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**Global dynamics of Gini coefficients of education for 146
countries updated to 1950-2015**

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Global Dynamics of Gini Coefficients of Education for 146 Countries Updated to 1950-2015

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Abstract We update the Gini coefficients of education to include the year 2015, added to the Barro-Lee data set recently. A panel analysis shows that every five years education inequality falls by 2.8 percentage points. A stable average value is predicted to be 0.22. Kernel densities loose their twin peaks when going from 1955 to later years. JEL Classification codes: E24, I24, I25, O15, Y1. **Keywords:** Gini coefficients of education, new data, trend, stability, changing global distribution.

1. Introduction

The educational data from Barro and Lee (2013) are now available as version 3.0 from September 2021 and go until 2015. This allows us to extend the data series of Gini coefficients of education, which did go until 2010 in Ziesemer (2016). We again use the formulas A-1 in Thomas et al (2000) and Castelló-Climent (2004) to calculate the Gini coefficients of education and do some basic data analysis of their dynamics.

2. Data

At <https://doi.org/10.34894/11MFXW> we provide the data for all 146 countries. Unlike World Development Indicators, they include data for Taiwan and Reunion. The code for Serbia is changed from SRB to SER. Both data sets also differ in their codes for Republic of Moldova, Romania, and Democratic Republic of Congo. We have indicated this in a column of the data file.

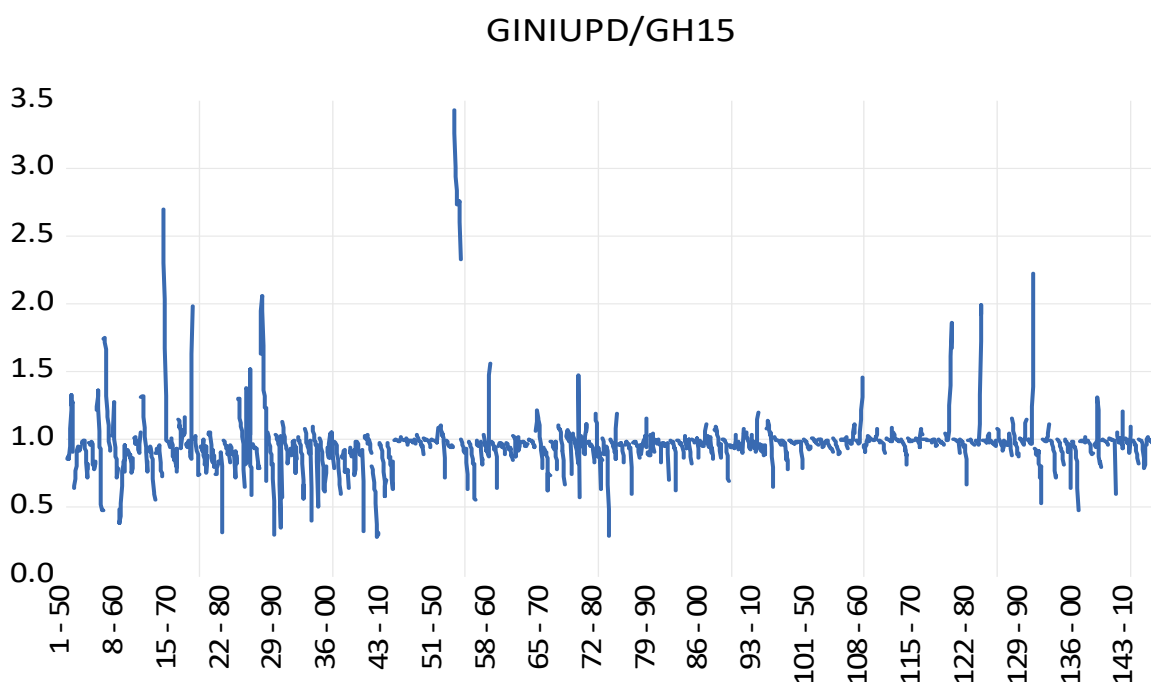


Figure 1 The ratio of Gini coefficients of education updated to 2015, GINIUPD, relative to their earlier version until 2010, gh15.

The ratio of new/old data shown in Figure 1 tells us that some new values are strongly revised upward revealing data points where much more inequality was actually present, if the new data are better than the old ones. However, many more points show a ratio below one indicating data points

¹ I am grateful to Eyal Argov and Shay Tsur for stimulating this update.

with less inequality. Comparisons between earlier data sets are shown or referred to in Ziesemer (2016).

The least-squares correlation between the older data going until 2010, named *gh15*, and the update data called *Giniupd* is

$$Gh15 = 0.023073 + 0.963993GINIUPD,$$

with both $p = 0.0000$, and adjusted R-squared = 0.96 from 1898 observations.

At the lower end of Gini coefficients, near zero, the old data are a bit higher as we can see from the positive, statistically significant intercept.

3. Dynamics of Gini coefficients of education

The new Gini data, starting from an average of 0.573, show a downward trend of, on average, 2.8 percentage points every five years, indicating a trend towards more educational equality, which most likely stems from more investment in human capital leading to more average years of education (see Thomas et al 2000, Ziesemer 2016):

$$GINIUPD = 0.573335 - 0.028117t,$$

with fixed effects, both $p = 0.0000$, and adjusted R-squared = 0.906 from 2044 observations. Where are Gini coefficients on average heading to? The following dynamic panel 2SLS regression with p-values in parentheses² leads to an answer.

$$GINIUPD = 0.0258 + 1.29GINIUPD(-1) - 0.41GINIUPD(-2)$$

(0.0167) (0.00) (0.03)

Adding up the slope coefficients leads to a value of 0.88, below that of a unit root. The long-run value than would go to about 0.22 for a panel average. Education will continue to go to more equality.

The distribution of Gini coefficients across countries for a certain year is shown in Figure 2 for steps of twenty years. In 1955 there are two peaks, reminiscent of Danny Quah's (1993) twin peaks for GDP per capita data. The peak of high inequality countries has Gini coefficients of 0.8 whereas the low one is at 0.25 with relatively little inequality. The high peak vanishes until 1995 but is back as a very small peak in 2015. The low peak first increases to 0.27 and then goes down to 0.19 and 0.13 because emerging economies invest in human capital. The rich countries with much human capital to very inequality of education.

4. Summing up

Barro and Lee have strongly revised the educational data. As a consequence, some of the Gini coefficients of education are also strongly revised. However, there is a strong correlation between the old and the new data for Gini coefficients of education. Earlier versions and revisions are discussed in Ziesemer (2016). On average, Gini coefficients of education are reduced by 2.8

² Periods: 10; observations 1460; cross-section weights for panel-corrected standard errors; period and country fixed effects; Instrument specification: C GINIUPD(-3) GINIUPD(-4). Mean dependent var = 0.334, Adjusted R-squared = 0.987. Durbin-Watson stat = 2.07, "is formed simply by computing the first-order residual correlation on the stacked set of residuals" (eviews12 2020) . Trying the orthogonal deviation version of system GMM of Arrelano and Bover (1995) we cannot find any case passing the Hansen-Sargan test.

percentage points every five years and are going towards an average value of 0.22. The dynamics of the kernel density distribution shows that the higher of two peaks vanishes and the lower one moves to having a peak at lower values. All these results indicate a global average trend towards more equality in education. Relations to other variables were shown in Ziesemer (2016). As we can add only one observation for 2015, we do not rerun these regressions but rather invite the reader to read them there.

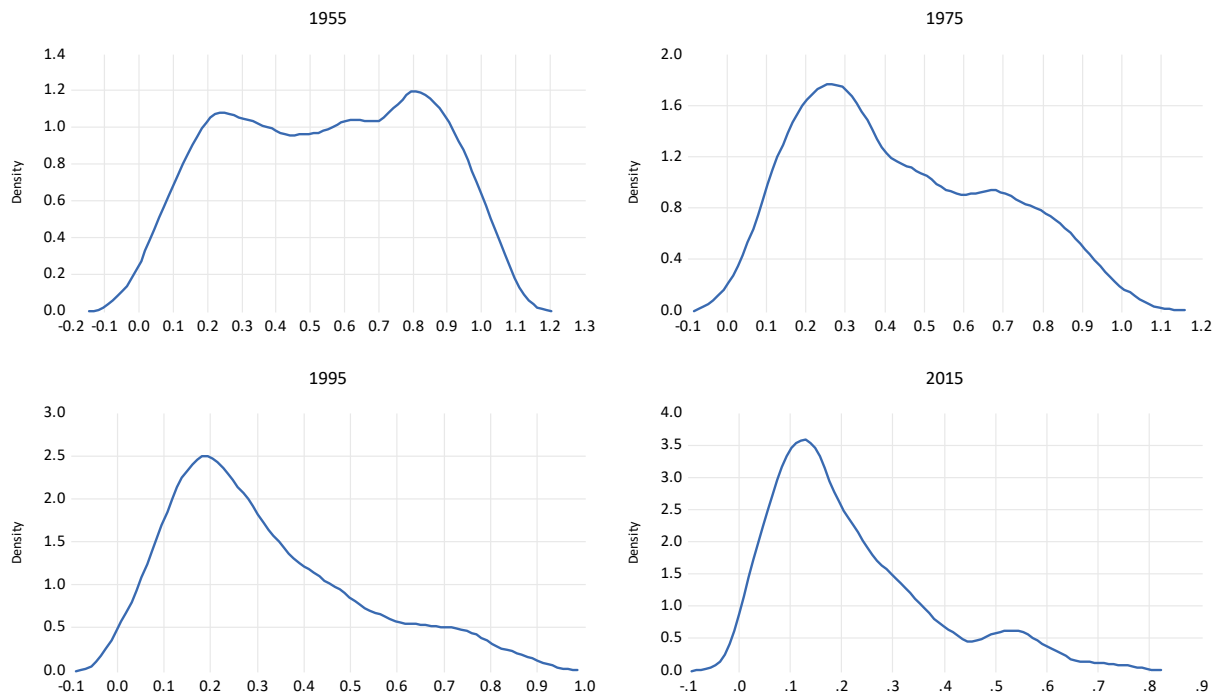


Figure 2 Kernel density distributions for 146 countries in 1955, 1975, 1995, and 2015

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