The Gender Wage Gap among Young People in Italy

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This paper provides evidence of the gender wage gap among young people (18-24) in Italy based on the YUSE data set and involves the Oaxaca and Ransom (1994) decomposition of the unconditional gender wage gap into discrimination and productivity components. About 70% of the overall gap is unexplained, a component which is higher than among adults. Almost 11% of the gap is explained by segregation of women in low wage industries. In the Northern Veneto, the explained component of the gap is almost double that in the Southern Campania (36.4%). This is clear evidence of the strong discrimination that young women experience especially in Southern regions.

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This paper provides evidence of the gender wage gap among young people (18-24) in Italy based on the YUSE data set and involves the Oaxaca and Ransom (1994) decomposition of the unconditional gender wage gap into discrimination and productivity components. About 70% of the overall gap is unexplained, a component which is higher than among adults. Almost 11% of the gap is explained by segregation of women in low wage industries. In the Northern Veneto, the explained component of the gap is almost double that in the Southern Campania (36.4%). This is clear evidence of the strong discrimination that young women experience especially in Southern regions.

Introduction

The existence of a differential payment of men and women in the labour market is taken as a universal phenomenon in almost all countries regardless of the nature and structure of the economic system in place. The situation where persons in the market are equally productive in a physical or mental sense, but are treated unequally in a way that is related to observable characteristics is defined in the literature as discrimination (Altonji and Blank, 1999, p.3168). Italy is an example of typical Southern European country where, despite anti-discrimination policy, the wage differentials against women, among others, are high.

In addition to gender discrimination, in the case of young women one should also consider the difficulty that those who have just entered the labour market have to face. Almost universally, the new entrants cannot realistically compete for jobs with skilled and experienced workers. At the beginning of their career, the lack of work experience, the troubles when looking for a job and the persistent excess supply of labour may be a

serious problem for young people. The youth unemployment rate is double that of adults in almost every country in Europe, while employed young people tend to have lower wages then their adult colleagues. In the case of Italy, such differences are particularly sizeable: in 2000, the youth (aged 15-24) unemployment rate was 1.62 times higher than that of the European Union for men, and 1.74 for women. The regional divide is striking also under this respect: the youth unemployment rate in the South was 55.7 percent, while in the North it was only 18.1 percent, the same as the EU average[1].

Furthermore, if one looks at the employment opportunities available for young women it would be fair to say that, dissimilar from the typical OECD country[2], in Italy they are generally more limited than those of men. Only 10 out of 100 young women residing in the South are employed. The comparable figure in the North is 30. The share of young men who are employed equals 37.3% in the North and only 18.2% in the South, a factor of two.

The aim of this paper is to analyse the components of the gender wage gap among young people in Italy and also the differences between the Northern and Southern regions. To do so, first, we show how personal, market and environmental characteristics affect the differential payment between men and women and, then, decompose the gender wage gap into "explained" and "unexplained" components. The adopted modelling strategy is standard, which makes this analysis comparable to others. Pooled Mincerian estimates, used to control for various observed characteristics, provide the non-discriminatory set of coefficients, used as weights of differences in

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[1] In the North, the ratio of the youth to the adults' unemployment rate is somewhat higher than in the South only because of the very low unemployment rate of the latter group.
[2] The cross-country evidence on employment opportunities by gender among young people is mixed. More frequent is the case of an advantage in favour of women (O'Higgins, 2001).

characteristics by gender to measure their impact on the gender wage gap, according to the method prompted in Oaxaca and Ransom (1994).

Our data, which comes from the survey on *Youth Unemployment and Social Exclusion* (YUSE) in Europe, provides measures of characteristics, such as actual work experience, family background and industry, not always available in other data sets. Variables are collected into five groups: personal characteristics (educational attainment, work experience, tenure, training, experience of voluntary work and health), individual work effort (working hours and part-time contracts), family background (educational attainment and occupation of father and mother), industry and type of job (firms' ownership, participation on the informal sector, self-employment and industry) and location (residence). The Italian sample includes over 1400 individuals aged 18-24, residing in Campania (in the South) and Veneto (in the North-East), of which about 50 percent have a paid job.

The data suggests that young women earn 72, 60 and 73% of men's wage in Italy, Campania and Veneto, respectively. This translates into a sizeable unconditional gender wage gap of about 33.2 percent of the average wage. The gap is in the South (51.7%) almost double that in the North (30.8%), where the average wage is much higher. After controlling for all the variables, there still remains a significant wage differential between young men and women amounting to 23.3%. The comparable figure is 32.9% in the South and 8.5% in the North. This is clear evidence of the strong discrimination that young women experience especially in the Southern regions.

The analysis of the characteristics' relative contribution to the gender wage gap suggests that about 70% is due to gender differences in wages that remain after controlling for all observed characteristics. Over 43% of the overall gender wage gap is

caused by a lower individual work effort on the side of women, while almost 11% is explained by segregation of women in low wage industries. The remaining 24% is to be attributed mostly to the location of women in high wage regions (21%), but also to higher levels of human capital accumulation (2%) and to better family background (1%). In the North, the explained component of the gender gap (72.2%) is much bigger than in the South (36.4%): in the former group of regions, women tend to work relatively less than men and over 50% of them are employed in state-owned, low paid industries.

The reminder of this paper is as follows. Section one provides some basic overview on the determinants of wage differentials, the theory of gender wage gap and a summary of the existing evidence on Italy. The empirical methodology is presented in section two. Section three describes the data and section four analyses the results, while section five puts them in perspective. Some concluding remarks follow.

1. Theoretical background

1.1. The factors of gender discrimination

Since the 1960s there has been a strong commitment of the governments in Western countries in prohibiting sex discrimination in wages allowing for wage differentials based upon length of job tenure, merit and productivity differentials. Despite the fact that many studies of gender discrimination adopt different types of estimation procedures and include much information (see Oaxaca, 1973 and references therein), all find sizeable female/male wage differentials across countries. Oaxaca (1973) estimated two kinds of equations (including such variables like occupation, industry and class of worker) and found that the estimated effects of discrimination were larger when there

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was not control for occupation, industry and class of worker. He concluded that unequal pay for equal work does not account very much for the female-male differential, but it is rather the concentration of women in low-pay jobs that produces such large differentials.

As other recent studies have found, women are generally more likely to be in clerical and service occupations or in professional services (which include education) (see, for a detailed survey, Altonji and Blank, 1999). In contrast to economists that argue that the female/male wage differential is a result of voluntary decisions on the part of individuals in selecting their careers, education attainment and the level and timing of labour force participation, the literature suggests that the gender wage differential is mainly due to discrimination arguing that discrimination affects women's choice of career, education attainment and labour supply decisions.

This conclusion has inspired a large body of empirical research related to gender in the labour market, which discusses the differences and constraints in the opportunities available to men and women. The hypothesis that group differences in wages, occupations and employment patterns are the consequence of preferences and skill differences rather than of discrimination are contrasted with the theories that treat discrimination as a prejudice on the part of employers, employees or consumers (Becker, 1971), and with the theories of occupational exclusion and crowding based on employer discrimination, social norms or institutional constraints and others (Altonji and Blank, 1999).

1.2 The evidence on Italy

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In the Italian labour market, women are considered to be at the disadvantage with respect to men and there is much evidence to support this conclusion. The available data shows that women's average earnings were about 77% of men's earnings in 1971 (Lucifora, Reilly, 1990, p.147), 78.4% in 1992 (Flabbi, 1997, p.187) and 70% in 1996. In 1996 the comparable figure was 74% in France, 62% in Germany, 60% in the United States, and 47% in the United Kingdom (Flabbi, 2001, p.385). The female to male earnings ratio was persistent in Italy over the years 1971-'96.

The estimated discrimination coefficient is difficult to compare across studies because of different specifications, information and assumptions. Using firm level data relative to the mid-1980s, Lucifora and Reilly (1990) estimated discrimination among unionised workers in the manufacturing sector with no allowance for regional or marital status differences. Their estimated discrimination coefficient was 16.8%. Flabbi (2001, p.388) found that the *ceteris paribus* gender wage gap (based on mincerian earnings functions and individual level data) amounted to 17% (adding industry variables to the equation the difference narrowed only to 16%) in 1995. In all other works (Lucifora and Rappelli, 1993; Prasad and Utili, 1998; Lupi and Ordine, 1998), the coefficient of the gender dummy was from 10 up to 28%, after controlling for observable characteristics.

Using the Oaxaca and Ransom' (1994) decomposition analysis, Flabbi (1997, p.207 and 2001, p.391) reckons that 44.4% in 1991 and 25% in 1996 of the overall gender wage gap was explained by differences in individual mean characteristics. Using another set of variables, Bonjour and Pacelli (1998) found that their observable set of characteristics explained only 25% of the overall wage gap.

In the available surveys (see, for instance, Dell'Aringa, Ghinetti and Lucifora, 2000) of the applied literature on gender discrimination in Italy, no studies were found about the gender wage gap and its decomposition among young people.

According to what Psacharopoulos (1994) found for the typical OECD country, in Italy the returns to an additional year of education appear to be slightly higher for women than for men, although this evidence is quite mixed and depends crucially on the specification adopted (Dell'Aringa, Ghinetti and Lucifora, 2000). Lucifora and Reilly (1990, p.158) reckon that the annual returns to education were 3.9% for women as opposed to 3.6% for men in 1985. As shown in Checchi (2002, p.24) the returns to education for men were slightly higher than for women, especially at low levels of education (primary and secondary school). Some studies argue that the returns to education were higher for women, but suggest that they were increasing at a relatively fast pace for men. From 1979 to 1993 the returns to education have increased on average from 2.4% to 4.7% (96%) for men and from 4.4% to 6.1% (56%) for women (Brunello, Comi, Lucifora, 2000).

The empirical research on the relationship between gender segregation and wage gap in Italy found that gender segregation affected the employment concentration in particular industries, especially the public administration (the share of employed women moved from 26% in 1977 to 51% in 1995) and chemicals and manufacturing (from 34% to 23% over the same years) (Flabbi, 2001). Also Lucifora and Reilly (1990) found that gender differences in the occupational distribution persist, with predominantly female jobs usually paying less than male jobs. Moreover, they show that there exists a significant negative relationship between the proportion of women employed in a given industry (female intensity) and the wage paid to men.

2. Econometric procedure

One way to explore the wage differential between groups is to decompose it into "explained" and "unexplained" components. Following Oaxaca and Ransom (1994), this study relies on pooled-data estimates to gather the set of non-discriminatory coefficients. To inform more effectively on gender wage effects, one should control for differences in productivity that may exist between gender groups. As rationalised in Mincer (1970), it is possible to assume a specified relationship between the natural logarithm of earnings and a set of wage determining characteristics. Defining $\mathbf{w}$ as the natural logarithm of wages the specification of the Mincerian earnings equation can be written as:

$$\mathbf{w} = \mathbf{X'\beta} + \delta\mathbf{G} + \mathbf{e}, \tag{1}$$

where $\mathbf{X}$ is a set of variables assumed to affect earnings, $\mathbf{\beta}$ is a vector of coefficients representing the effects of the various productivity variables on the log wage, $\mathbf{G}$ is a qualitative variable for gender taking a value of one (zero) if the worker is a woman (man) and $\mathbf{e}$ is a disturbance term representing other forces which may not be explicitly measured. The parameter δ measures the *ceteris paribus* gender wage gap. The estimation procedure customarily used to provide estimates for the unknown parameter vector $\mathbf{\beta}$ (and the parameter δ) is Ordinary Least Squares (OLS). This equation is referred to as a pooled equation, since it pools together data points for women and men.

The estimated coefficients are used together with the mean differences in explanatory variables (denoted by an over line) by gender to calculate mean wage gap decomposition:

$$\overline{w_m} - \overline{w_f} = [\overline{\mathbf{X}_m} - \overline{\mathbf{X}_f}]\beta + \delta G ,\tag{2}$$

where $\mathbf{w_m}$ and $\mathbf{w_f}$ are men and women log earnings respectively and $\mathbf{X_m}$, $\mathbf{X_f}$ represent control characteristics for all individuals in gender groups. The difference in the natural logarithms reflects a log point differential, which can be taken to approximate a percentage difference in pay between the two gender groups. The first term on the right-hand side in the decomposition represents the predicted gap between groups and the second term represents differences in gender-specific coefficients from the non-discriminatory wage structure and is often interpreted as pure wage discrimination or unexplained component of the gender wage gap. Note that, following Groshen (1991), the unexplained component is caught simply by the contribution of the *ceteris paribus* gender coefficient. However, the unexplained component captures not only the discrimination effect but also the effects of unobserved group differences in productivity and tastes.

As the estimation procedure is Ordinary Least Squares (OLS), the calculation of standard errors allows for any form of unconditional heteroscedasticity. To capture this form of clustering, the Huber-White estimator is used, which is given by

$$\hat{V}(\hat{\beta}) = (X'X)^{-1}(\sum X_j'\hat{\varepsilon}_j\hat{\varepsilon}_j'X_j)(X'X)^{-1},\tag{3}$$

where $\hat{\varepsilon}_j = \ln \omega_j - X_j\hat{\beta}$ is the column vector of estimated error term.

3. Description of data and variables

The analysis is based on an *ad hoc* survey implemented in Italy within the project

on *Youth Unemployment and Social Exclusion* (YUSE) in Europe[3]. The survey includes

1421 young adults (aged 18-24)[4] interviewed from March to June 2000 and sampled among those who were firstly registered at the local employment office for a continuous period of at least three months one year earlier and who are living in the Southern region, called Campania (974), one of the highest, and in the North-Eastern region, called Veneto (447), one of the lowest unemployment areas in Italy.

The present analysis includes only those who are currently employed in a paid job. We are left with 746 observations, almost evenly distributed by gender. The dependent variable is represented by the natural logarithm of the net monthly wage, while hours of work are used as a regressor to control for gender differences in work effort. The average logarithms of the monthly wages (and the corresponding geometric mean wages) computed from our sample are 6.688 (It. £803,000), whereas the average wage for women is 6.522 (It. £680,000) and for men 6.854 (It. £948,000). In the Southern region the average wage is 32.2% lower than in the Northern, but for women living in Campania, the average wage is almost half that of their counterparts in Veneto[5].

To explain the gender wage gap by region and to compare the differences across regions in the regression the vector of independent determinants of wages includes several variables, which are divided in five groups: personal characteristics (educational attainment, work experience, tenure, training, experience of voluntary work and health), individual work effort (working hours and part-time contract), family background (educational attainment of father and mother), industry and type of job (firms' ownership, participation to the informal sector, self-employment and industry) and location (residence). A dummy for women is used to measure the *ceteris paribus* gender pay gap.

Table I.1 in the Appendix documents the definition used for the variables whose name is not self-evident. Note that declared work experience (measured in months) is preferred to potential work experience as a more accurate proxy for the actual underlying characteristics. Generally, as noted also in Altonji and Blank (1999), potential work experience overstates the actual years of working, especially in the case of women. In the case of Italy, where unemployment spells are frequent and prolonged, especially among young people, the bias is expected to be even greater. Work experience is included also as a quadratic term to capture the possible concavity of the earnings profile.

There is a long tradition of using family background information to control for unobserved ability in studying the earnings profile of young people (see for a survey Card, 1999). The YUSE data set provides information on the parents' credentials (high school diploma and University degree) and employment status, used to identify the causal effect of young people' schooling on their earnings, which makes this analysis comparable across countries (as we find the multiple education streams in Europe).

4. Results

4.1. Augmented earnings equations

Our findings provide evidence of the existence of a sizeable gender wage gap among young Italian people and of remarkable discrimination that young women experience especially in the Southern regions. The female/male pay ratio among young people in Italy is not different from that found in the previous literature (Lucifora and Reilly, 1990; Flabbi, 2001). In the South the gap is particularly high: young women earn

72% of their male counterparts in the entire sample, 73% in Veneto, but only 60% in Campania. Table 1 provides information on the pay ratio in all the countries included in the YUSE data. Italy's female/male pay ratio is one of the highest in the YUSE data, lower only than that in Iceland, Germany and Norway. In Campania, though, women fare worse than in any other country in the group.

[Table 1 about here]

Table 2 reports the results of augmented earnings equations for all young people (column 1) and then separately for men (column 2) and women (column 3). The coefficient of the constant in column 2 measures the average wage of an able-bodied young (18-24) men with compulsory education or below, with poor family background, employed in a formal full-time job in the private construction industry, living in Naples, using no drugs.

[Table 2 about here]

The overall performance of the model is satisfactory with the adjusted R^2 reaching the value of 0.37 in the pooled estimate, 0.26 for the fraction of women and 0.18 for that of men, suggesting that the validity of the human capital model to explain these types of estimates is lower for men. The variables have always the expected sign. Not surprisingly, the coefficient for squared work experience is not significant: in fact, all the individuals in the sample are new entrants[6].

The unconditional gender wage gap is sizeable at about 33.2% of the average wage. The gap is in the Southern region (51.7%) almost double that in the Northern region (30.8%), where the average wage is much higher. After controlling for all the variables, there still remains a significant wage differential between young women and men

amounting overall to 23.3%. The comparable figure is 32.9% in Campania and 8.5% in Veneto[7].

Confirming expectations based on the human capital theory, having a university qualification significantly and positively influences wages, providing a premium of about 47.6% of the average wage of workers with compulsory education or below. This implies that every year of additional education for people with a university degree gives about 5.3% higher average wages compared to people with only compulsory education[8].

Recall from a previous section that the general finding of the literature on the magnitude of returns to education for women in Italy is mixed (Dell'Aringa, Ghinetti and Lucifora, 2000), while for most OECD countries, women's returns to education are higher than men's (Psacharopoulos, 1985 and 1994). In the YUSE data, young women's returns to education are almost the same as men's for university education, are higher in the case of high secondary and lower in the case of vocational school, similar to what Checchi (2002) finds. Men with a university degree receive about 37% higher wages from their job than their colleagues with compulsory education only. The comparable figure for women is only slightly lower, at 36%. Each year of education for young women and men with a university degree gives about 4% higher wages compared to gender groups with compulsory education. These figures are comparable with those found in existing similar studies.

Following Card (1999), children schooling outcomes are very highly correlated with the characteristics of their parents, and in particular with the parents' education. As expected, the estimated coefficients on the parental education variables are generally well behaved and also significant. Having a mother with high secondary school diploma provides around 14.5% higher wages for both gender groups. The parents' university

degree is statistically insignificant, which would appear inconsistent with expectations based on economic theory. However, among employed workers only the parents of few have a university degree. Taking into consideration the theory that more educated parents are more likely to invest in their child's education as a consequence of their own educational experience, one can find that young people of more educated parents at the age between 18-24 in Italy are not working but still studying and are not included in the sample[9].

Another way to test for the role of family background on youth wages is to apply sample selection procedures and use family background as independent variable in the participation equation. A maximum likelihood test for sample selection bias was carried out using various baseline groups: group one included all the rest of the sample; group two included only those in education; group three only those unemployed. In all these cases, no evidence of sample selection bias was found. The results, which are available on request, suggest no impact of parents' education on educational and participation decisions. Also the coefficients in the main equation remain unchanged.

Extensive literature points to the role of work experience as an important component of employability, especially for young people. In addition, education and work experience tend to be inversely related, particularly among young workers, as the higher is the level of education, the lower is the level of general and job-specific skills. As expected, in our estimates the results indicate strong evidence of the length of work experience on wages. For every additional month of work experience, the average individual obtains 1% higher wages. The return to work experience is similar by gender since all individuals are new entrants in the labour market.

Past or present participation in training programmes is almost insignificant and negatively correlated with the level of wages for young people. This result is not surprising, considering that our sample comes from registration at the local employment office and might be expected to contain people "less fortunate" at the labour market. Also training systems may be ineffective. In Italy, training is closer to general education than work-based training, which might be the reason of unsuccessful scheme's policy. Also our findings confirm existing doubts in the literature on whether training is a good instrument for improving young people's labour market skills (O'Higgins, 2001, p.96).

Voluntary work is negatively correlated with wages. Participation in voluntary work during the week of the interview decreases the average wage by about 1%. As for men it is not significant and decreases the earnings of women by about 14.5% confirming the negative correlation between the incidence of labour market participation and of voluntary work.

As expected, weekly hours of work are significantly and positively correlated with wages: one more hour of work per week gives about 1% increase in monthly wage. This variable strongly influences the wage differential among women who generally work less (on average 8 hours less per week than men) and it is insignificant for men. Consequently, part-time occupations are very strongly and negatively correlated with wages (especially the men's average wages). Young part-time working people earn on average 32.2% less than full-time workers (men almost 44% less and, not surprisingly, for women this variable is insignificant).

Working in a state or private sector is not significant for young people. Being self-employed means earning less than in the private sector by about 13%.

Employment in particular kinds of industry influences the wage differentials between individuals. For all industrial categories, differentials are relatively wider for women. Generally, people working in almost all considered sectors earn more than those employed in construction, which is taken as a baseline. As expected in the public services young workers earn 13.5% less.

Being partially disabled has an insignificant effect on wages. Those who are taking drugs earn less by about 14%.

Not surprisingly, geographical location is highly significant in several cases. The findings are that living in the Northern region does increase the wages among young people and increase it even twice among women. Females living in Veneto earn on average about £932,000, over 49% more than women in Campania, whereas men's average wage is £1,268,000 in Veneto, which is about 37% higher than in Campania.

4.2. Decomposing the gender wage gap

Using the estimations of the previous section, this section calculates Oaxaca and Ransom (1994) mean wage decomposition according to the econometric procedure described in section 2. Table 3 reports this decomposition for the entire sample. Column (1) shows the female-dummy coefficient that is based on a regression in which no other explanatory variable is used. Column (2) includes the main parameter estimates from the specification reported in column one of Table 2, while the columns (3) and (4) provide average characteristics for men and women, respectively[10]. The following columns measure the differences in characteristics between men and women and the absolute and relative contribution of each variable to the gender pay gap. Table 6

provides summary figures of the relative contribution of the five groups of explanatory variables used.

[Table 3 about here]

As the final column indicates, about 70% of the overall gender wage gap is due to gender differences in wages that remain after controlling for all available explanatory characteristics.

Personal characteristics like education, work experience or health status increase the overall gender wage gap by about 2%, which is essentially caused by the higher number of better educated women participating in the labour market. Almost 70% of women and only 44% of men have high secondary school education (at other levels of education the shares by gender are similar). Also location increases the overall pay gap by about 21%, due to the higher number of women that are located in high wage regions. Over 42% of the overall gap is explained by individual work effort like weekly hours of work, which confirms that also young women prefer part-time jobs (in the sample almost 50% of women work part-time, which compares to a share of 26% of men). Differences in the kind of industry and type of job explain almost 11% of the pay differential. Over 50% of women are employed in low-paid jobs: 24.6% work in the public services, where the average wage is 13.5% lower than wages in the construction industry and 23.3% of them work in public utility and trade where wages are also lower. Men are almost equally distributed across industries.

The wage gap decomposition is different in the two considered regions (Table 4 and 5). The adjusted R^2 for pooled regressions relative to the Veneto and Campania are 0.34 and 0.23 respectively. As the final column of table 4 indicates, in the Southern Campania almost 63.6% of the overall pay gap remains unexplained so that the

potential scope for gender pay discrimination appears high. The overall gender wage difference is lower in Veneto, in which case only 28% of the gap remains unexplained.

[Table 4 and 5 about here]

Column 2 and 3 of Table 6 reports that generally the explanatory percentage of each group of variables is different from one region to the other. Over 64% of the overall wage gap is explained by individual work effort in Veneto and only 21% in Campania what is caused by a lower individual work effort on the side of women in the North compared to the South. The type of industry and of job explains almost 19% of the gap in Veneto, where over 50% of women are occupied in public low-pay industries and only 11% in Campania, which suggests that industry segregation in this region is less important. Only in public services there is a significant difference in participation by gender (23.6% of the fraction of women and 11% of the fraction of men) but in other industries the percentage of labour market participation by gender is relatively similar. The remaining 11% in the North is to be attributed to higher levels of human capital accumulation (7%) and to better family background (4%) on the side of women. In the South these characteristics explain 4.5% of overall gender wage gap.

[Table 6 about here]

5. Discussion

The exhibited results are comparable with those of previous studies and suggest that the gender wage differentials are sizeable and similar to other European countries also for young people. Although this research does not focus on the segregation problem, some points should be stressed.

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Considering occupational segregation, which is measured by the fraction of women in a particular industry, one can observe a higher and more persistent concentration of women in low paying industries in the Northern region. Almost 50% of young women are employed in public services, which is comparable with the results for prime-aged people in 1996 (Flabbi, 2001). This persistence might suggest that women are systematically excluded (or this is a result of voluntary decision) from many better paid industries and even at the beginning of their career they choose the least paid occupations.

It is also worth noting that in industries where the proportion of women is high (for example public utility and trade or public services) men's wages are lower than those of other males and female coefficients are flatter. These results suggest that women's occupational segregation and also intensity seems to play an important role as far as wage determination is concerned and might be considered as the additional characteristics which capture wage differentials (Lucifora, Reilly, 2000).

Another finding is the high participation of young highly educated women in the labour market. About 70% of women from the sample achieve at least high school diploma and this fraction is higher than that of men (44%), which is the cause of an increase in the overall gender wage gap by about 2%. These results confirm that women with higher educational levels are more likely to participate in the labour market and may raise the question about the potential selectivity bias through the labour force partitipation decision also mentioned in the literature about Italy (see Flabbi, 2001, p.384). In fact, following Vella (1998, p.129) the possibility of sample selection bias arises whenever one examines a subsample and the factors determining inclusion in the subsample are correlated with the unobservables influencing the variable of primary

interest (in our case of wages) and the potential selectivity problem could cause the upward bias in the estimates of *ceteris paribus* gender wage gap. We tested this hypothesis and found no evidence of sample selection bias, which is in line with the finding of similar returns to education of men and women. This analysis might suggest that the concentration of women in some low pay industries comes earlier than that into inactivity.

Concluding remarks

This paper aimed to investigate the evidence of the gender wage gap among young people in Italy and also to analyse the differences between the Northern and Southern areas. The starting point of the analysis is that while gender differences in wages have been slightly narrowing over the past two decades, they are still significant and persistent in Italy. The adopted modelling strategy, namely Mincerian estimates and the Oaxaca and Ransom procedure, makes our analysis comparable to others.

The findings of this paper provide evidence of the existence of an overall gender wage gap among young Italian people which is sizeable at about 33.2% of the average wage, which is similar to that found in existing studies for adult people. After controlling for all the variables, there still remains a significant wage differential between young women and men amounting to 23.3%, which is higher than the general *ceteris paribus* gender wage gap generally found for prime-aged women in Italy (16-17%).

Other findings of the paper are as follow. The gender wage gap decomposition and the characteristics' relative contribution indicate that about 70% of the overall wage gap

is due to gender differences in wages that remain after controlling for all observed characteristics. The evidence from the most influential characteristics in the overall gender wage gap's explanation indicates that, on average, young women tend to work less than men (over 43% of the overall gender wage gap is caused by a lower individual work effort on the side of women), they are segregated in the low-pay industries, particularly public services or public utility and trade (almost 11% of the overall gender wage gap is explained by industry segregation).

Controlling for the same characteristics in the Southern and Northern regions the situation is substantially different. In the South, the potential scope for gender pay discrimination appears high, whereas the overall gender wage difference is lower in the North. The individual work effort on the side of women relatively to men is lower in the North than in the South and the effect of industry segregation is relatively stronger in the Northern regions.

In conclusion, the similarity of the findings of this paper with other studies suggests that despite the small size, the sample can be considered close to a nationally representative statistical sample and allows making further estimations. While beyond the scope of this study, having the necessary information to narrow the gender wage gap among young people, future research will need to focus on female occupational segregation and intensity and selectivity problem. A further natural extension of this study will be comparing the case of Italy with that of other EU countries in the YUSE data bank.

Appendix of Tables and Figures

Table 1. The female\male pay ratio (monthly log wages)

Country	The male log wage	The female\male pay ratio
Iceland	10.82854	0.325
Germany	7.230442	0.311
Norway	8.754201	0.296
Italy	13.42974	0.286
Spain	11.39204	0.198
Sweden	9.01645	0.185
Finland	8.41762	0.161
Denmark	9.353276	0.150
France	7.09126	0.106
Scotland	6.209657	0.058

Note: Monthly wages in national currencies.
Source: elaboration on YUSE data.

Table 2. Earnings equations by gender

Variables	All (1)	Men (2)	Women (3)
Education attainment (*Base: compulsory or below*):			
University degree	0.476	0.372**	0.360*
	(0.103)	(0.195)	(0.164)
High secondary school	0.140	0.127**	0.159*
	(0.053)	(0.077)	(0.08)
Vocational school	0.147*	0.157**	0.117†
	(0.069)	(0.091)	(0.094)
Declared work experience (*in months*):	0.009	0.008*	0.008
	(0.002)	(0.004)	(0.003)
Declared work experience squared	-0.000*	0.000†	0.000†
	(0.000)	(0.000)	(0.000)
Hours worked *per week*	0.009	0.005†	0.015
	(0.003)	(0.004)	(0.004)
Woman	-0.233	…	…
	(0.047)		
Father's educational attainment *(baseline: father with compulsory education or below)*:			
University degree of father	0.068†	0.135†	-0.004†
	(0.106)	(0.167)	(0.143)
High school of father	-0.139*	-0.038†	-0.202
	(0.062)	(0.108)	(0.073)
Vocational school of father	-0.047†	0.049†	-0.092†
	(0.058)	(0.117)	(0.077)
Unknown education of father	0.308**	0.260**	-0.332†
	(0.259)	(0.146)	(0.475)
Mother's educational attainment *(baseline: mother with compulsory education or below)*:			
University degree of mother	-0.081†	-0.191†	-0.033†
	(0.148)	(0.244)	(0.171)
High school of mother	0.145*	0.132†	0.159*
	(0.062)	(0.106)	(0.08)
Vocational school of mother	0.133*	0.074†	0.155*
	(0.058)	(0.113)	(0.07)
Unknown education of mother	0.261†	0.335†	0.160†
	(0.259)	(0.268)	(0.598)
Informal work *(baseline: formal work)*	-0.119	-0.020†	-0.183
	(0.046)	(0.064)	(0.065)
Part–time work *(baseline: full time work)*	-0.322	-0.436	-0.177†
	(0.09)	(0.147)	(0.12)
Disabled	0.152†	0.143†	0.180†
	(0.096)	(0.119)	(0.14)
Drugs	-0.143*	-0.177*	-0.035†
	(0.059)	(0.088)	(0.075)
Voluntary work *(during the last week)*	-0.09*	-0.060†	-0.145*
	(0.043)	(0.058)	(0.066)
Kind of occupation *(baseline: private sector, include non-profit organisations)*:			
State sector	0.023†	-0.073†	0.045†
	(0.13)	(0.211)	(0.162)
Self-employment	0.131**	-0.136†	-0.119†
	(0.073)	(0.102)	(0.105)
Training participation *(baseline: no-participation)*:			
Present training	-0.177†	-0.427*	-0.010†
	(0.122)	(0.177)	(0.156)

Past training	-0.017†	-0.082†	0.042†
	(0.064)	(0.092)	(0.087)
Industry *(baseline: construction):*			
Agriculture, forestry and fishery	0.214†	0.161†	0.288**
	(0.162)	(0.221)	(0.161)
Manufacturing	-0.021†	-0.106†	(droppe
	(0.108)	(0.116)	d)
Public utility and trade	-0.008†	-0.130†	0.109†
	(0.061)	(0.089)	(0.092)
Hotels and restaurants	0.007†	-0.027†	0.053†
	(0.075)	(0.104)	(0.102)
Transport and communication	0.262*	0.039†	0.784
	(0.109)	(0.129)	(0.21)
Real estate and business services	-0.033†	-0.076†	0.060†
	(0.097)	(0.123)	(0.142)
Public administration	0.159†	0.165†	0.300**
	(0.149)	(0.263)	(0.166)
Education	0.063†	-0.105†	0.212†
	(0.129)	(0.221)	(0.168)
Health and social service	0.14†	0.031†	0.297*
	(0.11)	(0.18)	(0.13)
Other public services	-0.135†	-0.223†	-0.015†
	(0.082)	(0.149)	(0.102)
Personal services	0.092†	-0.075†	0.319*
	(0.113)	(0.291)	(0.143)
Data missed	0.054†	-0.531†	0.474
	(0.298)	(0.471)	(0.163)
Location *(baseline: Neaples):*			
Verona	0.463	0.247*	0,670
	(0.066)	(0.106)	(0.092)
Vicenza	0.632	0.396	0,856
	(0.079)	(0.138)	(0.106)
Belluno	0.293	0.179**	0,477
	(0.07)	(0.108)	(0.093)
Treviso	0.441	0.323*	0,572
	(0.0.09)	(0.128)	(0.119)
Venezia	0.537	0.387	0,697
	(0.062)	(0.093)	(0.09)
Padova	0.444	0.389	0,593
	(0.066)	(0.126)	(0.09)
Rovogo	0.451	0.280	0,634
	(0.082)	(0.108)	(0.115)
Caserta	0.014†	-0.042†	0,087†
	(0.131)	(0.184)	(0.139)
Benevento	0.204†	0.254†	0,138†
	(0.217)	(0.355)	(0.125)
Avellino	0.201†	0.056†	0,341
	(0.143)	(0.197)	(0.127)
Salerno	0.017†	0.004†	0,052†
	(0.085)	(0.129)	(0.123)
Adj. R^2	0.37	0.26	0.18

*Notes: 1) dependent variable is the log of net monthly wages; heteroscedastic-consistent asymptotic standard errors (Huber-White) are in parentheses; the statistical significance for all reported estimates is as follows: nothing stands for statistically significant at the 1% level; * for **statistically significant at the 5% level;** ** for statistically significant at the10% level; † for statistically not significant.*
2) For further information of variables, see appendix 1.
Source: elaboration on YUSE data.

Table 3. Wage gap decomposition

Variables	Coefficient estimate (1)	Coefficient estimate (2)	Xm (3)	Xf (4)	Mean difference : men-women (5)	Absolute contribution to wage gap (2)* (5)	Relative contribution to wage gap (2)* (5)/(1)
University degree	…	0.476	0.008	0.008	0.000	0.000	0.000
High secondary school degree	…	0.140	0.444	0.698	-0.254	-0.036	-0.107
Vocational school	…	0.147	0.116	0.088	0.027	0.004	0.012
Declared work experience *(in months)*	…	0.009	26.478	22.618	3.861	0.033	0.100
Declared work experience squared	…	0.000	1285.984	961.254	324.730	-0.014	-0.042
Hours worked *per week*	…	0.009	36.911	29.179	7.732	0.068	0.203
Woman	-0.332 (0.049)	-0.233	0.000	1.000	-1.000	0.233	0.703
University degree of father	…	0.068	0.065	0.088	-0.024	-0.002	-0.005
High secondary school degree of father	…	-0.139	0.239	0.265	-0.025	0.004	0.011
Vocational school of father	…	-0.047	0.073	0.096	-0.024	0.001	0.003
Unknown education of father	…	-0.308	0.035	0.016	0.019	-0.006	-0.018
University degree of mother	…	-0.081	0.032	0.064	-0.032	0.003	0.008
High secondary school degree of mother	…	0.145	0.207	0.209	-0.002	0.000	-0.001
Vocational school of mother	…	0.133	0.062	0.094	-0.032	-0.004	-0.013
Unknown education of mother	…	0.261	0.024	0.013	0.011	0.003	0.009
Informal work	…	-0.119	0.301	0.345	-0.044	0.005	0.016
Part –time work	…	-0.322	0.261	0.492	-0.231	0.074	0.224
Disabled	…	0.152	0.062	0.029	0.032	0.005	0.015
Drugs	…	-0.143	0.231	0.075	0.156	-0.022	-0.068
Voluntary work	…	-0.091	0.508	0.725	-0.217	0.020	0.059
State sector	…	0.023	0.056	0.056	0.000	0.000	0.000
Self-employment	…	-0.131	0.164	0.219	-0.055	0.007	0.022
Present training	…	-0.177	0.040	0.067	-0.027	0.005	0.014
Past training	…	-0.017	0.102	0.099	0.003	0.000	0.000
Agriculture, forestry and fishery	…	0.214	0.019	0.005	0.013	0.003	0.009
Manufacture	…	-0.022	0.094	0.000	0.094	-0.002	-0.006
Public utility and trade	…	-0.008	0.226	0.233	-0.007	0.000	0.000
Hotels and restaurants	…	0.007	0.169	0.118	0.052	0.000	0.001
Transport and communication	…	0.262	0.067	0.021	0.046	0.012	0.036
Real estate and business services	…	-0.033	0.078	0.091	-0.013	0.000	0.001
Public administration	…	0.159	0.027	0.027	0.000	0.000	0.000
Education	…	0.063	0.030	0.056	-0.027	-0.002	-0.005
Health and social service	…	0.140	0.005	0.032	-0.027	-0.004	-0.011
Other public services	…	-0.135	0.099	0.246	-0.147	0.020	0.059

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		(1)	(2)	(3) Xm	(4) Xf		
Personal services	…	0.092	0.008	0.067	-0.059	-0.005	-0.016
Data missed	…	0.054	0.005	0.008	-0.003	0.000	0.000
Verona	…	0.463	0.089	0.126	-0.037	-0.017	-0.052
Vicenza	…	0.632	0.030	0.037	-0.008	-0.005	-0.015
Belluno	…	0.293	0.011	0.024	-0.013	-0.004	-0.012
Treviso	…	0.441	0.062	0.078	-0.016	-0.007	-0.021
Venezia	…	0.537	0.094	0.134	-0.040	-0.021	-0.064
Padova	…	0.444	0.056	0.088	-0.032	-0.014	-0.042
Rovino	…	0.451	0.038	0.048	-0.010	-0.005	-0.014
Caserta	…	0.014	0.062	0.029	0.032	0.000	0.001
Benevento	…	0.204	0.011	0.011	0.000	0.000	0.000
Avellino	…	0.201	0.027	0.016	0.011	0.002	0.007
Salerno	…	0.017	0.089	0.115	-0.026	0.000	-0.001

Notes. Column (1), the female dummy estimate is based on a regression in which no other explanatory variables are used; column (2), covariates in pooled-data regression; column (3) and (4) present the mean for all variables for men (Xm) and women (Xf); heteroscedastic-consistent asymptotic standard errors (Huber-White) are in parentheses.
For further information on the variables' definition, see Appendix 1.
Source: elaboration on YUSE data.

Table 4. Wage gap decomposition for Veneto

Variables	Coefficient estimate (1)	Coefficient estimate (2)	Xm (3)	Xf (4)	Mean difference : men-women (5)	Absolute contribution to wage gap (2)*(6)	contribution Relative to wage gap (2)* (3)/ (1) north
University degree	…	0.409	0.021	0.010	0.011	0.005	-0.015
High secondary school degree	…	0.054	0.546	0.765	-0.219	-0.012	0.038
Vocational school	…	0.011	0.163	0.115	0.048	0.001	-0.002
Declared work experience *(in months)*	…	0.006	23.532	21.730	1.802	0.012	-0.038
Declared work experience squared	…	0.000	860.085	776.610	83.475	-0.005	0.017
Hours worked *per week*	…	0.021	36.553	29.635	6.918	0.147	-0.477
Woman	-0.308 (0.054)	-0.085	0.000	1.000	-1.000	1.000	-0.278
University degree of father	…	0.026	0.071	0.080	-0.009	0.000	0.001
High secondary school degree of father	…	-0.047	0.241	0.250	-0.009	0.000	-0.001
Vocational school of father	…	0.016	0.106	0.130	-0.024	0.000	0.001
Unknown education of father	…	-0.076	0.028	0.015	0.013	-0.001	0.003
University degree of mother	…	0.290	0.028	0.055	-0.027	-0.008	0.025
High secondary school degree of mother	…	0.030	0.220	0.185	0.035	0.001	-0.003
Vocational school of mother	…	0.066	0.099	0.135	-0.036	-0.002	0.008
Unknown education of mother	…	-0.197	0.014	0.005	0.009	-0.002	0.006
Informal work	…	-0.137	0.213	0.300	-0.087	0.012	-0.039
Part –time work	…	-0.180	0.156	0.440	-0.284	0.051	-0.166
Disabled	…	0.042	0.071	0.040	0.031	0.001	-0.004
Drugs	…	-0.086	0.305	0.085	0.220	-0.019	0.062
Voluntary work	…	0.035	0.539	0.730	-0.191	-0.007	0.022
State sector	…	0.121	0.064	0.050	0.014	0.002	-0.005
Self-employment	…	-0.061	0.064	0.055	0.009	-0.001	0.002
Present training	…	-0.135	0.035	0.060	-0.025	0.003	-0.011
Past training	…	-0.073	0.092	0.090	0.002	0.000	0.001
Agriculture, forestry and fishery	…	-0.004	0.028	0.010	0.018	0.000	0.000
Manufacture	…	-0.149	0.092	0.000	0.092	-0.014	0.044
Public utility and trade	…	-0.012	0.227	0.275	-0.048	0.001	-0.002
Hotels and restaurants	…	-0.176	0.113	0.155	-0.042	0.007	-0.024
Transport and communication	…	0.197	0.057	0.010	0.047	0.009	-0.030
Real estate and business services	…	-0.033	0.092	0.095	-0.003	0.000	0.000
Public administration	…	0.130	0.043	0.035	0.008	0.001	-0.003
Education	…	-0.091	0.007	0.040	-0.033	0.003	-0.010
Health and social service	…	0.137	0.000	0.020	-0.020	-0.003	0.009

	(1)	(2)	(3)	(4)			
Other public services	…	-0.228	0.078	0.255	-0.177	0.040	-0.131
Personal services	…	(dropped)	0.000	0.000	0.000		0.000
Data missed	…	(dropped)	0.000	0.000	0.000		

Notes: Column (1), the female dummy estimate is based on a regression in which no other explanatory variables are used; column (2), covariates in pooled-data regression; column (3) and (4) present the mean for all variables for men (Xm) and women (Xf); heteroscedastic-consistent asymptotic standard errors (Huber-White) are in parentheses. For further information on the variables' definition, see Appendix 1.
Source: elaboration on YUSE data.

Table 5. Wage gap decomposition for Campania

Variables	Coefficient estimate (1)	Coefficient estimate (2)	Xm (3)	Xf (4)	Mean difference: men-women (5)	Absolute contribution to wage gap (2)*(3)	Relative contribution to wage gap (2)*(3)/(1)
University degree	…	0.633	0.000	0.006	-0.006	-0.004	0.007
High secondary school degree	…	0.177	0.381	0.621	-0.240	-0.042	0.082
Vocational school	…	0.117	0.087	0.057	0.029	0.003	-0.007
Declared work experience *(in months)*	…	0.012	28.277	23.638	4.639	0.056	-0.109
Declared work experience squared	…	0.000	1545.948	1173.489	372.459	-0.025	0.048
Hours worked *per week*	…	0.005	37.130	28.655	8.475	0.044	-0.086
Woman	-0.517 (0.068)	-0.329	0.000	1.000	-1.000	0.329	-0.636
University degree of father	…	0.033	0.061	0.098	-0.037	-0.001	0.002
High secondary school degree of father	…	-0.189	0.238	0.282	-0.044	0.008	-0.016
Vocational school of father	…	-0.120	0.052	0.057	-0.006	0.001	-0.001
Unknown education of father	…	-0.459	0.039	0.017	0.022	-0.010	0.019
University degree of mother	…	-0.326	0.035	0.075	-0.040	0.013	-0.025
High secondary school degree of mother	…	0.269	0.199	0.236	-0.036	-0.010	0.019
Vocational school of mother	…	0.136	0.039	0.046	-0.007	-0.001	0.002
Unknown education of mother	…	0.547	0.030	0.023	0.007	0.004	-0.008
Informal work	…	-0.093	0.355	0.397	-0.042	0.004	-0.007
Part –time work	…	-0.287	0.325	0.552	-0.227	0.065	-0.126
Disabled	…	0.353	0.056	0.017	0.039	0.014	-0.027
Drugs	…	-0.172	0.186	0.063	0.123	-0.021	0.041
Voluntary work	…	-0.132	0.489	0.718	-0.229	0.030	-0.059
State sector	…	-0.045	0.052	0.063	-0.011	0.001	-0.001
Self-employed	…	-0.204	0.225	0.408	-0.183	0.037	-0.072
Present training	…	-0.210	0.043	0.075	-0.031	0.007	-0.013
Past training	…	0.041	0.108	0.109	-0.001	0.000	0.000
Agriculture, forestry and fishery	…	0.534	0.013	0.000	0.013	0.007	-0.013
Manufacture	…	0.071	0.095	0.000	0.095	0.007	-0.013
Public utility and trade	…	-0.021	0.225	0.184	0.041	-0.001	0.002
Hotels and restaurants	…	0.152	0.203	0.075	0.129	0.020	-0.038
Transport and communication	…	0.304	0.074	0.034	0.039	0.012	-0.023
Real estate and business services	…	-0.087	0.069	0.086	-0.017	0.001	-0.003
Public administration	…	0.223	0.017	0.017	0.000	0.000	0.000
Education	…	0.075	0.043	0.075	-0.031	-0.002	0.005
Health and social service	…	0.177	0.009	0.046	-0.037	-0.007	0.013

Other public services	…		-0.030	0.113	0.236	-0.123	0.004	-0.007
Personal services	…		0.190	0.013	0.144	-0.131	-0.025	0.048
Data missed	…		0.153	0.009	0.017	-0.009	-0.001	0.003

Notes: Column (1), the female dummy estimate is based on a regression in which no other explanatory variables are used; column (2), covariates in pooled-data regression;
column (3) and (4) present the mean for all variables for men (Xm) and women (Xf); heteroscedastic-consistent asymptotic standard errors (Huber-White) are in parentheses.
For further information on the variables' definition, see Appendix 1.
Source: elaboration on YUSE data.

Table 6. Relative contribution to the wage gap by group of variables

	Italy	Veneto	Campania
Overall wage gap of which:	0.332	0.308	0.517
Explained components [a] (in %):			
Personal characteristics	0.017	0.070	-0.036
Effort	-0.427	-0.642	-0.211
Family background	0.005	0.039	-0.008
Location	0.213	…	…
Industry and type of job	-0.106	-0.189	-0.111
Unexplained gap, *ceteris paribus* (in %)	-0.703	-0.278	-0.636

Note: [a] Personal characteristics include educational attainment, work experience, tenure, training, voluntary work and health; individual work effort includes hours worked per week
and part-time contract; family background includes educational attainment of father and mother; industry and type of job includes: firms' ownership, participation to the informal
sector, self-employment and industry; location includes town of residence.
Source: elaboration on YUSE data.

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Annex I

Table I.1. Definition of selected variables

Variables	Variable definition	Question
Wage	Log of net monthly wages (* 1000 liras)	35
University degree	= 1, if she attained a University degree (4-5 years); = 0, otherwise	14_7
High secondary school	= 1, if she attained a diploma of secondary high school (5 years) or, for a small number, also a bachelor degree (3 more years); = 0, otherwise	14_6,5
Vocational school	= 1, if she attained secondary vocational school (3 years); = 0, otherwise. It does not give access to the University	14_4
Declared work experience	Declared months in paid work	28
Potential work experience	= age – education – 6 (years)	
Hours worked per week	Number of declared hours worked per week	38
Informal work	= 1, if she works in the informal, irregular sector; = 0, otherwise	17_7
Part –time work	= 1, if part-time work over last week; = 0, otherwise	17_3,5
Disabled	= 1, if partial inability to work because of invalidity; = 0, otherwise	62
Drugs	= 1, if drugs use over the last 12 months; = 0, otherwise	67
Voluntary work	= 1, if he/she does voluntary work during the week; = 0, otherwise	17_19
Public sector	= 1, if works in public sector (includes "*Partecipazioni statali*"); = 0, otherwise	32_1
Self-employed	= 1, if is self-employed; = 0, otherwise	32_3
Present training	= 1, if currently participate to on- or off-the-job training; = 0, otherwise	41_1,2
Past training	= 1, if past participate; = 0, otherwise	41_3
Agriculture, forestry and fishery	= 1, if agriculture, forestry and fishery, mining; = 0, otherwise	31
Manufacturing	= 1, if manufacturing; = 0, otherwise	31
Public utilities and trade	= 1, if public utilities and trade, finance, trade and repair service; = 0, otherwise	31
Hotels and restaurants	= 1, if hotels and restaurants; = 0, otherwise	31
Transportation and communication	= 1, if transportation and communication; = 0, otherwise	31
Real estate and business services	= 1, if real estate and business services, renting, research, factory's services; = 0, otherwise	31
Public administration	= 1, if public administration; = 0, otherwise	31
Education	= 1, if education; = 0, otherwise	31
Health and social service	= 1, if health and social service; = 0, otherwise	31
Other public services	= 1, if other public services; = 0, otherwise	31
Personal services	= 1, if personal services; = 0, otherwise	31
Data missed	= 1, if data missed; = 0, otherwise	31

Note: This table presents definition of those variables for which the name used in the tables is not self-explaining or for which providing further information is necessary.
Source: elaboration on YUSE data.