Is Global Inequality Really Falling?

Martin Ravallion

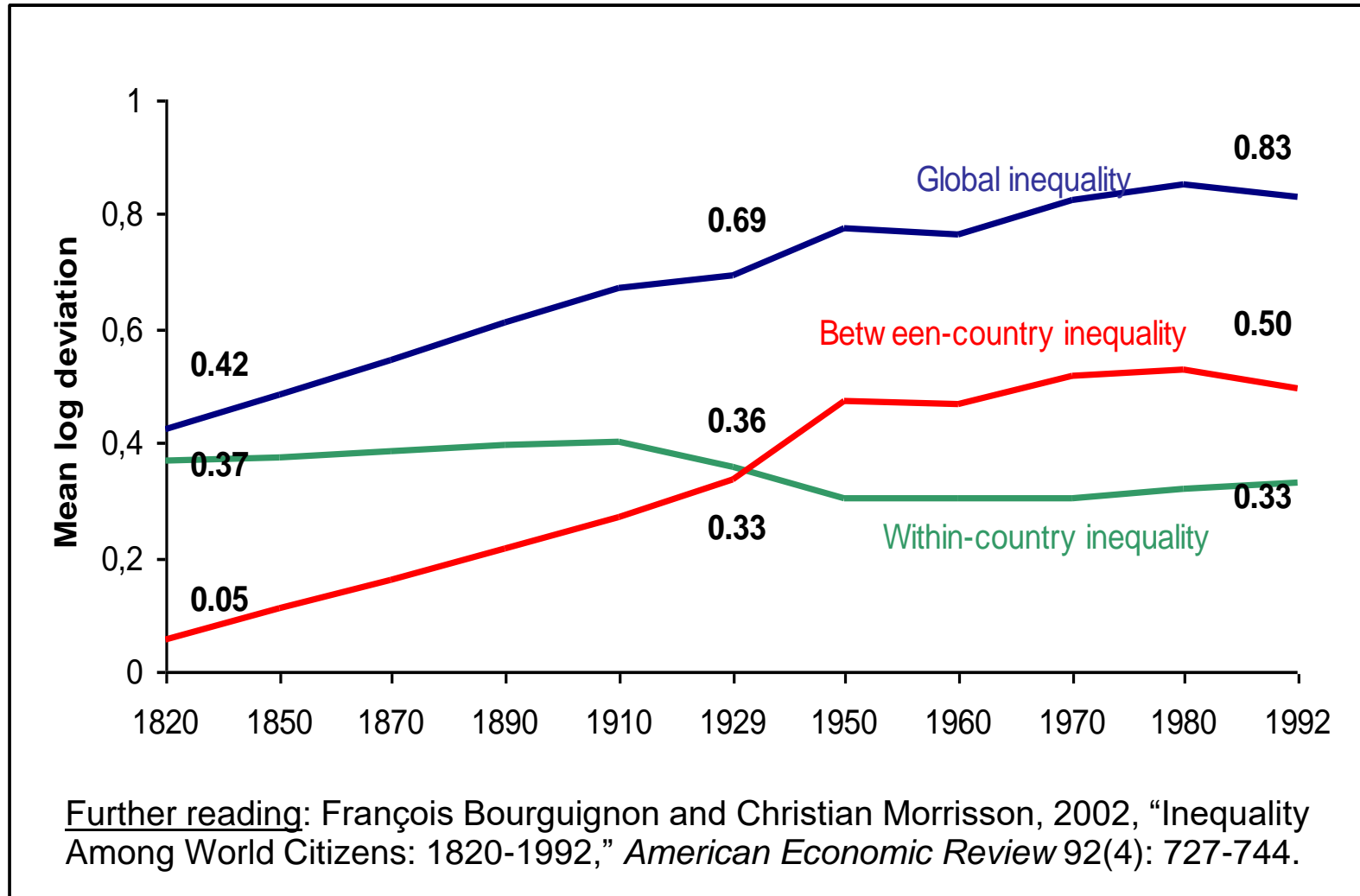Georgetown University

Defining "global inequality"

- The prevailing approach pools all incomes in the world and measures inequality in this global distribution the same way one measures inequality within one country.

- This has been dubbed the "cosmopolitan approach" in that everyone in the world is treated the same way (Caney, 2005; Nagel, 2005; Brandolini and Carta, 2016).

A (super) short history of global inequality

- Standard measures (such as Gini) imply rising global inequality from 1820-1990 (Bourguignon and Morrisson, 2002).
  - Driven mainly by divergent growth processes: today's rich world takes off from the early C19th (though some late starters). =>

- The pattern changed dramatically around 1990. Falling global inequality measures in the new Millennium (Bourguignon, 2015; Lakner and Milanovic, 2016; Milanovic, 2015, 2016).
  - Driven by convergent growth, esp., high growth in Asia. =>

Global inequality over 200 years
Between-country ineqality has become more important

Further reading: François Bourguignon and Christian Morrisson, 2002, "Inequality Among World Citizens: 1820-1992," *American Economic Review* 92(4): 727-744.

Global inequality since 1990 and its between- and within-country components

Total global inequality

Inequality between countries

Inequality within countries
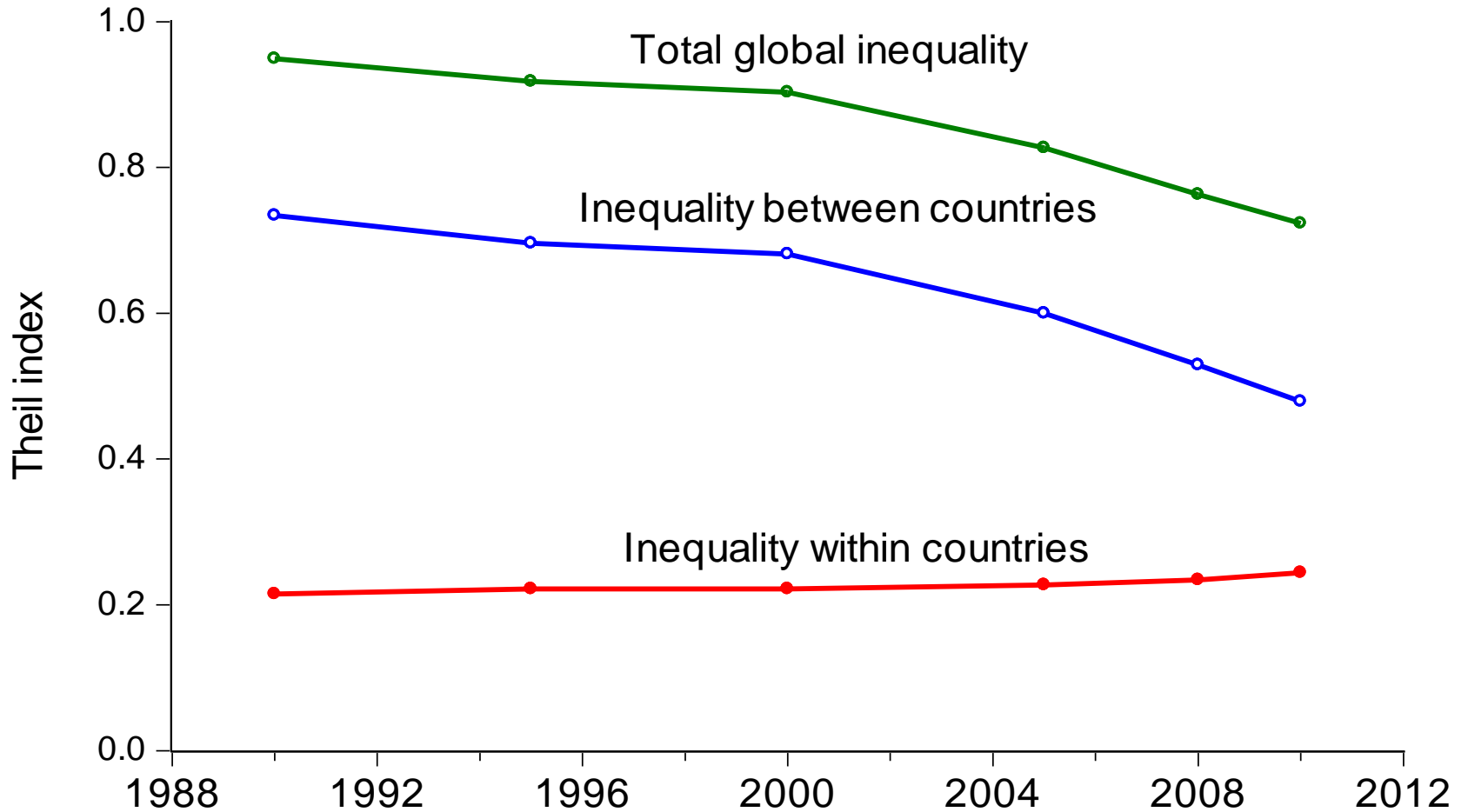
Source: Bourguignon, *Globalization of Inequality*, 2016.

Developing world only
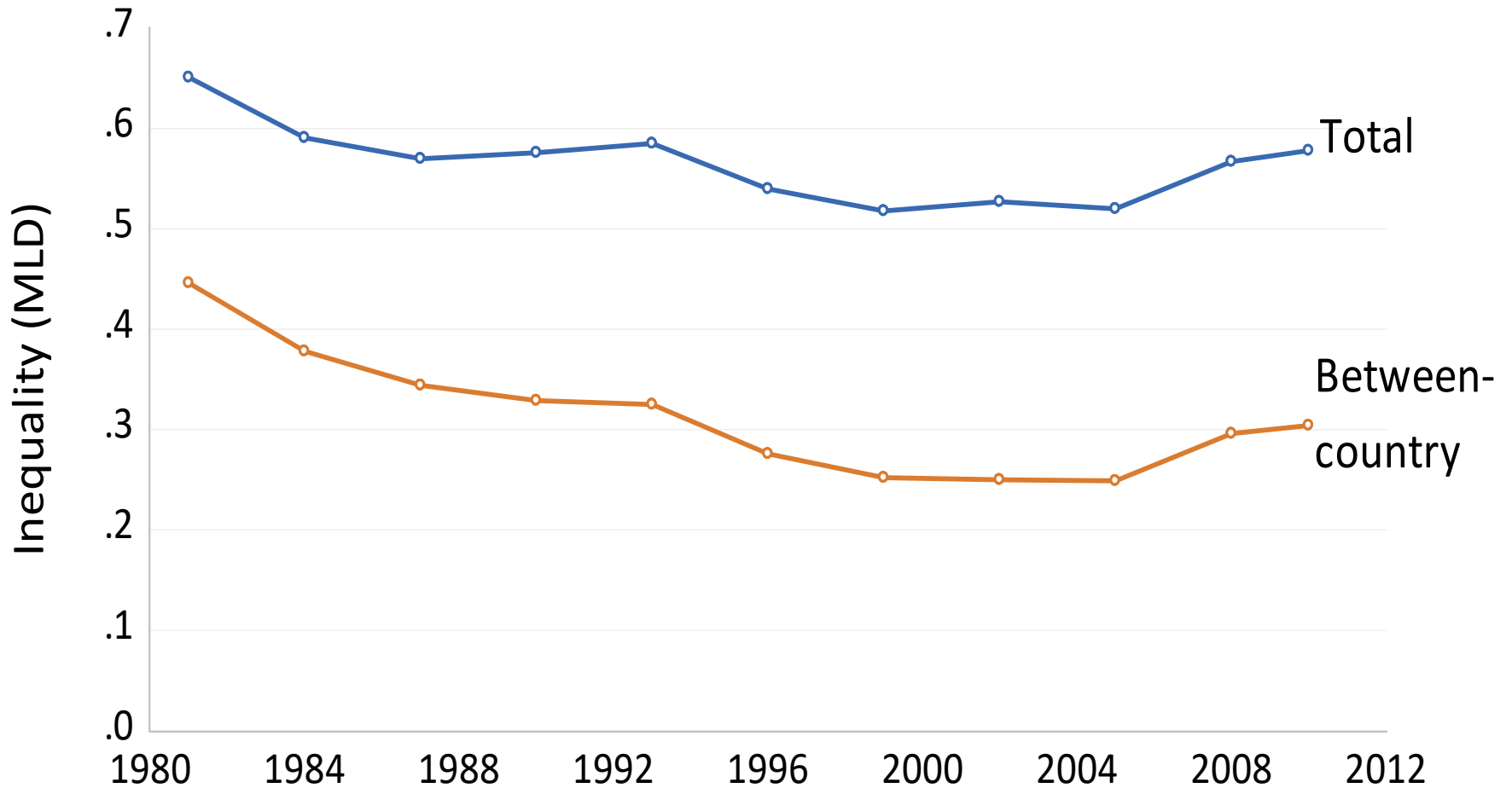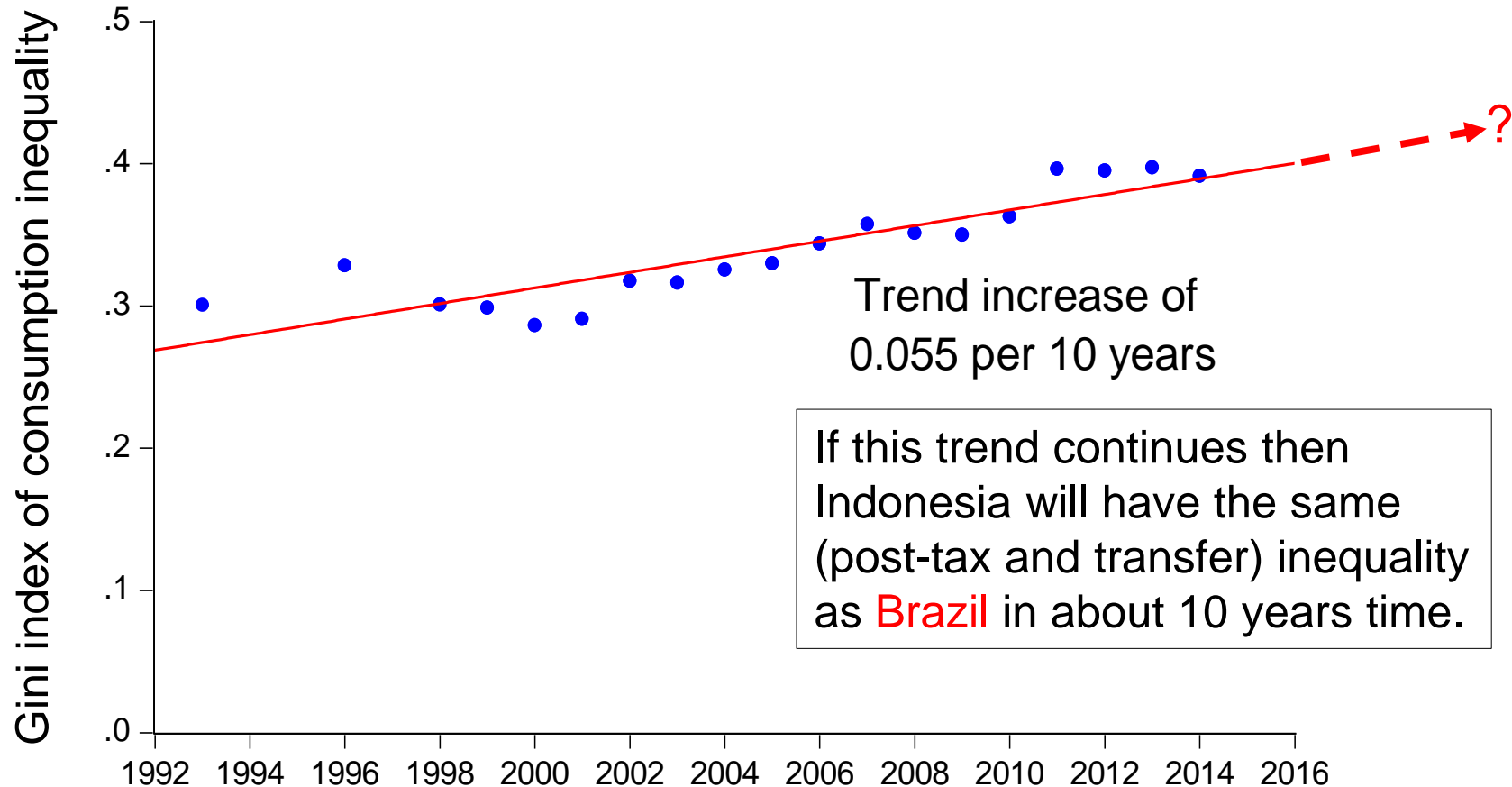

Source: Own calculations

Rising inequality within many developing countries

- At the same time, average inequality <u>within</u> countries has edged upwards since 2000.

- Famous examples of China (though signs of stabilization) and India. Also some newcomers to the camp. For example: =>

- Also signs of inequality convergence: tends to rise when low, fall when high.

  – Neoclassical growth and/or policy convergence?

This paper…

Example: Rising inequality in Indonesia

After long period of stable/declining inequality since 1970

Trend increase of
0.055 per 10 years

If this trend continues then Indonesia will have the same (post-tax and transfer) inequality as Brazil in about 10 years time.

# Is this stylized fact robust to how one measures global inequality?

- One might simply abandon the cosmopolitan approach. "Foreigners don't matter as much." => political nationalism.
  - Rawls (1999): people in rich countries only have a moral obligation to help those in poor countries when the latter are not well governed.
  - Yes, nations exist and their governments address inequality within their borders (and beyond).
  - The institutional fact of nation states and the limitations of global institutions constrain what global redistribution can be achieved.
- However, the moral case is strong for a cosmopolitan perspective on "global inequality"—a perspective that values all people of the world equally, no matter where they may happen to have been born (Nagel, 2005; Singer, 2010).

- I will stay within the cosmopolitan approach.

Three reasons one might question that global inequality is falling

1. Lorenz dominance?

2. Absolute vs relative?

3. Relative deprivation?

1. Lorenz dominance?

No Lorenz dominance
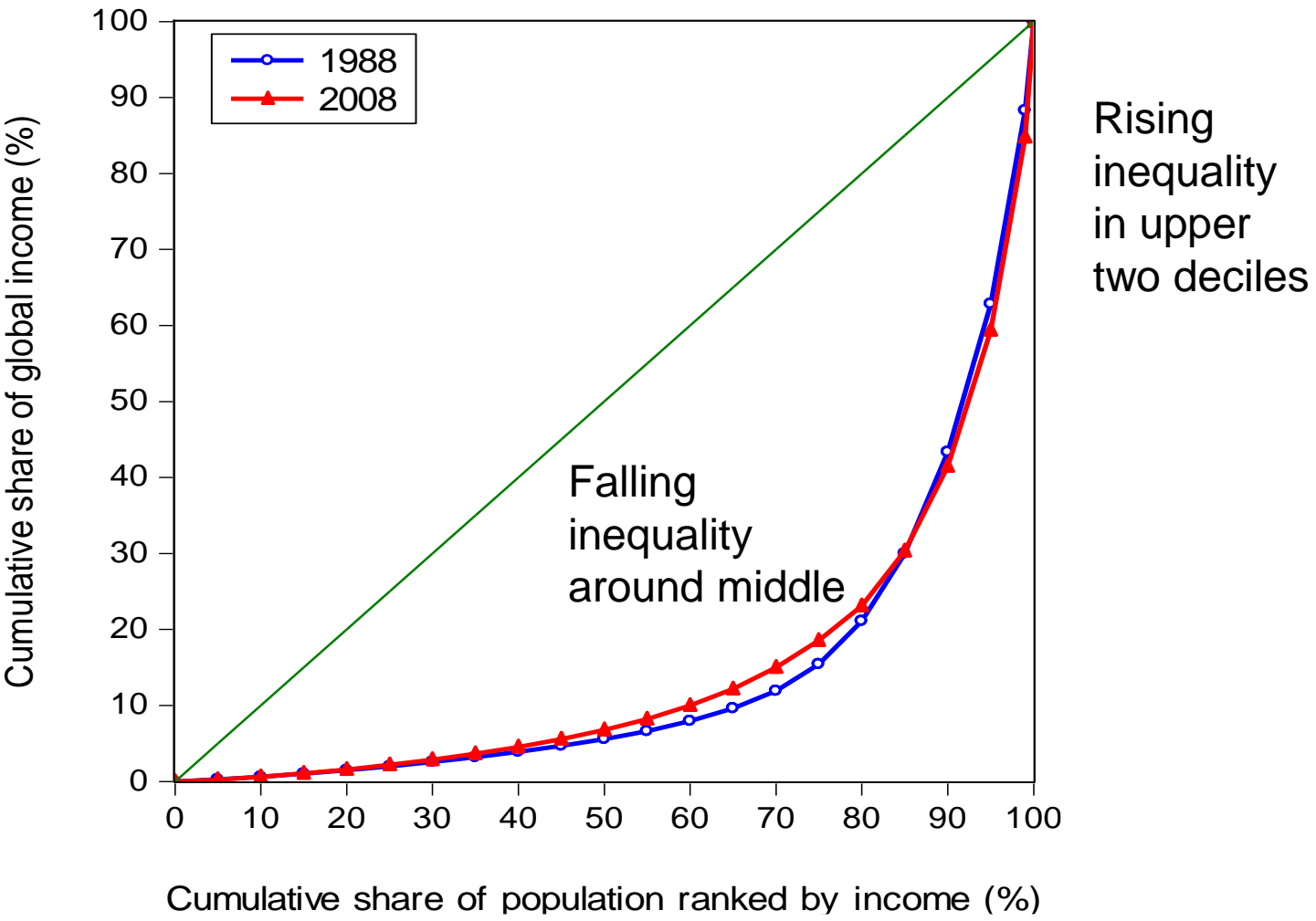
An ambiguous change in global inequality

- Marked inward shift of the Lorenz curve between the 30th and 80th percentiles + outward shift among the top decile + declining share for the poorest 5%.

- Atkinson index: $1 - \left(\sum_i w_i (\frac{y_i}{\bar{y}})^{1-\varepsilon} \right)^{1/(1-\varepsilon)}$

- Global inequality has risen over this period for $\varepsilon \geq 5$ (Ravallion, 2018).

- Rising global inequality if one holds a sufficiently strong ethical aversion to high-end inequality.
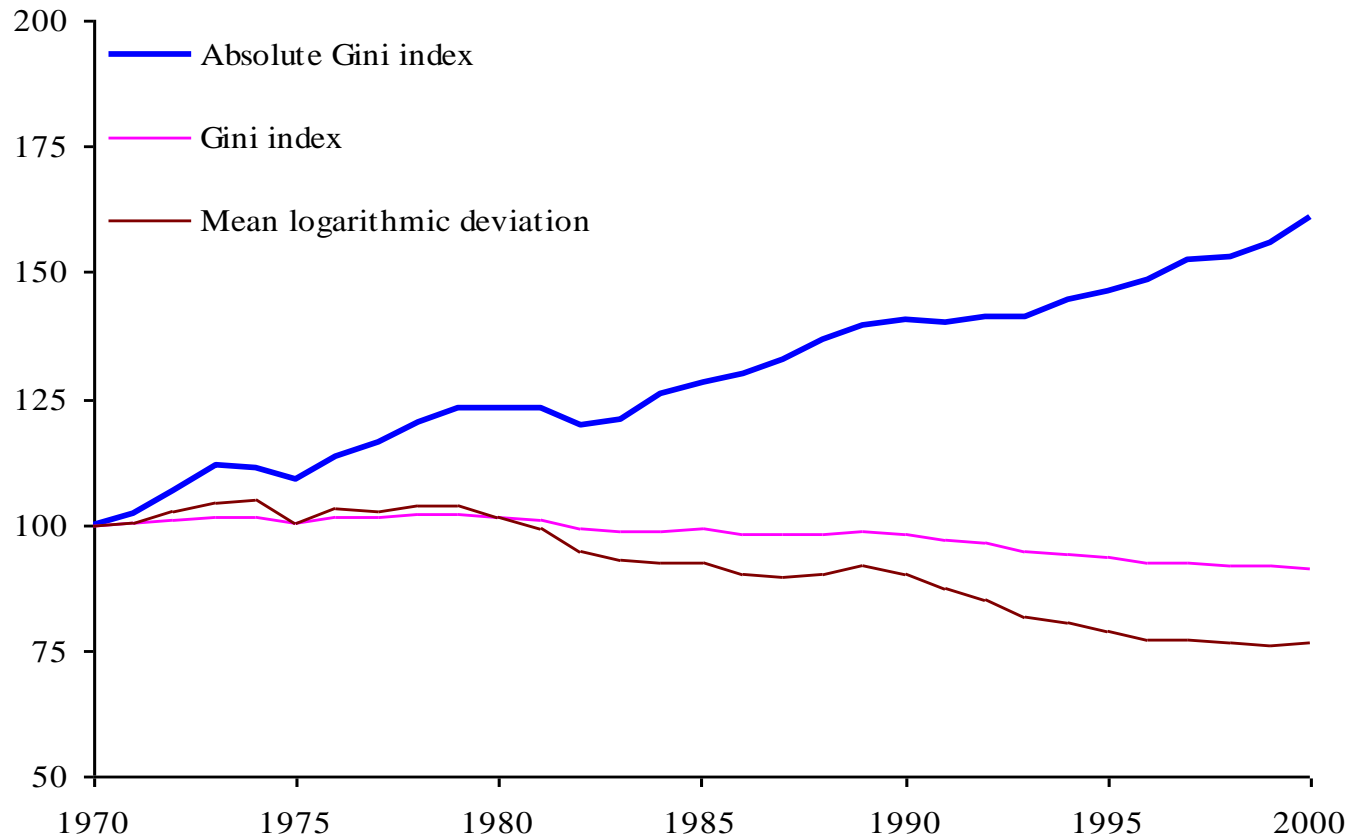
2. Absolute vs relative inequality

Scale independence?

- "Scale independence axiom" is an axiom, and it is not universally accepted.

- Absolute inequality matters more to many people.
  - Which has more inequality in your view?
    - State A: (1, 2, 3)
    - State B: (2, 4, 6)
  - Roughly half the students asked say that State B has higher inequality. Yet (relative) inequality measures (such as Gini) say that there is no difference. => Georgetown example

- Perceptions on the ground often differ to the numbers quoted by economists and statisticians!

- Relaxing scale independence ("translation invariance") the picture changes dramatically =>

My Georgetown students

Distribution		Which has higher inequality?			
A	B	A	B	Neither	N
(1,2,3)	(2,4,6)		Absolutist 56%	Relativist 40%	388
(1,2,3)	(2,3,4)	Relativist 44%	5%	Absolutist 51%	385
(1,2,3)	(3,1,2)	3%	4%	A and R 93%	388
(1,2,3)	(1,2,4)	3%	A and R 96%	1%	394
(2,4,6)	(4,8,12)	4%	Absolutist 57%	Relativist 38%	389
(2,4,6)	(4,6,8)	Relativist 46%	9%	Absolutist 46%	389
(2,4,6)	(3,4,5)	A and R 91%	2%	7%	388

16

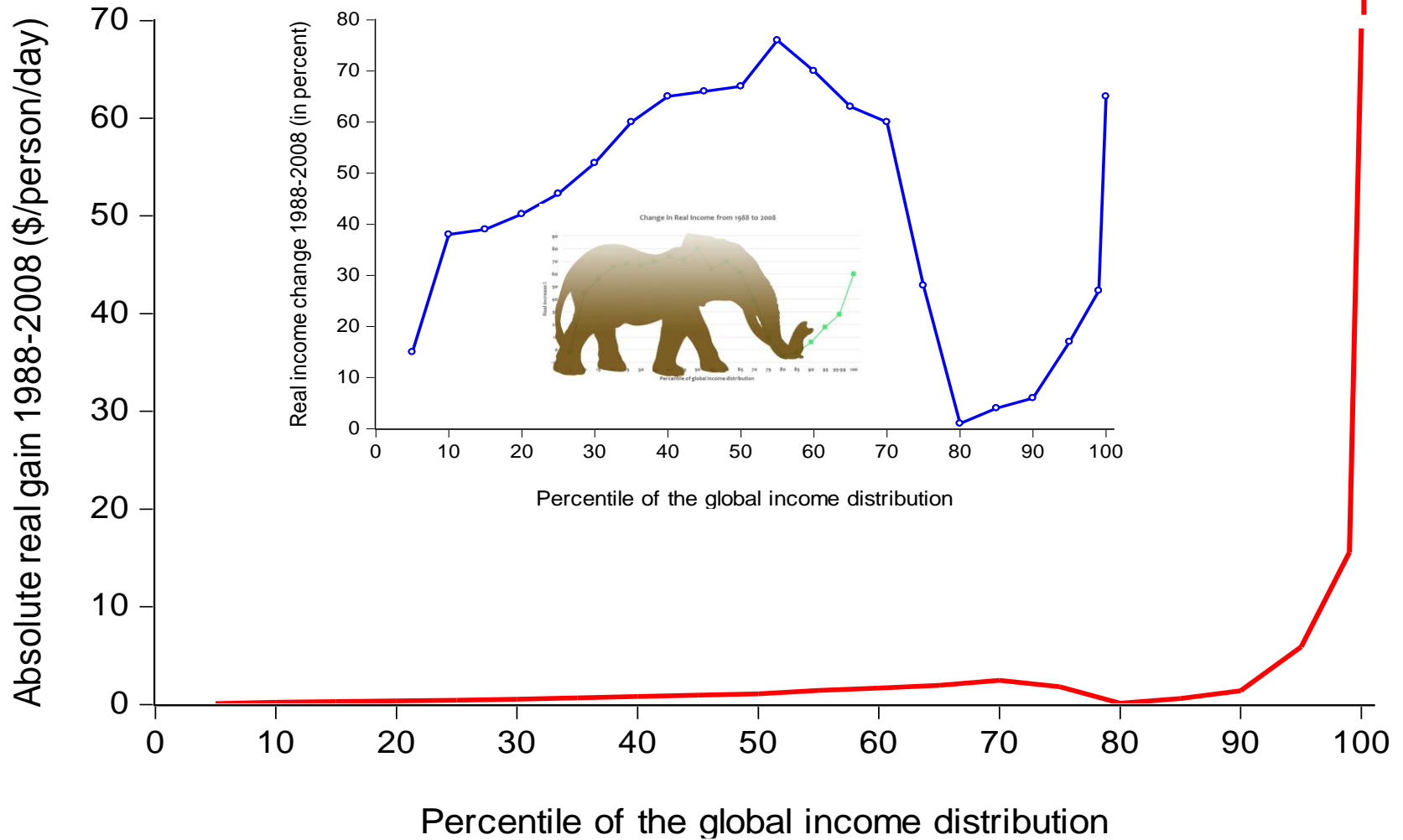# A less unequal world?
Absolute vs relative inequality

'Source: Atkinson and Brandolini (2004).

Source: Atkinson, Anthony and Andrea Brandolini. 2004. "Global Income Inequality: Absolute, Relative or Intermediate?", Paper presented at the 28th General Conference of the International Association for Research on Income and Wealth.

Elephant or serpent?

?

Absolute real gain 1988-2008 ($/person/day)

Percentile of the global income distribution

Real income change 1988-2008 (in percent)

Percentile of the global income distribution
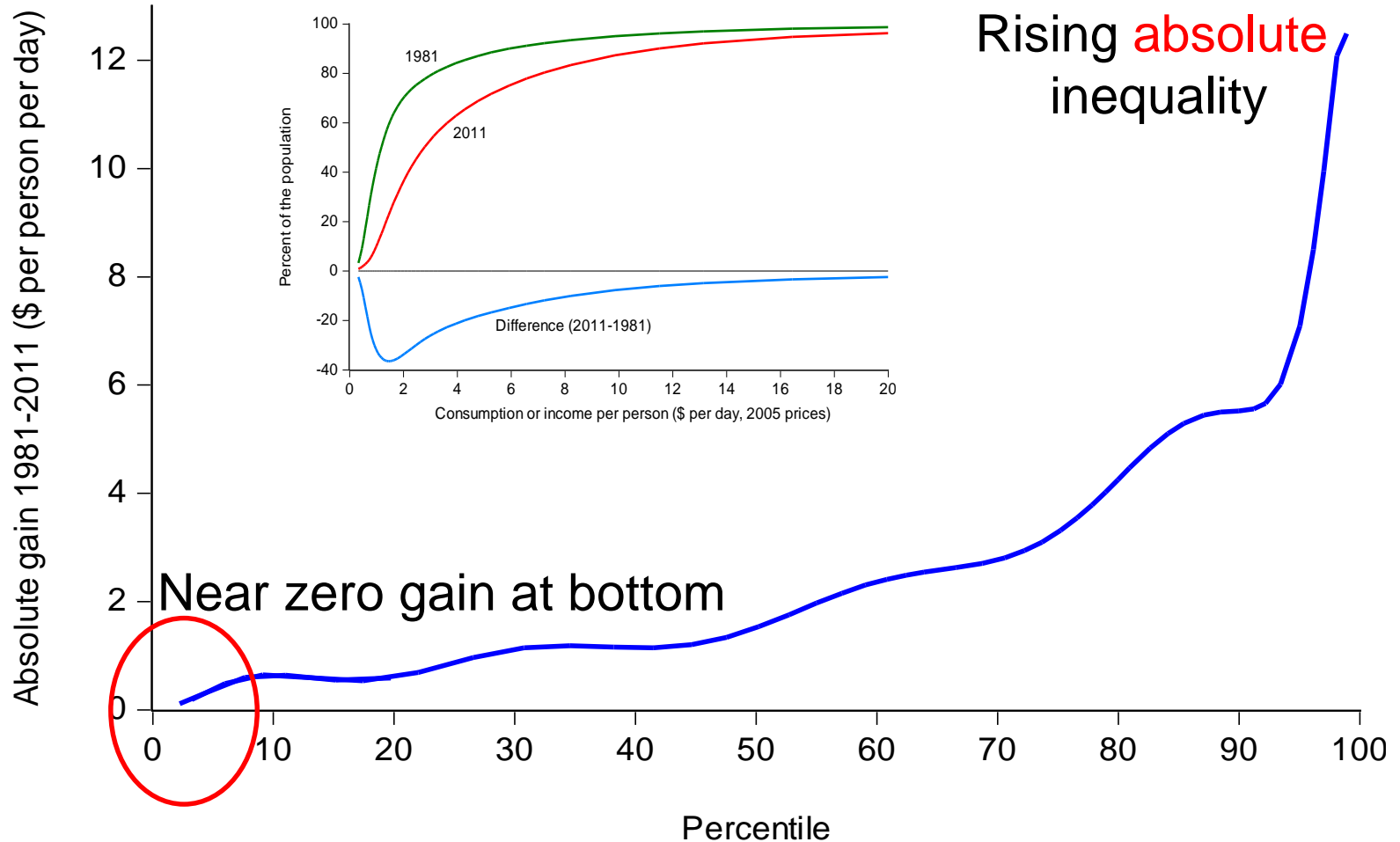
One aspect of rising absolute inequality: Poorest left behind

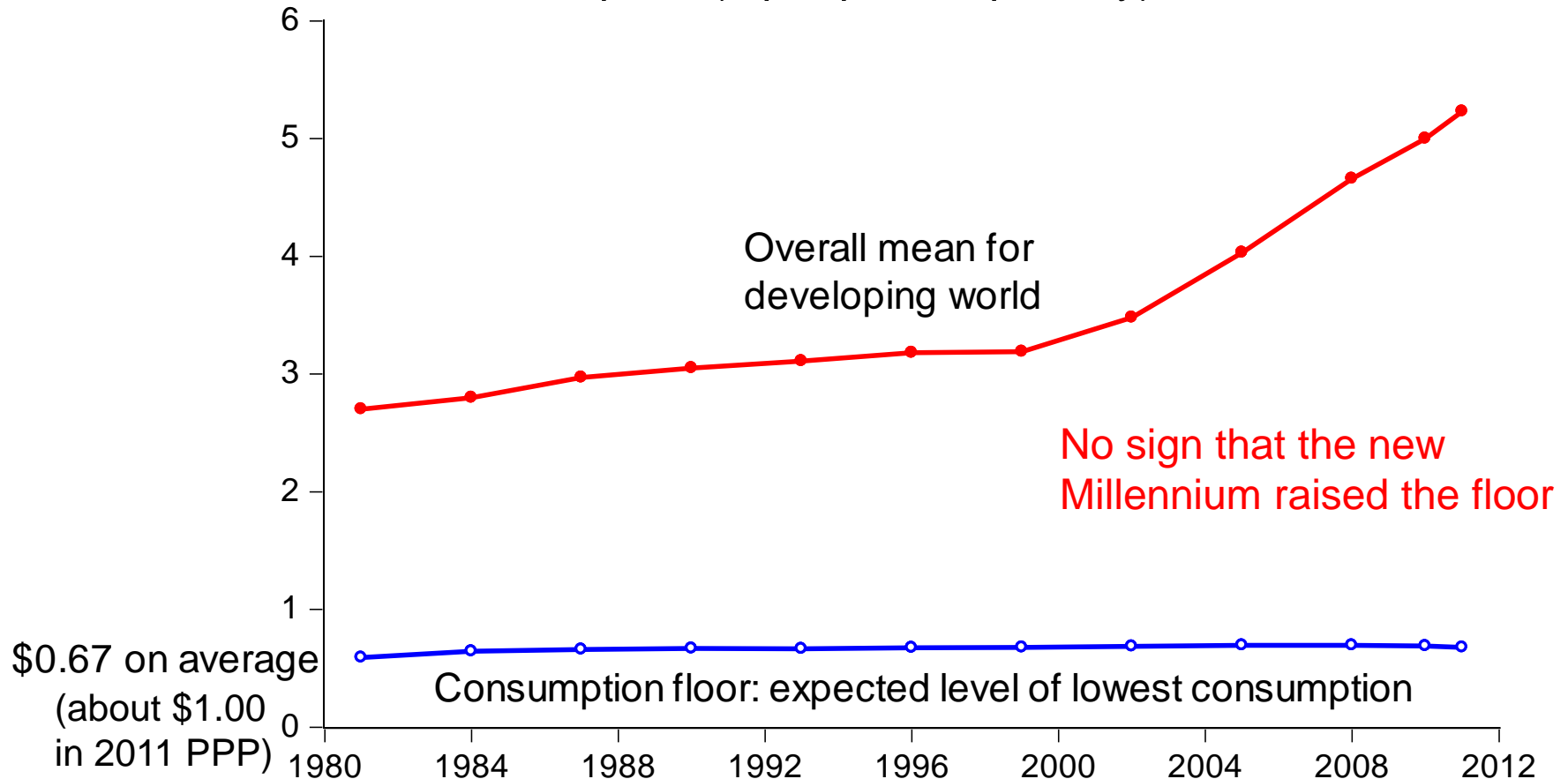# Yes, the poorest have been left behind!
Fewer people living near the floor, but little change in the floor

Rising absolute inequality

Near zero gain at bottom

Absolute gain 1981-2011 ($ per person per day)

Percentile

Inset figure axes:
Percent of the population

1981

2011

Difference (2011-1981)

Consumption or income per person ($ per day, 2005 prices)

Much less progress in raising the consumption floor globally

Mean consumption ($ per person per day)

Overall mean for developing world

No sign that the new Millennium raised the floor

$0.67 on average (about $1.00 in 2011 PPP)

Consumption floor: expected level of lowest consumption

Example: Indonesia's progress in lifting the floor

Mean consumption ($ per person per day; 2011 PPP)

Overall mean for Indonesia

Elasticity=0.3

Consumption floor
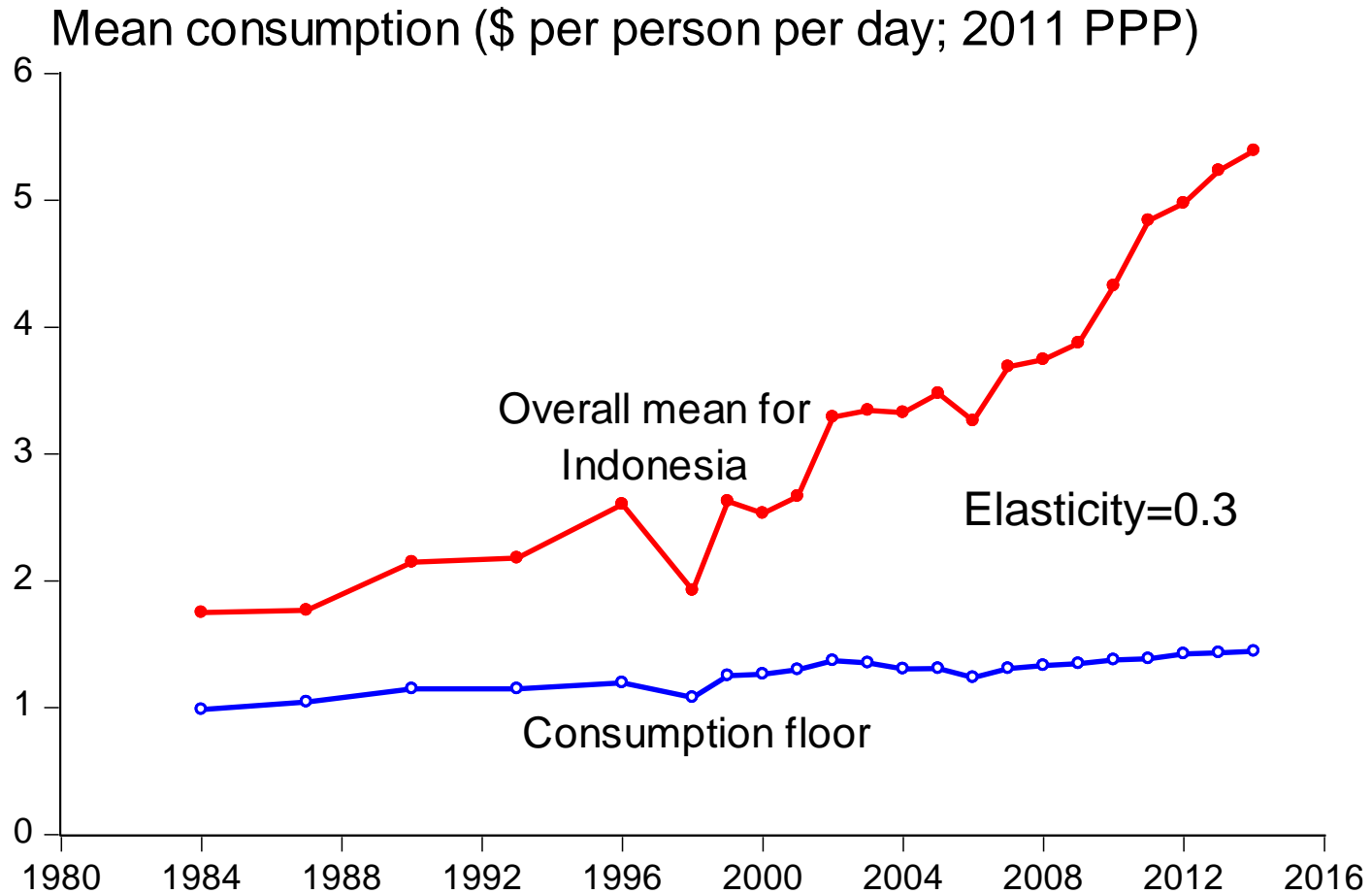
3. National income can matter, negatively or positively

Limitations of standard measures of real income

- In the standard approach to measuring global inequality, mean national income only matters in so far as it influences individual own income, as measured in surveys.

- It is plausible that the country of residence matters to personal income. This is the instrumental case for why national income matters.

- The key assumption is that national income does not matter to individual real income at given own income as measured in surveys.

- There are reasons to question this exclusion restriction.

Relative income hypothesis => Negative effect of living in a richer country

- This postulates that individual welfare depends on how the individual is doing relative to a set of comparators.

- In this context, a higher mean in the country of residence is taken to give disutility at given own-income through perceptions of relative deprivation.

- In sociology: Davis (1959) and Runciman (1966).

- In economics: Duesenberry (1949), Easterlin (1974), Frank (1985), and Clark et al. (2008).

- Rayo and Becker (2007): such utility functions can emerge endogenously (interpreted as the end-point of an evolutionary process) given the difficulty in distinguishing close options and the boundedness of happiness.

But also arguments for a <u>positive</u> welfare effect of higher mean at given own income

- Limitation of the measures used for "own-income"
  - We would ideally measure real income over a longer time period than that for which current income is measured in surveys.
  - Access to public non-market goods is typically excluded.
- Higher national mean may reflect higher longer-term welfare.
- Wagner's Law: Richer countries have better public services (Musgrave, 1969; Peacock and Scott, 2000; Akitoby et al., 2006; Afonso and Alves, 2017).
- People in richer countries tend also to be better protected from risk and less prone to costly forms of civil conflict.

Evidence from data on self-assessed welfare

- Most (published) studies within countries support for relative income hypothesis
  - Luttmer, 2005; Graham and Felton, 2006; Knight et al. 2009; Layard et al., 2010; Ravallion and Lokshin, 2010; Clark et al., 2017.
- What about between countries? Global studies of SW suggest that it is higher in richer countries at given own income
  - Di Tella and MacCulloch, 2010; Diener et al., 2010; Diener-Tay, 2015.
- However, these studies cannot tell us whether the effect of higher national income is internal (via own income) or external (at given own income).
- Those studies that include both "own income" and "national income" indicate a positive effect of the latter
  - Helliwell, 2008; Helliwell et al., 2010; Diener et al., 2013.

Individual real income when mean matters

- Let $y_{ijt} > 0$ denote the income of household *i* in country *j* at time *t*. We can treat y_{ijt} as a continuous random variable, and also presume that its values have been normalized for prevailing prices.

- Let m_{jt} be the corresponding mean in country *j* where m_t is the global mean with a global population size of n_t.

- Global inequality is then measured here for the distribution of mean-adjusted real income y^*_{ijt} defined by:

$$\ln y^*_{ijt} \equiv \ln y_{ijt} + \alpha \ln m_{jt}$$

- The literature on global subjective welfare suggests $\alpha \in (0.3, 0.5)$.

Measure of inequality: MLD

- Mean-log deviation (MLD)=log of mean income less the mean of log income.

- Unlike the Gini index, MLD is additively decomposable by population sub-groups.

- MLD is the only measure that satisfies both the Pigou-Dalton transfer axiom and the Monotonicity in Distance axiom of Cowell and Flachaire (2017).

  – Monotonicity in Distance axiom says that, when comparing two distributions that differ in one person's income, the greater the distance from equality, the higher the inequality.

MLD based on adjusted income

- The MLD based on the distribution of y_{ijt}^* over all i, j is:

$$L(\alpha)_t = \sum_i \sum_j \ln(m_t^*/y_{ijt}^*)/n_t$$

- Decomposability: $L(\alpha)_t = L^B(\alpha)_t + L^W(\alpha)_t$ where

$$L^B(\alpha)_t = \sum_j s_{jt} \ln(m_t^*/m_{jt}^*)$$
$$L^W(\alpha)_t = \sum_j s_{jt} L(\alpha)_{jt}$$

- where $L(\alpha)_{jt} = \sum_i \ln(m_{jt}^*/y_{ijt}^*)/n_j$ and $s_{jt} = n_{jt}/n_t$ is the population share of country j.

- The standard approach in the literature is the special case:

$$L(0)_t = \sum_i \sum_j \ln(m_t/y_{ijt})/n_t$$

- By contrast, when $\alpha = -1$ global inequality is average inequality across countries (noting that $L^B(-1)_t = 0$).

  – This is "nationalistic": no weight on inequality between countries.

Properties of the new measure

- Property 1: Only between-country component changes: All incomes within a given country are multiplied by a constant (m_{jt}^{α}). So under the scale-independence axiom, the within-country component of global inequality is independent of α; all that changes is the between-country component.

- Property 2: Stronger monotonicity: $L(\alpha)_t$ is a strictly increasing function of α (as long as m_{jt} varies across countries).

Data

- HH survey data in World Bank's *PovcalNet*, the Luxembourg Income Study (LIS) and the European Union Statistics on Income and Living Conditions (EU-SILC).

- 44 countries, being all those with two surveys.

- Consumption is used in preference to income when there is a choice; consumption is used for about two-thirds of countries.

- The relevant national mean income is taken to be the mean household income from the surveys.

- Country-specific CPIs to convert to a common base year, 2011, and survey means in local currency units are converted to $s at 2011 purchasing power parity (PPP) for consumption.

Global inequality measures 1993-2012

		1993		2012		Change in MLD
		MLD $(L(\alpha))$	Between country share	MLD $(L(\alpha))$	Between country share	(2012-1993)
Using observed incomes:		1.028		0.761		-0.267
Of which:	between-country component:	0.777		0.479		-0.298
	within-country component:	0.251		0.282		0.031

		1993		2012		Change in MLD
		MLD $(L(\alpha))$	Between country share	MLD $(L(\alpha))$	Between country share	(2012-1993)
	$\alpha=$					
	-1	0.251	0.00	0.282	0.00	0.031
	-0.8	0.278	0.10	0.300	0.06	0.021
	-0.6	0.366	0.32	0.355	0.20	-0.012
	-0.4	0.522	0.52	0.449	0.37	-0.073
With an intrinsic value on national income (MLD for various α):	-0.2	0.745	0.66	0.585	0.52	-0.160
	0	1.028	0.76	0.761	0.63	-0.267
	0.2	1.361	0.82	0.975	0.71	-0.386
	0.4	1.731	0.86	1.221	0.77	-0.510
	0.6	2.129	0.88	1.495	0.81	-0.634
	0.8	2.547	0.90	1.793	0.84	-0.754
	1	2.978	0.92	2.110	0.87	-0.869

Falling global inequality for $\alpha \geq= -0.6$
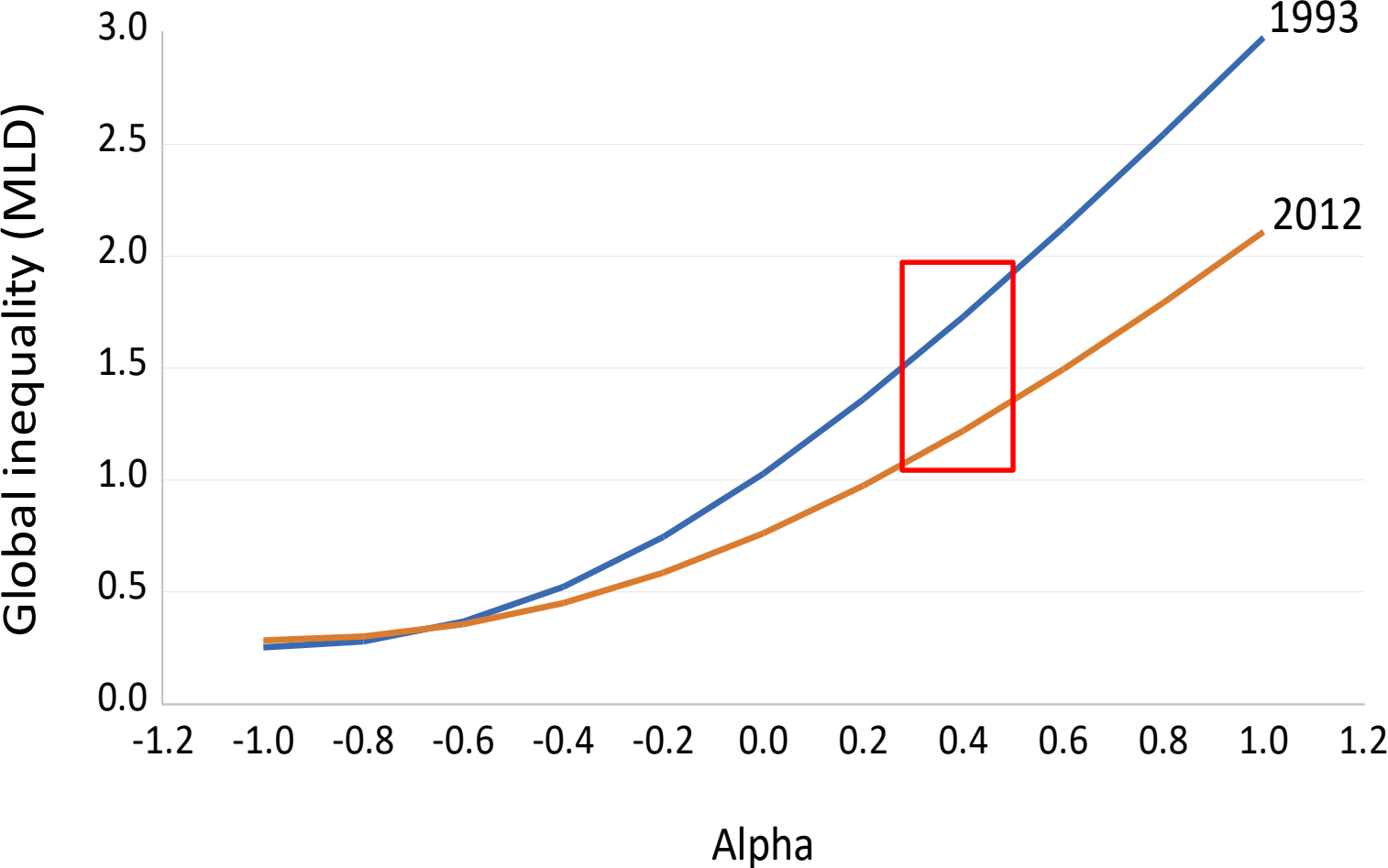
Summary of findings 1

- If one defines economic welfare in terms of relative income alone then one sees far less inequality in the world than if one puts a sizeable value on the external benefits of living in a richer country.

- However, this changes dramatically when one allows a positive value of national income (at given own-income), such as when living in a richer country brings benefits in terms of access to non-market goods and services, and better opportunities for private support in times of need.

Summary of findings 2

- The national income effect could well be 50% or more of the own-income effect on subjective wellbeing.

- Then global inequality is far higher than prevailing measures suggest, and far higher than found in even the most unequal country.

- The differences in levels of inequality due to this swamp the differences seen over time in standard measures, or the differences we see between countries,

- … and are also large relative to the impact of even a substantial underestimation of the incomes of the very rich.

Summary of findings 3

- The stylized fact that overall inequality has been falling since around 1990 is not robust,

- ...though one only finds rising inequality with a high negative weight on national income, such as due to relative deprivation.

- The finding of falling between-country inequality since 1990 is robust whatever value (positive or negative) one attaches to national income in assessing individual economic welfare.

Conclusions

- The claim that global relative inequality has been falling over the last 30 years (based on "own incomes") is not robust to…

1. the degree of ethical aversion one has to high-end inequality.

2. relaxing the scale independence axiom; rising absolute inequality; poorest left behind.

- Nor is it robust to allowing national income to matter, although only if one adopts an implausibly high degree of concern about relative deprivation within countries.