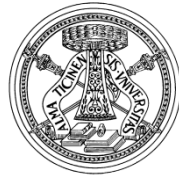


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Gender stereotyping and wage discrimination among Italian graduates

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Abstract

This paper addresses the gender pay gap among Italian university graduates on entry to the labour market and stresses the importance of gender stereotypes on subjective assessment of individual productivity. Our data show that in contexts where the stereotype is most likely to occur, the unexplained component of the gender pay gap is higher. Moreover, we find evidence that being excellent at school does not ensure that a woman will be rewarded as an equivalently performing man, but serves to counteract the gender bias in on-the-job evaluations.

Introduction

This paper explores the gender pay gap among Italian university graduates in the early years after labour market entry. Our data come from the Survey on Labour Market Transitions of University Graduates carried out in 2007 by the Italian National Statistical Office. By estimating the earnings equation for male and female employees working in full-time status we find a gender pay gap of 11%¹. By using the standard Oaxaca-Blinder decomposition, and controlling for possible self-selection (two-stage Heckman procedure), we separate earnings differences due to differences in observed characteristics, usually referred to as “explained gender pay gap” (near to 12% in our data) from differences in returns to characteristics, usually referred to as “unexplained or residual gender pay gap” (near to 88% in our data).

This finding is neither surprising nor trivial.

The difference in pay *per se* is not surprising because in modern labour market imperfect information manifests itself by the existence of wage dispersion. If both the labour demand and supply are heterogeneous, wages are not uniform, but instead vary across demographic groups. The literature shows that when examining how earnings are distributed by sex we find that women earn less than men, and no matter how extensively regressions control for individual and company characteristics, an unexplained gender pay gap remains even among workers with almost no experience². If the unexplained pay disparity sometimes favoured women and sometimes favoured men, there would be no reason for concern. But systematically and without exception finding that women earn less than men raises some non trivial questions (Hersch 2006). What unobserved something is it that can't be measured, is correlated with sex, and explains more of a pay disparity than known determinants of

¹ In the definition currently used by Eurostat the Gender Pay Gap (in unadjusted form) represents the difference between average gross hourly earnings of male paid employees and of female paid employees as a percentage of average gross hourly earnings of male paid employees (Eurostat 2009). The latest Eurostat data (2008) show that the gender pay gap is estimated to be 18% in the EU as a whole, and has practically remained constant during the last 15 years. The so-called unadjusted measure of the gender pay gap used in European statistics captures the overall or raw gap in men's and women's hourly wages. Adjustment for observable characteristics reduces the gender pay gap but does not eliminate it and large differences remain. Using the European Community Household Panel Survey, the adjusted gender pay gap only accounts for less than half of the overall gap (EuroFound 2010).

² For example, controlling for education, experience, personal characteristics, city and region, occupation, industry, government employment, and part-time status, Altonji and Blank (1999) find that only about 27 percent of the gender wage gap is explained by differences in characteristics.

earnings such as education and work experience? Following Becker (1957) and the mainstream literature on the gender pay gap we interpret unexplained sex disparities in pay that persist even with extensive controls for individuals and jobs characteristics as due to discrimination. Gender discrimination arises when the assessment of productivity is affected by stereotypes, that is non-conscious hypotheses, beliefs or expectations that influence our judgments of others (Valian 1998).

We hypothesize that the effects of gender stereotypes as “*a woman after pregnancy is a resource for the company lost*” or “*think manager, think male*” are an important cause of statistical discrimination which is realized in the unexplained component of the gender pay gap. Following Heilman (1997) and Hunt *et al.* (2002) we identify some contexts in which stereotypes are more likely to occur and we verify that the most likely the stereotype, the higher the unexplained component of the gender pay gap. Finally, we show that an excellent educational performance serves to counteract the gender bias in on-the-job evaluations, even if being excellent at school does not ensures that a woman will be rewarded as an equivalently performing man.

1 – Data

Our data come from the Survey on Labour Market Transitions of University Graduates carried out in 2007 by the Italian National Statistical Office. The Survey is the result of interviewing Italians who graduated from university in 2004 three years after graduation. The retrospective information gathered allows us to analyze both employment probabilities and earnings at the beginning of their career (Tab. 1). The graduate population consists of 167,886 individuals (68,939 males and 98,947 females). The ISTAT survey is based on a 16% sample of these students and is stratified on the basis of degree course taken and by the sex of the individual student. The response rate is about 69.5%, yielding a data-set containing information on 26,570 graduates. The data contain information on educational curriculum, occupational status and the student’s family background and personal characteristics.

In particular, the principal variables contained in the data set can be divided into the following five main groups. (i) University career and high school background: including, kind of high school attended, high school mark, other education, university, subject, duration, degree score, accommodation, work during university, post graduate studies; (ii) work experience: including, previous experience, experience in actual work, type of work,

net monthly wage; (iii) search for work: including, kind of work desired, willingness to work abroad, preference overworking hours, minimum net monthly wage required; (iv) family information: including, parents' work, parents' education level, brothers and/or sisters; (v) personal characteristics: including, date of birth, sex, marital status, children, country of domicile, country of birth, residence.

Table 1. Average earnings and employment probability by gender and field of study

Field of study	Average monthly earnings		Average employment probability	
	Male students	Female students	Male students	Female students
Sciences	1252.36	1065.03	0.69	0.66
Pharmacy	1280.79	1137.91	0.74	0.76
Natural sciences	1232.25	1062.48	0.65	0.59
Medicine	1468.22	1234.35	0.45	0.27
Engineering	1391.70	1287.06	0.92	0.83
Architecture	1221.35	1054.29	0.87	0.82
Agricultural studies	1141.59	905.72	0.77	0.70
Economics, Business and Statistics	1349.92	1169.86	0.83	0.77
Political Science and Sociology	1300.48	1096.71	0.78	0.82
Law	1172.35	1018.93	0.60	0.51
Humanities	1107.00	948.09	0.69	0.75
Foreign languages	1204.67	1048.28	0.85	0.80
Teachers college	1062.94	961.70	0.81	0.79
Psychology	1078.69	832.67	0.72	0.70
Health	1098.13	882.75	0.78	0.74
Total	1299.28	1080.96	0.72	0.63

Table 1 reports average monthly earnings and employment probability 3 years after graduation by gender and field of study. Monthly earnings in 2007 are in euros and net of taxes and social security contributions. The average earnings are 1299 and 1081 euros per month for the male and the female sub sample, respectively. The average employment probability 3 years after graduation is 0.72 and 0.63 for male and female candidates, respectively.

In the empirical analysis of Section 2, we estimate the earnings equation for male and female samples.

2 – Earnings Equations

The following earnings equation was estimated for full-time employees:

$$\ln(w) = \alpha + \beta_1 edperf + \beta'_2 E + \beta'_3 X + \beta'_4 Z + \varepsilon \quad (1)$$

where w is the monthly wage, “*edperf*” is educational performance³, E is a vector of educational dummy variables, X is a vector of personal characteristics and Z is a vector of regional dummy variables.

Table 2 reports results from estimating gender-specific earnings equations controlled for self-selection. We estimate the sample selection model by means of the Heckman (1979) two-step procedure. The dependent variable is the natural logarithm of the net monthly wage. We first consistently estimate the selection equations, binary choice type equations, where the binary variable simply indicates working or not working. The estimation is conducted by means of probit maximum likelihood. We then use the estimation results of the first stage to consistently estimate by OLS the linear earning equations. Our specification incorporates labor market experience⁴ and educational performance. In order to capture the impact of differences in regional wages we include dummies for region of residence. We include also family background variables as the level of education, the employment status and occupation of the father. We add further information on the educational attainment and the work experience: work during the university, minimum degree score needed for present work, obtainment of professional qualification. We try to exploit the richness of our data set by considering all variables statistically and economically significant in explaining the wage gap (Tab. 2-9).

³ - Two dimensions of academic performance are taken into account: degree score and the speed at which students complete their academic career. In order to take into account both dimensions, we build up the following measure for educational performance:

$$edperf = \frac{dscore}{1 + 0.10 \times \text{years}}$$

where “*dscore*” is the degree mark plus the laude or highest honors when it occurs. The degree scores in the publicly available data are provided in brackets rather than as a continuous variables. They fall into four intervals (<79, 80–89, 90–94, 95–99) and for scores higher than 99 the effective value is disposable. We treat the degree mark as continuous variable by using the midpoint of each range when the value is not available. The number of years in excess (“years”) used to get the degree is eventually corrected for those having carried out military service during their university years. Obviously, the degree scores have been normalized to take into account the different marking scale for each faculty. The final degree score ranges from 66 to 110 (for some universities the maximum mark awarded is 100). According to each faculty internal ruling a laude (distinction) may be assigned to candidates with a 110/110 mark for recognition of the excellence of their thesis (in this analysis the 110 *cum laude* was transformed to 113).

⁴ We make use of the age to approximate the labor market experience. We consider also the square of labor market experience to take into account non linear effects.

Table 2. OLS estimation results of the earnings equation for employees (male and female samples)

Variable	Earnings equation (employees)			
	Female		Male	
	Coefficient	T-value	Coefficient	T-value
CONSTANT	6.451078	80.249	6.516929	89.401
Educational performance	0.000950	4.031	0.001423	5.301
lambda	0.383831	6.319	0.414517	7.583
experience	-0.036356	-6.557	0.016100	1.465
experience2	0.004010	5.722	-0.001348	-1.141
Sciences	0.189980	4.621	0.075470	2.594
Pharmacy	0.290410	6.725	0.150891	5.120
Natural sciences	0.130703	3.820	0.062717	1.939
Engineering	0.360510	7.515	0.253378	7.238
Architecture	0.183003	3.857	0.121772	3.219
Agricultural studies	0.138144	3.090	0.058937	1.561
Economics, business and statistics	0.246893	6.207	0.168118	5.653
Political sciences and sociology	0.203020	4.692	0.074503	2.384
Law	0.075950	2.721	0.042657	1.507
Humanities	0.131889	3.114	-0.077757	-2.105
Foreign languages	0.162961	3.879	0.016601	0.391
Teachers college	0.111559	2.432	0.056077	1.162
Psychology	0.082282	1.645	0.043418	0.979
Hours worked (Q2 21)	0.008788	8.024	0.007432	6.449
University of North	-0.052636	-3.973	-0.011993	-0.804
University of Center	-0.010915	-0.766	0.043994	2.943
d Liceo	-0.017863	-1.904	0.002172	0.235
d Previously entered another degree course	0.005927	0.490	0.012281	0.894
d Studied in the hometown	0.000538	0.068	0.003824	0.440
d Moved to attend university	0.034356	3.784	0.032285	3.018
d Working student	0.096551	7.163	0.076887	6.731
Training	-0.090338	-6.441	-0.107812	-7.538
Married	0.005629	0.685	0.080510	6.880
Children	-0.009754	-0.620	0.091021	4.602
d Father's university degree	0.030699	2.294	0.007577	0.509
d Father's high school degree	0.018705	1.967	0.004630	0.421
d Mother's degree	-0.002357	-0.162	0.009058	0.567
d High school	-0.005666	-0.598	0.011621	1.083
d Father's occupation: manager	0.015552	1.036	0.030424	1.903
d Father's occupation: executive cadre	-0.003928	-0.280	0.027497	1.839
d Father's occupation: white collar	-0.000960	-0.086	0.001874	0.154
d Mother's occupation: executive cadre	0.011883	0.812	-0.021382	-1.375
d Mother's occupation: white collar	0.019560	1.942	0.006837	0.628
Erasmus	0.031319	2.666	0.052507	4.020
Firm size	0.089913	6.131	0.074524	3.547
d Attended private courses at university	0.020647	0.995	0.001685	0.066
d Father employed	0.004156	0.230	-0.000877	-0.041
d Father self-employed	0.023489	2.481	0.023034	2.074
Industrial sector	0.022993	2.527	0.037864	4.124
Paid training	-0.145341	-5.817	-0.120088	-4.218
Region dummies	X		X	
Number of observations	3744		3709	
Rbar-squared	0.1480		0.1460	
F	11.805 (0.00)		11.596 (0.00)	
Average wage women (ln)	7.1099409			
Average wage men (ln)	7.2269904			

Table 3. Estimation results of the employment probabilities for employees (male and female samples)

Variable	Employment probabilities (employees)			
	Female		Male	
	Coefficient	T-value	Coefficient	T-value
CONSTANT	-0.40774	-2.880	0.11501	0.770
Educational performance	0.00211	2.660	-0.00004	-0.050
Sciences	0.79611	9.810	0.31538	4.520
Pharmacy	1.10942	18.530	0.51041	7.530
Natural sciences	0.56726	9.820	0.19276	2.760
Engineering	1.34976	19.820	1.24828	24.280
Architecture	1.24957	18.570	0.87663	11.880
Agricultural studies	0.91999	11.510	0.62628	7.280
Economics, business and statistics	0.99523	22.500	0.75041	15.470
Political sciences and sociology	1.15891	22.230	0.62422	9.810
Law	0.39985	9.290	0.21823	4.360
Humanities	0.99855	17.350	0.33098	4.420
Foreign languages	1.05389	16.320	0.68531	5.190
Teachers college	1.16688	16.77	0.90959	6.440
Psychology	0.86643	10.370	0.51204	5.310
University of North	-0.03092	-0.610	0.05380	0.970
University of Center	-0.03418	-0.750	0.04650	0.930
d Liceo	-0.18332	-6.140	-0.09455	-2.870
d Moved to attend university	0.04979	1.620	0.05416	1.560
Erasmus	0.00179	0.040	-0.04484	0.930
Married	0.02327	0.770	0.29326	7.030
Children	-0.24011	-5.470	0.18525	2.710
d Father's university degree	0.02472	0.550	-0.05689	-1.140
d Father's high school degree	0.06245	0.100	0.03627	0.920
d Mother's degree	-0.01029	-0.210	0.01988	0.370
d High school	0.00679	0.200	0.03721	0.095
d Father's occupation: manager	-0.03102	-0.600	-0.01754	-0.320
d Father's occupation: executive cadre	0.01070	0.220	-0.06419	-1.250
d Father's occupation: white collar	0.02907	0.760	-0.01106	-0.250
d Mother's occupation: executive cadre	-0.02730	-0.580	-0.01326	-0.260
d Mother's occupation: white collar	-0.02826	-0.830	-0.01810	-0.470
d Father employed	0.02325	0.380	0.06934	0.098
d Father self-employed	0.08043	2.460	-0.00925	-0.240
d Attended private courses at university	0.24619	2.970	0.08003	0.096
d Working student	0.38804	14.770	0.39104	13.220
Training	-0.52419	-15.990	-0.71315	-19.740
Region dummies	X		X	
Number of observations	13499		11909	
Percent Correctly Predicted	73.8944		78.1678	

Moreover, we use whenever possible, the same set of variables to explain the wage gap between all the population groups considered⁵.

We note that there is a significant gender difference in graduates earnings: female average earnings are about 89% of male average earnings. From the separate regression analyses by gender, we calculate the Oaxaca decomposition and find that only about 12% of the gender gap

⁵ - OLS estimation results of the earnings equations underlying Tables 3-9 are conducted similarly to the earnings equation presented in Table 2. Calculations are not presented here for brevity, but will be provided by the authors to anyone who requests.

can be explained by differences in average observed characteristics. The remaining 88% of the gender gap is attributable to gender differences in unobserved characteristics⁶.

3 – Gender pay gap versus other differences in pay between groups

We ask first whether our data are too poor to explain wage differences arising among heterogeneous individuals since the early years after graduation. So we try to check the adequacy of the data to explain the differences in wages other than the gender pay gap.

Tab. 4 - Gender pay gap *versus* other differences in pay between groups

	<i>Explained pay gap</i>	<i>Unexplained pay gap</i>	Raw pay gap %
Gender pay gap (Male employees <i>versus</i> Female employees ⁷)	12,23	87,77	11,05
Public sector <i>versus</i> Private sector	80,32	19,48	0,74
Self-employed <i>versus</i> Employees ⁸	65,02	34,98	6,34
Permanent contracts <i>versus</i> Fixed-term contracts	40,44	59,56	13,18
Graduate degree required <i>versus</i> not required (<i>overeducation</i>)	48,40	51,60	9,44
Recruitment through open competition <i>versus</i> without open competition	66,31	33,69	1,37

Table 4 presents the gender pay gap and other differences in pay between groups separating the differential explained by observable characteristics from the residual unexplained reflecting the different returns to the same characteristics. The comparison between several types of wage differentials shows that the gender wage gap is of substantial amount and by far the most unexplained among the above considered groups.

In the literature, the factor most commonly cited to explain the gender pay gap is the impact of motherhood and the uneven division of domestic responsibilities on women lifetime earnings profile (Eurostat 2009, p. 7). For example, more women than men tend to match to part-time jobs that have lower returns and less training opportunities due to coping with childbirth and care. These differences in labour market choices make women to accumulate lower work experience compared to men and therefore to have lower earnings. But in our

⁶ - Castagnetti and Rosti (2009) find very similar results using a different data set and Castagnetti and Rosti (2010) find very similar results running a slightly different methodology.

⁷ Q2_4 = 4

⁸ Q2_4 = 4 vs Q2_4 = 1.

sample we only consider individuals working full time for more than 30 hours per week, and three years after graduation men and women usually neither tend to be parents yet nor they have accumulate significant work experience.

A second factor found to be significant in many empirical studies on gender differences in pay even at the beginning of a career is the choice of college majors (Eide 1994; Brown and Corcoran 1997; Daymont and Andrisani 1984; Lin 2010). Female students tended to concentrate in areas with lower pay, such as education, health and psychology, while male students dominated higher-paying fields such as engineering, mathematics and physical sciences.

Our data, however, documents large gender disparities in pay that persist even between individuals who studied the same fields (Tab. 5), and even controlling for standardized test score (*eduperf*) does not reduce significantly the unexplained pay disparity in our regression analysis.

The results of our regression analysis show that even controlling for a lot of variables whose effects may be part of the explanation of the gender pay gap, the unexplained component remains nevertheless high in each field of study.

Tab. 5 - Gender pay gap by college majors

College majors	<i>Explained pay gap</i>	<i>Unexplained pay gap</i>	<i>Raw pay gap %</i>
Total Employment⁹	27,03	72,98	11,55
1 Humanities	10,55	89,45	8,86
2 Economics, business and statistics	12,74	87,26	9,25
3 Political science and sociology	56,77	43,23	8,95
4 Sciences	1,83	98,17	10,27
5 Law	53,68	46,32	3,11
6 Engineering	16,40	83,60	6,64
7 Architecture	13,98	86,02	10,02
8 Medicine	46,72	53,28	16,13
Empolyees¹⁰	12,23	87,77	11,05
1 Humanities	23,14	76,86	5,73
2 Economics, business and statistics	7,99	92,01	8,88
3 Political science and sociology	4,01	95,99	7,85
4 Sciences	0,69	99,31	9,54
5 Law	58,35	41,65	9,33
6 Engineering	15,02	84,98	5,84
7 Architecture	19,19	80,81	11,44
8 Medicine	52,12	47,88	11,72

⁹ - Q2_4 = 1-4

¹⁰ - Q2_4 = 4

Why a woman who acquires the same human capital endowment of a man and makes the same career choices as a man does not receive the same reward?

In the Oaxaca (1973) and Blinder (1973) approach, discrimination is defined as the difference between the observed gender pay ratio and the gender pay ratio that would prevail if men and women were paid according to the same criteria (Grimshaw and Rubery 2002). As by definition labour market discrimination is characterized by unequal treatment of equally productive persons, empirical evidence showing wage disparity greater than productivity disparities are consistent with discrimination (Hersch 2006). Unfortunately, in our data we have no information on actual productivity of university graduates. But we know from the psychological literature that the assessment of productivity in the workplace is strongly influenced by stereotypes, that is non-conscious hypotheses, beliefs or expectations that affect our judgments of others¹¹. A large body of research suggests that all of us - regardless of our sex and the social group we belong to - perceive and treat people based on their gender (Valian 1998, Schein 2001). Adopting a stereotype-consistent view is automatic and unintentional (Devine 1989), and often at odds with our conscious intentions and our beliefs (Dovidio 2001)¹². Moreover, the ways that men and women are treated differently may be perceived as being in the best interest of women (Fuegen *et al.* 2004)¹³. Further, and perhaps even more importantly, acting on stereotypes can be nearly imperceptible at individual level and emerge only when aggregated across individuals.¹⁴ Stereotypes and prejudice preclude the fair assessment of individual performance and create workplace discrimination. Psychological research has demonstrated that even when the

¹¹ - For a general overview of cognitive analysis of stereotypes and stereotyping, see Hamilton and Troler (1986).

¹² - Dovidio (2001) shows that even individuals carrying strong egalitarian values and fully convinced of the duty to give equal treatment to men and women may behave in a discriminatory manner.

¹³ - Adverse employment decisions based on gender stereotypes are sometimes well-intentioned and perceived by the employer as being in the employee's best interest. Employers may think that they are behaving considerately when they act on stereotypes that they believe correspond to characteristics that women should have, such as the belief that working mothers with young children should avoid extensive travel. For example, an employer might assume that a working mother would not want to relocate to another city, even if it would mean a promotion (Williams and Segal 2003).

¹⁴ Crosby (1984), for example, demonstrated that women do not acknowledge the ways that gender discrimination may have affected their own career experiences. They are more likely to assume personal responsibility for receiving fewer organizational resources than their male coworkers.

actual qualifications of men and women have proved to be equivalent, evaluations of female employees are less positive than for men¹⁵.

We hypothesize that gender stereotypes as “*a woman after pregnancy is a resource for the company lost*” or “*think manager, think male*” affect the assessment of individual productivity and represent a major cause of statistical discrimination that is realized in the unexplained component of the gender pay gap.

Section 4 documents how gender stereotypes impact on subjective assessment of individual productivity, and consequently on the gender pay gap and careers of male and female graduates. Note that the focus of Section 3 is *not* the impact of childcare and other forms of caregiving on the gender pay gap. The focus is on statistical discrimination, that is pre-judgment by which women may be perceived as more committed to caregiving than to their jobs and less competent than other workers, regardless of how their caregiving responsibilities actually impact their work. Relying on these stereotypes, some employers may assume that childcare responsibilities will make female employees less dependable than male employees, even if a woman is not a mother and has no intention to become a mother.

4 – The effect of gender stereotypes on subjective assessment of individual productivity

In Italy, equal pay and sex discrimination legislation have been in place since 1991. New entrants to the labor market in the mid-2000s grew up in a society which encouraged them to take equal opportunities for granted. Similarly, no employer would deny in principle the employees right to be evaluated as a single individual, that is according to their personal characteristics rather than as members of a group having certain average characteristics. As a consequence, it is tempting to believe that discrimination is a thing of the past, currently carried out only by a small set of uninformed people. Yet even today employment decisions based on gender stereotypes rather than on the specific work performance may prevent many women from advancing in their careers. Beliefs and prejudices based on gender preclude the accurate assessment of individual productivity (Martell and DeSmet 2001), and the pervasiveness of sex role expectations is a primary cause that prevents women to reach top managerial positions (Schein 2001). Even very small differences in treatment can, as

¹⁵ - See, for example, the meta-analysis by Olian, Schwab and Haberfeld (1988), and, more recently, the meta-analysis by Swim and Sanna (1996).

they accumulate, have major consequences in salary, promotion, and prestige, including advancement to leadership positions (Valian 1998; Becker 1985; Merton 1968).

Research has shown that the “*ideal employee*” is currently still in line with characteristics such as rarely taking time off, having few personal obligations, and maintaining an unwavering commitment to the job over long periods of time. But these expectations associated with the prototype model of the employee are linked to a time when the workforce was comprised mostly of men married to women confined to household duties and childcare. As more mothers have entered the labour force, families have increasingly faced conflicts between work and caregiving responsibilities, resulting in a “*caregiver stereotype*” or “*maternal wall*” that prevents many women from advancing in their careers (Heilman and Okimoto 2008).

Similarly, the “*successful manager*” is consistently described as more similar to the way men are viewed than to the way women are viewed (Heilman *et al.* 1989; Schein, 1973). Men are stereotypically perceived as “more ambitious”, “more agentic” and “better leaders” than women (Fiske and Stevens 1993; Jost and Kay 2005; Eagly and Johannesen-Schmidt 2001), and women are viewed as “not assertive enough”, or “too much emotional”, or “not enough agentic” to fill leadership positions (Eagly and Karau 2002), resulting in a “*think manager-think male*” stereotype or “*glass ceiling*” that excludes many women from apical jobs and hampers the optimal movement of talent between organizational ranks.¹⁶

There is a growing empirical literature showing that because of stereotypes, an identical performance is assessed differently for men and women¹⁷. Consequently, imprecise knowledge about the productivity of young women or their career preferences may lead to systematic underestimation of the productivity of this group.

Olian, Schwab and Haberfeld (1988) present a meta-analysis of 19 studies conducted on 1,842 individuals assessing the applications for recruitment represented by an identical curriculum attributed to either a man or a woman. The results show that the positive responses (recruitment) were directed more often to men.

Dobbins, Cardy and Truxillo (1988) show that individuals who evidenced traditional stereotypes about women appraised women’s true performance less accurately than those who did not express traditional stereotypes.

¹⁶ Schein (2001) demonstrated that around the globe, the role of manager is viewed as more closely aligned with the characteristics ascribed to men than women: this was the case in China, Germany, Japan, and the United Kingdom. Because of the perceived lack of fit between what women are like and the traits presumed to be necessary for success at many of the most prestigious jobs and occupations, women are viewed less favorably than their male colleagues.

¹⁷ - See, for example, Cole *et al.* (2004).

Correll, Benard and Paik (2007) analyze applications for a job sent through an identical curriculum by two groups of individuals (mothers and non-mothers). The evaluators found the mothers less competent and less suitable for recruitment and promotions, and offered them lower wages than non-mothers.

Kobrynowicz and Biernat (1997) document the assessment of skills contained in an identical curriculum presented alternately with a female name or a male name in the selection for a management role (typically considered masculine in the stereotype).

The same skills were evaluated twice if attributed to a man instead of a woman.

Sackett, DuBois and Noe (1991) show that women were systematically rated as performing less well than men even after controlling for ability and experience, and that the gender discrepancy in evaluations was greater in male gender-typed jobs.

Due to statistical discrimination mechanisms, sex role stereotypes may have had negative effects on the compensation and careers of all women. According to Coate and Loury (1993), statistical discrimination against women gives employers an incentive to offer women jobs with a lower level of on-the-job-training. Further, if women are aware of the existence of statistical discrimination in advance, this may discourage even well qualified graduates from investing in skills or discourage them to apply for promotion.

Even if gender stereotypes are systematic and pervasive in our daily life (Sabini 1995), their use does not have the same importance in every organizational context (Heilman 1997, Hunt *et al.* 2002). In Section 5 we try to identify some specific environment in which the use of stereotypes is more or less likely to exert an influence on performance appraisal, and we verify that the unexplained component of the gender pay gap increases or decreases in line with the influence of the stereotype.

5 – Gender stereotyping in the workplace is more likely to occur when ...

We consider first a context in which the assessment of productivity is unnecessary (self-employment), thereby eliminating the fuel for discrimination by employers (Section 5.1).

We then consider an environment in which the assessment of productivity is negligible (executive jobs and temporary contracts), thus reducing the motivation of the evaluator to make an accurate assessment (Section 5.2).

Finally, we study a context where the assessors are required to provide justifications of their choices and must use objective criteria and structured evaluation procedures (recruitment

through open competition), thereby increasing the incentive for a more accurate assessment of individual performance (Section 5.3).

5.1 - Context in which the assessment of productivity is unnecessary (self employment)

Sex stereotypes in performance evaluation do not operate when the assessment of individual productivity is unnecessary, as in self-employment. The self employed are in fact employers of themselves, and know their own productivity without any kind of assessment. Following Moore (1983) we hypothesize that the existence of employer discrimination leads to some testable prediction regarding earnings differences by sex for wage and salary workers *versus* their self-employed counterparts. Self employment as a method of avoid discrimination by employers should result in a higher gender pay gap among the self employed workers than among employees.

In our data (Tab. 6), the unexplained component of the gender pay gap is lower among the self-employed workers than it is among employees.

Tab. 6 - Gender pay gap in self employment and employees

	<i>Explained pay gap</i>	<i>Unexplained pay gap</i>	<i>Raw pay gap %</i>
Employees	12,23	87,77	11,05
Self employed	27,83	72,16	12,13

5.2 - Context in which the assessment of productivity is negligible, less important and less accurate (executive jobs and temporary contracts)

An area in which stereotypes are more likely to exert an influence consists of situations in which the perceiver is not motivated to make accurate judgments, as in executive jobs. In lower-level occupations, characterized by purely executive tasks, the criteria used to assess individual productivity are often unspecified. In the absence of concrete criteria, inference is required to draw implications from performance information, and expectations based on stereotypes tend to dominate in the structuring of judgments, allowing for an orderly, if not necessarily accurate, judgment process (Heilman 2001; Nieva and Gutek 1980).

These conditions create the fuel for gender-based decision-making, because evaluators rely on their stereotypes when deciding whom to hire or promote, or what an appropriate salary increase will be.

In our data (Tab. 7), the unexplained component of the gender pay gap is lower in intellectual professions, scientific and highly specialized occupations than in executive, low-level occupations.

Tab. 7 - Gender pay gap between intellectual professions, technical professions and executive professions (total employment¹⁸).

	<i>Explained pay gap</i>	<i>Unexplained pay gap</i>	<i>Raw pay gap %</i>
1 Intellectual professions, scientific and highly specialized occupations	44,39	55,60	11,44
2 Intermediate professions (technical)	42,18	57,82	10,50
3 Professions relating to the administration and executive management	21,80	78,19	9,08

Another context in which stereotypes are more likely to operate because the employer is less motivate to make accurate judgments is that of temporary work. Firms may use fixed term contracts as a probationary stage during which they can observe individual performance (Loh 1994; Wang and Weiss 1998; Booth *et al.* 2002). In this case, productivity evaluation is less important because expiry of the contract eliminates the error of assessment by not renewing the contract. Therefore, the estimate of productivity is less accurate and more superficial, and leaves room for the stereotype.

Tab. 8 - Gender pay gap between employees hired under fixed term contracts and permanent contracts

	<i>Explained pay gap</i>	<i>Unexplained pay gap</i>	<i>Raw pay gap %</i>
Permanent contracts	33,06	66,94	12,70
Fixed term contracts	19,24	80,76	7,18

¹⁸ - Q2_3 (Annex F =2-4)

In our data (Tab. 8), the unexplained component of the gender pay gap is greater among employees hired under fixed term contracts than it is among employees hired under permanent wage contracts.

5.3 - Context in which managers must use objective evaluation criteria and structured evaluation procedures, and must justify their decisions (open competition – *concorsi*)

The stereotyping literature indicates that ambiguity in human resource practices can create the conditions for gender stereotypes to flourish (Welle and Heilman 2007). Open competitions may be a good device to resolve this ambiguity and detect personal characteristics and abilities beyond what signalled by the attained level of education.

Heilman (2001) and Heilman and Okimoto (2008) suggest that ambiguity in evaluative criteria and a lack of structure in the evaluation process are two factors that affect devaluation of women's work. Therefore, in environments where the judgment criteria are more specific, and the assessment procedure is more structured, the information can not easily be distorted to fit the stereotypes.

Tetlock and Kim (1987) find that people show more complexity and greater accuracy in productivity assessments when they anticipate having to justify their ratings. Dobbs and Crano (2001) show that individuals who have to justify their decisions have a stronger incentive to bypass their stereotyped impressions than those who do not have to make justifications. When decisionmakers are required to justify the decisions they make and describe the criteria they use to evaluate candidates, as in open competition, they are less likely to discriminate against women.

In *open competitions* (Tab. 9), the recruitment procedure is a combination of examinations, scrutiny of the curriculum and qualifications, and interviews.

Tab. 9 - Gender pay gap between employees recruited through open competition and without open competition.

	<i>Explained pay gap</i>	<i>Unexplained pay gap</i>	<i>Raw pay gap %</i>
Recruitment through open competition	39,64	60,36	12,12
Recruitment without open competition	33,99	66,01	12,09

When employees are recruited through open competition, performance appraisal is more objective, more structured and less ambiguous, thereby reducing the conditions for gender stereotypes to flourish. In our data (Tab. 9), when employees are recruited through open competition the unexplained component of the gender pay gap is lower.

6 – Does an excellent educational performance reduce the gender pay gap and its unexplained residual?

In summary, psychological research suggests that, without any information about the prior successes of an applicant, people tend to automatically assume that male candidates are more qualified and competent than female candidates. In order to counteract these perceptions and their consequences, some women may self-promote and make explicitly clear that they are exceptionally qualified candidates and top performers in their field. Sorting models of education (Arrow 1973; Spence 1973; Stiglitz 1975; Weiss 1995; Riley 2001) suggest that education is often used to draw inferences about unobserved characteristics of individuals: if the abilities that are correlated with schooling positively affect productivity on the job, education may be a good signal of a worker's productivity. This may be the informative role of educational performance.

But our data show that being excellent at school does not ensure that a woman will be rewarded as an equivalently performing man, since an excellent educational performance increases gender pay gap from 11,55% to 14,32% (Tab. 10).

Tab. 10 - Gender pay gap between graduates with excellent educational performance and total graduates¹⁹

Gender pay gap	<i>Explained pay gap</i>	<i>Unexplained pay gap</i>	<i>Raw pay gap %</i>
Excellent graduates (eduperf=113)	48,07	51,92	14,32%
Total graduates	27,03	72,98	11,55%

However, our data also show that signalling activities such as an excellent educational performance can reduce ambiguity in personnel evaluation and help counteract the effect of stereotyping, since achieving the maximum degree mark reduces the unexplained component of the gender pay gap (from 88% to 57%).

¹⁹ - Q2_4 = 1-4

Conclusions

By estimating the earnings equation for male and female employees working in full-time status three years after graduation we find a gender wage gap of 11%, and even controlling for a lot of individuals and jobs characteristics, whose effects may be part of the explanation of pay disparity, the unexplained component due to differences in returns to observed characteristics remains nevertheless high (near to 88% in our data).

We check the adequacy of the data to explain the differences in wages other than the gender gap, and by comparing several types of wage differentials (Public *versus* Private sector, Self-employment *versus* Employees, Permanent *versus* Temporary contracts, and so on) we find that the gender gap is by far the most unexplained among the above considered groups.

We wonder what unobserved something is it that can't be measured, is correlated with sex, and explains more of a pay disparity than known determinants of earnings such as education and work experience, and we hypothesize that the effects of gender discrimination may be an important cause of the unexplained component of the gender pay gap.

Since new entrants to the labor market in the mid-2000s grew up in a society which encouraged them to take equal opportunities for granted, it is tempting for young graduates of today to believe that discrimination is a thing of the past. Yet, even today, employment decisions based on gender rather than on the specific work performance may prevent many women from advancing in their careers, and even being excellent at school does not ensure that a woman will be rewarded as an equivalently performing man.

In the Oaxaca-Blinder approach, discrimination is defined as the difference between the observed gender pay gap and the gender pay gap that would prevail if men and women were paid according to the same criteria. Thus, empirical evidence showing wage disparity greater than productivity disparity is consistent with discrimination. Psychological research has demonstrated that even when the actual productivity of men and women has proved to be equivalent, evaluations of female employees are less positive than for men. Unfortunately, in our data we have no information on actual productivity of university graduates. However, we know from the psychological literature that the assessment of productivity in the workplace is strongly influenced by stereotypes that preclude the fair assessment of individual performance and create workplace discrimination.

We test the hypothesis that gender stereotypes affecting the assessment of individual productivity represent a major cause of statistical discrimination that is realized in the unexplained component of the gender pay gap. We identify some contexts in which

stereotypes are more likely to occur and we verify that the most likely the stereotype, the higher the unexplained component of the gender pay gap.

In order to reduce discrimination, personnel decisions should be guided by a structured program to ensure that men and women are being evaluated on the same criteria. Test performance, number of projects completed, amount of revenue generated, and other quantifiable indicators are relatively easy to collect and judge, and they are also more difficult to distort in gender-consistent ways than more subjective measures. For example, we find evidence that in contexts in which managers use more structured evaluation procedures as in open competition (*concorsi*) the unexplained component of the gender pay gap is lower.

It is important to be aware that the gender pay gap is influenced by gender stereotypes that affect the assessment of women's productivity when they enter the labour market or are in the early years of their working life. Very small differences in treatment can, as they accumulate, have major consequences in salary, promotion, and prestige, including advancement to leadership positions.

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