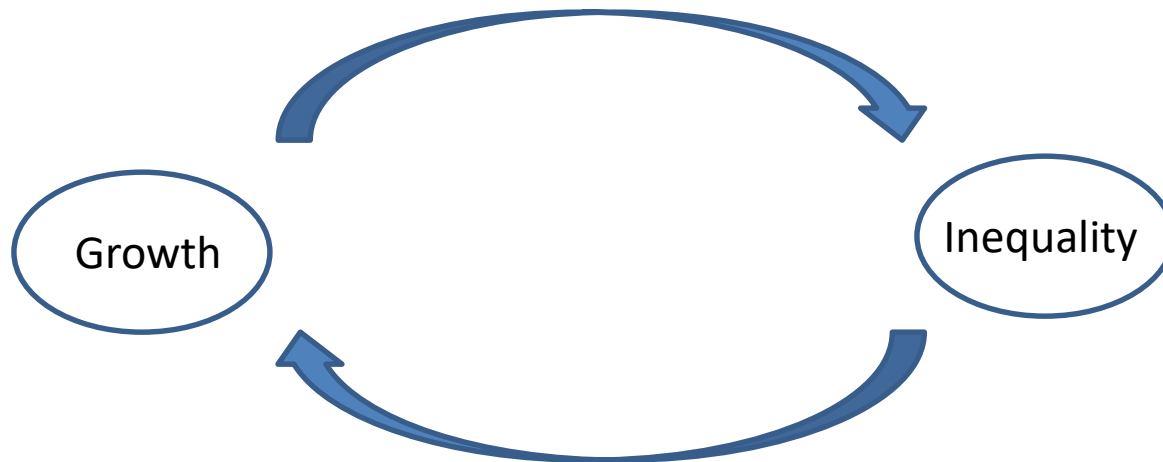# Economic Inequality and Economic Growth: a primer

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The World Bank

"New Challenges to Growth and Productivity"
The Growth Dialogue / G-24 Conference
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# The question

- How are economic growth and income inequality related?
  - Is there something about the growth process which systematically leads to a pre-determined inequality trajectory?
  - Conversely, does the degree of initial inequality shape the nature and rate of future growth?

# The question

- How are economic growth and income inequality related?
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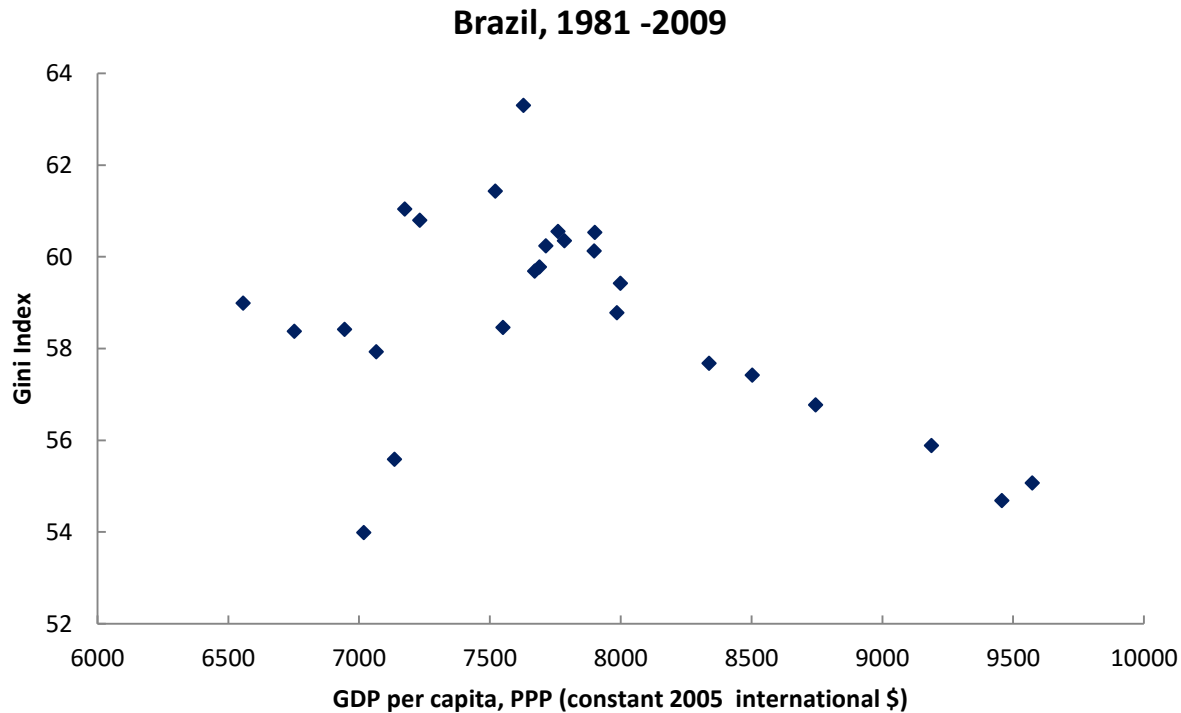  - Conversely, does the degree of initial inequality shape the nature and rate of future growth?
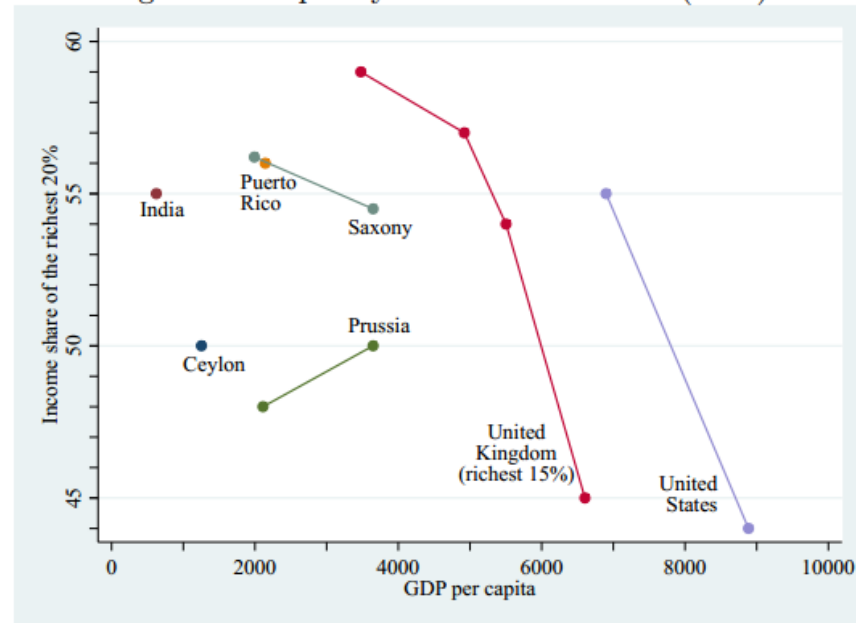
# The "Kuznets direction"

- Kuznets (1955): "suggestive" evidence of an inverted-U curve, predominantly from Germany, the UK and US.
  - Possible mechanism: structural change `a la Lewis (1954)

**Brazil, 1981 -2009**



Source: World Development Indicators

# The "Kuznets direction"

- But there is no evidence that the inverted-U pattern holds systematically for most countries (Bruno, Ravallion and Squire, 1998).

- In fact, there wasn't much evidence even in the original article!



Figure 1: Inequality Data from Kuznets (1955)

n.b. GDP per capita estimates are from Maddison, 2010. The Puerto Rico GDP is for 1950 while the income share is for 1948. Prussia and Saxony use GDP estimates for Germany.

Source: Gallup, John. "Is There a Kuznets Curve?." (2012).

# The "Kuznets direction"

- Nor does it hold in the cross-section of countries

**Figure 1: Income levels and inequality around the world**
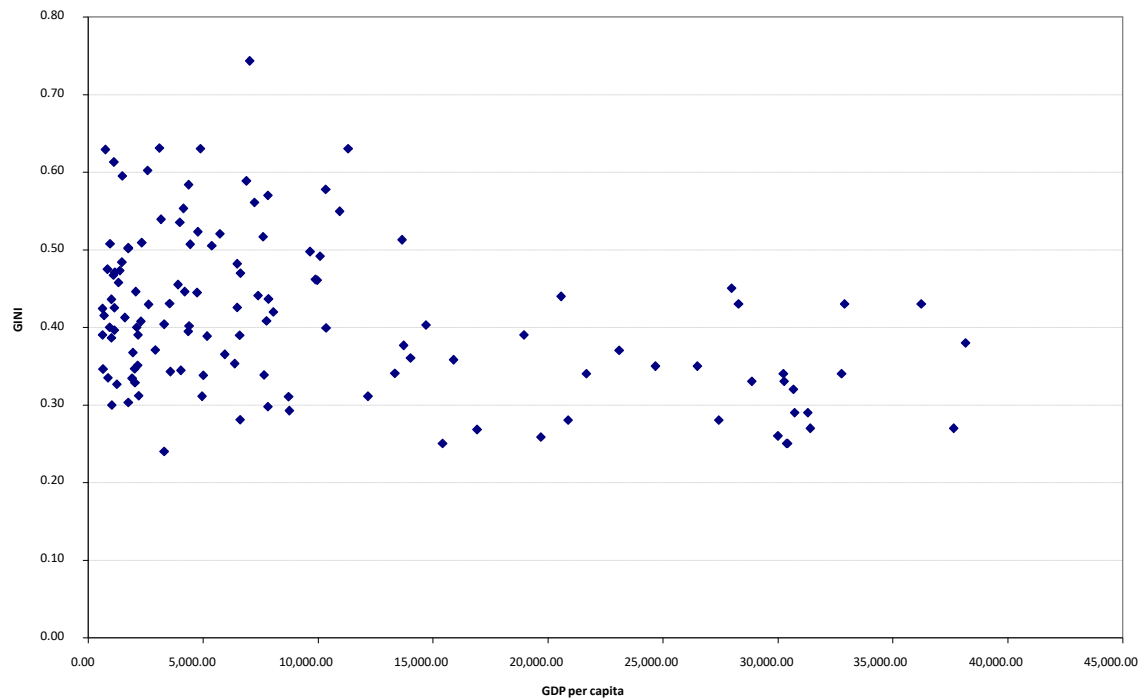


Gini range: 0.24-0.74
Correlation: -0.44

Source: Ferreira & Ravallion (2009)

# The "Kaldor direction"

- Inequality has been hypothesized to affect economic growth through various mechanisms:

  - Savings
    - Kaldor (1957)

  - Political economy
    - Alesina and Rodrik (*QJE*, 1994)
    - Persson and Tabellini (*AER*, 1994)
    - Bénabou (*AER*, 2000)

  - Credit constraints and investment indivisibilities
    - Banerjee and Newman (*JPE*, 1993)
    - Galor and Zeira (*REStud*, 1993)

  - Aggregate demand
    - Matsuyama (*JPE*, 2002)

  - Fertility
    - De la Croix and Doepke (*AER*, 2003)
    - Moav (*EJ*, 2005)

# The "Kaldor direction"

- Phase 1 - cross-section results: inequality is bad for growth

- Alesina and Rodrik (1994)
- Persson and Tabelini (1994)
- Deininger and Squire (*JDE*, 1998)

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TABLE I
GROWTH REGRESSIONS FOR 1960–1985

| | High-quality sample (N = 46) | | Largest possible sample (N = 70) | | Largest possible sample | | | |
| | | | | | (N = 49) | | (N = 41) | |
| | OLS (1) | TSLS (2) | OLS (3) | TSLS (4) | OLS (5) | OLS (6) | OLS (7) | OLS (8) |
|---|---|---|---|---|---|---|---|---|
| Const. | 3.60 (2.66) | 8.66 (3.33) | 1.76 (1.50) | 6.48 (2.93) | 3.71 (3.86) | 6.22 (4.69) | 6.24 (4.63) | 6.21 (4.61) |
| GDP60 | −0.44 (−3.28) | −0.52 (−3.17) | −0.48 (−3.37) | −0.58 (−3.47) | −0.38 (−3.61) | −0.38 (−3.25) | −0.39 (−3.06) | −0.38 (−2.95) |
| PRIM60 | 3.26 (3.38) | 2.85 (2.43) | 3.98 (4.66) | 3.70 (3.72) | 3.85 (4.88) | 2.66 (2.66) | 2.62 (2.53) | 2.65 (2.56) |
| GINI60 | −5.70 (−2.46) | −15.98 (−3.21) | 3.58 (−1.81) | −12.93 (−3.12) | | −3.47 (−1.82) | −3.45 (−1.79) | −3.47 (−1.80) |
| GINILND | | | | | −5.50 (−5.24) | −5.23 (−4.38) | −5.24 (−4.32) | −5.21 (−4.19) |
| DEMOC* GINILND | | | | | | | 0.12 (0.12) | |
| DEMOC | | | | | | | | 0.02 (0.05) |
| $\overline{R}^2$ | 0.28 | 0.27 | 0.25 | 0.26 | 0.53 | 0.53 | 0.51 | 0.51 |

The dependent variable is average per capita growth rate over 1960–1985. *t*-statistics are in parentheses. Independent variables are defined as follows:

GDP60: Per capita GDP level in 1960
PRIM60: Primary school enrollment ratio in 1960
GINI60: Gini coefficient of income inequality, measured close to 1960 (see Appendix for dates)
GINILND: Gini coefficient of land distribution inequality, measured close to 1960 (see Appendix for dates)
DEMOC: Democracy dummy.

Two-stage least squares regressions use GDP60, PRIM60, literacy rate in 1960, infant mortality in 1965, secondary enrollment in 1960, fertility in 1965, and an Africa dummy as instruments.

Table from Alesina and Rodrik (1994) →

# The "Kaldor direction"

- Phase 2:

Forbes (AER, 2000): With panel data, (recent) inequality is <u>good</u> for growth:

TABLE 3—REGRESSION RESULTS: ALTERNATE ESTIMATION TECHNIQUES

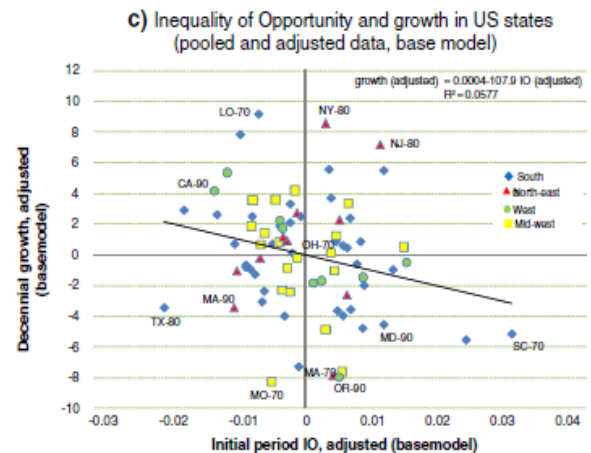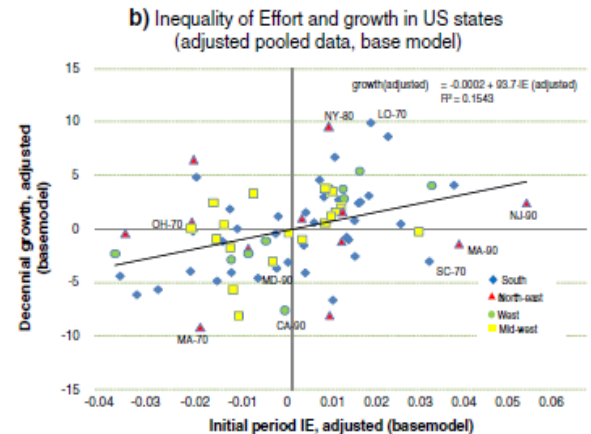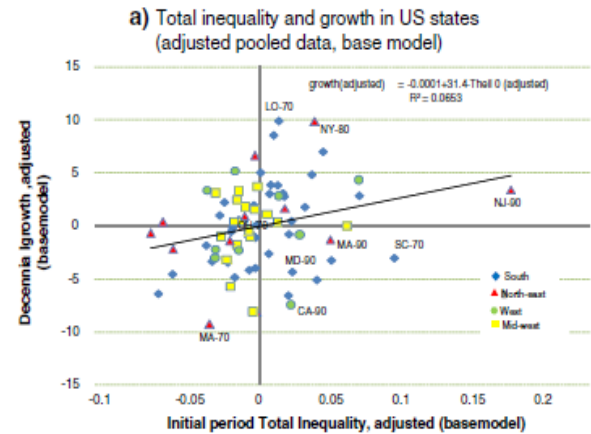| Estimation method | Five-year periods | | | | Ten-year periods: fixed effects (5) |
|---|---|---|---|---|---|
| | Fixed effects (1) | Random effects (2) | Chamberlain's $\pi$-matrix (3) | Arellano and Bond (4) | |
| *Inequality* | 0.0036 (0.0015) | 0.0013 (0.0006) | 0.0016 (0.0002) | 0.0013 (0.0006) | 0.0013 (0.0011) |
| *Income* | −0.076 (0.020) | 0.017 (0.006) | −0.027 (0.004) | −0.047 (0.008) | −0.071 (0.016) |
| *Male Education* | −0.014 (0.031) | 0.047 (0.015) | 0.018 (0.010) | −0.008 (0.022) | −0.002 (0.028) |
| *Female Education* | 0.070 (0.032) | −0.038 (0.016) | 0.054 (0.006) | 0.074 (0.018) | 0.031 (0.030) |
| *PPP* | −0.0008 (0.0003) | −0.0009 (0.0002) | −0.0013 (0.0000) | −0.0013 (0.0001) | −0.0003 (0.0003) |
| $R^2$ | 0.67 | 0.49 | | | 0.71 |
| Countries | 45 | 45 | 45 | 45 | 45 |
| Observations | 180 | 180 | 135 | 135 | 112 |
| Period | 1965–1995[a] | 1965–1995[a] | 1970–1995 | 1970–1995 | 1965–1995 |

*Notes:* Dependent variable is average annual per capita growth. Standard errors are in parentheses. $R^2$ is the within-$R^2$ for fixed effects and the overall-$R^2$ for random effects.

[a] Estimates are virtually identical for the period 1970–1995 (with 135 observations).

# The "Kaldor direction"

Phase 3:

- Easterly (JDE, 2007):
  - Inequality, instrumented by agricultural endowments, hurts growth

- Berg, Ostry and Zettelmeyer (JDE, 2012):
  - Inequality reduces the <u>duration</u> of high-growth spells

- Ravallion (AER, 2012):
  - Initial <u>poverty</u>, rather than inequality, is negatively associated with economic growth (and also with the growth elasticity of poverty)

- Marrero and Rodriguez (JDE, 2013):
  - When total income inequality is decomposed into "inequality of effort" and <u>inequality of opportunity</u>, the latter is negatively associated with subsequent growth



a) Total inequality and growth in US states (adjusted pooled data, base model)

b) Inequality of Effort and growth in US states (adjusted pooled data, base model)

c) Inequality of Opportunity and growth in US states (pooled and adjusted data, base model)

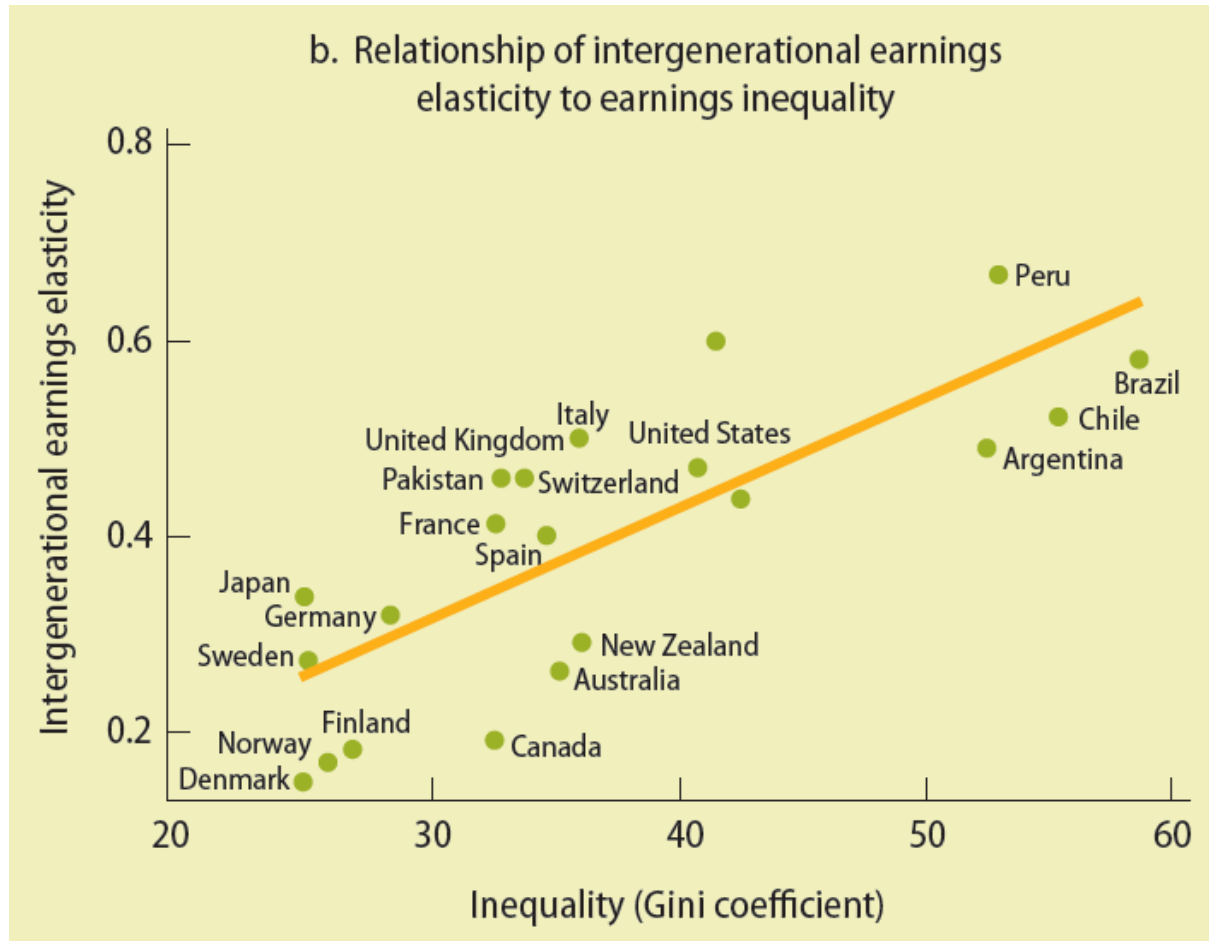# What about the "quality" of growth?

- Higher initial inequality attenuates the poverty-reducing power of economic growth.
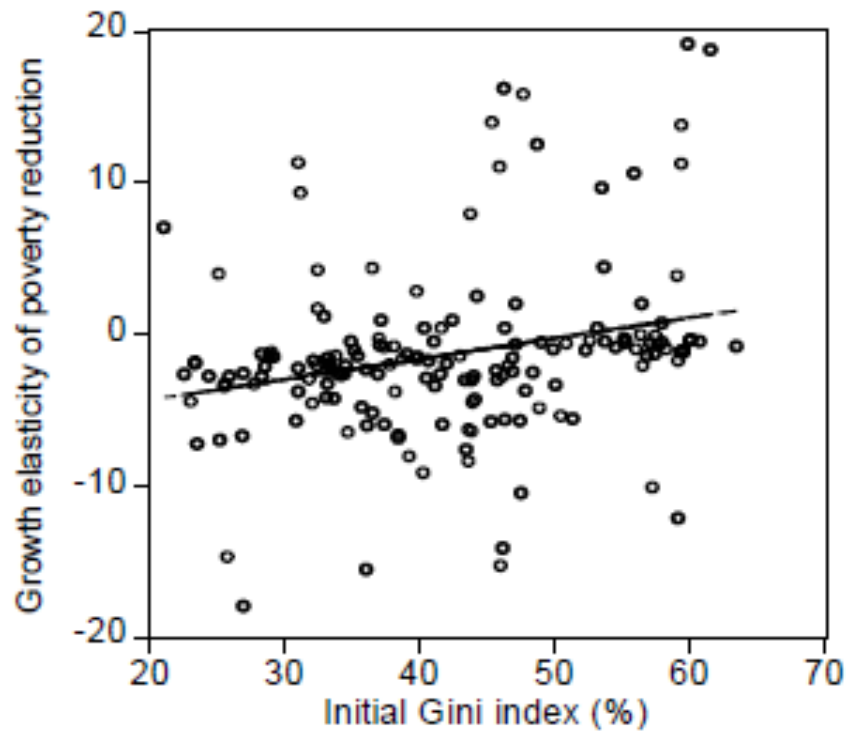


Source: Ravallion 20007
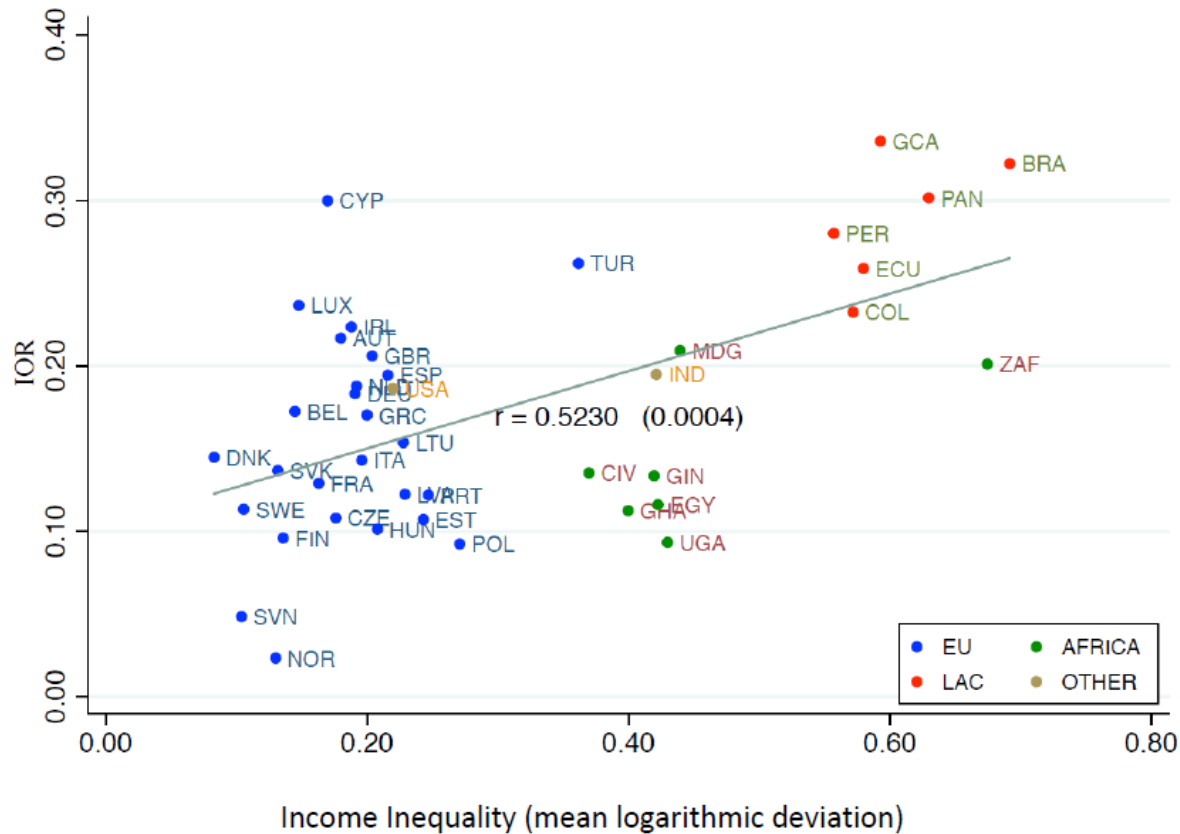
# What about the "quality" of growth?

- Higher inequality is also associated with lower economic mobility…



b. Relationship of intergenerational earnings elasticity to earnings inequality

*Source: Ferreira et al. (2013), building on Corak (2013)*

# What about the "quality" of growth?

- …and higher inequality of opportunity.



Source: Brunori et al. (2013)

# Conclusions

1. Structural transformation is inherent in economic growth, and likely to affect distribution – but not in a specific, pre-ordained way.

2. We do not yet know whether income "inequality" is mechanically associated with lower economic growth – though the evidence is once again tilting in that direction.

3. What we do know is that high inequality makes growth "worse":

   – Less poverty reduction; less mobility; more unequal opportunities