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28 April 2024

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Abstract

The article concerns the return of education in Italy, assessed through labour market participation and occupation of people born in the cohort 1954-1958. The changes in time are analysed in the years 1993-2009, that is since the transition from school to work has been definitely ended (35-40 age group) until before retirement (50-55 age group). We will show that the relationship between education and employment is rather complex, varies over time and space, and features significant gender-based differences. In terms of employability and occupation, the advantage of a high level of education is relatively greater for those who occupy a more disadvantaged position in the labour market (women and those who live in the least dynamic areas of Italy).

Keywords: education, employment, gender, labour market, occupation, return of education.

Introduction

The study focuses on the return of education in Italy by considering changes over time in employment, including both participation in the labour market and the level of occupation achieved. The period of analysis will start in the phase after the transition from the education system to work and end before retirement.

The strategy followed differs from the main approaches adopted in literature. In accordance with the theory of human capital, the private return of education (for individuals) is usually measured on the basis of income. However, as this is rather restrictive, the impact of education on employment should also be studied. This is a question that has not been dealt with in sufficient depth by literature in the field of the economics of education[1].

Many authors measure the return of education using the Mincer earnings equation (Mincer 1974, see, for example, Checchi 1999, Dickson, Smith, 2011, Harmon, Oosterbeek, Walzer 2003. For a critical viewpoint, see Heckman, Lochner, Todd 2003). Although this has led to the development of a complex modelling process, it does not provide a proper explanation of the relationship between education and employment or any changes over time.

The same can be said of other recent studies that have dealt with the relationship between education and employment. For example, the OECD (2013) considered the repercussions of education on participation in the labour market for a number of age groups in different years, but concentrated on comparisons between countries rather than

analysing national situations or different types of educational qualification in detail (only distinguishing between different levels of education, but not, for example, between different types of degree).

Similar attempts have also been made with regard to Italy (by Istat[2] and AlmaLaurea[3] since the late 80s and 90s respectively), but they have been limited to considering participation in the labour market five years after obtaining an educational qualification.

There is therefore a lack of in-depth studies on the medium-long term situation in Italy. Consequently, there is a divergence of opinion in literature between those who claim that studying at length is useful, but not overly so, given that there is less inequality of income on the basis of education in Italy than in other countries (Livi Bacci 2008) and those who maintain that education guarantees adults greater protection against unemployment and a higher probability of obtaining top professional positions (Reyneri 2005).

The objectives of the research presented are twofold. The first is to outline the characteristics of the relationship between education and employment over time in Italy after the transition from the education system to work. A starting question is whether education is used in the labour market or whether there are differences on the basis of the level of education and educational qualification obtained. Also considered are the advantages that education offers both in terms of employability and occupation.

The second aim is to understand whether the benefits of education are distributed equally or whether there are differences on the basis of individual characteristics (gender) and/or context (geographical area of employment). This will reveal whether the return of

education varies in accordance with other variables that influence the definition of individual employment trajectories.

The study uses data from the labour force surveys conducted by Istat (2006, 2011), which are cross-sectional surveys that use extremely large samples – more of 250,000 families are interviewed every year with a total of more of 600,000 individuals[4]. Therefore, less individual information is available compared to traditional panels, but there are the benefits of having broad sub-samples and the opportunity to make medium-long term comparisons. For reasons which will be explained below, the analysis has been restricted to those born in the five-year period 1954-1958. Participation in the labour market and occupation are analysed for adults with different educational qualifications starting from the age of 35-40 (period 1993-1994) and any relevant changes are examined until the age of 50-55 (period 2008-2009).

The study shows that the relationship between education and employment is extremely complex and changes significantly depending on gender and the socio-economic situation of the area of employment. It also varies over time. In general, the effort made by individuals to obtain higher educational qualifications improves their chances of employment and the occupation they hold, thereby providing a return on their investment. The advantage of a high level of education is greater for those in a more disadvantaged position in the labour market (such as women and those who live in the less economically dynamic areas of Italy).

1. The return of education and employment

It is somewhat problematic to use income as the only variable to measure the return of education. The resulting difficulties concern the relationship between education and income, wage formation and the educational choices made by individuals.

The studies based on the Mincer earnings equation (1974) have shown that there is a relationship between education and income (see, for example, Blundell, Dearden, Sianesi 2001, Harmon, Oosterbeek, Walzer 2003). However, there are two opposing explanations for this: some who follow the theory of human capital (Becker 1964) claim that education increases labour productivity, while others say that education does not have an impact on productivity, but favours the distribution of the workforce among different jobs. This is what is affirmed by the theory of signals (Spence 1975) and the theory of job competition (Thurow 1975). To a certain extent, these two theories can be traced back to the sociological theory of credentialism (Collins 1979)[5].

Furthermore, studies on the relationship between education and income tend to take it for granted that education is used in the labour market (see, for example, the extensive overview of research on the causal effect of education on income by Card, 1999), thereby ignoring those who do not work.

The problem of sample bias with regard to employment was addressed by Heckman (1979), who sustained that when income is estimated on the basis of non-random samples, there is a risk that the income of a population will not be measured correctly. This happens, for example, with income for women estimated using samples of women that do not include housemakers. However, the solution he suggested, which has been adopted by those who reference the selection model (see, for example, Lovaglio, Verzillo

2015, Triventi 2013), does not enable to clarify the relationship between education and employment over time.

Wage formation is another fundamental issue. The theory of human capital does not take account of collective bargaining or contractual models. In countries where bargaining is more centralised, there are more limited wage differences between sectors and companies, and there is a less significant link between a salary and the performance of a company (Calmorf, Driffil 1988, Hall, Soskice 2001, Traxler et al. 2001). Depending on the contractual model adopted, this means that there can be differences in the return of education measured in terms of income for reasons that have little to do with the relationship between education and labour productivity.

The context or economic situation at the moment of entry into the labour market may also influence wage levels (Ammermueller Kuckulenz, Zwick 2009, Blachflower and Oswald 1995, Oreopoulos, von Wachter, Heisz 2008).

The effectiveness of income as the sole variable for measuring the return of education is reduced by two aspects: the difficulty in explaining the relationship between education and income, and forms of wage formation. These factors also draw attention to the fact that it would be appropriate to shift the focus to the relationship between education and employment.

It can be assumed that employment prospects also influence educational choices. Even someone who is driven by instrumental reasons in choosing studies rather than making a complex and largely unrealistic calculation of expenses incurred, loss of earnings and future income, as the theory of human capital states, can opt for the educational qualification that is expected to provide a better probability of employment.

In the field of economic theory, there are also those who follow a different approach from the theory of human capital and claim that educational choices are made in situations where future earnings are uncertain (King 1974, McGoldrick 1995). The higher income associated with higher levels of education can be considered as a form of compensation for the risk involved in bearing high educational costs in the hope of obtaining a greater income in the future. This uncertainty, however, does not only concern information about income, but also employment prospects.

Furthermore, the individual reasons that lead to educational choices may follow different criteria of rationality from those suggested by the theory of human capital. For example, some may opt for a job that provides gratification irrespective of income, while others may consider additional aspects when choosing their careers, such as finding a work-life balance.

Studying the impact of education on employment also helps to address other open questions in the relationship between education and income. For example, many studies focus on the differences in income linked to different levels of education (inequality between) rather than on variations among subjects who have the same level of education (inequality within), even though the latter are important (Franzini, Raitano 2013).

There is also the theory of 'skill-biased technological change' (SBTC) – in a certain sense the contemporary version of the theory of human capital – which hypothesises an increase in the demand for highly qualified workers with a subsequent rise in the income differences between well and poorly qualified workers. The theory is contradicted by a number of studies that have found a U-shaped relationship between skills and wages in the United States (Autor, Dorn 2013, Brynjolfsson, McAfee 2011). As a result of

polarisation in the labour demand, the most penalised subjects in terms of income are actually those with intermediate qualifications rather than those at the bottom of the scale, as one might expect. The same phenomenon has also been identified in many European countries (Goos, Manning, Salomons 2009).

An essential starting point for measuring the return of education is to see whether it is used in the labour market. It will then be possible to identify the advantages that different educational qualifications offer both in terms of participation in the labour market and continuity of employment, and occupation. Moreover, it is necessary to understand to what extent the advantages of education are distributed equally or depend on individual characteristics (such as gender) and/or the context in which people live. Finally, it is important to study changes over time.

The literature on the subject also features problems of a methodological nature. Even in the most sophisticated version put forward by Mincer, the theory of human capital has led to the development of a complex equation that is problematic to apply in practice[6].

With regard to Italy, existing studies show that the school-work transition is somewhat problematic even for graduates and has become even more complicated for the new generations (Schizzerotto 2002). Five years after graduation, an Italian degree offers fewer advantages than a university qualification in other countries (AlmaLaurea 2014, Reyneri 2005).

In general, it is assumed that the valorisation of human capital is made difficult by the structure of the production system, which is characterised by the presence of small companies that in many cases have a low capacity for innovation and limited internationalisation (AlmaLaurea 2014). Other explanations refer to the inefficiency of

the education system and its ability to provide education and training required by the production system (Livi Bacci 2008).

Furthermore, in the case of Italy, many aspects that can be traced back to the theory of human capital do not seem to find confirmation. In general, the importance of credentialism is affirmed in the Italian labour market (Ballarino, Scherer 2013, Schizzerotto 2002).

However, as mentioned above, most studies in Italy have focused on the phase of transition from the education system to work, while there is a lack of in-depth research about how education influences employment over time. This is where this study comes in.

2. Data sources, indicators and geographical areas

Firstly, here is some preliminary information for the purposes of the study: the data sources and indicators used, the different geographical areas into which Italy can be subdivided on the basis of economic structure and the distribution of the level of education by geographical area.

Labour force surveys are the most important source of information about the Italian labour market. They have been carried out on a continuous basis since 1959. However, because of the varying usability and comparability of the available microdata, the start of the period of analysis is limited to the first quarter of 1993. Data up until the fourth quarter of 2009 have been used, the last that was made public at the time this study was carried out. Radical changes were made to the surveys from 2004 onwards, but this produced a negligible level of error in the estimate.

As previously stated, the analysis is restricted to the starting date of 1993 and those born in the five-year period 1954-1958. The focus is on a single cohort of adults, because otherwise the resulting complexity would not make it possible to conduct a sufficiently clear and presentable study[7].

After 1993, the phases will be separated by five-year periods. However, in order to maintain sub-samples of an acceptable size, the surveys have been regrouped into two-year periods (see tab. 1). The survey periods will therefore be as follows: 1993-1994, in which the age of the sampled population is 35-40; 1998-1999, with an age range of 40-45; 2003-2004, with members of the sample aged 45-50, and finally 2008-2009, with a corresponding age bracket of 50-55.

(Insert tab. 1 here)

In addition to age and gender, the main indicators that will be used are participation in the labour market, occupation, educational qualification and geographical area.

As far as participation in the labour market is concerned, different definitions are used from those usually adopted by Istat (2007, 2010) and other literature on the subject. The three indicators generally used to analyse the labour market are the economic activity rate (the percentage of the working age population that is active), the employment rate (the percentage of the workforce that is employed) and the unemployment rate (the percentage of the workforce that is unemployed). For the objective of this study, the framework provided by a categorisation of this type can lead to misleading assessments or considerations, as groups are compared that have extremely unequal distributions of non-workforce and workforce members. For example, the fact that many women in Italy are housemakers significantly reduces the active component of the population in the way

that it is usually interpreted. This makes it impossible to compare the labour statistics for women with those for men.

Another question is how to consider potential workers – those who have not sought a job for at least two months, but would be available immediately if offered one – and discouraged workers – those who are looking for a job and would accept one, although they have done no job-seeking in the last four weeks. The Istat (2007, 2010) surveys consider potential and discouraged workers to be inactive, but there is uncertainty regarding their positioning. A number of studies (Brandolini et al. 2004) have shown that they are more comparable to the unemployed.

Instead of using the indicators usually adopted to analyse the labour market, comparisons are made by calculating the percentage distributions between the different work situations, always referring to the entire population of the age bracket in question. The obvious consequence is that the resulting statistics will no longer be comparable to the official ones.

As a result, the main indicators used in this study are the employment rate and the job seekers rate, including those not actively looking for work, obtained by adding together the total of potential workers, discouraged workers and the unemployed in the strict sense of the word, all calculated as percentages of the total population.

As far as occupation is concerned, employees are subdivided according to the classification of professions formulated by Istat (2013), which is in turn an adaptation of the International Standard Classification of Occupations (ISCO[8]). In this way, the wide variety of professions in the labour market is pooled into a limited number of groups, organised in a hierarchical order depending on the complexity and reach of the assigned

duties, the level of responsibility and the degree of decision-making autonomy that characterises each profession (Hoffmann, 2004). The eight groups obtained from this process[9] are classed in descending order (see the appendix for the coding framework).

With regard to educational qualifications, two methods for measuring the level of education can be identified in literature (Blundell, Dearden, Sianesi 2001). The first of these, which is more widespread, considers the number of years spent in education, while the second focuses on the qualification obtained. In the first method, it is supposed that the return of education varies over time and that what really counts is the amount of time spent studying. On the other hand, the second method stresses that the decisive factor is the educational qualification achieved. The first solution is based on a restrictive premise, as the performance of human capital may vary not only according to the number of years of study, but also above all, especially in Italy, depending on the qualification obtained. For this reason, educational qualifications are divided into five levels arranged in ascending order: (a) elementary school diploma, (b) middle school diploma, (c) professional school diploma, (d) high school diploma and (e) degree (see the appendix for the full coding framework of educational qualifications).

Finally, it will be useful to analyse the differences in the return of education in terms of geographical area, distinguished by type of economic structure. After broadly following the indications given by Bagnasco (1977) and Trigilia (1992) and adapting them to our purposes, three areas have been identified. The first of these consists of the North-West and the 'Third Italy' and covers the most dynamic areas of the country, characterised by an economic structure formed by large companies above all in the former and small companies above all in the latter. The second area – Lazio and the

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Adriatic Coast – has a certain level of dynamism, although lower than the first area, and is still characterised by the presence of small-medium sized companies, even though they are less widespread than in more industrialised areas, and, especially in Lazio, by widespread public-sector employment. The third area consists of the other regions in the South and the Islands, and is the least developed and most backward area in industrial terms[10].

(Insert tab. 2)

The economic dynamism indexes shown in table 2[11] highlight the strong degree of heterogeneity at a geographical level. Given the objectives of the study, different types of indicators have been chosen that refer to GDP per capita, productivity and innovation (the number of patents per inhabitant and expenditure on research and development). As the table shows, there is consistency in the trends of the different indicators considered; the most dynamic geographical areas have an advantage in all four. Furthermore, as little changed between 1995 and 2009, the geographical differences remained constant over time.

Despite these marked inequalities in economic terms and unlike what might have been expected, at least from following the theory of human capital, the most dynamic areas do not benefit from a better educated body of workers (graph 1). On the contrary, those who choose a low level of professional specialisation are much more widespread in the North-West and the Third Italy than in the South and the Islands – 12.1% compared to 5.4%.

(Insert graph 1)

3. Participation in the labour market, age, gender and geographical area: some general trends

Here follows an overview of participation in the labour market for the different age groups by gender and geographical area.

The data for the four age brackets under consideration show that participation in the labour market tends to be somewhat stable until 45-50 years of age. If the size of the workforce is analyzed against the population of subjects aged between 35 and 55, this fraction accounts for approximately 78/83% (tab. 1). 35-40-year-olds have a slightly higher rate of active participation than 50-55-year-olds, as after 50 years of age there are higher numbers of retired people (0.6% compared to 2.6%), those unable to work (1.3% against 2.6%) and those who look after the home (15.1% compared to 16.2%). At the same time, there is a slight fall in the percentage of those in employment (from 72.4% to 69.8%).

It should be noted that from 1993-94 to 2008-09 there is a significant increase in those in fixed-term employment (from 3.8% to 7.0%), a phenomenon linked to the launch of a deregulation process in the Italian labour market in the second half of the 1990s (see, for example, Berton, Richiardi, Sacchi, 2009).

While the numbers of potential and discouraged workers remain stable, the percentage of those unemployed drops with age (from 4.7% to 2.6%).

There are, however, important gender-based differences. As one might have imagined, the employment rate is much higher for men than for women: among subjects aged between 35 and 40, the respective figures are 92.5% and 52.3%. This can mostly be explained by the fact that a significant proportion of women – about 30% – look after the home, compared to a negligible number of men. This confirms the fact that there is a clear division of roles on the basis of gender that sees men as the main breadwinners.

This is not the only disadvantage that women encounter; even when they are employed, they are more likely to be in precarious employment. In the 35-40 age bracket, 6.1% of employed women are in fixed-term employment compared to only 1.6% of men.

As people become older and move closer to retirement (50-55 age group)[12], the labour dynamics diverge even further. For women, the economic activity rate drops (by 4.0%), as there are more housemakers and retired people, while there is an increase in the number of those that work, especially in precarious employment (11.2%, about a fifth of employed women). There is a slightly larger fall (of 5.6%) in the economic activity rate of men aged between 50 and 55, because of retirement or incapacity for work. The percentage of those in precarious employment remains relatively low.

(Insert tab. 3 here)

Turning our attention to geographical variables, gender-based differences are amplified by area of residence. This issue will be addressed in more detail below. For now, it can simply be said that for 35-40 year-olds the inequalities present between men and women are made even wider by the level of dynamism of the geographical context (tab. 3); even in the North-West and the Third Italy, women are disadvantaged in terms of

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active participation, as 22.7% of them look after the home, while "only" 62.7% are employed, compared to 95.5% of men. However, these differences are far lower compared to the corresponding data for Lazio and the Adriatic Coast – 37.5% are housemakers, while 45.8% work, compared to 91.8% of men – and above all for the South and the Islands, where the respective figures are 40.5% and 35.0%, with 86.3% of men in employment. The situation improves slightly with an increase in age, in the sense that there is a rise in the number of women in employment: +0.5% in the North-West and the Third Italy, +2.7% in Lazio and the Adriatic Coast and +2.4% in the South and the Islands. Contrastingly, there is a drop in the number of employed men for the reasons discussed above, with respective figures of -5.5%, -7.9% and -8.6%.

The extent of these differences between men and women in terms of participation in the labour market is magnified by geographical area and reduced, albeit slightly, by age. These trends support the assertion that the return of education in Italy is diversified on the basis of individual characteristics and context.

Given that there are significant gender-based differences in the labour dynamics, it is necessary to carry out separate in-depth analysis.

4. The disadvantages of women aged 35-40 and the importance of education

Graph 2 provides a good illustration of the strong gender-based differences in terms of participation in the labour market. It also shows that level of education is a more decisive variable for women than for men. For now, only women in the 35-40 age group are considered.

As said above, the first disadvantage experienced by women is that they are less likely to be present in the labour market, with almost a third choosing to look after the home.

(Insert graph 2 here)

It is evident that the likelihood of being a housemaker becomes increasingly lower as the level of education increases, while the probability of successfully entering the labour market increases. To this end, we can highlight that for those who only have an elementary school diploma at most, the likelihood of looking after the home – almost 50%, see graph 2 and tab. 4 – is significantly higher than the probability of being employed – about 30%. The percentage of those looking for work is also high – 19.3%. These conditions change radically for those with more advanced educational qualifications and even a professional qualification significantly increases the likelihood of participating in the labour market: 81.2% are members of the workforce, whether active or not, and 67.0% of them are employed. Conversely, there is a drop in the percentage of housemakers. Finally, there is a notable increase in employment among female graduates, with a figure of 87.0%. The proportion of women in this group looking for work falls to 6.4%, while housemakers only account for 5.8%.

(Insert tab. 4 here)

The level of educational qualification also plays a determining role in being able to obtain a top occupation. In other words, as it is reasonable to expect, higher educational qualifications are more likely to lead to a higher-level job. It is clear that there is an almost monotonic trend, whereby the likelihood of being employed in highly specialised

jobs or positions with great responsibility increases in tandem with the level of educational qualifications. This is true both in terms of the percentage distributions, whose highest values are plotted on a hypothetical diagonal line (tab. 4, see also median values), and the arithmetic mean values (tab. 5[13]) – remember that the lower values correspond to higher-level jobs. For example, 2/3 of those in employment with no more than an elementary school diploma have an occupation that is no higher than a skilled worker. Contrastingly, more than 2/3 of female graduates have a medium-high or high-ranking occupation – the sum of positions 3, 2 and 1.

(Insert tab. 5)

There are significant differences in the advantages of education in terms of geographical area. In areas with a higher proportion of people looking for work, higher educational qualifications increase the probability of being employed (tab. 3 and graph 3). In this way, in the South and the Islands, the total percentage of employed women is 35.0% – with 22.7% looking for work –, values which drop to 15.8% for those who only have an elementary school diploma and rise in tandem with educational qualifications to reach 85.0% for university graduates. On the other hand, in the North-West and the Third Italy, there is not only a lower percentage of job-seekers – 12.1% –, but also smaller differences in participation in the labour market on the basis of educational qualifications, ranging from employment percentages of 41.5% for those with an elementary school diploma to 88.2% for graduates. Instead, there is an intermediate situation in Lazio and the Adriatic Coast.

Finally, in geographical terms (tab. 6), the relationship between educational qualification and occupation in the North-West and the Third Italy favours those with

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lower educational qualifications, as the average values by occupation show: for example, those with an elementary school diploma in the North-West and the Third Italy have a higher-level occupation (6.20 compared to 6.59 in the South and the Islands). Contrastingly, the South favours those with higher educational qualifications: 2.46 for graduates, compared to 2.52 in the North-West and the Third Italy.

(Insert tab. 6 here)

5. Advantages in terms of employment for men in the 35-40 age bracket

Men have a stronger position than women in the labour market both in terms of their participation and the precariousness of their employment relationship. Moreover, although there are some differences in terms of educational qualifications, they are much smaller than those for women.

As expected, the rate of employment is much higher for men than for women, but at the same time, the success of job-seeking is conditioned by their educational qualifications (tab. 4). There is a clear trend whereby an increase in the level of education means less difficulty in finding a job: the total percentage of job-seekers is 5.6%, ranging from 2.1% of graduates to 11.4% of those with no more than an elementary school diploma. Unlike the situation for women, there is no linear relationship between the two variables for men. Indeed, the chances of finding employment increase dramatically not only for graduates (97.5%), but also those with a high school diploma (95.1%) or a professional school diploma (95.7%). However, as mentioned above, the Italian production system is characterised by a high concentration of small companies – especially in the North-West and the Third Italy and along the Adriatic Coast – which

tend to require workers with specific skills and therefore not necessarily or not only those with high educational qualifications (Reyneri 2005).

This advantage in terms of employability varies according to the geographical area, although to a lesser extent than for women. In areas with higher unemployment, higher educational qualifications increase the probability of being employed (graph 3 and tab. 3). Therefore, in the South and the Islands, where the percentage of those employed is 86.3%, the figure drops to 71.8% for those with an elementary school diploma and rises to 95.0% for graduates. Contrastingly, in the North-West and the Third Italy, there is not only a higher percentage of those employed (95.5%), but also smaller differences on the basis of educational qualifications, ranging from 89.2% for subjects with an elementary school diploma to 98.3% for graduates. There is an intermediate situation in Lazio and the Adriatic Coast, which is comparable to the findings for women.

Finally, in geographical terms, the relationship between educational qualifications and occupation (tab. 6) in the North-West and the Third Italy favours those with lower educational qualifications, as the average occupation values show: for example, the value for an elementary school diploma is 6.18, compared to 6.38 in the South and the Islands. Unlike for women, however, there are no significant differences among those with high-level educational qualifications.

To sum up, gender-based analysis shows that higher educational qualifications guarantee everybody a better chance of finding employment and a higher-level occupation. These advantages are not equally distributed, as they are more significant in areas where there is less economic dynamism and for those who belong to a disadvantaged group in the labour market, such as women.

The trends of professional careers over time will now be analysed in greater detail.

6. Occupation: changes over time

As said, there are not many variations in terms of participation in the labour market over time: those who enter the labour market tend to stay there, while for those who have left, it is extremely difficult to return[14]. What is more interesting is what happens in terms of occupation. A few considerations have been already made to this end; as might be expected, on average, a higher level of education corresponds to a higher-level occupation.

The analysis starts with a gender-based comparison.

In the first age group (35-40), confounding expectations, employed women with equal educational qualifications reach a significantly higher-level occupation than men (see column "M-F" tab. 5[15]). However, this advantage is distributed extremely unequally among the different levels of education and is also only an average value, which means that it does not highlight the strong under-representation among the highest-level occupations.

In table 5, we can see that occupational levels favour women from a middle school diploma to a high school diploma (the gender-based difference for the average values of occupation is, in order, +0.39, +0.71, +0.30); vice versa, the situation favours men with an elementary school diploma (-0.05) and a degree (-0.30).

With analysis of the type of degree obtained, career advantages vary depending on the subject studied, confirming the existence of inequalities between those with the same level of educational qualifications (Franzini, Raitano 2013). Women are at a disadvantage for engineering (-0.31) and economic/social (-0.19) degrees, while they enjoy an advantage with degrees in the fields of the humanities (+0.14) and, albeit slightly, science (+0.03).

However, while these average values reveal that, unlike expectations, employed women do not achieve a lower occupational level than men, at the same time they hide the fact that it is difficult for them to reach the highest-level occupations with the same level of frequency. To this end, it is enough to highlight the fact that only 1.2% of employed women are in occupation level 1, compared to 3.2% of men[16]. This proves that a familiar phenomenon – the glass ceiling (Jackson and O'Callaghan, 2007, 2009) – also exists in Italy, as there are better career chances for men at the highest occupational levels than for their female counterparts.

At a geographical level, there are also gender-based differences in the levels of occupation, although the trends are less clear-cut than those for participation in the labour market. However, the previously identified discrepancy increases to the advantage of women, who manage to reach even higher positions in the least developed areas of the country, while this does not happen for men (see tab. 6).

The dynamics over time are a little clearer. As they grow older, on the whole the advantages acquired by women in the first part of their working lives wear away, because there is both a drop in their level of occupation and a rise in that of men. This trend is fairly general and involves all levels of education with the exception of professional school qualifications; the last column in tab. 5 shows that the values are mainly negative for women and positive for men. The most striking feature is the total erosion of the advantage among those with a high school diploma (tab. 5, from 0.30 at 35-40 years old to 0.01 at 50-55), while the disadvantage increases for those with a degree (the average difference moves from -0.13 at 35-40 years old to -0.30 at 50-55).

If those with high educational qualifications are analysed in greater detail, – with exclusive reference to employed women – there is an increase in lower-level occupations (cumulated values of occupation levels 6, 7, 8, only graduates from 1.6% to 4.1% at 50-55 years old). Instead, there is a lower increase than that for men in the highest-level occupation category. Again with sole reference to graduates, 5.1% of women aged 50-55 are in occupation category 1, an increase of +2.6% compared to 35-40 year-olds. The figure for men in the older age group is 12.1%, a rise of +4.2% compared to their younger counterparts[17].

Going into even further detail, the variations in the differences in occupation between men and women are extremely high for certain specific fields of degree such as engineering (from -0.31 to -0.51, tab. 5) and economic/social degrees (from -0.19 to -0.60), but above all medicine (from -0.02 to -0.57).

To sum up, variations with age in terms of occupation are diversified by gender. Women with low educational qualifications lose their advantages over time, while the differences that favour male graduates increase.

Finally, at a geographical level, the process in question is even more accentuated. For the interests of this study, the previously identified gender-based differences are consolidated even further over time (tab. 6, last two columns): in the North-West and the Third Italy, women's advantages in terms of occupation are reduced, which does not happen for men, except those with professional school qualifications. Contrastingly, in the South and the Islands, women tend to maintain the level of occupation that they achieve. Even when they are promoted, their increase in occupational level is generally less than that of men, who rise up the occupational hierarchy to a greater or lesser degree.

Conclusions

The study highlights that there are clear advantages in having high educational qualifications, with greater chances of successfully entering the labour market and, after obtaining a job, better opportunities to reach a high-level occupation. These advantages are also consolidated over time.

While these are the general trends, it must be said that the relationship between education and employment is more complex than what the above might suggest and what

usually emerges in literature. There is a danger of simplification in the observation that it does not appear to be possible to explain the relationship between education and employment through the theory of human capital, given that education helps to sort the workforce into the different jobs.

The return of education in terms of employment differs on the basis of gender and geographical area and the advantages of education are not the same for everyone. There is therefore a somewhat diverse range of trajectories in the labour market, only some of which can be explained by education.

Firstly, with regard to gender, women in Italy are most disadvantaged in terms of participation in the labour market, stability of the employment relationship and occupation, even though the latter aspect takes on some distinctive forms. In order to overcome the differences created by the labour market, they must on average achieve higher levels of education than those required by men.

The developments over time are also interesting. For women, there is a divergence between participation in the labour market and job occupation: high educational qualifications are fundamental for long-term presence in the labour market and employment, but do not guarantee career advancement over time, as they lose the advantages in terms of occupation acquired at 35-40 years old over time. It can consequently be affirmed that, at least for women, the informative value of educational qualifications is reduced over time, bringing into play career dynamics that are not connected to the level of education received.

However, with regard to men, even though the differences in terms of participation in the labour market on the basis of educational qualifications are smaller than those for

women, those with a low level of education tend to be more vulnerable and at risk of exclusion from the labour market. As far as occupation is concerned, there are no clear trends for men. In general, there is a rise in the level of occupation over time, but in the case of graduates, this varies according to the degree field. Instead, the benefits of lower qualifications such as professional school diplomas are greater at the beginning of a career; over time, occupational levels tend to decrease, as educational qualifications of this type probably become out of date.

With regard to geographical area, higher educational qualifications offer a better guarantee of finding a job above all in the least dynamic areas with a higher unemployment rate. This contradicts what might be expected on the basis of the theory of human capital, but can be explained by referring to credentialism. The demand for high educational qualifications is due to the significant presence of the public sector, which requires specific educational qualifications (it is known that public initiative has overcome the shortcomings in the private sector in less developed areas of Italy).

Finally, the analysis of the relationship between degree and occupation shows that there are some significant differences depending on the degree field. Also in this case, the relationship varies according to gender and over time. The study therefore confirms the existence of inequalities within that need to be examined in greater depth.

Appendix, coding of educational qualifications (ISCED classification)*
(a) elementary school diploma; (b) middle school diploma;
(c) professional school diploma (4-5 years). Professional qualification (2-3. does not allow entry to university). Art institute qualification (I cycle). Secondary school diploma in education (short cycle). Other qualification or diploma;
(d) five-year high school diploma. Allows entry to university.

(e) degree or university diploma. *including:*

economic/social: economic-statistical. political-social. legal;

humanities: literary. linguistic. teaching. psychological. physical education. fine arts;

engineering: engineering. architecture;

scientific: scientific. chemical-pharmaceutical. geo-biological. agrarian;

medical: medicine;

general: other degree or university diploma.

*Note. The ISCED classifications have changed significantly over the years.

Here we only show the main categories with the relative groupings.

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[1] There is an entire branch of sociology related to social mobility studies, which analyses the relationship between education, occupation and position in the social stratification system. This, however, is a different perspective from the one referred to in this article, even in the case of studies in which class mobility intersects with career mobility (Blossfeld, Hofmeister 2006, Blossfeld, Mills, Bernardi 2006. Regarding Italy, see Schizzerotto 2002). While economics generally applies the neoclassical model to educational choices, sociological studies focus on studying whether and to what extent education contributes to determining an individual's position in the social structure.

[2] The National Institute of Statistics.

[3] http://www.almalaurea.it/en/

[4] The sample size has changed considerably over time, going from 801,000 individuals in 1993 to 807,000 in 2004, eventually dropping to 660,000 in 2009.

[5] This is clearly a simplification. What the three theories have in common is an emphasis on the value of education for the purpose of sorting individuals into different jobs. In other respects, there are some significant differences between them. For example, the theory of signals considers the characteristics of the labour supply and gives education an informative value, in the sense that it signals an individual's abilities, competences and skills. Instead, the theory of job competition refers to the labour demand and states that in certain situations (such as when few good jobs are available or there is high unemployment) high educational qualifications can increase a worker's chances of being selected. Finally, the theory of credentialism states that there is an unequal distribution of resources and that this conditions the educational choices made by subjects. Furthermore, social class exerts power in controlling access to certain professions and favouring some groups.

[6] As income is not used as a dependent variable in this study, the option of applying the models of regression generally used in this type of research has been excluded. Another reason not to use them is that it would have to be assumed that the relationships studied are in some way "typical" – in general linear or a function that can be made linear. This assumption is false in our case, as the relationships that will be discussed change depending on the context analysed (see, for example, graph 1 below).

[7] The period effect should still be included, especially with regard to the economic crisis of 2008-09, along with the cohort effect connected to the different times at which subjects with different educational qualifications enter the labour market. The first effect was checked: the consequences of the crisis that hit Italy were yet to be felt in the last years considered. The situation of the cohort effect is more complicated, as 15 years or more can elapse between those with an elementary school diploma and graduates entering the labour market. Unfortunately, retrospective data are missing, but subjects born 10

years later – in the period 1964-1968 – have a greater general propensity to look for employment. Nevertheless, much of this variation can be attributed to the increase in schooling and it follows that by examining de facto education all or most of the cohort effect is also checked.

[8] The classification used here is CITP-88. The codes introduced in successive years and present in the microdata files (CP2001 and CP2011) do not vary in terms of general structure. The classifications of professions drawn up by Istat in Italy (with 9 large groups) and by ISCO internationally (with 10 groups) coincide almost completely. The only difference is that Istat groups together ISCO values 6 and 7, which are respectively defined as: skilled agricultural and fishery workers, and craft and related trades workers.

[9] The large group "armed forces" has been eliminated both for its scarceness (0.8%) and because an extremely diverse range of skills are needed to carry out the tasks in the different jobs, to the extent that it is impossible to arrange them inside the classification used. Nevertheless, they have not been eliminated, but inserted into the median occupation for the educational qualification in question.

[10] In concrete terms, the geographical areas considered include the following regions: North-West (Piedmont, Lombardy and Liguria), the Third Italy (Trentino Alto-Adige, Veneto and Friuli Venezia Giulia, Emilia-Romagna, Tuscany, Umbria and Marche), Lazio and the Adriatic Coast (Abruzzo, Molise, Puglia and Basilicata) and the South and the Islands (Campania, Calabria, Sicily and Sardinia).

[11] 1995 was chosen as it provided the first reliable data on the subject, while the last statistics available were from 2009.

[12] The Italian reform aimed at increasing the retirement age to 65 for men and 60 for women has only shown its initial effects in recent years.

[13] It is accepted that the correct statistic for ordinal variables is the median, which has been used in tab. 4. By using this measure of central tendency, one could, however, make comparisons that would be too imprecise, as even small movements can cause changes in the level of occupation. This problem is eliminated by using the arithmetic mean. In this way, it is assumed that the different levels are "layered" in proportional terms. The approximation is acceptable in this case, as some extremely similar values are compared.

[14] On the basis of the main study of a panel in the Italian labour market, there is a low level of individual mobility, as shown by the average number of episodes of use (Schizzerotto 2002).

[15] In terms of occupation, these advantages are not necessarily accompanied by an economic benefit.

[16] The data for those aged 35-40 can be obtained from tab. 4, excluding the unemployed in the recalculation of fractions, while the table is not shown for those aged 50-55.

[17] Ibidem.

Graph 1, Educational qualification by geographical distribution for those aged 35-40 (born in the period '54-'58)
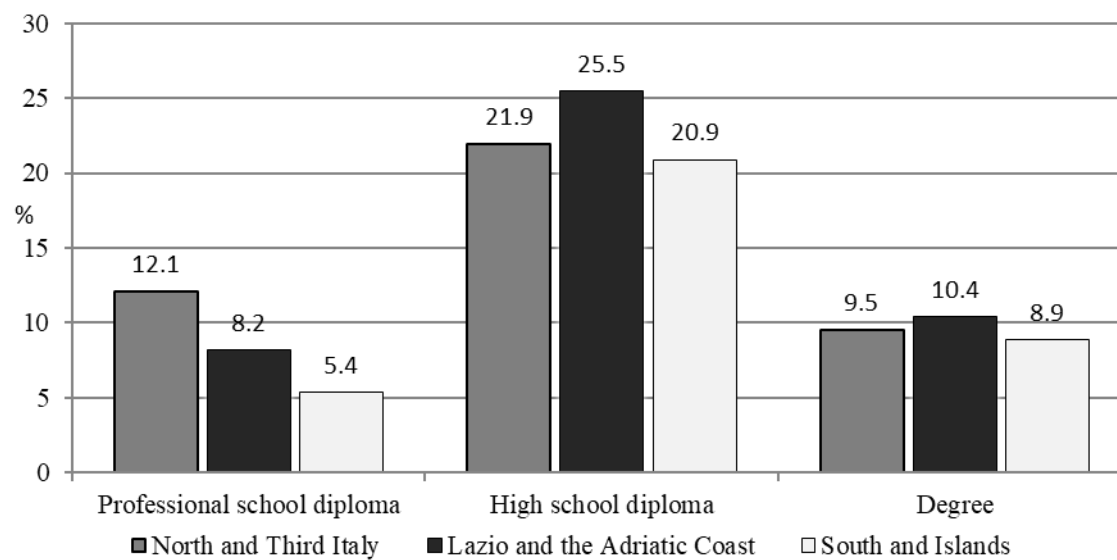
Graph 2, Employment status by educational qualification, age and gender
(F = female, M = male)
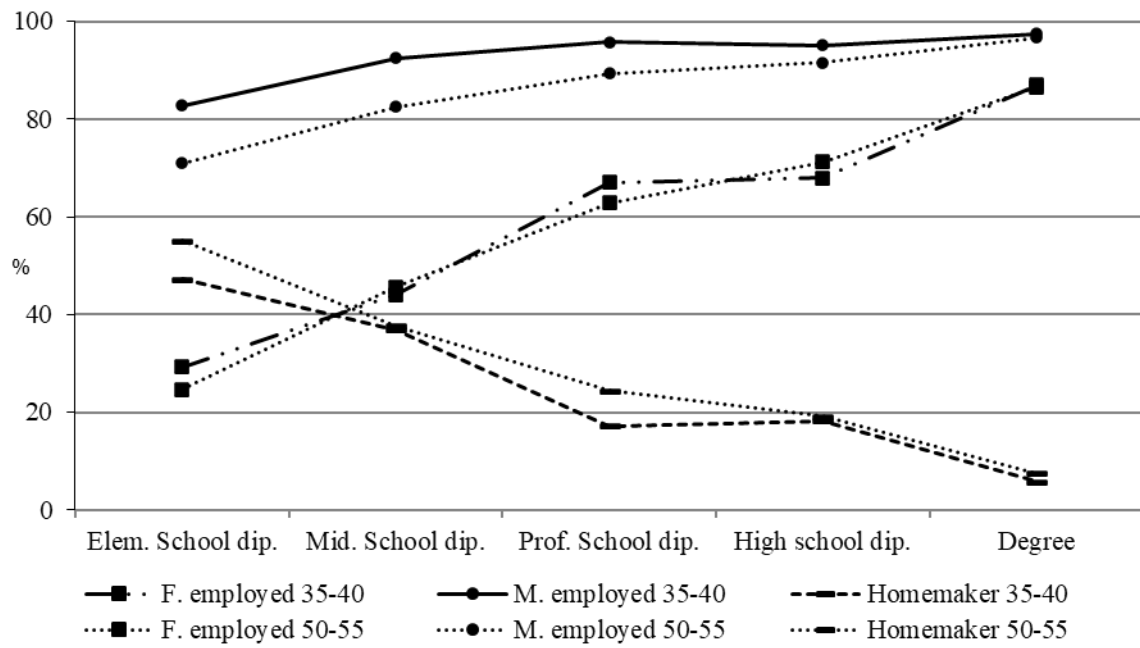
Graph 3, Employment by educational qualification, geographical area and gender (F = female, M = male) for those aged 35-40

Tab. 1, Employment status by age and gender

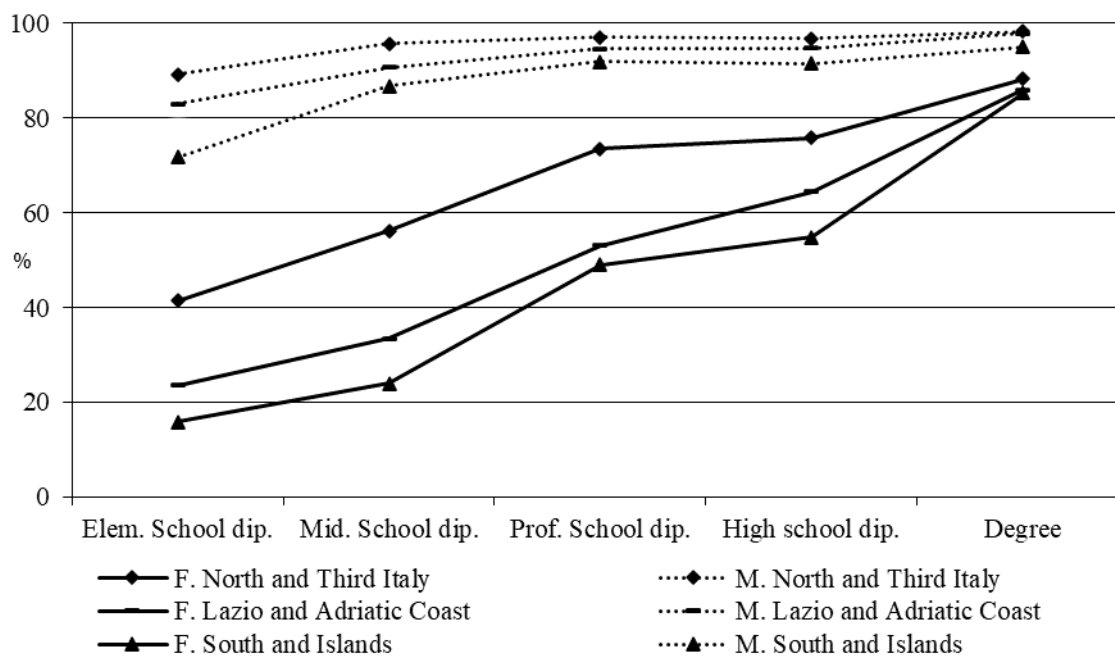| Age	35-40	40-45	45-50	50-55
Years of data collection	'93-'94	'98-'99	'03-'04	'08-'09
Total				
Non-workforce, including:	*17.1*	*16.2*	*18.3*	*22.0*
other status	0.1	0.2	0.3	0.6
retired	0.6	0.9	1.3	2.6
unable to work	1.3	1.2	1.7	2.6
homemaker	15.1	13.9	14.9	16.2
Active and inactive workforce, including:	*82.9*	*83.8*	*81.7*	*78.0*
potential or discouraged workers	5.8	6.3	5.4	5.6
unemployed	4.7	4.5	3.1	2.6
employed, including:	*72.4*	*73.0*	*73.2*	*69.8*
fixed-term	3.8	4.7	6.1	7.0
permanent	68.6	68.3	67.1	62.8
Total (%)	*100.0*	*100.0*	*100.0*	*100.0*
(N)	(109,122)	(111,158)	(98,004)	(89,706)
Women				
Non-workforce, including:	*32.3*	*29.9*	*32.5*	*36.3*
other status	0.1	0.1	0.3	0.5
retired	0.9	1.1	1.1	1.7
unable to work	1.1	1.0	1.6	2.2
homemaker	30.2	27.7	29.4	31.9
Active and inactive workforce, including:	*67.7*	*70.1*	*67.5*	*63.7*
potential or discouraged workers	10.1	10.9	8.8	7.5
unemployed	5.3	5.1	3.4	2.2
employed, including:	*52.3*	*54.0*	*55.3*	*54.0*
fixed-term	6.1	7.4	10.0	11.2
permanent	46.2	46.7	45.3	42.7
Total (%)	*100.0*	*100.0*	*100.0*	*100.0*
(N)	(55,470)	(56,247)	(50,101)	(46,387)
Men				
Non-workforce, including:	*1.9*	*2.3*	*4.0*	*7.5*
other status	0.2	0.2	0.4	0.7
retired	0.3	0.7	1.5	3.6
unable to work	1.4	1.4	1.9	3.0
homemaker	0.0	0.0	0.2	0.2
Active and inactive workforce, including:	*98.1*	*97.7*	*96.0*	*92.5*
potential or discouraged workers	1.6	1.7	2.0	3.7
unemployed	4.0	3.9	2.8	2.9

employed, including:	92.5	92.1	91.2	85.9
fixed-term	1.6	2.0	2.1	2.6
permanent	90.9	90.1	89.1	83.3
Total (%)	100.0	100.0	100.0	100.0
(N)	(53,652)	(54,911)	(47,903)	(43,319)

Source: Istat

Tab. 2, Indexes of economic dynamism by geographical distribution, in 1995 and 2009

	GDP per inhabitant in Euro (compared to 2005)		Patents per million inhabitants		Industry productivity	Expenditure on research and development
Year 1995	Value	Index	Number	Index	Value	GDP %
Italy	16,750	100	44	100	50	1.0
North-West and Third Italy	20,016	120	71	163	51	1.0
Lazio and Adriatic Coast	15,196	91	16	37	47	1.3
South and Islands	10,695	64	6	13	43	0.6
Year 2009						
Italy	25,247	100	72	100	51	1.3
North-West and Third Italy	29,422	117	115	159	52	1.3
Lazio and Adriatic Coast	23,408	93	23	32	50	1.4
South and Islands	16,956	67	12	16	42	0.9

Source: Istat

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Tab. 3, Employment status by geographical distribution, gender and age

	35-40-year-olds (%)		50-55 year-olds, differences in percentage points compared to 35-40 year-olds	
North and Third Italy	Female	Male	Female	Male
homemaker	22.7	.0	3.1	0.2
job seeker	12.1	3.0	-5.4	0.7
employed	62.7	95.5	0.5	-5.5
(N)	(28,253)	(27,747)	(25,068)	(23,963)
Lazio and Adriatic Coast				
homemaker	37.5	.0	1.8	0.1
job seeker	15.2	6.2	-4.1	1.4
employed	45.8	91.8	2.7	-7.9
(N)	(12,982)	(12,476)	(9,292)	(8,521)
South and Islands				
homemaker	40.5	.0	2.5	0.2
job seeker	22.7	10.9	-7.2	1.9
employed	35.0	86.3	2.4	-8.7
(N)	(14,235)	(13,429)	(12,027)	(10,835)

Source: Istat

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Tab. 4, Employment status with occupation by educational qualification and gender for those aged 35-40

	(a)	(b)	(c)	(d)	(e)	Total
Women						
Non-workforce, including:	51.5	38.6	18.8	19.7	6.6	32.3
unable to work, retired, other status	4.2	1.8	1.7	1.6	0.8	2.1
Homemakers	47.3	36.8	17.1	18.1	5.8	30.2
Active and inactive workforce, including:	48.5	61.4	81.2	80.3	93.4	67.7
job seekers	19.3	17.4	14.2	12.2	6.4	15.4
employed, including:	29.2	44.0	67.0	68.1	87.0	52.3
8. unskilled professions	8.7	8.1	2.8	1.5	0.4	5.6
7. blue-collar workers, machinery operators	3.3	3.2	1.0	0.4	0.3	2.1
6. specialised blue-collar workers, artisans and farmers	9.6	7.8	2.8	1.8	0.7	5.7
5. service professions	5.6	12.6	8.3	7.3	3.1	8.7
4. white-collar professions	0.9	7.0	20.9	18.6	6.2	9.7
3. professions with medium-high specialisation	1.0	5.0	28.7	35.7	17.3	14.3
2. professions with high specialisation	0.0	0.1	1.5	2.0	56.7	5.6
1. entrepreneurs, senior management and legislators	0.2	0.3	1.0	0.9	2.2	0.6
Total (%)	100.0	100.0	100.0	100.0	100.0	100.0
(N)	(11,228)	(21,530)	(5,799)	(12,028)	(4,885)	(55,470)
Median values (only the employed)	6	5	4	3	2	5
Men						
Non-workforce, including:	5.9	1.6	0.8	1.0	0.4	1.9
unable to workle, retired, other status	5.9	1.6	0.8	1.0	0.4	1.9
homemakers	0.0	0.0	0.0	0.0	0.0	0.0

	(a)	(b)	(c)	(d)	(e)	
Active and inactive workforce, including:	94.1	98.4	99.2	99.0	99.6	98.1
job seekers	11.4	5.9	3.5	3.8	2.1	5.6
employed, including:	82.7	92.5	95.7	95.1	97.5	92.5
8. unskilled professions	12.9	11.4	4.6	2.4	0.7	7.8
7. blue-collar workers, machinery operators	15.3	14.8	9.4	4.6	0.5	10.5
6. specialised blue-collar workers, artisans and farmers	42.9	37.2	21.2	9.6	1.7	26.3
5. service professions	7.8	15.3	13.5	12.5	3.2	12.2
4. white-collar professions	1.7	6.6	13.4	18.6	3.5	9.0
3. professions with medium-high specialisation	1.3	5.8	27.6	39.8	14.1	16.0
2. professions with high specialisation	0.1	0.2	2.4	2.4	66.0	7.9
1. entrepreneurs, top management and legislators	0.7	1.1	3.7	5.1	7.7	2.9
Total (%)	*100.0*	*100.0*	*100.0*	*100.0*	*100.0*	*100.0*
(N)	(7,517)	(22,913)	(5,237)	(2,553)	(5,573)	(53,652)
Median values (only the employed)	6	6	5	4	2	5

Key: (a) elementary school diploma; (b) middle school diploma; (c) professional diploma; (d) high school diploma; (e) degree.

Source: Istat

Tab. 5, Average occupation values by educational qualification, gender and age, only the employed

	35-40 age group					50-55 age group					Age diff.	
Italy		%		%	$\bar{M}$-$\bar{F}$		%		%	$\bar{M}$-$\bar{F}$	$\bar{M}$	
Elementary school diploma	.32	11.5	.27	12.7	0.05	.45	9.5	.24	10.5	0.22	0.13	.03
Middle school diploma	.45	32.6	.84	42.5	.39	.47	28.6	.65	36.8	.18	0.02	.21
Professional school diploma	.91	13.4	.62	9.7	.71	.21	10.9	.11	9.7	.90	0.30	0.49
High school diploma	.65	27.9	.95	24.0	.30	.76	32.0	.77	29.1	.01	0.11	.18
Degree, including:	*.50*	*14.6*	*.37*	*11.1*	**0.13**	*.56*	*19.0*	*.26*	*13.8*	**0.30**	*0.06*	*.11*
economic/social	.61	2.1	.42	2.4	**0.19**	.00	2.9	.40	3.2	**0.60**	0.40	.02
humanities	.55	6.0	.69	1.6	**.14**	.48	8.0	.44	2.1	**0.04**	.07	.25
engineering	.60	0.8	.29	2.6	**0.31**	.68	0.9	.17	2.9	**0.51**	0.08	.12
science	.40	2.9	.43	1.5	**.03**	.31	3.9	.32	2.0	**.01**	.09	.11
medicine	.15	2.1	.12	2.8	**0.02**	.65	3.4	.08	3.6	**0.57**	0.50	.04
Total	*.41*	*100.0*	*.94*	*100.0*		*.33*	*100.0*	*.64*	*100.0*			
(N)		(28,821)		(49,452)			(24,975)		(36,893)			

Note. Remember that the lower values show a higher level of occupation, while for the age differences – see the last column – positive values indicate an improvement in level of occupation and negative values show regression. In the gender differences ($\bar{M}$-$\bar{F}$), positive values show higher occupation levels for women, while negative values show higher occupation levels for men. The degree groups only include those specified. The comments only refer to significant differences in the tests. The total differences are not shown, as since the distributions by qualification change significantly with

variations in gender and, albeit less markedly, also over time, the values obtained would not be directly comparable for our purposes.

Source: Istat

Tab. 6, Average occupation values by educational qualification, gender, age and geographical area, only the employed

	35-40 years old			50-55 years old			Diff. by age	
North and Third Italy	$\bar{F}$	$\bar{M}$	$\bar{M}/\bar{F}$	$\bar{F}$	$\bar{M}$	$\bar{M}/\bar{F}$	$\bar{F}$	$\bar{M}$
Elementary school diploma	6.20	6.18	0.02	6.41	6.15	0.26	0.21	.03
Middle school diploma	5.39	5.80	.41	5.41	5.59	.18	0.02	.21
Professional school diploma	3.93	4.63	.70	4.14	5.08	.94	0.21	0.45
High school diploma	3.66	3.89	.23	3.75	3.70	0.05	0.09	.19
Degree	2.52	2.40	0.12	2.65	2.31	0.34	0.13	.09
Total	*4.48*	*4.89*		*4.40*	*4.61*			
(N)	(17,741)	(26,480)		(16,089)	(21,521)			
Lazio and Adriatic Coast								
Elementary school diploma	6.47	6.34	0.13	6.44	6.21	0.23	.03	.13
Middle school diploma	5.49	5.87	.38	5.70	5.75	.05	0.21	.12
Professional diploma	3.86	4.58	.72	4.51	5.11	.60	0.65	0.53
High school diploma	3.68	4.04	.36	3.90	3.81	0.09	0.22	.23
Degree	2.53	2.31	0.22	2.51	2.29	0.22	.02	.02
Total	*4.27*	*4.90*		*4.28*	*4.58*			
(N)	(5,972)	(11,422)		(4,323)	(7,026)			
South and Islands								
Elementary school diploma	6.59	6.38	0.20	6.61	6.41	0.20	0.02	0.03
Middle school diploma	5.75	5.91	.17	5.61	5.73	.12	.14	.18
Professional school diploma	3.74	4.61	.87	4.57	5.20	.63	0.83	0.59
High school diploma	3.58	4.01	.43	3.60	3.93	.33	0.02	.08

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Degree	2. 46	2. 37	0.09	2. 43	2. 12	0.32	.03	.25
Total	*4.* *28*	*5.* *07*		*4.* *10*	*4.* *78*			
(N)	(5, 108)	(1 1,550)		(4, 563)	(8, 346)			

Source: Istat