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Gender inequalities in medical careers

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Abstract

Women have made a significant progress in the medical profession. In 2013, they accounted for 46.8% of total physicians in OECD countries, a 10% increase from 2003. In Italy, women account for almost 40% of the medical work-force in 2013 and their increase has been very strong in years, up to +34% in the decade 2001-2011 and up to +3% from 2012 to 2013. Notwithstanding the strong feminization of the medical workforce, gender inequalities still persist. Empirical research has shed light on gender inequalities in pay, leadership and specialty fields. It is widely acknowledged that women physicians earn less than men, cluster in less remunerative specialties and progress more slowly through ranks. Most of these studies have taken place in the United States, where cross-sectional and longitudinal dataset are available. This research is part of the wider European project S.T.A.G.E.S. (Structural Transformation to Achieve Gender Equality in Science) at the University of Milan and it aims to fill the gap in the literature – with respect to the European context – on gender inequalities in medical careers. Data on more than one thousand physicians working in five hospitals in the Lombardy Region have been collected through an online survey with a rate of response of 48.7%. Data have been analysed through descriptive statistics and through regression analysis. The results point out that women earn 15% less than men, controlling for human capital, work and family characteristics, while they are 44.4% less likely to be promoted to the intermediate levels of the career ladder. Female physicians tend to cluster in medical specialties, while surgery still remains a male-dominated specialty area. Moreover, they do less private practice than their male colleagues, which is highly remunerative. Compared to private institutions, public hospitals seem to guarantee a stronger equality in earnings. The division of paid and unpaid work appears strongly unbalanced, with women as the main responsible for the care of children and the elderly. As a consequence, they tend to solve their work-life conflict by outsourcing care activities while reducing the number of children or renouncing to motherhood (39% of women in the dataset are childless). Regression analysis show that mechanisms of gender discrimination take place both in pay and promotions. Moreover, the same attributes are differently "rewarded" whether they refer to women or men. Hence, being father significantly increase men's income and their likelihood to promotion. The pay penalty for motherhood is significant at 90% level from the third child, while it negatively affects promotion from the second child. Overall, the fatherhood premium appears stronger than the motherhood penalty. Being married positively increases male's income but it doesn't have any effect on female colleagues. Educational credential "pays" more for men than for women in terms of pay, as well as being a surgeon and a head of a unit. Doing private practice is more rewarding, controlling for work hours, for men than for women. The amount of time spent at work and the years of work experience are also differently rewarded in terms of career outcomes, suggesting that gender inequalities are not only a matter of "being like men are". Overall, these results fill a gap in knowledge and argue that structural constraints – preventing female physicians to earn as much as men do and to have the same chances of career than men have – are taking place.

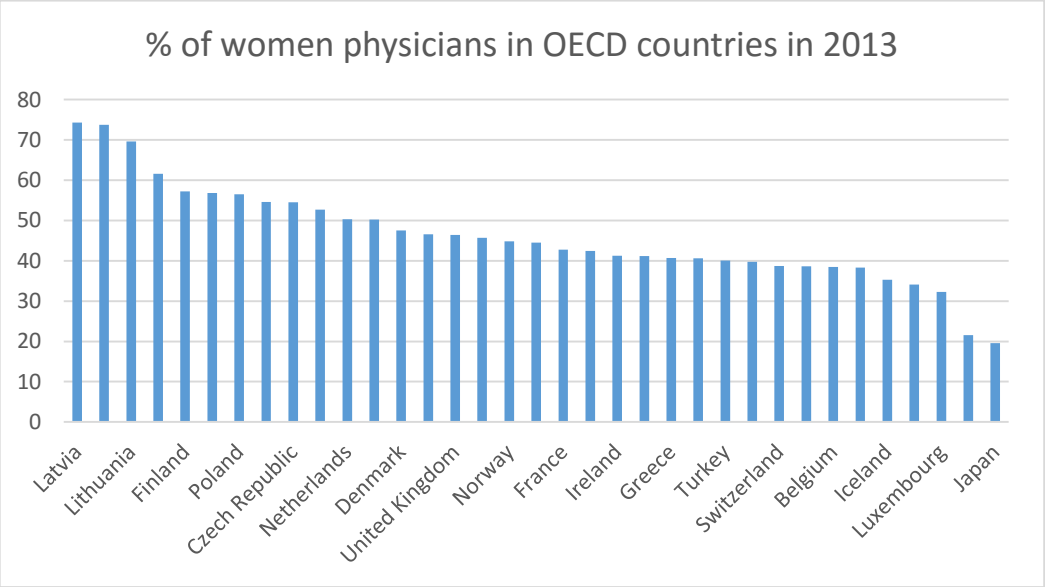
Introduction

Women have made a significant progress in the medical profession. In 2013, they accounted for 46.8% of total physicians in OECD countries, a 10% increase from 2003[1]. Their number varies significantly across countries, ranging from the minimum of Japan[2] and Korea (where only one out of four physician is a female) and the maximum of the Baltics, driven by Latvia (74.3% of women physicians), Estonia (69.6) and Lithuania (61.6%). Between the two extremes, a wide range of industrialized countries stays in the middle. In the middle, Eastern-European Countries account for the highest rate of female doctors (ranging from around 50 to 60%) while Western Europe and Anglo-Saxon States show more moderate rates of female physicians, ranging from around 30% to slightly more than 50% of the medical population.

The high rate of women in the medical profession in eastern countries finds its explanation in the earlier process of feminization of the medical profession due to a long tradition in gender-parity policies which stressed equality in education and favoured the entrance of women in scientific fields (Glover 2005). On the contrary, the feminization of the medical profession in western countries occurred only recently. This time gap finds evidence in the growth rates over time: eastern countries show the smallest variations in the last years, while western countries register the highest growth of women in medicine (see Figure 1). In this context, Italy fits in the western model: in 2013 women accounted for almost 40% of the medical work-force and their increase has been very strong in years, up to +34% in the decade 2001-2011 and up to +3% from 2012 to 2013[3].

[1] OECD (2015), *Health care resources*, OECD Health Statistics *(database)*. Data avalaible here: http://dx.doi.org/10.1787/data-00541-en (Website consulted on February, 28th 2016).
[2] Last data available for Japan refers to 2012.
[3] No useful data are available for the decade 2003-2013 for Italy a cause of a methodological change in coverage occurred in 2012.

Figure 1



Source: OECD (2015), "Health care resources"[4]

No matter such a strong feminization of the medical work-force, gender inequalities still persist. Empirical research has shed light on gender inequalities in pay, leadership, specialty fields. It is widely acknowledged that women physicians earn less than men (Hoff 2004, Sasser 2005, Weeks et al. 2009, Jagsi et al. 2012), they are clustered in less remunerative specialties (Hinze 2000, Sasser 2005, Boulis and Jacobs 2010, Crompton and Lyonette 2011) and they progress more slowly through ranks (Jagsi et al. 2011, Carnes et al. 2008).

Most of the studies on gender inequalities in medical careers have taken place in the United States, where cross-sectional and longitudinal dataset, as the American Medical Association dataset (AMA) or the Young Physicians' Survey (YPS), are available (Baker 1996, Sasser 2005, Boulis and Jacobs 2010, Weeks et al. 2015). Studies based on self-administrated surveys (Hinze 2000, Hoff 2004) as well as qualitative in-sights (Carr et al. 2003, Kass et al. 2006, Levine et al. 2011) into medical organisations are also mostly American. Only a few researches have been conducted outside the United States and more

[4] For Japan, Denmark and Sweden last data available refer to 2012.

specifically, at my knowledge, in Japan (Nomura and Gohchi 2012), UK (Crompton and Lyonette 2011), in the Netherlands (Pas et al. 2011) and Sweden (Magnusson 2015). Italy has a long tradition in the study of the medical profession in a gendered perspective (Vicarelli 1989, Vicarelli 2003, Vicarelli and Bronzini 2003, Vicarelli 2008, Spina e Vicarelli 2015). Vicarelli's studies are mostly concerned with female physicians' identities, values and career trajectories. Women in the profession are her unit of analysis. On the contrary, this research takes in consideration both female and male physicians as it aims to identify, and explain, gender inequalities in the workplaces and within organisations.

This research is part of the wider European project S.T.A.G.E.S. (Structural Transformation to Achieve Gender Equality in Science)[5] at the University of Milan and it aims to fill the European gap in the literature on gender inequalities in medical careers. For the first time in Italy, data on more than one thousand physicians have been collected through an online survey in five hospitals in the Lombardy Region, where the University of Milan is located. The submission of the questionnaire took from two to three months for each hospital and more than one year overall, taking start in June 2014 and ending in July 2015. The survey aimed to collect information on human capital, work and family characteristics of the physicians, as well as on work environment. Out of 2205 physicians receiving the questionnaire, 1074 answered, for a rate of response of 48.7%. Quantitative data analysis was made using descriptive statistics to identify the forms of gender inequalities and through regression analysis to identify their causes.

The field was made accessible by the members of the research group of the project S.T.A.G.E.S. as well as by its partners, and more specifically by the Health Department of the Region, which played a crucial role in promoting this study. Hospitals were chosen to be as more representative as possible of the Lombardy health system, which is a quite peculiar case within the (strongly decentralized) national health system, as it is based on a mixed logic, where one third of providers are private and two third are public. This has made the Lombardy health system very competitive and attractive both in terms of scientific research (Lombardy has the highest concentration of medical schools in Italy)

[5] The STAGES project – Structural Transformation to Achieve Gender Equality in Science – GA n° 289051, has been financed by the DG Research and Innovation of the European Commission within the Seven Framework Research Programme and it is co-funded by the Italian General Inspectorate for relations with the European Union of the Ministry of Economy and Finance (IGRUE).

and quality of care services (10% of services are provided to patients coming from other regions with peak concentrations of 50% in some specialties).

Studying gender inequalities in such a competitive and high-quality context has many advantages. One must objects that, since this study focuses on a very restricted population, made of high-qualified professionals and more specifically by physicians in five hospitals organisations, it can't provide useful insights on the general population. Statistically speaking, no doubt that this study is made of five quantitative case-studies which are representative of the five hospitals only. As these hospitals have been chosen in order to be as more representative as possible of the Lombardy health system, one could add, at the most, that this study provides information on the Lombardy health system as well. Is that all? Many reasons suggest that it is not. I argue that this study doesn't only provide precious insights on gender inequalities in the medical profession but in the general population as well. I will explain this concept by quoting Kathleen Gerson. "Large issues – she says – are often best illuminated by small, well-crafted studies" (Gerson 1985, p. XVIII). That is, if gender inequalities occur with respect to a very specific and committed population, it is very reasonable to think that they occur in a greater extent to the rest of the labour market. In other words, if gender inequalities occur in a population where women are *very similar* to men in terms of educational and work investments (Wajcman 1998), it is likely to think that they occur even more in a heterogeneous population, where gender differences (in characteristics) are stronger. The population of this research is restricted twice: with respect to the general population, as it represents the "slice" made of high-skilled professionals, and with respect to the medical profession itself, as it represents the very excellence of the health system in Italy and in Europe. As a consequence, by shedding light on the mechanisms and the reasons of gender inequalities among physicians in five health organisations in Lombardy, this research can provide many useful insight on how gender inequalities work in the medical profession and in the labour market as a whole.

This research is structured in five chapters. The first chapter will provide the review of the literature on gender inequalities by adopting a multi-disciplinary approach. Contributions both from the sociological and economical traditions to the study of gender inequalities will be discussed, with the aim of systematizing the different forms of gender inequalities and their different explanations identified by international scholars. The

second chapter is the methodological chapter. The choice of the methods – in the data collection and in their analysis - will be discussed, as well as the problematics linked to the access to the field, challenges and resistances. The questionnaire will be also illustrated and the representativity of the dataset analyzed. The third chapter will provide descriptive statistics on the population based on data collected through the survey. The fourth and fifth chapter will focus on two forms of gender inequalities: the gender pay gap and the vertical segregation. Both chapters aim to identify the reasons of gender inequalities in pay (chapter 4) and in authority (chapter 5). In order to do that, a set of hypothesis, drawn from the literature, will be tested using multiple regression models. The results will be then discussed at the end of each chapter. In the conclusions, research outcomes will be summarized, limits and strengths of the study discussed and further investigations outlined.

Chapter 1 - The literature

Studies on gender inequalities in the medical profession parallel the wider literature on gender inequalities in the general population and in non traditional jobs[6]. Many scholars have shed light on the obstacles that women face in the world of professions (Crompton and Sanderson 1990, Beccalli 2004), as managers (Jacobs 1995, Wajcman 1998), in the financial (Roth 2006) and IT (Wright and Jacobs 1995) sector, as well as in science (Evetts 1996, Glover and Campling 2000, Etzkowitz et al. 2008, Gupta et al. 2004, Smith Doerr 2004).

As for studies on gender inequalities in medical careers, most of the them have been taken place in the United States, where cross-sectional and longitudinal datasets, as the American Medical Association dataset (AMA) or the Young Physicians' Survey (YPS), are available (Baker 1996, Sasser 2005, Boulis and Jacobs 2010, Weeks et al. 2009). Studies based on self-administrated surveys (Hinze 2000, Hoff 2004) as well as qualitative in-sights (Carr et al. 2003, Kass et al. 2006, Jagsi et al. 2011 and 2012, Levine et al. 2011) into medical organisations are also mostly American. Only a few researches have been conducted outside the United States and more specifically, at my knowledge, in Japan (Nomura and Gohchi 2012), UK (Crompton and Lyonette 2011), in the Netherlands (Pas et al. 2011a and 2011b) and Sweden (Magnusson 2015). Italy has a long tradition in the study of the medical profession in a gendered perspective based on Vicarelli's work (Vicarelli 1989, Vicarelli 2003, Vicarelli and Bronzini 2003, Vicarelli

[6] I use the expression "non traditional jobs" or "traditionally male occupations" to mean both *male-dominated occupations* (or sex-segregated occupations) and *feminized occupations* (or *mixed-sex occupations* which have recently experienced a process of *feminization)*. In male-dominated (or sex-segregated) occupations, women account for a minor part of the work-force. Cutting points for defining an occupation as "sex-segregated" (being either female or male dominated) vary according to scholars: "75% or 80% one sex, a one-sex majority, or a percentage-point deviation from the sexes' representation in the labour force" (Reskin 1993, p. 244). Example of male-dominated occupations are engineering, finance and the hard-sciences. Male-dominated occupations can experience a process of feminization and can become mixed-sex occupations. I use this term in the same way used by Roos and Jones (1995), that is to indicate a growing presence of women within occupations and not to suggest that women have become the predominant, or even the majority, sex. Examples of feminized occupations are journalism, judiciary and medicine.

2008, Spina e Vicarelli 2015). Her research is mostly concerned with the historical process of the feminization of the profession on one hand and with female physicians' identities, values, behaviours and career trajectories on the other. In her studies, women physicians are the unit of analysis. On the contrary, this Ph.D. thesis takes in consideration both female and male physicians with the aim of identifying the causes of gender inequalities in workplaces at within organisations.

I. The forms of gender inequalities

There are different forms or different types of gender inequalities in non traditional occupations: the horizontal segregation (disparities in sectors/specialties), the vertical segregation (disparities in rank) and the pay gap (between men and women and between mothers and childless women).

The horizontal segregation (better known as occupational sex segregation) refers to the degree to which men and women do different works (Blau 1984, Milkman 1987, Walby 1988, Reskin and Ross 1990, Reskin 1993, England 1982, England 1992, Jacobs 1989, Jacobs 1995, Charles and Grusky 2004). Men and women can work in different industries, in different kinds of organisations (public, private, non-profit), in different occupations. Within the same occupation, they can work in different sectors or specialties, as it is the case of medicine (Boulis and Jacobs 2010). Once women enter into a male-dominated profession, mechanisms of *re-segregation* take place inside the same occupation (Reskin and Ross 1990). Workplace segregation is usually measured by the index of dissimilarity, which indicates the proportion of women who would have to move in order for them to be distributed in the same manner as men (Jacobs 1995). Analytically speaking, this distribution should not necessarily be a synonym of gender inequality. Nevertheless, it is well acknowledged that female occupations are usually less well paid than men's, provide less on the job-training, promotion opportunities and the opportunities to exercise authorities (England 1992, Reskin 1993, Jacobs 1995). Therefore, the occupational sex segregation has some important implications in terms of gender inequality.

The vertical segregation refers to the female overrepresentation in the lower levels of the career ladder and the *glass ceiling* is the most common metaphor to describe it

(Federal Glass Ceiling Commission 1995, Baxter and Wright 2000, Cotter et al. 2001, Liff and Ward 2001). The glass ceiling is defined as an "unseen, yet unbreakable barrier keeping women from rising to the upper rungs of the corporate ladder, regardless of their qualifications or achievements" (Federal Glass Ceiling Commission, 1995: 4) and it emphasises the existence of obstacles *at the end* of the career ladder. More recently, a second metaphor has been introduced to offset the limits of the glass ceiling: *the sticky floor* (Padavic and Reskin 1994, Britton and William 2000, Booth et al. 2003, Baert et al. 2016). Sticky floors can be described as the pattern that women are, compared to men, less likely to *start* climbing the career ladder. In this way, sticky floors complement the concept of glass ceiling and suggest that barriers can be found also at the beginning of the career ladder (Baert et al. 2016). The sticky floor is consistent with a third metaphor which has been mostly used in the literature on scientific careers: *the leaky pipeline* (Alper 1993, Blickenstaff 2005). This latter suggest that there is no difference between barriers at the beginning and barriers at the end of the ladder, as female talents are "dropped" all along the trajectory, implying the existence of equal obstacles throughout the ladder.

The vertical and the horizontal segregation are two forms of gender inequality. On the other hand, they are, in themselves, two of the most relevant explanatory factors of a further form of gender inequality in the workplace: the pay gap. According to Eurostat, in 2013 women have earned 16.4% less than men in the UE 27 without adjusting for work hours and other characteristics[7]. In Italy, the pay gap is "only" 7.3%, mainly because the female part-time work is less common than in Nordic European Countries. Women earn less (also) because they are concentrated in female jobs (which are usually worse paid than male jobs) and (also) because they are stuck in the lower ranks of the job ladder (Jacobs 1995). Nevertheless, the vertical and horizontal segregation are not the only causes of wage differentials. Many scholars have shed light on the child penalty for motherhood (Folbre 1994, Waldfogel 1997, Lundberg and Rose 2000, Buding and England 2001, England 2005) as well as on employers' discrimination (Becker 1957, Blau 1984, Reskin and Ross 1990, Gupta et al. 2004). The debate over the explanatory factors of the gender pay gap is very rich in contributions, both from the economic (Oaxaca 1973, Blau and Kahn 2000) and the sociological (England 1992, Rubery et al. 2005, Lips 2013)

[7] Gender pay gap in unadjusted form in %. Data available at: http://ec.europa.eu/eurostat/data/database. Accessed on February 25th, 2016.

traditions. Both perspectives have been adopted in this research, as they complement each other: providing the technical tools to calculate the determinants of the gap the former, correctly interpreting such determinants the latter.

II. The reasons of gender inequalities

Many studies have shed light on the reasons of gender inequalities and a few attempts to organize the debate have been done. I suggest to clearly distinguish between two levels of explanation: the level of the explanatory factors (first level) and the level of theoretical explanations (second level).

Explanatory factors are usually divided between "supply-side" and "demand-side" (Reskin 1993, Kelly 2012). The former emphasizes workers' characteristics, the latter emphasizes employer's actions (including discrimination) or, more in general, organisational obstacles. Supply-side explanatory factors are: 1. The human capital characteristics of workers (educational credentials, work experience and seniority, training, commitment and productivity); 2. Their institutional work characteristics (the industrial sector, the kind of organisation, the type of contract); 3. Their family characteristics (number of children, marital status). Demand-side explanatory factors are: 1. Employers' discrimination; 2. Gender bias; 3. Gendered organisations.

Supply-side explanatory factors (first level) are, in themselves, neutral, as they can be "interpreted" in different (even opposite) ways on the base of two different theories (second level): theories emphasizing the agency of the subject and theories emphasizing structural constraints[8]. That's why it is important to separate the two levels.

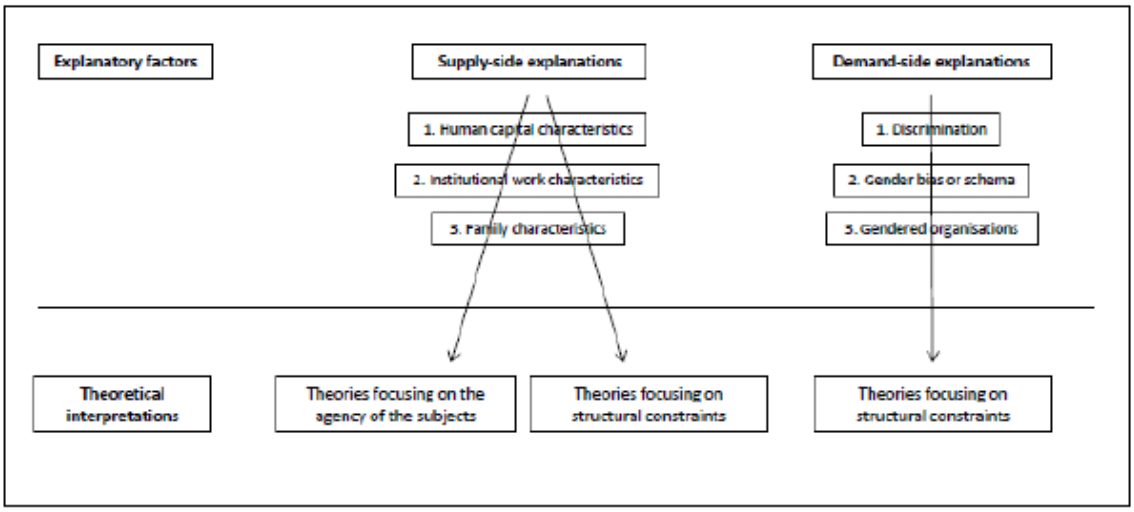
[8] Many scholars have already attempt to systematize the different contributions on gender inequalities. Jerry Jacobs (1995) distinguishes between the economic and the sociological perspective, the former emphasizing the agency of the subject, the latter emphasizing structural conditionings. Nevertheless, not all economists adopt such a theoretical approach. This is true only for neo-liberal economists. Reskin distinguishes between the neo-classical or neo-liberal economic perspective and the gender-role socialization theory (Reskin 1993). This is also partially correct as the socialization theories (Marini and Brinton 1984, Parsons 1942) are not the only one emphasizing the impact of external factors on individual agency. Gerson (1985) identifies two main strands sharing a structural approach: theories stressing the importance of socio-structural coercion (within the Marxist tradition) and theories stressing childhood socialization (within the psychoanalytic tradition). In order to better comprehend the heterogeneity of theoretical contributions on both side of the debate, I prefer to distinguish between *theories focusing on the agency of the subject* and *theories focusing on structural constraints*. Indeed, I believe it is a more comprehensive distinction, including economists and sociologists on both sides of the *querelle*, as well as, with respect to the second side only, sociologists and social psychologists. Moreover, I will use the expression "structural constraints" with a slightly different meaning with respect to Gerson's (1985). While

Theories focusing on the agency of the subjects interpret workers actions in terms of preferences (Hakim 2000) or rational choices (Becker 1985). According to this perspective, for example, women would choose "family-friendly" jobs because they prefer to spend more time in caring their children or because they expect that family obligations will limit their market work. On the contrary, structuralist theories would shed light on the social construction of gender (Connell 2002, Risman 2004, Piccone Stella and Saraceno 1996, Ruspini 2003) shaping women and men's choices towards specific occupations (Faulkner 2009, Powell et al. 2009) while determining their structure of opportunities (Crompton et al. 2005, Crompton and Lyonette 2010).

The two level-approach (explanatory factors vs theoretical interpretation) works for the supply-side factors only. For one simple reason: supply-side factors concern the actions of the unit of the analysis of the research (the worker), which can be differently "interpreted" (as free or constrained action). On the contrary, demand-side factors concern employers' actions which, from the point of view of the unit of the analysis (the worker), are – per se – *external* constraints as long as they don't depend on workers' choice. As such, they hardly can give place to a theoretical *querelle* around their nature and they are usually interpreted by advocating theories stressing structural constraints. In their case, then, the two levels (factors and interpretation) coincide. The contributions of the literature will be now explored by shedding light on the explanatory factors of gender inequalities and their theoretical interpretations.

she reduces structural constraints to socio-economic coercion, I prefer to use the same expression in a more comprehensive way which is drawn from the structuralist tradition. That is, as an heterogeneous dimension, including linguistic, psychological, social and economical "conditionings" of human actions.

Figure 1. Gender inequalities at work: explanatory factors and theoretical interpretations



III. Supply-side explanations

III.1. Human capital characteristics

The human capital theory in economics (Becker 1985 and 1991) and the preference theory in the social sciences (Hakim 2000) both argue that differences in individual characteristics between female and male workers account for gender inequalities. According to the human capital approach, gender differences in human capital – defined as the investment that workers make in their skills and commitment through education, training and work experience – engender inequalities. Since women (or at least married women) prioritize family over career, they invest less in their (market) human capital and they reduce their commitment to work. This may reduce women's productivity either because they work less hours in order to take care of the children or because they put less effort par hour relative to men who spend fewer off-job hours on household task. Lower productivity lead to lower earnings, which explains the gender pay gap, or into the choice of family-friendly occupations, which explains the occupational segregation.

As one of the foremost exponent of the human capital theory, Gary Becker argues that married women seek less demanding jobs because of their greater child care and housework responsibilities (Becker 1985 and 1991). Nevertheless, the way he describes how and why women "choose" to invest less in paid work doesn't exclude at all the role of the "structure" and more in particular of discrimination. In his attempt to explain why

women would be less committed to paid work, thus reproducing the sexual division of labour, he proposes two possible explanations: either they choose it because of their biological differences or they choose it because they anticipate discrimination. "Whatever the reason for the traditional division – perhaps discrimination against women or high fertility – housework responsibilities lower the earnings and affect the jobs of married women by reducing their time in the labour force and discouraging their investment in market human capital" (Becker, 1985, p. 55). However, while he doesn't explain any further how biological differences affect choices, he is clear on discrimination: since women have lower returns from their investments in the market human capital than men, they "choose" not to commit themselves in paid work as much as men do. By "anticipating" discrimination, they make a perfect rational choice.

Becker's contribution in explaining gender inequalities has certainly been remarkable as he has shed light on the relation between family responsibilities and the structure of opportunities, arguing that un unequal division of non paid work in the household has an impact on women's and men's investments in market human capital. This translate into lower productivity and, therefore, lower earnings. Nevertheless, studies have shown that women are not less productive than men even when they reduce their work hours (Sasser 2005). Moreover, gender inequalities occur also for childless and career-oriented women, that is – given equal level of (market) human capital investments – women earn less than men (Roth 2006, Wajcman 1998, Falcinelli 2009). In these cases, the human capital theory appears clearly inadequate in explaining inequalities.

III.2. Institutional work characteristics: the horizontal segregation

As above-mentioned, the occupational sex segregation can be both a form of gender inequality and, at the same time, an explanatory factor of a further form of gender inequality: the gender pay gap. In both cases, its interpretation depends upon which theoretical framework one chooses. The debate on the *causes* and the *consequences* of the horizontal segregation will be briefly illustrated.

The human capital approach to occupational sex segregation holds that women avoid occupations that demand skills that depreciate while they are out of the labour force raising their children. Women would choose female-dominated occupations, with

relatively high rewards early in life and a low rate of growth in earnings over time. Such occupations are supposed to be more family-friendly, require less skills than male-dominated ones, fewer penalties for motherhood and fewer work hours. Therefore, according to the human capital perspective, the horizontal segregation is the result of women's choices. On the contrary, the queuing tradition explains the horizontal segregation through employer's discrimination: interpreting the labour queue model in terms of gender queue[9], Reskin and Ross (1990) show that gender stereotypes, customs and expectations about women performances in male-dominated occupation led employers to rank men ahead of women, that is to favor male workers over women in their hiring decisions, no matter equal levels of educational credentials. Hence, the persistence of male-dominated occupations is the result of barriers at the entrance level, which in their turn find their justification in stereotypes on women competences and capacities.

The horizontal segregation is also one of the major causes of the gender pay gap (Jacobs 1995, Blau and Kahn 2000). Even in this case, two opposite theoretical approaches can be advocated. According to the neoliberal approach, female-dominated occupations require lower skills than male-dominated ones and that's why they are less rewarded. Analytically speaking, lower levels of (market) human capital explain the horizontal segregation which in its turn explains the gender pay gap (Polacheck 1987). Unfortunately, such a position doesn't fit the facts. First, studies have shown that male workers have been more successful in enforcing the definition of their jobs as skilled (Reskin 1993). Second, female-dominated fields pay less than male-dominated fields, both in the starting salary and in subsequent salary growth and promotions (England 1992, Roth 2006).

The debate on the "comparable worth" of occupations, which was very popular in the 1990's, has shown that women's jobs are not usually less skilled than men's. Rather, women's jobs typically provide less on-the-job training, shorter mobility ladders and less supervision of others (England 1992). As for the "family-friendly" presumption, many

[9] According to this model, which was first theorized by Lester Thurow (1972 and 1975), employers rank groups of workers (i.e. blacks vs white) in terms of their attractiveness. For example, blacks experience more unemployment than whites because employers rank them *below* whites employees in the labour queue. As a consequence, they are hired only *after* whites are hired. Reskin and Ross (1990) interpret the labour queue in terms of gender queues favoring men over women.

studies have highlighted that women's jobs report lower schedule flexibility, fewer unsupervised break times and less paid sick leaves and vacations (England 1992). Overall, it appears that female occupations pay less than male jobs occupation not *because* they require lower skill levels or because they are more family-friendly, but *notwithstanding* similar skill levels and fewer family-friendly arrangements (England 1992, Buding and England 2001). Evidence abounds that female-dominated jobs have pay levels which are lower than they would be if the jobs were filled mostly by men (Williams 1992). In other words, "women's jobs pay less partly because women do them" (Roth 2006, p. 62). These facts have led many to argue that women's jobs suffer from the cultural devaluation of all activities associated with women or with femininity. Hence, the process of feminization of a male-dominated occupation parallel its progressive devaluation: women are more likely to enter male-dominated occupations when their earnings, with respect to all jobs, are decreasing, and their opportunities for mobility and job autonomy decline (Williams 1989, Reskin and Ross 1990, England 1992, Reskin 1993, Crompton and Sanderson 1990, Cohen and Huffman 2003). In this perspective, the causal relation between the horizontal segregation and the gender pay gap is nothing for granted or rational, as a human capital approach would argue by reducing it to differences in skills and efforts. On the contrary, the pay gap appears to be due to a whole set of cultural and social assumptions devaluating women's jobs simply because women do them.

III.3. Family characteristics: Hakim vs Crompton

III.3.1. Do women "prefer" to care for family?

If the human capital theory reduces gender inequalities to differences in investments in market human capital by at least suspending the judgment on the "nature" of women's and men's choices, the preference theory developed by Catherine Hakim (2000) adds a further element in the debate: women choose to prioritize career over family on the base of their *preferences*. Women – she says – are different from men because of the different choices they make. Nevertheless, not all women are equal. Hakim argues that there are three groups of women: home-centred, work-centred and adaptive. Home centred women give priority to their families and after giving birth to their children either they don't work or they work marginally. Work centred women, on the contrary, give priority to their

employment careers and they are often childless. Adaptive women – the largest group – want to combine employment and family without either taking priority for one of the two aspects and, therefore, they either tend to choose part-time work or they adopt other strategies to combine full-time work with family life, such as having only one child or partly outsourcing care-work. In modern societies, and more in particular in liberal and laissez-faire societies[10], adaptive women account for around 60% in the female population, while home-centred and work-centred women account for one-fifth each. These three categories can be found also amongst men but with different proportions, as fewer men are home centred or adaptive. This difference in the proportions of the three preference categories between men and women is due, according to Hakim, both to social constraints and to biological factors, such as the difference in testosterone levels which, in her view, would make men more aggressive and competitive than women in the world of employment.

Hence, Hakim doesn't completely deny the role of economic and social structural factors in influencing "choices", at least apparently. Citing Bourdieu's concept of *habitus*, she affirms that "preferences do not express themselves in a vacuum, but within the context of local social and cultural institutions" (Hakim 2000, p. 168) and, therefore, they "do not predict outcomes with complete certainty" (Hakim 2000, p. 169). On the other hand, she argues that in modern societies, where "there is no single prescription for the good life and people have to choose between mutually incompatible values", structural constraints are becoming less important and their *relative* weight declines as the relative importance of lifestyles preferences steadily grows. The preference theory, she specifies, simply reinstates preferences as an important determinant of women's behavior and it states that they are increasingly important.

As reasonable her theoretical premise – apparently arguing a balance between the agency and the structure – may appear, her conclusions are rarely consistent with it. Hakim's awareness of the impacts of social conditionings is often overshadowed by her propensity to give priority to biological factors. As Crompton has already pointed out,

[10] Liberal and laissez-faire societies are societies where government policy does not actively force women into accepting only one model of women's role (Hakim, 2000, p. 157). Britain and the USA provide the main examples, having social, fiscal and labour policies that are "chaotic, confused and contradictory when compared to hegemonic modern societies". In contrast, "many European societies impose more coherent, consistent and unidirectional policies based on well-defined models of family life, sex-roles and the standard jobs" (Hakim, 2000, p. 18).

this tension often returns in her work (Crompton 2006). For example, with respect to teenage pregnancies in UK, Hakim admits that given the availability of welfare provisions in UK for mothers, women without strong professional aspirations may find more attractive and satisfying to rear their own child than gaining an educational qualification (Hakim 2000). By confirming what many welfare sociologists have been arguing for the last twenty years (Orloff 2006 and 2008; Lewis 2002, Lewis et al. 2008; Gornick and Meyers 2003 and 2006; Naldini and Saraceno 2008), she states that public policies influence maternity choices. Unfortunately, a few lines after having admitted the role of welfare provisions on women's choices, she states exactly the opposite, arguing that the choice of not aborting, after the contraceptive revolution, "reflects a real choice in most cases" (Hakim 2000, p. 49) as teenage girls derive pleasure, according to her, from the ownership of a child.

Another example comes from Hakim's arguments on the relation between preferences and social classes. If "preferences do not express themselves in a vacuum", then the effect of socio-economic conditions should not be neglected. Unfortunately, it is. In Hakim's view, the three types of preferences report the same proportions across social classes, ethnic groups and educational levels. However, as Crompton has highlighted (2006), empirical studies show that women in lower-level occupations or with no or lower qualification are more likely than women in the professions and with high qualifications to balance work and life by either leaving employment or switching to part-time. Similarly, the moral commitment towards maternal care lasts longer among working class women – with lower career opportunities – than among professional women (Crompton 2006). Contrary to Hakim's arguments, preferences do vary across social classes and educational levels.

Overall, her "structural" premises à la Bourdieu are not consistent with her essentialist arguments. Not surprisingly, Hakim states that differences between men and women, "will never disappear completely" (Hakim 2000, p. 141) and she labels choices as "genuine" (p. 169). In other words, no matter her references to the *habitus* and the impacts of social conditionings, she considers the subjective dimension in terms of a "pure" self, a transcendent "core" irreducible to any sort of constraints. That's why her arguments have found favor in conservative environments and many authors consider her as a neoliberal gender essentialist (Crompton 2006).

Furthermore, her position has also epistemological and methodological implications: as long as preferences are "genuine", they can clearly be reported. What women declare is what women prefer and the social research is called upon to "ask them directly and explicitly about their preferences" (Hakim 2000, p. 16) without worrying to much about digging into interviewee's words and understanding the reasons standing *behind* "declared" preferences. However, the task of any social scientist is, on the contrary, to dig into words and investigate the reasons of human actions. From this point of view, Hakim's positivist perspective on knowledge appears quite naïve with respect to the object of her research: human behaviors and values.

III.3.2. Work-life balance policies, family arrangements and gender equality at work

If according to the preference theory, most women "choose" to balance work and family responsibilities thus reducing the hours of work, theories focused on structural constraints, on the contrary, shed light on the unequal division of paid and unpaid work between men and women. In this perspective, "female" priority to work-life balance choices is "shaped" by structural constraints such as cultural expectations on women's and men's roles in society, the lack of adequate welfare services, limited career opportunities in the organisation, etc. Women "choose", certainly, but their choices are taken within a context. The change in the perspective is evident also in the language used by structuralist scholars: family characteristics are not defined as family-related *preferences* but, rather, as family-related *obstacles*.

Work-life balance issues have been investigated by two different "angles". On one hand, scholars in the area of gender, work and organisations[11] have analysed how work-

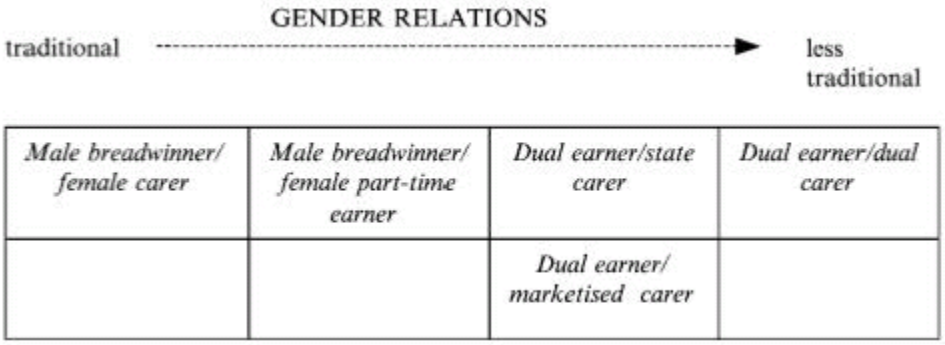
[11] I use the term "literature in the area of gender work and organisation" as a general term including two macro-strands in the sociological literature: studies of (gendered) organisations on one part and studies of occupations in a gendered perspective on the other. The two strands of literature have different unit of analysis: the organisation the former, the occupation the latter. The first strand has much develop in the 1990's upon the theory of gendered organisations (Acker 1990, Britton 2000). The second strand can be further specified in different traditions whose boundaries often overlap: the study of sex-segregated occupations (England 1992, Reskin 1993, Jacobs 1995); the study of non traditional jobs (Williams 1989, Jacobs, 1995, Wajcman 1998, Bagilhole 2002, Crompton 2006, Roth 2006, Boulis and Jacobs 2008), women and sciences (Evetts 1996, Glover and Campling 2000, Etzkowitz et al. 2008, Gupta et al. 2004, Schibinger et al. 2008, Smith Doerr 2004), the studies of professions (David and Vicarelli 1994, Sarfatti Larson 1977), the queueing tradition (Reskin and Ross 1990).

life balance *obstacles* affect female career outcomes and wages in the workplace (Folbre 1994, Wajcman 1998, Buding and England 2001, Sasser 2005, Glauber 2007 and 2008, Hodges and Budig 2010, Crompton and Lyonette 2006, Crompton 2006). On the other, welfare scholars have analysed how work-life balance *policies* affect gender equality both at the State (Orloff 2006 and 2008; Lewis 2002, Lewis et al. 2008; Gornick and Meyers 2003 and 2006; Saraceno and Naldini 2003, Naldini and Saraceno 2008) and at the organisational (McDonald et al. 2005, Lewis and Taylor 1996, Lewis 1997, Dex et al. 2001, De Cieri et al. 2005, Straub 2007, Di Santo and Villante 2013, Bombelli and Lazazzara 2014) level.

Among the scholars who systematically paid attention to both "sides of the coin" is Rosemary Crompton (1999 and 2006). In her work, she argues that the sexual division of labour – that is the unequal division of paid and unpaid work between men and women – is the "major explanation" for gender inequalities in the workplaces and she calls for the importance of adopting adequate work-life balance and gender equality policies in order to destructure it.

In her continuum of gender relations (Figure 2), she identifies four "models of family" or four forms of "gender arrangements", going from the most to the least traditional with respect to the division of paid and unpaid work (Crompton 1999 and 2006). The first one is the male breadwinner-female caregiver model, composed by a full-time male breadwinner and a full-time housewife. The second one is the male breadwinner-female part-time earner, which differs from the previous one in the fact that the female partner works part-time. The third model is the dual earner model, with both members of the couple working part-time. The fourth model is the dual earner-dual carer model, with both members of the couple working three quarter of the time and both responsible for unpaid work.

Figure 2 – The continuum of gender relations of Rosemary Crompton



Source: Crompton (2006, p. 193)

The more traditional the gender arrangement it is, the more negative consequences it has in terms of female occupation and gender equality in the labour market. The "connection" between gender inequalities at home and gender inequalities in the workplace finds evidence in the child penalty for motherhood. Many scholars have shown that motherhood is associated with lower pay and fewer chances of promotion (Folbre 1994, Waldfogel 1997, Lundberg and Rose 2000, Blau-Kahn 2000, Buding and England 2001, England 2005). Comparing childless women with mothers, Buding and England (2001) finds a 7% of penalty per child in terms of earnings, which is stronger for married women. On the other hand, several contributions have suggested that fatherhood is associated with an increase in pay in comparison to childless men (Glabuer 2008, Hodges and Budig 2010, Kelly 2012). Interesting findings have been also provided by qualitative studies focusing on the difficulties that women face in combining work and family. Women professionals and managers experience stronger work-life conflict than working class women (Wajcman 1998, Hochschild 2001, Wajcman and Martin 2002, Blair-Loy 2009, Crompton 2006, Roth 2006, Gerson 2010). As a consequence, either they delay or avoid maternity or they outsource care-work as much as they can (Roth 2006). On the contrary, working class women appear to be more "family-centred", as their lack of qualifications and low job experience would make their career progression difficult (Crompton 2006).

Viceversa, men don't experience, or experience in a much lower extent, the work-life conflict, as - by virtue of the sexual division of labour - they have less family responsibilities than women. Moreover, even if the male breadwinner-female housewife

model have become less common in western countries, in some professions men in traditional family arrangements still report greater career advantages with respect to their colleagues who are married with a working wife (Roth 2006). Pateman (1988) explains this mechanism in term of "sexual contract": marriage, she argues, "frees" men from family responsibilities and place them in a privileged position to invest in their career. The less the wife works, the most she can support her husband's career aspirations. The work contract, then, requires a sexual contract.

If the literature in the area of gender, work and organisation has paid much attention on the effects, in terms of gender inequalities, of the sexual division of labour, welfare scholars have investigated how the sexual division of labour itself can be affected by work-life balance policies, as long as they "shape" family arrangements. Work-life balance policies are made of three "core policies" (Gornick and Meyers 2006): family and parental leaves, early-childhood education and care services, working-time regulation. The *priority* given to some pillars rather than others and the *way* each pillar is designed has a strong impact in terms of models of family or "gender arrangements" (Crompton 1999). For example, policies focusing mainly on family leaves and providing insufficient child-care services encourage women to stay home once they have children (thus promoting a male breadwinner-female carer model of family). Providing part-time policies endorse women to balance paid and unpaid work (thus promoting a male breadwinner-female part-time carer), but with negative consequences in terms of gender parity, as women are confined to the so called "mummy tracks" (Schwartz 1989) and their career progression becomes more difficult (Lewis and Taylor 1996, Gornick and Meyers 2003, Crompton 2006, Lewis et al. 2008, Santo e Villante 2013). Anti-discrimination policies and good childcare services, on the contrary, support female full-time work (thus promoting a dual earner model of family), as the care of children is outsourced. Flexi-time policies and paternity leaves promote both a dual earner – dual carer family model, with both partners working "three quarter of the time" and both having equal family responsibilities. By challenging traditional gender roles (Fraser 1994), the fourth model pursues two objectives: gender equality and time for care (Gornick and Meyers 2003). However, as long as the sexual division of work won't be deconstructed in favour of new forms of gender relations (i.e. the dual earner-dual carer couples), gender equality will remain "unfinished" (Gerson 2010).

IV. Theories focusing on the agency of the subject vs theories focusing on structural constraints: a double shift.

Both the human capital and the preference theory make a causal link between gender *differences* (in characteristics) and gender *inequalities* and do not explore the role of structural constraints in shaping the former. By doing this, they tend to *justify* gender inequalities: women earn less than men, they are clustered in lower-paid occupations and progress more slowly through ranks *because* they make *different* choices with respect to work and family.

On the contrary, studies focusing on structural constraints adopt a critical approach by calling gender inequalities into question. They do it through two "steps". First, by not taking gender *differences* (between men and women) for granted. Second, by focusing on *equality* (between men and women) rather than difference. These two steps don't exclude each other as very often the same author consider them simultaneously.

The first step concerns supply-side factors: if women and men make *different* choices with respect to work and family, a structuralist approach investigates what's "behind" these choices. Theories focusing on the agency of the subjects explain female choices either by focusing on expectations (that family will limit their work returns of investments in market human capital) or by focusing on their "genuine" preferences (for balancing work and family life). On the contrary, theories focusing on structural constraints adopt a critical approach. In sociological terms, this means to focus on the sexual division of labour and the wider context of employment and care, with the aim of identifying the influence of work-life balance policies and/or socio-cultural assumptions about gender roles and/or gender bias in shaping women's choices. In econometric terms, it means to be aware of the mechanisms of *indirect discrimination* which encourages women to "anticipate" discrimination by making *different* choices which translate in *different* characteristics. I'll come back to this point later.

The second step concerns demand-side factors: if theories focusing on the agency of the subjects stress *differences* in choices (or characteristics) between men and women as a way to justify inequalities, theories focusing on structural constraints focus on *equal* choices (or characteristics). What happens indeed to gender inequalities if women and men make similar choices? If they "show" similar characteristics? If gender inequalities still persist, then they become hardly justifiable as long as they don't depend upon

workers' actions or characteristics. Indeed, they must depend merely on the demand-side factors. That is the reason why studies focusing on structural constraints often investigate men and women with *similar* characteristics in order to understand whether (and why) gender inequalities persist. In sociological terms, this translates into the choice of focusing, for example, on career-oriented women in high-skilled professions. In econometric terms, this means, on one hand, to focus on a homogeneous population thus reducing the bias due to unobservable (or at least hardly measurable) characteristics like ability and productivity. On the other, it means to "control" for all (observable) characteristics in order to figure out if *direct discrimination* occurs (I'll come back to this point later).

In this work, I adopt a structural approach in the understanding of gender inequalities and their explanatory factors. This doesn't mean to deny the fact that women and men can make different "choices". It means, simply, to assume a critical point of view on the concept of "choices" and investigate what's behind them, not to take them for granted. In other words, if women and men show different human capital and work characteristics, this will be interpreted assuming that "choices" and "preferences" are always embedded in cultural, social and economic constraints.

V. Demand-side explanations

Many studies have shown that gender inequalities still persist controlling for human capital, work and family characteristics (Wajcman 1998, Roth 2006). The "part" of gender inequality which persists no matter similar attributes is considered in the econometric literature as due to discrimination. If the econometric literature on gender inequalities in the workplaces has much focused on discrimination and how to "quantify" it (Blau-Kahn 2000), the sociological literature in the area of gender work and organisation has focused on the *mechanisms* underneath, shedding light on the reasons of the female disadvantage in non traditional jobs. Two mechanisms have drawn the attention of social scientists: gender bias or gender schema from one hand (Valian 1999) and he gendered dimension of organisations from the other (Acker 1990, Britton 2000).

V.1. Discrimination

The econometric literature distinguishes between two "components" of pay inequalities: the first component is due to differences in observable characteristics (human capital, subjective and institutional work characteristics, family characteristics); the second component is due to differences in unobservable characteristics or to (direct) discrimination. Direct discrimination is defined as the part of the pay gap which occurs *not withstanding* equal characteristics between men and women. This distinction reflects the opposition between supply-side explanatory factors and demand-side explanatory factors. As above mentioned, neo-liberal economists tend to interpret the first component (supply-side) as a justification of the pay gap, while the second component (demand-side) represents the part of the gap due to "discrimination" against women (Fabbri 2001).

Many sociologists have challenged this interpretation by adopting a critical approach. Olsen and Walby (2004) distinguish between indirect discrimination (concerning differences in characteristics: first component) and direct discrimination (concerning the part of inequalities given equal characteristics: second component). Indirect discrimination is associated with observable characteristics and can affect individuals' motivations, preferences and attitudes. For example, the expectation of systematic disadvantage in the labour market encourage women to "anticipate" discrimination, making family-friendly choices. Therefore, it is incorrect to assume, as neoliberal economists do, that differences in the pay gap are "legitimate" because they reflect differences in individual characteristics as long as individual characteristics anticipate discrimination (Olsen and Walby 2004).

In his study on the pay gap among physicians, Baker (1996) finds that, controlling for all characteristics, there is no gender difference in pay. That is, regressing all explanatory variables, being a female doesn't have a significant impact on pay. In his OLS model, differences in specialty and practice settings account for the majority of the difference in hourly earnings between the sexes. Nevertheless, he admits that his study "did not address the process by which male and female physicians choose – and are chosen for – their specialties and practice settings". Such choices involve a variety of considerations: "these include their preferred practice environments and each physician's sense of his or her social role and family responsibilities. Limitations in opportunity, real and perceived, may also be important". In other words, social expectations on gender roles in society, which

reflects the sexual division of labour, play an important roles in "shaping" choices opportunities. Therefore, he concludes, "the results of this study should not be interpreted as the evidence that discrimination is no longer a problem" (Baker 1996, p 963). In short, if there is no evidence of (direct) discrimination *after* controlling for individual characteristics, it doesn't mean that there is no evidence of (indirect) discrimination *at all*.

V.2. Gender bias or gender schema

Employers discriminate women also on the base of their expectations on women's performance which in its turn is conditioned by gender bias. One of the foremost contribution on how gender bias function is Virginia Valian's *Why so slow? The advancement of women* (1999). In the book, Valian sheds light on the reasons of the slow advancement of women into traditional-male occupations through a literature review of the studies in the fields of social and cognitive psychology as well as sociology and economics. Her analysis is centered on two concepts: the gender schema and the accumulation of advantages (and disadvantages). Gender schema are cognitive frameworks or hypothesis about sex differences, playing a crucial role in women's and men's professional lives[12]. They are a set of implicit or unconscious expectations on female and male's characteristics and behaviors which belong both to men and women. In white, western, middle-class societies, "the gender schema for men includes being capable of independent, autonomous action (agentic, in short), assertive, instrumental, and task-oriented. Men act. The gender schema for women is different; it includes being nurturant, expressive, communal and concerned about others" (Valian 1999, p. 13). As such, these expectations influence the evaluation of women and men's work and their performance as professional. Their most important consequence for their professional life is that men are consistently overrated, while women are underrated. Valian thinks of professions but her analysis applies to all scientific and traditionally-male dominated

[12] Schema are cognitive frameworks or hypothesis about social phenomena. Hence, gender schema are a particular type of schema, concerning gender differences. The concept of schema differs from the concept of stereotype. Schema can be accurate or inaccurate, positive, negative or neutral. Moreover, they are a necessary cognitive framework which enable us to put all the information together and give a sense to the world around us. On the contrary, stereotypes tend to describe phenomena in a inaccurate and negative way. Therefore, schema are a more inclusive concept that stereotypes.

occupations, where male's traits and attributes fits with social expectations about the traits and attributes that people, in those occupations, should have.

Gender schema are acquired from the early childhood and are strongly intertwined with the sexual division of labour. It's by observing the unequal divisions of paid and unpaid work between men and women – both at home and in the wider world - that children search for an explanation for it and build their gender schema. The most simple explanation, Valian says, is to make a link between biology and talents, interests, preferences, attitudes and behaviors. However, biology is not destiny (as neither is the social environment): "neither determines behavior: both influence it" (Valian 1999, p. 12). This is a very important passage because it clearly makes a link between the sexual division of labour and gender bias (or, in Valian's terms, gender schema). That is to say that the sexual division of labour is not only a material device, assigning greater family responsibilities to women and thus reducing their time for paid-work. Indeed, it is also a cultural device, creating gender schema and justifying them by appealing to differences in nature. For example, to explain and justify the fact that almost all engineers are men and almost all homemakers are women, "people may say that men have traits and abilities that fit them to be engineers and cause them to choose engineering over homemaking, and women have traits and abilities that fit them to be homemakers and cause them to choose homemaking over engineering" (Valian 1999, p. 13). By assigning different characteristics and skills to men and women, the sexual division of labour works as a cultural constraints on people's choices and evaluations.

V.2.1. The Matthew effect

Gender schema are strictly connected to two other mechanisms which have been used to describe the obstacles that women face are the Matthew effect (which is in turn strictly connected to the "self-fulfilling prophecy") and the Matilda effect.

The Matthew effect has been elaborated by Robert Merton in his study on the allocation of rewards to scientists and derives its name from the parable of the talents in the gospel of Matthew, according to which "for unto every one that hath shall be given, and he shall have abundance: but from him that hath not shall be taken away even that which he hath" (Merton 1968). According to the Matthew effect, eminent scientists get

disproportionately greater credit for their contributions to science while relatively unknown scientists tend to get disproportionately less credit for comparable contributions. In other words, there is a pattern of recognition skewed in favor of the established scientists acquiring further advantages (Merton 1968). Like in interest on capital, advantages accrue and, like interests on debt, disadvantages accumulate. This mechanism – cognitive material presented by an outstanding scientist may have greater stimulus value than roughly the same kind of material presented by an obscure one – give place to a self-fulfilling prophecy.

Indeed, the material of the outstanding scientists will be read more carefully, "and the more attention one gives it, the more one is apt to get out of it" (Merton 1968, p. 7). This becomes a self-confirming process, as the eminent scientist can reinforce his image in the scientific community, confirming the expectations on him.

Following Merton's analysis, as women scientists are often outsiders or in subordinated positions, they are more likely to get disproportionately little credit for their contribution thus accumulating disadvantages and confirming the expectations that women don't fit in science as men do. In this perspective, the occupational disadvantage of women is the result of mechanisms of accumulation of advantages and disadvantages at work (Merton 1968, Zuckerman 1975). Virginia Valian reads Merton's concept in a gendered perspective: since gender schema affect the evaluation of women's and men's performance, she says, "the long term consequences of small differences in these evaluations can, as they pile up, result in large disparities in salary, promotion and prestige" (Valian 1999, p.3). In other words, minor instances of group-based bias add up to major inequalities. Indeed, expectations on any further performance will be influenced by our first evaluation, thus giving place to a self-confirmed process. Similarly, attributing to men and women different characteristics and attitude, we treat them in accordance with our expectations about those characteristics, thereby confirming hypotheses about the different natures of males and females. An example can be a work meeting, where often women talk less than men because they don't feel recognized in their professional role. The consequence of a simple "rational" choice (not talking gives a minor disadvantage than talking without being listened) can provoke a disadvantage in terms of reputational career (Evetts 1996, Valian 1999).

V.2.2. The Mathilda effect

Another interesting mechanism, foremost explored in the studies of women scientists, is the Mathilda effect. Named after the U.S. women's rights activist Matilda Joslyn Gage, who first observed the phenomenon at the end of the 19th century, it was then used by Margaret Rossiter (1995) to describe the systematic denial of the contribution of women scientists in research, by attributing their work to their male colleagues. The Mathilda effect is strongly related to the Matthew effect, as women scientists' contribution is as long as male scientists are the ones who often coordinate research groups or held the top positions in the scientific organisations and therefore enjoy higher visibility, while women are comparatively unknown. Rossiter provides many examples of the Mathilda effect. Rosalind Franklin, for example, is now recognized as one of the main contributors to the discovery of DNA structure but at the time her work was minimized in the distorted autobiographical account written by two of her male colleagues - Francis Crick and James Dewey Watson - who actually won the Nobel Prize after her death. Another case of theft of Nobel credit was Lise Meitner, who worked for decades with Otto Hahn on nuclear fission. In 1944, Hahn was awarded the Nobel prize for one of the biggest discovery of the century. An "happy ending" story comes instead from Frieda Robscheit-Robbins, the associate for thirty years of pathologist George Hoyt Whipple and the co-author of nearly all of his publications. After having being awarded the Nobel, in 1934, realizing the indebtedness to her and the injustice of the award, he decided to share the money with her and two other female assistants (Rossiter 1995).

V.3. Gendered organisations

In explaining the persistence of gender inequalities no matter the absence of normative (and therefore "visible") barriers, many authors have focused on the functioning and characteristics of the organisations. The reasons of inequalities, they argue, must be searched inside the firms and in the organisation of work.

Within this strand of literature, Kanter's *Men and women of the corporation* (1977a) is still today considered a milestone in the studies of gender and organisations. In her ethnography in a big selling company, she analyses what happens when women are "token", that is when they account for no more than 15% of the workforce. Her works

investigates the effects and the dynamics of tokenism: for example, the pressure on women's performance (due to their higher visibility when they are few), their isolation in the organisation and from informal networks (the so called "old boy networks"), and their entrapment into pre-defined roles. Kanter gets deep into the description of the mechanisms of the male culture within organisations, arguing that the image of the top corporate manager include "a masculine ethic" (1977a) and provides a very precise description of the "role traps" in which women-token are confined in male-dominated organisations (1977b). However, in Kanter' view, the dominance of the male culture is only a matter of numbers: the male culture is stronger as long as men outnumber women in a significant proportion. That's why her approach, she says, can be generalized "beyond male-female relations to persons-of-one-kind and person-of-another-kind interaction in various contexts" (Kanter 1977b, p. 967). In other words, her models fits for any minority, for examples black workers in white-dominated occupations or also male workers in female-dominated occupations. Her implicit assumption is that once women will have reached the "critical mass", gender inequalities will disappear.

Many have criticized this "critical-mass" assumption by showing that women's exclusion from the top positions occurs also in mix-sex occupations which have recently went through a process of feminization or by demonstrating the success of men in female-dominated occupations (Yoder et al. 1996, Williams 1992). The case of medicine itself contradicts Kanter's conclusions, where many studies have shown that gender inequalities persist no matter the feminization of this profession (Baker 1996, Hoff 2004, Sasser 2005, Carnes et al. 2008, Boulis and Jacobs 2010, Crompton and Lyonette 2011, Pas et al. 2011a, Magnusson 2015),

No matter her "gender-neutral" approach, Kanter's work has nevertheless shed light on many *cliché* about women at work. Stereotypes like "women are too rigid and aggressive to be good leaders", "women don't help other women", "women are less committed to paid work because of their higher commitment to care work" have been explained by Kanter in terms of opportunities, power and numbers (Falcinelli 2009).

If Kanter has explained stereotypes in terms of "material" constraints (numbers), the following "generation" of scholars in the study of gender and organisations – mostly post 1980's – adopted a "cultural" approach, focusing on "gendered" organisations and gendered identities (Acker 1990, Cockburn 1991, Gherardi 1995, Britton 2000). If, as

above mentioned, gender inequalities persist even when women have reached the critical mass, then Kanter's "numerical" paradigm is not sufficient. In order to explains the persistence of this "paradox", some scholars called into question the "gendered nature" of workplaces. The idea is that organisations are not gender-neutral but, on the contrary, they are defined and structured in terms of a distinction between masculinity and femininity which inevitably will reproduce gender differences (Britton 2000). Gender is a constitutive element of organisations which not only influences processes and identities but also reflects and preserves men's interests. Indeed, organisations promote the idea of an "abstract worker" which, in reality, is based on male characteristics, with its "body, its sexuality, minimal responsibility in procreation and conventional control of emotions" (Acker 1990, p. 152). This idea includes being assertive and decision-maker, but also working extra hours, while never interrupting its career, for example, by taking parental leaves (Bombelli 2000). The so called "face-time" culture, evaluating employee's performance more on the base of the time spent in the office than on their actual results, imply that (ideal) workers have no family responsibilities (Pateman 1988, Gherardi 1995, Wajcman 1998, Blair-Loy 2009). Being the ideal worker doesn't only imply to be free from family responsibility: it also can mean to have a nonworking spouse at home who takes care of the children, of the house, and who support her husband's career's aspiration. The work contract imply a sexual contract, which make fathers and married man more likely to climb the career ladder than single and childless men (Pateman 1988). In other words, the gendered nature of organisations is based on, and reinforces, the gendered division of labour.

Hence, the paid and unpaid division of labour between men and women is deeply intertwined with the gendered nature of organisations. When Crompton (2006) takes the distance from the "cultural turn" in the study of organisations, leading, in her opinion, to a considerable emphasis on the construction of sexual identities, her purpose is not to reject this kind of contribution, but to refocus the attention on its "material" origin: the sexual division of labour. There is a sort of "fundamental" priority of the sexual division of work which explains why the "stigma of motherhood" (Crompton 2006) affect *all* women, both mothers and childless women. Indeed, the sexual division of labour is both a material and a cultural device: as a material device, it reduces working mother's time dedicated to paid work, thus negatively impacting their earnings and chances of

promotions. As a cultural device, it promotes the idea of an “ideal worker” with male characteristics, it affects employers’ expectation and evaluations on men and women’s work, it shapes individual “choices”.

Chapter 2 – The methodology

Most of the studies on gender inequalities in the medical profession using quantitative data sources have been taken place in the United States, where federal and national datasets on physicians are available. Only a few studies have been conducted in Europe, and more specifically, at my knowledge, in UK (Crompton and Lyonette 2011), the Netherlands (Pas et al. 2011) and Sweden (Magnusson 2015). This study aims to fulfil the gap in the European literature by focusing on the Italian labour market.

A dataset on more than a thousand of Italian (male and female) physicians has been used in order to investigate gender inequalities. An online survey has been sent to 2205 physicians working in five hospitals in the Lombardy Region: the Policlinico Hospital in Milan, the Civil Hospital in Legnano, the Sant'Anna Hospital in Como, the San Donato Hospital in San Donato and a fifth hospital in Milan whose general direction asked to remain anonymous in order to participate. It will be called with a fantasy name: the Machado Hospital. The survey was sent in order to collect demographic, human capital, work and family characteristics. A few questions on work environment and the organisational culture have also been proposed. Out of 2205 physicians, 1074 answered the questionnaire, for a response rate of 48.7%.

I. The S.T.A.G.E.S project

This research is part of the European project S.T.A.G.E.S. (Structural Transformation to Achieve Gender Equality) at the University of Milan. Under the coordination of the Department for Equal Opportunities of the Italian Presidency of Council of Ministers, and assisted by a research centre specialized in gender and science (ASDO), five research Institutes/Universities from Italy, Germany, Denmark, Romania and the Netherlands have been implementing a self-tailored action plan in 3 strategic areas : women-friendly environment, gender-aware science, women's leadership of science. The project took start

in January 2012 and it will end in December 2020. It is made of two phases: the first phase (January 2012-December 2015) was devoted to the implementation of the action plan, while the second phase (January 2016-December 2020) will be devoted to ensure the sustainability of the plan. At the University of Milan, the project has been coordinated and implemented by the research centre GENDERS (Gender & Equality in Research and Science)[13]. The Centre has implemented an integrated set of actions aimed at triggering structural change processes to foster gender equality and equal opportunities by focusing on the faculties of agriculture and medicine, but also envisaging actions concerning the whole University and the territory (for further details on the S.T.A.G.E.S. project see the guidelines, Cacace et al. 2015[14]). The research on gender inequalities on medical careers is one of the actions of the project.

II. Field and methods

At the University of Milan (UMIL), gender inequalities in academic-scientific careers persist throughout all disciplines. At the time when the action plan was drafted, 67% of the post-doctoral students and almost half of the researchers at the faculty of Medicine were women, while only 15% of women were full professors (Cacace et al. 2015). Such unbalance brought the S.T.A.G.E.S team to decide to devote an action of the plan to the study of the reasons of gender inequalities in medical careers. Since the beginning, the research was designed with the idea of focusing both on academic and hospital medical careers as, at UMIL, they are strongly intertwined. Indeed, the University of Milan itself was founded in 1924 by merging an ancient Academy of arts with the Policlinico Hospital[15], which is the main Hospital in UMIL and the oldest one in town. Today, almost one third of UMIL employees work in the eight medical departments of the University.

At first, the idea was to focus on a single case study, by entering into the Policlinico

[13] The S.T.A.G.E.S project team at the University of Milan (UMIL) is composed by: Dr. Daniela Falcinelli (Team leader), Prof. Luisa M. Leonini (Scientific Responsible 2014-2015), Prof. Claudia Sorlini (Scientific Responsible 2012-2014), Prof. Bianca Beccalli, Prof. Maria Domenica Cappellini (head of Department of Internal Medicine and Medical Specialties at the Policlinico Hospital), Prof. Antonio M. Chiesi (head of the Department of social and political sciences at UMIL), Dr. Elena Del Giorgio, Camilla Gaiaschi, Prof. Marisa Porrini, Dr. Patrizia Presbitero. See www.stages.unimi.it Accessed on February 28th, 2016.

[14] The guidelines can be downloaded here: http://www.stages.unimi.it/news.php#25. Accessed on February 28th, 2016.

[15] For further details on the history of the faculty of Medicine at the Policlinico Hospital: http://www.lastatale90.it/. Accessed on February 28th, 2016.

and conducting an organisational ethnography. This approach would have shed light on the micro-dynamics and daily practices that produce inequalities. By analyzing the every-day experiences of people working in the hospital, it would have provided an up-close understanding of the mechanisms of gender discrimination. Nevertheless, this idea ended not to be realizable, as renovation works started a few weeks after the launch of the S.T.A.G.E.S project at UMIL. In a short time, the Policlinico became a giant open-air construction site whose works haven't finished yet today. Many operational units were temporary displaced and physicians were often obliged to work in different buildings.

This event had led the S.T.A.G.E.S team to discard the idea of conducting an organisational ethnography at the Policlinico. Conducting interviews was then taken in consideration but it didn't seem – at least by itself – to adequately balance the loss of the advantages provided by ethnography and more specifically its in-depth analysis of the micro organisational dynamics. The team opted then for a (census) survey to sent to the whole population of the Policlinico with the idea of extending it to other hospitals. If the advantages of a single-case in-depth analysis would have been lost, the advantages of a large-scale survey could be at least taken. The research would have lost in details but it would have gained in representativity. Moreover, the idea of conducting interviews was not completely abandoned. If the quantitative data collection and analysis have been the object of the implementation phase of the S.T.A.G.E.S. project, a qualitative investigation will be realized during the sustainability plan (see conclusions for further details).

After a long phase of contacts and bargains (see next paragraph), five hospitals of the Lombardy Region have been surveyed and a dataset of more than a thousand physicians was collected. Investigating gender inequalities in this specific population has its advantages and its limits. On one hand, it is a homogeneous population which allows to reduce unobserved heterogeneity as it is composed by very similar individuals in terms of educational and work investments. On the other hand, for these same reasons, one can say that it is not representative of the whole labour market as long as female physicians are not adequately representative of the general female labour force. The latter comprehends a very large spectrum of female workers, going from residual and part-time workers to high-skilled professionals working in high-performance jobs (Crompton 2006) characterized by long hours of work. Considering the two extremes of the spectrum, female physicians are much closer to the latter than the former.

However, as already mentioned in the introduction, if gender inequalities occur with respect to a very specific and committed population, it is very reasonable to think that they occur in a greater extent to the rest of the labour market. In other words, if discrimination occurs *no matter if* women are very similar to men (in human capital and work characteristics), it is likely to occur in a greater extent if women are much more heterogeneous among each-other and difference in work attributes, among women and with respect to men, are bigger. Moreover, the population of this research doesn't only represent a very specific slice of the labour market – the physicians – but, within this slice, its excellence – the physicians in Lombardy. As a consequence, it is reasonable to think that if gender inequalities occurs among physicians in Lombardy, it is reasonable to think that they can occur not only in other similar (high-quality) contexts in Europe, but also in less efficient health systems in Italy.

III. The access to the field: challenges and resistances

Being part of a EU project has certainly helped in opening the field. The access to the Policlinico Hospital and to the San Donato hospital was made possible by, respectively, two members of the S.T.A.G.E.S. research group, that is the head of Department of Internal Medicine and Medical Specialties at the Policlinico and by the scientific responsible of the project. The access to the remaining three hospitals – the Legnano Hospital, the Como Hospital and the Machado Hospital – were made possible by the Health Department at the Lombardy Region, which is a partner of the project in the activities on gender medicine[16].

The three of them put me in contact with the "gate-keepers" of each organisation: the general director at the Policlinico, the general director in Legnano, the head of one of the emergency units in Como and two physicians in S. Donato and Machado who, in their turn, put me in contact with the vice-director of the Health Department of the former and the Human Resources team of the latter. The first four organisations (Policlinico, Legnano, Como, San Donato) were all very committed to gender equality and provided me with all the support I needed, also in terms of internal human resources (most of the

[16] More specifically, the access to the three above-mentioned hospital was made possible by Dr. Maria Antonietta Banchero of the Health Department of the Lombardy Region.

time the IT and/or HR offices), during the research. This is not the case of the fifth organisation (the Machado hospital): the commitment of the human resource unit whom I've worked with – it is my impression – was only formal, their participation to the research drawn by the need to please the Health Department of the Region which strongly promoted it. As a consequence, they put many limitations in the research with respect to the number of physicians to be contacted and they didn't provide me with all the information that I was looking for on the population. As it will explain later, this had an impact on the of the results.

It is worth to mention that the five above-mentioned hospitals were not the only ones to be contacted. In total, ten hospitals have been asked to participate and only five accepted to enter into the research. I didn't personally carry on the contact-phase at the very beginning: the STAGES project started in January 2012 but I have entered into the research group only in October 2013. At that time, the research group had already asked four hospitals holding an agreement with UMIL – among them the Policlinico – to participate. The Policlinico was the only one accepting their request. Two of them, at first, showed interest in entering into a European project but once they realized the aim of the research – mapping gender inequalities in their organisation – they didn't go further. The third hospital actually accepted, the participation to the survey was approved by the board but the change of the general director stopped the negotiations. In the three cases, the actors in charge of the negotiations put "implicit resistance" to gender equality (Mergaert and Lombardo 2014) and no clear explanation was provided to the research group for their denial. Furthermore, in one of the three hospitals, a private one, such resistance clearly contradicted its public image of a women-friendly company. This mechanism is not new, as scholars have highlight the gap existing in many organisations between their good intents and their real implementation, suggesting that the former are sometimes only a marketing tool to ameliorate the company's profile (Bombelli and Lazazzera 2014).

No matter the failure in drawing the three hospitals into the research, the attempt required an important amount of time. The whole process – which implied choosing the hospitals, getting in contact with them, having meetings with the persons responsible for negotiating with the research team and providing all the documents they required in order to take a decision – started in January 2012. After my arrival, in October 2013, only the Policlinico hospital had agreed to be part of the research, putting its Equal Opportunity

Office and its IT Office at disposal in order to organize the survey. The first of the five surveys, which was conducted at the Policlinico, would have been sent in June 2014, two years and a half after the beginning of the project. Once entered into the project, while preparing the questionnaire I have contacted six further hospitals. Four of them accepted. Two didn't. For one of them the denial was not due, at least at that phase of the negotiation, to any implicit or explicit resistance. On the contrary, the Equal Opportunity Committee of the Hospital was very interested in the research but it was already committed on a similar survey regarding employees' wellbeing and work-life balance. Therefore, at that time it couldn't engage its human resources in a second survey. The second hospital made open resistance. I was introduced to the president of the Equal Opportunity Committee of the hospital who tried hard to convince the general director to participate into the research. The director didn't want to and the reason of his resistance, as he personally explained to me, was due more to the fear of making public the level of precarious work in the organisation (which is mostly female in any cases[17]) than to show gender inequalities.

Over all, of the ten hospitals contacted, five participated to the survey while five did not. Among the five hospitals which didn't participate, four have shown implicit or explicit resistance with respect to gender equality or, more in general, to social equality. Among the five hospitals participating, four have proved to be very helpful while one has in some way hindered the research as its engagement was strictly formal. I will come back to this point later.

IV. The health system in the Lombardy Region

The Italian National Health System (NHS), established in 1978, is universal and financed by the government through taxes. Nonetheless, the strong policy of decentralization, which has been taking place since the early 1990s, has gradually shifted powers from the state to the twenty-one Italian regions. As a consequence, the state now

[17] Data are published in the Equal Opportunity Plan ("Piano di Azione Triennale") of the organisation which was provided to me by the president of the Equal Opportunity Committee. The Equal Opportunity Plan is a document containing information on women and men's career trajectories as well as a specific plan of actions to be implemented in order to foster gender equality. It is prescribed by law to all Public Administrations.

retains limited supervisory control and continues to have overall responsibility for the NHS in order to ensure uniform and essential levels of health services across the country, while regions have a strong autonomy in structuring and organizing their own health system (Nuti et al. 2012)

The health system of the Lombardy Region is quite peculiar in the Italian context as it incorporates the principle of universal coverage and solidarity but, on the other hand, it promotes the development of a mixed system, made of public and private health care providers. In Lombardy, private hospitals represent one third of the entire offer. Patients can access to private providers at the same costs as if they went to public ones as services are reimbursed by the Region (Pelissero 2010). The promotion of the competition between public and private providers, alongside with the affordable costs of the latter, have settled the condition for the development of a very rich – in services and quality – offer which is able to attract many patients from all over Italy.

According to data provided by the Health Department of the Lombardy Region[18], there are 220 health care providers in Lombardy. Around one third of them are private and two third are public. Out of the 220 providers, 24 are University hospitals or IRCCS ("Istituti di Ricovero e Cura a Carattere Scientifico"[19]). Lombardy has the highest concentration of medical schools in Italy, as 7 Universities (five public and two private) have a faculty of medicine and surgery ("Facoltà di medicina e chirurgia"). Out of the 24 IRCCS, four are public (among which the Policlinico). The whole health system in Lombardy provides employment for 100.000 workers, while 10% of the services are provided to patients coming from other regions. In some specialties, as oncology and the cardio-vascular area, the percentage of patients living outside Lombardy increases to 50%. Half of the stroke units in Italy are settled in Lombardy.

V. The choice of the five hospitals

The five hospitals were chosen in order to be as more representative as possible of the hospital system in the Lombardy Region. Out of the five hospitals, three are public (Policlinico, Legnano, Como) and two are private (S. Donato and Machado). Three are

[18] Data were provided by Federica Petraglia, of the Health Department of the Lombardy Region.
[19] "Scientific Institutes for hospitalization and care" in Italian.

University hospitals or IRSCS (Policlinico, San Donato and Machado) and two are not (Legnano and Como). Among the three IRCCS, one is public (Policlinico) and two are private (San Donato and Machado). University hospitals hold an agreement with the University. This agreement has three main implications. First, some units (or all of them) are directed by full professors. Second, part of the medical work-force in the hospital (mainly in the top positions) is made by academic physicians[20]. Third, because of the presence of academic physicians and its tight link with the University, the hospital's mission is double as it is focused not only on clinics and care but also on research (and teaching). On the contrary, "regular" hospitals don't have any agreement with the University. As a consequence, their medical work-force is made only by hospital physicians focusing on clinics and referring to one single employer: the hospital.

From a geographical point of view, two hospitals (Policlinico and Machado) are in Milan. Two hospitals (Legnano and San Donato) are in two small cities outside Milan which are part of the "metropolitan city", a recently constituted administrative unit which has taken the place of the old province. Nevertheless, their location with respect to Milan is different. San Donato Milanese is 12 km away from downtown Milan and it is considered part of the bigger urban area, a sort of an annex to the city. It is located within the ring-road surrounding Milan and it is connected to downtown by the subway. Legnano, on the contrary, is 31 km away from downtown Milan, it is situated outside the ring-road and it is not connected with the subway. If the former is felt as being part of the city, the latter is not. Finally, the Como hospital is in the city of Como, which is not only another municipality but also another province, 50 km away from Milan, located closed to the Alps and besides the homonymous lake, near the Swiss border. As such, it represents the only hospital out of the five ones located in the regional territory.

The five hospitals vary not only in terms of their sector (public vs private), vocation

[20] Physicians can be either academic or hospital physician. Academic physicians can be either "convenzionati" (holding an agreement with the hospital) or "non convenzionati" (not holding an agreement with the hospital). "Non convenzionati" physicians are "pure" academic physicians. As such, they are mainly focused on academic research, they follow the academic career track and they refer only to one employer: the University. "Non convenzionati" physicians are quite rare. Indeed, most of academic physicians are "convenzionati", thus holding an agreement with a hospital. As such, their activity is split between research and clinic and they follow a double career: as professor in their own University and as physicians at the hospital. As a consequence, they have two employers: the University and the hospital. Because in Italy academics earn less than physicians, the legislator has decided that academic physicians who are "convenzionati" must earn as much as their hospital colleagues (law 200/74). Therefore, their base salary is paid by the University and the rest is paid by the hospital.

(scientific or clinic) and geography (city vs province). They also show differences in their size. The Policlinico is the largest hospital reporting a medical population of 902 physicians, followed by Legnano (721 physicians). Machado and Como are in the middle, with, respectively, 587 and 524 physicians, while San Donato is the smallest hospital reporting a medical population of 302 physicians, slightly less than one third of the Policlinico.

VI. The data collection

A questionnaire has been sent by email to the physicians of the five different hospitals. The data collection took from two to three months for each hospital and more than one year overall to be realized, starting in June 2014 and ending in July 2015. The first organisation in which the survey was realized was the Policlinico hospital, followed by Legnano, Como, San Donato and, finally, Machado. The physicians received the survey by email and each hospital contributed to advertise the initiative in its own specific way. San Donato and Como organized a public meeting with the heads of the units of the hospital in which the research team presented the survey and invited them to spread the word among their subordinates. Machado has announced the arrival of the survey in the letter containing the monthly pay. Policlinico and Legnano advertised the survey on their Intranet. After the first email containing the web link to the survey, at least three email recalls in each hospital have been made in order to foster the rate of response.

The survey was conducted by the Laboratory of Opinion Polls (LID) at the University of Milan[21]. In two cases (Policlinico and Legnano), the hospital decided to handle the submission internally: the questionnaire's link was sent by email by their IT offices and data were collected afterwards by the LID. In one case (Policlinico), the web link of the questionnaire was "universal" while in the other four hospitals was "personalized". The universal link is the same for all physicians and, as a consequence, respondents can't be identified if needed.

[21] The Laboratory had the task to computerize the questionnaire through the software IdMonitor V 4.9.2., to send the questionnaire's web link to the physicians by email, to collect data, match them with the dataset provided by the hospitals (through a numeric code associated to each cases) and deliver it to the research group on a Spss format. Afterwards, I have transported them into STATA and merged them in one single file.

Indeed, beside the dataset collected through the survey, each hospital provided me with a dataset containing information on its medical population (or, in the case of Machado, on part of it, see below). Each dataset contained different information on its physicians, like for example the type of practice, the gender, the rank, the specialty, etc.. Policlinico and Legnano provided me with the richest and most detailed datasets, while Machado was the least generous.

In the cases where the web link of the survey was personalized and the respondents where, as a consequence, identifiable (Legnano, Como, San Donato and Machado), the data collected through the questionnaire were "matched" with the dataset provided by the hospitals through a numeric code associated to each case. This has had an undoubtable benefit as long as it allowed me to avoid to pose the question (i.e. are you a male or a female?) when the information (i.e. gender) was already available and, therefore, to shorten the questionnaire and its time of compilation. Only in the case of the Policlinico the dataset drawn from the survey couldn't be matched with the one provided by the hospital because of their choice to use a universal web link. As already mentioned, the universal link doesn't offer the possibility to identify respondents, nor to matched them to a second dataset. For the same reason, if one day there will be the conditions to repeat this study in a longitudinal perspective, the Policlinico dataset will be unfortunately dropped. The Policlinico choice of using a universal link was due to the fact that the Equal Opportunity Office and IT office – with I've worked whom – explicitly asked us to do so in in order to guarantee the maximum level of privacy of the physicians.

VII. The questionnaire

The questionnaire aimed to collect information on physicians' demographic, human capital, work and family characteristics as well as opinions on the work environment and the organisational culture. Sixty-six questions have been formulated in total, with their number varying according to the dataset provided by each single hospital, the type of practice[22] and the answers given by the respondent. The questionnaire was written and

[22] Many American scholars use the term "practice setting" to refer to the setting of the medical practice, which can be, for example, a solo practice, a group practice, a practice in hospital, in Hmo - Health maintenance organisation, at University, in government, etc.. The term practice setting emphasizes the "place" where a physician practices. On the contrary, I prefer to use the term "type of practice" (or simply

submitted in Italian and it can be found in appendix 1. Questions on demographic characteristics include the gender and the year of birth of the respondent. Questions on educational credentials include the grade of the medical degree, possible honors, the type of specialty and further educational titles (second specialty, PhD, masters, etc.). Questions on work-related human capital characteristics include the number of years of work experience, the number of years of seniority and the number of weekly work hours. With respect to work hours, respondents have been asked to specify how many hours they have worked within the organisation and outside the organisation to control for free-lance physicians working in more than one hospital. Physicians were also asked to provide the number of hours of private practice. In order to explore physicians' propensity for mobility, they have been asked to provide the number of hospitals in which they have worked and if they are willing to move to another city in order to be promoted. Motivational drives have been explored by asking respondents why they have changed hospital (if they did) and why they work extra-hours (if they do).

Questions on institutional work characteristics include the type of practice, the contract, the rank within the organisation and pay. The contracts are divided into four items: open-ended contracts, short-term contracts, contracts of collaborations/grants and free-lance contracts (in Italian "partita Iva"). Ranks are different between public and private hospitals (as the former follow the national collective agreement while the latter don't) and also between the two private institutions, as each of them has signed its own specific union contract. Physicians in top positions have been also asked to specify the year in which they have been promoted. As for the pay, I have asked for the gross annual income in order to better assess the impact of private practice on total income. Finally, with respect to the specialty, this could have been assessed either by asking the specialty school or the operational unit in which the respondent works. The first of the two options

practice) as long as this research refers only to one type of setting or place (the hospital) in which different types of practice exist. I have operationalized the concept of type of practice in four categories: hospital's employees, hospital's free-lancers, hospital's collaborators and academic physicians which corresponds to the items of the variable "practice" as it has been recoded (see paragraph IX). Such classification is based on the grids used by the hospitals in order to classify their medical working-force. As one can see, the concept of type of practice include both the type of career (i.e. academics vs hospitalists) and the type of contract (employees vs freelancers). There is a clear correspondence between the type of practice and the type of contract. Hospital employees' are hired either with an open-ended contract or with a short-term contract. Hospital's free-lancers have a free-lance contract. Hospital's collaborators can have a contract of collaboration (either in the form of a co.co.pro. or co.co.co) or a grants or scholarship. Academic physicians can have all types of above-mentioned contracts. For all the details on the types of contracts, right and duties related to each of them, see next chapter, paragraph II.1 and II.2.

was preferred as the school classification is common to all the physicians of the five hospitals while operational units change from hospital to hospital and sometimes are not comparable.

Many questions have focused on family-related characteristics. Respondents have been asked to declare whether they have a cohabiting partner or if they are married, if they are separated or divorced. The number of children was asked, as well as the number of children under 14 years old and living in the household. A specific set of questions investigates work-life balance issues. Respondents have been ask whether they experience a work-life conflict and for which reasons. Who cares for their children when they are at work and if they can count on a maid and/or a baby-sitter and for how many hours a week. Whether they do flexi-time or not and which level of time flexibility at work they can dispose. In order to assess the sexual division of work within the couple, respondents were asked how many hours a week they spend in nonpaid work, divided by type of activity (care for children, for the elderly, domestic, etc.). I have repeated the same question with respect to their cohabiting partner or spouse, asked for his/her occupational status and how many hours a week he/she works. Respondents were also asked whether they have a component in their family who is a physician and in which degree of relationship. A set of questions also relates to the time spent in parental leave (maternity leaves, paternity leaves and parental leaves).

Most of the questions included in the survey aimed at collecting information on respondents' characteristics. The underlying idea was to obtain as much information as possible in order to control for differences in individual attributes (between men and women) in the analysis of gender inequalities. In other words, to control for supply-side factors in order to assess the impact of gender discrimination in pay and career advancement. As long as it is possible via quantitative data collection, demand-side characteristics related to the work environment and the culture of the organisation were explored. Hence, respondents were asked whether they have faced any obstacle at work and which kind of obstacle among a set of pre-given answers (including sexual harassment and mobbing); whether they could count on somebody supporting their career, including possible role models or networks; what's considered important in the organisational culture in order to progress the career. Demand-side factors question the role of structural conditions in producing gender inequalities. Certainly, experimental

research and qualitative methods are the most appropriate methods for investigating the mechanisms of discrimination as well as the functioning of gendered organisations and I am well aware of the limitations of the questionnaire as a tool to collect information on these aspects. This doesn't mean that these aspects should be completely excluded from surveys as they provide useful suggestions which could be eventually deepen in through qualitative methodologies afterwards.

VIII. The rate of response

The survey was sent to 2436 email addresses through an email containing the web link to the questionnaire. In order to calculate the rate of response, the number of emails has to be corrected by subtracting those individuals who *didn't receive or should never have received* the email. The number of email to subtract is 231 and it includes: wrong email addresses and full email boxes (77 emails), non medical professionals who were included in the email list by the hospitals by mistake (biologists, psychologists and dentists: 63 in total), residents (91)[23]. After having subtracted these cases to the original email list, the number of physicians included in the *correct* email list decreases to 2205. This is the number from which the rate of response has been calculated. As 1074 physicians answered the questionnaire, the rate of response is 48.7%.

The rate of response varies significantly from hospital to hospital. Policlinico has a medical population of 902 physicians but the original email list provided by the hospital contained only 594 email addresses (see next paragraph). Subtracting wrong email addresses, full email box, non medical professionals and residents, the correct email list is reduced to 565 physicians. Out of 565, 249 physicians answered, for a rate of response of 43.6%. Legnano provided an email list of 759 physicians coinciding with the population. Subtracting wrong and full email addresses, non medical professionals and residents, the correct email list is composed by 711 physicians; 403 of them answered, for a rate of response of 56.68%. Como provided an email list of 533 physicians

[23] Legnano, Como and San Donato provided me also with the email addresses of their residents. Machado and Policlinico didn't (no matter two residents of the Policlinico were wrongly included in the email list and I had to take them out). Because of the lack of residents in two out of three email lists, I had to exclude them all as they wouldn't have been representative of the whole population, especially considering that Policlinico has many residents because of its tight connection with UMIL.

coinciding with the population. The correct email list is composed by 498 addresses and 239 physicians answered, for a rate of response of 48%. San Donato provided a list of 402 physicians coinciding with the population. Considering the correct email list (288), the rate of response is 39.2% as 113 physicians answered. Machado has a medical population of 587 physicians but the email list provided by the hospital was composed only by 147 physicians (see next paragraph). The correct email list included 143 addresses, 72 physicians answered for a rate of response of 50.3%.

Tab. 1 – The number of respondents by hospital

	Frequence	Percent
Policlinico	247	23
Legnano	403	37.52
Como	239	22.25
San Donato	113	10.52
Machado	72	6.7
Total	1074	100

IX. Population and email lists: a problem of under-coverage

This research is based on a census survey as the questionnaire was sent to *all* the physicians working in each hospital, that is to the whole population without doing any sampling. Statistically speaking, the survey is representative of *that* specific population: the medical population in Policlinico, Legnano, Como, San Donato and Machado.

As it is often the case in census survey, also this survey reports a problem of undercoverage (Dick 1995). The problem relates to Policlinico and Machado: part of the population of the two organisations was not recorded in the lists of physicians' emails provided by the hospitals in order to send them the questionnaire. In other words, the elements (or the individuals) in the population didn't fully correspond to the elements of the lists who would have been contacted by email. Therefore, a part of the population has not received the questionnaire, with some consequences in terms of representativity as it will be discussed in the next paragraph.

As already mentioned, 565 physicians - out of 902 - were included in the Policlinico

email lists, while 147 - out of 587 - were included in the Machado email lists. In percentage term, the 63% of the Policlinico population and the 25% of the Machado population were "covered" by the survey, that is it was included in the email lists of the physicians who were contacted. The reasons of such exclusion were different depending on the hospital. Since the questionnaire was submitted by email, the condition for being in the email lists was to have an email account. Unfortunately, the Policlinico has a limited web provider and not all the physicians have a institutional email account, especially the precarious ones. Moreover, not everybody without an institutional email account has communicated his/her private email address to the IT office. Therefore, many physicians couldn't be included in the list.

A similar problem occurred for Machado, where many free-lance physicians don't have an institutional email account. In this case, the HR office decided not to provide me with private emails evoking privacy reasons. Moreover, this was only one part of the problem: the HR office put explicit and further limitations in the number of physicians to be reached by the survey in order to participate, asking for the academics to be excluded. Privacy reasons were invoked also in this case, as academics refer to two employers: the hospital and the University. Moreover, the Hr office decided to exclude also physicians working less than 20 hours per week, supposing that they work in more than one hospital (as part-time work in the sector is residual) and therefore not considering them as representative of the organisation. I could made up only for the academics, as out of thirteen academic physicians working in the hospital (mostly head of units), twelve are UMIL professors, whose email address could easily found by asking to internal UMIL's staff.

X. The representativity of respondent data

In order to test the representativity of the dataset, differences in characteristics – between respondents and non respondents – should be analysed. To do so, the statistics drawn from the *respondents' dataset* should be compared to the statistics drawn from the *email lists' dataset*, that is the dataset containing the information of the physicians to whom the questionnaire has been sent by email. In three cases (Legnano, Como, San Donato), the email lists provided by the hospitals coincided with the population while in

two cases (Policlinico and Machado) they did not. For Policlinico and Machado the best option, in order to test the representativity of respondent data, would have been to make a double comparison: between respondent data and data based on the email lists and between respondent data and data based on the population. Unfortunately, this wasn't always possible: for Policlinico the comparison was made on the population dataset while for Machado it was made on the email lists dataset. T-tests have been run in order to discover self-selection biases[24]. All descriptive statistics and t-tests are contained in appendix 2.

With respect to the Policlinico, the statistics based on respondent data could be compared only with those based on the whole population as the email list of physicians used by the IT office to submit the survey didn't contain any useful statistics to compare with, except for the email address (but without possibility of inferring the gender of the person). Therefore, no analysis of representativity on the email list of physicians contacted was possible. On the other hand, the hospital provided a rich dataset on the medical population which was nonetheless restricted only to 735 employees (out of 902 physicians working at the Policlinico in total)[25]. Therefore, statistics based on respondent data could be compared with those based on a restricted population of 735 employees. The population dataset contained information on gender, rank, age and salary and no particular differences in the frequencies and means between the respondent data and the institutional dataset, except for a slight under-representation in the fourth and five step of the career ladder, have emerged. This problem would be in any case overcome as the "public" six-steps career scale of the Policlinico would have been merged, in the general respondent dataset, into a three-step ladder in order to harmonize all the different hospitals' classifications (see appendix 2).

As for Machado, the only information regarding the population provided by the hospital was its composition in terms of type of practice: out of 587 physicians, 376 are free lance physicians, 98 are (hospital) employees and 13 are academic physicians. The comparison between respondent data and population data was therefore possible only on

[24] One-sample T-tests have been run in order to know, for each hospital, if there are significant differences in the mean of comparable attributes contained in the two datasets (population/email list dataset versus respondent dataset).

[25] Out of 902 physicians working at the Policlinico, 735 are employees (either with an open-ended or a short-term contract) and 167 are atypical workers (freelance or collaborators). Atypical workers were not included in the population dataset provided by the Policlinico.

the type of practice. The hospital provided me also with the email list of physicians to be contacted which was matched with the respondent dataset. Nevertheless, the email list contained only two useful information: the type of practice (divided in the three above mentioned categories) and the gender. The comparison between respondent data and email lists was therefore possible only on the base of two statistics. The comparison between email list dataset and respondent dataset doesn't show any particular difference, while the gender results to be slightly mismatched, with 47% of male respondents versus 51% of male physicians in the email list (see appendix 2)[26]. Unfortunately, this is not the case with the population. Because of the choice, by the HR direction of Machado, to exclude from the email lists those who don't have an institutional email address, many free lance physicians were not covered by the survey. Therefore, they are strongly under-represented in the respondent dataset. If in the population, free-lance physicians account for 77% of the entire medical work-force (that is 376 physicians out of 587), in the respondent dataset the free lance-employees ratio turns around completely, with 25% of respondents being freelance. Such under-representation of freelance physicians in Machado is due to the above-mentioned problem of under-coverage of the population (and more in particular of the freelance population) and it can bias the statistics, both descriptive and analytic. The possibility of weighting the dataset has been taken in consideration in order to have a better representativity in terms of the type of practice. On the other hand, the five datasets would have been merged in one single file, thus smoothing the mismatches between the population and the respondents. Moreover, I would have been careful in the analysis. Hence, descriptive analysis of the type of practice and the type of contract (which is linked to the type of practice) in Machado report both the statistics of the respondent dataset and the statistics of the population (chapter 3) to provide a better idea of the organisation. The model on the pay gap and the model on the vertical segregation don't include neither the type of practice nor the contract among the explanatory variables (chapter 4), thus excluding those elements that could bias the results.

As for Legnano, Como and San Donato, the analysis of representativity has proved to be simpler. The lists of physicians to be contacted by email coincided with the medical

[26] One has to consider the low level of total respondents in Machado (72), which makes mismatches of this sort highly possible.

population of each organisation thus avoiding any problem of under-coverage. Legnano has provided the list of emails physicians including their gender, practice setting, specialty, rank and seniority. Como email lists contained information on gender, practice setting and specialty. San Donato email lists contained information on gender, practice setting, rank, specialty and age. The comparative analysis of statistics has shown a substantial correspondence between the statistics of the respondent dataset and the statistics of the population except for a few ones. In Legnano, free-lance physicians are significantly under-represented (they are 3.9% in the population and 2.2% in the respondent dataset), while hospital employees are significantly over-represented (97.7% in the respondent dataset vs 95.5% in the population). As for the specialty, a slight under-representation of physicians in surgery (28% among respondents vs 32% in the population) balances a slight over-representation of physicians in diagnostic (24% among respondents vs 21% in the population). On the other hand, in Como it is the medical area to be over-represented (50% in the respondent dataset vs 45% in the population), while surgery is slightly under-represented (24% vs 29%). Also the San Donato respondent dataset shows a relevant discrepancy with respect to the specialty: the medical area is over-represented, with 51% of respondents against a rate of 41% in the population. As a consequence, surgery and diagnostic are under-represented, with respectively the 22% and 24% of respondents against 28% and 30% in the population. The differences in distributions with respect to the specialty in the three hospitals are not significant, except for the over-representation of the medical area in San Donato. For all the comparisons of statistics and t-tests see appendix 2.

XI. Recoding the dataset

After controlling for the representativity of statistics, the five datasets were merged into one single file in order to analyse it. A very long work or recodification has proved to be necessary. Beside the usual and most simple codifications (i.e. transforming strings containing numbers into numeric variables, transforming multiple choice items in one single categorical variable, etc.), some challenging tasks had to be solved. First, many multiple-choice questions offered the possibility, to the respondent, of choosing an empty item in which he/she could write his/her personal answer. For example, with respect to

the question on the specialty, 110 physicians preferred to write his/her own specialty as they didn't find theirs in the pre-given list. This was due to the fact that the items were based on the last ministerial classification of specialty schools (dating back at the end of the Nineties). Physicians who specialized before that reform may have not found the same specialty denomination and their answers had to be recode by comparing the different classifications. The analysis of the free answers related to the specialty also allowed me to identify those cases who were wrongly included by the hospitals in the email lists (dentists, psychologists, biologists: 20 in total).

Recoding free items was necessary also with respect to the two questions made in order to assess the motivational drives (the first one associated with the reasons for changing hospital and the second one with the reasons for working extra hours): 192 and 154 "free answers" were recoded on the base of a content analysis. This has meant either to include the free answer into a pre-given item (if the free answer was very similar in the meaning) or to create a new item. For example: many physicians declared to have change hospital to be closer to home and to better commute. I didn't actually think of that option while I was building the questionnaire: it was therefore add it *ex-post*.

Second, many inconsistencies in the answers had to be corrected. Cross-checking the type of practice and the contract allowed me to discover that some employees have declared to have a free-lance contract, which is an oxymoron. Some free-lance physicians declared to have a regular contract, either in an open-ended or in a short-term form, with the hospital: another oxymoron. There were other single cases of inconsistency between the type of practice and the contract (i.e. a collaborator declaring an open-ended contract[27]). Once again, it was possible to disentangle these problems and recoding these cases by checking the information of each single physician with the HR offices of the hospitals.

By cross-checking the contract and the rank, I also realized that a few physicians in private hospitals chose the wrong item with respect to the contract. For example, a few heads of a unit in San Donato declared to have a contract of collaboration which, in general, it is used for younger physicians. Luckily, having at my disposal the institutional dataset provided by the hospital, I knew that only three physicians in the whole

[27] In this case, for example, this physician considered its contractual relationship with the hospital as an open-ended form of employment as its contract of collaboration was annually renewed. Formally speaking, it wasn't.

organisation had a contract of collaboration. Therefore, they couldn't be more than three respondents, which wasn't the case. Checking the information by the HR office, I discovered that many of them, in reality, had a free-lance contract (partita Iva).

Third and last challenge to mention, the answers related to the rank had to be harmonized. Public hospitals follow a national union contract while private hospitals have their own union contract which is different between San Donato and Machado. Public contracts include six steps, while the two private hospitals envisage, respectively, five and three steps. The only common step to the five hospitals was the last one: the head of the unit. As a consequence, the ladders of the three public hospitals (six steps) and Machado (five) had to be merged into the three-steps ladder of San Donato. This was done by analysing the mean age, experience and income par step and by hospital. Also in this case the HR offices' precious collaboration helped me to understand the tasks and the responsibilities implied in each rank.

Overall, the support of the human resources of the hospitals has certainly been fundamental. As doubts and problems arose little by little in the recoding phase and through out the analysis of the dataset, this has meant to contact them many times and counting on professionals who in some way believed in the project certainly helped. It wasn't always the case as, for instance, collecting information and having adequate support in Machado hasn't been simple. I had to insist and sometimes renounce to gather information (as in the case of population statistic, as they provide me only with the type of practice). Hopefully, this hasn't had any impact on the recodification of the dataset.

Chapter 3 – The dataset

Do men and women differ in human capital, work and family characteristics? Is this difference relevant? This chapter will answer to these two questions by presenting the descriptive statistics of physicians in the five health organisations. Coherently with the theoretical chapter, the findings will be presented distinguishing between human capital, institutional work and family characteristics. Human capital characteristics are divided between educational credentials on one hand and individual work characteristics on the other hand. Individual work characteristics include commitment and productivity and differ from institutional work characteristics not only because they provide information on human capital but also because of their subjective dimension[28]. Some of the characteristics described in this chapter will be used as explanatory variables for the two forms of gender inequality which will be discussed in the following chapter: the differences in pay and the differences in rank.

The frequencies of the characteristics have been distinguished by gender and tested for significant differences using Chi2 tests for categorical variables and two-sample t tests for interval ones. Given that, on one hand, the respondent dataset is representative of the population made by the physicians working in the five hospitals, tests provide information on the significance of the difference in characteristics between men and women with respect to that specific population.

As for the structure of this chapter, the above-mentioned three groups of characteristics – human capital, work and family characteristics – correspond to three different paragraphs. Each paragraph ends with a summary table presenting the means of the main characteristics by gender with the results of the difference tests.

[28] This is a conventional distinction. Many would use a different classification, arguing, for example, that the variable "hours of work", doesn't properly describe commitment, neither productivity. Sometimes work hours are not even a subjective "choice", as it is the case of "forced" part-time work. This is certainly true and I also adopt this critical approach. However, one must not forget that the human capital is (also) a function of the hours spent at work and this is the reason why I've chosen to place such variable among individual work characteristics rather than institutional ones.

I. Human capital characteristics

I.1. Age, experience and seniority

Out of 1074 physicians, 553 are males (51.5%) and 521 are females (48.5%). Women, in average, are younger than their male colleagues: the mean age for women is slightly less than 48 years old, while the mean age for men is slightly more than 52 years old. As a consequence, women report, in average, a shorter work-experience than men in terms of years of work (17 years versus 21.6), as well as a shorter seniority, defined as the years of continuous work within the organisation in which they actually work: 14.1 for females years versus 16.4 for males (for means and t-test see table 3 at the end of paragraph I).

I.2. Educational credentials and trainings

Women graduate from medical schools with slightly better grades than men (108 vs 107) and, among best-in-class students (that is students obtaining the maximum degree, which in Italy is 110/110), women tend to obtain special honors slightly more often than men (47.2% of best-in-class women obtained honors versus 40.8% of men). If women show better educational credentials up until the University, on the other side men tend to have more post-graduate titles. For instance, 26% of the male respondents hold two (or more) specialties against 16% of females (pvalue=0.000), while the difference shrinks with respect to Ph.D. (6.9% versus 5.2%, pvalue=0.2445).

Results on further educational titles need further insights. The likelihood of having a second specialization or a Ph.D. changes between different cohorts. In general, older physicians are more likely to have a second specialty than younger ones, while younger physicians are more likely to have a Ph.D. than older ones (see table 1 and table 2 in appendix 3)[29]. Both phenomena are due to changes in law.

With respect to the second specialty, the reform of specialties schools in 1991 has strongly decreased the likelihood of having more than one single specialty. The decree

[29] The mean age for physicians holding more than one specialty is almost 58 years, while those without a second specialty are 48 years old in average. The mean age for physicians holding a Ph.D. is 44,5 years old, while the mean age of those without is 54,5 years. Age significantly increases the likelihood of having a second specialization (beta=0,1459, p=0.000), while significantly decreases the likelihood of having a Ph.D (beta=-0,0643; p=0,000). See table 1 and table 2 in appendix 3.

law no. 257[30] established that specialty schools were a "full-time" and remunerated activity. Eight years after, with the decree law no. 368/1999[31], a further element was introduced: such activity must be regulated by a contract (between the resident and the hospital) which is renewable each year. In other words, if before the 1990's physicians were used to take a second or even a third specialty while working, as a form of permanent training, the reorganisation of the school system made this option hardly feasible. Today, if one takes a second specialty he/she will likely "abandon" his/her own career trajectory and start from the beginning a new one. This has certainly decreased the number of physicians holding more than one specialty among younger generations.

For similar reasons, but with opposite results, the likelihood of having a Ph.D. has increased among younger generations. In this case, a reform at University level occurred. The Ph.D. was introduced in Italy in 1980 with presidential decree no. 382[32] and only recently, it has become, even if informally, a necessary step for climbing the academic career-ladder. Today, many full professors don't hold a Ph.D., as it wasn't required at the beginning of their career, while both assistant and associate professors, who are much younger, do. It is interesting to notice that only three academic physicians in the dataset (out of thirty-three in total) have a Ph.D. Indeed, most of the academic physicians (23) are heads of units as – at least in University Hospitals – being an academic is a necessary (even if informal) requirement to reach the top positions in the organisation. Therefore, their age, as a group, is higher than the average (56,4 the mean age for academics against 49,9 for non academics) and this explains why they rarely hold a Ph.D.

The cohort effect on the likelihood of having a second specialty and a Ph.D. has some important implications for women. With respect to the second specialty, it is also because of their late entry in the medical profession and, as a consequence, of their younger age (in average), that women are less likely than men to hold a second specialty. In other words, the relation between gender and the likelihood of having a second specialty is "spurious" and influenced by age (see table 3 and 4 in appendix 3). This is confirmed by the higher percentage of women holding more than one specialty among younger cohorts.

[30] See law at: http://www.normattiva.it/uri-res/N2Ls?urn:nir:stato:decreto.legislativo:1991;257. Accessed on February 27th, 2016.
[31] See law at: http://www.camera.it/parlam/leggi/deleghe/99368dl.htm. Accessed on February 27th, 2016.
[32] See law at: http://www.esteri.it/mae/it/normative/normativa_consolare/.../dpr_382_1980.pdf. Accesed on February 27th, 2016.

Considering all cohorts, women are *less* likely than men to hold a second specialty. But if one considers only the respondents who are less than 57 years old, they actually are *more* likely than men to hold one: up until that age, 9.8% of women against 8.4% of men hold a second specialty. Considering the respondents who are 57 years old or more, the percentages overturns: 36% of women against 49.7% of men (p-value never significant) (see table 5 and 6 in appendix 3). Since most of the physicians holding a second specialty are concentrated among respondents who are 57 years old or more (70% of them), the gender gap in the second specialty of the whole population reflects the gender gap in the older generations.

No matter the two groups (respondents holding a second specialty who are less than 57 years old and respondents holding a second specialty who are 57 years old or more) are not equally distributed and the differences not significant, their comparison is nevertheless quite interesting because it provides useful suggestions on the effects of the above-mentioned 1990s school reform in a gendered perspective. That is, the older group did not experience the effects of the reform while the younger did. Before the reform men were more likely to obtain a second or a third specialty while after the reform women were. Obtaining a second specialty before the reform was more or less equivalent to follow a permanent training while working already as a physician, without any effect in terms of the career progression. The lower percentage of women holding a second specialty among "pre-reform" physicians may therefore be due to their greater family responsibilities, and/or to lower employer's investments in female human capital. On the contrary, obtaining a second specialty after the reform means to start again from the beginning as a resident in a new specialty thus stopping the career progression. The lower percentage of men holding a second specialty among "post-reform" physicians may be due to the fact that, today, they are less likely than women to follow non-linear career trajectories which are less rewarded in terms of pay and leadership (Jacobs 1989).

With respect to the Ph.D., women are less likely than men to hold a Ph.D. than men: out of 65 Ph.D. respondents, 27 are female and 38 are male but, as above mentioned, the difference is not significant. Being a female significantly decreases the likelihood of holding a Ph.D. only controlling for age (see table 7 and 8 in appendix 3). Analysing frequencies by cohorts, it appears that this is due to younger generations. Younger physicians (both female and males) are more likely to hold a Ph.D. because of the

relatively recent introduction of the Ph.D.s in Italy and, contrary to older cohorts, show a significant gender difference. Indeed, the between-group difference in the likelihood of holding a Ph.D. is significant only considering respondents who are less than 46 years old: 8.6% of women in this cohort hold a PhD against 15.9% of men (table 9 in appendix 3).

The lower level of women holding a PhD in the five hospitals is inconsistent with general data on the medical population in the labour market: according to the last She-Figures report published by the Directorate General for Research and Innovation of the European Commission, women account for 63% of PhD Italian students in the welfare and health field of study[33]. Data from the University of Milan confirm the national trend, with a percentage of female PhD students in the Health Department at 67.9% (see scissor diagram of the academic staff in UMIL and in the UMIL's health sector: figure 1 appendix 3). Hence, no matter a higher female Ph.D. supply in the labour market, hospitals keep hiring more male Ph.Ds. This finding runs counter neoliberal theories which emphasise supply-side factors in the explanation of gender inequalities. According to this approach, lower rate of female employment are due to lower levels of female supply in the labour market. Data collected in five hospitals in the Lombardy Region suggest the opposite.

Why is there this discrepancy? Why do women Ph.D. are less likely to be working in hospitals in comparison to men PhDs? From the data collected it is not possible to provide an answer to this question. Further investigation are required. Two different hypothesis, paralleling two different theoretical approaches, could be tested. According to the first hypothesis, women with a Ph.D. may choose to follow the "pure" academic career and prefer to work in University. Data from the University of Milan showing a majority of women in the Health sector up until the step of the post doc confirms this possible explanation (see figure 1 in appendix 3). According to the second hypothesis, employers may discriminate women with a Ph.D. by favouring men with the same title. If this is the case, male Ph.Ds would be "ranked" ahead female Ph.Ds by employers, following a mechanism of "gender queue" (Reskin and Ross 1990).

[33] Report available at: http://ec.europa.eu/research/science-society/document_library/pdf_06/she-figures-2012_en.pdf. Accessed on February 27th, 2016.

I.3. Individual work characteristics: mobility, motivational drives and hours of work

Unlike the general population, physicians represent a quite homogeneous group in terms of human capital characteristics. Indeed, they all have invested many years in their education (at least 10, including the specialty) and they all have chosen a profession requiring long hours of work, as, at least in Italian hospitals, it rarely provides the possibility of part-time arrangements. No matter such homogeneity, gender differences still persist.

The descriptive statistics of what many would ascribe as proxies of commitment and productivity, that are the willingness to move, the motivational drives and the hours spent at work, will be now presented. A preliminary remark must be done. If it is certainly important to control for these characteristics (and more specifically work hours) while modelling the determinants of gender inequalities, one must be aware of their inadequacy in providing information on commitment and productivity. They are useful tools, but to handle carefully. Two reasons must be advocated. First, as for any human capital characteristic, one must not forget the impact of structural constraints (i.e. the sexual division of work) and indirect discrimination in engendering different levels – if there are any – of "commitment" and "productivity". Second, they are what they are: only proxy. The hours of work can tell us very little about commitment and productivity as one can reduce the hours of work while being as much (if no more) productive than those who work longer as Sasser (2005) has shown with respect to women physicians.

I.3.1. Mobility

Having made this clear, one can investigate these characteristics while keeping a critical approach on them. Hence, studies show that women are less likely to move (Xie and Schauman 2005, Wacjman and Martin 2003, Falcinelli 2009), but one must not forget that this may be due, for example, to major family responsibilities. The dataset confirms the literature: men are more willing than women to move 100 km away in case of a good professional offer coming from another hospital: 69.5% of males would accept that offer against 45.1% of females. On the contrary, no strong gender difference is found with respect to the portfolio career: men have changed, in average, 2.4 hospitals, against 2.2

for women. Mobility has been investigated also in terms of international training and work experience: if male respondents have spent slightly more than five months abroad for work and/or training, female respondents have spent slightly less than three months (see table 3 for summary statistics at the end of the paragraph).

I.3.2. Motivational drives

Respondents were asked if they have changed hospital at least once in life and the reasons why they did, with the possibility of providing multiple answers[34]. In total, 703 respondents have changed hospital at least once and 764 reasons were provided, divided into twelve items.

Table 1 - Reasons for having changed hospital, multiple response

	M	F	Total	p
For a better work	215	145	360	**0.0020**
% on total answers	46.84	38.16	47.12	
For more money	77	62	139	0.7235
% on total answers	16.78	16.32	18.19	
To follow the partner	33	42	75	0.0647
% on total answers	7.19	11.05	9.82	
Because of a bad environment in the previous hospital	32	27	59	0.9765
% on total answers	6.97	7.11	7.72	
To be closer to home	20	21	41	0.7079
% on total answers	4.36	5.53	5.37	
For a better contract	11	28	39	**0.0008**
% on total answers	2.40	7.37	5.10	
Because of too many work hours in the previous hospital	15	14	29	0.7974
% on total answers	3.27	3.68	3.80	
To advance in the career ladder	23	5	28	**0.0023**
% on total answers	5.01	1.32	3.66	
Because of the restructuring/closure of the previous hospital	10	4	14	0.1881
% on total answers	2.18	1.05	1.83	
For a better work-life balance	5	6	11	0.5647
% on total answers	1.09	1.58	1.44	
To work in a public hospital	1	3	4	0.2429
% on total answers	0.22	0.79	0.52	
Other reasons	17.00	23	40	0.1314
% on total answers	3.70	6.05	5.24	
Total answers:	**459**	**380**	**764**	

[34] 703 physicians have changed at least one hospital. They could choose between six items providing the reasons of their last transfer: more money, better work, too many hours, to follow the partner, bad work environment, all other reasons. Respondents choosing the item "all other reasons" had the possibility to specify the reason of their transfer in the form of a short (free) text. Because of the multiple choice option, 764 answers were provided in total and 204 in the form of a free text. Many of the free answers were easy to recode. In particular, I have recoded 164 free answers, out of the 204, into six new items: to be closer to home, for a better work-life balance, for advancing in the career, for a better contract, for the restructuring of the organisation (closing of previous hospital or department), because I wanted to work in a public hospital. After recoding, the number of cases belonging to the item "all other reasons" was reduced to 40.

Almost half of the physicians (360) have changed hospital to do a better job, that is for advancing in their research, receiving more training or simply because they were looking for a more interesting activity. The second most chosen item is the increase in the salary (139 physicians), followed by the choice of following the partner (75) and the existence of a bad environment/hostility of colleagues and/or bosses (59). Forty-one respondents declared they needed to work closer to their house, while only eleven respondents specified that it was for family reasons: I have decided to distinguish these respondents in a specific item named "work-life balance reasons". Worth of mention that 39 respondents declared to have changed hospital in order to have a better contract, which in most cases was an open-ended contract. As open-ended contracts are rare in private hospitals, these cases partly coincide with a passage from a private to a public hospital.

Analyzing the answers by gender, only three items show a significant difference between men and women: men are significantly more likely to change hospital for doing a better job ($p=0.002$) and for advancing in the career ladder ($p=0.002$), while women are significantly more likely to change hospital for a better contract ($p=0.000$). As it will be clear in the next paragraph, women are concentrated in less stable contracts than men and this certainly explains the higher percentage of female physicians who have changed hospital for ameliorate their contractual position. Women are more likely to change to follow the partner while men are more likely to change for money but the differences are not significant, while women and men are very similar in their answers with respect to commuting (21 vs 20) and work-life balance (6 vs 5).

Physicians' motivation has been tested through a second question. Respondents working extra hours (basically everybody, that is 1051 physicians out of 1074) were asked why they stay longer at work through a multiple-choice question[35]. In total, 1911 answers were provided divided into eight items. No items shows a significant difference between the two groups (males and females). Only the "advancement-in-career" motivation is

[35] Respondents could choose among six items with the multiple choice option: it's not a choice as it is required by the organisation/the type of work; to gain more money; to enhance my skills and grow professionally; to advance in the career ladder; because of a sense of responsibility towards patients; all other reasons. As for the previous question, respondents choosing the option "all other reasons" had the possibility to specify the reasons of their working extra-hours in the form of a short text. Eighty-nine respondents choose to write their own answer. Many of these answers were attributable to the five items provided in the questionnaire. Others (28) were easy classifiable into two new items: for lack of colleagues/human resources; for doing research. After recoding, the number of cases belonging to the item "all other reasons" was reduced to 12.

"almost" significant at 90% CI (p=0.0509) with men more likely to choose it but the cases are too few (19).

Table 2 – Reasons for working extra hours, multiple response

	M	F	Total	p
For responsibility towards patients/colleagues	384	376	760	0.3261
% on total anwers	39.14	40.43	39.77	
No choice, it's required by the type of work	375	364	739	0.4683
% on total anwers	38.23	39.14	38.67	
To grow professionaly/to learn/for passion	117	111	228	0.3400
% on total anwers	11.93	11.94	11.93	
More money	72	53	125	0.1462
% on total anwers	7.34	5.70	6.54	
To advance in career	14	5	19	0.0509
% on total anwers	1.43	0.54	0.99	
For lack of human resources	8	10	18	0.5468
% on total anwers	0.82	1.08	0.94	
For doing research	5	5	10	0.9246
% on total anwers	0.51	0.54	0.52	
For other reasons	6	6	12	0.9174
% on total anwers	0.61	0.65	0.63	
Total answers	**981**	**930**	**1911**	

*CI=-.0314989 .0000599

Both questions on motivation – the former being linked to having changed hospital and the second to working extra hours – don't follow clear female and male stereotypical patterns. Within the literature on gender differences in motivations or job "rewards" (Mottazl 1986, Pelletier et al. 1995, Konrad et al 2000, Rusillo 2004), scholars tend to distinguish between intrinsic and extrinsic motivations/rewards. The former refers to inherent satisfaction or pleasure in performing certain activities without expecting any reward; the latter refers to the tendency to perform activities for external rewards, whether they are tangible (money, power) or psychological (praise) (Brown 2007). Some studies have highlighted the existence of gender differences in motivations, thus arguing that women tend to be more "intrinsically" motivated (Pelletier et al. 2005), while men are more "extrinsically" motivated (Rusillo 2004). Other studies have contested this idea, by showing that either there is no significant gender difference in job rewards (Mottazl 1986) or that differences don't follow stereotypical patterns (Konrad et al. 2000). This study

substantially support this second strand of arguments. Except for the advancement in the career ladder, which is a significant male characteristic with respect to the reasons for changing hospital and significant at 90% level with respect to the reasons for working extra hours, women and men don't seem to follow the extrinsic-intrinsic schema. Sometimes they actually reverse it, as men are more likely to have changed hospital for the job in itself (intrinsic motivation) and women for a better contract (extrinsic motivation). Significant gender difference, moreover, has not been identified neither with respect to pay nor with respect to responsibility towards patients or to commuting/work-life balance.

I.3.3. Hours of work

Women physicians tend to work fewer hours than men after marrying/having children (Hinze 2000, Jagsi et al. 2012) even though Sasser (2005) highlights that such reduction in working hours doesn't lead to a reduction in productivity. She operationalizes productivity as the hourly wage and finds that, having made significant investments in human capital, women physicians are able to preserve their hourly earning potential while working fewer hours (Sasser, 2005).

In the five hospitals analysed, men tend to work slightly more than women, and more specifically less than three hours a week: 47.78 hours against 44.97 hours in average. Nevertheless, this difference decreases to 1 hour and 20 minutes if the time spent in doing private practice is not taken into account (see table 3 at the end of the paragraph I). In other words, considering only the hours of work spent *within* and *for* the hospital, the difference in work hours between men and women is about 1 hour and twenty minutes per week. Indeed, men tend to do more private practice, which is more lucrative, than women: 3.7 hours a week for males against 2 hours for females. Part-time work is residual among physicians, with no big difference between men and women. Only 13 physicians – 6 men and 7 women – work less than 20 hours, their number increases up to 34 considering those who work less than 30 hours (22 women and 12 men). These data are not surprising: unlikely many North-European countries where part-time work is widespread, in Italy it is not as much. According to Eurostat data, no matter the recent growth in part-time work, the percentage of part-time workers in Italy is 18.4% in 2014, slightly less than the EU17 average (22.5%) and much less than countries like the

Netherlands (50.4%), Germany (27.6%) and UK (26.8%)[36]. This is particularly true for most high-qualified professions, where part-time work is barely absent and long hours of work are required.

[36] EUROSTAT (2015), *Persons employed part-time*, EUROSTAT Employment Statistics. http://ec.europa.eu/eurostat/tgm/table.do?tab=table&init=1&language=en&pcode=tps00159&plugin=1 Accessed on February 27th, 2016.

Tab 3. Human capital characteristics, mean or percentage[37] and difference test

	Men	Women	p value
Age (years, mean)	52.29	47.89	0.000
N	553	521	
Grade (points 90-110, mean)	107.12	108.01	0.0004
N	501	478	
Honors (yes/no, %)	45.11	51.46	0.0468
N	501	478	
Second specialty (yes/no, %)	26.22	16.12	0.0000
N	553	521	
Ph.D. (yes/no, %)	6.87	5.18	0.2445
N	553	521	
Months abroad (mean)	5.20	2.80	0.0004
N	553	521	
Ready to move (yes/no, %)	59.49	45.11	0.0000
N	553	521	
Portfolio (no. of hospitals, mean)	2.43	2.17	0.0045
N	553	521	
Experience (years, mean)	21.62	17.00	0.0000
N	553	521	
Seniority (years, mean)	16.44	14.17	0.0003
N	553	521	
Weekly work hours (mean)	47.78	44.97	0.0000
N	553	521	
Weekly hours of private practice (mean)	3.74	2.04	0.0000
N	553	521	

[37] The percentage refers to the percentage of women (or men) holding that specific characteristic with respect the total number of women (or men).

II. Institutional work characteristics

II.1. The type of practice and type of contract

Out of 1074 physicians, 36 are academic physicians, that are professors working in the hospitals, while 1038 are "pure" hospital physicians. Besides the type of practice (academics vs hospitalists), respondents have been distinguished according to their type of contract. Indeed, the literature on gender inequalities in medical careers has much focused on vertical and horizontal segregation (Lorber 1984, Boulis and Jacobs 2010, Jagsi et al. 2011, Spina and Vicarelli 2015, Kass et al. 2006, Carnes et al. 2008,), as well as on the pay gap between men and women (Becker 1996, Hinze 2000, Hoff 2004, Sasser 2005, Weeks et al. 2009, Jagsi et al. 2012). Nevertheless, not much attention has been addressed to gender differences in the types of contracts.

As in many European countries, over the past decades Italy has recorded an increase in the use of atypical employment. Flexible contracts are particularly widespread among women and young workers (Barbieri and Schrer 2009), while the traditional "protection effect" of high education against unemployment and underemployment has recently been eroded by the economic crisis (Murgia and Poggio 2014). In the health sector, the most common a-typical employment are: short-term contracts, consultancy (partita Iva), contracts of collaboration (which takes two forms: the "continuous and coordinated collaboration" or co.co.co. and the "collaboration on a project" or co.co.pro.), the grant or scholarship ("borsa di studio"). Short-term contracts are atypical contracts envisaging a relationship of subordination with one employer, thus providing almost the same benefits of an open-ended contract in terms of welfare benefits and career progression, allowing physicians to enter into a sort of "tenure track". As for the consultancy ("partita Iva"), it is a form of self-employment regulated either by a contract or not (with the physician simply issuing an invoice to the hospital). As such, it should not avoid physicians to work in more than one hospital as a free-lancer. Nevertheless, as in other professions in Italy (i.e. lawyers or architects), many free-lancers work full-time in one single hospital, exactly as their colleagues who are officially hired. In these cases, the free-lance contract becomes a pseudo form of self-employment which implies the same obligations (but not the same benefits) of a regular contract. The contracts of collaboration (co.co.co and co.co.pro) are temporary contracts with no relationship of subordination and very little benefits (even in terms of unemployment schema). Introduced by the

reforms on labour market de-regulation of the mid-nineties, the co.co.co. has been substituted by the co.co.pro. in 2003 through the so-called Biagi law, which forced employer to link the contract to a specific project. As for the grant, it is a scholarship provided either by Universities or private Foundations (or both) to young physicians once they have ended their residency. It often lasts one or two years and it doesn't provide any sort of welfare benefits. Considering the duration and the lack of benefits provided, grants and contracts of collaborations are very similar.

No matter the growing flexibilisation of the labour market in the health sector, the open-ended contract remains the most common contract in the three public hospitals, where from 80% to more than 90% of physicians, depending on the hospital, hold a permanent contract and only a residual part of the workforce (from 1.2% to 5.4%) has a free-lance contract. In private hospitals, on the contrary, the free-lance contract is the rule. It accounts for more than 83% of total contracts in San Donato. As for Machado, the percentage "decreases" to 29% (see tables[38]). Nevertheless, because of the above-mentioned discrepancy between the email lists provided by the hospital and the population, the rate of free-lance contracts in the Machado dataset is not representative of the population. According to institutional data, free-lance physicians accounts for 77% of total physicians, while the rest is made of open-ended contracts[39].

Hence, public hospitals tend to offer permanent contracts while private ones make a larger use of atypical employment, especially free-lancers. This difference have some important implications in terms of career progression. Being a freelancer in a private hospital is perfectly compatible with the fact of holding top positions. Actually, many heads of units, either academics or hospitalists, have a free-lance contracts which are very well paid. On the contrary, in public hospital, except for a few number of retired physicians who continue to work as consultant, freelancers are often young and out of the career-ladder, as long as collaborators or grant-fellows. The "meaning" of being a free lancer is completely different whether one works in public or in private hospitals. Being

[38] The frequencies on the type of contract in the respondent dataset are illustrated in tables 10 and 11 in appendix 3.

[39] The frequencies in the type of setting in Machado comparing the population and respondents are illustrated in table 12 in appendix 3. The comparison has been made on the base of the type of setting since it is the only data provided by the hospital on the population. The type of setting distinguishes between academic physicians and hospital physicians. Within hospital physicians, it distinguishes among employees (who can hold either an open-ended or a short-term contract), freelancers ("partita Iva") and collaborators (co.co.co/pro or grants)

a freelancer in public institutions means to be an "outsider" who won't necessarily be part of the organisation one day, while being a free-lancer in private hospitals doesn't mean anything less than being a regular "hired" physician in terms of career progression and pay (but not in terms of welfare schema). In San Donato being a free-lancer is the rule: 298 physicians out of 302 are freelancers, the rest is made by one open-ended employee and three collaborators. Out of the three collaborators, two of them are, respectively, vice and head of unit. Like freelancers, also collaborators in San Donato can hold top positions.

Having made this clear, differences in contract between men and women will be now investigated. Because of the small number of cases holding a grant or a contract of collaboration (11), the variable contract has been recoded in three items by merging the contracts of collaboration and the short-term contracts in one single category as they both are a form of atypical employment presenting lots of common characteristics, no matter if the short-term contract is a better contract than the collaboration. They are a form of precarious employment, often seen as a passage before recruitment much used in public hospital, where they are offered (mostly) to young people (the mean age is 39.5 for co.co.pro. vs 40.7 for short-term) and women (10 women out of 11 in co.co.pro and 57 out of 97 in short-term).

Data suggest that women are less likely to hold a stable (and more remunerative) contract than men are: 74% of women against 78% of men hold an open-ended contract, while 13% of women against 7% of men hold either a *co.co.pro/co,* a grant, or a short-term contract. No much difference persists with respect to free-lance contracts (13% of females vs 15% of males) (see table at the end of the paragraph II). Worth to mention that "bad" atypical contracts (co.co.co/pro and grants) are the less remunerative ones, while "good" ones (free-lance contracts) are the most remunerated ones. And even within each category, gender differences in pay persist as it shown by the following table:

Table 4 – mean income by gender and contract (n. observations: 1002)

	Men	Women	total
Short-term/co.co.co/grants	60221	47778	52139
Free-lance	107923	62241	87384
Open-ended	84324	65421	75506
total	85973	62738	74773

II.2. The horizontal segregation: institutional characteristics and specialty

Women tend to cluster in less remunerative types of organisations and specialties (Sasser 2005, Boulis and Jacobs 2010, Crompton and Lyonette 2011). In the dataset, 84% of women work in a public hospital, against 81.5% of men. There is a slight tendency, for women, to cluster in public institutions but the difference is not significant. This result is consistent with Hinze (2000) but not with Jagsi et al. (2012) who finds a higher propensity for women to work in private organisations. Public institutions offer better schedules and slightly shorter hours of work: in private hospitals physicians, considering both males and female, work around 48.7 hours a week, compared to the 46.5 hours worked in public hospitals, for a difference of two hours.

Gender segregation is evident also in the gender composition of each specialty (Baker 1996, Hinze 2000, Sasser 2005, Magnusson 2005, Boulis and Jacobs 2010, Crompton and Lyonette 2011, Jagsi et al. 2011 and 2012, Magnusson 2015). The Italian Ministry of education, universities and research clusters specialties in four areas: medicine, surgery, diagnostic and public health. In the respondent dataset, more than half of the female workforce (and precisely the 56%) work in the medical area (against 40% of males) while only 16% of them is a surgeon, against 35% of men. The diagnostic area appears to be the most balanced one, with 24% of female physicians working there against 21% of men. The public health area is made of only 30 cases (17 men and 13 women), which makes it difficult to draw conclusions. The medical area includes twenty-three specialties like for instance general medicine, internal medicine, dermatology, haematology, endocrinology, gastroenterology, neurology, paediatrics, psychiatry, etc.. Some specialties are more "gendered" than others: in neonatology and rheumatology 80% of physicians are females. High female rates can also be found in paediatrics (67,5%), radiotherapy (66,7%), neuropsychiatry (60%), while psychiatry exhibit a lower proportion of women (56,2%).

If women are clustered in the medical area, men are more concentrated in the surgical one, where, out of ten physicians, seven are males and three are females. The highest level of segregation occurs in oral and maxilla-facial surgery (91%-9%), orthopaedics (88%-12%), urology (88%-12%), hearth surgery (83%-17%), general surgery (77%-23%), vascular surgery and otorhinolaryngology (both at 75%-25%). A traditionally male-dominated branch – at least in Italy – like genecology has experienced a strong feminization in the last years: now 49 physicians out of 100 are females. Only two surgical

specialties, out of thirteen, appear perfectly gender-balanced: paediatric surgery and neurosurgery, where the proportion of males and females is 50%-50%. Together, the medical and the surgical area cover the 74% of the entire medical population. Considering also the diagnostic area, which is the third most populated area, the three areas represent up to 96.3% of physicians. The diagnostic area is quite gender balanced, with a slight majority of women working in (51 out of 100). More than half of the physicians in this area (58%) and three quarter of physicians concentrated in two specialties: anesthetic and intensive care, which are both female dominated: 54%-46% is the proportion for the former and 5%-4% is the proportion for the latter.

II.3. The vertical segregation: the career steps

Studies on medical careers have shown that women physicians concentrate in lower steps of the career ladder and progress more slowly through steps (Carnes et al. 2008, Boulis and Jacobs 2010). Data based on the five hospital in Lombardy confirm the existence of a mechanisms of vertical segregation among physicians. In order to investigate whether women and men are differently positioned within the organisational structure, the different career ladders have been harmonized taking in consideration the differences between public and private hospitals. The former follow the national contract for physicians in the public sector, made of six formal ranks. The two private hospitals have their own contract, made of three (for San Donato) and five (for Machado) ranks. I have re-categorized the steps on the base of a content analysis and through the comparison of elements such as age and income in order to create one single career ladder.

The result is a ladder made of three ordinal ranks. The first level gather the first two steps of public hospitals, the first level of San Donato and the first two levels of Machado. For those physicians who will never be promoted, this level can be at the same time the first and the last step of their career: one can retire with a "first level" position with her/his salary being determined by merely seniority or accomplished targets (but not by any responsibility allowance derived from promotions). The following step – "vice" – is where promotional mechanisms and responsibilities comes into play. "Vice" gather three different steps in the public contract, one step in San Donato and two in Machado. The third and last step – "head" – is the highest level of the ladder and stands for physicians

who are responsible for an operational "unit".

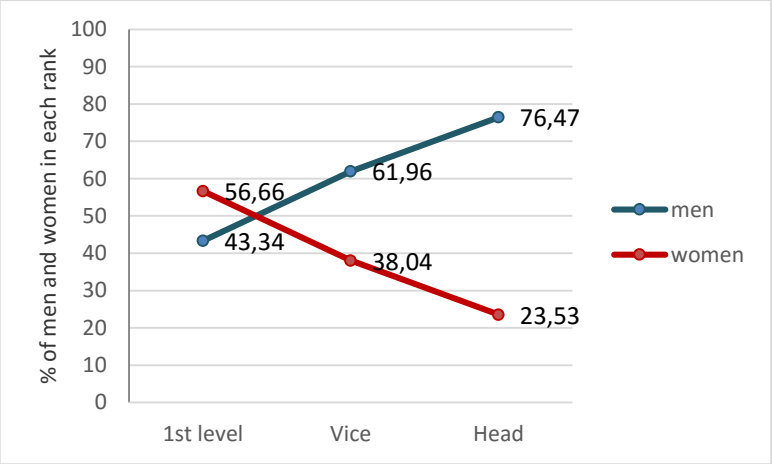
Tab. 5 – The career ladder

	Frequencies	Percent
1st level	646	60.15
Vice	255	23.74
Head	136	12.66
All others	37	3.45
total	1074	100

The "all others" step gathers three figures which are hard to code in an ordinal scale: the collaborators or grant fellows of public hospitals, the freelancers of public hospitals and "pure" academic researchers. Collaborators and freelancers in public institutions are precarious – often young – workers waiting to be hired. Such (often) temporary positions are scarcely compatible with a progressive ladder because not everybody passes through that step. Officially, once the residency is over, one should participate to a public competition ("concorso") and, if he/she wins it, be hired as a first level physician (either with a short-term or open-ended contract). Furthermore, this is true only in public hospitals: in private ones, where no public competition is needed, precarious contracts are compatible with any step of the career-ladder. Together with atypical public contracts, the step "all others" gather four academic physicians "non convenzionati" (without agreement between the Hospital and the University) whose career progression takes place only within the University and, therefore, it follows the academic steps[40]. Because of the impossibility to "order" into a progressive scale these figures (precarious positions within the public institutions and academics "non convenzionati"), they have been coded as "all others" (see table 5). For the same reason, they were excluded from the scissor diagram.

Figure 1 – The scissor diagram: men and women in each rank of the ladder

[40] Academic physicians "non convenzionati" (literally: not covered by an agreement between the University and the Hospital) are paid only by the University, even if part of their activities take place in the hospital. Their career progression follows only the University "ladder" and that is the reason why I was obliged to cluster them into the "all others" step of the ladder. On the contrary, academic physicians "convenzionati" (most of them: that is covered by an agreement between the University and the Hospital) have a double employer: the University and the Hospital. Their career progression takes place both at the University and in the Hospital and their salary is much higher than the academics "non convenzionati" because, by law, must be equal to hospitalists' pay.



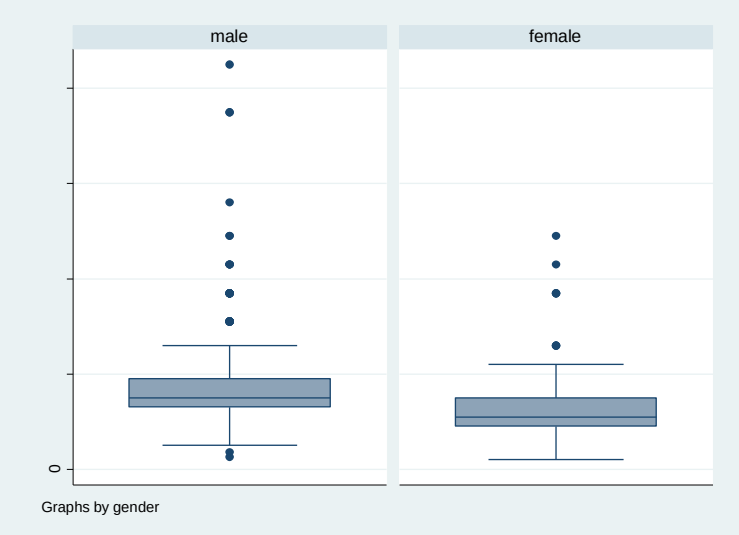
The scissor diagram shows the percentage of women and men *within each rank*. As one can see, women are the majority of physicians in the lower rank of the ladder (being 56% of first level physicians) while they are the minority both as vices (38%) and heads (24%). On the contrary, considering the percentage of women and men *within each sex* (see table 6 at the end of the paragraph), women are concentrated into the lower ranks, with 70% of them working as a 1st level physicians (against 50% of men) and 5% as "all others" (against 2% for men), while they are under-represented both in vice (19% of women against 29% of men) and in head (6% of women against 19% of men).

II.4. The gender pay gap

In order to have the highest rate of physicians declaring their income, they were given the opportunity to choose among 21 income classes, going from the lowest one (up to 10.000 euro) to the highest one (more than 400.000 euro). Each class has then been transformed into its mean when modelling the pay gap. Respondents were asked to provide the income, and not the salary, in order to account for earnings made in private practice and all other consultancy activities, if there are any. Moreover, as these earnings, due to extra work, are taxed once a year through the income tax filling, I have considered that the gross value would be easier to remember than the net one. Overall, the mean income of the respondents, considering both sexes, is 74753.5 euro, with a median class of 65000 euro. Men in the dataset earn, in average, 87973 euro while females earn 62747

euro for a earn differential of 23226 euro (number of observations=1004). The distribution of income, both for men and women, is rather skew with male income reporting more outliers than the female income. Adopting the Oecd definition of the gender pay gap[41], men earn 26,6% more than women.

Figure 2 – Boxplot of the income by gender



[41] The gender wage gap is unadjusted and is defined as the difference between median earnings of men (75.000 in the dataset) and women (55.000 in the dataset) relative to median earnings of men. Data refer to full-time employees. See https://data.oecd.org/earnwage/gender-wage-gap.htm. Accessed on February 28th, 2016.

Tab 6. Work characteristics, mean or percentage and difference tests

	Men	Women	p value
Contract (%)			
Short-term/ collaborations	6.52	13.13	
Free-lance	15.04	12.74	0.001
Open-ended	78.44	74.13	
N	552	518	
Specialty (%)			
Medicine	39.86	56.48	
Surgery	35.14	16.05	
Diagnostic	21.20	23.98	0.0000
Public Health	3.08	2.51	
All others	0.72	0.97	
N	552	517	
Rank (%)			
1st level	50.63	70.25	
Vice	28.57	18.62	0.000
Head	18.81	6.14	
All others	1.99	4.99	
N	553	521	
Income	85973.03	62747.42	0.0000
N	519	485	

III. Family characteristics

Because of persisting traditional gender roles within the family and the inadequacy of welfare provisions, women in high-qualified professions face strong challenges in balancing work and family responsibilities. Many studies have pointed out that marriage and children have a negative impact on women's career and income (Lundberg and Rose 2000, Buding and England 2001, Sasser 2005). To avoid such penalties – in rank and pay – women in non traditional jobs are more likely than men to be single, to reduce the number of children or to be childless (Wajcman 1998). This is particularly true in Italy, which is a country traditionally characterized by long hours of work, with inadequate (or too expensive) care services (especially for early childhood) and where family

responsibilities are still a woman's issue, no matter the growing, and recent, commitment of Italian fathers in the care of children (Zajczyk and Ruspini 2008, Saraceno and Naldini 2011).

III.1. Parental and marital status

In the dataset, 692 physicians out of 1074 are married. Men are more likely to be married than women (70.5% of male physicians are married against 58% of female physicians), while not much gender difference appears in the likelihood of having a cohabiting partner (15.9 versus 15.7%). As for children, 739 physicians (318 females and 421 males) have at least one children. The percentage of women being mother is lower than the percentage of men being father: 61% against 76%. On the other hand, 39% of women are childless, against 24% of men. Among parents, there is a significant gender difference in the number of children: male physicians have in average 1,51 children against 1,06 of females physicians (for all the summary statistics see table 9 at the end of the paragraph).

The debate on the gendered dimension of organisations (Acker 1990, Britton 2000) has shown how organisations promote the idea of an "abstract worker" which is based on males' characteristics. Such ideal worker have very little care responsibilities and, eventually, can count on a non-working spouse taking care of the children and supporting him in his work aspirations (Pateman 1988, Wajcman 1998). Descriptive statistics partially confirm this picture. In the dataset, males physicians are more likely than their female colleagues to have a non working partner (defined as spouse or cohabiting partner). The difference is striking: 24% of male physicians have a housewife, while 8.6% of female physicians are married with a non working partner, which is, nonetheless, a quite high percentage anyway. Male physicians are more likely to have a partner working residually or part-time: 12% and 14% of men have partners working, respectively, up to 20 and up to 30 hours, while the percentages shrink to 3% and 5% for women physicians. Gender parity occurs only when the partner works full time: 32.2% of males and 33.8% of female physicians exhibit a partner working from 30 up to 40 hours a week. On the contrary, female physicians are more likely to have a spouse working over-time: almost 50% of women in the dataset have a partner working more than 40 hours, against 18% of

men. Gender balance occurs also with respect to homogamy: 24.5% of females and 25.5% of males are married (or are living together) with a physician.

III.2. The sexual division of labour

Being married and having children have different impacts on women and men's use of time devoted to non paid work, defined as both domestic and care work. Respondents had the choice to report the time devoted to nonpaid work distinguishing between five items: care for children; care for the elderly, traditionally female domestic activity (cleaning, laundry, etc.), traditionally male domestic activity (repairing, gardening, etc.), the coordination of the maid/baby-sitter.

Overall, men and women spend in average, respectively, 15 and a half and 25 and a half hours per week in non paid activities. This translates into about one and a half hour a day of gender gap in non-paid activities. The result is not consistent with data on the general population, which show a much worse picture. According to the National Institute of Statistics (Istat), Italian men and women spend, respectively, 104 and 315 minutes par day in non paid activities, which translates into a gap of three and a half hours (211 minutes) par day and sets the country among the worst ones in the OECD area (Gaiaschi 2014). The discrepancy is mostly due to women's side: translating hours into minutes, female physicians report 218 minutes of non paid work par day (against 315 minutes in the general population according to Istat), while male physicians report 133 minutes (104 for Istat).

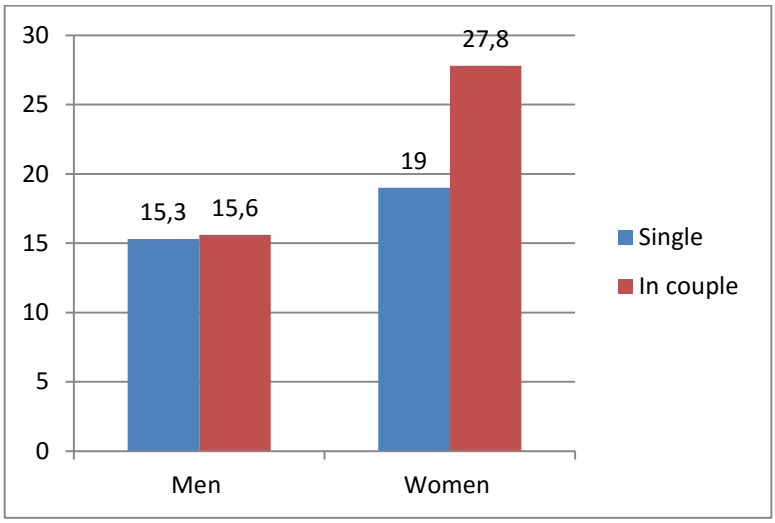
Part of the reason of such discrepancy could be due to the difference in methods: Istat uses (daily) diaries, while my data are based on (weekly) estimates (respondent's declarations). It is well acknowledged that the former are much more accurate than the latter, both with respect to paid and nonpaid work (Robinson and Bostrom 1994, Robinson et al. 2002, Robinson et al. 2011). With respect to nonpaid work in particular, it has been shown that women tend to underestimate the time spent in non paid activities (Bonke 2004). One second reason for the discrepancy between my results and national data on the sexual division of labour could due to the target population. Indeed, general data account for women working part-time and for women not working at all, while this research targets a very selected population, composed by high-skilled professionals who

have invested a lot in their education and who work long hours of work. As a consequence, 39% of them are childless while mothers tend to outsource care and domestic work in order to balance work and family.

Data on outsourcing are quite interesting indeed: women in the dataset have reported to pay a maid working, in average, almost 7 hours of a week, against 5.4 hours declared by men. Among women, childless women report having a maid working three hours a week, exactly as their male childless colleagues, while mothers report having a maid working nine hours and a half par week, against 6.40 minutes declared by fathers. Hence, mother physicians tend to reduce their time in nonpaid work by outsourcing domestic work. Such circumstance, together with the high rate of childless women, reduce the overall data on women physicians' nonpaid work activities.

The time devoted to non paid work varies not only according to parenthood but also according to the parental status. Both single and men with a partner (either a spouse or a cohabiting partner) devote around 15 hours a week to non paid activities. This means that marriage doesn't have any impact on men's use of time in non paid work. This is not the case for women: if as single woman spend 19 hours a week in non paid work, as spouse or cohabiting partner she will spend 28 hours a week. In this case, a change in marital status parallels a change in women's use of time in non paid work, enhancing hours in nonpaid work of almost nine hours a week. Stronger involvements by men occurs when they become fathers. Childless men devote 10.7 hours a week to unpaid work, which increases to 17 hours a week with the first child. Nevertheless, the increase is much higher for women: from 14 hours a week when they are childless to 33 when they are mother. Indeed, gender inequalities at work reflect gender inequalities at home: it is because domestic work and the care of children are still a "women issue" that marriage and children constitute a "penalty" for women's career (Saraceno 1980, Crompton 2006, Gerson 2009).

Figure 3 – Nonpaid work for women and men (single and in couple)



III.3. Work-life conflict

The problem of work-life balance is strongly felt by women: 46% of female physicians experience a situation of work-life conflict while 45% experience it sometimes, against, respectively, 35% and 48% for men.

Tab 7 – Do you have a hard time to balance work and life?

worklife_conflict	gender: male	female	Total
No	89 16.09	47 9.02	136 12.66
Sometimes	270 48.82	235 45.11	505 47.02
Yes	194 35.08	239 45.87	433 40.32
Total	553 100.00	521 100.00	1,074 100.00

Pearson chi2(2) = 19.1365 Pr = 0.000

Respondents experiencing a work-life conflict were invited to provide an explanation for it by choosing among five items: rigid schedule, long hours of work, lack of care

services, lack of grandparents caring for children and lack of support by the partner in sharing care responsibilities. Each item provided a four-point scale ("very"; "slightly"; "a little"; "not at all"). Women are (significantly) more likely than men to complain for a rigid schedule, long hours of work, a lack of care services and a lack of support by the partner in sharing care responsibility. On the contrary, there is no much gender difference with respect to the lack of grand parents, with the majority of both male (43%) and female (41%) physicians declaring it doesn't pose a problem (see figures 2-6 in appendix 3).

Analyzing women's answers, it's worth of notice that the lack of care services matters much more than that the lack of the partner's support in care responsibilities. Only 24% of women has indicated the latter as explanation for their work-life conflict (9% of them have chosen the item "very" and 15% of them have chosen the item "slightly") while 52% (divided between 26% as "very" and 24% as "slightly") has indicate the former. How to interpret this finding? Either men equally share non paid work with their partners or women don't feel it as a problem. Since the unequal division of nonpaid work between men and women existing among physicians, it seems more reasonable to opt for the second explanation. In other words, the majority of female respondents facing a work-life conflict don't recognize the traditional division of paid and non paid work between the sexes – which in Italy remains quite strong – as the cause for it (Saraceno 1980, Saraceno and Naldini 1998, Saraceno and Naldini 2011).

On the other side, the organisation of the time in the workplace is clearly identified by women as a cause of their work-life conflict: 70% and 84% of them (against 61% and 76% of men) think that, respectively, the rigidity of work schedules and too many hours of work negatively impact their work-life balance in a "very" or "slightly" manner. The Person's Chi2 test is significant in both cases, thus confirming the findings of Lyness et al. (2003) according to which: 1. Women have less "control" of their schedule than men do as long as they work in occupations or they are clustered in ranks which don't provide enough possibility of flexi-time; 2. Women report working too many hours more often than men do. The gender difference in the possibility of "controlling" its own schedule is confirmed by a specific question. Physicians have been asked to explain how their workday is structured. Four items were proposed from the least to the most flexible schedule arrangements: no flexibility; flexibility in entry; flexibility both in entry and in exit, total flexibility. In the table below the results are divided by gender.

Tab 8 – Control over worktime

control	gender male	gender female	Total
Fixed entry and exit	66 11.93	87 16.70	153 14.25
Fixed entry only	56 10.13	62 11.90	118 10.99
Flexy entry & exit	311 56.24	273 52.40	584 54.38
Total flexibility	120 21.70	99 19.00	219 20.39
Total	553 100.00	521 100.00	1,074 100.00

Pearson chi2(3) = 6.7263 Pr = 0.081

Women are more concentrated in the two first items, which provides less flexibility, while men in the second two, which provides more flexibility, even if the gender difference is not significant (p.=0.081).

Tab. 9 - Family characteristics

	Men	Women	p value
Married (yes/no, %)	70.52	57.97	0.0000
N	553	521	
Living together (yes/no, %)	15.91	15.74	0.9378
N	553	521	
Married or living together (yes/no, %)	86.44	73.70	0.0000
N	553	521	
Divorced or separated (yes/no, %)	16.46	13.24	0.1388
N	553	521	
Number of children (mean)	1.5	1.06	0.0000
N	553	521	
Childless (yes/no, %)	23.87	38.96	0.0000
N	553	521	
Having a partner physician (yes/no, %)	25.50	24.57	0.7257
N	553	521	
Partner's weekly hours of work (%)			
0 hours	23.85	08.59	
1-20	11.72	02.86	
21-30	14.02	04.95	0.0000
31-40	32.22	33.85	
More than 40	18.20	49.74	
N	478	384	
Weekly hours of nonpaid work (mean)	15.5	25.5	0.0000
N	553	521	
Weekly hours of nonpaid work of the partner (mean)	29.7	17.4	0.0000
N	478	384	

IV. Conclusions

Women and men respondents report many differences in human capital, work and family characteristics. Women graduate with better grades than men do but once they have entered in the profession they are less likely to acquire further specializations. Even if today they are the majority of PhD students at University, it is not the case in hospitals,

where more men than women have a post-graduate title. Women physicians tend to have a smaller portfolio-career than men, they appear less "mobile" and they work fewer hours than men (mainly because they do less private practice). On the other hand, motivational drives don't seem to follow gender stereotypical patterns.

As for the "choice" of specialization, women tend to cluster in medical specialties while surgery still remains a male-dominated specialty area, with around 70% of physicians being males. Women are more likely than men to hold an atypical, and less remunerated, contract. The career ladder still remains harder to climb for them: by analysing the composition of the medical population, a strong vertical segregation still persists. Women are the majority of physicians in the lower rank of the ladder but they are the minority in the upper ranks. Pay differentials are relevant: men earn 26.6% more than women, which is much greater than the national pay gap (7.3%). Both data are unadjusted, that is they are not controlled for any work characteristics, but if the former is based on the income, the latter is based on earnings. Such difference makes the pay gap found among physicians inclusive of revenues dues to private practice and external consultancies (if there are any), thus providing a more realistic picture of pay differentials between men and women.

The analysis of family characteristics has shown a quite traditional picture. Women, and in particular mothers, are the main responsible for non paid work. In order to face work-life obstacles they reduce, with respect at least to the general population, the time devoted to domestic and care activities, either by outsourcing nonpaid work or renouncing to motherhood and thus confirming the findings of previous research in non traditional profession (Wajcman 1998, Roth 2006).

One may objects that these disparities are only a "matter of time", that they will gradually disappear as long as the level of women entering in the profession will be equal to all cohorts. Studies on the general labour market have refuted these arguments (Palomba 2013). If this is the case also with respect to the medical profession, it should be further investigated: researches on early cohorts of physicians (Jagsi et al. 2012) and using longitudinal data (Sasser 2005) show that gender inequalities persist among younger physicians. Yet, further longitudinal data with respect to the European context are needed to analyse changing conditions across time.

Chapter 4 – Explaining the gender pay gap

It is well known that women physicians earn less than their male counterparts. Most of the studies finds that the pay gap persists no matter equal characteristics (Hinze 2000, Hoff 2004, Sasser 2005, Weeks et al. 2009, Jagsi et al. 2012, Magnusson 2015). On the contrary, Baker (1996) finds no earning difference after controlling for experience, specialty, practice setting, family status and other characteristics[42]. Sasser (2005) focuses on the child penalty and finds that mothers earn significantly less than childless women after controlling for all characteristics, with the penalty growing with the number of children, while fathers with two children earn significantly more than childless men.

In order to examine the determinants of the pay differential, a model for the log annual income using OLS will be estimated (paragraph II). Afterwards, a model accounting for interaction terms will be estimated in order to investigate how gender mediates the effects of characteristics on income (paragraph III). Finally, the pay gap will be composed by using the Oaxaca-Blinder decomposition (paragraph IV).

I. Measures

The natural logarithm of the annual income is the dependent variable. The type of hospital is the control variable[43]. Independent variables include human capital, work and family characteristics. Human capital characteristics include a four-item variable for grade and the number of years of work experience. Grade, originally an interval variable, has been recoded into a multinomial one in order to correct for its distribution as it is

[42] Coherently with the theoretical approach of this thesis (see Chapter 1), the results of Baker's study "should not be interpreted as evidence that discrimination is no longer a problem" (Baker 1996, p. 963). He explicitly reminds such concept on his conclusions as he underlines the importance of the structure of limitations and opportunities in determining the differences in characteristics between men and women through socialization.

[43] In the models of chapter 4 and 5 hospitals are named as following: Public 1 is the Policlinico, Public 2 Legnano, Public 3 Como, Private 1 San Donato and Private 2 Machado.

negative skewed, with very few observations on the left tail. Work characteristics include individual ones, as the number of hours and the number of hours of private practice worked in a week. Institutional work characteristics include the rank (a three-item variable divided in first level, vice and head) and the specialty (a four-item variable divided in medicine, surgery, diagnostic and "all others"[44]). Family characteristics include the marital status and the number of children. The marital status is a multinomial variable accounting for the work status of the partner. It is made by six categories: no partner, no working partner, partner working residually (from 0 to 20 hours a week), partner working part-time (from 21 to 30 hours a week), partner working full time (from 31 to 40 hours) and partner working overtime (working more than 40 hours a week). A dummy variable was also added for having (=1) or not (0) a partner who also works as a physician to control for homogamous couples. Finally, the number of children is a categorical variable made on the base of the question on the number of children living at home[45]. It is composed by four category: 0 for no children, 1 for 1 children, 2 for 2 children and 3 for more than 2 children. This variable has been transformed into a categorical variable for two reasons: first, to correct for its distribution. As in the general population, also with respect to this specific dataset, the right tail of the distribution of the variable children is not continuous in its extreme values. Second, from a theoretical point of view, I assume that the impact of children varies importantly across the first steps (and therefore between 0 children and 1, between 1 and 2, 2 and more than 2), while it doesn't so much after the third child (Sasser 2005).

[44] The item "all others" of the variable specialty used in the regression includes the specialty of public health, specialties difficult to recode, physicians with no specialty and missing casses. Cases in these four groups are very few (44 in total) and, in order to correct for their distribution in the multinomial variable "specialty", I had to merge them in one single item. Betas and pvalues for such an item haven't been taken then then in consideration as they refer to a very heterogeneous category.

[45] I had the possibility to chose between the answers of two different questions. The former regarding the number of children in general (including the adults one), the second regarding the number of children living at home. I have chose to add the latter on the base of the literature (Sasser 2005) and because it is the most coherent with theoretical framework of this work, which emphasizes the sexual division of labour as an explanatory factor of gender inequalities. Children at home require parents taking care of them (at least until they are not independent) and thus they impact on the division of paid and unpaid work. This is not the case, at least in a much lesser extent, for adult children. This is confirmed by the fact that, running the same regression with the total number of children (instead of the number of children living at home), the beta decreases (from 2% to 1,4%) and the pvalue increases (from 0.070 to 0.221, in both case not significant), indicating that children at home have a stronger impact on pay than children in total.

II. Hypothesis

I consider five mechanisms by which being a woman physician may negatively affect pay. First, in anticipation of taking the majority of family responsibilities, women acquire less human capital (either because they choose it or, alternatively, because employers provide them with less training) (first hypothesis). In this perspective, women's lower pay is attributable to lower levels of human capital (Becker 1981). The human capital theory is less plausible for a specific and quite homogeneous group as the one composed only by physicians, as they have chosen a profession requiring many years of education and long hours of work. On the other hand, descriptive statistics in the previous chapter show that women report, in average, better grades but lower levels of secondary specialties, while no relevant gender differences have emerged with respect to the Ph.D.. Moreover, they report fewer years of work experience which may negatively impact the pay.

Second, women may earn less because they work fewer hours (hypothesis 2) and because they do less private practice, which is more lucrative, than men (hypothesis 2bis). The difference in total work hours and in private practice hours may be due to greater family responsibilities or, in the case of the private practice, to a greater commitment to the institution.

Third, by anticipating major family responsibilities, women may "choose" family-friendly specialties like the medical ones which are less paid (hypothesis 3). Medical specialties are less well paid with respect to surgical ones but they offer better time-arrangements, with more predictable schedules and shorter hours of work. On the contrary, surgical specialties implies higher probability of working extra-hours (especially when complications with patients in the operating rooms occur) and/or facing emergency situations. This is confirmed by the following table which shows that physicians in surgical specialties work, in average, two hours more than physicians in the medical ones. Data include the hours of private practice, which are higher in surgical specialties.

Tab 1. Weekly total hours of work and weekly hours of private practice by specialty

	total weekly work hours	weekly hours of private practice	frequency
Medicine	45.8	2.4	512
Surgery	47.7	4.6	277
Diagnostic	46.2	2	241
all others	46.4	2.9	44
Total	46.4	2.9	1074

Fourth, women may earn less because of their greater family workload. As already mentioned, the sexual division of labour ensures that women and men are differently affected by their marital and parental status. Hence, having children may negatively impact women's pay while it may enhance men's pay (hypothesis 4). Moreover, being married (or living together with) can engender different returns too: positives for men, negatives for women (hypothesis 4bis).

Fifth, women may earn less because either they are discriminated by their employers or because of the effect of unobservable characteristics, such as productivity and skills (hypothesis 5).

III. Interpreting the gap through an OLS multivariate model

In order to test these five hypothesis, a step-wise multivariate regression model using OLS has been run. Table 1 reports the coefficients on pay for different sets of variables. Column 1 shows the "gross" effect of gender on income: without no control for differences in characteristics, women earn 30% less than men. Column 2, 3, 4 and 5 reports the coefficients for different sets of variables, including the control variable "hospital". Column 2 controls for human capital characteristics only. Controlling for grade and years of experience, the penalty decreases to 23.5% but it is still significant. Column 3 adds for work variables, which includes hours of work, hours of private practice, the specialty and the rank. Controlling both for human capital and work variables, the female penalty decreases to 15% thus remaining significant. Column 4 controls for family variables only, while Column 5 reports the full model. Controlling for

all characteristics, the female penalty on pay is still significant. Adding family characteristics doesn't add to much to the model in terms of explained variance as the female penalty still lays at 15% in the full model. Such part of pay gap may be due either to discrimination or to unobservable characteristics.

Over all, table 2 shows that no matter equal (observable) characteristics between men and women, women earns significantly less. This suggests that, net of unobservable characteristics, mechanisms of discrimination take place. As for observable characteristics affecting income, the reduced experience and the reduced hours of work, both in total and with respect to private practice only, are part of the explanations of the pay gap. Having obtained honors increases the pay with respect to the reference category but only at a 90% level of confidence interval. Clearly, being in the top levels of the career ladder increases income, as it is shown by the significance impact of the "vice" and "head" ranks with respect to the first level. Working in a surgical specialty with respect to a medical one significantly increases income, as it does working in diagnostic. Therefore, the higher concentration of women in the lower ranks of the ladder as well as in the medical specialties is one of the explanation of the pay gap. All in all, differences in human capital and work characteristics play a role in engendering a pay differential between men and women. Nevertheless, *they are only part of the whole story*, as controlling for differences in such characteristics, the female penalty on pay persists.

Tab. 2. Step-wise multivariate model on income

	(1) Log income	(2) Log income	(3) Log income	(4) Log income	(5) Log income
Female	-0.305***	-0.232***	-0.149***	-0.279***	-0.150***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Hospital: Public 1		0	0	0	0
		(.)	(.)	(.)	(.)
Hospital: Public 2		-0.0423	-0.0196	-0.115***	-0.0285
		(0.173)	(0.489)	(0.000)	(0.318)
Hospital: Public 3		-0.00575	0.0169	-0.0478	0.0109
		(0.871)	(0.602)	(0.200)	(0.740)
Hospital: Private 1		0.180***	0.0913*	0.0432	0.0948*
		(0.000)	(0.028)	(0.367)	(0.023)
Hospital: Private 2		0.234***	0.176***	0.207***	0.173***
		(0.000)	(0.001)	(0.000)	(0.001)
Grade: up to 104		0	0		0
		(.)	(.)		(.)
Grade: 105-110		0.0408	0.0314		0.0392
		(0.237)	(0.315)		(0.213)
Grade: honors		0.0542	0.0451		0.0501
		(0.100)	(0.135)		(0.099)
Experience		0.0191***	0.0122***		0.0122***
		(0.000)	(0.000)		(0.000)
Work hours			0.00477***		0.00491***
			(0.000)		(0.000)
Hours of private practice			0.00881***		0.00842***
			(0.000)		(0.000)
Rank: Up to 1st level			0		0
			(.)		(.)
Rank: Vice			0.193***		0.184***
			(0.000)		(0.000)
Rank: Head			0.434***		0.440***
			(0.000)		(0.000)
Specialty: Medicine			0		0
			(.)		(.)
Specialty: Surgery			0.0741**		0.0806**
			(0.007)		(0.003)
Specialty: Diagnostic			0.149***		0.149***
			(0.000)		(0.000)
Specialty: All others			0.0636		0.0570
			(0.255)		(0.307)
No partner				0	0
				(.)	(.)
No working partner				0.108*	0.0365
				(0.023)	(0.365)
Partner working residually				0.0597	-0.0172
				(0.331)	(0.737)
Partner working part-time				0.0838	0.0791
				(0.133)	(0.097)
Partner working full-time				-0.00287	0.0353
				(0.943)	(0.303)
Partner working over-time				0.0481	0.0786*
				(0.235)	(0.022)

No children				0	0
				(.)	(.)
One child				0.0795*	0.0434
				(0.017)	(0.123)
Two children				0.0658	0.0567*
				(0.050)	(0.046)
More than two children				0.0633	0.0429
				(0.194)	(0.297)
Having a physician as partner				-0.00765	-0.0447
				(0.801)	(0.079)
Constant	11.27***	10.81***	10.51***	11.22***	10.45***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
R-square	0.123	0.362	0.484	0.177	0.494
N	1004	914	914	1004	914

p-values in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

IV. Interpreting the pay gap through interaction terms

Family variables must be treated carefully. Because of the persistence of the sexual division of labour assigning major family responsibilities to women, the marital status and the number of children may affect women's and men's pay in different ways. Many studies have documented the existence of a marital wage premium for men (Korenman and Neumark 1991, Loh 1996, Hersch and Stratton 2000). Qualitative contributions in the study of gendered organisations have shed light on the positive effect, on men's career, of being married with a non-working spouse (Pateman 1988, Wajcman 1998, Wajcman and Martin 2001). On the other hand, married women may be penalized in terms of earnings (Buding and England 2001, Sasser 2005). As for the effect of children on parent's wages, many contributions have shed light on the wage penalty for motherhood (Folbre 1994, Waldfogel 1997, Lundberg and Rose 2000, Buding and England 2001, England 2005, Sasser 2005) as well as on the fatherhood wage premium (Sasser 2005, Glabuer 2008, Hodges and Budig 2010, Kelly 2012). In order to account for such differences in "slopes", many scholars interact the marital and the parental status with the gender variable while modelling the pay gap (Tharenou 1999, Sasser 2005, Kelly 2012).

Nevertheless, if the use of interaction terms with respect to family characteristics in modelling the pay gap is quite common in the literature, it is not with respect to human capital and work variables. Only a few empirical studies, in the area of gender work and organisation, go in that direction (Hoff 2004). Yet, that gender moderates the effects of

human capital and work characteristics is well known. In the economic literature, the decomposition methods (i.e. Oaxaca-Blinder) are based on the assumption that the pay gap is due both to differences (between males and females) in characteristics between males and females as well as to differences in their *returns*. Within the sociological debate, both the queue tradition and the debate on comparable worth (see Chapter 1) suggest that the "effort" - in education and in employment – are differently "assessed" in the labour market whether they refer to men or women thus leading to mechanisms of horizontal segregation and pay inequalities. In multivariate analysis, these differences could be accounted for by interacting gender with human capital and work characteristics.

In order to investigate the different "slopes" – between men and women – of the same variables, interaction terms have been added with respect not only to family characteristics, but also with respect to human capital and work characteristics. The idea underneath is to investigate whether, for example, women have lower "returns" on their educational credentials or on the time they spent at work. Whether being a female surgeon or a female "head" "pay" less than being a male surgeon or a male "head", controlling for all other characteristics.

Descriptive statistics suggest that being surgeon or working in a top position is less rewarding for women than for men, as it is shown in the tables below:

Tab 3. Mean income by specialty and gender

specialty	gender male	female	Total
medicine	80618.932	60250	69065.126
	206	270	476
surgery	89986.339	61085.526	81505.792
	183	76	259
diagnosti	87568.807	67125	76855.895
	109	120	229
all other	95238.095	77236.842	86687.5
	21	19	40
Total	85973.025	62747.423	74753.486
	519	485	1004

Tab 4. Mean income by rank and gender

rank	gender male	gender female	Total
up to 1st	68560.886 271	55666.209 364	61169.291 635
Vice	88166.667 150	78010.753 93	84279.835 243
Head	130765.31 98	104107.14 28	124841.27 126
Total	85973.025 519	62747.423 485	74753.486 1004

Yet the simple crosstabs do not take into account other important differences in human capital, individual work and family characteristics. In order to do this, one must make use of an OLS multivariate regression accounting for interactions terms.

Two sets of models have been run. Each set of model shows the full model in the first column and the model accounting for the interaction terms in the second column. Preliminary regressions separately for men and women have been run in order to identify which explanatory variable reported opposite coefficients thus suggesting the need of an interaction. Afterwards, interaction terms have been added in the full model and significant interactions up to 90% level have been kept. In the first set of model children and partner are categorized as dummy variables (1=having children - 0=no children; 1= having a partner – 0=no partner). In the second set of models both children and partner are multinomial variables where partner accounts for the hours of work of the partner. The second set of model reports, in the first column, the same exact full model of table 4 and, in the second column, its version with the interaction terms.

The differences in the use of the children and partner variables make sense as long as they answer to different research questions. The first set of models reports the effect of having or not having children and having or not having a partner. The second set of models – which corresponds exactly to the full model of the previous paragraph – goes further in details and reports the incremental effect of having children and the effect of having a working partner, with different degrees of work-schedules, with respect to not having a partner at all (reference category).

As one can see, using a different recodification of the same two variables doesn't change much in terms of observations, R squared and F tests, while betas and t statistics are slightly different but such difference doesn't modify the interpretation. Each couple of model presents the full model in the first column and the same model with the interactions terms in the second column.

Table 5. Ols models with interactions

	Set 1		Set 2	
	(1)	(2)	(1)	(2)
	Log income	Log income	Log income	Log income
Female	-0.141***	0. 0843	-0.150***	0.0774
	(0.000)	(0. 354)	(0.000)	(0.397)
Hospital: Public 1	0	0	0	0
	(.)	(.)	(.)	(.)
Hospital: Public 2	-0.0294	0. 0382	-0.0285	0.0381
	(0.301)	(0. 348)	(0.318)	(0.349)
Hospital: Public 3	0.00273	0. 0445	0.0109	0.0454
	(0.933)	(0. 320)	(0.740)	(0.318)
Hospital: Private 1	0.0879*	0.201***	0.0948*	0.213***
	(0.034)	(0.000)	(0.023)	(0.000)
Hospital: Private 2	0.170***	0.238***	0.173***	0.247***
	(0.001)	(0.001)	(0.001)	(0.000)
Hospital*female: Public 1		0		0
		(.)		(.)
Hospital*female: Public 2		-0.115*		-0.115*
		(0.043)		(0.045)
Hospital*female: Public 3		-0. 0585		-0.0456
		(0. 369)		(0.491)
Hospital*female: Private 1		-0. 232**		-0.228**
		(0.005)		(0.006)
Hospital*female: Private 2		-0.102		-0.0923
		(0.306)		(0.361)
Grade: up to 104	0	0	0	0
	(.)	(.)	(.)	(.)
Grade: 105-110	0.0340	0.0437	0.0392	0.0461
	(0.275)	(0.290)	(0.213)	(0.269)
Grade: honors	0.0475	0.0937*	0.0501	0.0920*
	(0.114)	(0.019)	(0.099)	(0.023)
Grade*female: up to 104		0		0
		(.)		(.)
Grade*female: 105-110		-0.0276		-0.0221
		(0.661)		(0.727)
Grade*female: honors		-0.0935		-0.0848
		(0.123)		(0.167)
Experience	0.0120***	0.0117***	0.0122***	0.0121***
	(0.000)	(0.000)	(0.000)	(0.000)
Work hours	0.00504***	0.00476***	0.00491***	0.00455***
	(0.000)	(0.000)	(0.000)	(0.000)
Hours of private practice	0.00879***	0.00932**	0.00842***	0.00872**
	(0.000)	(0.001)	(0.000)	(0.003)
Hours of private practice*female		-0.00283		-0.00277
		(0.557)		(0.570)
Rank: Up to 1st level	0	0	0	0
	(.)	(.)	(.)	(.)
Rank: Vice	0.183***	0.145***	0.184***	0.143***
	(0.000)	(0.000)	(0.000)	(0.000)
Rank: Head	0.437***	0.398***	0.440***	0.399***
	(0.000)	(0.000)	(0.000)	(0.000)
Rank*female: Up to 1st level		0		0

		(.)			(.)
Rank*female: Vice		0.0823			0.0864
		(0.130)			(0.112)
Rank*female: Head		0.159*			0.153
		(0.046)			(0.060)
Specialty: Medicine	0	0		0	0
	(.)	(.)		(.)	(.)
Specialty: Surgery	0.0754**	0.0991**		0.0806**	0.110**
	(0.006)	(0.004)		(0.003)	(0.002)
Specialty: Diagnostic	0.145***	0.145***		0.149***	0.150***
	(0.000)	(0.000)		(0.000)	(0.000)
Specialty: All others	0.0601	0.199*		0.0570	0.207*
	(0.280)	(0.014)		(0.307)	(0.011)
Specialty*female: Medicine		0			0
		(.)			(.)
Specialty*female: Surgery		-0.0295			-0.0328
		(0.603)			(0.565)
Specialty*female: Diagnostic		-0.00548			-0.00462
		(0.919)			(0.932)
Specialty*female: All others		-0.292*			-0.298**
		(0.010)			(0.009)
Partner dummy	0.0511	0.109*			
	(0.084)	(0.021)			
Partner dummy*female		-0. 0795			
		(0.182)			
Children dummy	0.0501*	0.0659*			
	(0.033)	(0.048)			
Children dummy*female		-0. 0383			
		(0.413)			
No partner				0	0
				(.)	(.)
No working partner				0.0365	0.0698
				(0.365)	(0.204)
Partner working residually				-0.0172	0.0774
				(0.737)	(0.233)
Partner working part-time				0.0791	0.164**
				(0.097)	(0.009)
Partner working full-time				0.0353	0.0980
				(0.303)	(0.064)
Partner working over-time				0.0786*	0.155**
				(0.022)	(0.006)
No partner*female					0
					(.)
No working partner*female					-0.0315
					(0.723)
Partner working residually*female					-0.274*
					(0.028)
Partner working part-time*female					-0.202
					(0.063)
Partner working full-time*female					-0.0807
					(0.250)
Partner working overtime*female					-0.0945
					(0.187)
No children				0	0
				(.)	(.)
One child				0.0434	0.0561
				(0.123)	(0.168)
Two children				0.0567*	0.0691

				(0.046)	(0.077)
More than two children				0.0429	0.117*
				(0.297)	(0.043)
No children*female					0
					(.)
One child*female					-0.0313
					(0.580)
Two children*female					-0.0365
					(0.527)
More than two children*female					-0.157
					(0.059)
Having a physician as partner	-0.0401	-0.0493		-0.0447	-0.0683
	(0.108)	(0.050)		(0.079)	(0.058)
Having a physician as partner*female					0.0232
					(0.654)
Constant	10.44***	10.33***		10.45***	10.33***
	(0.000)	(0.000)		(0.000)	(0.000)
R-square	0.491	0.505		0.494	0.514
N	914	914		914	914

p-values in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

With respect to family interactions, Column 2 shows that having a partner significantly grows men's income while it doesn't have an effect on women's income. Column 4 provides further details by reporting that the positive effect on men's income occurs when the wife or the cohabiting partner works, and more specifically when she works more than 40 hours (partner working overtime) or part-time (at 95% level of significance) and when she works full time (at 90% level of significance). Hence, the analysis of the working status of the partner rejects previous results of the literature on the positive effect of housewives on men's careers (Pateman 1988). Nevertheless, if the male's partner is a physician, this seems to have a negative impact on his income at 90% level, while it is not the case for female physicians (having a physician as partner). This is, apparently, a contradictory result with respect to the previous findings on the effect of partner's working status for men's pay. The latter suggest that men's pay is positively affected by working partners (from 20 to more than 40 hours of work par week). If this partner is a physician though, the effect is negative. Unfortunately, data on working partners provide the hours of work but not the type of work that partners do. Certainly, it includes (also) women working part-time. Moreover, one can assume it includes many different types of jobs, including typical female-dominated (and low-paid) jobs. Previous studies on

aerospace engineers have shown that male scientists have high-educated partners who either are aerospace engineers as well or, if not, they work in female-dominated and low-paid sectors (Falcinelli 2009). If this was true also for physicians, it would explain the different effect of an apparently similar situation. Working wives are a heterogeneous group (also) including part-time and low-paid workers, while wives working as physicians represent a very selected group with high income. If this is true, male physicians with a working partner are more likely to be the breadwinner of the family, while male physicians in homogamous couples are not, as both members of the couple are career-oriented. Further investigations though are needed to confirm this interpretation.

As for children, the "gross" effect of having children (no matter their number) with respect to not having them at all is positive for men (column 2) while it is not significant (but worth of notice it is the negative sign of the beta) on women. Analyzing the effects of each specific number of children, though (column 4), the effect of having more than two children is significant at 95% level for men (p value 0.043) and at 90% level (p value 0.059) for women. In other words, with the third child a bonus for fatherhood and a penalty motherhood occur.

Human capital and work characteristics interactions show some interesting results. Educational credentials "pays" differently by gender: honors (grade) increase men's income but not women's one, no matter if women have, in average, better grades. As for work variables, the interactions terms show that working in private hospitals is worth for men, but not for women, as only men's income increase. On the contrary, working in Public 2 (Legnano) and Private 1 (San Donato) is disadvantageous for women, as their income decreases. That is, public institutions seem to guarantee a better gender equality in terms of revenues, while private don't. This may be due to the fact that in private hospitals, unlike in public ones, a substantial part of annual earnings is distributed to physicians through bonuses. Bonuses depend on employer's evaluation of physicians' performances and they can be affected by gender bias (Valian 1999), which explain lower females' earnings. These results confirm previous researches on other high-skilled professions showing that bonuses play a crucial role in determining the gender pay gap (Roth 2006). As for the choice of the specialty, being in surgery and diagnostic, with respect of being in medicine, "pays" only for men, while it doesn't for women. Worth of

interest that, while the hours of work don't behave differently whether they refer to women or men, it is not the case for the hours of private practice, which increase the income for men but do not increase the income for women. Finally, there is a positive effect of being in the top positions for men but not for women, with the "vice" and "head" position incrementing men's income.

V. Decomposing the pay gap through the Oaxaca-Blinder decomposition

The idea that the same characteristics can have different effects whether they refer to women or men is at the base of the Oaxaca-Blinder decomposition (Oaxaca 1973, Blinder 1973, Oaxaca and Ransom 1999). Its formula is based on the assumption that the pay differential between men and women is due to two components: a component related to the difference in observable characteristics and a component related to the difference in returns of these same characteristics. Its formula is the following one:

$$\log(W_m) - \log(W_f) = \beta_m (X_m - X_f) + (\beta_m - \beta_f) X_f$$

where log (W) is the natural logarithm of wage, X are the characteristics and β the coefficients which refer either to males (m) or females (f). The formula is based on the linear function of pay[46] and indicates that the gender difference in the log wage is equal to the difference in characteristics of the two groups weighted for the coefficients of the advantaged group (which is assumed to be men's group) plus the difference in the returns of characteristics weighted for the (mean) characteristics of the disadvantaged group (which is assumed to be women's group). The first part of the pay difference is the "explained" part of the gap which economists usually interpret as "fair", as long as it is "justified" by a difference in characteristics. The second component, on the contrary, is the "unexplained" part of the gap and it relates to discrimination, as it is due to the difference in "values" that employers attribute to women and men's characteristics.

This interpretation has two limits: on one hand, it doesn't account for unobservable characteristics, on the other, it doesn't account for indirect discrimination. In the light of

[46] The above-illustrated formula is the difference in average outputs between two groups (males and females) : $\bar{y}_m - \bar{y}_f$. Where the output y (log wage) is the linear function of the covariates X and the error ε is independent of X: $y=\sum\beta X + \varepsilon$.

this, one should take two precautions in the interpretation of the decomposition. First, the explained part doesn't have to be interpreted as the part "justifying" the pay gap as the difference in characteristics can occur because women "anticipate" discrimination in their choices. More correctly, the first part should be interpreted as the component accounting both for the differences in observable characteristics and for *indirect* discrimination. Second, the unexplained part also includes the potential effect of unobservable characteristics which can't be "controlled" in the model, for example ability and productivity. As a consequence, it should be correctly interpreted as the component accounting both for *direct* discrimination and unobservable characteristics.

An Oaxaca decomposition based on the full OLS model presented in paragraph II (table 2, column 5) and paragraph III (table 5, set 2, column 1) is shown in the following table.

Tab 6 – The Oaxaca-Blinder decomposition

	Log income				
overall					
group_1	11.28***	(0.000)			
group_2	10.95***	(0.000)			
difference	0.326***	(0.000)			
explained	0.176***	(0.000)			
unexplained	0.150***	(0.000)			
explained			**unexplained**		
Public 2	0.00183	(0.355)	Public 2	0.0428*	(0.048)
Public 3	0.000496	(0.741)	Public 3	0.00949	(0.497)
Private 1	0.00364	(0.175)	Private 1	0.0230*	(0.024)
Private 2	-0.000536	(0.843)	Private 2	0.00411	(0.471)
Grade: 105-110	-0.000517	(0.691)	Grade: 105-110	0.00839	(0.714)
Grade: honors	-0.00281	(0.257)	Grade: honors	0.0410	(0.215)
Experience	0.0561***	(0.000)	Experience	-0.0777	(0.107)
Hours of work	0.0156**	(0.010)	Hours of work	-0.215	(0.140)
Private practice	0.0151*	(0.027)	Private practice	0.0125	(0.494)
Rank: Vice	0.0192***	(0.001)	Rank: Vice	-0.0104	(0.332)
Rank: Head	0.0597***	(0.000)	Rank: Head	-0.00600	(0.485)
Specialty: Surgery	0.0148**	(0.008)	Specialty: Surgery	0.00930	(0.469)
Specialty: Diagnostic	-0.00505	(0.232)	Specialty: Diagnostic	0.000533	(0.962)
Specialty: All others	-0.000246	(0.759)	Specialty: All others	0.0114	(0.053)
No working partner	0.00510	(0.382)	No working partner	0.00630	(0.564)
Partner working residually	-0.00137	(0.753)	Partner working residually	0.0130	(0.059)
Partner working part-time	0.00695	(0.112)	Partner working part-time	0.0143	(0.059)
Partner working full-time	0.000599	(0.613)	Partner working full-time	0.0189	(0.326)
Partner working overtime	-0.0157*	(0.032)	Partner working overtime	0.0174	(0.328)
One child	-0.000779	(0.562)	One child	0.00894	(0.504)
Two children	0.00382	(0.116)	Two children	0.00981	(0.478)
More than two children	0.0000869	(0.914)	More than two children	0.0141	(0.063)
Having a physician as partner	-0.000367	(0.780)	Having a physician as partner	-0.00582	(0.659)
Constant	0.199	(0.327)			
N	914				

p-values in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

The natural log of the mean income of males (group 1) is 11.28, while the natural log of the mean income for females (group 2) is 10.95. The natural log of the difference of the two mean incomes is 0.32. Out of it, 0.17 is the explained part and 0.15 is the unexplained part. The explained part provides the effects of the difference in characteristics on the gap: a negative coefficient means that women's mean value with respect to a specific characteristic is higher than men's (X_m-X_f) and it contributes to decrease the gap of β. On the contrary, a positive coefficient means that women's mean value is lower than men's and it contributes to increase the gap of β. The unexplained part provides the effects of the difference in returns of the characteristics on the gap. A negative coefficient means that women's mean return on a specific characteristic is higher than men's and it contributes to decrease the gap of β. A positive coefficient means that women's mean return on a specific characteristic is lower than men's and it contributes to increase the gap of β.

Among the observable characteristics, the fact that men have, in average, a longer work experience, work longer hours and do more private practice than women increase the gender gap. Being more likely than women to be in a "vice" or in a "head" position, as well as being more likely to work in a surgical specialty, also increase the gender pay gap. On the other hand, the fact that women are more likely than men to have a partner working overtime decreases the gap. Looking at the unexplained part, the lower returns, for women, of working in Public 2 and Private 1 translates into an increase of the total pay gap, given all other characteristics equals. The lower returns, for women, of having a partner working residually or part-time also increases the gap at 90% level. Finally, the "return" on children is higher for men than for women, as all the coefficients regarding the multinomial variable in the unexplained component report a positive sign but only having more than two children is significant at 90% level, that is the higher returns, for men, of having more than two children (with respect to women), increases the pay gap.

VI. Conclusions

The OLS analysis shows that no matter equal (observable) characteristics, women earn 15% less than men. This suggests that, net of unobservable characteristics, mechanisms of discrimination take place in the five hospitals. These findings challenge the human

capital perspective by calling for the role of structural mechanisms in producing inequalities.

Moreover, adding interaction terms in the model provides useful insights for understanding the mechanisms of discrimination though the use of interaction terms. The study confirms previous findings of the literature on the interaction of family characteristics with gender and more specifically that having a partner and having children significantly increases men's income. Nevertheless, it has no effects on women's income. Accounting for the incremental number of partner's working hours and accounting for the number of children, a significant negative impact for women occurs with respect to partners working residually or part time and with respect to the third child at 90% level. Overall, the analysis shows that the "husband" and "fatherhood" premium for men appear stronger than the "wife" and the "motherhood" penalty for women[47]. Further interesting findings have emerged in the analysis of human capital and work characteristics: the use of interaction terms has shown that honors increase men's income but not women's one. Working in private hospitals increases men's income but it decreases, at least in Private 1, women's. That is, public institutions seem to guarantee more gender equality in terms of revenues, while private don't and this may be due to the fact that in private hospitals, unlike in public ones, a substantial part of annual earnings is distributed to physicians through bonuses. Different "rewards", whether they refer to male or female physicians have been found with respect to the hours of private practice, the choice of a surgical specialty and working in a top position.

The decomposition partially confirms the results pointed out by the models accounting for interaction terms. Indeed, if the latter quantify the *return* of women's (or men's)

[47] The causal relation between children and men's income doesn't have to be interpreted merely as a matter of (positive, in this case) discrimination. In other words, It is not only because employers discriminate workers on the base of their gender that, once they have children, they differently "reward" them, by positively discriminating men and increasing their income. The effect of children on men's income should be interpreted also as a matter of "choice". Once they have children, women and men may choose to differently invest in their paid work and non paid work activities because, on one part, their earnings are different, and, on the other, because women may anticipate discrimination. In other words, if on one hand women earn less than their male's partner even before becoming mothers and, on the other, they expect to have greater difficulties in terms of career progression once they will have children, then the choice that both women and men make within the couple – in terms of splitting responsibilities and time devoted to paid and non paid activities *on the base of the structure of their opportunities* - are perfectly rational (Becker 1985). Having considered this, men's income are positively affected by children not only because employers reward parenting differently whether it refers to women or men (demand-side: direct discrimination), but also because of men's and women's choices of differently investing in paid activities once they become parents (supply-side: indirect discrimination).

characteristics on women's (or men's) income, the former tells if and how this difference in the *returns* increases or decreases the difference in pay. The analysis of the explained part has confirmed the results of the OLS model: the fact that men have a longer work experience, work longer hours, do more private practice, are clustered in surgical specialties and in top position increase the pay gap. The analysis of the unexplained part confirms the role of family interactions in producing inequalities but not the role of human capital and work interactions. Hence, the higher returns, for men, of having a working partner and more than two children increases the gap. Women report negative but not significant betas. Once again, the "husband" and fatherhood bonus seems stronger than the "wife" and motherhood penalty in determining the pay gap.

Chapter 5 – Explaining the vertical segregation

I. The gender gap in authority in the literature

The existence of the "vertical segregation" in workplaces is well documented in the literature (Jacobs 1995, Reskin and Roos 1990, Crompton and Sanderson 1993, Baxter and Wright 2000, Roth 2006, Crompton 2005). Three main metaphors have been used by scholars to describe its mechanisms: the "glass ceiling", the "sticky floors" and the "leaky pipeline". The former refers to the existence of an invisible barrier blocking the vertical mobility of women (Federal Glass Ceiling Commission, 1995), thus suggesting that the obstacles that women face in promotions are greater at the end of the career ladder than at the bottom (Baxter and Wright 2000). Sticky floors are complementary to the glass ceiling and suggest the idea that the obstacles that women face are grater at the beginning of the career ladder (Baert et al. 2016). The leaky pipeline (Alper 1993, Blickenstaff 2005) suggests that there is no difference between barriers at the beginning and barriers at the end of the ladder as female talents are "dropped" all along the career trajectory.

Whether the obstacles are at the beginning, at the end, or all along the career ladder, the consequence is that women are clustered in the lower ranks of the hierarchies, while they are under-represented in the middle and in the top positions. While there are several studies describing the mechanisms of the vertical segregation, very few ones have addressed the empirical question of the relative probabilities of women and men being promoted (Baxter and Wright 2000). Even fewer studies apply this question to medical careers. At my knowledge only Jagsi et al. (2011) have done it with respect to academic careers, while no study have been conducted with respect to hospital careers yet.

Beyond the more specific debate on medical career, in the more general literature on the labour market, the study of Baxter and Wright (2000) represents an important contribution in the study of the vertical segregation as it empirically investigates the probability of promotion at given steps of the career ladder through logistic regressions. The idea is to test the existence of the glass ceiling in three labour markets (Us, Sweden

and Australia) by calculating the female coefficients of promotion throughout a six-steps ladder. Baxter and Wright provide two definitions of glass ceiling. In its strict version, it implies the existence of barriers at the end of the ladder. In its broader version, it implies the existence of increasing barriers all along the ladder. Considering the two definitions of glass ceiling, its existence would be confirmed empirically if, on one hand, significant negative female coefficients to promotion are found at the end of the ladder (strict version) or if these coefficients *worsen* throughout the different steps (broader version). Empirically, the glass ceiling can be tested by running different logit models for each (adjacent) step of the career. If the female coefficient to promotion at a given level is worse than at the previous – adjacent – level of the ladder, then one must conclude that there is a glass ceiling. Their findings don't confirm the existence of a glass ceiling, as in all the three countries analysed the female odds ratio to promotion are significant lower than men's at the first of the six steps of the ladder, while Sweden and Australia report significant negative beta also at the third level. Overall, the study shows that in the three countries analysed, women are less likely to reach the top positions because of the existence of barriers at the beginning of the career ladder. Moreover, in two out of three countries, significant obstacles preventing women to climb the hierarchy are identified in the middle of the ladder. While denying the existence of a glass ceiling, the two authors are, de facto, confirming the existence of the sticky floors and the leaky pipeline, no matter if they don't use such metaphors for describing their results.

Baxter and Wright's study has given rise to a rich debate. More specifically, their paper has been the object of two reviews – one by Ferree and Purkayastha (2000) and the other by Britton and Williams (2000) – shedding light on the critical aspects of their work. Both reviews contend the definition of glass ceiling provided by Baxter and Wright. According to the reviewers, the glass ceiling is not the result of *increasing* female disadvantages. It is, rather, the result of *cumulative* disadvantages (thus not necessarily increasing) faced by women all along their career trajectory. If this is the case – if the glass ceiling is the effect of tiny, even invisible, disadvantages, not necessarily increasing, throughout all the steps of the hierarchy – the fact that female coefficients to promotions stay constant or ameliorate at the top levels (as it is the case of Baxter and Wright's study), in the critics' point of view it doesn't deny the existence of a glass ceiling. In other words, the glass ceiling is the *effect* of an accumulation of disadvantages (Merton 1968, Valian 1999).

What Britton and Williams suggest is to investigate the glass ceiling otherwise: by intensive qualitative case studies in order to capture detail information on the whole of the career trajectory. As for Ferre and Purkayastha (2000), they suggest to calculate the cumulative odds otherwise: any woman who made it to level 4 of a five-steps ladder has already survived severe discrimination, they say. Therefore, her odds of promotion to level 5 are the product of all the relative disadvantages she has gone trough *at each step*. If, for example, women have constant relative disadvantage to men, i.e. two thirds the chance of relative promotion at each level of a four-steps career ladder, the cumulative odds to promotion for women at level one, compare to their male colleagues at the same level, will be $(2/3)^4$, that is the relative disadvantage raised to the number of steps (Ferree and Purkayastha 2000, p. 810).

Both critics, no matter the different "solutions" they propose, insist on the fact that women face cumulative disadvantages and consider the glass ceiling as the effect of a leaky pipeline. In other words, they both propose a different definition of glass ceiling and – on the base of this different definition – they contest Baxter and Wright's empirical investigation. This is quite strong in Britton and Williams's where their critic assumes theoretical insights. Recalling Reskin and Padavic's work, the two authors argue that the glass ceiling and the sticky floors can be the same thing. But whatever language one use, such critics doesn't contradicts Baxter and Wright's empirical findings. It only suggests how to better interpret them, by taking in consideration the cumulative disadvantages women experience. By arguing – as Baxter and Wright do – that female odds to promotion are higher at the lower levels than at the top levels of the ladder simply means to argue that the problem deals more with sticky floors and leaky pipelines rather than with glass ceilings. This doesn't mean to deny that women face cumulative disadvantages, on the contrary. Nor to deny that they are discriminated. It simply means that early steps of the career ladder are *crucial*, even *more crucial* than later steps, in determining women's career outputs and – therefore - their equal representation at the top positions. If they are crucial, they imply specific policies (i.e. mentoring) which are different from the ones used for addressing the problem of the glass ceiling (i.e. gender quota). For this reason, it is important to analytically distinguish the two concepts as it will be do in this chapter. Denying the existence of the glass ceiling doesn't mean to deny the existence of the vertical segregation.

The reviewers' critics appear more appropriate, in terms of empirical consequences, when they point out the lack of adequate indicators of the horizontal segregation in the labour market and of the "quality" of employees. If the former of the two problems can be solved by adding more adequate controls of the occupational segregation, the latter deals with the well-known problems of the measurability of unobservable characteristics (i.e. productivity and skills) in regression-based methods. The problem of unobservable characteristics is even more crucial in the study of the probabilities of promotion as, like Ferree and Purkayastha (2000) have pointed out, is intertwined with the issue of accumulated disadvantages. Indeed, since women are subjected to a more stringent selection process (due to discrimination), they are likely to be increasingly more qualified than men in the available pool of potential candidates for promotion. Therefore, "even a constant differential probability of promotion in favor of men would constitute an intensification of discrimination against women" (Wright and Baxter 2000, p. 817). Given that characteristics such as ability and skills are very hard to measure, their impact can be controlled by recurring to very homogeneous population as it is the case of this research.

In this chapter the mechanism of vertical segregation will be investigated by replicating Baxter and Wright's methodology. By adding the variable specialty in the model, the horizontal segregation will be controlled. Moreover, because of the choice of investigating one single profession, the problem of unobservable characteristics will be also reduced.

II. Research design and hypothesis

Drawing from Bexter and Wright's study, the female odds of promotion will be calculated through three sets of logistic regressions. The dependent variable is constructed on a three-step career ladder (first level, vice and head). The first two sets of models are adjacent-level models calculating the probability of being in level n+1 compared to level n. The first set of models calculates female coefficients of promotion to "vice" compared to the first level. The second set of models calculates the female coefficient to promotion to the "head" level compared to the vice level. If the female odds of becoming head with respect to vice is worse than the female odds of becoming vice with respect to the 1st level

(net of unobservable characteristics), then it means that there is a glass ceiling at the end of the carrier. On the contrary, if the female odds of becoming vice (with respect to 1st) is worse than the female odds of becoming head (with respect to head), then it means that obstacles to women's career advancement should be identified at the middle of the ladder and, more specifically, where responsibility (towards a sub-unit and its components) come into play for the first time[48]. In addition to the two adjacent level-models, a group-level model calculates the probability of becoming head compared to both first level and vice physicians. This set of models allows to relax the assumptions of the first two and it works as reliability check (I will come back to this point later).

In addition to Baxter and Wright, once having assessed in which step of the ladder women face greater obstacles than men, I will explore the determinants of these obstacles. Five mechanisms by which being a woman physician may negatively affect the probability of career progression will be explored. Women may be less likely to be promoted because of their lower work experience (hypothesis 1) or because they work fewer hours (hypothesis 2). Women may be less likely to be promoted because of their grater family responsibilities. Hence, having children may negatively impact women's probability to climb the career ladder while it may enhance men's one (Hypothesis 3). Moreover, being married (or living together with) can engender different returns too: positives for men, negatives for women (Hypothesis 4). Women may be less likely to be promoted because either they are discriminated by their employers or because of the effect of unobservable characteristics, such as quality, which are not included in the model.

[48] Physicians can very well end their career as 1st level physicians. Being promoted a vice is not automatic, as it means to be responsible for a sub-unit and for its components. For this reason, it appears more correct to use the expression "glass ceiling", rather than "sticky floors", to refer to the barriers at the vice level. Unfortunately, I can't test the sticky floor hypothesis because of the way the career ladder is constructed. As already mentioned (see chapter 3), each of the five hospitals had its own career ladder. The three public hospitals have a six-steps career ladder, Machado has a five-steps ladder while San Donato has a three-steps ladder. In order to harmonize the three models of the ladder and correctly "sets" the physicians of San Donato (which presents the shortest ladder) in their right rank, I was obliged to create a three-step ladder, that is to reduce all the ladders to the San Donato model. The first level of the new scale groups two different ranks of the three public hospitals and Machado. The vice level group three levels of the public hospitals and two levels of Machado. If, by simplifying the scale, I have certainly gained in robustness, I unfortunately have lost in details. Such lost is reflected in the analysis of the probability of promotions. Indeed, I couldn't analyze in details the probability of promotion through the different middle steps of the ladder and, most importantly I couldn't analyze at all the odds of promotion of the early steps of the career. This analysis would have provided me with information on the existence, or not, of sticky floors. I certainly can run such analysis by restricting the dataset only to the three public hospitals (with, eventually, Machado) and excluding San Donato physicians. This will be the object of future researches.

III. The model

The position in the career ladder is the dependent variable. According to the way it is coded, it will be possible to explore the odds of promotion at different levels of the ladder. In order to do this, three sets of models have been set. The first and the second set of models are adjacent level models analyzing, respectively, the odds of becoming vice with respect to the 1st level (vice-versus-1st level: first set) and the odds of becoming head with respect to the vice level of the career ladder (head-versus-vice: second set). In the first set, the dataset is restricted to physicians in the first or vice levels, the rank is coded as a dummy variable where 1=vice and 0=first level. In the second set, the dataset is restricted to physicians in the vice or head levels, the rank is coded as a dummy variable where 1=head and 0=vice.

The model of the two sets is a logistic regression estimating, for individuals i in a given level n of the career ladder, the odds ratios of being in the upper level n+1:

$$\text{Log}\,[Pr(n+1)/Pr(n)]=a_{)}+\sum\beta_{(n+1)i}X_i+\varepsilon$$

where Pr(n+1) is the probability of being at level n+1 and Pr(n) is the probability of being at level n, the subscript n+1 indicates that the coefficients β refers to the probability of being in the level n+1, X are the covariates, a the intercept and ε the error. In the group-level model, n is a macro-category including both 1st level and vice physicians, while n+1 is the head level.

In addition to the two adjacent level-models, a group-level model calculating the probability of becoming head compared to both first level and vice physicians is proposed. To do so, the adjacent levels "1st" and "vice" are collapsed together in a broader category. In this case, the dependent variable rank is coded as a dummy variable where 1=head and 0=all other levels in order to analyze the probability of becoming head after a certain cut-point, that is with respect both to the first and the vice levels. The group-level model is useful for three reasons. First, it allows to increase the sample size as all the three steps of the ladder are included in the regression. On the contrary, the two adjacent level models are based on a restricted population. In the head-versus-vice model, for example, the number of observation is very low (391) as the most populated category – the 1st level – is excluded. Second, the two adjacent models assumes that the career

ladder is somewhat progressive and exclude that a 1st level physician can become head without passing though the step "vice"[49]. The group-level model relaxes this assumption. Third, it works as reliability check. If the results are consistent across the different codification of the dependent variable, then it provides confidence to the interpretation (Baxter and Wright, 2000a) [50].

The analysis of the female probability to promotion will be reported in a first table, while the analysis of the determinants to promotion will be reported in a second table. In the first table, each sets of models includes two models. The first model reports the "gross" gender gap in authority without controlling for characteristics (the gender is the only explanatory variable added in the model). The second model reports the "net" gender gap controlling for human capital, work and family and characteristics. In the second table, each sets of models includes two models as well. The first model is the full model reporting the coefficients of all explanatory variables, the second model is the full model accounting for interaction terms.

IV. Measures

The dependent variable is a dummy variable indicating the rank in the career ladder. The type of hospital is the control variable. Independent variables include human capital, work and family characteristics. Human capital characteristics include educational credentials and the years of experience. Educational credentials include a categorical variable with four outcomes for grade and a dummy variable for further titles where

[49] "Skipping a step" is rare but not impossible. Certainly, the fact of having merged many different steps into only three (in order to harmonize the San Donato's career ladder with the other four ladders) strongly reduce such probability.

[50] Reliability checks have also been done on the two adjacent-level models by running the same analysis through two multinomial logistic regressions. In this case, the dependent variable is coded as a three-item multinomial variable where 0=first level; 1=vice and 2=head. The two multinomial logits are run on the whole population. In the first model, the reference category is the first level. The logit provides two results: the odds of promotion to the vice level and the odds of promotion to the head level, both with respect to the reference category 1st level. The first model's results are kept for doing reliability checks. In the second model, the reference category is the vice level. The logit provides two results: the odds of promotion to the head level and the odds of promotion to the 1st level with respect to the reference category vice. The first model' results are kept for doing reliability checks. Comparing the four models (odds of promotion to head through logit and odds of promotion to head through multinomial logit; odds of promotion to vice through logit and odds of promotion to vice thorough multinomial logit) it emerges that the coefficients of the covariates, their p values and confidence intervals are very similar. Only the pseudo R2 changes, showing higher values in the multinomial logit than in the logit. The female coefficients of the multinomial logit models are reported in table 1 of this chapter.

1=having more than one specialty or a Ph.D and 0=having no or one specialty only. Individual work characteristics include the number of hours and the number of hours of private practice worked in a week. Institutional work characteristics include the rank (a three-item variable divided in first level, vice and head) and the specialty (a four-item variable divided in medicine, surgery, diagnostic and all others).

Family characteristics include the marital status and the number of children. The marital status is a dummy variable where 1=being married or living together with a partner and 0=not married nor living together with a partner. The models have been run also using a multinomial variable for partner instead of the dummy, thus accounting for the work status of the partner. The multinomial variable is made of six categories: no partner, no working partner, partner working residually (from 0 to 20 hours a week), partner working part-time (from 21 to 30 hours a week), partner working full time (from 31 to 40 hours) and workaholic partner (working more than 40 hours a week). The results of this alternative analysis are provided in the notes. A dummy variable has also been added for having (=1) or not (0) a partner who also works as a physician to control for homogamous couples. The number of children is a categorical variable made on the base of the question on the number of children living at home. It is composed by four category: 0 for no children, 1 for 1 children, 2 for 2 children and 3 for more than 2 children. In order to account for the sexual division of work, two interval variables were added indicating the weekly hours of non-paid work and the weekly hours of non-paid work which is outsourced (through a maid, baby-sitting, etc.). Family networks are controlled through two dummies: one for having a partner physicians and the one for having a father physician.

V. Results

Table 1 reports the female coefficient for the gross gender gap and for the net gender gap for each level of comparison: the vice level against the 1st level (first row); the head level against the vice level (second row), the head level against the first and vice level grouped together (third row). The gross gender gap provides the female coefficient without controlling for differences in characteristics, while the net gender gap provides the female coefficient controlling for differences in characteristics (in human capital,

work and family). Tables from 2 to 4 provide the coefficients for the independent variables. Column 1 reports the full model, while column 2 reports the full model with interaction terms. For the second set of models only (vice-versus-head), a further column has been added reporting a nested model which is very similar to the full model without interaction except that the variable experience is not included.

V.1. The female odds to promotion

Table 1 reports the gross and net female coefficients to promotion divided by the level of comparison. As one can see, the coefficients of the binary logit regressions are consistent with the coefficients of the multinomial logit regressions. The only remarkable difference is the pseudo R2, which is bigger in the multinomial regressions. The logit only will be commented. Considering the two adjacent-level models (first and second row), there is a significant gross gender gap in authority both at the vice (set 1, column1) and at the head level (set 2, column 1). That is, without controlling for characteristics, first level female physicians are significantly less likely than men to be promoted to a vice level and vice female physicians are significantly less likely than men to be promoted to a head level. Interpreting the results in percentage terms, the odds of a first level woman being at the vice level are 54.4% smaller than the odds of her male colleagues, and the odds of a vice women being at the head level are 49.9% smaller than their male colleagues. The odds in set 2 are slightly better than the odds in set 1, that is the disadvantages women face (compared to men) at the middle level of the career are bigger than the disadvantages they face (compared to men) at the upper level. This is true also in the logit with controls (column 2): female coefficients to promotion to vice (set 1) are worse than female coefficient to promotion to head (set 2). Interpreting the result in percentage terms, the odds of a first level woman being at the vice level are 44.4% smaller than the odds of her male colleagues and the odds of a vice women being at the head level are 36.2% smaller than their male colleagues, controlling for differences in characteristics. Nevertheless, if the former are significant, the latter are not. That is, women experience *significant* relative disadvantages to promotion (with respect to men) only at the middle level of the career. As it will be discussed later, this is due to the control variable “experience”. Hence, after controlling for differences, it appears that the

disadvantages that women face have less to do with the existence of a glass ceiling and more with the existence of obstacles at the middle level of the career.

Considering the grouped-level model (set 3), women are significantly less likely to be head both without and with controls in characteristics. Interpreting the results in percentage change, the odds for a woman to be head are 71.7% smaller than men's odd without controlling for differences in characteristics and 50.1% smaller controlling for. Both relative "cumulative" disadvantages are significant.

Tab 1 – Gross and net female gap in authority (logit and mlogit)

	Logit (1)	Logit (2)	M-logit (1)	M-logit (2)
Levels being compared	Gross female gap (no controls)	Net female gap (with controls)	Gross female gap (no controls)	Net female gap (with controls)
Set 1: Vice vs 1st level	-0.786***	-0.586**	-0.786***	-0.558**
	(0.000)	(0.005)	(0.000)	(0.006)
Pseudo R2	0.0255	0.2154	0.0360	0.2991
N	938	853	1074	979
Set 2: Head vs Vice	-0.691**	-0.449	-0.691**	-0.419
	(0.004)	(0.196)	(0.004)	(0.195)
Pseudo R2	0.0172	0.2676	0.0360	0.2991
N	391	343	1074	979
Set 3: Head vs all others	-1.264***	-0.696*		
	(0.000)	(0.022)		
Psuedo R2	0.0501	0.4052		
N	1074	979		

p-values in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

V.2. The determinants of the vertical segregation

Table 2 reports the three sets of logit models with controls and explanatory variables. For each set, the first column (1) reports the full model, while the second column (2) reports the full model with interaction terms. In Set 2, a further model (0) has been included: it is a nested one which is very similar to the full model except that the variable experience is not included.

Overall, 1st level women are significantly less likely to become vice but the disadvantage is not significant anymore when it's time, for a vice, to become head, keeping all characteristics constant. Nevertheless, as the nested model in Set 2 shows (column 0), without controlling for the years of experience the disadvantage turns

significant again. In other words, vice women are less likely to become head because, in general, they report a lower work experience. Women report a lower work experience because they are, in average, younger than men, as they have entered into the medical profession later. At first sight, this means that – considering the adjacent level model – the glass ceiling at the top level is more a matter of time and cohorts than a matter of discrimination (net of unobservable characteristics and not considering the cumulative disadvantage that vice women have already experienced in the earlier steps).

As for the other determinants of the gender gap in authority, table 2 shows that men in private hospitals are more likely to become head, while it is not the case for women. Actually, working in Private 2 (Machado) decreases the likelihood of climbing the career ladder for women, as all the female coefficients in the three sets of model are negative though significant only in Set 1. Having a second specialty or a Ph.D. increases the likelihood of becoming vice, both for men and for women, but it increases the likelihood of becoming head only for men. Work hours increases the likelihood of becoming vice (set 1) and the cumulative likelihood to become head (set 3) for men, while they don't have any positive effect for women. Even increasing years of experience have a different impact whether they refer to female or male doctors: they increase the likelihood of climbing the career for men but not for women. Contrary to the model on pay, the private practice doesn't increase the likelihood (and the cumulative likelihood) to become head. As for the promotion to the vice levels, it actually decreases the likelihood for men while it doesn't have any effect on women.

As for the rest of the attributes, the hours of non paid work show a negative sign in the full models but they are not significant. Interacting them with gender proved to be significant at 90% level only in the cumulative-level model. In this case, they decrease the likelihood of becoming head for women while they have no effect on men. To correctly assess the impact of nonpaid work hours a control variable has also been added in order to account for the hours of nonpaid work outsourced (through a maid or a baby-sitter).

Contrary to the pay model, the career progression doesn't seem to depend so much from the parental and the marital status. Being married (or living together with) doesn't have an impact on the likelihood of promotion, nor it does by interacting the variable with gender. The parental status plays a role only in the likelihood to be promoted to the vice

level – as having two children significantly increases the likelihood for men and significantly decreases the likelihood for women – but not at the very top level. Having a partner working as a physician doesn't have any impact, while it does have an impact – in order to become head – to have a father who is/was a physician. It is true at 90% level in the adjacent level model of the likelihood to become head and it is true at 95% level in the group-level model. Interacting the father physician with gender, it appears that having a father physicians does increase men's likelihood of becoming head but it doesn't with respect to women. This result is worth further analysis. Earlier studies on female "pioneers" in non traditional jobs have shown that the father's profession plays a crucial role in the educational choices of daughters towards traditionally male sectors (Ridgeway 1978, Auster and Auster 1981, Harlan and O'Farrell 1982). More recently, Falcinelli (2009) finds that having a father who is/was an aerospace engineer significantly increases female' earnings. No matter if they refer to different career outcomes, the comparison between physicians and engineers is quite interesting as it may shed light on how the different professions work. Indeed, one must consider that the two labour markets – for engineers and for physicians – are very different in Italy. The latter is strongly intertwined with social networks and familism, while the former it is not. Different generations of the same family can work in the same hospital, and fathers can determine the career of their children. This is particularly true in public institutions and University hospitals, where academic logics characterized by nepotism (Wenneras and Wold 1997) and familism (Durante et al. 2011) – come into play. Hence, the different results with respect to the role of the father should be interpreted considering the differences in the work dynamics. In a "free" market like engineering, fathers works as role model for female daughters. In a market like medicine, which is affected by networks and family relations, fathers have an active role in facilitating their sons' careers (but not their daughters').

Tab 2 – The determinants of the vertical segregation

	Set 1 Vice vs 1st level		Set 2 Head vs Vice			Set 3 Head vs all others	
	(1)	(2)	(0)	(1)	(2)	(1)	(2)
Female	-0.586**	2.761*	-0.743*	-0.449	0.396	-0.696*	1.332
	(0.005)	(0.035)	(0.020)	(0.196)	(0.819)	(0.022)	(0.568)
Hospital: Public 1	0	0	0	0	0	0	0
	(.)	(.)	(.)	(.)	(.)	(.)	(.)
Hospital: Public 2	-0.851***	-0.583	0.773*	0.622	0.217	0.536	0.503
	(0.000)	(0.090)	(0.033)	(0.109)	(0.650)	(0.143)	(0.277)
Hospital: Public 3	-0.577*	-0.168	1.293**	1.065*	0.827	1.049**	1.249*
	(0.036)	(0.655)	(0.001)	(0.014)	(0.114)	(0.009)	(0.013)
Hospital: Private 1	-0.421	-0.128	1.985***	2.567***	2.129**	2.391***	2.252***
	(0.266)	(0.792)	(0.000)	(0.000)	(0.001)	(0.000)	(0.000)
Hospital: Private 2	0.613	1.609*	1.292**	1.897***	2.150**	2.351***	2.713***
	(0.125)	(0.016)	(0.006)	(0.000)	(0.003)	(0.000)	(0.000)
Hospital*female: Public 1		0			0		0
		(.)			(.)		(.)
Hospital*female: Public 2		-0.555			1.283		0.387
		(0.244)			(0.124)		(0.617)
Hospital*female: Public 3		-0.921			0.422		-0.419
		(0.092)			(0.670)		(0.640)
Hospital*female: Private 1		-0.863			1.361		0.759
		(0.301)			(0.306)		(0.486)
Hospital*female: Private 2		-1.820*			-0.697		-0.904
		(0.031)			(0.534)		(0.401)
Grade: up to 104	0	0	0	0	0	0	0
	(.)	(.)	(.)	(.)	(.)	(.)	(.)
Grade: 105-110	-0.0685	-0.0754	0.491	0.256	0.237	0.353	0.382
	(0.795)	(0.780)	(0.227)	(0.550)	(0.595)	(0.360)	(0.335)
Grade: honors	0.0896	0.0636	0.711	0.438	0.417	0.531	0.587
	(0.732)	(0.813)	(0.077)	(0.307)	(0.347)	(0.166)	(0.137)
Further titles	0.374	0.431*	0.675*	0.202	0.121	0.396	0.713*
	(0.078)	(0.047)	(0.014)	(0.501)	(0.693)	(0.135)	(0.029)
Further title*female							-0.972
							(0.106)
Experience	0.106***	0.130***		0.151***	0.175***	0.189***	0.204***
	(0.000)	(0.000)		(0.000)	(0.000)	(0.000)	(0.000)
Experience*female		-0.0432			-0.0445		-0.0151
		(0.060)			(0.409)		(0.740)
Work hours	0.0416***	0.0596***	-0.00744	0.00855	0.0136	0.0441**	0.0453*
	(0.000)	(0.000)	(0.638)	(0.623)	(0.459)	(0.002)	(0.010)
Work hours*female		-0.0385					-0.0116
		(0.077)					(0.719)
Hours of private practice	-0.0549*	-0.0809**	0.00834	0.000991	0.00263	-0.0461	-0.0430
	(0.011)	(0.003)	(0.804)	(0.978)	(0.943)	(0.082)	(0.107)
Hours of private practice*female		0.0849					

		(0.052)					
Specialty: Medicine	0	0	0	0	0	0	0
	(.)	(.)	(.)	(.)	(.)	(.)	(.)
Specialty: Surgery	0.113	0.0458	-0.477	-0.139	-0.143	0.0489	-0.0253
	(0.632)	(0.850)	(0.150)	(0.703)	(0.698)	(0.878)	(0.939)
Specialty: Diagnostic	0.0922	0.0347	0.393	0.443	0.435	0.274	0.198
	(0.697)	(0.886)	(0.291)	(0.267)	(0.284)	(0.425)	(0.570)
Specialty: All others	0.930	1.074*	1.183*	1.704**	1.523*	2.021***	1.958***
	(0.065)	(0.035)	(0.022)	(0.004)	(0.013)	(0.000)	(0.000)
Hours of non-paid work	-0.00241	-0.00155	-0.0228*	-0.0124	-0.0109	-0.0135	0.000160
	(0.633)	(0.762)	(0.028)	(0.245)	(0.322)	(0.142)	(0.988)
Hours of non-paid work*female							-0.0363
							(0.078)
Outsourced domestic work (h)	0.00543	0.00864	0.0394**	0.0256	0.0294	0.0286*	0.0324*
	(0.607)	(0.418)	(0.007)	(0.106)	(0.076)	(0.033)	(0.020)
No children	0	0	0	0	0	0	0
	(.)	(.)	(.)	(.)	(.)	(.)	(.)
One child	0.297	0.231	-0.415	-0.223	-0.218	-0.0284	-0.0434
	(0.250)	(0.519)	(0.211)	(0.532)	(0.547)	(0.927)	(0.892)
Two children	0.512*	0.820*	-1.085**	-0.545	-0.509	-0.301	-0.365
	(0.045)	(0.013)	(0.003)	(0.168)	(0.211)	(0.386)	(0.311)
More than two children	0.596	0.614	-1.226*	-0.648	-0.557	-0.576	-0.533
	(0.084)	(0.182)	(0.034)	(0.276)	(0.353)	(0.288)	(0.335)
No children*female		0					
		(.)					
One child*female		0.0171					
		(0.972)					
Two children*female		-0.967*					
		(0.049)					
More than two children*female		-0.277					
		(0.677)					
Partner	0.442	0.472	-0.0706	-0.419	-0.529	-0.0359	0.0883
	(0.109)	(0.092)	(0.852)	(0.313)	(0.215)	(0.919)	(0.806)
Partner physician	-0.404	-0.405	0.228	0.276	0.275	0.0947	0.0331
	(0.076)	(0.081)	(0.453)	(0.392)	(0.405)	(0.746)	(0.913)
Father physician	0.229	0.295	0.173	0.591	0.917	0.816*	1.224**
	(0.448)	(0.343)	(0.667)	(0.172)	(0.069)	(0.035)	(0.008)
Father physician*female					-1.824		-1.823
					(0.148)		(0.117)
Constant	-4.970***	-6.671***	-1.256	-6.034***	-6.693***	-9.936***	-10.92***
	(0.000)	(0.000)	(0.174)	(0.000)	(0.000)	(0.000)	(0.000)
pr2	0.2154	0.2319	0.1623	0.2676	0.2855	0.4052	0.4240
N	853	853	343	343	343	979	979

p-values in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

VI. Conclusions

The adjacent-level models show that the obstacles that women face are stronger in the middle of the career ladder than at the top. This is confirmed by the fact that the female relative disadvantage (to men) in the likelihood of becoming head is not significant once the years of experience are added into the model. Does it mean that what appears to be as a glass ceiling at the head level is only a matter of time? Yes, but only if one doesn't consider the disadvantages that vice female physicians have experienced before arriving there. In a "cumulative" perspective, being head remains, indeed, significantly more difficult for women than for men. Interpreting these results at the light of Baxter and Wright's critical reviews, the glass ceiling that women physicians face is more the effect of a leaky pipeline all along the career progression than the effect of existing obstacles at the end of the ladder.

As for the determinants of the lower female representation at top levels, some work variables seems to have a different impact whether they refer to women or men: working in private hospitals helps men but not women, while the hours spent at work and the years of experience count "more" for men than for women. Family variables don't play a crucial role as they did in the pay model, as the second child affect career outcomes (positively for men and negatively for women) only at the vice level. Rather, having a father physician helps men, but not women.

Overall, women are significantly penalized when they move from the first level to the vice level. This is a very important step, as it is the very first step where physicians are responsible for a sub units and for a team. It is were, actually, the progression of career starts. As for the reasons why this happens, the child penalty explains only a tiny part of the problem. Discrimination plays an important role as female disadvantage stands controlling for all characteristics and equal work attributes produce different outcomes (work institution, hours, experience).

Conclusions

This research is an attempt to shed light on the mechanisms and on the causes of gender inequalities in medical careers. Data on more than a thousand physicians have been collected through an online survey sent to the medical workforce of five health organisations in the Lombardy Region. The survey submission lasted for more than a year and 48.7% of the target population answered to the questionnaire. The research is based on a very specific population made of high-skilled professionals who strongly invested in their education and work long hours. This has the advantage of reducing heterogeneity bias while investigating the reasons of gender inequalities. As it has already argued, if gender inequalities occur no matter women are similar to men in their human capital and work characteristics, than it is reasonable to think that they occur in a greater extent in the rest of the labour market.

Arguing that women and men show *similar* characteristics doesn't mean they don't show any difference at all. On the contrary, descriptive statistics show that women in the dataset graduate with better grades than men do but once they have entered in the profession they are less likely to have further specializations. Even if today they are the majority of PhD students in the health sector in Italy (and at the University of Milan), it is not the case in the five hospitals, where more men than women have a post-graduate title. Women physicians tend to have a smaller portfolio-career than men, they are less mobile and they work three hours less than men per week, but once the hours of private practice are not taken into account, the gap decreases to only slightly more than one hour per week. On the other hand, motivational drives do not seem to follow gender stereotypical patterns. With respect to the mechanisms of segregation, women tend to cluster in medical specialties while surgery still remains a male-dominated specialty area. The career ladder still remains harder to climb for them: women are the majority of physicians in the lower rank of the ladder but they are the minority in the upper ranks. Pay differentials are relevant: men earn 26.6% more than women, which is much greater

than the national pay gap (7.3%). The analysis of family characteristics has shown a quite traditional picture, with women, and in particular mothers, remaining the main responsible for non paid work while reducing, with respect at least to the general population, the time devoted to domestic and care activities, either by outsourcing nonpaid work or renouncing to motherhood (39% of women in the dataset are childless), as other studies on high-skilled professionals have shown (Wajcman 1998, Roth 2006).

Once having "mapped" the population, two forms of gender inequalities have been explored: the pay gap and the authority gap. The Ols analysis shows that no matter equal characteristics, women earn 15% less than men. This suggests that, net of unobservable attributes, mechanisms of discrimination take place in the five hospitals. Adding interaction terms in the model provides further insights as it allows to investigate the effect of characteristics by gender. Hence, being married and being father significantly increases men's income, while being married and being mother has no effects on women's income. Only controlling for the number of children, a negative impact at 90% for women appears with the third child. In other words, the "husband" and "fatherhood" premium for men appear stronger than the "wife" and the "motherhood" penalty for women. This should be interpreted in terms of *direct* (positive) discrimination towards fathers (by employers) but also in terms of *indirect* discrimination, that is in terms of conditioned choices within the couple, given the structure of opportunities. This is a quite interesting funding as it may suggest that women's struggles for emancipation have reduced employer's bias against women at work but they haven't reduced men's privilege. Further findings have emerged with respect to human capital and work characteristics: obtaining honors in medical school is more "rewarding", in terms of pay, for men than for women. Similarly, it is more rewarding for men working as a surgeon, doing private practice or being in a top position (keeping all other characteristics constant). Working in private hospital is disadvantageous for women while it is advantageous for men. Overall, public institutions seem to guarantee a greater gender equality in pay, while private organisations do not and this may be due to the crucial role played by bonuses – mostly used in private hospitals – in determining revenues (Roth 2006).

The logit models on the likelihood of reaching a top position in the career ladder show a complementary picture to the one provided by the analysis of the pay gap. Considering

the three steps of the career ladder – 1st level, vice and head – women face stronger obstacles to become "vice" than to become "head". Metaphorically speaking, the vertical segregation among physicians seems more a matter of a "leaky pipeline" than a matter of a "glass ceiling". Women are significantly less likely than men to become vice and this may be due to a process of accumulation of disadvantages in the previous steps of the career. But once they reach that level, it is easier (with respect to the previous steps) to progress further. As for the determinants of the vertical segregation, family variables don't seem to play a crucial role as they do in the pay model except for the second child, who positively affects the likelihood for men to become vice and negatively affects women's. Interaction terms show interesting results. Having a father physicians helps men in progressing the ladder, but not women, as well as the fact of working in private hospitals. Work hours and years of experience are also differently "rewarded" in terms of career outcomes whether they refer to women or men, suggesting once more that gender inequality is not only a matter of "being like men are" (Wajcman 1998).

These results challenge the human capital approach by arguing that discriminatory mechanisms, preventing female physicians to earn as much as men do and to have the same chances of career than men have, are taking place. Structural constraints should be then advocated to better understand the persistence of gender disparities in medical careers. This calls for the demand of adopting and implementing equal opportunities and anti-discriminatory policies in workplaces. Special attention should be devoted to early-careers, where the risk of loosing women who are likely to become head one day is higher, as well as to private hospitals, where the pay gap is higher because of the higher propensity, with respect to public institutions, of rewarding physicians through bonuses. Gender-aware policies should therefore also be taken in order to reduce the impact of unconscious gender biases on the bonus policy (Valian 1999). Finally, inequalities in the distribution of paid and unpaid activities within the couple should also be considered. Italian women physicians have much invested in their (market) human capital but, at the same time, they are still most responsible for the care of the children and the elderly. As a consequence, they "solve" their work-life conflict either by reducing the number of children or by renouncing to motherhood. Italy lacks of adequate work-life balance policies (Saraceno and Naldini 1998, Saraceno 2003, Naldini and Saraceno 2008). Therefore, affordable early-child and elderly care services should be promoted, as well as

a stronger sharing in family responsibilities by strengthening paternity and parental leaves. Italian fathers dispose of only two days of mandatory paternal leaves (plus two facultative days) and parental leaves are not sufficiently paid (30% of the salary). This is not enough, as it reinforce traditional gender roles with negative consequences in terms of women's occupation and gender equality.

This study has also some limits. First, as it is based on cross-sectional data, it is not able to provide a solution to the problem of time (or the problem of numbers, if one prefers) in the study of gender inequalities. Are gender equalities only a matter of time? Will be they disappear once parity in numbers – between men and women – will be reached in all cohorts? Recent studies – using either experimental methods (Baert et al. 2016) or longitudinal data (Palomba 2013, Sasser 2005) – argue that they won't. If this is the case also with respect to the medical profession, it should be further investigated. Second, this research is based on quantitative methods, both in the data collection and in their analysis. This has an advantage – providing information on a large-scale sample – but it also has a limit, as it sometimes lacks of a deep understanding of the dynamics which are *behind* the determinants of gender inequalities. Such understanding could be provided by in-depth qualitative case studies. Indeed, this was the original idea at the base of the S.T.A.G.E.S. project, which was eventually discarded for organisational reasons, as it has been illustrated in the second chapter. Now that the implementation phase of the project has ended, this idea will be realized during the sustainability phase. In-depth interviews will be realized to privileged witnesses of the Policlinico Hospital and to physicians working in the surgical department. The reason of focusing on the surgical area is motivated by the fact that, unlikely the medical one, surgery is still strongly male-dominated and its study could provide precious insights on the gender dynamics in "non traditional" specialties, thus making part of the larger debate on non traditional jobs.

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Appendix 1

Copy of the questionnaire sent to the Legnano hospital

18 febbraio 2015
Questionario informatizzato Indagine Gender in Medical Careers
Azienda Ospedaliera "Ospedale civile di Legnano"

Nota interna CAMPIONE: 1 -4- 5- 6- 7

Intro

L'Università degli Studi di Milano ha realizzato il presente questionario con l'obiettivo di mappare i percorsi di carriera del personale medico con attenzione alle differenze di età, specialità, genere nonché a temi come la qualità dell'ambiente di lavoro, il rapporto con i colleghi, la precarietà e i meccanismi di promozione.
La ricerca si inserisce nell'ambito del progetto STAGES - Structural Change to Achieve Gender Equality in Science. La Sua partecipazione al questionario è importante e consentirà di colmare una lacuna in ambito europeo rispetto alla conoscenza delle carriere mediche.
Non Le occorrerà molto tempo: la compilazione varia infatti da un minimo di 7 a un massimo di 15 minuti.
Le garantiamo che le Sue risposte saranno utilizzate solo in modo aggregato e a fini scientifici, nel pieno rispetto della normativa a protezione della privacy e dei dati personali (D.L. n. 196 del 30/6/2003).

ISTRUZIONI PER LA COMPILAZIONE DEL QUESTIONARIO:
- Per accedere alle domande: clicchi sulla scritta verde in basso a destra, "procedi all'indagine".
- Per modificare/rivedere le sue risposte: clicchi sul bottone in alto a sinistra "Domande Precedenti" e poi su "correggi".
- Per rivedere l'intero questionario compilato: una volta concluso apparirà il bottone CORREGGI LE DOMANDE PRECEDENTI .
- **AL TERMINE per salvare le sue risposte** definitivamente e chiudere il questionario: clicchi su **CONFERMA**.
ATTENZIONE: L'inattività per ***60 minuti*** comporta lo scadere della sessione. E' possibile **interrompere** la compilazione del questionario e riprendere in seguito dal punto in cui l'ha lasciata, senza perdere le risposte già inserite --> clicchi su "**continua l'indagine in seguito**" e per accedere nuovamente usi il link che le abbiamo inviato.
Può accedere di nuovo a queste istruzioni durante la compilazione cliccando sul tasto **.:HELP:.** che trova in alto a destra.
Per ulteriori informazioni puo' scrivere al Laboratorio di Indagini Demoscopiche: lid@unimi.it

Alessandra Caserini
LID- Laboratorio Indagini Demoscopiche
Dipartimento di Scienze Sociali e Politiche
http://www.socpol.unimi.it/lid

_____
000

Per cominciare, Lei è:

01 Maschio
02 Femmina

001_D *Campione =06 e Campione =07*
Specifichi quante ore ha lavorato la scorsa settimana...

N. ore tra,0-100

001_D01 /G 001_D per l'Azienda Ospedaliera Ospedale Civile di Legnano
001_D02 per altra Azienda Ospedaliera
001_D03 per altra attività clinica (ad es. studio privato)

001_E *Se Campione=06*
Lei è:

01 Supplente
02 Titolare
03 Titolare responsabile di branca
77 Altro, specificare ->T
---
002 ***Se 001=02 OPPURE001=03*** *Non viene visualizzata a nessuno*
Qual è la sua posizione all'interno dell' Università ?

01 Dottorando/a
02 Borsista (con Borsa per giovani promettenti)
03 Collaboratore (co.co.co)
04 Assegnista di ricerca
05 Ricercatore a tempo determinato
06 Ricercatore a tempo indeterminato
07 Professore Associato
08 Professore Ordinario
77 ALTRO, specificare _____
---
003 *Se 002>01 E 002<06 Non viene visualizzata a nessuno*
Potrebbe specificare durata del contratto ?

01 MESI _____ VALORI ACCETTATI 0-120"
---
004 Se *Campione* =05 OPPURE *Campione* =04
Qual è la sua posizione all'interno dell' OSPEDALE ?

02 Borsista
04 Dirigente con meno di cinque anni di servizio
05 Dirigente con più di cinque anni di servizio
06 Dirigente con incarico professionale
07 Dirigente con incarico di struttura semplice (UOS)
08 Dirigente con incarico di struttura semplice dipartimentale (UOSD)
09 Dirigente con incarico di struttura complessa (UOC)/ PRIMARIO
11 Direttore di dipartimento ->ESCLUDE LE PRECEDENTI
77 ALTRO, specificare (es.: consulente o altro non previsto prima) _____
---

005 *Se Campione =01*
Qual è la sua area di specializzazione?

01 AREA MEDICA
02 AREA CHIRURGICA
03 AREA SERVIZI CLINICI
04 AREA VETERINARIA

006_1 *Se 005 =01*
Indichi la specializzazione

01 Medicina interna
02 Geriatria
03 Medicina dello sport
04 Medicina termale
05 Oncologia medica
06 Medicina di comunità
07 Allergologia ed Immunologia clinica
08 Dermatologia e Venereologia
09 Ematologia
10 Endocrinologia e malattie del ricambio
11 Gastroenterologia
12 Malattie dell'apparato cardiovascolare
13 Malattie dell'apparato respiratorio
14 Malattie infettive
15 Medicina tropicale
16 Nefrologia
17 Reumatologia
18 Neurofisiopatologia
19 Neurologia
20 Neuropsichiatria infantile
21 Psichiatria
22 Psicologia clinica
23 Pediatria

006_2 *Se 005 =02*
Indichi la specializzazione

01 Chirurgia Generale
02 Chirurgia dell'apparato digerente
03 Chirurgia pediatrica
04 Chirurgia plastica, ricostruttiva ed estetica
05 Ginecologia ed Ostetricia
06 Neurochirurgia
07 Ortopedia e traumatologia
08 Urologia
09 Chirurgia Maxillo-Facciale
10 Oftalmologia
11 Otorinolaringoiatria
12 Cardiochirurgia
13 Chirurgia Toracica
14 Chirurgia Vascolare
77 Altro, Specificare _____

006_3 *Se 005 =03*
Indichi la specializzazione

01 Anatomia Patologica
02 Biochimica Clinica Microbiologia e Virologia
03 Patologia Clinica
04 Radiodiagnostica
05 Radioterapia
06 Medicina nucleare
07 Anestesia Rianimazione e Terapia Intensiva
08 Audiologia e foniatria
09 Medicina fisica e riabilitativa
10 Tossicologia Medica
12 Genetica medica
13 Scienza dell'alimentazione
14 Farmacologia
15 Chirurgia orale
16 Ortognatodonzia
17 Odontoiatria Pediatrica
18 Odontoiatria clinica generale
19 Igiene e Medicina Preventiva
20 Medicina Aeronautica e Spaziale
21 Medicina del Lavoro
22 Medicina Legale
23 Statistica sanitaria
24 Farmacia ospedaliera
25 Fisica Medica
77 Altro, Specificare _____
---
007 *Se 001=03 (non si visualizza mai!)*
In Università, qual è il suo settore scientifico-disciplinare?

01 AREA 05 - Scienze biologiche
02 AREA 06 - Scienze Mediche
77 ALTRO Settore, specificare _____
---
008 *Se 007=01 (non viene visualizzata)*
Esattamente in quale settore delle SCIENZE BIOLOGICHE?

01 Bio/01 botanica generale
02 Bio/02 botanica sistematica
03 Bio/03 botanica ambientale e applicata
04 Bio/04 fisiologia vegetale
05 Bio/05 zoologia
06 Bio/06 anatomia comparata e citologia
07 Bio/07 ecologia
08 Bio/08 antropologia
09 Bio/09 fisiologia
10 Bio/10 biochimica
11 Bio/11 biologia molecolare
12 Bio/12 biochimica clinica e biologia molecolare clinica
13 Bio/13 biologia applicata

14 Bio/14 farmacologia
15 Bio/15 biologia farmaceutica
16 Bio/16 anatomia umana
17 Bio/17 istologia
18 Bio/18 genetica
19 Bio/19 microbiologia generale
77 ALTRO Settore, specificare _____
---
009 Se 007=02 *(non viene visualizzata)*
Esattamente in quale settore delle SCIENZE MEDICHE

01 Med/01 statistica medica
02 Med/02 storia della medicina
03 Med/03 genetica medica
04 Med/04 patologia generale
05 Med/05 patologia clinica
06 Med/06 oncologia medica
07 Med/07 microbiologia e microbiologia clinica
08 Med/08 anatomia patologica
09 Med/09 medicina interna
10 Med/10 malattie dell'apparato respiratorio
11 Med/11 malattie dell'apparato cardiovascolare
12 Med/12 gastroenterologia
13 Med/13 endocrinologia
14 Med/14 nefrologia
15 Med/15 malattie del sangue
16 Med/16 reumatologia
17 Med/17 malattie infettive
18 Med/18 chirurgia generale
19 Med/19 chirurgia plastica
20 Med/20 chirurgia pediatrica e infantile
21 Med/21 chirurgia toracica
22 Med/22 chirurgia vascolare
23 Med/23 chirurgia cardiaca
24 Med/24 urologia
25 Med/25 pschiatria
26 Med/26 neurologia
27 Med/27 neurochirurgia
28 Med/28 malattie odontostomatologiche
29 Med/29 chirurgia maxillofacciale
30 Med/30 malattie apparato visivo
31 Med/31 otorinolaringoiatria
32 Med/32 audiologia
33 Med/33 malattie apparato locomotore
34 Med/34 medicina fisica e riabilitativa
35 Med/35 malattie cutanee e veneree
36 Med/36 diagnostica per immagini e radioterapia
37 Med/37 neuroradiologia
38 Med/38 pediatria generale e specialistica
39 Med/39 neuropsichiatria infantile
40 Med/40 ginecologia e ostetricia
41 Med/41 anestesiologia
42 Med/42 igiene generale e applicata

43 Med/43 medicina legale
44 Med/44 medicina del lavoro
45 Med/45 scienze infermieristiche generali, cliniche e pediatriche
46 Med/46 scienze tecniche di medicina di laboratorio
47 Med/47 scienze infermieristiche ostetrico-ginecologiche
48 Med/48 scienze infermieristiche e tecniche neuro-psichiatriche e riabilitative
49 Med/49 scienze tecniche dietetiche applicate
50 Med/50 scienze tecniche mediche applicate
77 ALTRO Settore, specificare _____
---
010 *Se Campione=04 OPPURE Campione=05 OPPURE Campione=06 OPPURE Campione=07*
Qual è l'area della sua specializzazione (D.M. 30 gennaio e 31 gennaio 1998)?

01 AREA CHIRURGICA E DELLE SPECIALITA' CHIRURGICHE.
02 AREA DELLA MEDICINA DIAGNOSTICA E DEI SERVIZI.
03 AREA DI ODONTOIATRIA (Specializzazione in ODONTOIATRIA)
04 AREA DI SANITA' PUBBLICA.
05 AREA MEDICA E DELLE SPECIALITA' MEDICHE
06 AREA DELLA SANITA' ANIMALE
07 AREA DELL'IGIENE DEGLI ALLEVAMENTI E DELLE PRODUZIONI ZOOTECNICHE (Specializzazione in IGIENE DEGLI ALLEVAMENTI E DELLE PRODUZIONI ZOOTECNICHE)
77 ALTRO, specificare _____

011_1 *Se 010=05*
Precisamente, qual è la sua specializzazione?

01 ALLERGOLOGIA ED IMMUNOLOGIA CLINICA
02 ANGIOLOGIA
03 CARDIOLOGIA
04 DERMATOLOGIA E VENEREOLOGIA
05 EMATOLOGIA
06 ENDOCRINOLOGIA
07 GASTROENTEROLOGIA
08 GASTROENTEROLOGIA
09 GERIATRIA
10 MALATTIE DELL'APPARATO RESPIRATORIO
11 MALATTIE INFETTIVE
12 MALATTIE METABOLICHE E DIABETOLOGIA
13 MEDICINA DELLO SPORT
14 MEDICINA E CHIRURGIA D'ACCETTAZIONE E D'URGENZA
15 MEDICINA FISICA E RIABILITAZIONE
16 MEDICINA INTERNA
17 NEFROLOGIA
18 NEONATOLOGIA
19 NEUROLOGIA
20 NEUROPSICHIATRIA INFANTILE
21 ONCOLOGIA
22 PEDIATRIA
23 PSICHIATRIA
24 RADIOTERAPIA
25 REUMATOLOGIA

26 SCIENZA DELL'ALIMENTAZIONE E DIETETICA
77 ALTRO, specificare _____

011_02 *Se 010=01*
Precisamente, qual è la sua specializzazione?

01 CARDIOCHIRURGIA
02 CHIRURGIA GENERALE
03 CHIRURGIA MAXILLO-FACCIALE
04 CHIRURGIA PEDIATRICA
05 CHIRURGIA PLASTICA E RICOSTRUTTIVA
06 CHIRURGIA TORACICA
07 CHIRURGIA VASCOLARE
08 GINECOLOGIA E OSTETRICIA
09 NEUROCHIRURGIA
10 OFTALMOLOGIA
11 ORTOPEDIA E TRAUMATOLOGIA
12 OTORINOLARINGOIATRIA
13 UROLOGIA
77 ALTRO, specificare _____

011_*04 Se 010=02*
Precisamente, qual è la sua specializzazione?

01 ANATOMIA PATOLOGICA
02 ANESTESIA E RIANIMAZIONE
03 BIOCHIMICA CLINICA
04 FARMACOLOGIA E TOSSICOLOGIA CLINICA
05 LABORATORIO DI GENETICA MEDICA
06 MEDICINA LEGALE
07 MEDICINA NUCLEARE
08 MEDICINA TRASFUSIONALE
09 MICROBIOLOGIA E VIROLOGIA
10 NEUROFISIOPATOLOGIA
11 NEURORADIOLOGIA
12 PATOLOGIA CLINICA (LABORATORIO DI ANALISI CHIMICO-CLINICHE E MICROBIOLOGIA)
13 RADIODIAGNOSTICA
77 ALTRO, specificare _____

011_05 *Se 010=04*
Precisamente, qual è la sua specializzazione?

01 DIREZIONE MEDICA DI PRESIDIO OSPEDALIERO.
02 EPIDEMIOLOGIA
03 IGIENE DEGLI ALIMENTI E DELLA NUTRIZIONE
04 IGIENE EPIDEMIOLOGIA E SANITA' PUBBLICA
05 MEDICINA DEL LAVORO E SICUREZZA DEGLI AMBIENTI DI LAVORO
06 ORGANIZZAZIONE DEI SERVIZI SANITARI DI BASE
77 ALTRO, specificare _____

011_06 *Se 010=06*
Precisamente, qual è la sua specializzazione?

01 AREA DELL'IGIENE DELLA PRODUZIONE, TRASFORMAZIONE, COMMERCIALIZZAZIONE, CONSERVAZIONE E TRASPORTO DEGLI ALIMENTI DI ORIGINE ANIMALE E LORO DERIVATI.
77 ALTRO, specificare _____
---
012 *Se Campione=04 OPPURE Campione =05 OPPURE Campione =06*
Che tipo di contratto ha?

01 Tempo determinato
02 Tempo indeterminato
03 A progetto/co.co.co
04 A partita Iva
77 ALTRO, specificare _____
---
013 *Se 012=01 OPPURE 012=03*
Potrebbe specificare durata del contratto? (in mesi)

01 MESI _____ VALORI ACCETTATI 0-120"

013_01 *Se 012 =01*
Dalla specialità all'assunzione a tempo determinato quanti anni ha lavorato in una posizione precaria (es: libera professione, contratto a progetto etc.)?

01 Indica anni _____ VALORI ACCETTATI 0-30"

013_02 *Se 012=02*
Dalla specialità all'assunzione a tempo indeterminato quanti anni ha lavorato in una posizione precaria (es: libera professione, contratto a progetto e contratti a tempo determinato etc.)?

01 Indica anni _____ VALORI ACCETTATI 0-30"

014
Ora ricostruiamo la sua carriera a partire dalla laurea. Ci può indicare con quale voto si è laureata/o?

01 voto _____ VALORI ACCETTATI 66-110"
02 con lode ->M
99 Non ricordo il voto di laurea

015A *Se Campione DIVERSO 01* risposta multipla
Quali altri titoli di studio ha conseguito? (possibili più risposte)

01 Dottorato
02 Specializzazione
03 Seconda specializzazione
04 Master
99 Nessuno di questi titoli -> ESCLUDE LE ALTRE

015B *Se Campione =01 risposta multipla*
Esclusa la specializzazione che Lei sta facendo, quali altri titoli di studio ha conseguito? (possibili più risposte)

01 Dottorato
03 Specializzazione
04 Master
99 Nessuno di questi titoli -> ESCLUDE LE ALTRE

016
Ha mai fatto esperienze di studio o di lavoro all'estero? Se sì, indichi per quanti mesi complessivamente?
(se ha avuto più esperienze all'estero faccia la somma totale dei mesi):

01 Sì, di durata inferiore al mese
02 ►Sì, indichi il totale di MESI... _____ VALORI ACCETTATI 1-200"
03 No, non ho mai fatto esperienze di studio o di lavoro all'estero
---
017 Se *Campione* DIVERSO 01
In che anno ha iniziato la sua attività lavorativa? Nel caso abbia conseguito una specializzazione e/o un dottorato post-laurea, ci dica in che anno ha iniziato la sua attività lavorativa una volta terminata l'eventuale specializzazione e/o dottorato.

01 ANNO _____ VALORI ACCETTATI 1930-2014"

018
In che anno ha cominciato a lavorare nella struttura in cui attualmente lavora? Consideri anche i contratti precari, i rapporti di collaborazione, ecc.

01 ANNO _____ VALORI ACCETTATI 1930-2014"
---
019 Se 004=07 OPPURE 004=08 OPPURE 004=09
In che anno è diventato dirigente con incarico di struttura semplice (UOS)?

01 ANNO _____ VALORI ACCETTATI 1930-2014"
02 Non ho avuto incarichi di UOS
---
020 Se 004=08 OPPURE 004=09
In che anno è diventato dirigente con incarico di struttura semplice dipartimentale (UOSD)?

01 ANNO _____ VALORI ACCETTATI 1930-2014"
02 Non ho avuto incarichi di UOSD
---
021 Se 004=09
In che anno è diventato dirigente con incarico di struttura complessa (UOC)?

01 ANNO _____ VALORI ACCETTATI 1930-2014"
---
024 Se *Campione DIVERSO 01*
In quante strutture ospedaliere ha lavorato nella sua carriera?
(Indichi 1 se ha sempre lavorato presso il medesimo Ospedale)

01 N. OSPEDALI _____ VALORI ACCETTATI 1-20"
---
025 Se 024>1 risposta multipla
Pensi all'ultimo spostamento: per quale motivo ha cambiato struttura? (possibili più risposte).

01 Per migliore offerta economica
02 Per migliorare la mia formazione/ricerca
03 Per ricongiungimento con il mio/la mia partner
04 Perché ero costretto/a a lavorare troppe ore
05 Per conflitto con colleghi/superiori
77 ALTRO, specificare _____

026_01
Parliamo ora della sua situazione lavorativa attuale. Considerando il complesso delle sue attività, quante ore ha EFFETTIVAMENTE lavorato la settimana scorsa, compresa l'eventuale libera professione ?

01 N. ore _____ VALORI ACCETTATI 0-100"

026_02
E quante ore sarebbero previste a settimana dal suo contratto?
Se intrattiene rapporti lavorativi con più di un'azienda, faccia la somma delle ore previste in ciascuno contratto e scriva il totale.

01 N. ore _____ VALORI ACCETTATI 0-100"
---
027 risposta multipla FINO A MAX 3
Se Le capita di lavorare più di quanto stabilito da contratto, quali sono le principali tre ragioni?(al massimo 3 risposte)

01 No, non mi capita -> ESCLUDE LE ALTRE
02 Sì, è richiesto dal tipo di lavoro, non è una scelta
03 Sì, per guadagnare di più, arrotondare lo stipendio
04 Sì, per crescita professionale
05 Sì, per fare carriera
06 Sì, per responsabilità nei confronti dei miei pazienti
77 Sì, ALTRA RAGIONE, quale? _____

028
Quale delle affermazioni che seguono descrive meglio la sua situazione?

01 Il mio contratto prevede determinati orari di entrata non modificabili
02 Il mio contratto prevede determinati orari di entrata ed uscita non modificabili.
03 Il mio contratto prevede flessibilità in entrata ed uscita
04 Non ho vincoli di orari di entrata ed uscita

029
Pensi al suo lavoro: indicativamente, quanta parte del suo tempo lo dedica a ciascuna delle seguenti attività? Risponda in percentuale.

01 CLINICA _____VALORI ACCETTATI 0-100"
02 RICERCA _____VALORI ACCETTATI 0-100"
77 Altro, specificare (per es. attività di gestione/management): VALORI ACCETTATI 0-100"

(warning in caso di errore)
029W *se 029_77>1 e 029_77 vuota*
ATTENZIONE! E' STATO INSERITO UN VALORE PERCENTUALE SENZA SPECIFICARE NULLA NEL CAMPO DI TESTO "ALTRO" Clicchi sull'opzione "Correggo

la risposta precedente" e su prosegui e compili correttamente il campo SPECIFICA.

01 Correggo la risposta precedente *torna a 029*

(warning in caso di errore)
029W2 *Se la somma delle 29 è diversa da 100 (warning in caso di errore)*
ATTENZIONE! LA SOMMA DELLE VOCI NON CORRISPONDE al 100%" Clicchi sull'opzione *Correggo la risposta precedente* e su prosegui e corregga le cifre.

01 Correggo la risposta precedente *torna a 029*
---
030 *Se Campione diverso da 7*
La scorsa settimana per quante ore ha praticato la libera professione ?

01 N. ore _____ VALORI ACCETTATI 0-100"
02 Non pratico la libera professione

032
Se le proponessero un importante avanzamento di carriera o un'interessante occasione professionale che richiede uno spostamento geografico di oltre 100 km, Lei accetterebbe?

01 Sì
02 No

035
Pensi alla sua attività in ospedale. Il suo capo è:

01 Uomo
02 Donna
03 Non ho un capo a cui rispondo direttamente

036
Lei ha l'incarico di coordinare il lavoro svolto da altre persone?

01 Sì
02 No
99 Non so/non rispondo

037
A suo avviso che cosa conta veramente per poter fare carriera nell'ospedale in cui lavora?
Esprima il suo livello di accordo per ciascuna delle seguente affermazioni:

	01 Per nulla	02 Poco	03 Abbastanza	04 Molto
038_01 Numero di ore lavorate in Ospedale				
038_02 Risultati conseguiti/performance lavorativa				
038_03 Anzianità				
038_04 Avere un buon network sociale di conoscenze				
038_05 Pubblicazioni				

039

Chi le ha dato maggiore appoggio durante la sua carriera?

01 Partner
02 Un genitore/i genitori
03 Colleghi
04 Capo uomo
05 Capo donna
06 Un mentore (guida, consigliere di fiducia, maestro)
07 Rete di conoscenze/amici/network informali
77 ALTRO, specificare _____
99 Nessuno
---
040 *Se 039 =06*
il mentore/la guida è un uomo o una donna?

01 uomo
02 donna
---
041 *Se 039 =07*
Prevalentemente maschili o femminili?

01 maschili
02 femminili
99 Non so/Non rispondo

042
Esprima il suo livello di accordo per ciascuna delle seguenti affermazioni. Nel suo lavoro...

	01 Per nulla	02 Poco	04 Abbastanza	05 Molto
Le mie capacità non sono adeguatamente valorizzate				
Sicurezza e decisione sono le mie doti				
Comprensione, condivisione e ascolto sono le mie doti				
E' fondamentale avere l'appoggio di qualche collega più anziano				
Gli uomini sanno farsi valere meglio delle donne				

---
044 Lei ha un/una partner convivente?

01 Sì
02 No
---
045 *Se 044=01*
Siete sposati?

01 Sì
02 No
---
046 Lei ha figli?, se sì quanti?

01 N. figli - VALORI ACCETTATI DA 1 A 9

-09 No, non ho figli
---
047 *Se 046>=01*
Quanti minori di 14 anni?

01 N. figli minori di 14 anni - VALORI ACCETTATI DA 0 A 9
---
048 *Se 046>=01*
Quanti convivono con Lei?

01 N. figli coabitanti - VALORI ACCETTATI DA 0 A 9

049
Ha mai divorziato o si è mai separato (di fatto o legalmente) ?

01 Sì, ho divorziato
02 Sì, mi sono separato
03 No
---
050 *Se 047>=01*
Chi si occupa dei figli quando Lei è al lavoro? Attenzione Selezioni in ordine di tempo trascorso. Sono possibili FINO A due risposte. Es: se i vostri figli trascorrono 6 ore alla scuola materna e 3 ore con la nonna, cliccare , NELL'ORDINE, PRIMO su “servizi per l’infanzia” e SECONDO su “nonni”.

	01 Primo	02 Secondo	99 Non scelto
Il mio partner/la mia partner			
Servizi per l’infanzia (nido-materna) o scuola			
Baby sitter			
Nonni			
ALTRO, specificare...			

(warning in caso di errore)
050W *se 050_77=01 e 050_77 vuoto OPPURE SE 050_77=02 E 050_77 VUOTO->*
ATTENZIONE! E' STATA SCELTA L'OPZIONE ALTRO SENZA SPECIFICARE NULLA NEL CAMPO DI TESTO "ALTRO" Clicchi sull'opzione, Specifica prosegui e completi il campo .

01 *Specifica -> TORNA ALLA 50*

051
Ha sperimentato o sperimenta delle difficoltà a conciliare il lavoro con la vita privata?

01 Sì
02 No
03 Qualche volta
---
052 *Se 051 =01 OPPURE 051 =03*
Indichi quanto ciascuno di questi fattori incide sull’equilibrio vita-lavoro nel suo quotidiano . Attenzione: qualora l'opzione non fosse applicabile al suo caso perché non ha figli selezioni "Non sperimentato".

	01 Non sperimentato	02 Per nulla	03 Poco	04 Abbastanza	05 Molto

rigidità dell'orario / turni notturni
giornata lavorativa troppo lunga
mancanza di servizi per l'infanzia
mancanza di nonni vicini
mancata condivisione dei ruoli di cura all'interno della coppia
Altro, specificare

(warning in caso di errore)
052W *Se 052_77=02 e 052_77= senza specifica o 052_77=03 e 052_77= senza specifica oppure 052_77=04 e 052_77= senza specifica , oppure 052_77=05 e 052_77= senza specifica*
ATTENZIONE! NON E' STATO SPECIFICATO NULLA NEL CAMPO DI TESTO "ALTRO"
Clicchi su La preghiamo di correggere e su prosegui, poi corregga specificando un fattore che incide sull'equilibrio vita-lavoro oppure selezionando "NON SPERIMENTATO

1 La preghiamo di correggere ->torna a 052"
---
053 risposta multipla FINO A MAX 2
Nella sua carriera, ha incontrato o sta incontrando qualcuno dei seguenti ostacoli? Quali? Può indicare fino a 2 risposte

01 nessun ostacolo -> ESCLUDE LE ALTRE
02 mancanza di una guida/di un mentore
03 pregiudizi da parte dei colleghi e/o supervisori
04 ambiente/colleghi ostile/i
05 mobbing
06 difficoltà nell'accedere alle reti informali di conoscenze che contano
07 discriminazione sessuale
77 ALTRO, specificare _____

055
Si avvale di un aiuto domestico retribuito? Se sì, per quante ore la settimana?

01 Sì, indichi il n. di ore settimanali _____ VALORI ACCETTATI 1-60"
-9 Non ho un aiuto domestico
---

056 *Se 044=01*
La settimana scorsa, indicativamente, quante ore Lei e il suo/la sua partner avete dedicato alle seguenti attività? Se non avete svolto queste attività indichi 0

	Lei	*il suo partner*
056.01	Cura dei figli minori di 14 anni:	
056.02	Cura di genitori/suoceri anziani	
056.03	Attività domestiche di pulizia/cucina/bucato ecc:	
056.04	Attività come l'amministrazione e la riparazione della casa/dell'auto, il giardinaggio, ecc:	
056.05	Coordinamento della baby sitter / domestica	

---

057 *Se 044=02*
La settimana scorsa, indicativamente, quante ore ha dedicato alle seguenti attività? Se non le ha svolte indichi 0

057.01 Cura dei figli minori di 14 anni:
057.02 Cura di genitori/suoceri anziani
057.03 Attività domestiche di pulizia/cucina/bucato ecc:
057.04 Attività come l'amministrazione e la riparazione della casa/dell'auto, il giardinaggio, ecc:
057.05 Coordinamento della baby sitter / domestica
---
058 *Se 044=01*
Indicativamente, per quante ore (retribuite) ha lavorato il suo/la sua partner la settimana scorsa?

01 0 ore
02 da 1 a 10 ore
03 da 10 a 20 ore
04 da 20 a 30 ore
05 da 30 a 40 ore
06 da 40 a 50 ore
07 oltre 50 ore
---
059 (RISPOSTA MULTIPLA)
Ci sono altri medici nella sua famiglia? Specifichi chi, oltre a lei, pratica (o ha praticato prima del pensionamento) la professione medica. Sono possibili più risposte.

01 Mio padre
02 Mia Madre
03 Il mio/la mia partner
77 Altro familiare? specifichi qui... _____
99 Nessuno -> ESCLUDE LE ALTRE
---
060 *Se 059=03*
Qual è posizione suo/ la sua partner?

01 Assegnista
02 Borsista
03 Contrattista/ collaboratore (co.co.co/co.co.pro)
04 Dirigente in formazione con meno di cinque anni di servizio
05 Dirigente con più di cinque anni di servizio
06 Dirigente con incarico professionale
07 Dirigente con incarico di struttura semplice (UOS)
08 Dirigente con incarico di struttura semplice dipartimentale (UOSD)
09 Dirigente con incarico di struttura complessa (UOC)/ PRIMARIO
10 Direttore di area ->M
11 Direttore di dipartimento ->M
77 ALTRO, specificare (es.: consulente o altro non previsto prima) _____
---
061 *Se 046>=01*
Ha utilizzato almeno una volta o sta utilizzando i congedi parentali ?Definizione di Congedo parentale o astensione facoltativa: congedo per entrambi i genitori della durata max di 10 mesi nei primi 8 anni di vita del bambino remunerato al 30% . (Se è la donna a usufruirne si parla comunemente di maternità facoltativa)

01 No, non ne ho avuto bisogno
02 No, non li ho chiesti: la legge è entrata in vigore quando mio figlio/i miei figli erano già grandi.
03 No, sono un/una lavoratore/lavoratrice autonomo/a e non ne ho diritto
04 No, li ho chiesti ma non mi sono stati concessi
05 No, li ha utilizzati il mio/la mia partner
06 No, ho preferito non utilizzarli per non compromettere la mia carriera
07 Sì
---
062 *Se 061=07*
Per quanti giorni complessivamente? Pensi a tutte le volte in cui ne ha usufruito per i suoi figli

01 N. giorni _____ VALORI ACCETTATI 1-365"
99 Non ricordo
---

063 *Se 000==02 E 046>=1*
Pensi al/la suo/a primogenito/a: ha usufruito o sta usufruendo dei cosiddetti permessi per allattamento?

01 No, non ne ho avuto bisogno
02 No, non li ho chiesti: la legge è entrata in vigore quando mio figlio/i miei figli erano già grandi.
03 No, sono un/una lavoratore/lavoratrice autonomo/a e non ne ho diritto
04 No, li ho chiesti ma non mi sono stati concessi
05 No, li ha utilizzati il mio/la mia partner
06 No, ho preferito non utilizzarli per non compromettere la mia carriera
07 Sì
---
064 *Se 000==01 E 046>=1*
Ha mai usufruito del congedo di paternità ? In Italia il congedo di paternità è previsto come diritto autonomo del padre (Legge Fornero) e prevede un giorno di astensione obbligatoria più due giorni facoltativi entro i 5 mesi dalla nascita del figlio.

01 No, non ne ho avuto bisogno
02 No, non li ho chiesti: la legge è entrata in vigore quando mio figlio/i miei figli erano già grandi.
03 No, sono un lavoratore autonomo e non ne ho diritto
04 No, li ho chiesti ma non mi è stato concesso
05 No, ho preferito non utilizzarli per non compromettere la mia carriera
06 Sì

065F *Se 063=07*
Fino a che mese di vita del bambino/bambina?

01 MESE _____ VALORI ACCETTATI 1-12"

065M *Se 064=06*
per quanti giorni complessivamente?

01 N. giorni _____ VALORI ACCETTATI 1-3"

066SA
Se Campione =01 OPPURE Campione =04 E 004<04 OPPURE Campione =05
Ultime domande. Qual è la sua retribuzione annuale lorda? Faccia riferimento all'anno passato e pensi alla retribuzione totale, comprensiva di eventuali indennità, bonus, percentuali sui Drg, consulenze, libera professione ecc. Pensi in sostanza alla sua dichiarazione dei redditi derivante da lavoro dipendente e/o autonomo.

01 Fino a 10mila euro
02 Da 10mila a 15mila
03 Da 15mila a 20mila
04 Da 20mila a 25mila
05 Da 25mila a 30mila
06 Da 30 a 40mila
07 da 40 a 50mila
08 Oltre 50mila
99 Non rispondo

---
067 *Se Campione =04 E 004=04 OPPURE Campione =04 E 004=05 OPPURE Campione =04 E 004=06 e 026_02<21)*
Ultime domande.
Qual è la sua retribuzione **annuale lorda**? Faccia riferimento all'anno passato e pensi alla retribuzione totale, comprensiva di eventuali indennità, bonus, percentuali sui Drg, consulenze, libera professione ecc. Pensi in sostanza alla sua dichiarazione dei redditi derivante da lavoro dipendente e/o autonomo.

01 Fino a 25mila
02 Da 25 a 30mila euro
03 Da 30 a 40mila euro
04 Da 40 a 50mila euro
05 Da 50 a 60mila euro
06 Da 60mila a 70mila euro
07 Da 70mila a 80mila euro
08 Da 80mila a 90mila euro
09 Da 90mila a 100mila euro
10 Da 100 a 120mila euro
11 Oltre 120mila euro
99 Non rispondo
---
068 *Se (Campione =04 e 004>06) oppure (*Campione=4 e 004=06 e 026_02>20)
Ultime domande.
Qual è la sua retribuzione **annuale lorda**? Faccia riferimento all'anno passato e pensi alla retribuzione totale, comprensiva di eventuali indennità, bonus, percentuali sui Drg, consulenze, libera professione ecc. Pensi in sostanza alla sua dichiarazione dei redditi derivante da lavoro dipendente e/o autonomo.

01 Fino a 50mila
02 Da 50 a 60 mila euro
03 Da 60 a 70mila euro
04 Da 70 a 80mila euro
05 Da 80 a 90mila euro
06 Da 90 a 100mila euro

07 Da 100 a 120 mila euro
08 Da 120 a140mila euro
09 Da 140 a 170mila euro
10 Da 170 a 200mila euro
11 Da 200 a 230mila euro
12 Oltre 230mila euro
99 Non rispondo

068SLP *Se Campione =06 OPPURE Campione =07 (sumaisti e liberi professionisti)*
Ultime domande.
Qual è la sua retribuzione **annuale lorda**? Faccia riferimento all'anno passato e pensi alla retribuzione totale, comprensiva di eventuali indennità, bonus, bonus, percentuali sui Drg, consulenze, libera professione ecc. Pensi in sostanza alla sua dichiarazione dei redditi derivante da lavoro dipendente e/o autonomo.

01 Fino a 20mila euro
02 Da 20 a 30mila euro
03 Da 30 a 40mila euro
04 Da 40 a 50mila euro
05 Da 50 a 60mila euro
06 Da 60mila a 70mila euro
07 Da 70mila a 80mila euro
08 Da 80mila a 90mila euro
09 Da 90mila a 100mila euro
10 Da 100mila a 120mila euro
11 Da 120mila a 140mila euro
12 Da 140mila a 170 mila euro
13 Da 170 mila a 200 mila euro
14 Da 200 a 230 mila
15 Oltre 230 mila
99 Non rispondo

069
Per finire, qual è il suo anno di nascita?

01 ANNO _____ VALORI ACCETTATI 1930-1995"

Z77_FINE
Il questionario è terminato, la ringraziamo molto per la sua collaborazione. Se vuole, può rilasciarci qualche commento o suggerimento.

01 Eventuale commento (facoltativo) _____

Appendix 2
Analysis of the representativity of the respondent dataset

1. POLICLINICO[51]

Gender		m	f	total
Population dataset	freq	385	350	735
	%	52.38	47.62	100
Respondent dataset	freq	126	121	247
	%	51.01	48.99	100
p[52]				0.6680

Rank		Population dataset	Respondent dataset	p
<=IP	freq	579	194	
	%	78.78	78.54	0.1796
Uos	freq	93	21	
	%	12.65	8.5	0.0204
Uosd	freq	10	5	
	%	1.36	2.02	0.0000
Uoc	freq	53	27	
	%	7.21	10.93	0.3876
tot	freq	735	247	
	%	100	100	

Year of birth (mean)	Population dataset	Respondent dataset	p
Men	1961.9	1962.7	
Women	1065.6	1967.1	
Tot	1063.7	1964.8	0.4655

[51] For the Policlinico the statistics comparison is made using the population dataset since the email list dataset doesn't contain any useful information to compare with.
[52] P values greater than 0.05 suggest that there is not a significant difference between the two values. H0: there is not a significant difference. If p>0.05 the null hypothesis (H0) is accepted.

Gross income[53] (mean)	m	f	tot
Population dataset	74551	73276	73906
Respondent dataset	85973	62747	74753

2. MACHADO[54]

Gender		m	f	total
Email list dataset	Freq	75	71	146*
	%	51.37	48.63	100
Respondent dataset	Freq	34	38	72
	%	47.22	52.78	100
p				0.4862

Type of practice		Email list dataset	Respondent dataset	p
Academic	Freq	12	6	
	%	8.22	8.33	0.9723
Hospital employees	Freq	86	45	
	%	58.9	62.5	0.5334
Hospital freelancers	Freq	48	21	
	%	32.88	29.17	0.4938
Tot	Freq	146	72	
	%	100	100	

[53] The income provided by the hospital is the salary. Therefore, it doesn't take account of private practice and external consultancies. On the contrary, the income in the respondent dataset does. The two data are therefore not comparable. No matter the impossibility of comparing the two data, this table provides nonetheless useful insights on the weight of the private practice in producing the gender pay gap.

[54] From now on (Machado, Legnano, Como, San Donato), the statistics comparisons are made on the email list datasets provided by the hospitals which were corrected by excluding residents and non medical professionals. For Legnano, Como and San Donato the email list dataset corresponds to the population, while for Machado it corresponds to a sub-population (see chapter 2).

3. LEGNANO

Gender		m	f	total
Email list dataset	Freq	360	360	720
	%	50	50	100
Respondent dataset	Freq	191	212	403
	%	47.39	52.61	100
p				0.2961

Type of practice		Email list dataset	Respondent dataset	p
Academic	Freq	0	0	
	%	0	0	
Hospital employees	Freq	688	394	
	%	95.55	97.77	0.0029
Hospital freelancers	Freq	28	9	
	%	3.89	2.23	0.0252
Hospital collaborators	Freq	4	0	
	%	0.56	0	
Tot	Freq	720	403	
	%	100	100	

Specialty[55]		Email list dataset	Respondent dataset	p
Medicine	Freq	324	186	
	%	45.83	46.5	0.8956
Surgery	Freq	225	111	
	%	31.82	27.75	0.0554
Diagnostic	Freq	148	97	
	%	20.93	24.25	0.1421
Public Health	Freq	10	6	
	%	1.41	1.5	0.9020
Tot	Freq	707	400	
	%	100	100	

[55] Thirteen cases in the email dataset are missing. Comparison made excluding missing cases. As missing cases in the email dataset corresponds to cases that in the respondent dataset which are coded either as "all other specialties" or "missing" (3 in total), both two items have been excluded for comparison in the respondent dataset.

Rank		Email list dataset	Respondent dataset	p
1st level	Freq	523	288	
	%	72.64	71.46	0.6022
Vice	Freq	122	71	
	%	16.94	17.62	0.7232
Head	Freq	43	36	
	%	5.97	8.93	0.0380
All others	Freq	32	8	
	%	4.44	1.99	0.0005
Tot	Freq	720	403	
	%	100	100	

Seniority (years, mean)	Email list dataset	Respondent dataset	p
Men	16.4	17.1	
Women	14.2	12.6	
Tot	15.3	14.8	0.1603

4. COMO

Gender		m	f	total
Email list dataset	Freq	305	219	524
	%	58.21	41.79	100
Respondent dataset	Freq	134	105	239
	%	56.07	43.93	100
p				0.5067

Type of practice		Email list dataset	Respondent dataset	p
Hospital employees	Freq	491	226	
	%	93.7	94.56	0.5598
Hospital freelancers	Freq	33	13	
	%	6.3	5.44	0.5598
Tot	Freq	524	239	
	%	100	100	

Specialty[56]		Email list dataset	Respondent dataset	p
Medicine	Freq	184	117	
	%	44.88	50.21	0.1054
Surgery	Freq	117	55	
	%	28.54	23.61	0.0782
Diagnostic	Freq	104	56	
	%	25.37	24.03	0.6355
Public Health	Freq	5	5	
	%	1.22	2.15	0.3312
Tot	Freq	410	233	
	%	100	100	

[56] Information provided by the hospital for employees only. The specialty of employee physicians in the emergency units (81 individuals) can't be drawn from the email dataset. Comparison made only between employees and excluding missing cases (which in the respondent dataset are coded either as missing or as "all other specialties").

5. SAN DONATO

Gender		m	f	total
Email list dataset	Freq	176	126	302
	%	58.28	41.72	100
Respondent dataset	Freq	68	45	113
	%	60.18	39.82	100
p				0.6822

Type of practice		Email list dataset	Respondent dataset	p
Academic	Freq	17	8	
	%	5.63	7.08	0.5507
Hospital employees	Freq	1	1	
	%	0.33	0.88	0.5327
Hospital freelancers	Freq	281	102	
	%	93.05	90.27	0.3229
Hospital collaborators	Freq	3	2	
	%	0.99	1.77	0.5344
Tot	Freq	302	113	
	%	100	100	

Rank		Email list dataset	Respondent dataset	p
1st level	Freq	245	73	
	%	81.13	64.6	
Vice[57]	Freq	2	15	
	%	0.66	13.27	
1stlevel+Vice	Freq	247	88	
	%	81.79	17.87	
Head	Freq	55	25	
	%	18.21	22.12	
Total	Freq	302	113	
	%	100	100	0.3207

[57] The discrepancy in the vice position between the email dataset and the respondent dataset is due to the fact that, formally, only two physicians in the whole organization have a vice qualification. Nevertheless, informally, many 1st level physicians are – *de facto* – vice, no matter if they don't report it in their qualification. This informal step has been reported in the respondent dataset.

Specialty[58]		Email list dataset	Respondent dataset	p
Medicine	Freq	109	58	
	%	40.98	51.33	0.0305
Surgery	Freq	75	25	
	%	28.2	22.12	0.1244
Diagnostic	Freq	79	27	
	%	29.7	23.89	0.1524
Public Health	Freq	3	3	
	%	1.13	2.65	0.3169
Tot	Freq	266	113	
	%	100	100	

Age (years, mean)	Email list dataset	Respondent dataset	p
Men	49.5	49.1	
Women	41	42.2	
Tot	45.9	46.4	0.6825

[58] Thirty-six cases in the email dataset either don't report the specialty or the specialty is reported but it is not possible to codify according to the specialty classification used for the respondent dataset. These cases have been excluded for comparison. The San Donato respondent dataset doesn't report any missing case (or "all other specialties" cases).

Appendix 3
Tables and figures supporting descriptive statistics in Chapter 3

Table 1 –Bivariate analysis on the likelihood of holding a second specialty by age

```
. logit second_specialty age, nolog

Logistic regression                                     Number of obs   =       1074
                                                        LR chi2(1)      =     219.28
                                                        Prob > chi2     =     0.0000
Log likelihood = -446.90224                             Pseudo R2       =     0.1970
```

second_specialty	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
age	.1459834	.0122187	11.95	0.000	.1220352	.1699316
_cons	-9.122819	.6908853	-13.20	0.000	-10.47693	-7.768709

Table 2 – Bivariate analysis on the likelihood of holding a Ph.D. by age

```
. logit phd age, nolog

Logistic regression                                     Number of obs   =       1074
                                                        LR chi2(1)      =      23.16
                                                        Prob > chi2     =     0.0000
Log likelihood = -233.72244                             Pseudo R2       =     0.0472
```

phd	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
age	-.0643219	.0137796	-4.67	0.000	-.0913295	-.0373144
_cons	.313352	.6326833	0.50	0.620	-.9266844	1.553388

Table 3 – Bivariate analysis on the likelihodd of holding a second specialty by gender

```
Logistic regression                               Number of obs   =       1074
                                                  LR chi2(1)      =      16.49
                                                  Prob > chi2     =     0.0000
Log likelihood = -548.29593                       Pseudo R2       =     0.0148
```

second_specialty	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
gender	-.6145829	.1534295	-4.01	0.000	-.9152993	-.3138666
_cons	-1.034533	.0966826	-10.70	0.000	-1.224028	-.8450389

Table 4 – Likelihood of holding a second specialty by gender controlling for age

```
. logit second_specialty gender age, nolog

Logistic regression                               Number of obs   =       1074
                                                  LR chi2(2)      =     219.65
                                                  Prob > chi2     =     0.0000
Log likelihood = -446.71533                       Pseudo R2       =     0.1973
```

second_specialty	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
gender	-.1056721	.1728947	-0.61	0.541	-.4445394	.2331953
age	.1443916	.0124563	11.59	0.000	.1199776	.1688055
_cons	-8.990215	.721242	-12.46	0.000	-10.40382	-7.576607

Table 5 – Cross-tab between second specialty and gender if age <57

second specialty	gender male	female	Total
no	288	366	654
	88.62	89.93	89.34
yes	37	41	78
	11.38	10.07	10.66
Total	325	407	732
	100.00	100.00	100.00

Pearson chi2(1) = 0.3262 Pr = 0.568

Table 6 – Cross-tab between second specialty and gender if age>56

second specialty	gender male	female	Total
no	120	71	191
	52.63	62.28	55.85
yes	108	43	151
	47.37	37.72	44.15
Total	228	114	342
	100.00	100.00	100.00

Pearson chi2(1) = 2.8697 Pr = 0.090

Table 7 – Bivariate analysis on the likelihood of holding a Ph.D. by gender

```
. logit phd gender, nolog

Logistic regression                             Number of obs   =       1074
                                                LR chi2(1)      =       1.35
                                                Prob > chi2     =     0.2446
Log likelihood = -244.62438                     Pseudo R2       =     0.0028

------------------------------------------------------------------------------
         phd |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
      gender |  -.3001179   .2594588    -1.16   0.247    -.8086478     .208412
       _cons |  -2.606581   .1680998   -15.51   0.000     -2.93605   -2.277111
------------------------------------------------------------------------------
```

Table 8 – Likelihood of holding a Ph.D. by gender controlling for age

```
. logit phd gender age, nolog

Logistic regression                             Number of obs   =       1074
                                                LR chi2(2)      =      28.15
                                                Prob > chi2     =     0.0000
Log likelihood = -231.22522                     Pseudo R2       =     0.0574

------------------------------------------------------------------------------
         phd |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
      gender |  -.5936236   .2682948    -2.21   0.027    -1.119472   -.0677755
         age |  -.0703556   .0140027    -5.02   0.000    -.0978004   -.0429108
       _cons |   .8708749   .6745009     1.29   0.197    -.4511225    2.192872
------------------------------------------------------------------------------
```

Table 9 - Cross-tab between Ph.D. e gender if age <46 years

Holding a Ph.D	gender male	female	Total
no	122 84.14	203 91.44	325 88.56
yes	23 15.86	19 8.56	42 11.44
Total	145 100.00	222 100.00	367 100.00

Pearson chi2(1) = 4.6166 Pr = 0.032

Figure 1 – Scissor diagram of academic careers at UMIL, year 2013

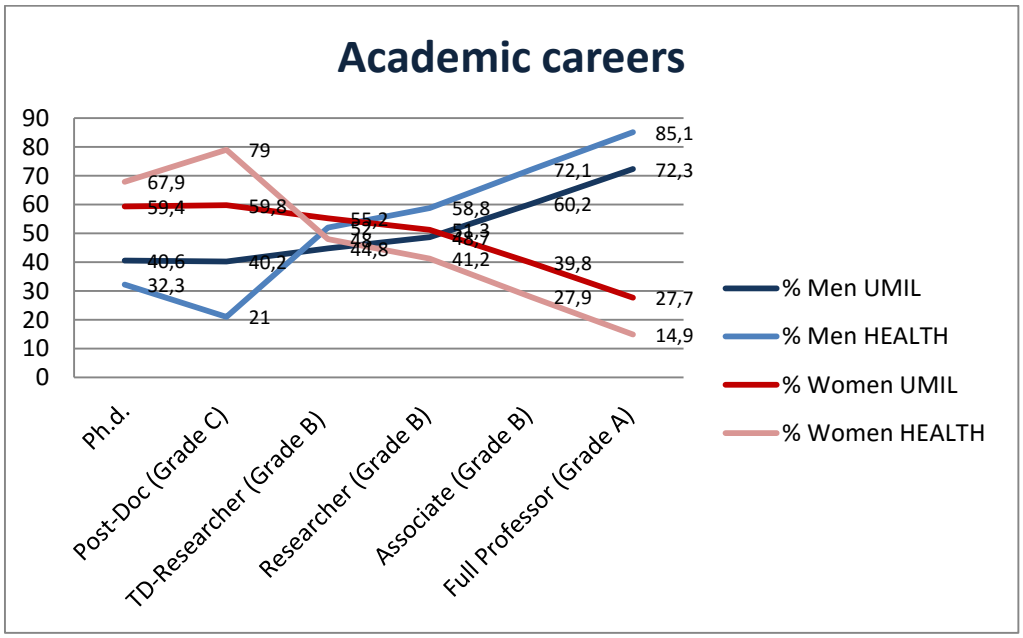

Table 10 – Respondents by contract

	Frequency	Percentage
grants/co.co.co/pro	12	1.12
short-term	92	8.57
free-lance	149	13.87
open-ended	817	76.07
missing	4	0.37
total	1074	100

Table 11 – Respondents by contract and by hospital

		Policlinco	Legnano	Como	San Donato	Machado	Total
grants/co.co	Freq	10	0	0	2	0	12
	%	4.07	0	0	1.79	0	1.12
short-term	Freq	6	66	16	0	4	92
	%	2.44	16.46	6.69	0	5.56	8.6
free-lance	Freq	3	9	13	103	21	149
	%	1.22	2.24	5.44	91.96	29.17	13.93
open-ended	Freq	227	326	210	7	47	817
	%	92.28	81.3	87.87	6.25	65.28	76.36
total	Freq	246	401	239	112	72	1070
	%	100	100	100	100	100	100

Table 12 – Type of setting in Machado: email list dataset vs respondent dataset

		Population	Respondents
Academic	Freq	13	6
	%	**2.67**	**8.33**
Hospital employees	Freq	98	45
	%	**20.12**	**62.5**
Hospital freelancers	Freq	376	21
	%	**77.21**	**29.17**
Hospital collaborators	Freq	0	0
	%	0	0

total	Freq	487	72
	%	100	100

Figures 2-6: Work-life conflicts explanations

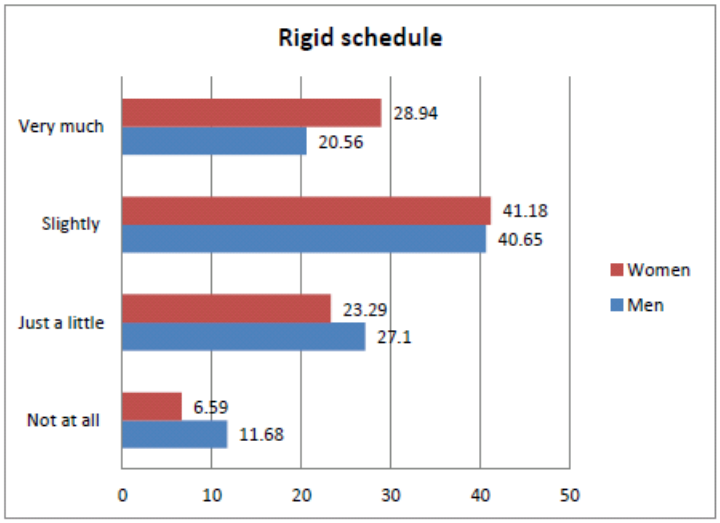

Figure 2 - Rigid schedule
answers: 853
p-value for Chi2 test: 0.004

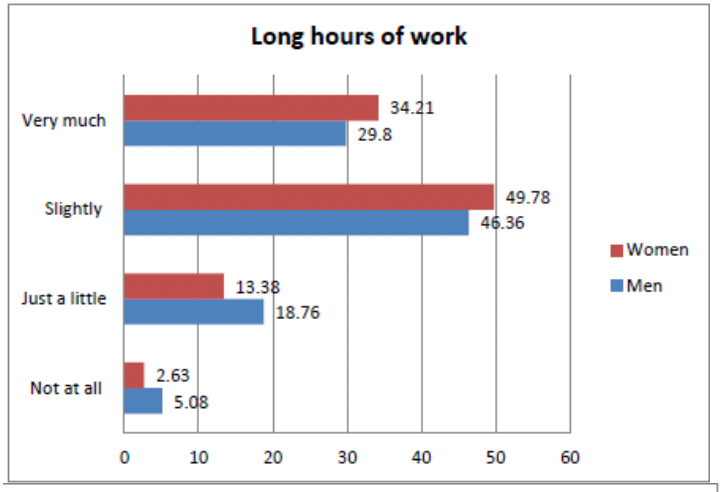

Figure 3 – Long hours of work
answers: 909
p-value for Chi2 test: 0.023

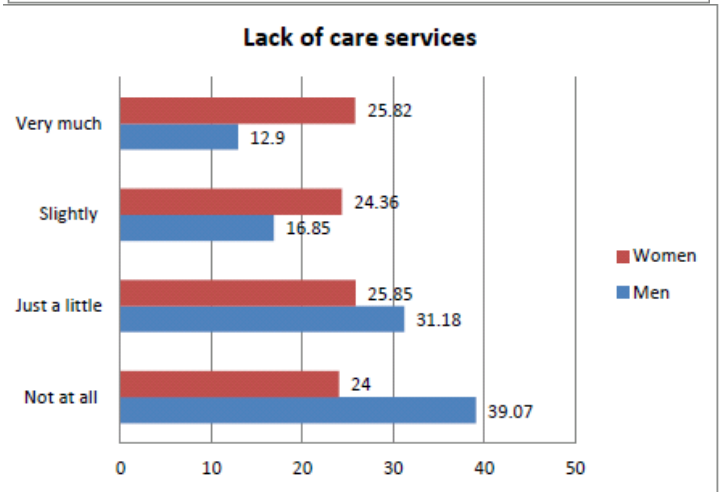

Figure 3 – Lack of care services
answers: 554
p-value for Chi2 test: 0.000

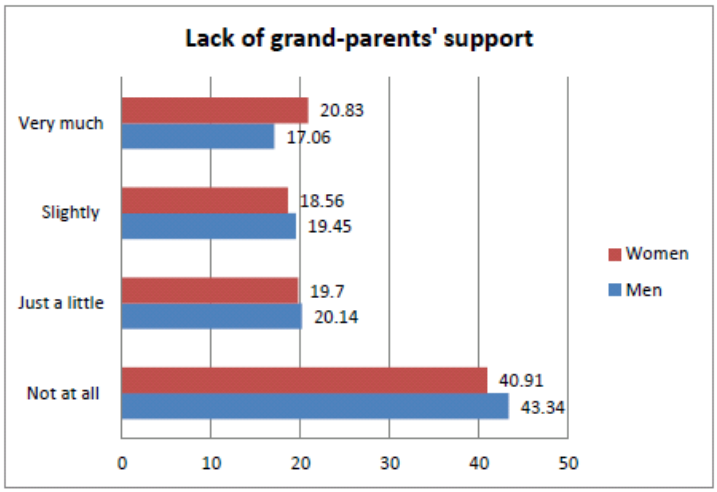

Figure 3 – Lack of care services
answers: 557
p-value for Chi2 test: 0.726

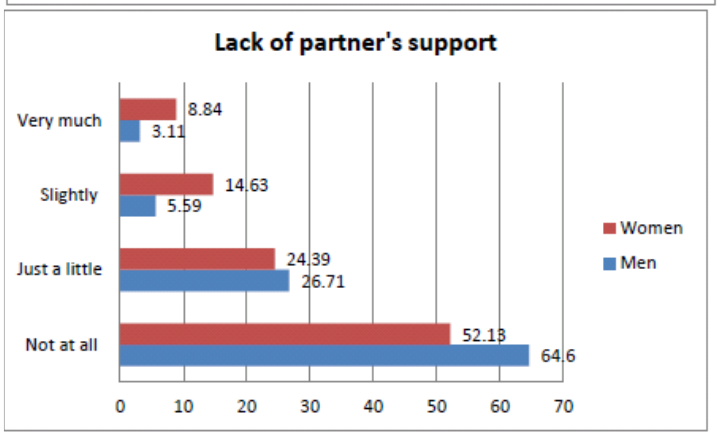

Figure 3 – Lack of care services
answers: 650
p-value for Chi2 test: 0.000