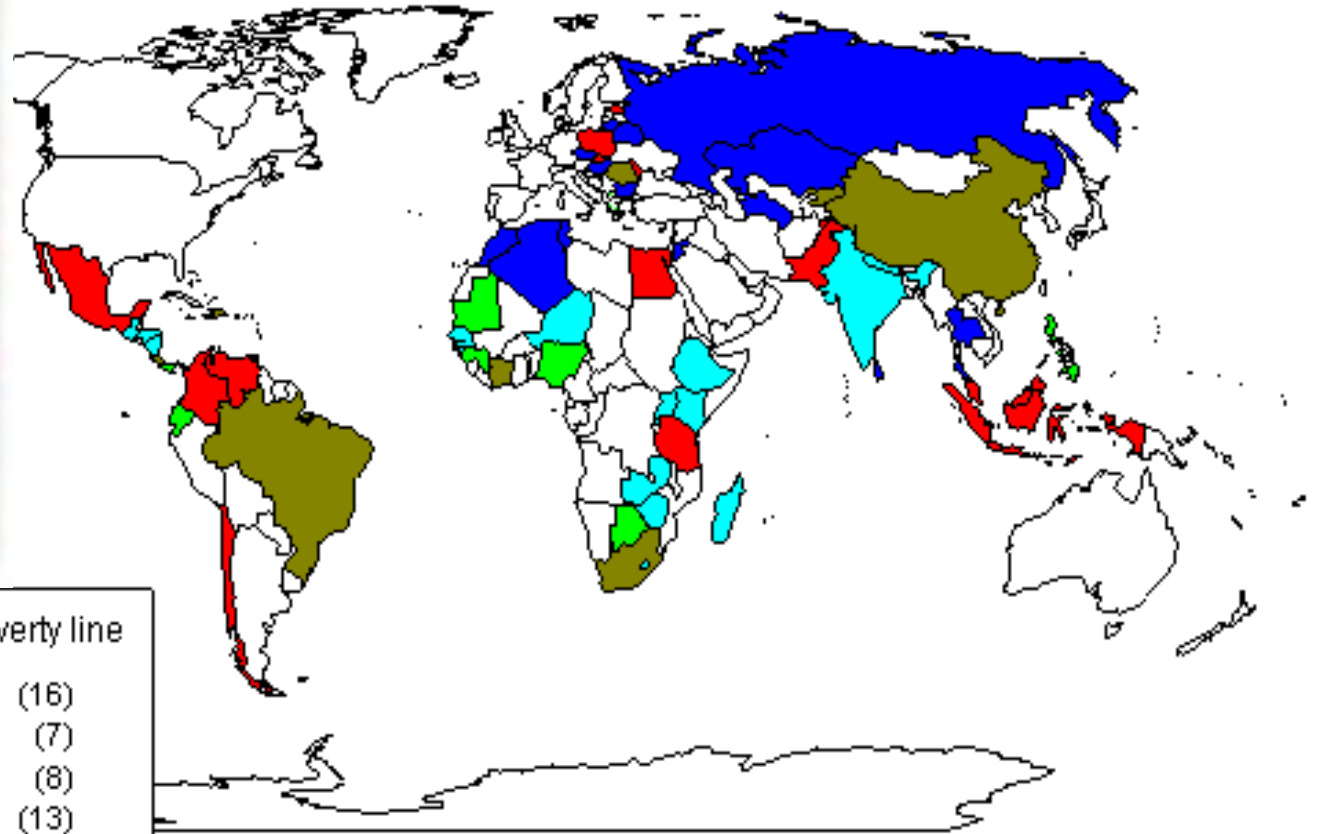
Years to cross over the poverty line for an average Poor Person with Different Growth Rates:

Growth Rate Per Capita	Average Income Shortfall:		
	20%	34%	50%
4%	6	10	18
3%	8	14	23
2%	11	20	35
1%	22	41	70
.5%	45	81	139







Rural Poverty In the Philippines



Poverty Rate H: % below \$1/day

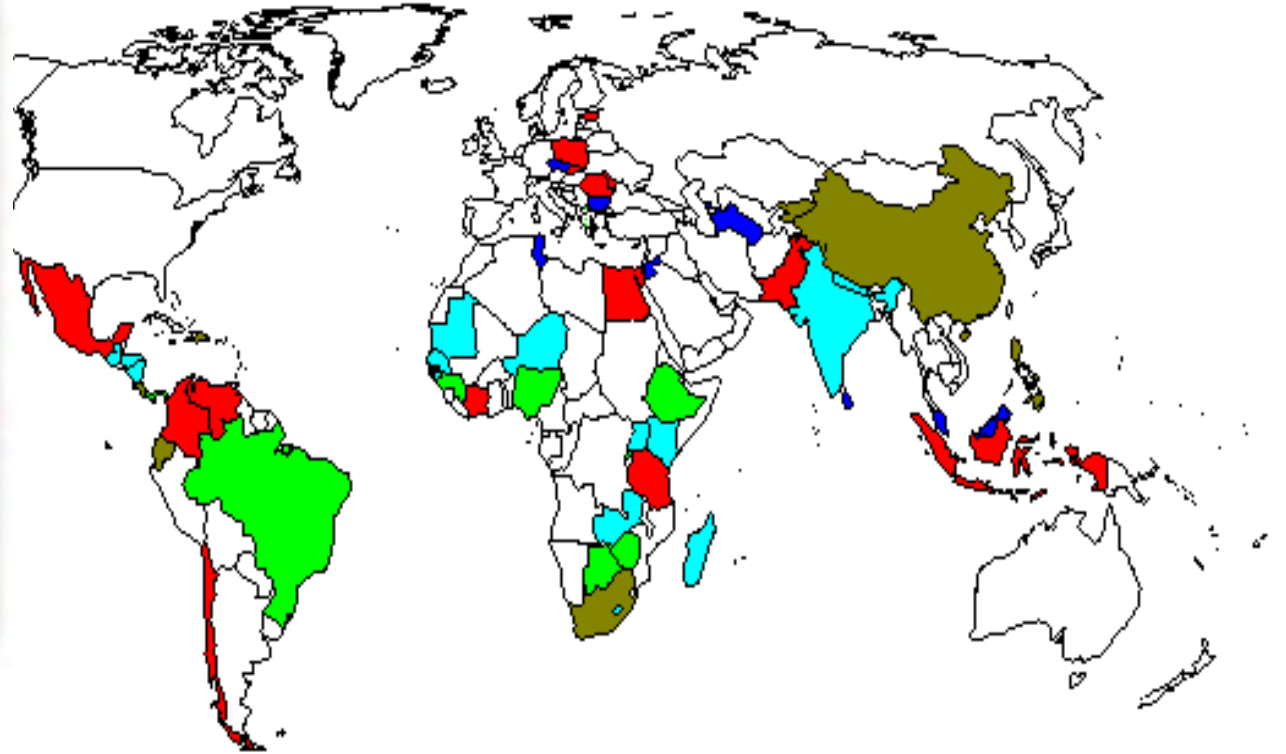


Population below poverty line

	more than 40%	(16)
	25% - 40%	(7)
	16% - 24%	(8)
	6% - 15%	(13)
	5% or less	(15)
	no data	(140)

Source: OECD, World Bank

Poverty Gap Index or H*I



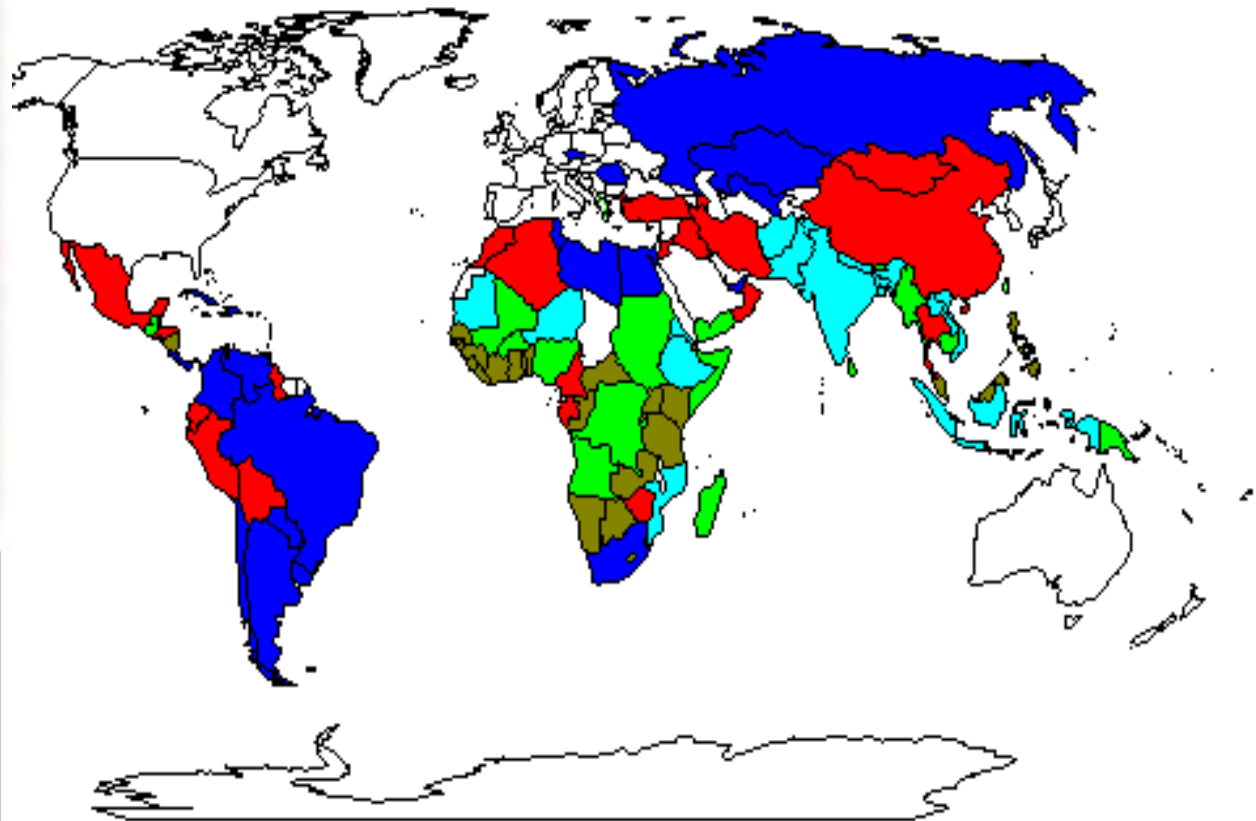
Poverty gap

15% or more	(14)
10% - 14%	(8)
5% - 9%	(7)
1% - 4%	(14)
less than 1%	(8)
no data	(148)

Incidence times Depth of Poverty H^*I

Source: OECD, World Bank

nutrition



Child malnutrition

40% or more	(13)
30% - 39%	(17)
20% - 29%	(27)
10% - 19%	(28)
less than 10%	(32)
no data	(82)

Child Malnutrition: Prevalence of Underweight Under 5 -- Source: OECD, World Bank

Give direct targeted thatched roofs in Africa (these are in Scotland):



Give direct targeted thatched roofs in Africa (these are in Scotland):



Poverty Measures Spring 2012

Crofts from the Ilse of Skye from Colbost Croft Museum