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Michele Raitano

Income Inequality in Europe Since the Crisis

The economic literature is increasingly concerned about inequality in income and in the living standards of individuals and households. A vast amount of empirical evidence has proved that in most countries since the 1980s, incomes have become more dispersed and much more concentrated in the hands of small segments of society, i.e. the top one per cent or 0.1%.[1] Furthermore, preliminary studies on the income inequality trends during the economic crisis that began in 2008 report a large increase in the inequality of market income (i.e. gross earnings and capital incomes) in many developed countries.[2] However, these studies point out that the increase in market income inequality during the crisis has been cushioned by the tax-benefit system in most of the countries, so that changes in the inequality of disposable income (i.e. gross of cash transfers and net of taxes) are rather limited.

Actually, economic inequalities are engendered by a complex process, characterised by several steps and involving the interaction of several factors.[3] According to the literature, the best indicator of individual economic well-being is disposable equivalised income, which stems from the sum of all income earned in the market by household members – regardless of its source, i.e. employment, self-employment, capital, rent – net of taxes and including transfers by the state and made equivalent by dividing income by the so-called equivalence scale in order to take into account the number of members of the household.[4]

For a better understanding of income inequality, the process that shapes equivalised disposable incomes can be depicted as a chain made of at least three links.[5] The first link refers to individual earnings inequality and is related to labour market outcomes (i.e. hourly wages, working hours, contractual arrangements, unemployment spells). The second link acts at the household level and refers to market income inequality related to the earnings of all household members (and, therefore, is dependent on the number of them who are employed) and also to income stemming from all other market sources, including the return on capital, if any. The final link refers to the public redistribution through taxes and transfers (e.g. pensions, unemployment benefits, social assistance).

In this article, we follow this view and present data on income inequality trends in the aftermath of the economic crisis in EU15 countries, distinguishing among the various components of disposable incomes, in order to specify the role played by each of the links listed above. We cluster EU15 countries according to the four usual geographical groups highlighted by the welfare regime literature,[6] i.e. Nordic, Continental, Anglo-Saxon and Southern, and we compare data about income inequality for these country groups.

After presenting concepts and the dataset, we then focus on household incomes and show how much inequality is imputable to labour and capital incomes and to redistribution. Finally, we focus on inequality in individual labour incomes.

Data and concepts of income

We use data collected by Eurostat through the sample survey European Union Statistics on Income and Living Conditions (EU-SILC). Being interested in the time trend of inequality indexes, we use the longitudinal survey carried out in the four-year period 2009-2012, which recorded annual incomes in the period 2008-2011, so as to assess changes in inequality since the start of the eco-

1 See OECD: Divided we stand. Why inequality keeps rising, Paris 2011; W. Salverda, B. Nolan, D. Checchi, I. Marx, A. McKnight, I. Tóth, H. van de Werfhorst (eds.): Changing Inequalities in Rich Countries. Analytical and Comparative Perspectives, Oxford 2014, Oxford University Press; and A.B. Atkinson, T. Piketty, E. Saez: Top Incomes in the Long Run of History, in: Journal of Economic Literature, Vol. 49, No. 1, 2011, pp. 3-71.

2 OECD: Crisis squeezes income and puts pressure on inequality and poverty, 2013; OECD: Income Inequality Update – June 2014 – Rising inequality: youth and poor fall further behind, 2014.

3 See A. Atkinson: Inequality. What can be done?, Cambridge 2015, Harvard University Press; M. Franzini, M. Pianta: Explaining inequality, London 2016, Routledge; and the other articles in this Forum.

4 Canberra Group: Handbook on Household Income Statistics, Geneva 2011, United Nations.

5 M. Franzini, M. Raitano: Income Inequality in Italy: Tendencies and Policy Implications, in: G. Sancetta, D. Strangio (eds.): Italy in a European Context. Research in Business, Economics and the Environment, London 2015, Palgrave Macmillan, pp. 50-75.

6 See e.g. W. Arts, J. Gelissen: Three worlds of welfare capitalism or more? A state-of-the-art report, in: Journal of European Social Policy, Vol. 12, No. 2, 2002, pp. 137-158.

Michele Raitano, Sapienza University of Rome, Italy.

nomic crisis.[7] We include only the balanced subsample, i.e. those individuals and households who participated in the longitudinal survey for the whole four-year period.

As mentioned above, we focus our analysis on the four groups of EU15 countries, but in the longitudinal EU-SILC 2009-2012 survey four countries are missing – Sweden, Luxembourg, Germany, Ireland. The remaining 11 countries have then been clustered in the following groups: Nordic (Denmark and Finland), Continental (Austria, Belgium, France and the Netherlands), Anglo-Saxon (the UK), and Southern (Greece, Italy, Portugal and Spain).[8]

We use two samples in our analysis. For the analysis of household income inequality,[9] our final sample is composed of 21,829 households present for the whole period in the longitudinal EU-SILC. For the study of labour income inequality, we use the subsample of 19,440 individuals who were active and less than 60 years old in 2008 and who did not retire during the four-year period.

The EU-SILC dataset is based on a homogeneous conceptualisation of the various income sources (e.g. employment, self-employment, pensions, welfare benefits), and thus it allows us to precisely compare income inequality across EU countries. Each income source is recorded gross of the personal income taxes and social contributions paid by the worker. Furthermore, household disposable income (i.e. the sum of all market income received by all household members net of personal income taxes and including welfare cash benefits) is also recorded.

However, only a few countries also report net values for each income source (e.g. wages or pensions), preventing us from comparing the effect of tax progressivity for each source. Furthermore, as usual in most computations of disposable incomes, only personal income taxes and cash transfers are taken into account, while indirect taxes, tax expenditures and monetary values imputable to in-kind public transfers (e.g. education, health care) are not included. As argued by Jenkins et al.,[10] this limitation prevents us from assessing the effect on inequality of cuts to in-kind benefits (e.g. health care or education) or of higher indirect taxes on consumption, like the ones introduced by some EU governments since the outbreak of the crisis. As a further limit, one common to all sample surveys, the effective trend of inequality can be underestimated due to the difficulties of survey data in precisely recording the tails of the income distribution, because the poorest (in particular immigrants) and the richest tend to be under-sampled in sample surveys, and the individuals characterised by large income drops are more likely to drop out of the panel over time.

With these caveats in mind, the longitudinal EU-SILC is well suited for comparing the trend of income inequality and its main determining factors across groups of EU countries. In the next section, we will first focus on equivalised household income and compare disposable income, gross income (i.e. total household income gross of personal income taxes) and market income (i.e. disposable income net of cash welfare benefits). We then decompose gross income inequality in order to highlight the contribution of each income source in determining total inequality.

In more detail, market incomes are comprised of gross incomes earned by all household members and coming from all market sources, i.e. employment, self-employment and capital;[11] gross incomes are computed adding welfare cash benefits (pensions and other welfare transfers, expressed gross of personal income taxes in the EU-SILC)[12] to market incomes; finally, disposable incomes are obtained by subtracting social contributions and personal income taxes paid on all income sources from gross incomes.

Income inequality and its trend depend on several sources, and each of these sources affect total inequality according to the share of total income received by that source and to the inequality within each source. As demonstrated by Shorrocks,[13] inequality in total income (independent of the index used for computing it) can be de-

7 The official data on income inequality based on the EU-SILC that is available on the Eurostat website is computed on the various cross-sectional waves of the EU-SILC, without attention to the longitudinal dimension; this data may then differ from our results.

8 Incomes values, expressed in euros, have been adjusted through the Purchasing Power Parities (PPPs) indexes provided by Eurostat to allow for cross-country comparisons. Note that all computations shown in this article have been made using the longitudinal EU-SILC sample weights.

9 All income sources computed at the household level have been equivalised using the "modified OECD equivalence scale", which assigns a weight of 1 to the first adult in the household, 0.5 to other individuals aged 14 and over, and 0.3 to each child aged under 14. Note also that in our definition of household income, we do not include imputed rents on housing.

10 S. Jenkins, A. Brandolini, J. Micklewright, B. Nolan (eds.): The Great Recession and the Distribution of Household Income, Oxford 2012, Oxford University Press.

11 Capital incomes are computed adding income from rental of a property or land and interest, dividends, and profit from capital investments in unincorporated businesses.

12 We include old-age, disability and survivors benefits in pensions, while the "other transfers" are composed of individual welfare benefits (unemployment benefits, sickness, maternity and education allowances) plus cash benefits directly devoted to households (family and housing allowances plus other social assistance benefits).

13 A. Shorrocks: Inequality Decomposition by Factor Components, in: Econometrica, Vol. 50, No. 1, 1982, pp. 193-211.

Table 1
Gini index of equivalised incomes in 2008 and 2011

	Market income			Gross income			Disposable income		
	2008	2011	% change	2008	2011	% change	2008	2011	% change
Nordic	0.486	0.505	3.92	0.312	0.307	-1.48	0.254	0.257	0.92
Continental	0.515	0.538	4.44	0.334	0.328	-1.60	0.290	0.292	0.52
Anglo-Saxon	0.502	0.524	4.27	0.379	0.375	-1.08	0.325	0.313	-3.62
Southern	0.464	0.470	1.38	0.369	0.361	-2.12	0.326	0.321	-1.43

Source: Elaborations on Longitudinal EU-SILC 2012.

composed into the sum of contributions to inequality from each income source, where a positive value is assigned to sources that exert a disequalising contribution to inequality and a negative value is assigned to sources that exert an equalising contribution. Following this approach, in the next section we also decompose gross income inequality by income source, in order to assess which factor (e.g. employment, self-employment, capital, pensions or other transfers) has mainly affected the trend of total inequality from 2008 to 2011.[14]

Market income versus disposable income inequality

As argued, in order to assess the mechanisms underlying the trend in income inequality, it is useful to distinguish among the various types of inequality, i.e. inequality related to market income, to gross income and to disposable income.[15]

The values of disposable income inequality – expressed via the Gini coefficient – strongly differ among the four groups of EU15 countries (see Table 1). As expected, the Nordic countries are characterised by the lowest values of inequality, while the Anglo-Saxon and Southern countries show the highest values. Interestingly, in the period 2008-2011, disposable income inequality increased slightly in the Nordic and Continental countries, while falling slightly in Southern Europe and falling more significantly in the UK.

The stability of disposable income inequality does not imply the constancy of the forces underlying such inequality. Market income inequality increased in all four groups of countries. When gross welfare cash transfers are added to market incomes, the Gini coefficients decreased everywhere, suggesting that these transfers play a wide equalising role (see the values of gross income inequality in Table 1). Consistent with findings by the OECD,[16] the increase in market income inequality during the crisis has been cushioned by cash transfers, and consequently changes in inequality in disposable income have been rather limited.

The ranking of groups of countries changes according to the income concepts that we refer to. For example, in 2011, the Southern countries were the least unequal in terms of market incomes but the most unequal in terms of disposable incomes. The difference (in percentage points) between market and disposable income inequality – both computed via the Gini coefficient – is usually considered as an appropriate measure of the intensity of redistribution, because it expresses the reduction in income inequality due to redistributive policies, i.e. income taxes, social contributions and cash transfers. According to these differences (shown in Figure 1 in 2008 and 2011), the Nordic countries are the most progressive, with the highest levels of redistribution, while the Southern countries exhibited the lowest levels of redistribution through taxes, social contributions and cash transfers. In all four groups of countries, the intensity of redistribution increased during the crisis, suggesting that cash welfare benefits (in particular unemployment benefits in some countries) were quite effective in reducing the effect of the increased market income dispersion on inequality (Figure 1).

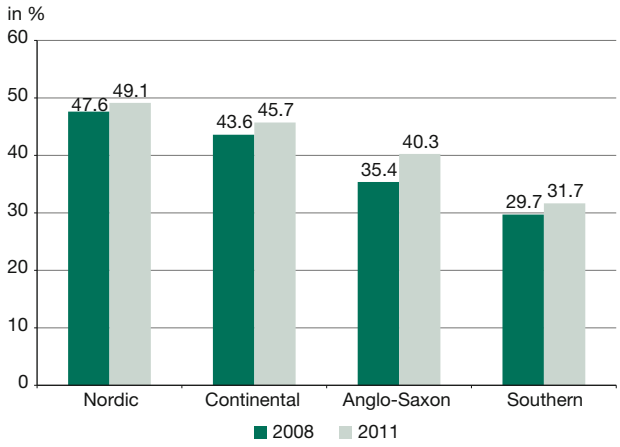
Leaving aside that almost any policy intervention will have distributive implications (in particular those that set the way in which the markets work and that affect the endowments with which the agents enter the market), a proper evaluation of the redistributive capacity of public policies

14 Disposable income cannot be similarly decomposed because, as pointed out, we do not have at our disposal net values for all sources.

15 In this section, we refer to incomes computed at the household level and equivalised through the OECD "modified scale".

16 OECD: Crisis squeezes income and . . . , op. cit.

Figure 1
Intensity of redistribution of income inequality in 2008 and 2011



Note: The intensity of redistribution index is expressed by the percentage difference between the Gini coefficient of market income inequality and the Gini coefficient of disposable income inequality.

Source: Elaborations on Longitudinal EU-SILC 2012.

would require the inclusion in the income concept of all typologies of taxes, in-kind transfers and tax expenditures.

Furthermore, the intensity of redistribution is difficult to measure due to several methodological problems that could bias the comparison between market income inequality and disposable income inequality. Actually, as emphasised by Franzini and Raitano, the measured intensity of redistribution is strongly affected by the inclusion of pensions.[17] In most of cases, a pensioner has zero market income but a positive disposable income; such a difference points to a very sharp redistribution. However, pensions cannot be considered as mere inter-individual redistribution – that is, transfers between the workers who pay contributions and the elderly who receive pensions –especially where pension benefits are strictly linked to the contributions paid by the individuals during their previous working life.

Therefore, comparing pre- and post-redistribution income levels inevitably biases the measure of the pure redistributive effect of the welfare state. This effect should instead be measured by identifying a counterfactual market distribution, i.e. the income distribution that would emerge should the welfare state cease to exist.

This article does not aim to solve these methodological complexities. In any case, in order to better disentangle the mechanisms underlying the trend of income inequality in EU15 countries during the crisis, it is useful to decompose gross income inequality, computing the share of total inequality imputable to each factor (see Table 2, p. 71, where the share of each factor on total gross income and the ratio between the two shares are also shown).

We distinguish three factors related to market incomes (i.e. employment, self-employment and capital) as well as gross pensions and other welfare cash benefits. As expected, in all countries employment and pensions (which can be considered as deferred earnings) are by far the largest component of gross income packages. According to the Shorrocks decomposition rule,[18] labour income (employment and self-employment) has by far the largest proportionate inequality contribution of all the components in 2011, amounting as a share of total inequality to 89.7% in the Nordic countries, 63.3% in the Continental countries, 96.7% in the UK and 86.7% in the Southern countries. Welfare cash transfers exert, in general, an equalising contribution to total inequality, while the disequalising effect of pensions that emerges in the Southern and Continental countries – where pensions are more strictly linked to previous wages than in the other two groups of countries – decreases and is rather limited when compared to the share of total income due to pensions.

Capital income represents a limited share of total income, apart from the Continental countries – especially France, where the share of total income due to capital income is around ten per cent. However, its relative contribution to inequality is much higher than its relative income share, especially in the Nordic countries, where the ratio between capital income's contribution to inequality and its share of total gross income has a value around 5.

Looking at the changes in the ratio between the contribution to inequality and the income share (see Table 2), it has to be pointed out that the relative role played by labour incomes on gross income inequality increased in all countries in the period 2008-2011. Therefore, in the next section we move from household income to individual labour income and investigate in more detail the mechanisms behind individual earnings inequality in the four EU15 country clusters.

17 M. Franzini, M. Raitano, op. cit.

18 A. Shorrocks, op. cit.

Table 2
Decomposition of gross income inequality by source in 2008 and 2011

	2008			2011			2008			2011		
	Inequality share	Income share	Income-inequality share ratio	Inequality share	Income share	Income-inequality share ratio	Inequality share	Income share	Income-inequality share ratio	Inequality share	Income share	Income-inequality share ratio
	Nordic						Continental					
Employment	81.1	65.4	1.24	79.3	62.6	1.27	33.2	55.1	0.60	38.9	51.0	0.76
Self-employment	6.8	4.9	1.38	10.4	4.6	2.28	33.2	6.5	5.12	24.4	6.1	4.00
Capital	13.9	2.8	4.94	13.3	2.5	5.34	25.5	9.3	2.74	32.2	10.3	3.12
Pensions	1.4	20.2	0.07	0.2	22.7	0.01	9.3	23.9	0.39	5.7	27.1	0.21
Other transfers	-3.2	6.6	-0.49	-3.2	7.6	-0.43	-1.1	5.2	-0.21	-1.1	5.4	-0.20
Labour	87.9	70.3	1.25	89.7	67.2	1.34	66.3	61.6	1.80	63.3	57.1	1.11
	Anglo-Saxon						Southern					
Employment	76.4	58.5	1.31	32.3	53.3	0.61	39.3	53.0	0.74	58.3	49.9	1.17
Self-employment	21.4	8.8	2.44	64.3	11.6	5.55	38.1	13.6	2.80	27.9	13.5	2.06
Capital	5.2	3.5	1.48	4.6	3.0	1.56	7.3	3.4	2.13	4.3	3.2	1.32
Pensions	-0.2	23.6	-0.01	0.4	26.1	0.02	14.7	26.8	0.55	9.2	29.8	0.31
Other transfers	-2.8	5.6	-0.50	-1.7	6.0	-0.29	0.6	3.1	0.20	0.3	3.4	0.07
Labour	97.8	67.2	1.45	96.7	64.9	1.49	77.4	66.6	1.16	86.3	63.5	1.36

Note: Inequality share measures the percentage contribution to inequality. Income-inequality share ratio is the ratio between inequality share and income share.

Source: Elaborations on Longitudinal EU-SILC 2012.

Labour income inequality in a longitudinal perspective

One of the most damaging aspects of an economic downturn is that it can worsen income inequality by reducing the labour incomes of individuals belonging to the least advantaged households. The crisis which started in 2008 could have impacted earnings inequality by both increasing wage dispersion and reducing the employment opportunities for the weakest workers.

However, earnings inequality is usually computed by taking into account only the subsample of those individuals working during a year, i.e. without considering the effect exerted by outflows from the labour force. As a consequence, if a recession has the effect of removing the least paid workers from the workforce, earnings inequality among the remaining workers could paradoxically be reduced.

For a better understanding of earnings inequality trends during the recession and of the role played by labour income in individual living standards, our analysis also takes into account those workers who were active in a certain year and then became unemployed (with zero earnings) in the following years. To this aim, we show the values of gross labour income inequality (i.e. considering income from both employment and self-employment), focusing on the subsample of individuals interviewed for the whole four-year period in the longitudinal EU-SILC and who earned a positive labour income in 2008.[19] Earnings inequality is then computed, including individuals that have become unemployed (i.e. earning a zero income) in the following years.[20]

Following this approach, a large increase in labour income inequality in the period 2008-2011 emerges in all four groups of countries (see Table 3). This is especially true in

19 As already stated, we exclude from the analysis those aged at least 60 in 2008 and those who retired in the period 2009-2011.

20 Zero earnings are replaced by a value of one euro so as to allow us to include these values in the computation of the Gini coefficient.

Table 3
Gini index of annual gross labour incomes, with or without social benefits in 2008 and 2011

	Labour income			Labour income plus social benefits		
	2008	2011	% change	2008	2011	% change
Nordic	0.290	0.325	12.3	0.274	0.293	6.8
Continental	0.351	0.371	5.8	0.335	0.346	3.2
Anglo-Saxon	0.393	0.426	8.5	0.393	0.417	6.2
Southern	0.362	0.423	16.8	0.352	0.400	13.6

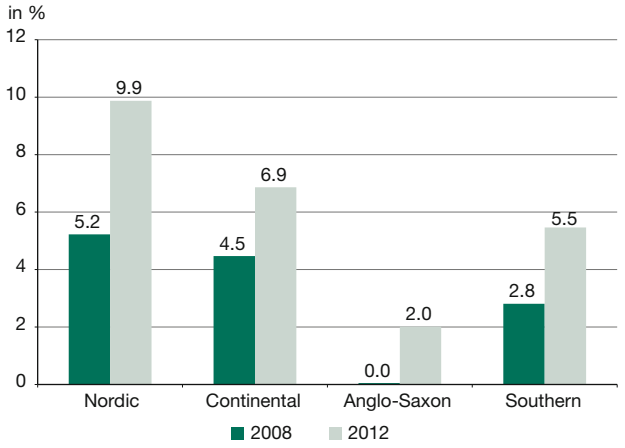
Source: Elaborations on Longitudinal EU-SILC 2012.

the Nordic countries (+12.3%) – where earnings inequality is the lowest – and in Southern countries (+16.8%).

At the individual level, the welfare state can cushion a recession's disequalising effects on earnings by providing effective unemployment benefits or other types of allowances (i.e. maternity, sickness, disability or education allowances) to individuals experiencing adverse events. The picture of increasing inequality in the period 2008-2011 does not disappear when we add individual social benefits to labour income; however, in this case, the increase in the Gini coefficient diminishes in all four groups of countries. In the Nordic countries, the increase in inequality approximately halves when social benefits are added to labour incomes (from +12.3% to +6.8%). Interestingly, in the Southern countries – the other cluster characterised by a large increase in earnings inequality over the examined period – the increase in the Gini index after taking social benefits into account is only slightly lower than the increase in "pure" labour income inequality (+13.6% vs. +16.8%).

These data suggest that the welfare states in the Nordic countries have a higher capacity to contend with inequalities emerging in the labour market than the Southern countries do. This is confirmed in an index of the intensity of redistribution in the labour market. We formulated the index by computing the percentage decrease in the Gini coefficient of labour income (without social benefits) and adding individual social benefits to labour incomes (see Figure 2, where we show the values of this index in 2008 and 2011). In 2008 the Gini of labour income inequality decreased by 5.2% in Nordic countries when social benefits were added, while the value of this indicator of the intensity of redistribution amounted to 9.9% in 2011. While the Nordic countries are characterised by the highest values of this indicator both in 2008 and in 2011, these values increased in all four groups of countries in this period.

Figure 2
Intensity of redistribution of labour income inequality in 2008 and 2011[1]



[1] The intensity of redistribution index is expressed by the percentage difference between the Gini coefficient of labour income inequality and the Gini coefficient of inequality in labour income plus individual social benefits.

Source: Elaborations on Longitudinal EU-SILC 2012.

Conclusions

Since the start of the crisis, market processes have been primarily responsible for the worsening of income inequalities in all European countries, and especially in Southern Europe. Unemployment and the loss of wages is a key factor in the worsening of income distribution. Welfare states, however, have been able to reduce the impact of the crisis. *Ex post* redistribution through cash benefits has reduced inequality in disposable incomes, particularly in the Nordic and Continental countries.

However, the effectiveness of public redistribution would likely be weakened if we could include the comprehensive effects of the reforms that were introduced, especially in Southern Europe, to cope with public budget deficits. These include reforms of in-kind welfare benefits – i.e. cutting the provision of education, health and caring services – and increases in indirect taxes on consumption and in tax expenditures for those individuals enrolled in private welfare schemes. While a thorough assessment of the impact of public policies on income inequality since the onset of the crisis should consider all possible links between income distribution and each type of policy introduced, the evidence shows that welfare states – at least through cash transfers – retain a crucial function in Europe and that they have been central in limiting the detrimental effects of the crisis on disposable income distribution.