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“Interaction of global and national income inequalities”

by

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1. Introduction

Global inequality, defined as income inequality among all citizens of the world, where incomes are adjusted to reflect differences in price levels between the countries, has been broadly stable between 1980s and early 2000s, and has since declined by several Gini points. Using an unbalanced panel of country-deciles for the period 1988-2008, Lakner and Milanovic (2015) find global inequality to have decreased from 69 Gini points in 1988 to 67 Gini points in 2011.² Using the updated 2011 data, Milanovic (2016) finds a further decrease, down to about 64 Gini points. This is indeed a remarkable decline that has occurred over a relatively short time period. It was driven by very high rates of income growth in China and India in particular, but also of other populous and relatively poor countries such as Vietnam, Thailand, Indonesia, and others.

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² We are using here, and in the rest of the paper, the results obtained with 2011 PPPs (see Lakner and Milanovic, 2014, Table A3).

African countries also had had a rather good first decade of the present century. On the other hand, the sluggish or even negative growth of the advanced economies has also contributed to the shrinking of the global income inequality.

It is remarkable that this historic decrease in global income inequality, explained mostly by the reduction in gaps between countries' mean incomes, has coincided with rising income inequality in most individual countries, whether advanced, middle-income or poor. About two-thirds of countries had higher income inequality in 2011 than in 1988.³ Among OECD countries, 18 out of 23 registered a significant increase in income inequality between the mid-1980s and around 2013 (see OECD, 2015, p.24).

Citizen concern with rising inequality, ubiquitous in the media and in the political arena, has thus coincided with rising income inequality in most countries, despite the decline in global income inequality. If the latter were all, or most, what mattered to the people around the world, it is less likely that the inequality concerns, voiced practically daily, would have been as strong. This note explores what might lie behind them.

2. The data

In the calculations we use the Lakner-Milanovic World Panel Income Distribution (LM-WPID) dataset available (with a detailed description) at <http://econ.worldbank.org/WBSITE/EXTERNAL/EXTDEC/EXTRESEARCH/0,,contentMDK:23690796~pagePK:64214825~piPK:64214943~theSitePK:469382,00.html>.

³ Of 65 countries with Gini values in both 2011 and 1988, Gini was higher in 43 countries and lower in 22. Moreover, the average increase among the countries with higher inequality in 2011, was 5.3 Gini points while the average decrease among the other group was 3.6 Gini points (calculated from the Lakner and Milanovic database expanded to include 2011).

⁴ The dataset provides an unbalanced panel of country/deciles over the period 1988-2008 with the average incomes of each country/decile expressed in real 2005 PPPs dollars (based on 2011 International Comparison Project results). Incomes for country/deciles are calculated using national household surveys which in most cases (and increasing so for the more recent years) were accessed at the level of individual households (that is, not as grouped or published data). The global income distribution estimates for the period 1988-2008 are done for five benchmark years positioned at regular intervals (1988, 1993 and so forth). The number of countries included varies between 75 in 1988 and 120 in 2008. The coverage of the world population varies between 81 percent in 1988 and 94 percent in 2003. The coverage of world income is consistently higher than the population coverage because the countries without available household surveys are almost always poor.

This dataset was extended up to 2011 by Milanovic (unpublished results) using the same procedure and the same PPPs as in the case of the original dataset. The 2011 data include 113 countries and cover 88 percent of the world population.

3. A simple welfare function

We consider a simple welfare function W_{ij} for individual i living in country j which has two arguments. A person is concerned with her absolute level of income (adjusted for the price level of the country where she lives) y_{ij} , and with her relative position in her own country, expressed as the ratio between her income and mean income of the country μ_j :

⁴ For more information see Lakner and Milanovic (2014).

$$W_{ij} = (y_{ij})^{1-\lambda} \left(\frac{y_{ij}}{\mu_j} \right)^\lambda \quad (1)$$

We use a Cobb-Douglas formulation with the parameter λ that takes values from 0 to 1.⁵ As can be readily seen, if $\lambda=0$, equation (1) reduces to include income only. Thus the Gini coefficient of global income is the Gini coefficient of the distribution of $\{W_{ij}\}$ when $\lambda = 0$.

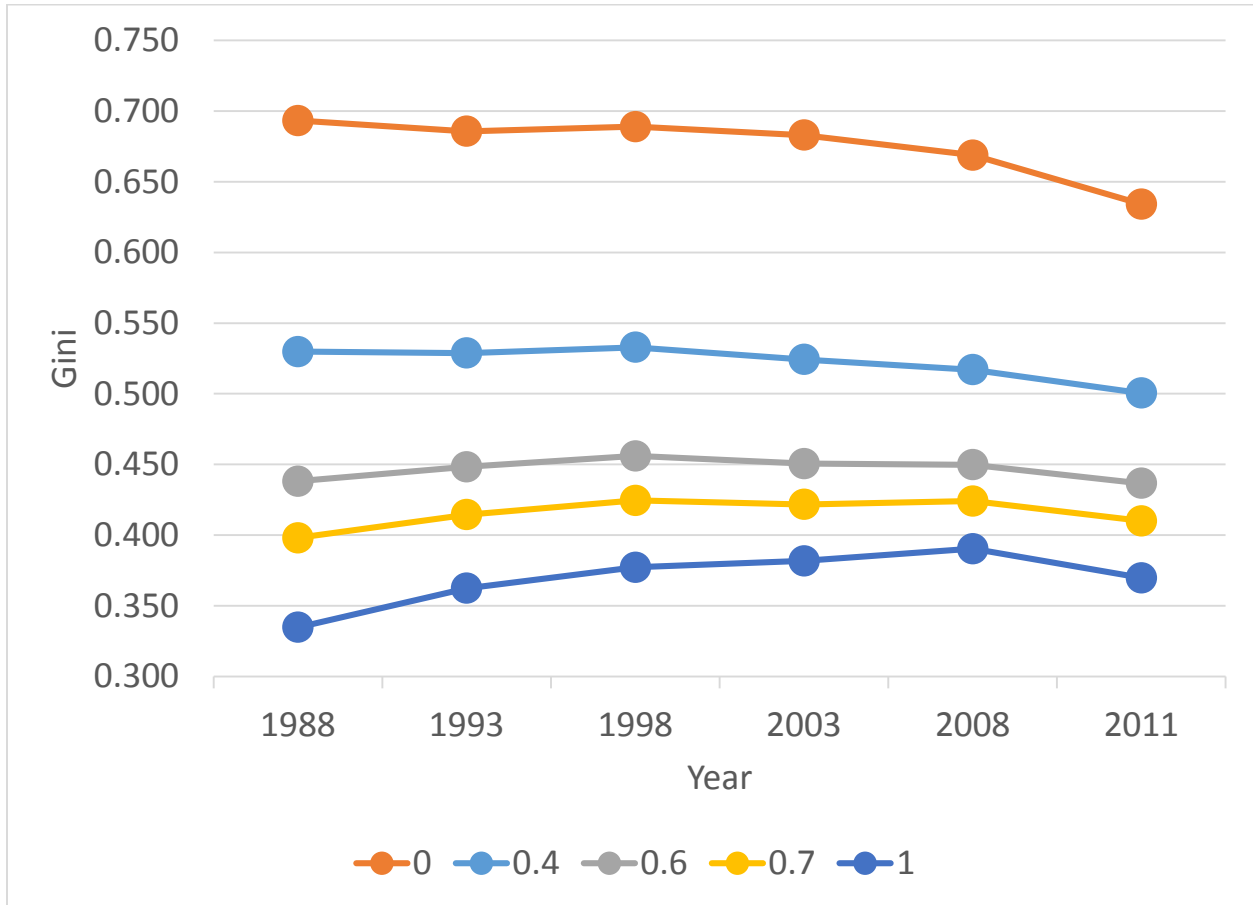
However, as λ increases, one's relative position within one's country's income distribution becomes increasingly important until it reaches the extreme case of $\lambda=1$ when this alone matters. One's absolute (real) income is then immaterial; only the relative national position is taken into account. We can thus consider λ as a measure of "national salience" as opposed to the situation when $\lambda=0$ and where only absolute income matters, a situation which may be associated with "cosmopolitan" worldview.

Figure 1 shows the calculation of global Gini index over W for various values of λ , taken in increments of 0.1 (results shown in the Annex). The Figure displays the calculations for only $\lambda=0, 0.4, 0.6, 0.7$ and 1.

The top graph in Figure 1 gives the Gini coefficient of global income. It displays a sharp decrease of global inequality since 2003 and especially between 2008 and 2011.

⁵ For a different approach where, like here, global and national inequalities are included in a welfare function see Brandolini and Carta (2016).

Figure 1. Global Gini (1988-2011) with different λ 's



First, note that the values of the Gini coefficient uniformly decrease as λ increases, and second, note that the changes over time in Ginis for $\lambda > 0$ follow a different pattern than the change in the conventional global Gini calculated across personal incomes only.

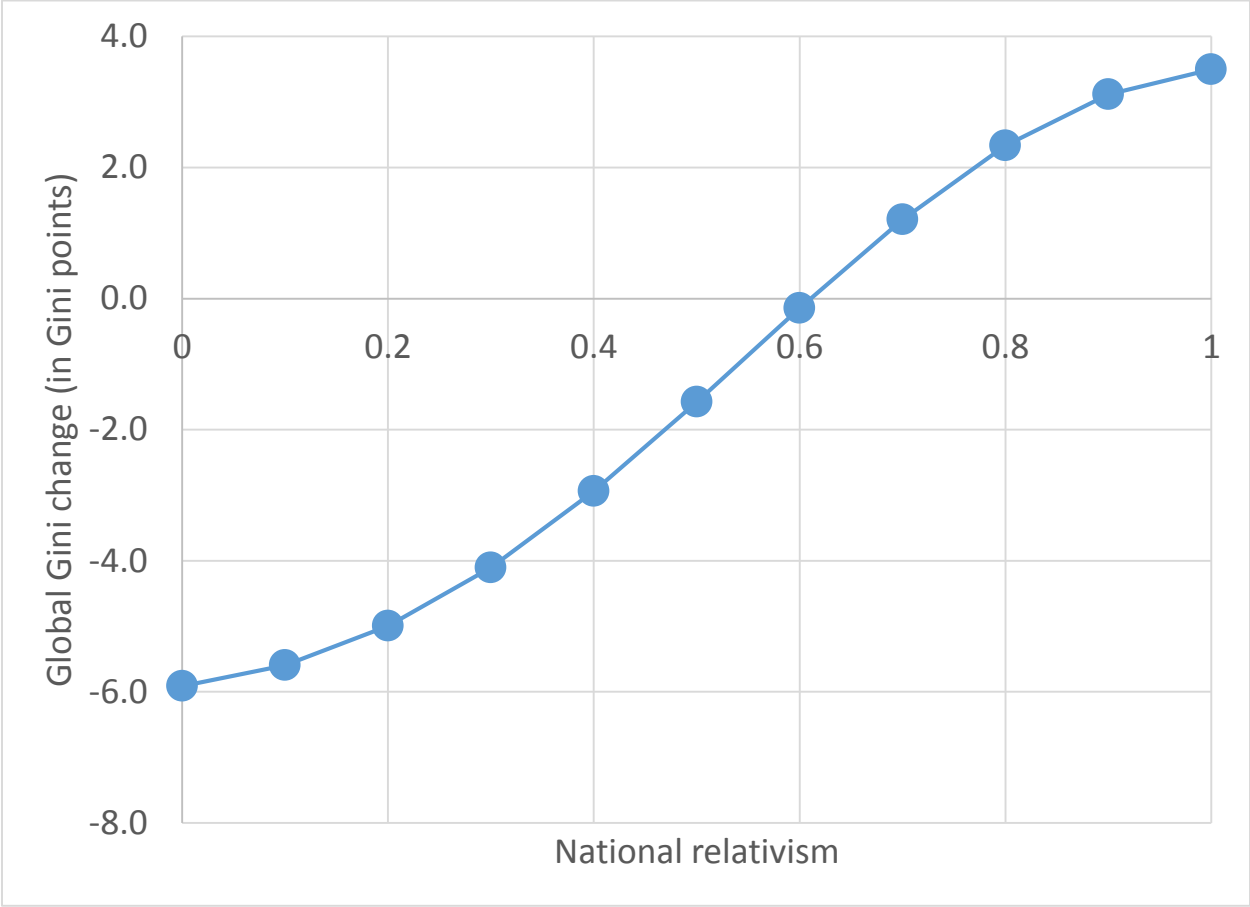
The level of inequality in all formulations with $\lambda > 0$ will be less than with $\lambda = 0$ because in all such formulations we introduce an “income-moderating” function similar to what we do when we transform income directly into welfare such as

$W=W(y)$ with $W''<0$. Since higher income levels do not lead to proportional increases in welfare, it is obvious that inequality of welfare, calculated across individuals who are assumed to have the same concave utility functions, will be less than inequality calculated across untransformed incomes.

What is interesting in our case is that as λ increases, and especially when it reaches 1, global inequality is substantially smaller than at $\lambda = 0$. The reason lies in the extremely high inequality of countries' mean incomes: depending on the index used, some two-thirds or even three-fourths of the conventionally calculated global inequality is explained by the differences in countries' mean incomes. Now, in the formulation where $\lambda=1$, that part of global inequality vanishes as individuals are assumed to care only about their position relative to their country mean. (Differently put, the formulation for $\lambda=1$ gives what global inequality would be if all countries' mean incomes were normalized to be the same.)

With regard to the dynamics over time, in the conventional calculation ($\lambda=0$), global inequality decreases and, as shown in Figure 2, is almost 6 points lower at the end of the period than in 1988. But this is not the case with other formulations. As λ increases, the Gini of global inequality declines less, and for values of λ around 0.6, the decline disappears altogether. Moreover, with $\lambda>0.6$, we obtain an increase in global inequality which in the case of complete national salience ($\lambda=1$) reaches 4 Gini points. Thus, the range of global-inequality change between 1988 and 2011, measured from full "cosmopolitanism" to full "national salience" goes from -6 to +4 Gini points.

Figure 2. Change in global Gini between 1988 and 2011 for different values of λ



4. Discussion

This note shows that with a moderate change in the welfare function to include also a concern with one’s position in national income distribution, the evolution of global (welfare) inequality diverges from the evolution of inequality calculated across absolute (real) incomes. As the concern with one’s relative position becomes greater, because during the past 30 years inequality in most countries has increased, it turns out that the relativistic element dominates over

the more equal distribution of absolute incomes worldwide, and converts the decrease of income inequality into an increase of global (welfare) inequality.

We believe the welfare function proposed here is reasonable because individuals' welfare is sensitive to how their incomes compare with incomes of their peers. An obvious salient peer-group comprises one's co-citizens. One could use the same formulation but change the peer group. Andrew Clark and Claudia Senik (2010) show that for the people living in countries in the European Union, the salient peers are, increasingly, taken to be the EU citizenry, not solely one's own co-citizens. Gradually, as globalization progresses, one could think of replacing the national mean incomes with regional mean incomes.

We give two dramatic examples of the importance of acknowledging concerns for relative income. In Russia, after the economic crisis of 1998, life expectancy for men fell to less than 59 years, despite the fact that almost all Russian men still placed relatively high in the global income distribution. Men, Brennan, Boffetta and Zaridze (2003) report that increased mortality was attributed in large part to vascular disease and violent causes. In the United States, Case and Deaton (2015) have documented a sharp rise in mortality and morbidity of non-Hispanic white men and women in mid-life in the period 1999-2013, again due to suicide, alcohol and opiate use. The men and women who are afflicted place very high on the global distribution of income, but have experienced a sharp deterioration in their positions relative to those in the top decile of the income and wealth distribution in the United States⁶.

⁶ An alternative hypothesis to the importance of relative position in the income distribution of one's country is that a sharp change in the growth rate of one's income is what matters to people. We cannot calculate a measure

Because the world is politically organized in nation-states where most of the decisions about economic and social policies are made, and as the movement of labor between the countries is limited, it seems reasonable at this stage to use county mean as a “peer-yardstick”. This seems to us especially apposite at present, when voters’ and politicians’ attention is much more focused on inequality developments nationally rather than on the favorable developments in inequality globally.

In a yet another twist, which we do not explore here, it could be argued that it is precisely these favorable global developments that are causing the rising national inequalities. This possibility is especially intriguing because with a high λ , such a process can lead to particularly deleterious welfare effects. To put it simply, (i) if the rising incomes in Asia that underlie the reduction in global income inequality lead to increasing inequalities in advanced countries as well as in the Asian countries themselves, and (ii) if individuals still care more about their relative national positions, then a concern with rising national inequalities may significantly (in welfare terms) outweigh the advantages of rising welfare stemming from higher absolute incomes. Such a dynamic model would then have to include a feedback from lower global inequality into greater national inequalities and hence into individual welfare functions. Moreover, in such a model λ itself may be thought to be variable (possibly decreasing with greater globalization).

based on the dynamics of income growth with available data sets since we do not have longitudinal data at individual level.

Even without such a dynamic model, we suggest that with a relatively simple reformulation of welfare, the feeling of rising inequality may coexist with the fact that the conventionally measured inequality is decreasing globally.

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Annex

Global inequality for different values of λ from equation (1)
(in Gini values)

	Lambda	Year						Change between 1988 and 2008
		1988	1993	1998	2003	2008	2011	
Fully cosmopolitan	0	0.693	0.686	0.689	0.683	0.669	0.634	-0.059
	0.1	0.658	0.650	0.653	0.646	0.632	0.602	-0.056
	0.2	0.619	0.612	0.615	0.606	0.594	0.569	-0.050
	0.3	0.576	0.571	0.574	0.565	0.555	0.535	-0.041
	0.4	0.530	0.529	0.533	0.524	0.517	0.500	-0.029
	0.5	0.483	0.487	0.493	0.485	0.481	0.467	-0.016
	0.6	0.438	0.448	0.456	0.451	0.450	0.437	-0.001
	0.7	0.398	0.414	0.425	0.422	0.424	0.410	0.012
	0.8	0.366	0.388	0.400	0.400	0.405	0.389	0.023
	0.9	0.344	0.370	0.384	0.387	0.394	0.375	0.031
Only national	1	0.335	0.362	0.377	0.382	0.390	0.370	0.035