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Twenty years of employment and work qualification

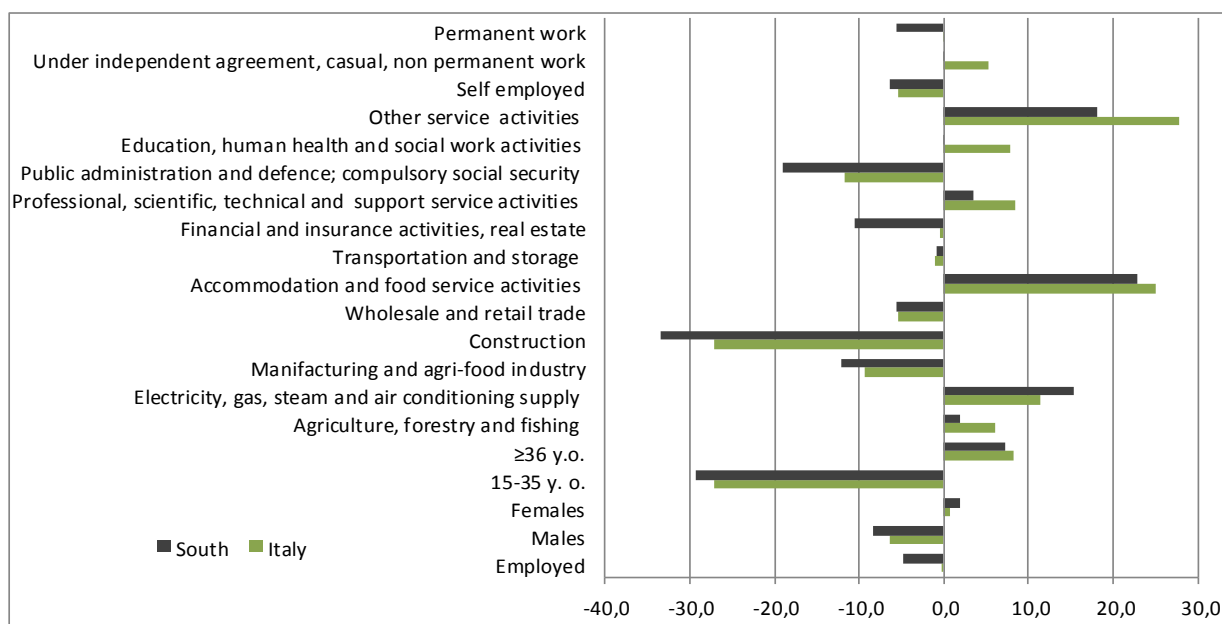
The economic crisis passed 2008 through 2017 has hit the employment hard, which at the end of the period has not yet recovered pre-crisis levels. These outcomes have changed the previous labor market structure (Chart 1).

On the demographic level, in fact, the males and the younger population saw be closed the outlook of placement and replacement of the labor force in the economic system. On the contrary, female employment and that of the people with more than 35 years old, in the decade considered, has grown significantly.

On the economic side the employment has decreased in the sectors of *Public administration and defence; compulsory social security; Financial and insurance, real estate activities; Transportation and storage; Construction* and in the *Manufacturing and agri-food industry*.

Lastly, as regards work relations, the decade recorded negative balances both for *Self-employed* and for *Permanent work*.

Chart 1. Demographics, economic activities and employment relationships of the employed. Italy vs South and Islands. Percentage variations between the years 2008-2017



Source: Istat, Labour Force Survey

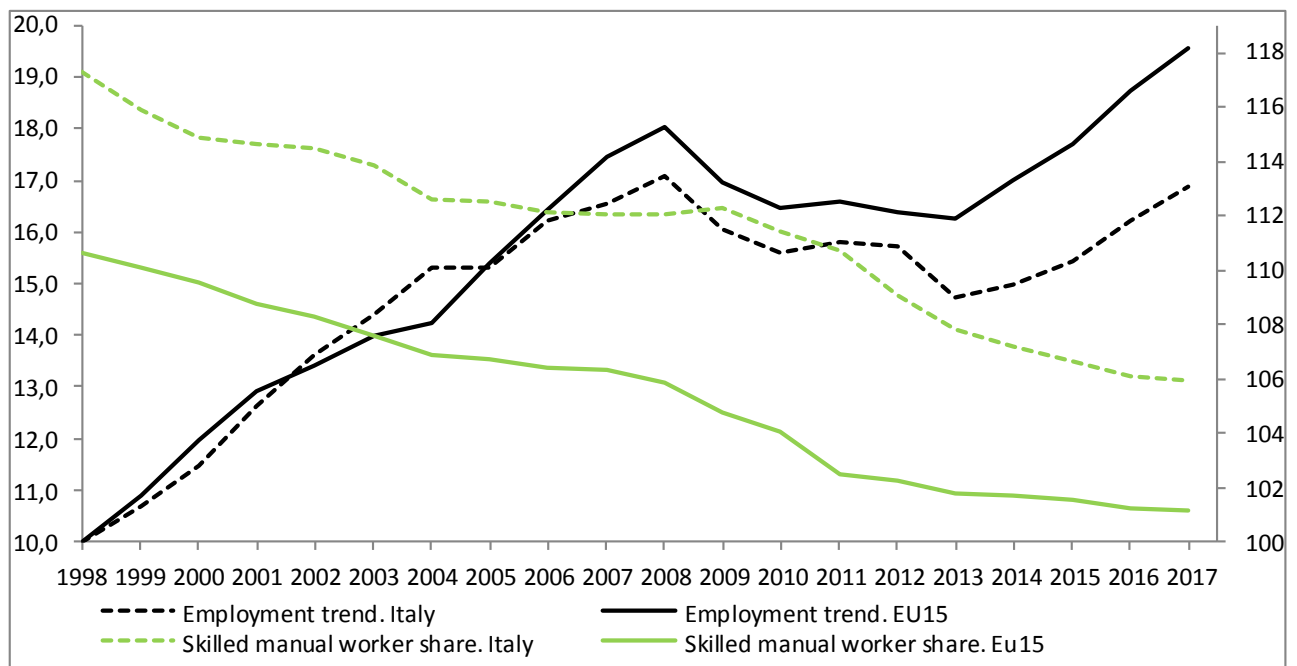
It is hardly necessary to note that the dashed picture for the whole of Italy is identical in

structure, but with worse absolute values, even for the South of the Country.

In this context, the attention of the public debate has focused on the repeated industrial crises, on the relative heavy repercussions on the skilled manual worker employment and on the consequent need to activate and expand the set of social shock absorbers available to deal with them.

However, if we focus on this aspect of the crisis we can not fail to notice that the reduction in the stock of skilled manual workers and craftsmen has already been recorded in Europe since the late nineties (Chart 2) and to observe that the phenomenon certainly has started some time before and that in the two territorial aggregates it moved with different speed and impact on the labor market.

Chart 2 - Employment trends (1998 = 100, scale on the right) and percentage share of craftsmen and skilled manual workers on the employment (scale on the left). E. U. 15 countries^(a) and Italy. Years 1998-2017



^(a) Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain, Sweden, United Kingdom

Source: Eurostat (Labour Force Survey, <http://ec.europa.eu/eurostat>). The Labour Force Survey data from 1998 to 2004 relate only to the second quarter of each year. Since 2005 they are available for all quarters and therefore also as an annual average.

The information provided is clear. From 1998 to 2017, both in Italy and in the 15 EU countries, employment progressively increased and the crisis registered since 2009 initially marked an inversion of the trend and, on the recovery, a slowdown in growth, without ever marking a return to employment levels at the beginning of the period: the final balance is positive and remains substantial, with around 13 per cent more employment for Italy and around 18 per cent for the fifteen countries of the Union. The employment rate is also positive (+3.3 percent for the 15 EU countries and +2.2 percent for Italy).

Within this growth, however, the weight of craftsmen and skilled manual workers on overall employment has gradually reduced, for Italy, from 19.1 to 13.1 percent and for the 15 EU countries from 15.6 to 10.6%, recording, at the end of the period, a reduction in the initial stock of about 867 thousand units for Italy and about 4.7 million for the group of the 15 member countries of the Union (respectively equal to -22.3 percent and -19.8 percent of the initial stock of craftsmen and skilled manual workers).

The reduction in the stock of craft and skilled manual work is, therefore, a long-term phenomenon, which has been detected for some time on an international scale, on which the long crisis started in 2008 has intervened, confirming it.

Already discussed in the literature, this phenomenon is generally associated with the expulsion and/or the non-substitution of work force following the reorganization and automation processes of industrial production, activated by companies and considered unavoidable in the face of particular economic cycles and/or of widespread opportunities to invest in new technologies.

If seen with a greater depth of field, the same phenomenon is read as an implicit element in the change of paradigm of consumption and mass industrial production and the related adaptations in the way of producing (Rullani 1998, Azzariti 1999). In this logic, the change of paradigm is associated with different consequences on the labor market, broadly polarized, on one hand, in the relocation of large numbers of workers towards the unskilled jobs, especially in services and in the increase of the risk of a unsecure job and of unemployment in crisis situations and, on the other, in the growth of medium-high and high-skilled work - of the work of knowledge workers- which has been recorded in the economically advanced societies (Drucker, 1994; Rifkin, 1995; Butera, 1998 ; Rullani, 2004; Negrelli, 2013).

More recently, research developments and the increasing availability of information technology and robotics applied to the provision of services and to the industrial automation have fueled and sustained a debate that took place between thorough macroeconomic analyses of their effects on employment and the prediction of the disappearance and of the advent of old and new occupations, between a next "catastrophe" of the labor market and a prospects of a future that will revolutionize work and its time towards the maximum expression of the individual and his freedom (De Masi, 2017a, b, Ford, 2015, Staglianò 2016).

In both approaches, the qualification of the work carried out in a productive system is a background datum that is almost always evoked in the interpretation of the processes that are investing the social systems of economically advanced countries. However, this is a datum that, if analyzed directly, makes it possible to distinguish these processes from their short-lived results much more evident in their effects on the labor market.

The measure of this datum is almost always expressed in terms of the output of the higher education and university system and in how both contributes to forming the work force necessary for the productive system. In other words is used a proxy of how much an economic

system can access, or access with limitations, to the offer of qualified labour force available on the market.

The modalities of the qualification of the work carried out, presented here, consider rather the assumption that this measure must be built starting from the occupations actually exercised in the productive system by reorganizing the collected information from the public statistics and, in some respects, from the public administration itself, through the Classification of Occupations published by Istat (Isfol 2007, Istat 2001, 2013)¹.

From this point of view, the informational detail released by the Eurostat data warehouse and, in some respects, the same International Standard Classification of Occupations (ISCO), adopted to uniformly code the data sent by the National Statistical Institutes, are not sufficient to reconstruct the modalities of the qualification to which the occupations actually carried out by the employed can be referred to.

On the contrary, the Labour Force Survey conducted by Istat and the data acquired by the public administration on the mandatory communications on the changes of the job relationships collect those data according to a detail of the national classification that, despite the different editions published since the nineties, can be re-aggregated into seven different ways that identify the qualification of the job done along the level of knowledge and of the manual character contained (see the Methodological Appendix at the bottom).

It is therefore possible to reconstruct, at least for Italy, how the structure of the work force occupied over the twenty years from 1998 to 2017 has changed due to the demand for qualified work by the production system along its process of change.

Chart 3 shows that, at the end of the twenty-year period considered, there are two components that have had a major impact on the final employment balance.

A first one had negative effects, reducing the stock of the employed of one worker every five for the entire country and for the South of Italy, contributing in a constant and negative way to the growth of employment throughout the period. It is about the skilled manual work, of the work on whom the development of the small and medium enterprise of the entire country has been built, to which, in the South, is added the unskilled manual work that intervenes to contain the reduction of whole manual worker employment.

The same chart also shows a clear reduction in the stock of large and small entrepreneurs, shopkeepers, craftsmen and self-employed workers, which shows significant negative results but less marked compared to skilled manual work.

On the other hand, a second component consisting of medium-high and high-skilled work and

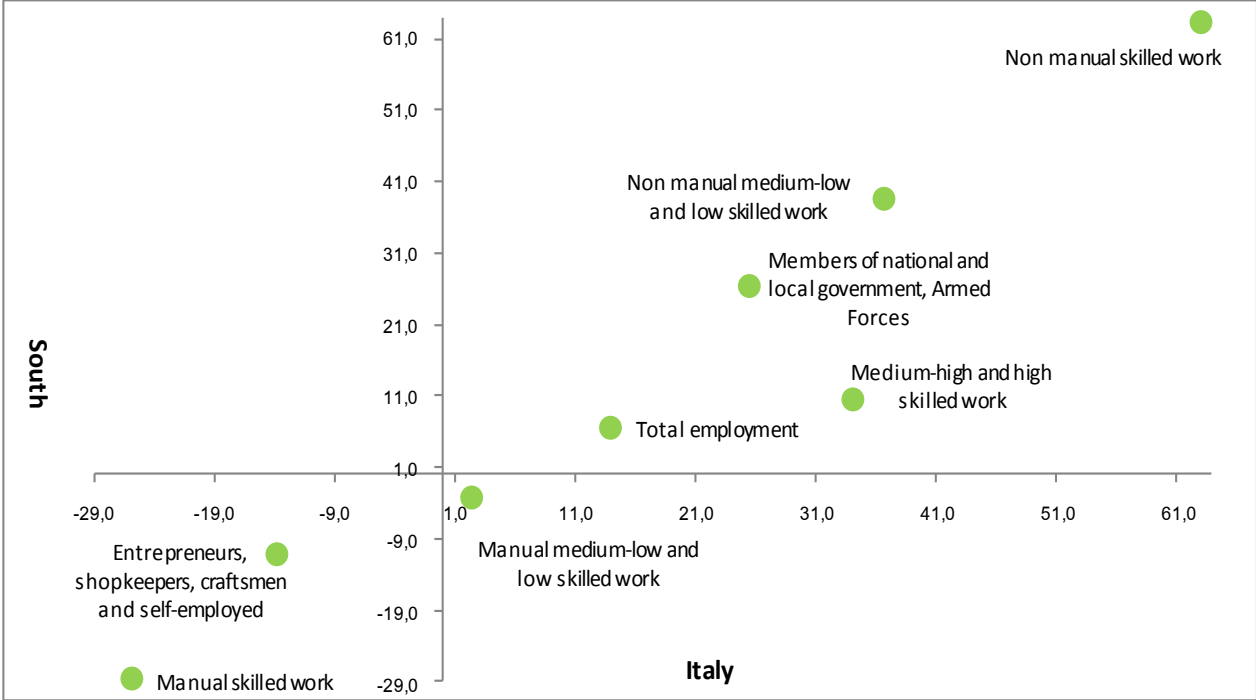
¹ It is a more analytical and detailed national variant of the International Standard Classification of Occupation (ISCO).

non-manual skilled work and non-manual medium-low and low skilled work contributed positively to employment. Both qualifications of the latter manual type show, in the twenty years, a considerable increase in the stock of employees that exceeds the growth of the employed people who carry out work with higher qualifications.

Also on the positive side of the variations, there are clear territorial differences that have a different impact on the employment balance for Italy and for the South, where the contribution to the medium-high and high qualification employment is less than one third of the contribution given by this work to the employment of the Country.

This is a fact that confirms how the phenomenon we observe in these regions is biting in depth, with social and economic implications that weigh heavily on the data of the entire country.

Chart 3 - The qualification of the work carried out in Italy and in Southern Italy - Years 1998-2017. Percentage variations.



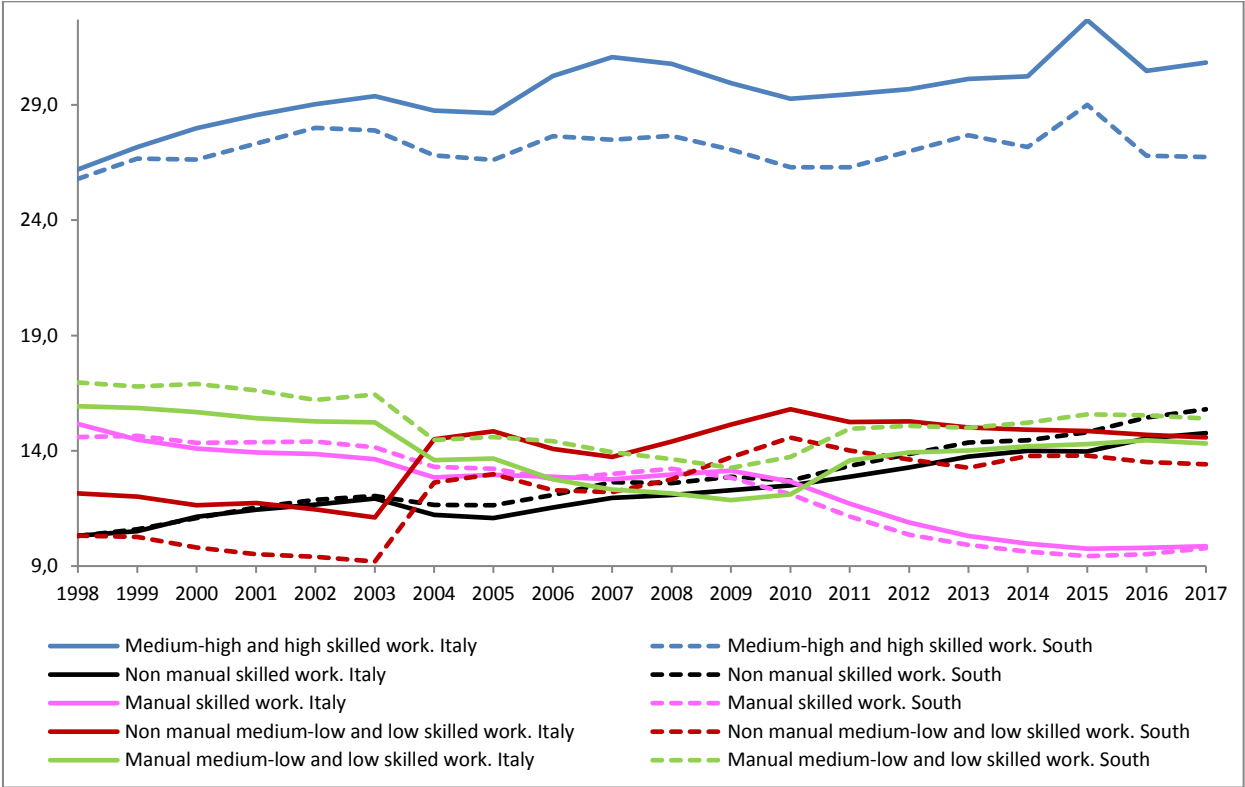
Source: Istat, Labour Force Survey

The following chart confirms, extending it to all the modalities considered, the hypothesis that the variations detected are not a punctual datum but the result of structural changes in the composition of the qualification of the work which, despite economic conjunctions of different nature and different impacts on the employment, have maintained in the long run, and continue to maintain, both for Italy and for the South, the same constant direction.

If are aggregated the two manual work qualifications and the two non-manual ones, it turns out that at the beginning of the period considered the greatest contributions to employment,

both in Italy and in the South, were given, in order, from manual work (31.1 percent in Italy and 31.6 percent in Southern Italy) and from medium-high and high qualification (26.2 percent in Italy and 25.8 percent in Southern Italy) and that, conversely, non-manual work represented the least important contribution (22.5 percent in Italy and 20.6 percent in the South).

Chart 4 - The qualification of the work carried out in Italy and in the South of the Country. Performance of the overall employment contribution^(a). Years 1998-2017



(a) "Members of government, elective assemblies, Armed Forces" and "Entrepreneurs, shopkeepers, craftsmen and self-employed" are not shown.
 Source: Istat, Labour Force Survey

At the end of the twenty years, the structure of the qualification of the employment has radically changed.

In fact, the contribution of manual labor has progressively eroded to the advantage of medium-high and high-skilled work (30.8 per cent in Italy, 26.7 per cent in the South) and non-manual work (29.2 per cent for Italy and 29.3% for the South) ending up representing the residual share of both national employment and of the Southern side of the country (respectively 24.2 percent and 25.2 percent).

In detail, in the Southern Italy, the erosion of skilled manual work has substantially followed that of the entire Country, differently than medium-low and low skilled manual work, which in that territory has continued to fall with the same speed but with significantly less consistency.

An inverse structure, on the other hand, is recorded for non-manual skilled work, which

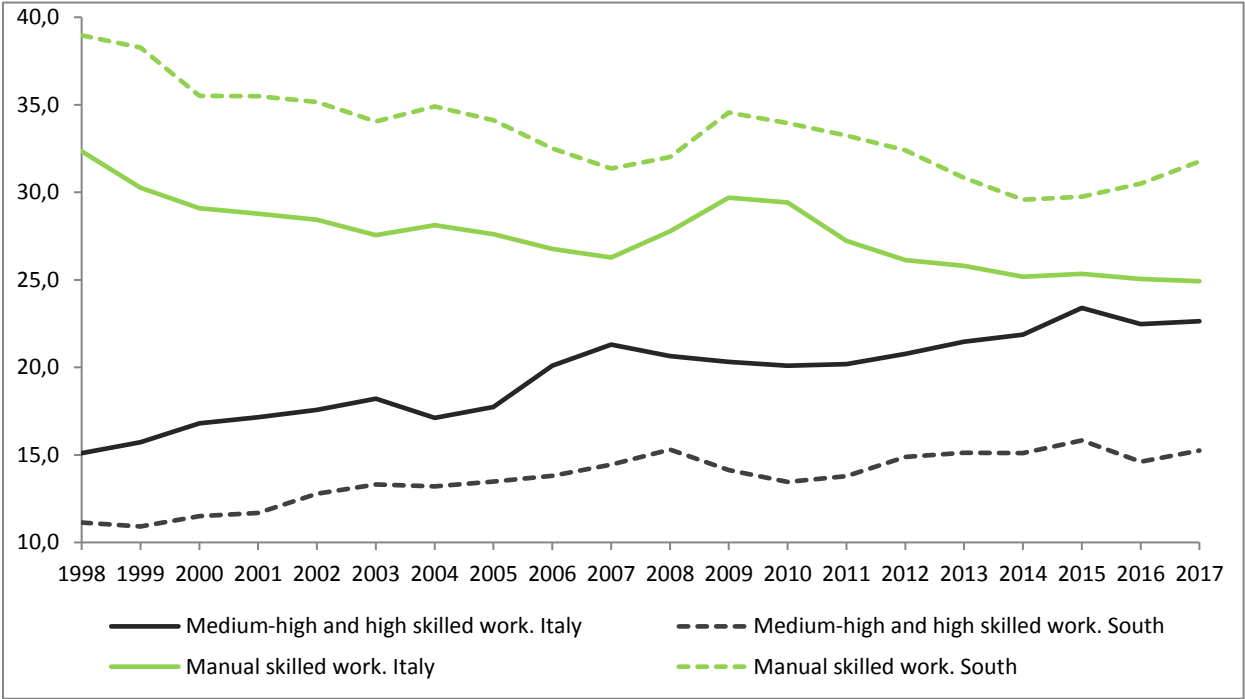
substantially increases its weight on total employment with the same speed in the two territorial aggregates but with a greater amount in the South and for the medium-low and low skilled non-manual work that moves with the same speed but with greater amount for the whole Italy.

Referred to qualification, in other words, the empirical evidence shows that the transformation of the employment structure in the South has been significantly different from that which has characterized the entire Country. In terms of employment growth, in fact, Southern Italy has less pronounced dynamics in the development of medium-high and high-skilled work and of non-manual work with medium-low and low skills. This structure faces a smaller reduction of the skilled manual workers, which, however, continue to contribute more than in Italy to the local employment structure.

Both differences have progressively been defined over a very long time frame and appear to be the weakest point in the gap in the national labor system on which the crisis and its outcomes on employment have been grafted.

The not very pronounced development of medium-high and high-skilled work and the smaller reduction of the skilled manual workers registered for the South are also confirmed when the data are considered only in the sector of the manufacturing industry (Chart 5).

Chart 5 - The contribution of the medium-high and high-skilled work and skilled manual work in the manufacturing industry. Italy and Southern Italy - Years 1998-2017



Source: Istat, Labour Force Survey

Further analysis could verify whether the long-term transformations found in the national employment structure differ from those of other countries or groups of economically developed countries.

However, what is interesting here is how the emerged empirical evidence can help to formulate hypotheses on how the differences detected in the observed phenomenon accentuate the delay in the development of Southern Italy.

The analysis so far made, in other words, has shown that employment growth is a complex process in which the micro-behavior of companies do not determine, on the short term, a change on the aggregated labor demand that can be clearly identified.

In addition, to highlighting the effects of the economic situation on employment (and more generally on the labor market as a whole), therefore, it is important to pinpoint and bring out the structural dimensions of the phenomena. With respect to these, the South of Italy presents structural labour market problems but also a lack of capacity to develop the component of the highly qualified work who remains permanently below national standards and shows it as one of the conditions, at the same time the effect and the cause, of the structural delay and the gap of the less developed part of the country.

In this context, one cannot fail to take due account of the way in which that production system, and in other respects that of the entire country, has metabolized the widespread processes of technological innovation and organizational and productive rationalization which, over the years, it necessarily faced.

In particular, it will be useful to explore not only the ways and processes through which the system of production of goods, understood in its widest sense, the tertiary sector, the entrepreneurs themselves acquire and introduce elements of technological and organizational innovation in enterprises but also as and if such modes and processes require -and at what cost- changes in the skills of their employees.

It should also be considered that the productive fabric of the country has been developed and supported by a widespread system of small and medium enterprises and by the contribution given to production and innovation by the tacit knowledges and skills of the the qualified manual work on whom has been built the economic success of the whole country.

And that, in this set-up of the production system, changes in content and work qualification triggered by the speed of diffusion and the accessibility of new technologies can be met by enriching the skilled manual work performance with greater knowledges and competences and providing the worker the most effective instrumentation to move from a "capable doing" to a work that requires knowledge and manual skills enriched with cognitive abilities (Von Krogh, 2000; Nonaka, 2008; Negrelli, 2013).

Methodological appendix

Employment (and conditions and levels) generated by a given production system, guaranteeing access to the population, is the empirical evidence with which states and citizens of relatively advanced economies have always confronted each other, quantifying and qualifying the living conditions, the welfare that each of the social systems of reference from time to time on the whole are able to offer.

In this context, the statistical monitoring of the working condition of the population, in its contemporary configuration, has developed to produce a solid, timely and particularly vast and detailed quantitative information on the changes that intervene on it in the short term.

So, in particularly critical economic phases, the attention of public opinion and politics is concentrated above all on the immediate consequences on the labor market and on the changes in aggregates and indicators of the phenomena that most influence people's daily lives.

In these situations, in other words, the critical aspects of the labor market become emergencies which darken the transformations that have taken place in the structure of the market itself highlighting and amplifying some events of critical phases of the economy and the employment .

Consequently the public debate and the social tensions that generate it tend to feed itself with information and empirical evidence not otherwise founded, or tautologically founded only as effect of the crisis, losing sight of the structural changes that affect the labor market and the employment level.

To identify, through the occupation exercised, the qualification of the work carried out can be one of the tools to observe in the long run the effects of the changes underway in the production system, distinguishing them from their punctual outcomes.

This is an unusual approach in the statistical analysis of the labor market that identifies some particular transformations in the employment structure which appear relevant in the reconstruction of its change in the long run.

The proposed tool assembles the basic units (Categories and / or Occupational Units) of the different classifications of occupations published by Istat since 1991 in a different conceptual structure that identifies the following seven modalities that qualify the work performed.

The first modality refers to medium-high and high skilled occupations, and organizes the non-entrepreneurial work aimed at "directing, defining, managing and coordinating the policies and objectives of companies, organizations and complex structures (public and private) and in orienting their activities towards for their own purposes"; the work of scientific and aesthetic research, the one that applies it and makes it productive; the work that interprets scientific theories, legal norms and concepts, artistic forms and the one that teaches them in a

systematic way; the work done as "technical-applicative support in the scientific, humanistic and economic-social, sporting and artistic fields".

The second refers to non-manual skilled occupations and detects the qualified work in services to people, the work that assists customers and consumers, trains and keeps pets, provides basic health aids for families, support in the use of free time, services of personal hygiene, of companionship and of assistance to the person; the work that operationally guarantees public order, security, custody and property protection.

The third refers to manual skilled occupation and collects the work that requires the "practical knowledge and experience of materials, tools and processes necessary to extract or work minerals; to build, repair or maintain artifacts, objects and machines "; to produce goods in agriculture and animal breeding, hunting, fishing and the agri-food chain; as well as "the same preliminary knowledge of the characteristics and possibilities of use of the final product".

The fourth refers to non-manual medium-low and low skilled occupations and includes the executive work in offices and organizations that, with limited autonomy of judgment and initiative in the execution of related tasks, supports the acquisition, treatment, storing and transmitting information and the provides the public with simple information and services related to the activities of the organization or company in which the work is carried out.

The fifth refers to manual medium-low and low skilled occupations and collects the work that operates and controls industrial plants and machinery for the extraction of raw materials, for their transformation and for the production of goods; the work that assembles parts and components of products; which drives vehicles and mobile machinery; the work which is related to very simple and repetitive activities that often require the use of physical strength and a limited autonomy of judgment and initiative in the execution of the foreseen tasks.

Unlike these first five, the sixth and seventh modes have been defined outside the manual vs skill axes and respectively report the entrepreneurial work in proper own, in little or large companies, with simple or complex organizations and the work provided to govern the Country and the work exercised in the Armed Forces. This is the work identified in the two modes *Entrepreneurs, shopkeepers, craftsmen and self-employed* and *Members of national and local government, Armed Forces*. Distinguish them was useful to control the variations in the data related to the particularity of the conjuncture and to the sample fluctuations of two very particular aggregates.

This reorganization of data was used in the e-book "Attraverso la crisi. Occupazione e reti di imprese in Puglia" (available at <https://www.istat.it/it/archivio/177462>).

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