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Titulo

Los cambios en el mercado laboral y las desigualdades de salud durante los años de la reciente recesión económica en Italia [1]

Autores

S.Sarti[a] y S.Zella[b]

[a] *University of Milan, Department of Social and Political Sciences, Italy*
[b] *Swiss Centre of Expertise in the Social Science (FORS) and University of Lausanne, Switzerland*

Abstract

There is widespread concern that episodes of unemployment and unstable working conditions adversely affect health. We add to the debate by focusing on the relationship between work trajectory and the self-reported health of Italian men and women during the present economic downturn. Relying on Italian data in the EU-SILC project (from 2007 to 2010), our sample includes all individuals aged 30 to 60 in 2010, and uses multivariate binomial regression models for preliminary analyses and the Structural Equations modelling (SEM) to observe the cumulative effects of health status according to different job trajectories. Our main findings show similar pictures for men and women. Individuals who are unemployed, ejected or in precarious occupational positions have a higher risk of worsening their health status during these years.

1. Introduction

The objective of this paper is to evaluate the relationship between changes in labour market conditions and self-reported health. We frame our study on the Italian context from 2007 to 2010, which corresponds to the first years of the recent economic downturn. The effect of labour market conditions on health has been previously investigated using several theoretical framework and different methodological approaches (Brand et al., 2007; Cullati et al., 2014; Cullati, 2014; Drydakis, 2015;Economou et al., 2008; Menéndez et al., 2007; Novo et al., 2001; Pirani and Salvini, 2015; Ruhm, 2000, 2005; Stuckler et al., 2009; Urbanos-Garrido and Lopez-Valcarcel, 2014; Virtanen et al., 2005). The majority of scholars have argued that massive levels of unemployment and its persistence has deleterious effects on an individual's well-being (Barnay, 2014; Oesch and Lipps, 2012; Pirani and Salvini, 2015; Strandh et al., 2014; Urbanos-Garrido and Lopez-Valcarcel, 2014); those workers who experience work insecurity also experience strong adverse effects on their health (Laszlo et al., 2010; Ferrie et al., 2002) and exiting the labour market can be associated with a decrease in physical activity (Grayson, 1993) and health risk behaviours, such as excessive alcohol consumption or more smoking (Fagan et al., 2007; Mossakowski, 2008).

Despite the important number of studies on this topic, there is a persistent and strong interest in this association, which could be justified for three reasons. First, the position in the labour market (as well as working conditions) constitutes one of the major social determinants of health (CSDH, 2008). As highlighted by the World Health Organization (2012), employment conditions, work trajectories and the nature of the work itself have an important influence on the health of workers, families and communities. Second, in recent decades permanent full-time employment characterized by a stable salary and job security has been replaced by new forms of flexible and

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temporary work contracts, which in turn have modified labour market entry and exit conditions, leading to growing instability in employment relationships. In recent years the economic crisis has worsened the situation in the Italian labour market, bringing a dramatic increase in the unemployment rate and a decrease in stable and secure careers. Looking at the Italian labour market, there is clear evidence that the proportion of unemployed (in particular individuals under 35 years old) has increased over time and reached its peak during the years of the recent economic crisis: on the basis of the World Bank's data the unemployment rate was 8% in 2004 and 11% in 2012. And third, the availability of new data has increased evidence of the association between precarious employment and poor health (Benach et al., 2014).

Much remains to be understood about the relationship between work and health, in particular in terms of a longitudinal perspective. The majority of previous research examined this relationship using cross-sectional surveys, which do not allow for selection effects to be captured. Only a few scholars have approached this study using a longitudinal perspective. Pirani and Salvini (2015) estimated the causal effect of temporary work on self-rated health in Italy, applying inverse-probability-of-treatment weights and controlling for selection effects. Cottini and Lucifora (2010) and Ehlert and Schaffner (2011) used fixed effects models to study the relationship between work and health in a comparative approach. Strandh et al. (2014) investigated the long-term relationship between unemployment experiences and mental health over the life course, employing mixed models on Swedish data. Drydakis (2015) used a fixed effect ordered logit model to examine the effects of unemployment on self-reported and mental health in Greece.

Our study addresses open questions about the association between the changes in the labour market conditions and self-reported health. Specifically, we aim to evaluate whether social disadvantages in health are cumulative and whether differences between the genders exist in Italy. We frame our research on the cumulative advantage perspective, which argues that the advantage of one individual (or group) over another increases over time. This perspective has been extensively discussed in the literature on health, and scholars have suggested that, thanks to its dynamic characteristic and its ability to capture changes over time, it allows a definition of the social process driving health trajectories to be achieved (Blane et al., 2007; Cullati et al., 2014). We rely on four waves of Italian data from the European Union Statistics on Income and Living Conditions (IT-SILClongitudinal surveys from 2007 to 2010) and use structural equation modelling (SEM). This method allows us to evaluate the direct/indirect decomposition effect on the cumulative association between different health statuses.

This study makes relevant contributions to the literature as, to the best of our knowledge, this paper represents one of the few analyses of the aforementioned relationship in the Italian context which simultaneously takes into consideration several work trajectories and addresses the cumulative theory of health status. In addition to this it also examines gender differences.

Our article is structured as follows. After a review of the literature on the link between occupational position and health, we will describe the main changes in the Italian labour market in the years of the economic crisis. The section on 'Data and methods' discusses the data used and the statistical technique chosen. The section on 'Results of analysis' provides descriptive evidence of the association of our interest and shows the estimation results of SEM models. The 'Conclusion' section discusses the main findings, reflects on the limits of the study and proposes some ideas for the future.

2. Theoretical and background

2.1 Cumulative advantage theory and previous findings on the relationship between occupational condition and health

Scholars from different disciplines, such as economics, sociology and epidemiology (e.g., Dorling, 2009; Economou et al., 2008; Ruhm, 2005; CSDH, 2008) have paid more attention to the relationship between health and the labour market, which has contributed to the development of different approaches and methodologies.

In our opinion, one of the most suitable theoretical frameworks for analysing labour market and health status is the cumulative advantage theory. This approach allows the mechanism through which a favourable position generates further gains across the life course to be captured, resulting in the growth of the advantage of one individual or group relative to another across time (DiPrete and Eirich, 2006). The cumulative advantage theory represents the social dynamics that affect individual lives at the macro level (Cullati et al., 2014). As a result, the cumulative advantage trajectories can vary with economic and political changes (Morello-Frosch et al., 2011). The concept of cumulative advantage was originally proposed by Merton in his study on stratification in scientific careers (1968). Since Merton's original formulation, many conceptual discussions regarding cumulative advantage as a mechanism generating health inequality across the life course have recently emerged, even though the cumulative processes linking inequality to health have not been empirically addressed in a systematic manner (DiPrete and Eirich, 2006; Dupre, 2008). Research that considers the temporal processes generating health inequality has begun to ask whether cumulative advantage as a mechanism for inequality explains the stratification of health across the life course. For example, Ross and Wu (1996) examine the relationship between educational attainment and health for individuals aged 20-64 using short-term longitudinal data. Supporting a process of cumulative advantage, they found that the gap in health (self-reported health, physical functioning, and physical well-being) among people with high and low educational attainment increases with age. Through the use of a similar methodological design, Miech and Shanahan (2000) also found an age-related gap in the relationship between SES and mental health. Some critics argue that it is difficult to discern whether this relationship is the result of changes that occur with the process of over-time accumulation, or cohort differences, since the data used either have a cross-sectional nature or are very short-term panel studies (Brim at al., 2004).

Recent empirical applications of the concept of cumulative advantage as a mechanism generating health disparities across the life course use longitudinal data. These studies underline that a prior state influences the current state and has both direct and indirect long-term consequences. For example, the studies by Blackwell et al. (2001), Kuh et al. (2002) and McLeod and Shanahan (1996) focused on a conceptual model that specifies a full-path-dependent process of cumulative advantage, and underlined that the health effects of early socioeconomic resources have a continuing influence on later outcomes.

Another variation of cumulative advantage is rooted in the Blau and Duncan tradition. The cumulative exposure model, in this case, utilises the *duration* concept to suggest that long-term exposure to a particular state may have a direct effect on the rate of the accumulation process.

Few such studies exist in health literature, probably because to examine this type of cumulative advantage process requires extensive data. One example is the article by McDonough and Berglund (2003), who examine of the effect of poverty history on trajectories of health. They observed that persistent poverty early in life predicted health disparities, but that cumulative exposure to poverty was not related to over-time change in health trajectories; initial differences in health remained constant over time. Adopting the cumulative advantage perspective, Cullati (2015) analyses whether health trajectories are diverging as people age across socio-economic positions in Switzerland. He finds an association between employment status and income on shaping health trajectories, but he underlines that there is little evidence to support the cumulative advantage model hypothesis.

Finally, another question that health literature asks is whether cumulative advantage implies a process of unlimited growth. Some studies suggest that the health advantages of socioeconomic resources diminish upon reaching a critical age value: in this sense the socioeconomic trajectories of health diverge through the middle years and converge in later life (Beckett, 2000; Mishra et al., 2004; Mustard et al., 1997).

Expanding our reflection to include other theoretical perspectives, it is possible to note that the majority of the studies on the relationship between the labour market position and health provide consistent evidence that an unstable work career (in particular including episodic unemployment)

has a negative impact on health. In other words, high unemployment rates seem not only to have social and economic disadvantages for individuals (through their negative financial consequences), but they are also a risk factor for the population's health as reflected in mortality rates (Bonamore et al., 2015; Garcy and Vågerö, 2012; Halliday, 2014). One of the most recent articles on this topic is by Urbanos-Garrido and Lopez-Valcarcel (2014) and based on a Spanish context. The authors estimate that unemployment episodes have a significant negative impact both on self-assessed health and on mental health. In addition, their findings confirm that this impact is particularly strong in the case of the long-term unemployed.

Strandh (2014), using a longitudinal perspective, also clearly shows the negative impact of unemployment on health. Specifically, he concentrates his study on the relationship between unemployment episodes at 16, 18, 21, 30 and 42 years of age. He unequivocally finds that youth unemployment is significantly connected with poorer mental health at three target ages: 21, 30 and 42 years. At the same time later singular unemployment experiences did not appear to have the same long-term negative effects. In Greece, the country most affected by the crisis in the EU area, Drydakis (2015) proved that unemployment has a stronger negative impact on physical and mental health during periods of high unemployment rates and that this problem affects more women than men. This conclusion prompted the author to consider the importance of focused policy actions for reducing unemployment and supporting women's employment.

To complete the literature review, we cite a group of scholars who have contradicted the notion that unemployment worsens health (physically and mentally).

One of the most well-known authors in this group is Ruhm (2000, 2005). He based his analyses on US data and showed that recessions are beneficial to population health since mortality rates decline with increasing unemployment rates. Consequently, by decreasing the unemployment rate economic upturns have a negative effect on physical health. The author supported his idea on the basis of three aspects: 1) the possibility of health enhancing activities is reduced because of the decrease in non-market leisure, 2) there should be an increase in unsafe working conditions and in working hours, because health generates services and products, 3) higher income increases the chances of unsafe activities such as smoking, drinking and excessive consumption of a high fat diet. Ruhm's findings were confirmed by Gerdtham and Ruhm (2006) and Neumayer (2004), but many authors contradicted them (e.g., Economou et al., 2008; Urbanos-Garrido and Lopez-Valcarcel, 2014). As mentioned before, several scholars support the idea that exiting the labour market or the loss of a job could negatively affect health, because the events mentioned are detrimental to an individual's standard of living and financial resources. Restricted financial resources may lead to poor nutrition and restricted access to necessary medical health care which may cause increased physical morbidity and even death.

2.2 Italian studies and changes in the labour market

So far there have not been many studies of this relationship that focus on the Italian context. However, there is increasing attention on topic of health (Callea et al., 2012; ISTAT, 2014; Pirani and Salvini, 2015), probably driven by the social risks tied to important changes in Italian labour market conditions during the years of the recent economic crisis.

Until the 1980s, the Italian labour market could be defined as heavily regulated and characterized overall by a use of permanent contracts. The Italian labour market reforms of the 1990s (the Treu package: Law 196/1997), and 2003 (the Biagi Law 30/2003) progressively introduced new contractual forms with a high degree of flexibility both in working time and duration, such as part-time, job-on-call, apprenticeship, training, fixed-term and project-based work, generating the so-called "atypical", "non-standard" or "precarious"[2] forms of employment (Tompson, 2009; Mussida

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[2]The literature underlines that precarious employment is a multidimensional concept, defined by the degree of certainty over the continuity of employment, the sufficient level of pay and salary

and Lucarelli 2014; Barbieri and Scherer, 2009). These reforms saw Italy reach the highest rate of flexible and temporary contractual forms in Europe over the period 1997-2008 (OECD data), involving mostly young workers. The reforms aimed to go beyond the dual characterization of the Italian market labour, and intended to alleviate the difference between insiders - occupied with open-ended contracts with an advantageous social protection, and outsiders - persons excluded from the social security system (Lindbeck and Snower, 1988). Thus, the general intent of the reformers was to enforce the position of outsiders, moving from unregulated areas of work and easing the transition from school to work for younger people (Barbieri and Scherer, 2009).

On the other hand, rather than reduce the differences between insiders-outsiders this flexibility seems to have led to a deterioration in the overall conditions of the Italian labour market during the years of the crisis. The most recent data from the Italian National Institute of Statistics(2014) show that the employment rate has decreased by 4.2% from 2008 to 2013, a decrease that has mostly hit men (6.9%), compared with only 0.1% of women. The substantial stability of the number of women in the labour market can be associated with three main factors. First, there is an important increase in the number of foreign women (+350 thousand units from 2008 to 2013), compared with a decrease in the number of Italian workers (-4.3%). Second, there is an increase in employed persons aged 50 years or more, due to the raising of the retirement age. Lastly, an important number of wives have become workers to compensate for their husbands' unemployment.

However the youngest generation (15 – 34 years old) is the one most affected by the crisis, with a decline of 10.2% in employment: in 2013 the employment rate of individuals under 35 years reached 40.2% (Mussida and Lucarelli, 2014).

Figures 1 and 2 show the trend in the occupational macro-indicators starting in the 1990s, when the first reform in the labour market was implemented. From this perspective, the period that we will analyse (2007-2010) is particularly interesting because it contains the beginning of the recent crisis in terms of the collapse of the GDP (see in Appendix Figure A1).

The data clearly attest to the worsening of occupational conditions for males, the rise in the unemployment rate and the decrease in labour force participation. The situation is different for females, where the increase in the unemployment rate (Figure 1) is followed by a slight rise of female participation in the labour market.

Figure 1. Unemployment, percentage of labour force (ILO estimates), circles show the years analyzed. Source: Worldbank.

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progression, legal protection and the workers' individual and collective lower control of work (Barbieri and Scherer, 2009; Mussida and Lucarelli, 2014).
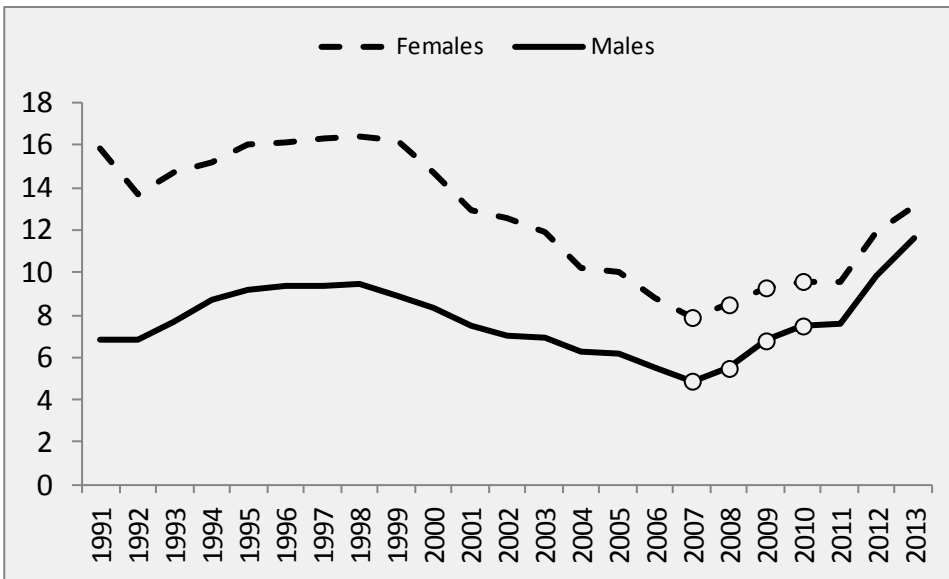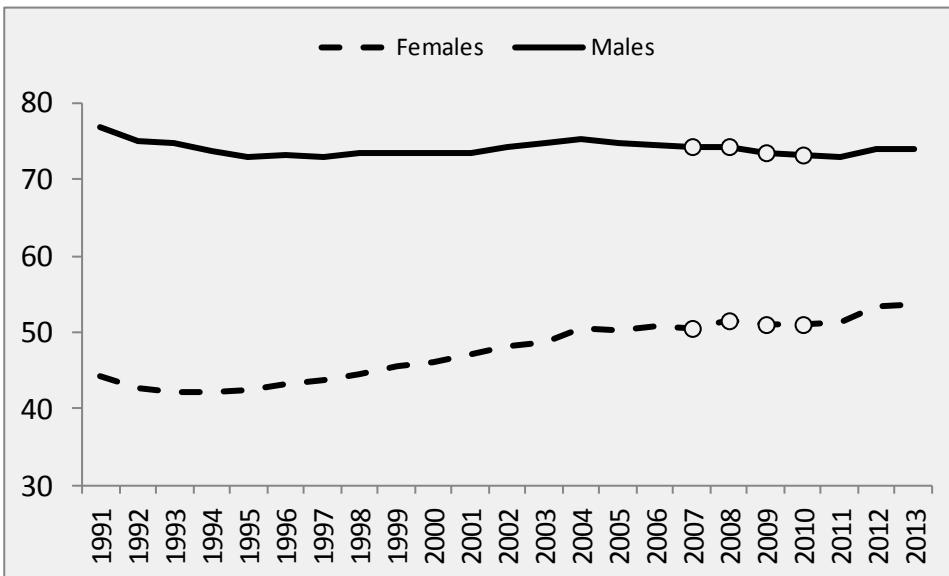
Figure 2. Labour force participation, percentage of population ages 15-64 (ILO estimates), circles show the years analyzed. Source: Worldbank.

Focusing on the kind of contracts, it is possible to note that permanent and full-time positions have decreased from 77.0% to 74.2%, hitting men especially (ISTAT 2014). Those most affected are self-employed persons without employees (-8.7%), followed by self employed persons with employees (-6.0%). In addition, atypical contracts (fix-term and part-time) affect more and more women, individuals in Public Administration positions and in the field of education. In this context, the duration of the contracts also decreases and in 2013 only half the number of people had a contract which lasted more than one year. At the same time, unstable and insecure condition last many years: 18.3% of individuals who had an atypical position in 2008, started their situation of instability five years previously. 20.2% of insecure workers in 2013 began fix-term positions five

years before. It is possible to conclude that the chances of transforming fix-term positions to permanent contracts are very low in contemporary Italy.

2.3 Main research question

In this paper we want to analyse the association between occupational position in the labour market and health over a period of years during the recent economic downturn. In doing so we first capture the occupational position of individuals over four years and define the work trajectories.

We follow the cumulative advantage perspective with the aim of understanding whether social disadvantage in health is cumulative and whether this accumulation differs between genders. This objective is addressed through two research questions:
- Studying in association with individuals' work trajectories, is it possible to assure that social disadvantage in health has a cumulative characteristic?
- Does a difference in this association between genders exist?

Based on the results of previous studies, we support the hypothesis that health statuses are strongly associated over long periods and that this relation becomes stronger when individuals experience an unstable work career. Specifically, we hypothesise that the health status in t_0 is strongly associated with the health status in t_1, when individuals have repeated periods of unemployment and inactivity. We want to test the difference between genders in this relationship, since gender disparities are quite severe in the Italian labour market structure as previously mentioned, and only a few studies have directly and explicitly considered gender issues in studying this subject. When a gender perspective has been considered some studies have revealed that the relationship between health and an unstable work trajectory is shaped differently for men and women. Considering different countries in Europe, Canada and United States, Menendez et al. (2007) underlined that the health of women with temporary contracts is strongly affected by work flexibility. Women suffer more than men from mental, self-reported health issues (Artazcoz et al., 2007; Campos-Serna et al., 2013), as well as anxiety and depression (Callea et al., 2012). Moreover, since the gender differential derives from the interaction between job and domestic labour, it is not surprising that gender differences have been found mostly in Southern European countries, like Italy and Spain, where gender inequality is still pervasive in both work and family arrangements (Del Boca et al., 2012; Cullati, 2014).

3. Data and methods
The data we analyse come from the four waves (from 2007 to 2010) of the IT-SILC. The IT-SILC (Italian survey from EU-SILC) is carried out by the Italian Institute of Statistics and is a rich longitudinal study collecting information on a nationally representative random sample of households in Italy. Since the individuals in the sample are followed for four years, it is possible to trace their employment histories, their socio-demographic characteristics, their level of education and their self-reported health over the course of those years.

To answer our research question we selected respondents who were between 30 and 60 years old in 2010 (and, consequently, from 27 to 57 in 2007, the year of the first wave). This choice allowed us to avoid the selection bias among elderly people due to the premature death of disadvantaged persons (Willson et al., 2007) and to exclude heterogeneity in educational indicators due to the presence of individuals who were still students in the sample.

Since the perceived health and job positions are crucial variables in our study, we decided to take into account only those individuals for whom the aforementioned information was known for all

four years. In addition, to avoid endogeneity problems, we decided to include in our sample only one individual per household. [3]

Our final sample consists of 3,987 individuals (1,944 males and 2,043 female) who were successfully traced and who participated in the four years under consideration. We proposed separating the analyses for males and females, with the aim of capturing the differences between the genders.

We rely on the use of *self-reported health status*, which is measured by the following question: "How is your health in general?" The possible responses are very good, good, fair, bad and very bad, and they are coded 1, 2, 3, 4, and 5, respectively.

Self-reported health has been found to be a reliable health measure in multiple studies (Idler and Benyamini, 1997; Jylhä, 2009). It combines the subjective experience of acute and chronic symptoms, and different feelings of well-being, such as feeling tired, having backache and headaches. Some studies underline the fact that self-reported health also correlates with "objective" measures, such as physician assessments and measures of morbidity, and it predicts the mortality net of chronic and acute disease, of physician assessments made by clinical exams, of physical disability, and of health behaviours.

In our analysis we include, as control variables, age and the highest Isced level of educational attainment, which is categorised as "primary education", "lower secondary education", "upper secondary education", "post-secondary non tertiary education" and "first stage of tertiary education". In Table 1 we set out the descriptive statistics of the sample on the basis of our dependent variable, the level of education, the household typology and the geographical area in 2007, differentiated by genders. [4]

Table 1. Descriptive statistics by gender, percentages.

	Females	Males
Perceived health in 2007		
Very bad 1	0.7	0.9
2	3.7	3.7
3	18.5	15.8
4	62.8	63.0
Very good 5	14.4	16.5
Statistics of perceived health (scores 1,2,3,4,5)		
Mean	3.86	3.90
Median	4	4
Standard deviation	0.722	0.739

[3]We selected the youngest person because the youngest people are strongly touched by the crisis, and their proportion in the sample is lower than the proportion of other classes of age (see appendix Figure A2).We excluded 98 females and 79 males, which corresponds to 4.5% and 3.8% respectively.

[4] In appendix A4.1 and A4.2 we provide a bivariate analysis using the fractional polynomial method of estimation to predict perceived health in the first wave with respect to age and Isced level attained. This analysis supports the quasi-linearity between the dependent variable (self-assessed healht) and the main independent variables used in the multivariate models (age and educational level).

Levels of education		
Primary education	9.3	7.8
Lower secondary education	31.2	38.0
(Upper) secondary education	38.1	35.9
Post-secondary non tertiary education	6.2	5.0
First stage of tertiary education	15.2	13.3
Household typology in 2007		
Singles and couples without sons	19.2	20.7
Families with minors	42.0	45.1
Other families	38.8	34.2
Geographical area in 2007		
Northern Italy	45.4	46.8
Center Italy	19.5	20.7
Southern Italy	35.1	32.6
N	2043	1944

We are interested in estimating the cumulative disadvantage in health in association with occupational changes. Following the individuals for all four waves of the IT-SILC, we use the multidimensional approach consists of creating mutually exclusive combinations between different types of occupational positions on the basis of contractual status of employment: 1) employee with open-ended contract, 2) employee with fixed-term contract, 3) self-employed, 4) unemployed (actively seeking work) and 5) inactive (not engaged in education or not looking for a job). Some combinations are considered more or less precarious because of their limited legal entitlements. These five occupational conditions involve the fundamental changes in Italian labour market because they take into account its duality and the transformations induced by the job reforms.

On the basis of the observed combination of the five basic occupational positions we obtain 173 different sequences for males and females for 207 (for example the sequence 1-1-1-1 indicates an employed person for the whole period, meanwhile the sequence 1-1-4-5 indicates a person employed in 2007 and 2008, unemployed in 2009 and inactive in 2010).

Table 2 describes the variation in occupational positions for males and females respectively, in the four years considered.

Table 2. Variation in occupational conditions from 2007 to 2010, percentages

	Males (n=1944)				Females (n=2043)			
	2007	2008	2009	2010	2007	2008	2009	2010
Occupied (permanent)	58.1	59.5	57.3	56.5	38.0	39.8	40.7	40.5
Occupied (fixed term)	5.9	3.7	4.2	4.5	7.1	6.9	5.8	5.5
Occupied (independent)	25.3	25.3	25.6	25.1	11.9	11.1	10.8	11.7
Unemployed persons	4.3	3.5	4.3	3.5	5.4	5.1	4.4	3.8
Inactive persons	6.4	8.0	8.6	10.4	37.5	37.2	38.3	38.4
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

There are several techniques for analysing data in a longitudinal shape. The most common are: (A) longitudinal analysis considering the status transition (Blossfeld and Rohwer, 1995), (B) sequence

analysis (Arosio, 2004; Abbott and Tsay, 2000) or (C) latent growth curve models (Bollen and Curran, 2006).

As with every technique, those listed above have assumptions and limits.

(A) The study of the time spent in the different occupational positions could be inaccurate considering the differences of the careers when trajectories change. Different combinations of the order of the episodes give the same result in terms of the proportion of a career spent in the different jobs. The studies of time budget fail to capture the specific characteristics of mobility trajectories differentiating for the order of the states that compose the careers. (B) In the analysis of sequence, two of the most important moments are the measurement of the distance between sequences and the identification of groups. For both these aspects, the researcher has a crucial role, since he has to decide which distance and groups fit better for his study. This means that the analysis of sequence has a strongly subjective aspect which could be seen as a limitation of this technique. In addition, sequence analysis could not be defined as a casual model, since it does not give any explanation of the phenomenon of interest, but can only describe it. As Abbott (1992) underlined in his article, OMA is "a narrative methodology opposed to variables paradigm" in which "processes become the basis of sociological analysis". (C) Another technique used to investigate longitudinal data is the use of latent growth curve models (LGCM), which are a special case in SEM. These models are a useful instrument to study longitudinal data, since they allow an estimate to be made of the rate of change in a variable controlling for some covariates. It is used when the data follows a pattern of change in which both the strength and the direction of the relationship between the independent and dependent variables differ across cases. The analysis identifies distinct subgroups of individuals following a distinct pattern of change over age or time on a variable of interest (Andruff et al., 2009). Like all statistical multivariate techniques the LGCM has assumptions that could be problematic (Bollen and Curran, 2006; Byrne and Crombie, 2003) even if it is currently considered one of the most suitable techniques for the analysis of change (Andruff et al., 2009).

However in our hypothesis we are interested in studying the cumulative transfer from one year to another year of the health status. In relation to our aims, we chose to use structural equation models that allow us to evaluate, through the direct and indirect decomposition of effects, the cumulative association among the different statuses of health. Figure 3 presents the analytical model we apply to test our hypothesis: the structural equation modeling (SEM) (Joreskog and Sorbom, 1968; Bollen, 1989). These models permit us to organise variables in a hierarchical order according to theoretical assumptions and reconstruct total, direct and indirect effects of the independent variables on the outcome. SEM also allows us to measure specific factors of interest by means of latent constructs and to account for the endogeneity (versus exogeneity) of the selected independent variables.Specifically, the SEM allows us to estimate the relation between health status across time, controlling for the age and the educational attainment of the individuals.[5]

Thus, we can estimate how much the status of health in different periods of time is correlated: in particular our main attention is focused on the direct coefficients between "health_w1" and "health_w2", between "health_w2" and "health_w3" and between "health_w3" and "health_w4".

In the SEM models the perceived status of health is used like a metric variable. It has an asymmetric left skewed distribution, as revealed in a wide range of literature and the tests of normality cannot be considered acceptable. However, distributions are unimodal, and mean and median are very similar (see Table 1 and in Appendix the Figure A3 which reports the kernel

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[5]The educational level introduced as a control variable is used like a proxy of distal socio-economic conditions. A large number of studies support the strong correlation between high education and health. It is evident that the starting health status in 2007is largely influenced by previous socio-economic conditions. The educational level is certainly a good indicator.

density analysis).[6] Thus we decided to use the variable in its raw shape. Moreover it should be observed that the perceived status of health in five grades is a robust indicator that, even though it has an asymmetric distribution, it is even used as a latent continuous metric measure of objective health conditions (Böckerman and Ilmakunnas, 2009; Crossley and Kennedy, 2002; Della Bella et al., 2012; Gunasekara et al., 2013; Manor et al., 2000; McDonough and Berglund, 2003; Sacker et al., 2005).

Using AMOS software we can also consider the multigroup options that allow us to simultaneously estimate coefficients for groups of individuals constructed on the basis of different job sequences. We can estimate year-to-year coefficient for each group that aggregates a specific job life course from 2007 to 2010. According to our hypothesis we expect to find coefficients of different intensity for different groups. In particular we suppose that the health statuses of individuals belonging to the group with stable work careers are strongly inter-correlated, while the health status coefficients of individuals with precarious jobs or with inactive episodes in their work history clearly change from one year to the next.

In other words, if the positions in the labour market have worsened over the years, the three coefficients should increase; on the opposite side, a stable work position in the labour market should be associated with the stability or the decrease of the value of these coefficients.

Moreover, according to the discussion in the part 2.2 (see above), with respect to the characteristics of the Italian labour market, we will have to consider a separated model for males and females.

Figure 3. Analytical model (SEM) to analyse cumulative disadvantage in health status.

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[6]Furthermore in explorative linear regression models different transformations (e.g. logarithmic, square root)applied to the perceived health in order to normalise its distribution produced similar results.
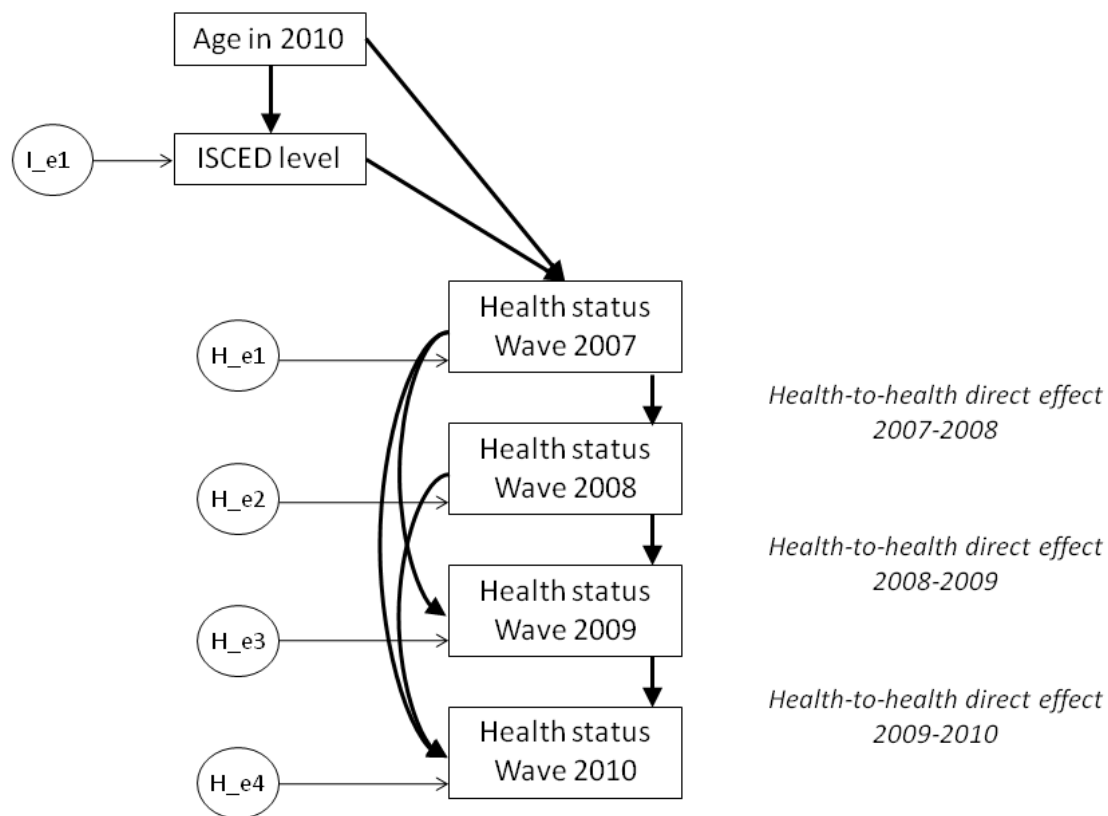
A key issue in the research on this topic concerns the importance of considering a dynamic perspective in the study of precarious employment relations to account for the complexity of diverse individual trajectories. This approach would allow for the study of the health impacts of different employment trajectories, taking into account the interaction between precarious employment and unemployment through the working life. In addition, it would clarify the extent to which the effects of precariousness are cumulative over time, whether they are persistent or transitory and whether they are modified over the life course.

The categorisation of the job sequences is highly problematic. Thus, in our definition of the job sequences we have taken into account three important aspects: 1) we looked at every single trajectory as a unique path considering occupational events not disjointed between them. In our approach we considered the whole trajectory in the period analysed assuming that problematic social conditions (weakness in the labour market) can be manifest in a different time with respect to the moment of the interview. For example, two individuals occupied in 2007 have the same job condition, but if one of the two loses his job in 2008, his occupation in 2007 could already be at risk, and this simple fact could weigh on his health status. 2) We theoretically evaluated the different trajectories stressing the disparities in the power relationships and the economic and symbolic resources associated with labour market organisation, paying particular attention to the problem concerning the flexibilisation of the labour market (Barbieri and Scherer, 2009). 3) We applied a principle of consistency giving empirical attention to the sample size of the group of job sequences constructed. If a group has too few cases the estimates will be too uncertain. However, an important criterium of classification in defining the typology is the occupational condition in 2010, that is, from our perspective, the outcome of the impact of the economic crisis.

Based on theoretical and empirical arguments we defined eight groups that summarise the job sequences in the period 2007-2010. These groups will be used in the SEM analysis.
They are:
– **Insiders (permanent employee):** individuals keeping their job as employeesin all four waves (not fixed-term jobs);
– **Insiders (permanent self-employed.):** individuals keeping their **self-employment positions** in all four waves;
– **Insiders (with discontinuity.):** individuals that were employed in 2007 and had stable work in 2010 (as self-employed or employee with open-ended contract), but they experienced at least one break in their sequence (for example one year of unemployment, or one year of inactivity, or one year of a different occupational position);
– **Entrants:** individuals that in 2007 were out of labour market (inactive persons or unemployed), and in 2010 have a stable job (as self-employed or employee with open-ended contract);
– **Precarious job positions:** individuals that have frequently changed jobs (at least twice) passing by fixed-term occupations, unemployed or self-employed position. They remain substantially in a precarious job condition in 2010 (fixed-term);
– **Ejected:** individuals that in 2007 had a stable (employed or self-employed) job position, while in 2010 they lost their job ending in an inactive or unemployed condition;
– **Outsiders (unemployed):**individuals that looked for a job at least for one episode, but did not find one and stayed out of the labour market (inactive or even unemployed) for all the other episodes;
– **Outsiders (inactive):** individuals that have been inactive for all the waves.

The values presented in Table 3 show that in our sample almost one man in two (48.5%) has had permanent positions as employee and one man in five (20.1%) has kept his independent job position for four waves. Discontinuous careers characterise 8% of men in our sample, while 7.4% of males became inactive or unemployed in the last wave. Comparing male and female trajectories, it is possible to capture important differences. 38.1% of women (insiders permanent dep. and insiders permanent ind.) in our sample maintained their job position for all four waves, but more than one woman in four (27.5%) was inactive for all the time periods considered.

Table 3. A typology of job sequences from 2007 to 2010.

	Males	Females
Insiders (permanent dep.)	48.5	30.9
Insiders (permanent ind.)	20.1	7.2
Insiders (with discont.)	8.0	4.7
Entrants	4.3	8.0
Precarious job positions	5.4	6.9
Ejected	7.4	9.0
Outsiders (unemployed)	2.9	5.7
Outsiders (inactive)	3.4	27.5
Total	100.0	100.0
N	1944	2043

Since the number of cases classified in the different trajectories and the level of measurement of the variables do not allow us to control for several potential confounders in the SEM models, we first apply multivariate binomial regression models to conduct static analysis of the relation between job career and health. The mentioned models have an explorative aim in our study and allow us to capture the associations between occupational trajectories and health sequences, controlling for

several variables (age, level of education, health status in the first wave, geographical area, household income and familial typology). In these analyses we distinguish the health outcomes into two categories: 1) individuals that do not change their health status during the four waves or improve it, 2) individuals that worsen their health or individuals whose health varies over time (and whose value in 2007 is worse than in 2010).

In the next section we present the results of the multivariate models.

4. Results of analysis

Preliminary static analyses of the associations between job and health outcomes controlling for several socio-demographic confounders are reported in Table 4. For males we can observe a higher odds ratio in the propensity to develop a worse health status for ejected and for inactive individuals (the respectively estimates 1.557 and 2.730 are significant at the 0.10 level). Regarding women, we note the significant odds ratio of ejected (2.057, as happened in the case of males) and of women in precarious positions (1.917), but no statistical significance for the other categories.

Table 4. Estimates of odds ratios (and 95% confidence intervals) of the binomial logistic regression regarding the chance of declaring a worse health status during the period 2007-2010 in association with different job sequences, controlling for age, isced level, income, geographical area and household typology.
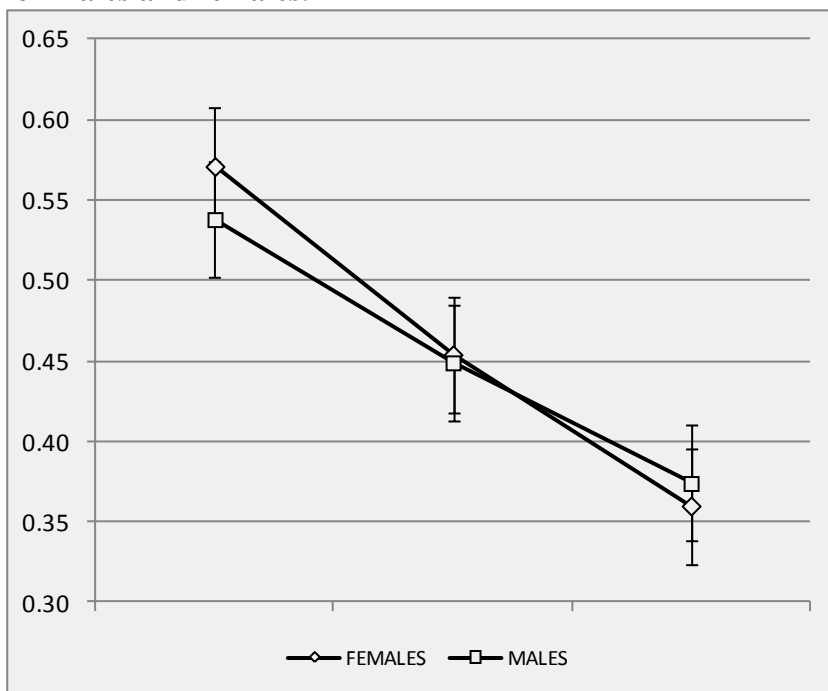
	MALES			FEMALES		
	O.R.	Lower Bound	Upper Bound	O.R.	Lower Bound	Upper Bound
Insiders (permanent empl..)	1[a]			1[a]		
Insiders (permanent self-empl.)	0.975	0.692	1.373	0.757	0.433	1.323
Insiders (with discont.)	1.186	0.725	1.941	1.353	0.735	2.490
Entrants	0.984	0.497	1.945	0.928	0.551	1.565
Precariuos job positions	1.092	0.575	2.076	1.917 **	1.150	3.195
Ejected	1.557	0.939	2.582	2.057 **	1.289	3.282
Outsiders (unemployed)	1.883	0.822	4.316	1.378	.694	2.736
Outsiders (inactive)	2.730 *	1.235	6.036	1.513	.899	2.546
CONTROL VARIABLES:						
Age in 2010 (from 30 to 60)	1.053 **	1.035	1.072	1.031 **	1.014	1.049
ISCED level (from 1 to 5)	0.914	0.805	1.038	0.906	0.802	1.022
Income quintile (from 1 to 5)	0.947	0.843	1.064	1.086	0.936	1.261
Health status in 2007 (from 1 to 5)	9.117 **	6.992	11.888	6.274 **	4.930	7.985
Household typology in 2007						
Singles and couples without sons	1[a]					
Families with minors	1.399	1.012	1.933	0.965	0.678	1.373
Other families	1.615	1.099	2.372	0.821	0.616	1.095
Geographical area in 2007				1[a]		
Southern Italy	1[a]			1[a]		
Northern Italy	0.903 *	0.633	1.289	0.828	0.619	1.108
Center Italy	0.776 *	0.573	1.051	1.128	0.790	1.610

*Note:significant levels: ** 0.01,* 0.05; reference categories: 1[a]*

However, according to our initial hypothesis the idea was that health is the result of a cumulative process of disadvantage. Regarding this perspective we want to investigate the net strength of the health status from year to year in association with different occupational trajectories. As explained before, the SEM is the strategy we choose to estimate the singles links of the chain that are the direct health-to-health effects (see Figure 3 above).

Figure 4 shows the unstandardised coefficients of the weight of perceived health over the entire observation window. Differences between genders are captured in the Figure. Based on the confidence intervals, it is possible to affirm that health is significantly tied across the years. If we consider direct effects the health status depends for each unit of previous health, on an average, of about 0.55 point from 2007 to 2008, about 0.45 from 2008 to 2009 and about 0.37 from 2009 to 2010, (the range of health is from one to five). The values are similar between males and females.

Figure 4. Coefficients (not standardised) of the health-to-health status direct effects, all cases for males and females.

Tables 5.1 and 5.2 show the standardised results of the analysis for males and females, respectively (using standardised coefficients we want to eliminate possible bias due to different heterogeneity in the distributions in the job sequences of groups).[7] Considering all the males (Table 5.1), the coefficients are, respectively, 0.55 in 2007-2008, 0.44 in 2008-2009 and 0.39 in 2009-10. These coefficients represent the weight of health year to year. In terms of standard points a change of 1 point in the perceived health in 2007 produces on average a variation (of perceived health) of 0.55 in 2008. Since we consider in our model the decomposition of direct and indirect effects, it is not surprising that coefficients decrease, because the relative role of distal health status (indirect effects) are relevant. Therefore, stronger decreases in the coefficients' values indicate that the cumulative disadvantage tends to diminish.

The coefficients of this table allow us to answer our research questions precisely. The weight of the previous health status on the subsequent health status decreases less for individuals in precarious job positions (-0.09), who are ejected (+0.01) and outsiders (0.03). This presents an enforcement of the notion of cumulative disadvantage in health: the previous health condition is more relevant for predicting the subsequent health condition.

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[7]For models of both genders the goodness of fit are good: RMSEA (Root mean square error of approximation) is about 0.03 for both genders, and the comparative indices like NFI or CFI are higher than 0.95(Schreiber et al., 2006; Schermelleh-Engel et al., 2003).

Instead the strongest improvement of health, or higher diminution in direct effects, is for entrants (-0.28) and inactives (-0.34).

Figure 5.1 summarises results of the analysis for the job sequences inherent in our hypothesis for males. With the aim of emphasising the different trajectories, in the image we report the coefficients as the variation from the total average (indicated as "all cases"). Increasing or decreasing trends show the change in weight of previous health conditions. The divergences in the sequences are clear: in the three waves only the entrants' coefficients decrease over time, meanwhile others' coefficients tend to increase. In particular the cumulative disadvantage increases strongly for unemployed persons.

Table 5.1. Results of the multigroup SEM model for males: health-to-health direct effects and the total effect of initial health status on the last health status (standardised coefficients).

	N	2007-08	2008-09	2009-10	Difference 2009/10 - 2007/08	Total effect 2007 >2010
All cases	**1944**	**0.55**	**0.44**	**0.39**	**-0.16**	**0.53**
Insiders (permanent empl.)	943	0.48	0.42	0.36	-0.12	0.41
Insiders (permanent self-empl.)	390	0.53	0.46	0.37	-0.16	0.59
Insiders (with discontinuity)	155	0.46	0.35	0.25	-0.21	0.50
Entrants	83	0.72	0.54	0.44	-0.28	0.55
Precarious job positions	105	0.39	0.37	0.30	-0.09	0.32
Ejected	144	0.51	0.46	0.52	0.01	0.50
Outsiders (unemployed)	57	0.65	0.44	0.68	0.03	0.46
Outsiders (inactive)	67	0.72	0.38	0.38	-0.34	0.63

Model fit males: valid cases=1944; Parameters estimated 168; DF 48; Chi-square = 120,724; Probability level = 0.000; RMSEA 0.028 (C.I. 0.022–0.034); NFI=0.960; CFI= 0.975; CMIN/DF 2.51 (p=0.000).

Figure 5.1. Differences with all cases coefficients: coefficients (standardised) between year to year health statuses, males.
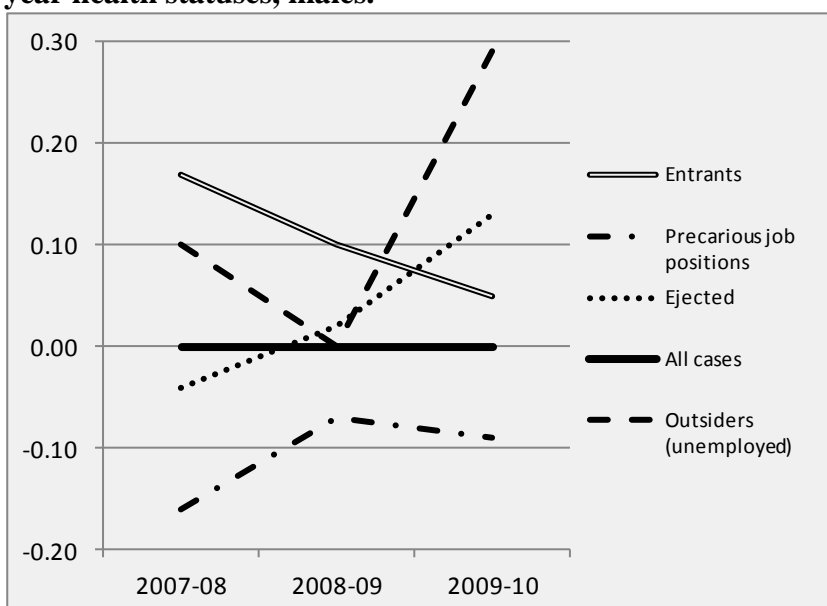
Results for females are reported in Table 5.2 and in Figure 5.2. We observe (Table 5.2) more intense diminutions for insiders (permanent employed), insiders (with discontinuity) and inactives. On the other hand, we want to underline that the categories of outsiders (who experience at least one episode of unemployment in the four years considered), even show an increase in disadvantages, meanwhile the ejected and those in precarious job conditions show an important perpetuation of health disadvantages, as for insiders with permanent self-employed positions. For outsiders (unemployed), the standardised weight of health year to year is 0.43, 0.51 and 0.54, with a total increase of 0.11, while for ejected the (total) decrease is only -0.12 and for precarious job positions only -0.07 (Table 5.2). In the static analysis (see above Table 4) the female groups with a greater chance of worsening health were the precarious and the ejected, but in the dynamic analysis the disadvantage of precarious jobs for females seems less important (however it should also be noted that punctual estimates of odds ratio are positive).[8]
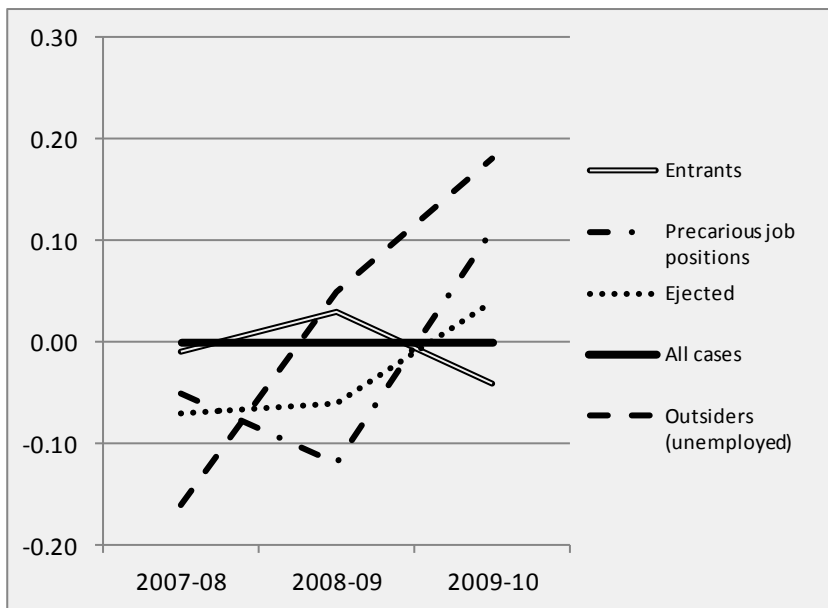
Table 5.2. Results of the multigroup SEM model for females: health-to-health direct effects and the total effect of initial health status on the last healthstatus (standardised coefficients).

	N	2007-08	2008-09	2009-10	Difference 2009/10 - 2007/08	Total effect 2007 >2010
All cases	**2043**	**0.59**	**0.46**	**0.36**	**-0.23**	**0.51**
Insiders (permanent empl.)	632	0.53	0.41	0.31	-0.22	0.46
Insiders (permanent self-empl.)	148	0.61	0.14	0.49	-0.12	0.45
Insiders (with discontinuity)	97	0.63	0.50	0.30	-0.33	0.38
Entrants	163	0.58	0.49	0.32	-0.26	0.56
Precarious job positions	141	0.54	0.34	0.47	-0.07	0.48
Ejected	184	0.52	0.40	0.40	-0.12	0.39
Outsiders (unemployed)	116	0.43	0.51	0.54	0.11	0.53
Outsiders (inactive)	562	0.66	0.50	0.32	-0.34	0.69

Model fit females: valid cases=2043; Parameters estimated 168; DF 48; Chi-square = 128,894; Probability level = 0.000; RMSEA 0.029 (C.I. 0.023–0.035); NFI=0.964; CFI= 0.977; CMIN/DF 2.68 (p=0.000).

Figure 5.2. Differences with all cases coefficients: coefficients (standardised) between year to year health statuses, females.

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[8]At the end, with the aim of achieving robustness in our findings we analysed job careers also using a latent linear growth model approach. Even if models are different in assumptions, results seem congruent: perceived health decreases faster for people with job problems (precarious job positions, ejected and unemployed) than other subgroups.Meanwhile entrants in stable job positions keep their health status better than others for both genders.Results are not shown but are available on request.

Figure legend:
- Entrants
- Precarious job positions
- Ejected
- All cases
- Outsiders (unemployed)

X-axis: 2007-08, 2008-09, 2009-10
Y-axis: -0.20, -0.10, 0.00, 0.10, 0.20, 0.30

5. Conclusion

In this study we evaluated the relationship between occupational position and self-reported health using an innovative approach. Specifically, three elements, taken simultaneously, constitute the key strength of this study. First, we use a longitudinal perspective (IT-SILC from 2007 to 2010) to create eight occupational trajectories of individuals, which characterised different dynamic conditions within the labour market. The originality of these trajectories lies in their characteristic of capturing not only the position of individuals in the labour market, but also in considering the problem of the flexibilisation of the labour market. Second, we framed our paper using a cumulative disadvantage perspective, evaluating its evolution in the first years of the recent economic downturn. Lastly, we focused on the gender differences.

To reach our aim we first used multivariate binomial regression models for static preliminary analyses, then we applied SEM to decompose the effects of perceived health across time. Our main findings can be summarised as follows. First, the structural equation models clearly show that the cumulative effects are different according to the different job trajectories. Second, differences between genders are captured. In fact for males, SEM outputs show a perpetuation of the cumulative effect for individuals with precarious job positions, ejected people and outsiders (unemployed). Vice versa, male entrants show a decrease. For females the situation is similar, and the disadvantage seems to worsen for outsiders (unemployed), the ejected and individuals with precarious job positions. For women even insiders with permanent self-employed positions show a persistence in the health disadvantage. It should also be noted that for females the findings of the static analysis also describe a worsening of health for precarious job trajectories.

To the best of our knowledge, our study can be considered the first which simultaneously takes into consideration the relationship between the health status and work trajectories during the years of the recent economic downturn in Italy. We underlined how in the last decades the Italian labour market reforms have introduced many different kinds of temporary job contracts, with the aim of making the labour market more flexible, to alleviate the youth unemployment and to facilitate entry into the labour market. However, temporary job contracts bring a strong sense of insecurity, since they impose a need for continuous changes in working conditions, contexts, social networks, time and expectations. All these aspects merge in the negative definition of flexibility, which which is also called precariousness. The literature has proved that precariousness not only affects the economic aspect of individual's life, but it has also important consequences on the individual's well-being,

and our paper provides more evidence about this relationship. It is clear that workers with poor health are likely to suffer more from illness, which then limits their working performance and ability. In favour of this interpretation, a remarkable result of this study is that the chain of unhealthy effects seems to weaken for entrants, people who find a stable job position. This finding suggests an important question, namely that the cumulativeness of this disadvantage is not an automatism, but it can be "easily" interrupted. Therefore, we can conjecture that, if the augmenting of long-term occupation is associated with an improvement in the life condition, then the cumulative advantage theory seems particularly linked to macro-economic dynamics. In this view the weight of the occupational position within the labour market is really preeminent (Bartley, 2003).

It is not hazardous to think that the effect of unstable working trajectories on health is stronger in times of economic crisis when, in a situation of austerity and firms downsizing, the precariousness is more pervasive, entry into the labour market is more difficult and working conditions and wages are deteriorating (Benach et al., 2014; Oesch and Lipps, 2012). The national and international institutional research body (ISTAT, 2014; WHO, 2012) have already warned that, due to the aggravation of general job conditions in recent years (flexibilisation and unemployment), the risk of the health status of the Italian labour force becoming worse is very high. Other factors related to the deterioration of the social-health context are an issue of concern: in Italy cost sharing in medicine in the period considered (2007-2010) has been growing, meanwhile poor households have decreased their levels of expenditure (Terraneo et al., 2014). Moreover, Italy, along with Greece, is the only European country without a minimum-income benefit, a policy that could prevent a worsening of health during periods of unemployment (Drydakis, 2015; OECD, 2014).

In this context it is evident that policy measures should take priority to the creation of occupations and the enhancing of social security protection to temporary workers: Bartley and colleagues (1997) had already written that during "critical periods" social policies capable of protecting individuals against an accumulation of health risk social are particularly important. In addition, these measures should be proposed in relation to a gender perspective, allowing gender equity in the participation in the labour market and reducing the responsibility of women as workers, wives and mothers.

Our study has a number of limitations in the analyses concerning strong theoretical assumptions in the SEM model and in the data collected. In particular, our model of cumulative disadvantage certainly oversimplifies the mechanisms of reproduction of health inequalities, but it has the scope to estimate the differences in health dynamics among a variety of occupational trajectories. Goodness of fit of the models should be considered with respect to this fundamental aspect. The group definitions don't allow an evaluation of a particular combination of job careers because of their small size, but at the same time we maintain an adequate level of detail in relation to our research questions.

Despite these limitations, our findings are consistent with the studies by scholars who support the idea that exiting the labour market or losing a job or working in precarious conditions can negatively affect health (e.g. Urbanos-Garrido and Lopez-Valcarcel, 2014; Strandh, 2014).

Future research should take advantage of all the aforementioned elements in order to enhance the understanding of the relationship between work conditions and health in a dynamic perspective. An interesting point to investigate is related to different job positions, for example when considering the detailed ISCO classification available in the data. In addition, a comparison between different countries and the connected welfare states could be an optimal strategy to better capture the mechanism by which different work trajectories might affect the health of males and females.

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