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Do rising shares in top incomes affect income inequality as a whole?



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This blog examines trends in the top 1 percent income shares and income inequality as a whole for 19 countries during 1970-2012, and the claim whether the rise in top income shares is a main factor in the increase in income inequality of the whole population.

The worldwide rise in top incomes has attracted a lot of attention recently (OECD 2015, Jones 2014, Piketty 2014, Jenderny 2015). In the United States, the top 1 percent of the population (ranked by income) earned 7.8 percent of the total income in 1972. This had risen sharply to 19.3 percent by 2012. In 2012 in the Netherlands, the top 1 percent of the population earned 6.3% of the total income. Moreover, in the United Kingdom, the top 1 percent income share had reached 12.9 percent by 2011, almost twice the figure it was in 1981.

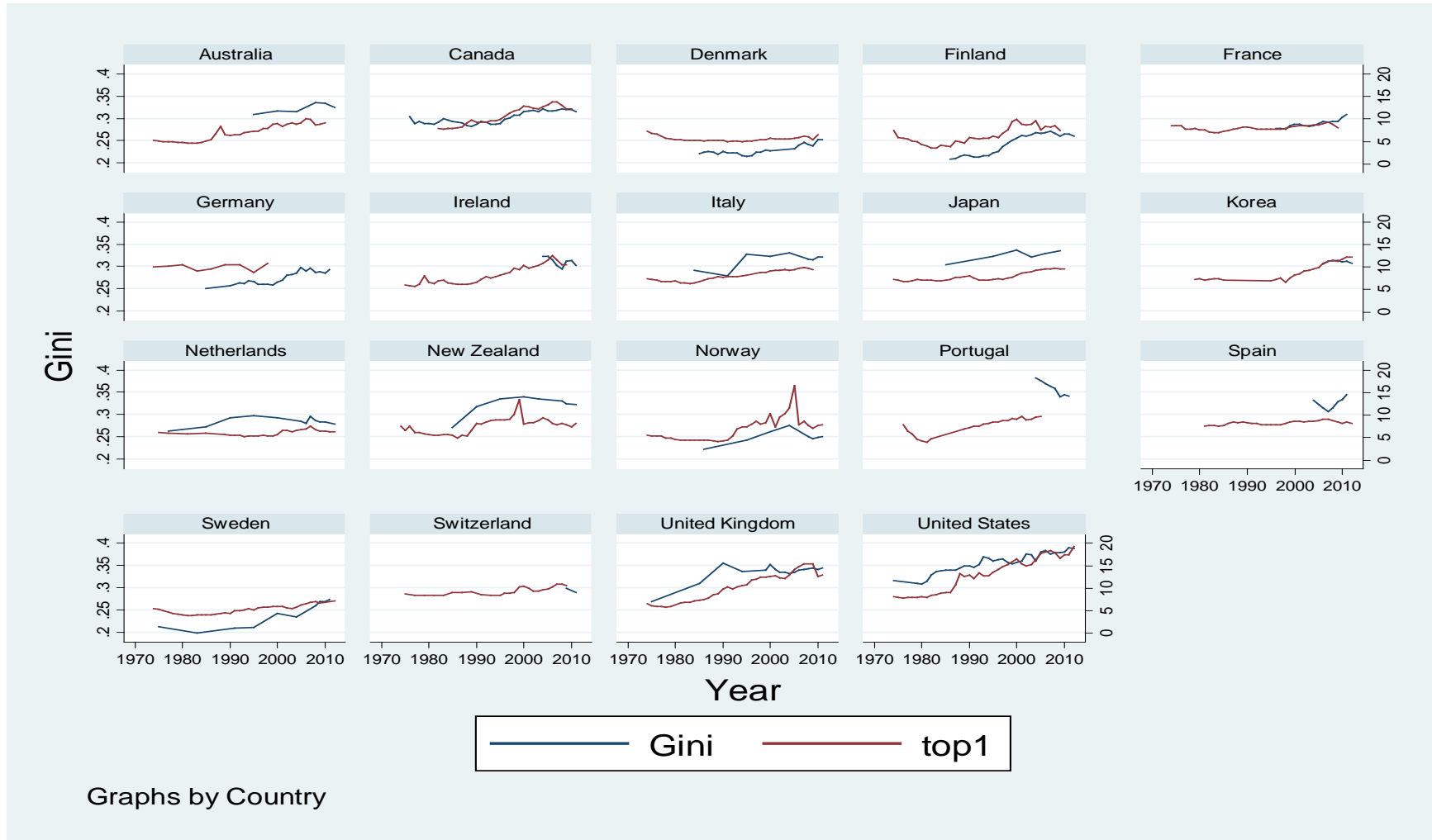
Piketty (2014) and Atkinson (2007) claim that the rise in top income shares has been a main factor in the increase in overall income inequality of the population over the decades in affluent countries. However, the most commonly used measurement of income inequality of the population as a whole, the Gini coefficient - which ranges from 0 (all households have equal incomes) to 1.0 (the richest household receives all income) - is particularly sensitive to the center of the income distribution, not so to its tails (top or bottom). Still the top rich income group seems capable of significantly impacting on changes in overall inequality (Alvaredo 2011).

This blog fills a small gap in the literature. By calculating Gini coefficients a (small) section of top incomes is usually neglected because administrative data or survey data do not allow for the inclusion of very high top incomes (as a rule of thumb, data is top coded at 10 times the median income). We will contribute to the discussion by linking the trend of top income shares and income inequality for the population as a whole (Gini's) for 19 affluent countries during 1970-2012. We will try to figure out whether most countries share a similar trend in rising top income shares and income inequality in society in general. Has this rise in income inequality among the total population been

driven over the decades by (or positively related to) the rise in shares in top incomes? We make use of the data on top income shares from the [World Top Income Database](#) (WTID) assembled by Thomas Piketty, Tony Atkinson and others, and data for the Gini coefficient from the [OECD Income Distribution Database](#) (IDD).

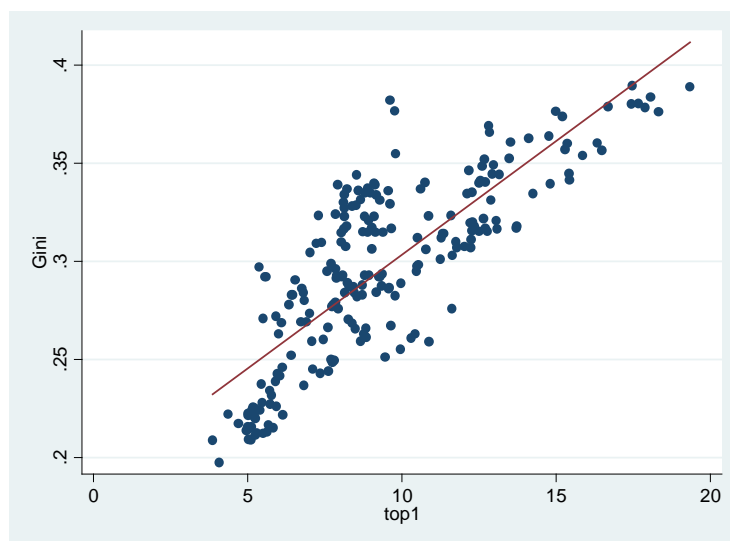
Figure 1 shows that both the shares of top incomes (top 1%) and the Gini coefficient have increased in most countries since 1970. The largest increase in top income shares was observed in the United States followed by the United Kingdom and the largest growth of income inequality of the total population was found in the United Kingdom and to a lesser extent in the United States. However, not all countries experienced a rising trend in top income shares and/or Gini coefficients. Despite some fluctuation within the entire period, the top 1% share was quite stable in Germany, Spain and the Netherlands for example and even declined slightly in Denmark and France.

Figure 1: Trends in income shares top 1% and the Gini coefficient



The correlation between the top income shares and income inequality of the total population can be clearly observed in Figure 2, where all observations across countries and years are pooled together. The horizontal axis represents the level of the top income share while the vertical axis shows the level of the Gini coefficient. The red line represents the fitted value, indicating whether there is a positive or negative correlation between the top 1% income share and the Gini coefficient of the population as a whole. Figure 2 indicates that a positive correlation does indeed exist: a higher level of top income share is linked to a higher level of income inequality for the total population.

Figure 2 Correlation between top income shares and the Gini coefficient



Using the simple method of ordinary least square estimation (Table 1) we can examine this correlation in more detail. Correlation lines can be traced simply by observing a set of data points (see Figure 1 or 2), but their position and slope can be better calculated using statistical techniques like linear regression. Linear regression is an approach for modelling the relationship between a scalar dependent variable (e.g. top 1% income share) and one or more explanatory variables (e.g. Gini coefficients). Correlation lines are typically straight lines, and indicate the extent to which particular data correlate with each other (e.g. top 1% income shares with Gini coefficients). So, we tested the claim concerning the rising shares in the top 1% for all countries together, just by running simple statistical OLS regressions for the countries under study to measure whether the change in income shares in the top 1% income earners correlate with changes in the Gini coefficient over time in the period 1970-2012. A significant correlation is defined as a significant coefficient (p value < 0.05). The results are presented in Table 1.

The results show that there is indeed a strong positive relationship between top income shares and income inequality. Interestingly, the overall income inequality is more sensitive to the top 1 percent income shares, compared to the top 5 percent income

shares. This result does not alter if we use a fixed effect model to check for country-specific characteristics. However, this positive relationship represents an average or general pattern. There are still some exceptions such as Denmark and the Netherlands (see Figure 1) where the rise in top income shares has did not lead to a higher income inequality among the whole population.

Table 1 The relationship between top income shares (1% and 5%) and the Gini coefficient of total population from a simple OLS regression

	OLS Gini	OLS Gini	OLS Fixed effect Gini	OLS Fixed effect Gini
top1	0.012*** [0.000]		0.007*** [0.000]	
top5		0.008*** [0.000]		0.005*** [0.000]
Constant	0.188*** [0.000]	0.114*** [0.000]	0.232*** [0.000]	0.177*** [0.000]
No. of observations	223	217	223	217
Adjusted R-sq	0.658	0.711	0.549	0.572

Notes: OLS regression; p values in parentheses. ** Significant at 0.01 level; * significant at 0.05 level

Source: World Top Incomes Database, OECD Income Distribution Database, and own calculations.

Futher reading

Alvaredo, F., A.B. Atkinson, T. Piketty and Emmanuel Saez (2014). [The World Top Incomes Database](http://topincomes.g-mond.parisschoolofeconomics.eu/Incomes Database) at <http://topincomes.g-mond.parisschoolofeconomics.eu/>

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