Inequality and poverty during the recession in Italy

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Abstract

This paper simulates the effects of the recent economic crisis on income inequality and poverty in Italy. We impute the changes in employment rates for groups of the population, obtained from the Labour force survey, on the Silc sample for Italy, and simulate in detail also the resulting changes in unenployment benefits and in the *Cassa Integrazione Guadagni*, a wage supplement fund greatly expanded in the last few years.

Keywords: Italy, economic crisis, employment rates, unemployment benefits, inequality, poverty.

1. Introduction

The aim of this paper is to propose some quantitative simulations on the changes in inequality and poverty levels for Italian households during the recent recession, and to study the role of public subsidies in integrating the incomes of those who have lost their jobs or have been temporarily suspended from it.

Focusing on the years 2008-2010, for a given demographic structure of the population we ask what has been the impact on inequality and poverty of both the reduction in unemployment and the increase in the number of employees in *Cassa Integrazione guadagni*, a job reduction scheme that is part of the backbone of Italian employment protection. We do not, therefore, mean to simulate the total impact of the economic crisis on the distribution of income and on poverty. To this aim, we would need data on the distribution of income changes for those who have not lost their job. It is reasonable, indeed, that the recession has been profoundly changing the economic structure of the country, with distributional consequences across individuals, areas and sectors that are only partially reflected by the statistics on the changes in employment levels and welfare payments. Further, in the absence of sufficient data on the distribution of the reduction in capital incomes we cannot simulate the effect of the performances of the housing and capital markets. The same problem applies to cash benefits or losses from self-employment, except for the case where people have closed their activity. Finally, it is not possible to separate the effect of the crisis from other phenomena that have continued to take place in the Italian labour market.[1]

If we want to use "real" data, i.e. the result of up to date surveys on households, we should wait for 2010 or 2011 households survey, which will be available only in a couple of years. As a consequence, it seems useful to show some simulations concerning the impact of the recession on

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[1] For example, if we observe a reduction in the female unemployment rate by 1 percentage point, the impact of the crisis could have been higher: without the crisis, this rate could even have increased.

unemployment.[2] We ask what has been the impact on inequality and poverty of the changes in the employment rate registered between 2007and 2010, and to what extent the current unemployment benefits and job reduction schemes have mitigated the impact of the crisis on households' incomes. The results presented in this ex-ante analysis would remain of some usefulness also when new data will become available: changes in poverty and inequality in "real" data are subject to a wide variety of influences, while the simulation allows one to consider one change at a time, in this case the variation in employment rates.

Recently, two papers have studied a similar subject for Italy. D'Amuri (2011) focuses on the Italian labour market and on the changes in earnings inequality. He finds that the recession has increased the probability of unemployment mainly for workers on fixed-term contracts, with a consequent rise in earnings inequality. Our results are consistent with these findings; we also study the implications on the more general changes in inequality and poverty among households' incomes. Figari et al. (2011), using the Euromod microsimulation model, study the role of social protection systems of various countries in contrasting the negative distributional effects of the downturn. Differently from them, we consider only a limited set of tax-benefit instruments, but we simulate in greater detail the reduction in employment probabilities. In addition to their work, we also provide an exhaustive reconstruction of the recipients of the *Cassa Integrazione*, a scheme that has been significantly expanded and strengthened by the Italian authorities during the recession.

Sections 2 and 3 are devoted to description of the data used and of the steps followed in the simulations; section 4 presents the results and section 5 concludes.

2. The data and the simulation of the changes in employment rates.

The dataset used for the simulations is the Eu-Silc 2008 survey for Italy (It-Silc). Since this survey refers to a period that predates the recession, it allows simulating all the effects of the changes in the occupational structure that took place during the recession. All the data have been updated to 2010 monetary values.

The most important step in our elaborations is the simulation of a reduction in the employment rate and of the related changes in labour and family incomes[3]. In the Eu-Silc dataset, the professional condition is defined with respect to the year of the interview, while income data are relative to the previous year (2007). The problem is that the job condition is surveyed with a detail that is enough to simulate the *Cassa integrazione* (sector of activity, position in the employment, etc.) only for 2008. For the previous year, we only know whether the individual was or not employed during each month. As a consequence, we have tried to avoid two extreme cases. Individuals who declared to be employed in 2008, but without having received labour income during 2007, and respondents who reported to be not employed in 2008, but who had received labour incomes during all 12 months in 2007.[4] In the first of these two cases, we re-classify the individuals as not employed, including them in the categories of the students, unemployed or in other non professional conditions according to the prevalent status during 2007. In the second case, we re-classify the subjects as employed and

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[2] See also Boeri (2010) and Misiani (2010).

[3] The employment rate is defined as the percentage of employed persons in the age range 15-64.

[4] For the self-employed with zero earnings, we check if they have worked for at least one month during 2007.

use the information on their activity in 2007.[5] For all other cases, we assume that nothing has changed between 2007 and 2008.[6]

In order to change the employment rate within our sample, we compare two datasets from the Italian labour force survey, the first one relating to the year 2007, and the second one to the year 2010. Notice that we take 2007 as the base year since earnings collected in It-Silc 2008 refer to the calendar year 2007, the period to which we try to reconcile the data on the job status of the respondents through the elaborations described above.

We focus on the population aged between 15 and 64 years, keeping its demographic structure constant between to the year of the survey (2008). , The reduction in the employment rate is simulated for 24 categories, defined according to the following variables:

- Gender.
- Age (less than 40, 40 or more).
- Education level (up to lower secondary, upper secondary, degree).
- Area of residence (North-Centre, South).

The 2007 sample refers to the "before the crisis" period, while the simulations have been done first by simply reducing the employment rates, and then also modifying incomes using the rules for unemployment benefits and for the wage supplement fund.

To build the groups affected by changes in employment rates, we avoid using characteristics related to the type of job or the sector of employment. Otherwise, we should have taken into account the occurrence of transitions across different sector, on which we do not have enough information at the individual level. We therefore simulate how the probability of being employed is likely to have changed in groups defined on the basis of fixed demographic categories, or variables that are likely to change only in a limited number of cases (for instance, the geographic area). The Labour force survey is used to estimate the change in the distribution of workers for each group before and after the crisis. For each category, we have computed the respective employment rates in the two cross-sections. The difference in the 2007 and 2010 employment rates has then been applied to each corresponding group in the It-Silc survey. For example, if for the group composed of young workers living in the South and with low education we observe a 4% fall in the employment rate, we apply the same percentage change within the It-Silc survey, irrespective of the initial level of the employment rate in this survey.

It is useful to clarify that the distribution of the population of interest across the 24 groups differs in the 2007 Labour Force survey sample and in It-Silc. In some of the groups, we observe that the latter tends to underestimate the employment for young individuals. This is not a result of the corrections applied to make the economic status consistent with the 2007 income, as we observe very similar results using the original Silc variables.[7] One of the reasons is the difference in the way in which the two surveys define employment. In the Labour Force survey, it refers to any paid job during the week previous to the interview, while it is the current self-defined economic status in It-Silc. Therefore we chose to simulate the same change in percentage points observed in the Labour Force survey, irrespective of the employment rate in the initial It-Silc sample.

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[5] These data are collected in section 7 of the individual questionnaire only for persons currently not employed. They refer to the most recent job. We do not have information on whether, during 2007, these individuals were employed in the public or private sector, nor on their economic activity. Therefore, we estimate a probit model for the dummy "public sector" and a multinomial logit for the class of economic activity, using data on those individuals who are employed in 2008. We then impute both for those individuals to whom we change status from not employed to employed, using monte carlo techniques, which simply means that we predict the probability of each category and we decide which is the relevant drawing a number from an uniform distribution. Full results are available on request.

[6] For these persons, therefore, we ignore the information on employment during 2007. The reason of this choice is that even if some inconsistencies are possible, we do not have the data to simulate the wage supplement fund.

[7] A full table is available on request.

Tab. 1 Distribution of the population aged 15-64 years, for each of the 24 groups used in the simulation of the transition between employment and unemployment

Group	Labour force survey		It-Silc survey
	2007	2010	
Up to lower secondary education; male; young; South	4.79%	4.27%	3.93%
Up to lower secondary education; male; young; North-Centre	6.4%	5.83%	5.59%
Up to lower secondary education; male; old; South	5.08%	5.15%	5.17%
Up to lower secondary education; male; old; North-Centre	8.78%	8.53%	8.73%
Up to lower secondary education; female; young; South	4.28%	3.79%	3.47%
Up to lower secondary education; female; young; North-Centre	5.03%	4.69%	4.3%
Up to lower secondary education; female; old; South	5.64%	5.64%	5.66%
Up to lower secondary education; female; old; North-Centre	9.14%	8.66%	9.03%
Upper secondary education; male; young; South	3.7%	3.79%	4.11%
Upper secondary education; male; young; North-Centre	7.22%	7.12%	7.49%
Upper secondary education; male; old; South	2.44%	2.57%	2.45%
Upper secondary education; male; old; North-Centre	6.12%	6.87%	6.48%
Upper secondary education; female; young; South	3.76%	3.74%	4.14%
Upper secondary education; female; young; North-Centre	7.23%	6.96%	7.33%
Upper secondary education; female; old; South	2.29%	2.47%	2.39%
Upper secondary education; female; old; North-Centre	6.07%	6.91%	6.33%
Degree; male; young; South	0.77%	0.75%	0.91%
Degree; male; young; North-Centre	1.88%	1.91%	2.06%
Degree; male; old; South	0.83%	0.91%	0.96%
Degree; male; old; North-Centre	1.97%	2.17%	2.14%
Degree; female; young; South	1.15%	1.2%	1.27%
Degree; female; young; North-Centre	2.69%	2.79%	2.88%
Degree; female; old; South	0.83%	0.98%	0.95%
Degree; female; old; North-Centre	1.91%	2.3%	2.22%
Total	100%	100%	100%

Source: authors' computations on It-Silc and Labour force survey data; population 15-64; all estimates use the sample weights.

Since there is no control on totals, the after-simulation final total employment rate that we simulate in the It-Silc survey is different from the rate registered in the 2010 Lfs. Actually, in our case it is slightly higher than that (tab.2). It seems nevertheless sensible to keep this result, for at least two reasons. The first is that the difference is low; the second is that, not being able to simulate the demographic changes occurred in the three years under consideration, we did not change the structure of weights. In this way we should be able to insulate the impact of the crisis from the changes in the demographic structure of the Italian society.

Within each of the 20 groups where the change in employment rate has been negative, we have randomly selected some employed persons in the private sector and re-classified them as non employed. These persons lose their recorded earnings, replaced by the unemployment benefit. If the workers do no meet all the requirements for receiving the full amount of the these benefits (in Italian, "requisiti ridotti", reduced requirements), we apply the reduced rate.[8] Further, we assume that the length of the unemployment condition is 12 months. This assumption, clearly very strong, is due to the difficulty of estimating transitions from non-employment to employment during the crisis, and of distinguishing between discouraged workers and unemployed. It is also in any case

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[8] We do not know all the details necessary to distinguish neatly between the two cases. In practice, we assign the reduced unemployment benefit to those unemployed with no more than two years of paid contribution. Those who have not paid any contribution in the past are left without any subsidy. For people with short term contracts, we take into account the characteristics of the particular benefits that apply to the various contract types.

not clear how to simulate spells of unemployment shorter than one year, because we do not have panel data that allow us to follow individuals thorough every month of 2010.[9]

In the four groups for which the employment rate during the period turns out to be increased, we have simulated in the It-Silc dataset a corresponding increase in the proportion of employed, by randomly selecting from the pool of those who were not employed (excluding disabled persons, pensioners and soldiers) a suitable number of respondents. We assign them an earnings level similar to the average earnings of the corresponding group, perturbed by an error with normal distribution and standard deviation equal to that observed in the sample for each group of workers.[10]

Tab. 2 Employment rates for each of the 24 groups used in the simulation of the changer in employment rates

Group	Labour force surveys			Simulation		
	2007	2010	Change	Before the crisis	After the change in employment	Change
Up to lower secondary education; male; young; South	49.8%	40.5%	-9.3%	56.2%	47.0%	-9.2%
Up to lower secondary education; male; young; North-Centre	64.9%	56.8%	-8.1%	70.3%	62.4%	-7.9%
Up to lower secondary education; male; old; South	63.2%	58.5%	-4.7%	64.5%	60.0%	-4.6%
Up to lower secondary education; male; old; North-Centre	67.8%	68.2%	0.4%	67.8%	68.2%	0.4%
Up to lower secondary education; female; young; South	17.6%	15.9%	-1.7%	18.3%	16.6%	-1.7%
Up to lower secondary education; female; young; North-Centre	40.7%	33.3%	-7.4%	48.3%	41.0%	-7.3%
Up to lower secondary education; female; old; South	18.6%	18.4%	-0.2%	18.1%	18.0%	-0.2%
Up to lower secondary education; female; old; North-Centre	37.4%	38.1%	0.7%	35.7%	36.4%	0.7%
Upper secondary education; male; young; South	58.5%	53.8%	-4.8%	52.9%	48.2%	-4.7%
Upper secondary education; male; young; North-Centre	80.7%	77.0%	-3.8%	78.4%	74.7%	-3.7%
Upper secondary education; male; old; South	80.1%	78.0%	-2.1%	80.3%	78.4%	-1.9%
Upper secondary education; male; old; North-Centre	83.4%	82.0%	-1.4%	83.5%	82.1%	-1.4%
Upper secondary education; female; young; South	35.0%	31.2%	-3.8%	29.5%	25.8%	-3.7%
Upper secondary education; female; young; North-Centre	65.6%	62.1%	-3.5%	62.6%	59.1%	-3.5%
Upper secondary education; female; old; South	51.9%	51.5%	-0.3%	52.1%	51.9%	-0.2%
Upper secondary education; female; old;	66.7%	67.5%	0.8%	65.1%	65.9%	0.7%

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[9] For more information on the length of unemployment in European countries, see the recent report Employment in Europe 2009 (European Commission, 2009). It is interesting to observe that the average length of unemployment estimated on the longitudinal section of Eu-Silc (ibidem, tab.15, p.91) turns out to be greater than that resulting from the labour force surveys of the various European countries, suggesting for Italy values that are not inconsistent with our assumption.

[10] The estimate clearly suffers from selection bias (incomes of new entrants could be lower than the average, because these persons are currently not employed). On the other hand, our assumption is equivalent to assuming that the distribution of the incomes of the employed in each group has not changed.

North-Centre

Degree; male; young; South	65.2%	60.5%	-4.7%	54.1%	49.6%	-4.5%
Degree; male; young; North-Centre	82.9%	80.5%	-2.4%	77.4%	75.0%	-2.4%
Degree; male; old; South	89.5%	88.7%	-0.7%	91.5%	90.8%	-0.7%
Degree; male; old; North-Centre	90.1%	88.9%	-1.2%	87.2%	86.0%	-1.2%
Degree; female; young; South	54.2%	50.7%	-3.5%	52.6%	49.2%	-3.4%
Degree; female; young; North-Centre	74.7%	74.0%	-0.8%	73.7%	73.2%	-0.6%
Degree; female; old; South	79.4%	76.0%	-3.4%	81.5%	78.2%	-3.3%
Degree; female; old; North-Centre	77.1%	78.1%	1.0%	78.0%	78.8%	0.8%
Total	58.7%	56.9%	-1.8%	59.1%	56.6%	-2.5%

Source: authors' computations on It-Silc and Labour force survey data; population 15-64; all estimates use the sample weights.

Table 2 shows the employment rates for the 24 groups of workers, in 2007 and in 2010 for the labour force survey, while in 2007 and after the simulated change in the It-Silc dataset. The four groups for which the employment rate has increased are all composed by mature workers, some of them probably being obliged to keep working after the changes in the rules governing the pension system. Even an increase in the employment rate for a group could hide a negative impact of the crisis, if the employment rate would have increased by a greater extent without it. In particular, in the years before the crisis the female employment rate has significantly increased, from 37.3% in 1998 to 46.3% in 2006 (source: Eurostat).[11] On the other hand, from 2006 to 2010 it has remained fairly stable.

Table 3 presents more synthetically the main characteristics of those individuals to which the simulation changes the employment condition from employment to non employment. It turns out, for example, that 2.38% of workers living in the North-eastern part of the country have lost their job after the recession, that the downturn has affected more, in general, the workers with low educational levels, and particularly younger workers aged less than 41 years. While the geographic area does not seem to make a relevant difference, even if the rates are slightly higher in the South, the group of workers born outside the EU countries, representing 5% of the total population, is over-represented among those who have lost their job, with a probability of becoming unemployed which is much higher than that for Italian workers.

Tab. 3 Shares of employed individuals that after the simulation lose their job by demographic characteristics, and their group composition

	Share of individuals	Composition		Share of individuals	Composition
Geographic area			Age class		
North West	2.43%	24.08%	<=30	3.23%	31.31%
North East	2.38%	16.95%	31-40	5.76%	52.84%
Centre	1.97%	14.45%	41-50	1.08%	9.6%
South	3.37%	30.48%	51-64	0.63%	6.25%
Islands	3.285	14.04%			
Total	2.65%	100%	Total	2.65%	100%
Education			Citizenship		
Up to lower secondary	3.1%	53.55%	UE	5.445	3.96%
Upper secondary	2.515	38.48%	Italian	2.51%	88.04%
Degree	1.58%	7.97%	Other countries	4.3%	8%

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[11] The table consulted for these data is "Employment rate by gender, [tsiem010], available on the Eurostat website (last access: 30 may, 2010). In 2004 the series has a break.

Total	2.65%	100%	Total	2.65%	100%

Source: authors' computations on It-Silc data; population 15-64; all estimates use the sample weights.

3. The simulation of the wage supplement fund (Cassa integrazione guadagni)

The Italian government decided to face the recession by relying upon the existing social protection schemes. The strategy has been to increase the total expenditure in them, without embarking in systemic reforms. As is well known, current Italian social insurance benefits form a system which is complex and unfair, and leaves many unemployed without any support (temporary, "atypical" workers with fragmented careers)[12]. Before the crisis, only a minority of the unemployed received a benefit.

Another scheme that has recently seen a rapid increase in total expenditure is the Cassa Integrazione Guadagni (Cig), a wages guarantee fund that protects workers' incomes and jobs in case of a temporary crisis of the firm where they are employed. It is administered by Social Insurance (INPS), and provides up to 80% of the salary for a short period (usually less than one year, but longer periods are allowed). Traditionally reserved to big industrial firms, this scheme has been extended during the recession to sectors so far excluded (small firms) and to wider time intervals. The Cig preserves the place of work and maintains a link between the worker and the firm, but slows the inevitable process of reallocation of workers due to changing market conditions.

In order to simulate its distributional effects, we need data on the number of hours of Cig conceded during 2010[13]. Again ideally, we would need to know the distribution among workers of the reduction in hours worked. Unfortunately, we only know the frequency distribution of the total number of hours authorised by the Social Insurance Institute (INPS), by sector of activity and geographic area, as provided by the Statistical Observatory on Cig available at the Inps website (www.inps.it). We also know, from the Inps Annual Report 2010, the share of total authorised hours that have been actually used during 2010, without any disaggregation by area or sector. In 2010 a total of 1.204 billion hours have been authorised, with a utilisation rate of 49.1%, corresponding to 591millions (Inps 2011).

Usually each worker benefits from Cig for a limited number of hours: according to the Inps Report, during 2010 the total number of workers interested by Cig has been 1.56 million, corresponding to an average of two months in Cig for each of them.[14] The Cig scheme has therefore allowed to share among a great number of persons the fall in Gdp. Since we do not have information on the distribution of Cig among the single workers, it seems reasonable to simulate the receipt of this scheme by 1.56 million workers, corresponding to 7% of total employed. Given the distribution of total Cig hours between sectors (industry, construction, artisans, trade), areas (North, Centre, South) and condition in employment (blue and white collars), we construct 24 groups and we compute the number of Cig beneficiaries in each of them. Using their distribution across the groups, we randomly select a corresponding number of beneficiaries in each group, in such a way that the proportion of the employed individuals covered by this scheme is equal to the total number of beneficiaries reported by Inps (2011) divided by the total number of individuals in employment according to official statistics (Banca d'Italia, 2011). To each selected worker, we assign 771 hours of authorised Cig, of which on average 49% are actually used, i.e. about 378 hours, corresponding to two months of work. We exclude from the sample of potential Cig users the self-employed and the public employees. We also take account of those workers that in the original It-Silc sample declare to be using the Cig scheme. All individuals who are extracted as Cig beneficiaries receive a transfer equal to 80% of their monthly wage, for two months. They lose twice the ratio between

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[12] See Anastasia et al. (2009).

[13] We consider jointly all forms of Cig (ordinary, extraordinary, "in deroga").

[14] Two months of working hours correspond to 49% of the ratio between the total number of authorised Cig hours and the number of workers involved in the scheme during 2010.

their total yearly earnings and the number of monthly payments received in the year.[15] The average amount of Cig received is 1834 euro.

Tab. 4 Distribution of workers interested by the Cig scheme

			Inps data (year 2010)		It-silc data after Cig simulation
			number	%	%
Blue collars	industry	North	564,490	36.21%	36.67%
		Centre	112,330	7.21%	7.28%
		South and Islands	183,108	11.75%	11.85%
	artisans	North	134,951	8.66%	8.69%
		Centre	36,291	2.33%	2.28%
		South and Islands	5,296	0.34%	0.32%
	construction	North	50,064	3.21%	3.19%
		Centre	17,516	1.12%	1.09%
		South and Islands	31,342	2.01%	1.67%
	trade	North	36,458	2.34%	2.34%
		Centre	11,383	0.73%	0.51%
		South and Islands	16,712	1.07%	1.02%
White collars	industry	North	181,743	11.66%	11.84%
		Centre	39,432	2.53%	2.57%
		South and Islands	33,403	2.14%	2.17%
	artisans	North	16,395	1.05%	1.07%
		Centre	3,083	0.20%	0.19%
		South and Islands	996	0.06%	0.0%
	construction	North	2,757	0.18%	0.06%
		Centre	949	0.06%	0.06%
		South and Islands	1,475	0.09%	0.05%
	trade	North	46,812	3.00%	3.03%
		Centre	11,515	0.74%	0.74%
		South and Islands	20,489	1.31%	1.31%
	Total		1,558,991	100.0%	100.0%

Note: the number of workers in each group has been reconstructed on the basis of the data provided by the observatory on the Cig available at the Inps website. We have assumed that workers benefiting from Cig are distributed among the groups proportionally to the number of authorised hours; population 15-64; all estimates use the sample weights.

From Table 4, one third of authorised hours went to industrial manual workers on the north. The next more significant groups belong to the industrial sector as well: manual workers of the South (11.7%) and of the Centre (7.2%), together with industrial white collars in the North (11.7%). As in the analysis of the previous paragraph, in Table 5 we show some characteristics of the persons selected as Cig beneficiaries by our simulation. Compared with the fall in employment levels, the Cig is much more concentrated in the North than in other areas. The age of beneficiaries is higher than in the case of the simulation of the probability of job loss. Finally, since the ethnic minorities are often employed as manual workers in the factories of the North, it is not surprising that the diffusion of the Cig among them is greater than among Italian workers.

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[15] In this way we can allow for the fact that in the two months under Cig the workers lose not only 20% of their wage, but also possible integrations from extra work hours or fringe benefits.

Tab. 5 Share of employed workers to which the simulation has imputed the Cig and their group composition

	Share of individuals	Composition		Share of individuals	Composition
	Geographic area			Age class	
North West	8.61%	37.98%	<=30	8.13%	21.82%
North East	8.80%	28.59%	31-40	7.6%	33.83%
Centre	4.81%	14.8%	41-50	6.34%	29.05%
South	5.12%	13.93%	51-65	5%	15.31%
Islands	3.59%	4.69%			
Total	6.77%	100%	Total	6.77%	100.0%
	Education			Citizenship	
Up to lower secondary	9.4%	51.6%	UE	7.7%	2.54%
Upper secondary	6.32%	42.31%	Italian	6.6%	90.13%
Degree	2.35%	6.09%	Other countries	9.06%	7.33%
Total	6.77%	100.0%	Total	6.77%	100.0%

Source: authors' computations on It-Silc data; population 15-64; all estimates use the sample weights.

4. The distributive impact of the recession and of the benefits

In this section we use the dataset built according to the criteria described above to simulate the change in the distribution of household incomes that took place during the crises, as a consequence of the fall in earnings. We simulate to what extent this reduction has been tempered by increased expenditure on unemployment benefits and on the wage supplement fund.
We consider in particular three scenarios:
  A) The first case corresponds to the distribution of income before the crisis.
  B) The second scenario considers the impact of the changes in the unemployment rate and of the increase in the unemployment benefits and in the Cig.
  C) Finally, scenario C corresponds to the income distribution that would have been produced by the recession without changes in social benefits.

The analysis is performed on the individuals of the It-Silc sample. To each person we assign the disposable income of his/her family, corrected using the modified Oecd equivalence scale. The impact of the crisis and of social benefits is measured by observing the changes in the Gini and poverty incidence indexes, the latter computed by defining two poverty lines: the first one set at 60% of median equivalent income across persons, the second one set at 40% of the median, so as to select the most serious cases.
After the recession and the reduction in earnings, the whole income distribution should present, ceteris paribus, a fall in median and average family values.[16] If the poverty line is computed ex novo, in a purely relative approach to the study of poverty, it should be lower than the poverty line

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[16] As discussed in the previous paragraphs, for a few groups employment has increased from 2007 to 2010, and with it also household incomes. For workers benefiting from the wage suplpement fund, however, the change in earnings is always negative.

of the pre-crisis distribution. The use of a variable poverty line would therefore narrow the increase in poverty, because in order to define a person as non poor it would now be enough to have an income level lower than the previous line.[17] To take this effect into account, in what follows we show some results computed with a variable poverty line, i.e. recomputed on the distribution of income after each of the four scenarios, while other poverty indexes are computed by keeping the poverty line fixed at the level obtained from scenario A, i.e. on the distribution before the crisis. This second case corresponds to the application of an "absolute" approach to poverty, because it takes also into account the absolute levels of incomes.

Table 6 shows, for quintiles of the pre-crisis income distribution, the average equivalent income before the crisis (A), after the crisis without changes in social benefits (C), and after the crisis considering also the impact of social benefits (B). Case C is the counterfactual, i.e. the hypothetical situation without changes in benefits. The right section of the table contains the percentage changes in average income by quintiles, the percentage change in post-crisis incomes due to social benefits and a measure of how much of the income loss caused by the crisis has been recovered thanks to the social benefits. The recession would have caused disposable incomes, ceteris paribus, to fall on average by 3.16%. Social benefits have filled about one third of this loss, reducing the fall in average income to 2.27%. The impact of the crisis has been harder for the lower quintiles, in percentage terms. Social benefits have had a greater impact on lower incomes. If we restrict the analysis only to the households that have seen a fall in income (representing 12% of all households, i.e. about 3 millions), on average the equivalent incomes of the persons living in these households have fallen, before changes in benefits, by 26%, and by 19% after the increase in benefits (data not shown in the tables).

Tab. 6 Average equivalent income by quintiles of equivalent income, before and after the crisis – all individuals of the sample

	A) Before the crisis	B) After the crisis with social benefits	C) After the crisis without social benefits	from A to B	from A to C	% increase in income from benefits	Share of income loss regained through the benefits
1	9124	8802	8636	-3.52%	-5.34%	1.92%	34%
2	15113	14755	14578	-2.37%	-3.54%	1.22%	33%
3	19846	19387	19195	-2.31%	-3.28%	1.00%	30%
4	25506	24883	24628	-2.44%	-3.44%	1.04%	29%
5	40923	40180	39986	-1.82%	-2.29%	0.48%	21%
Total	22101	21600	21403	-2.27%	-3.16%	0.92%	28%

Source: authors' computations on It-Silc data; all estimates use the sample weights.

Since the losses are particularly high for households where labour incomes are present, Table 7 repeats the content of the previous one, but only for the subsample of persons who live in households where the head is aged less than 65 years. [18] In this case the recession would produce a greater reduction of average income (4%), softened by social transfers in particular for the lowest quintiles.

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[17] An extreme example: if all incomes fall by 90%, and with them also the poverty line, the diffusion of relative poverty does not change.

[18] The household head is defined as the person with the highest individual income in the family.

Tab. 7 Average equivalent income by quintiles, before and after the crisis – individuals living in households with head aged less than 65 years

	A) Before the crisis	B) After the crisis with social benefits	C) After the crisis without social benefits	from A to B	from A to C	% increase in income from benefits	Share of income loss regained through the benefits
1	8974	8575	8373	-4.45%	-6.70%	2.42%	34%
2	15120	14643	14409	-3.16%	-4.71%	1.62%	33%
3	19878	19281	19033	-3.00%	-4.25%	1.30%	29%
4	25542	24787	24483	-2.96%	-4.15%	1.24%	29%
5	40608	39754	39535	-2.10%	-2.64%	0.55%	20%
Total	22326	21705	21463	-2.78%	-3.86%	1.12%	28%

Source: authors' computations on It-Silc data; all estimates use the sample weights.

Tables 8 and 9 provide an overall vision of the impact of the crisis, in terms of changes in the inequality and poverty indexes (both with variable and fixed line). Without benefit increases, the Gini index would rise by more than one point, not a small variation, and poverty diffusion with fixed line by nearly 3 points. The increase in poverty with the line set at 40% of the median would also be significant. The Appendix provides the results of the test of statistical significance of the differences in poverty measures.

Tab. 8 Inequality and poverty before and after the crisis – all individuals living in the sample

	Gini	Poverty diffusion with line at 60% of the median		Poverty diffusion with line at 40% of the median	
		Variable line	Line fixed at scenario A	Variable line	Line fixed at scenario A
A) Before the crisis	0,2877	16.85%	16.85%	5,53%	5,53%
B) After the crisis and the increase in unemployment benefits and Cig	0,2952	17.48%	18.58%	6,60%	6,96%
C) After the crisis without changes in social benefits	0,3006	17.82%	19.29%	7,14%	7,56%

Source: authors' computations on It-Silc data; all estimates use the sample weights.

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Tab. 9 Inequality and poverty before and after the crisis - individuals living in households with head aged less than 65 years

	Gini	Poverty diffusion with line at 60% of the median		Poverty diffusion with line at 40% of the median	
		Variable line	Line fixed at scenario A	Variable line	Line fixed at scenario A
A) Before the crisis	0.2902	17.20%	17.20%	5.96%	5.96%
B) After the crisis and the increase in unemployment benefits and Cig	0.3000	18.34%	19.35%	7.36%	7,73%
C) After the crisis without changes in social benefits	0.3068	18.87%	20.22%	8,09%	8.48%

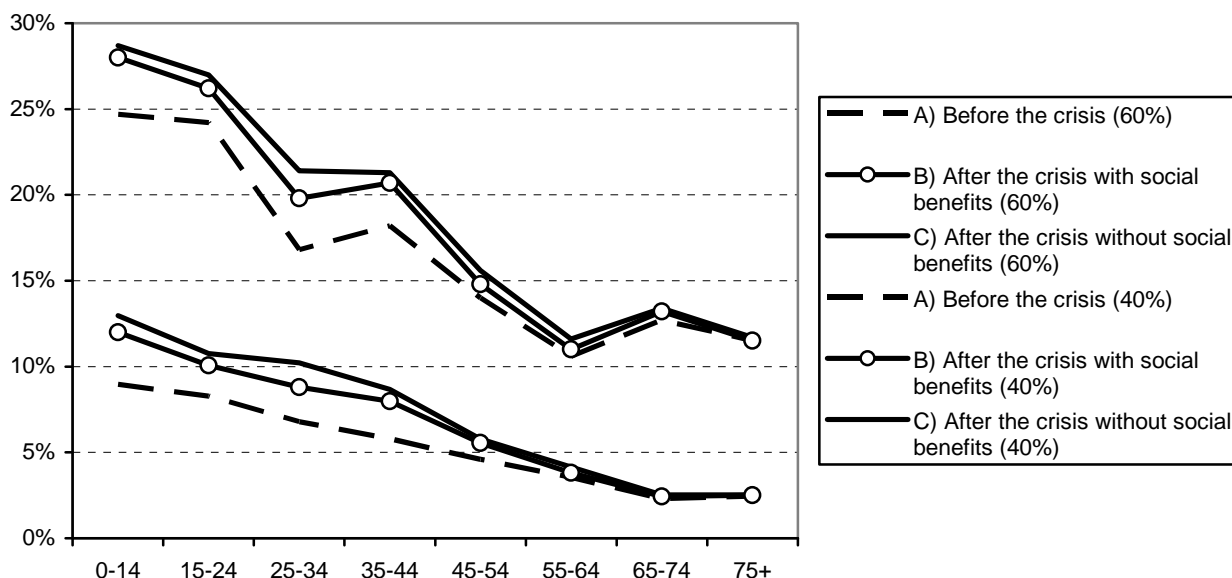*Source: authors' computations on It-Silc data; all estimates use the sample weights.*

The impact of the recession seems to vary across age classes: even after the extension of social benefits, those more hardly hit are the younger, therefore making more marked the concentration of poverty among households with children (Table 10 and Figure 1). Figure 1 contains also the values of the poverty rate for the 40% line, fixed at the pre-level crisis.

Tab. 10 Poverty before and after the crisis (line at 60%) by age classes –all the individuals of the sample

	Variable line			Fixed line		
	A) Before the crisis	B) After the crisis with social benefits	C) After the crisis without social benefits	A) Before the crisis	B) After the crisis with social benefits	C) After the crisis without social benefits
0-14	24.7%	26.5%	26.9%	24.7%	28.0%	28.7%
15-24	24.2%	24.7%	25.2%	24.2%	26.2%	27.0%
25-34	16.8%	18.8%	19.9%	16.8%	19.8%	21.4%
35-44	18.2%	19.6%	19.8%	18.2%	20.7%	21.3%
45-54	14.0%	13.8%	14.4%	14.0%	14.8%	15.6%
55-64	10.6%	10.5%	10.9%	10.6%	11.0%	11.6%
65-74	12.7%	12.0%	11.9%	12.7%	13.2%	13.4%
75+	11.5%	10.0%	9.8%	11.5%	11.5%	11.7%
Total	16.9%	17.4%	17.8%	16.9%	18.6%	19.3%

Source: authors' computations on It-Silc data; all estimates use the sample weights.

Fig. 1 - Poverty before and after the crisis (fixed line at 60% or 40%) by age classes –all the individuals of the sample

Source: authors' computations on It-Silc data; all estimates use the sample weights.

With fixed line, the crisis would produce a much stronger effect in Northern regions (Table 11), if we evaluate the impact in relative terms with respect to the respective starting points. Social benefits would anyway be more effective in contrasting the rise in poverty indexes in the North, due to the greater concentration of industrial jobs, and therefore of the wage supplement fund, in that area.

Tab. 11 Poverty before and after the crisis (line at 60%) by area of residence –all the individuals of the sample

	Variable line			Fixed line		
	A) Before the crisis	B) After the crisis with social benefits	C) After the crisis without social benefits	A) Before the crisis	B) After the crisis with social benefits	C) After the crisis without social benefits
North	8.4%	9.3%	9.9%	8.4%	10.1%	10.7%
Centre	10.1%	10.3%	10.3%	10.1%	10.9%	11.4%
South	31.6%	32.1%	32.2%	31.6%	33.9%	34.8%
Total	16.9%	17.4%	17.8%	16.9%	18.6%	19.3%

Source: authors' computations on It-Silc data; all estimates use the sample weights.

Tab. 12 Poverty before and after the crisis (line at 60%) by education of the head – all the individuals of the sample

	Variable line			Fixed line		
	A) Before the crisis	B) After the crisis with social benefits	C) After the crisis without social benefits	A) Before the crisis	B) After the crisis with social benefits	C) After the crisis without social benefits
Lower secondary	23.8%	24.2%	24.5%	23.8%	25.9%	26.6%
Upper	11.0%	11.9%	12.4%	11.0%	12.6%	13.4%

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	secondary					
Degree	4.7%	5.1%	5.3%	4.7%	5.6%	5.9%
Total	*16.9%*	*17.4%*	*17.8%*	*16.9%*	*18.6%*	*19.3%*

Source: authors' computations on It-Silc data; all estimates use the sample weights.

5. Conclusions

Like in other European countries (Ward et al. 2009), also in Italy the recent reduction in employment rates originated by the 2008-2010 crisis has hit younger workers much more than the rest of the population (according to our results, in Italy 84% of workers who have lost their jobs are aged less than 40 years), as well as those with low education levels and with foreign citizenship. The extension of the Cassa integrazione guadagni has mainly interested the Northern regions, the middle-aged workers and those with Italian citizenship. Together with the reliance on unreformed unemployment benefits, which exclude many fixed term contracts and atypical workers, these measures have therefore reinforced the dual nature of the Italian job market and of the social protection system: young employees and workers of small firms on the one side, middle-aged and medium or big firms workers on the other. Almost no effort has been made towards a more universal system.

According to our simulations, the current recession, like the previous deep crisis of 1993, should have increased inequality and poverty (with the usual caveat of the ceteris paribus assumption). If we keep the poverty line fixed at the pre-crisis level, the poverty rate with line at 60% should have increased by about 2.5 percentage points, an increase similar to that measured with the 40% line. Inequality should have worsened too. The reaction of public policies, in terms of greater expenditure for traditional social benefits, has had a significant impact on the extent of poverty, in any case far from being able to bring back the indexes at their pre-crisis levels.

Appendix

From the point of view of the simulation, the changes in the inequality and poverty indices are almost deterministic. They simply summarize the overall magnitude of the reduction in earnings associated to the procedure we set up to replicate on the It-Silc sample the trends that we observe in labour force surveys. The only component of variation is induced by the random selection of those individuals that lose their job. Given the high correlation between the earnings before the simulation and the earnings after it, we are likely to find that all changes are significantly different from zero at standard statistical significance level.

However, it is interesting to look at the results from the point of view of an observer who looks separately at the sample "before" the crisis and at the one "after" the crisis. This is similar to what we would do if we had already had two independent It-Silc cross-sections available, one relative to 2007, and the other relative to 2010. We do one step more, considering also the sample where we remove the unemployment and *Cig* benefits.

In all three, we estimate the standard errors for the poverty rate. Given the relatively large sample size, we approximate it with the standard estimator for the standard error of the sample mean, accounting for the clustering of individuals at the household level. We then compute the standard *z-score* test for the difference in the means, assuming that the samples are independent[19]. This is used

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[19] Though the proper distribution of the statistic is a *student t*, given the sample size it is well approximated by a standard normal.

to calculate the p-value for a one-tail test that the poverty rate is higher after the reduction of income. The differences between the poverty rates before and after the crisis are almost always significant, even considering the increase in benefit spending.

Table A.1 P-values for the one-tail test of the significance of the changes in poverty rates

	Variable poverty line		Fixed poverty line	
	All individuals	Individuals living in households with head aged less than 65 years	All individuals	Individuals living in households with head aged less than 65 years
Before the crisis (A) – After the crisis with benefits (B)	0.154	0.051	0.002	0.001
Before the crisis (A) – After the crisis without benefits (C)	0.049	0.008	0.000	0.000
After the crisis with benefits (B) – After the crisis without benefits (C)	0.266	0.225	0.120	0.112

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