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Italian Top Paid Workers: Gender Disparities in Careers and Earnings

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ITALIAN TOP PAID WORKERS:

GENDER DISPARITIES IN CAREERS AND EARNINGS

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Abstract

Using the Work Histories Italian Panel for years 1990-1995-2000 and 2005, this analysis examines gender differences in careers' paths, roles and total earnings among the highest working category in Italy, that of *dirigenti*. Results show that Italy is characterized by a strong vertical segregation: women represent less than 12% of the sample of the highly paid in each of the reference year. Females in the management class are younger, have less years of working experience and tend to face issues of horizontal segregation in less remunerative sectors and firms with respect to their male counterpart. The difference in total annual earnings among male and female *dirigenti* ranged between 26% and 37%. A large proportion of this gap is not explained by differences in observed characteristics, indicating both the effect of other non-observed predictors and discrimination. Controlling for the fixed effects that change between individuals, but are constant over time, the gender pay gap for this category of workers was 1% over the period 1990-1995, insignificant over the period 1995-2000, and 2% over the period 2000-2005.

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1. Introduction

Equality between women and men is one of the founding principles of the European Union. In the article I-3 of the Constitutional Treaty, which covers the internal and external objectives of the Community, it is possible to read that one of European primary aim is: *"Combating social exclusion and discrimination, promoting social justice and protection, equality between women and men, solidarity between generations and protection of the rights of the child"*[1].

Within this framework, the European Commission has been actively proposing different measures to promote gender equality in various fields. One of the most recent initiative has been the elaboration of an action plan adopted in September 2010, the *Strategy of Equality between Women and Men* for the years 2010-2015. Its priorities are: equal economic independence, equal pay for equal work, work for equal value, equality in decision making, dignity, integrity, an end to gender-based violence, and gender equality in external actions beyond the EU (European Commission, 2012). These initiatives had important consequences on the labour markets of the Member States of the Union. The most important has been the massive incorporation of women into the labour force. In fact, female participation rate in Europe raised from 54.8% in 2003 to 58.8% in 2013(EUROSTAT, 2016*b*).

Another important consequence has been the female occupation of previously male-dominated managerial roles, though somewhat very slowly. Nowadays it is not an exception for a woman to be a boss, but the proportion of female managers remains below their proportion in the overall workforce, especially for high-level management positions. In October 2013, the average share of women on boards of the largest publicly listed companies registered in the EU-28 Member States reached 17.8% only (European Commission, 2014). Conscious of this situation, on 14 November 2012, the European Commission put forward the proposal for a Directive establishing a procedural quota with the objective for a minimum of 40% of each sex among non-executive directors by 2020. In case of equal qualification, priority will have to be given to the candidate of the under-represented gender. The proposal enhances fairness and transparency in board selection processes by pushing companies to take a broader base of candidates from the outset. Qualification and merit remain the key criteria for a job on the board (European Commission, 2014).

The purpose of this study is to focus on this specific issue and deeply analyse differences in roles and compensations of the Italian management class.

[1] EUR-Lex, Consolidated version of the Treaty on European Union - TITLE I: COMMON PROVISIONS - Article 3 (ex Article 2 TEU), *Official Journal 115 , 09/05/2008 P. 0017 - 0017.*

Italy still stands beyond the European achievements in terms of gender equality in the labour market. In 2012, the female labour force participation rate was 39%, much lower of North European countries (69% in Norway, 54% in Germany), but also of other South European countries (44% in Greece, 53% in Spain) (World Bank, 2016). The situation is particularly critical at top corporate levels. In 2010, the share of female members of boards in largest quoted companies, supervisory board or board of directors was 5%, against the European average of 12% (European Institute for Gender Equality, 2014). In order to face this delicate issue, in July 2011, the Italian Government adopted the Law No. 120, establishing *Equal Access to Boards of Directors and Boards of Statutory Auditors of Companies Listed on Regulated Markets*, which states that from August 2012 boards of listed companies shall include 20% of women, and that the total number of members shall be increased to one third starting from 2015. This initiative had a beneficial consequence. In three years, from October 2010 to October 2013, the share of women on boards increased by 10.4 percentage points (European Commission, 2014).

Anyway, even if some improvements have been made over the last years, important gender differences in roles and compensations among Italian top corporate employees still persist. The aim of this research is to analyse the main characteristics of the Italian management class, shading light on discrepancies in careers' paths between men and women and gender differentials in remuneration among the highly paid in this country. Using for the first time data from the Work Histories Italian Panel from 1990 to 2005, the evidence shows issues of both vertical and horizontal segregation and a worsening of the remunerative conditions of female managers during the first years of the new century.

This work is organised as follows: in chapter two, a general description of the concepts of economic discrimination and wage differential will be reported with a specific focus on top corporate literature. In the third, a general overview of the Italian labour market and its main characteristics will be made. In the fourth, the descriptive analysis of the sample under study will be presented, while, in the fifth, the empirical strategy and the results of the estimations will be shown. The concluding section will be dedicated to the summary of the main findings of the work.

2. Discrimination: definitions and implications

According to the Oxford Dictionary, the word discrimination indicates *"The unjust or prejudicial treatment of different categories of people, especially on the grounds of race, age or sex"*(Oxford Dictionary, 2014). This definition suggests that a voluntary distinction, based on particular judgements or classifications, is at the basis of a discriminatory process.

The concept of discrimination is typically used with a negative connotation: if the distinction among individuals is socially reprehensible or without any rational foundation, it becomes discrimination. In this case, it is possible to define it as *"The practise of diminishing the chances of social, political and economic participations of individuals, according to unjustifiable characteristics, such as gender, political ideals or race"* (D'Amico, as reported by Brucchi 2001, p. 382). According to this definition, the phenomenon of discrimination has important reflections on individuals' lives, influencing their possibility to participate to the scholar system, the labour market or, simply, to social life, in order to improve their condition and status. In fact, as suggested by Arrow (1971), examples of discrimination could be: deliberate racial segregation in entrance to schools, deprivation of the right to vote along the social and sexual lines or discriminatory taxation.

It is easy to understand how complex this phenomenon is. It is not a case that it is studied by different disciplines, in particular psychology, sociology and economics. Psychologists and sociologists tend to focus on discrimination in a non-market context. Economists, indeed, tend to analyse the effects of discrimination in the labour market. These involve, for example, differences in the rates of participation to the labour force of the discriminated groups, the occupational segregation of particular categories of employees in specific sectors of the economy and the wage differentials between discriminated and no-discriminated workers.

These specific themes can be classified under the notion of economic discrimination. The next section will focus on the explanation of this concept, while the following two will deepen the issue of the gender pay gap in general and among the highly paid in particular.

2.1 Economic discrimination: theoretical explanations

"Money, commonly used as a measuring rod, will also serve as a measure of discrimination. If an individual has a taste of discrimination, he must act as if he were willing to pay something, either directly or in the form of a reduced income, to be associated to some persons instead of others. When actual discrimination occurs, he must, in fact, either pay or forfeit income for this privilege. This simple way to looking at the matter gets at the essence of prejudice and discrimination" Becker (1957: 14).

This is the incipit of one of the greatest contributions of economic theory to the issue of discrimination, The Economics of Discrimination of the Nobel Prize Gary Becker, published for the first time in 1957. It is easy to understand from this statement that this discriminatory phenomenon is able to influence the price structure and the allocation of resources (Brucchi, 2001). In this specific context, the interest is on the effects of discrimination on workers' wages.

The first application of neoclassical theory to discrimination is that of Edgeworth, who in 1922 published Equal Pay to Men and Women for Equal Work, but Becker's analysis represents the main study. Becker (1957) bases his work on the assumption that pay, productivity and value are all represented by individual attributes, especially education, training and experience, while relations of power, social norms and expectations are external factors. In this sense, he operates in the framework of Human Capital Theory. In his analysis, Becker refers to a perfect market economy, against which he conceptualizes discrimination as an *"Unfortunate, but peripheral, aberration based on prejudice"* (Bruegel, 1987, p.1).

Another neoclassical economist who analysed these themes is Arrow (1971). In his study, The Theory of Discrimination, he explains the concept of discrimination in terms of individual characteristics: *"The fact that different groups of workers, be they skilled or unskilled, black or white, male or female, receive different wages, invites the explanation that different groups must be different according to some characteristics valued on the market"* Arrow (1971), p.1. He continues explaining that, in standard economic theory, they usually refer to differences in productivity, but the notion of discrimination involves additional concepts related to personal attributes of the worker and unrelated to productivity. These attributes, such as race, sex or ethnical background, are specifically valued in the market and can be considered one of the sources of discrimination. He defines a model to investigate racial discrimination, which can be easily extended to gender discrimination. The assumption of his model is that discrimination arises because some economic agents have negative valuations for blacks (women) or positive valuations for whites (men) or both. The point is that they are willing to pay for these evaluations and have the opportunity to pay. Given this assumption, the market works smoothly: general equilibrium requires full employment for both groups of workers, wages will adjust to clear the market and the discriminatory tastes will be reflected in wage differences.

Phelps, in 1972, elaborated The Statistical Theory of Discrimination, according to which discrimination is based on employers' lack of information on employees' productivity. Employers use signals in order to understand which categories of workers are more productive: *"Skin colour or sex are taken as a proxy for relevant data non sampled. The a priori belief in the probable preference of white or men, who are not*

known to differ in other respects, might stem for the employers' previous statistical experience with the two groups or it might stem from prevailing sociological believes" (Phelps, 1972, p.659).

The main difference between the Human Capital Theory approach and the Statistical Theory approach is that the first refers to the supply side of the labour market (workers' differences in their skills, experience, formal educations and tastes), while the second refers to the demand side of the labour market (employers have beliefs based on observations or prejudice).

As a result of these two theories, more complex analyses have been elaborated. Lundberg and Starzt (1983) investigated the effects of laws forbidding discrimination. They present a model of statistical discrimination and examine the effects of prohibiting group-specific treatment of workers on both net social outcome and the distribution of income. They found that the allocation achieved by rational agents can be improved by forbidding discrimination based on group membership. Oettinger (1996) developed a dynamic model of statistical discrimination in order to estimate the wage gap between white and black young men. The main result is that no black-white wage gap exists at labour-force entry, but that this develops as experience accumulates, mainly because blacks get smaller gains from job mobility.

The wage gap is one of the most important discriminatory labour market outcome. Since the main aim of this work is to estimate the wage gap among the Italian highly paid workers, a specific attention will be dedicated to this issue in the following two sessions.

2.2 The gender pay gap

The gender pay gap is a traditional issue in labour economics. This is because labour income is considered one of the major determinant of welfare for employed individuals, as well as a potential gain for those not currently employed. In addition to this, it is a significant input into a multitude of decisions, ranging from labour supply to marriage and fertility, and an important factor influencing the bargaining power and relative status of the spouse within the family (Blau and Kahn, 1999)[2].

Eurostat defines the unadjusted Gender Pay Gap as *"The difference between average gross hourly earnings of male paid employees and female paid employees, as a percentage of average gross hourly earnings of male paid employees*"(EUROSTAT, 2016). In other words, this indicator measures wage discrepancies between the two genders, indicating the extent of unequal opportunities in the labour market. It also reflects the incompatible requirements of career and family, problems which most women face.

Many labour market researches reveal that women's wages are lower than men's, even after correcting for job and worker characteristics (Eckel and Grossman, 2008). Empirical data show that this difference has diminished over the last 30 years, but a significant gap is usually found in all the studies conducted. In fact, the gender pay gap is a persistent characteristic of virtually every nation's labour market. Moreover, the extent to which men out-earn women varies substantially across countries (Blau and Kahn, 2001).

Many theories have been elaborated in order to explain the persistent difference in earnings between men and women. Researches on the sources of this gap have traditionally focused on gender specific factors, such as women's lower investments in human capital or differences in treatments of otherwise equally qualified male and female workers. More recently, labour income differentials have been studied in the context of the overall structure of wages.

2.2.1 Determinants of gender pay gap: gender specific factors

Blau and Kahn (1999) suggest that the two pillars of traditional economic analysis on this phenomenon are Human Capital Theory and models of labour market discrimination. These are gender specific explanations because they consider gender differences in qualifications or skills as the cause of the earnings differential.

Within this framework, the gender pay gap is explained in terms of gender differences in productivity-related qualifications, like education, training and experience. Given the gendered division of labour, women are considered less likely to invest in market-oriented formal education because they expect a briefer and more discontinuous working life: an investment in education is not expected to be properly repaid in the future. Less investment and limited experience will reduce their productivity and this is translated in lower wages (European Commission, 2006).

These considerations produce gender differences in occupations, as women choose jobs where qualifications are less important and where earnings penalties for work interruptions are smaller. Women have a lower return to investments in education and firm-specific skills, so they tend to avoid highly paid jobs. In addition, since the costs of firm-specific training are shared by employers and employees, firm owners are reluctant to hire women for these positions, because they expect a shorter tenure for female workers. *"The difficulty of distinguishing more career-oriented women from less career-oriented women means that the former may be the victim of 'statistical discrimination' based on average gender differences in attachment to the firm and the labour market"* (Blau and Kahn, 1999, p.626)

Summarizing, Human Capital Theory provides a logical explanation for gender differences in labour market outcomes based on traditional division of labour within the family. This division leads women to earn less and to be located in less remunerative occupations. The main point is that these outcomes derive from a voluntary decision of men and women.

Models of labour market discrimination, instead, offer a different explanation. They assume a world of uncertainty and imperfect information and focus on differences between men and women on productivity or expected productivity. An interesting model, ideated by Bergmann (1974), defines the relationship between occupational segregation and discriminatory wage gap. The researcher argues that discriminatory exclusion of women from male jobs results in an excess of supply of labour in female occupations, depressing wages for otherwise equally productive workers.

Employers can discriminate against female workers also by avoiding to introduce them in traditional male occupations. Akerlof and Kranton (2000) specifically define "male" and "female" occupations while studying male resistance to the entry of women due to the loss of "male identity" that this would cause. According to Goldin (2002), the entry of a woman in a male dominated job decreases the prestige of the occupation; this on the basis of the perception that women are, on average, less productive.

The two sets of explanations, gender differences in qualifications and labour market discrimination, are not exclusive sources of gender wage differentials. They are usually combined in empirical studies based on cross-sectional data within countries. In fact, many studies show that both qualifications and discrimination play an important role in determining the gender pay gap, but these findings have strong limitations.

The first problem in decomposing the gender pay gap in these two constituencies, notice Blau and Kahn (1999), is that the evidence for discrimination relies on the presence of a residual gender wage differential which cannot be explained by gender differences in measured qualifications. This accords well with the definition of labour market discrimination, i.e *"Pay differences between groups that are not explained by productivity differences"* (Blau and Kahn, 1999, p.628), but also reflects group differences in unmeasured characteristics or compensating differentials. If men are more endowed than women with respect to these omitted variables, discrimination will be overestimated. Alternatively, if some of the factors controlled reflect the impact of discrimination, this one will be underestimated.

The second problem is due to the presence of feedback effects. The traditional division of labour within the family influences women's market outcome through its impacts on their acquisition of education and on rationales for employers' discrimination against them. But discrimination itself can

also reinforce the traditional division of labour: it can lower the market rewards to women's human capital investment and labour force attachment.

Concluding, it is possible to say that even small initial discriminatory differences in wages may cumulate to large ones as much as men and women make labour market decisions on their basis.

2.2.2 Determinants of the gender pay gap: the role of wage structure

2.2.3

This approach of study was defined for the first time by Juhn et al.in (1993) and by Katz and Murphy (1992), in their researches on gender and racial differences. The innovative point of their studies is the treatment of demographic differentials and the analysis of the wage structure in an integrated way: *"We interpret the dispersion in wages, after controlling for observable skill determinant, as a distribution of unobservable ability in the population, in conjunction with a current market value of this unobservable ability"* (Juhn et al., 1993: 411).

After their works, economists have recognised that overall wage structure, or the monetary values the labour market attaches to qualifications, skills, rents and sectors, can be more useful in understanding the relative wages of subgroups of workers. For example, since women have, on average, less work experience and tend to be more segregated in specific occupations and industries, an increase in return to experience or male dominated sectors will raise the gender pay gap (Blau and Khan, 1999).

In fact, the wage structure is considered of notable importance in determining the relative earnings of one group of workers who tend, on average, to be less skilled or to be located in lower paying sectors of the economy. Both human capital and discrimination models suggest that men and women tend to have different levels of labour market qualifications and to be employed in different industries. This means that they have different returns to skills and job occupations: the larger these returns, the larger the gender pay gap. But the notion of high and low return is intrinsically a relative concept. Thus, the framework provided by wage structure requires some structural frame of reference and is particularly useful in analysing changes over time in gender differentials and differences across countries. These inter-temporal cross countries comparisons allow for measuring the effects of wage structure comparatively with reference to the situation that existed at an earlier point in time or that prevails in another country.

Many factors determine the wage structure: the relative supply of labour, skills levels, technology, the composition of demand and wage-setting institutions. Recent institutional factors include declining union density and the falling real value of minimum wages.

In addition to this, it is important to underline that gender specific factors and wage structure can interact in affecting the gender pay gap, making it sometimes difficult to disentangle their separate effects.

For example, since 1970s, labour market returns to skills, especially education, specialized training and experience, have risen in many countries. In particular, the prices of skills for which women have a relative deficit have risen and such changes in the wage structure can negatively affect the gender pay gap (Blau and Khan, 1999).

Things get more complicated when the gender pay gap is studied for specific categories of workers. In this case, different determinants can arise. In the next section, those affecting the gender pay differential among the top paid employees will be explained.

2.3 The gender pay gap among the highly paid: economic and social factors affecting the wage differential

It is common knowledge that inequality in compensation between men and women becomes more pronounced at senior levels. Different explanations have been given to this fact.

Part of academic literature has focused on human capital theory, which indicates that women earn less because of gender differences in education, years of experience or tenure (Kulich et al., 2011). Another explanation focuses on occupational sex segregation, which states that positions women typically occupy are in less-paid areas, like human resources, health care or teaching.

Other findings show that, even if women are employed full time, have continuous careers or work in male-dominated sectors, they still receiver lower rewards than men with comparable qualifications and experience (Kulich et al., 2011). This indicates that women's qualifications, experience and career's choices cannot entirely explain the gap, but other factors should be taken into account. Some of these, like discrimination, are widely recognised, while others still have to be identified.

The main point of this brief introduction is that the mechanisms explaining the gender pay gap among top managers are not immediate and so numerous and various factors should be considered. Generally, these are distinguished into economic and no economic.

2.3.1 Economic factors affecting the compensation of top corporate employees: implications on the gender pay gap

In corporate finance literature, the gender wage gap is explained in terms of the factors that generally determine managers' compensation: firm size, firm performance and firm ownership (Murphy, 1999). These represent fundamental information in order to understand the economic determinants of the gender pay differential because there is evidence that women tend to work for smaller, more competitive and so less remunerating corporations than men.

Skalpe (2007), analysing the gap between male and female managers in the tourist and manufactory sectors in Sweden, uses a logarithmic transformation of companies' sales as a measure of firm size and accounting-based information to develop measures of firm performance. Bertrand and Hallock (2001) define firm size as the value of shareholders wealth, sales, total assets and number of employees. They both find that female CEO receive less compensation even if they run similar firm or achieve comparable economic results. In their samples, women are highly underrepresented in large corporation, even if a decline in sex segregation by firm size is underlined.

Other economic explanations of the gender pay gap focus on corporations' structure and organization. The tournament theory of Lazear and Rosen (1981) states that top management compensation should be considered within the context of organisation's hierarchy and assessed by how effectively it stimulates performance. Since women tend to operate in smaller, more crowded and competitive firms, they provide lower levels of earnings to their shareholders or employees and this can partially explain their lower level of remuneration and their location in subordinate levels. Niederle and Vesterlund (2008), focusing their investigation on the question of self-selection in tournaments, analyse the willingness of male and female managers to submit their performance to a tournament payment scheme or not. They find that men and women perform equally well in the piece rate payment scheme and equally increase their performance within it, but, if they are allowed to select the payment scheme, significantly more men than women would choose the tournament.

Occupational and industrial segregation are usually accounted as independent variables in the definition of the gender pay gap among top managers. Female executives are not uniformly represented in all industrial sectors: they are more likely to be managing companies that are specialized in health, social services and trade, while they are almost absent in top positions in agriculture, construction, mining and heavy manufacturing industries. In this sense it is important to notice that Bertrand and Hallock (2001) find no evidence that sex segregation by industry explains any of their observed gender pay gap, while they believe that occupational segregation, and so the underrepresentation of women in the very top positions, accounts for as much as half of the unconditional gender pay gap.

Work experience, leadership practise, past performance, seniority and reputation are other relevant issues in the definition of the wage-setting processes of top executives. In particular, qualification and experience play a fundamental role. These factors are related to the human capital of the manager: differences in skills, practises, knowledge should make a great difference in the remuneration that individuals receive (Gray and Benson, 2003)[3]. Anyway, even if the same level of education or experience is registered, some variability in compensations still persist. In a study of male and female lawyers, Wood et al. (1993) show that women law school graduates start their careers earning only slightly less per year than do men graduates, but, 15 years later, women graduates earn only 60% as much as men.

Another possible interpretation of the gender pay gap is based on the assumption that men and women face alternatives where they are differently productive. For example, women may end up in lower paying positions even if they have the same ability distribution as their male colleagues because they have alternatives in the household where they are more productive (Lazear and Rosen, 1990). In addition, it is also possible that women and men at top positions react differently to incentives. Gneezy et al. (2003) offer a partial illustration for the gap stating that women react less to competitive incentives and prefer less competitive environments.

Also other personal characteristics should be considered; age and tenure, for example, are accounted in almost all studies on this theme. Usually, female executives are younger than their male counterpart and have less seniority in companies. Since returns to age, seniority and experience are larger in the executives' labour market, the relative youth and low seniority of the female executives is another determinant of the gender pay gap.

Economic discrimination is an important factor affecting the gap between male and female executives. This concept is linked to the notions of information asymmetry and statistical discrimination. Uncertainty about young female productivity and their preferences on different career paths could lead to underestimation of their promotion and compensation standards. This uncertainty is considered as an extra cost, which can explain why well qualified potential female managers have lower earnings or are discouraged from investing in additional skills or applications for wage increases and promotions (Coate and Loury, 1993).

Even if economic factors represent the majority of the causes affecting of the gender differentials in the remuneration of the executives, they are not able, alone, to explain the whole gap. Other motivations are required and these are related to different sphere of analysis, in particular sociological and psychological.

2.3.2 Social and psychological explanations for the gender pay gap among the top paid

Usually, economic factors are able to explain only a part of the gender pay gap. A percentage of it stays in the so called *"unexplained"* part, due not to evident, concrete, quantifiable factors, but to social and psychological norms, attitudes and beliefs that affect women's earnings.

In this context, the gender pay gap could be the result of a complex interaction between various elements, among which the predominant are sex, gender and the organizational context.

First of all it is important to underline that in many studies, in order to understand the gap between male and female top managers in income attainment, a distinction between sex and gender in made. This because, while sex is a biological fact, gender is a social construction, a product of learning, socialisation and experience (Unger, 1979): *"masculinity"* and *"femininity"* reflect differences in values, interests and preferences.

The most common psychological explanation of the gender pay gap among executives focuses on the gender role theory: lower levels of compensation are the result of the fact that employers consider women not suitable for that kind of positions. Socially constructed beliefs associate *"masculinity"* with the stereotype of a successful manager, while *"femininity"* is seen as incongruent with this role (Ely and Meyerson, 2000).

These traits are fundamental in the definition of the gendered organizational cultural preferences and in the analysis of income attainment. Kirchmeyer and Bullin (1997) show that masculine preferences, high on aggressiveness and low on supportiveness, are associated with higher salaries both for women and men. Also Kent and Moss (1994) find that masculinity, more than sex, is more correlated with leader emergence and higher compensation. In any case, an interesting finding related to these results, indicates that women with masculine organizational preferences are generally disliked and interpersonally sanctioned. This is called *"double-bind"* behavioural norm, which creates a situation where a person cannot win, no matter what she does. Women must be authoritative as men to be taken seriously, but in this case they are disliked and considered too aggressive. *"Societal gender roles could potentially disadvantage all women, regardless their organizational culture preferences, resulting in women being restricted from accessing and improving within the highest paid jobs"* (O'Neill and O'Reilly , 2010, p. 859).

Günther et al. (2010) suggest that one way to reduce the gender pay gap in compensations and positions could be to teach women strategies to cope with the effects of these stereotypes or to design mechanisms that help to avoid stereotype treat from arising.

Also social discrimination should be considered among the variables that affect the gender pay gap. Working in an environment in which discrimination is readily perceived has a very strong negative

impact upon a women's compensations, no matter what their attributes or efforts. Discrimination represents a barrier that can obstacle female managers progresses in career and earnings (Bartlett and Miller, 1985).

Another interesting issue regards female lack of confidence. Kay and Shipman (2014) recently wrote a book, entitled *"The confidence Code. The Science and Art of Self-Assurance, what Women Should Know"*, where they explain that what really hold women back in the career path is their own self-doubt. *"Confidence is the stuff that turns thoughts into action"* (Kay and Shipman, 2014). The obvious result of low confidence is inaction: when women hesitate because they are not sure about their capabilities, they hold themselves back. This seems to be confirmed by empirical evidence. In a survey of 2,000 British women carried out by Head and Shoulders, 24% of them said they would be at a more senior level in their careers if they were freed of their self-doubt, while 17% of them are not sure about themselves to seek promotions (Dathan, 2013). Another way to define this concept is the *"Imposter Syndrome"*: a psychological phenomenon in which people are unable to internalize their accomplishments and, despite external evidence of their competence, they are convinced to be frauds and not deserve their success (O'Conor, 2014). This syndrome is sometimes used to explain why, for example, women tend to negotiate lower salaries, on average 30% less than men, and engage in negotiation on the whole less frequently (O'Conor, 2014).

According to others, the confidence gap and the imposter syndrome cannot alone explain why women are still far behind men in top positions. Jessica Valenti, analysing the above book, states that the confidence gap is not a personal defect as much as it is a reflection of a culture that gives women no reason to feel self-assured (Valenti, 2014). According to her, since school, girls are not encouraged to self-esteem, and, generally, confident women at work are not well seen and indicated as *"bossy"*. In this sense, the only solution is the creation of a culture that value self-assured women.

All these factors, even if difficult to quantify, should be considered in order to give a complete explanation of the gap in the level of remuneration between male and female executives.

Before starting the specific analysis of the wage gap between Italian male and female top corporate workers, an overview on the labour market characteristics of women in Italy will be made in the following chapter.

3. Italian workers: how well women are doing in this country?

This chapter is dedicated to a deep analysis of the main labour market outcomes of Italian female workers. The most important economic indicators will be described together with the presentation of the specific legal and cultural framework affecting gender issues. The last section will be dedicated to the main characteristics of women in management in this Country.

3.1 Labour market indicators: a general overview

According to the last ISTAT Census (2011), Italy has a population of 59,433,744 individuals, among which 28,745,507 are males and 30,688,237 are females. Most of the population is concentrated in the Northern, richest regions: 15,765,567 in the North West and 11,447,805 in the North East. The Centre accounts for 11,600,675 inhabitants, the South for 13,977,431, while the Islands for 6,642,266. One of the main features of Italian population is that it is quite old: 12,384,972 individuals, so almost 21% of total population, are 65 years old or more, with an ageing index[4] of 154.1% (ISTAT, 2011).

At the beginning of 2014 the working age population consisted of 64.7% of total population. In the first quarter of this year, the total labour force consisted of 25,660,000 individuals, 14,809,000 males and 10,851,000 females. In that period, among the 15 years and over, the activity rate was 49.1%, the employment rate 42.45%, while the unemployment rate 13.6%. The inactivity rate was very high: 50.88%, ranging from 46.42% in the Northern regions of the Country to 58.47% in the Southern (ISTAT, 2011).

Important gender differences should be accounted in the analysis of these rates. Data from the last Italian Labour Force Survey[5] show that the total female employment rate (for individuals aged 15 years and over) in the first quarter of 2014 was 34.27%, against 51.24% of males. Great regional differences must be underlined. In the North, the percentage of women employed increases by 6 points, reaching, on average, 40.83%, with a pick of 41.38% in the North East. In the Centre it is lower, but not that much: 38.43%. The real problem is the South: the female employment rate drastically decreases to 23%. Another important difference regards the level of education. Huge discrepancies in the employment rate are registered between women with a lower secondary education (27.7%) and a tertiary level of education (66.01%). Even in the South of Italy, women with a university degree have an employment rate of 55.53%. Anyway, this percentage is almost 20 points higher (72.53%) in the North.

[4] The ratio between the old age population (over 65) and the young population (under 15).
[5] The Italian Labour Force Survey is a continuous survey carried out every week of a year. Each quarter, it collects information on almost 70,000 households in 1,246 Italian municipalities for a total of 175,000 individuals.

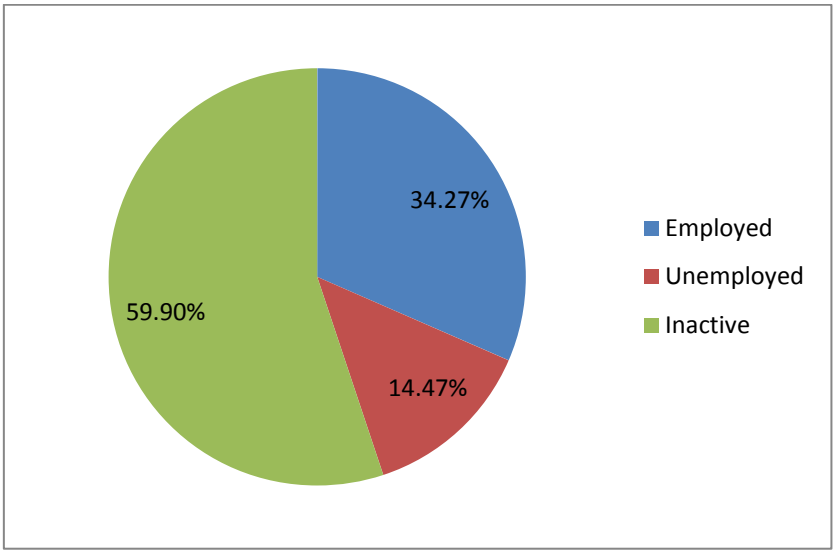
Similar conclusions can be drawn from the analysis of the unemployment rate. The national female unemployment rate in the first quarter 2014 is 14.47%, against 12.95% of males. This value varies from 10.56% in the North, 12.76% in the Centre and 23.87% in the South. Again, educational differences must be considered: the unemployment rate drops at 6.7% for well educated women living in the North of the country, but remains high (15.3%) for those living in the South.

Among 15 years and over women, the inactivity rate is particularly high, showing that too many women still decide to not actively participate to the labour market. This means that they are neither employed nor unemployed: they do not work, are not available for a job and do not actively seek for an employment opportunity. On the whole Italian territory the female inactivity rate is 59.9%, varying from 54.3% in the North to 69.8% in the South.

In this sense, a serious concern is represented by young girls who are in the category of "NEET", not in education, employment or training: 32.76% of 18-29 years old girls in this country are classified in this group. This represents a huge social problem. These girls non only will find it difficult to enter in the labour market in the future, but also risk to stay at the margin of society and social, economic, and political participation.

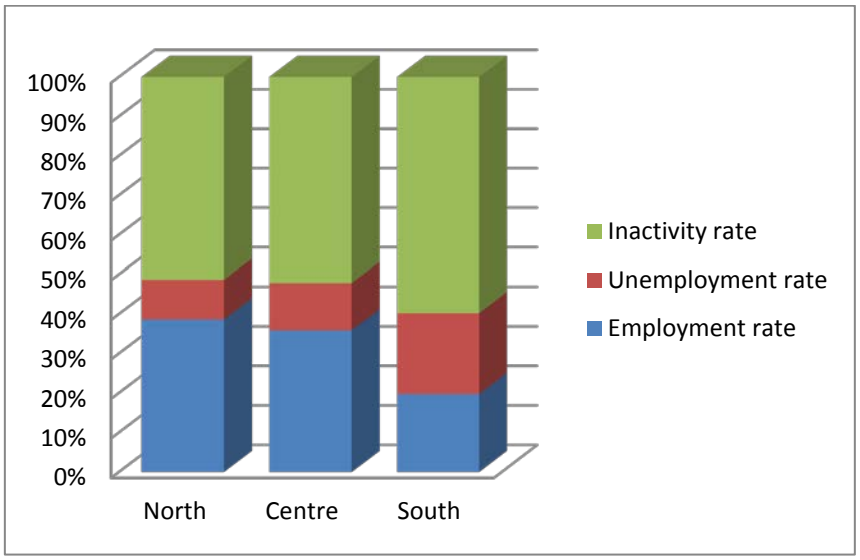
The two figures below summarize these statistics, showing the employment, unemployment and inactivity rates on the whole territory first and then by macro-regions (North, Centre, South).

Figure 1: Distribution of female work in Italy



Source: Italian Labour Force Survey, first quarter 2014

Figure 2: Distribution of female work by macro-regions



Source: Italian Labour Force Survey, first quarter 2014

The Italian National Institute of Statistics estimates the potential labour force in all Italian regions. These estimations are highly significant: in the island of Sicily, for example, 55.73% of women could be included as additional labour force, while, in the Northern region of Trentino Alto Adige this percentage is only 6.67% (ISTAT, 2015).

In addition, estimations on the number of individuals who, on the one hand, are available to work, but not seeking and, on the other hand, seeking for a job, but not immediately available to work, are included. These data are useful in order to calculate the so called "*relaxed unemployment rate*"[6]. Also in this case, women represent the majority of the individuals. In Calabria, a region in the South of Italy, 58.83% of women are available to work, but they are not seeking; again, this percentage drops at 5.2% in Trentino Alto Adige. As it is possible to imagine, if these individuals were included in the definition of the unemployment rate, this would be much higher. Instead, the percentage of women seeking for a job, but not immediately available for work, is very low: 0.5% on the whole territory (ISTAT, 2015).

The high percentages of women available to work, but not seeking, is an alarming sign of the spreading discourage in this country. Past unsuccessful job search, lack of experience, qualification and job-market skills, lack of jobs in specific areas and recent job loss can be all accounted among the causes of this phenomenon.

[6] "All individuals who did not do any work of any type for pay, profit, barter or home use during last week, and who did not have a job or own farm or enterprise to which they will definitely return to, and who were available for work last week, but who had *not* taken any steps within the reference week to look for work" (Nordman, 2014).

Surely, the recent financial crisis has particularly hit the Italian economy, with a consequent loss of jobs. According to Confindustria, the Employers trade union, since 2007 1.8 million jobs have been lost (*"Confindustria: dalla crisi danni", 2013*). But the crisis alone cannot explain the low female employment rate and the high inactivity rate. In the next section, peculiar cultural and legal factors will be considered in order to give an explanation of these data.

3.2 Why is this so?

According to the predominant literature, the main reasons of the low female employment rate stand in the lack of social and labour market policies that help the reconciliation of work and family responsibilities (Del Boca, 2002; Pacelli et al.,2013; Del Boca et al.,2009). In the following sections this point will be specified in more details.

3.2.1 Low fertility, low employment

The first thing one can think about looking at these data is: Italian women prefer staying at home to look after their children. This is surely true, but the situation is much more complex than this simplistic vision.

Data show that in 2013 the fertility rate was 1.39 children per woman, one of the lowest in Europe (ISTAT, 2014). In addition, live births have been consecutively decreasing for the last five years, while the average age of the mother at childbirth increased to 31.5 years. Low fertility and low employment rate seem to be the main characteristics of Italian women. In addition, the female employment rate decreases as the number of children increases. Among women aged 25-54, the employment rate is equal to 60% for those who have only one child, but it drops at 30% for those with three children or more (ISTAT, 2012). In this sense, following Gauthier's (1996) classification, Italy can be defined as a *"pro-traditional Country"*, a country where the main concern is the preservation of the family, but governments take very little action to support it.

According to different studies, many factors play a significant role in this context: generosity of parental leave, childcare services, availability of good quality part-time jobs, working characteristics and employee's human capital (Bratti et al. 2005; Pronzato, 2009; Pacelli et al., 2013).

The first aspect regards parental leave. In Italy, the law 151/2001 regulates maternity and paternity leaves. All employees paying taxes to the Italian National Institute of Social Providence, self-employed, agricultural and domestic workers and also unemployed women (whose maternity leave began 60 days before the last day of work) have the right to maternity leave. This accounts for 80% of daily earnings and, in normal situations, starts 2 months before childbirth and ends 3 months after. If the mother is

not able to take care of the child, the father has the same rights. Additionally, since 2012, the father is obliged to take a day off within the first five days of life of the child. The problem is that, after these months, the parental leave is only 30% of the regular salary and, if the child is between 3 and 8 years old, such leave is still accessible but unpaid (Pacelli et al.,2013).

This fact could be alleviated by good childcare services. But this is not the case. *"Low availability of childcare slots is a serious obstacle to women's work"* (Pacelli et al.2013, pag. 414). Public nursery schools cover only 11.8% of the potential demand and one child over three cannot be accepted. Not only availability is low, but also the expenditure for the family is significant. The average cost of public nurseries is 309 euros per month (Cittadinanza Attiva, 2014). It raises a lot in private nurseries, which are still a recent and not widespread phenomenon. The availability of childcare services increases for children between 3 and 6 years old. Anyway, as Pacelli et al.(2013) point out, opening hours of the service are often incompatible with full-time work. This happens also in primary schools, usually closing at 4.30pm, where, moreover, a cafeteria serving lunch is often missing.

Having a part-time job seems to be the best solution in order to compromise women's roles as mothers and employees. However, in 2011, only 15.5% of employees were part-time and, among these, 29.3% were females, while only 5.9% males (ISTAT, 2015. Del Boca et al., 2009) stress the importance of the quality of this type of jobs. This regards job protection, social benefits and earnings. In fact, they specify that the influence of part-time on participation and fertility is positive only if it is of high quality: permanent, protected and with wages and benefits similar to full time jobs.

In Italy part-time job is regulated by the Legislative Decree 61/2000, which has been modified by the Legislative Decree 276/2003. These reforms had the objective to encourage employers to hire part-timers, deregulating the previous legislation and increasing flexibility. Working schedule can now be defined and changed by the employer, even without the consent of the employee, and with very short notice (Pacelli et al., 2013). The effects of theses policy interventions have not been satisfactory. From 2005 to 2010, the percentage of part-time employees increased from 12.8% to 15%; for females from 25.6% to 29% (ISTAT, 2015). This small improvement demonstrates that a lot should be done in order to improve the definition and implementation of good policies on part-time jobs.

Cross-country comparisons show that motherhood decreases the probability of choosing full-time work against not working or working part-time (Del Boca et al. 2009). In countries were these opportunities are lacking, such as Italy, women who decides to participate to the labour market tend to work full time, but a large number of those who are unemployed or inactive report they would work part time (Del Boca et al.,2009).

Education and job characteristics also affect employment and fertility decisions. In particular, more skilled women, with better jobs and higher opportunity costs are less likely to leave the labour market after childbirth. Del Boca et al. (2009) showed that, in Italy, 60% of women with primary education are still out of the labour market 48 months after childbirth, while those more educated re-enter the labour market a few months after childbirth. More flexible jobs, especially as regards working time, increase the probability of mothers to work.

But is this flexibility always good? Which are its impacts on wages?

3.2.2 Wages and the gender pay gap

Since 1997 Italy has undertaken major steps towards flexibility. Different labour market reforms have liberalized the use of more flexible and liberal contracts. The pillars of these reforms are the Law 196/1997, the *"Treu Package"*, and the Law 30/2003, the Biagi's Law, which introduced important innovations in terms of legitimization of temporary work agencies and fixed-term contracts. They also gave rise to the expansion of flexible and atypical work arrangements, like part-time jobs, seasonal jobs, youth work-training, apprenticeship contracts, job on call, time sharing, staff leasing, and work on projects (Mussida and Picchio, 2011).

According to many, these reforms have contributed to a further development of the Italian labour market: a falling gender gap in the employment rate (Mussida and Picchio, 2011). In fact, these contracts have made it easier for women to reconcile family responsibilities with employment. However, a debate has been opened about whether atypical contracts spur the creation of a secondary labour market in which workers get trapped in a cycle of unstable and low paid jobs (Mussida and Picchio, 2011). Boeri and Garibaldi (2007) defined a two tier regime with, on the one hand, highly protected workers, mostly male unionized employees, and, on the other hand, highly flexible jobs, especially for the marginal and weakest labour market segments. Women have a higher probability to accept these types of contacts and this fact can increase female wage penalties.

The actual situation on the gender pay gap in Italy is not perfectly clear. According to Eurostat, it is one of the lowest in Europe: 6.7% in 2012 against 15.9% in Sweden, 14.8% in France and 19.1% in the United Kingdom (EUROSTAT, 2014)[7]. Moreover, the study of raw data from mid-1990s to mid-2000s shows that it has decreased, both in mean and at several quantiles of the wage distribution. More specifically, in mean, it decreased by one percentage point, from 6% to 5% (Mussida and Picchio, 2011). This development was coincident with the previous cited reforms.

[7] These data show the unadjusted gender pay gap: the difference between average gross hourly earnings of male paid employees and of female paid employees as a percentage of average gross hourly earnings of male paid employees.

However, this trend might be simply a statistical artefact. In fact, a deeper analysis shows that when the components due to gender differences in the distribution of individual characteristics are netted out, the median pay gap for women increases from 6% to 17% in the mid-1990s and from 5% to 25% in the mid-2000s (Mussida and Picchio, 2011). This means that if men and women had had the same distribution of individual characteristics fixed at the corresponding time period, the gender pay gap at the median of the wage distribution would have increased over a decade from 17% to 25%.

This is due to a different composition of the labour force and a selection bias. It is not simply a matter of lower wages, but also of low female employment. If women who are employed tend to have relatively high-wage characteristics (like a good education level), low female employment rates become consistent with low gender pay gaps simply because low-wage women would not feature in the observed wage distribution (Olivetti and Petrongolo, 2008). As shown in the first section of this chapter, Italian female workers tend to be more educated, since those with a low level of education are mainly inactive. So, on average, female employees fall in the category of *"higher wages"*. The unadjusted gender pay gap does not account the weight of education, giving misleading information.

Addabbo and Favaro (2011) analysed gender wage differentials in Italy along the lines of a distributional approach, with the intention of verifying whether education affects the wage gap and its composition. They found that highly-educated women are affected by lower wage gaps than low-educated women, at any wage rate. For low-educated workers, the gap is mainly due to higher rewards to male productive characteristics, compared to females, and lower female productive characteristics. For higher-educated workers, indeed, female characteristics are better than male ones. For this group, part of the gap remains unexplained.

What is important to stress in this section is that the gender pay gap is negatively correlated with gender employment gaps. The real issue is female employment. According to Fernandez and Fogli (2005) and to Fortin (2006), the role of soft variables should be emphasized. These are cultural believes on gender roles and family values, individual attitudes towards greed, ambition and altruism which are considered as determinants of women's employment decisions and wage differentials (Olivetti and Petrongolo, 2008).

3.2.3 The importance of culture

Another fundamental feature regards culture. According to many, the reconciliation of work and family life is a basic condition of equal participation to the labour market. In Italy, as in many countries, women still remain the main carers of houses, children and elderly. It seems that, in this country, the stereotype of *"male breadwinner/female carer"* still persists.

In this sense, it is interesting to analyse the Gender Equality Index, defined by the European Institute of Gender Equality as a synthesis of multidimensional aspects regarding work, money, knowledge, time, power, health and violence (European Institute for Gender Equality, 2014). This index relies on gender gaps, that is on differences in the level of achievement between women and men on a given gender indicator. As regards the overall index, having set full gender equality at 100%, Italy reaches only 40.9%, against the European average of 54%.

In particular, if only the dimension time is considered, this percentage falls to 33%, showing that women play a major role in care and other no economic activities. Italian women who live in a couple and have little children tend to spend 51 hours on domestic work per week, while men dedicate to it only 20 hours or less (ISTAT, 2012). Italian couples are strongly specialised. Once they have children, women start diminishing the time devoted to paid work and increasing time devoted to caring activities, while men do the opposite. Italy is a perfect example of the "*stalled gender revolution"* (Esping-Andersen, 2009): even if women managed to improve their education and enter the labour market, they still carry almost all the burden of family and domestic care. Working women do not have enough free time to commit to themselves. This causes a low level of life satisfaction. According to a survey conducted by the Italian Institute of Statistics, 21% of women are not satisfied about their life against 18% of men and 18.5% are not satisfied about the division of labour within the family, against 8% of men (ISTAT, 2012). However, it is important to underline that women who work are more satisfied than housewives. 81.5% of young women aged 20-34 in a couple with children declare to be satisfied about their job against 59.6% of housewives (Sabbadini, 2004).

Another interesting domain of the Gender Equality Index which reflects cultural influence is that of knowledge. This shows differences between women and men in terms of education and training. In particular, it measures gaps in participation in tertiary education, segregation and lifelong learning. The value of the index is 32.1%. The sub-domain of educational attainment and segregation (31.2%) indicates the great under-representation of women and men in certain fields, such as education for men or engineering and manufacturing for women. In Italy, the segregation of females in the teaching, health care or services sector reflects cultural stereotypes which do not allow women to undertake typical *"male jobs"*. This type of segregation should be monitored and addressed because it directly translates into gender inequality in labour market participation, earnings and society in general (European Institute for Gender Equality, 2014).

The worse indicator is that of the variable power: 18%. This domain examines differences between men's and women's representation in the political and economic spheres. The next section will be dedicated to the analysis of Italian women in powerful positions, still very few, as this value shows.

3.3 Women in power

In Italy, more than in other countries, vertical segregation seems to be particularly strong[8]. According to the European Institute for Gender Equality, in 2010, only 20% of Parliamentary members were female. In Europe, on average, they reached a higher percentage, 23%. Among the Government's Ministries, 17% were women, against the average 25% of Europe. In the Regional assemblies this percentage was even lower, 12%, against 30% of Europe. This is a serious concern, since the presence of women in the places where political decisions are taken is fundamental in order to develop policies which favour the conciliation between family and work and promote female employment.

In the private sector the situation is dramatic. According to these data, in 2010, the presence of women among the Members of Boards was almost insignificant: 5%. Among the members of the Central Bank it was 6%. In Europe these values were respectively 12% and 18% (European Institute for Gender Equality, 2014). Data from the European Commission (2013) indicate that there are no women board chairs or CEOs in the largest publicly listed companies (FTSE MIB index).

Also in this case, the main cause is not the lack of a specific legislation. With the Legislative Decree 198/2006, the National Code of Equal Opportunities between Women and Men was approved. The Code consists of 11 laws regulating the promotion of equal opportunities between women and men in the areas of ethical, social and economic relations and civil and political rights. In particular, the main goal is to promote women's empowerment, recognise and ensure freedom of choice and better quality of life for both males and females. More important, the code has introduced the principle of gender mainstreaming in the drafting of laws, regulations and administrative acts. Thanks to this principle, in 2011 it was approved the Law 120 establishing *Equal Access to Boards of Directors and Boards of Statutory Auditors of Companies Listed on Regulated Markets*. According to this norm, from August 2012, boards of listed companies shall include 20% of women. Moreover, the total number of female members shall be increased to 1/3 starting from 2015. In the event of non-compliance there is a progressive warning system which will eventually lead to the dissolution of the board. This law indicates that the solution that the Italian Government found in order to increase the number of women in top corporate positions was based on quotas. According to the European Commission, the implementation of these quotas is starting to have an effect: the proportion of women on boards has increased by 5 percentage points between 2011 and 2012, which represents a significant acceleration on the rate of change (European Commission, 2013).

[8] Vertical segregation: differences in the social status associated with men's and women's occupations within the manual and non-manual jobs (Charles, 2003).

An important debate on quotas characterised the approval of the new electoral law, the *Italicum*, in March 2014. Three amendments had been proposed in order to facilitate the entry of women in the Parliament: the alternation men-women in the electoral lists, 50% of female nominators or, alternatively, 40%. All these proposals were rejected by the Parliament, with great disappointment by the public opinion. Gender quotas in political activities were introduced by law in 1993 and were if force until 1995, when they were removed by the Constitutional Court. Only municipalities that had an electoral race in that period were affected by the reform. De Paola et al. (2010) showed that female political representation had increased significantly more in those municipalities affected by the reform compared to those not affected. In addition, even after the abolishment of the reform, the municipalities affected by it continued to show a higher female political representation (De Paola et al., 2010). The claim that gender quotas help eliminating gender stereotypes seems to be confirmed by these findings.

This type of regulation is usually justified on the basis of equity and fairness ground. Anyway, imposing constraints on board composition may affect firms' value and raise costs in terms of restricting the possibility of appointing the best available candidate (Bianco et al., 2011). In addition, other problems can arise. As Bianco et al. (2011) show, the Italian board system is characterised by a pervasive presence of women directors with a family connection with the controlling shareholders: in 47.3% of diverse-board companies female directors are exclusively family members and in further 9.3% there is at least one family-affiliated woman. These *"family directors"* tend to be less educated with respect to other female directors, but they occupy more often executive positions. According to their analysis, family-affiliated women are more present in smaller companies, with a concentrated ownership which usually operate in the consumer sector, whereas non-affiliated women are more common in bigger companies, in firms held by a foreign shareholder or in companies with younger boards and a higher proportions of independent directors, especially in the IT/communication sector (Bianco et al., 2011).

As it is possible to understand, the conditions of Italian women in top job positions are still unclear and difficult to evaluate. A lot needs to be done both in terms of research and policy interventions. In the next chapters, an empirical analysis will be conducted in order to better clarify the situation of Italian female top paid workers, estimate the gender pay gap for this category of workers and determine which factors affect it.

4. The dataset

The purpose of this work is to evaluate the gender pay gap among the highest working category in Italy, that of *dirigenti*. In order to do so, administrative data from the Work Histories Italian Panel will be used. The next two sections will be dedicated to the description of the data set and the sample under study.

4.1 The Work Histories Italian Panel

The Work Histories Italian Panel is a database of individual work histories, based on the Italian Social Security Administration (INPS) archives. It is produced by an agreement between the University of Turin and the INPS and made available by LABORatorio Riccardo Revelli[9]. The administrative archives from which data are extracted include a unified individual register, employees' contributions, artisans' contributions, traders' contributions, contributions of atypical workers, retirement benefits, other social security benefits, business registers, and monthly contributions of firms.

The reference population is made up by all the people -Italian and foreign- who have worked in Italy even only for a part of their working career. A large representative sample has been extracted from this population. In the standard file the sampling coefficient is about 1:180, for a dynamic population of about 370,000 individuals. Data are available from 1985 to 2005.

The main episodes of individual working careers are observed. These include: private employee working contracts, atypical contracts, self-employment activities, trader, retirement spells and non-working spells in which the individual received social benefits, like unemployment subsidies or mobility benefits. Only those who have an autonomous security found –those who worked in the public sector or as freelancers- are not observed.

In this study, four reference years have been chosen to analyse the evolution of the characteristics of women in top corporate positions and the gender wage differential: 1990-1995-2000-2005. The sample population is the working category of *dirigenti*.

4.2 The sample: descriptive statistics

According to the Italian Law, a *dirigente* is an employee who, on the basis of established professional skills, is able to manage an economic activity on behalf of its owner. He has to organize, coordinate and check the overall working activity. The hierarchical dependence towards the entrepreneur is lower with respect to other categories. The *dirigente* has responsibility for the management of the enterprise with

[9] For details see *www.laboratoriorevelli.it/*.

the only limit of compliance with the general guidelines established by the employer. It follows that, for this category, many of the protections afforded by other employees are reduced. This fact is offset by the strong independence of this group of workers, the presence of a special union and a specific social security scheme.

That of *dirigenti* represent the highest level of the Italian classification of employment[10]. For this reason, they can be considered as an optimal sample in order to evaluate gender differences in wages among the highly paid in Italy. In addition, they are likely to be an homogeneous group in terms of education, qualifications, skills and abilities and so, focusing on this category, facilitates the analysis of the results.

Following the work of Bertrand and Hallock (2001), specific individual and firm characteristics are accounted in the evaluation of the gender pay gap among top corporate employees. These include gender, age, education, working experience, occupational level, type of work, location of work, firms' size, firms' sector, and, of course, earnings. The WHIP database gives information on gender, age, place of birth and work, number of years of working experience, type of work, firms' size, firms' sector, and annual gross earnings. These characteristics will be analysed in details in the following sections, after the analysis of the evolution of the proportions of male and female *dirigenti* during the reference period and the phenomenon of the glass ceiling effect.

4.2.1 Trends in the proportions of Italian dirigenti from 1990 to 2005: the glass ceiling effect

Table 1 summarizes the total numbers and the proportions of male and female *dirigenti* in the four reference years.

Table 1: **Evolution of the number of male and female *dirigenti* from 1990 to 2005**

	Male	**Female**	**Total**
1990	9,584	775	10,359
	(92.52%)	**(7.48%)**	**(100%)**
1995	8,923	956	9,879
	(90.33%)	**(9.67%)**	**(100%)**
2000	7,921	789	8,710
	(90.93%)	**(9.07%)**	**(100%)**
2005	7,196	925	8,121
	(88.61%)	**(11.40%)**	**(100%)**

Source: Work Histories Italian Panel for 1990-1995-2000-2005

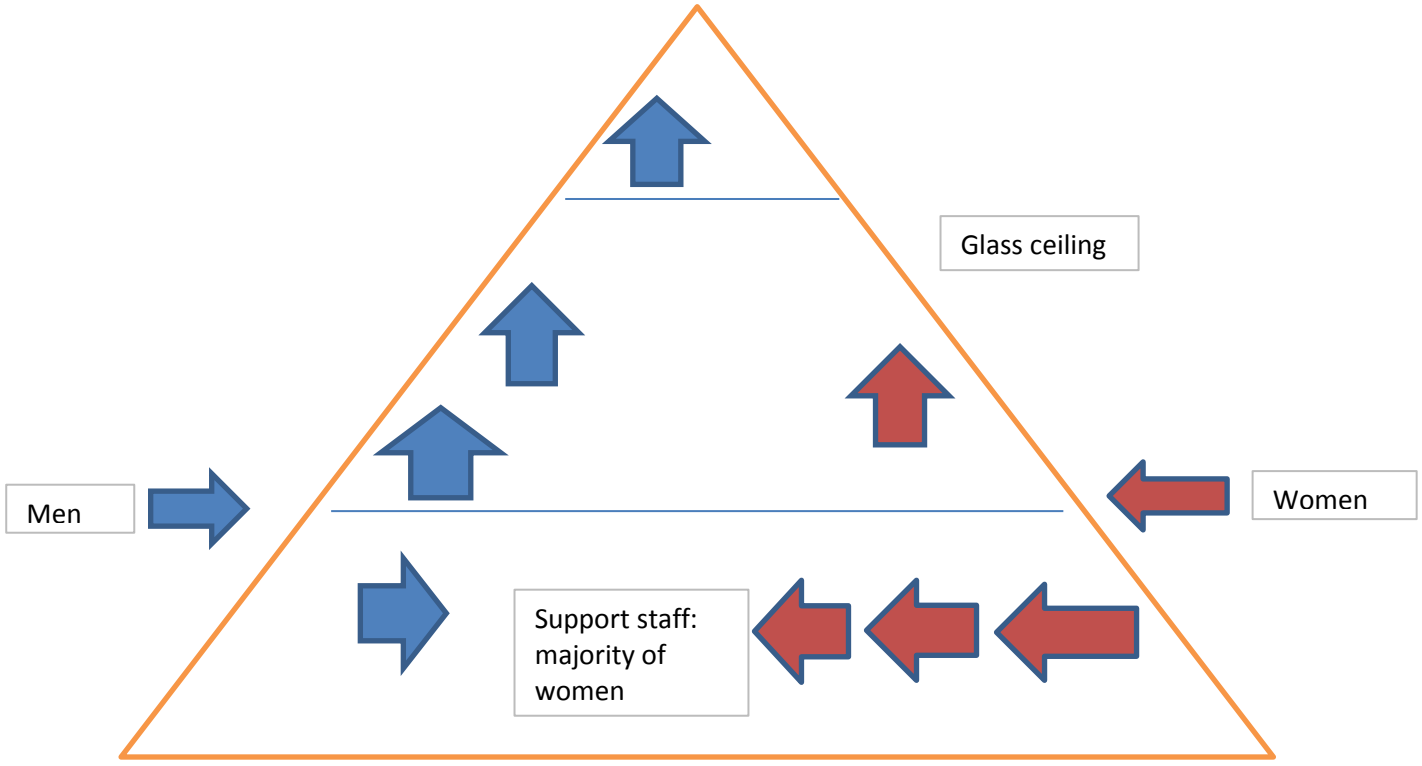
[10] The Italian classification of workers includes four categories of employees: *Operai*, blu collar employees with productive skills, *Impiegati*, white collar employees with collaboration functions, *Quadri*, white collar employees with autonomous and basic managerial functions, and *Dirigenti*.

The total number of *dirigenti* has constantly decreased over time, from 10,359 in 1990 to 8,121 in 2005. The number of male *dirigenti* followed this constant trend, diminishing from 9,584 in 1990 to 7,196 in 2005. The number of women in this category, instead, is characterized by an inconstant trend: it raised from 775 in 1990 to 956 in 1995, it diminished to 789 in 2000 and then increased again to 925 in 2005.

The most evident result shown in this table is the huge gender disproportion in the number of *dirigenti*. On average, in all the reference years, more than 90% are men, against less than 10% of women. This demonstrates that the management of Italian private companies is male dominated. This has important consequences in terms of "management style" and implementation of family friendly policies which can facilitate women in their careers. From this first raw data it is possible to assess that a glass ceiling effect is likely to exist in Italy.

The term glass ceiling refers to all the *"invisible and artificial barriers, created by attitudinal and organizational prejudices, which block women from senior executive positions"* (Wirth, 2001, p. 1). The main point here is that there is no objective reason for women not rising to the very top as men do, indicating that there exists inherent discrimination in the structures and processes of both organizations and society in general (Wirth, 2001). The glass ceiling is commonly represented by a pyramidal shape as in Figure 3.

Figure 3: The glass ceiling in organizational pyramid



Source: Wirth, 2001

In order to better understand the magnitude and characteristics of the glass ceiling effect, the evolution of the proportions of males and females in the two intermediate categories of employees, *impiegati* and *quadri aziendali* is reported. Data on *quadri aziendali* are available from 1997 only, so they are missing for 1990 and 1995.

Table 2: Evolution of the number of male and female impiegati from 1990 to 2005

	Male	**Female**	**Total**
1990	182,299	172,992	355,291
	(51.31%)	**(48.68%)**	**(100%)**
1995	169,711	173,852	343,563
	(49.40%)	**(50.60%)**	**(100%)**
2000	151,631	175,729	327,360
	(46.32%)	**(53.68%)**	**(100%)**
2005	165,447	234,139	399,586
	(41.40%)	**(58.60%)**	**(100%)**

Source: Work Histories Italian Panel for 1990-1995-2000-2005

Table 2 shows that the total number of *impiegati* decreased from 1990 to 2000, varying from 355,291 to 327,360, and then considerably increased, reaching 399,586 in 2005. Despite the reduction in the number of total *impiegati* over the period 1990-2000, the number of females working in this category has constantly increased in all the reference years. On the contrary, that of males followed the overall trend, diminishing until 2000 and then increasing again from 2000 to 2005.

Table 3: Evolution of the number of male and female quadri aziendali from 2000 to 2005

	Male	**Female**	**Total**
2000	17,039	3,658	20,697
	(82.33%)	**(17.67%)**	**(100%)**
2005	20,941	5,618	26,559
	(78.85%)	**(21.15%)**	**(100%)**

Source: Work Histories Italian Panel for 2000-2005

The total number of *quadri aziendali* increased in the two reference years, reaching 26,559 employees in 2005. Both males and females followed this increasing trend: from 17,39 to 20,941 and from 3,658 to 5,618 respectively (see table 3).

The evidence shows that Italian women clearly face invisible barriers that limit their possibilities to be promoted to the highest corporate levels. Most of female employees stay in the category of *impiegati*. Their presence in this group of workers has constantly increased during the period under study until reaching the majority (53.68% in 2000 and 58.60% in 2005). On the contrary, they are highly

underrepresented in the two top corporate categories of *quadri aziendali* and *dirigenti*. The proportion of men and women among *quadri aziendali* is more balanced with respect to that of *dirigenti*, but women still represented only 21.15% of employees in this category in 2005.

A deeper analysis in this sense can be made looking at transition probabilities in and out the working categories of *dirigenti*, *quadri aziendali* and *impiegati* by gender. This allows to assess how differently men and women tend to be stable in their working category over time. These probabilities are usually defined within the framework of the Markov Chains.

These chains identify a set of states:

$$S=\{s_1,s_2,\ldots,s_n\}$$

The process starts in one of these states and move successively from one state to another. Each move is called step. If the chain is currently in state s_i, then it moves to the next step s_j with a probability denoted by p_{ij}. This probability does not depend upon which states the chain was before the current state. The probabilities p_{ij} are the transition probabilities (Grinstead and Snell, 1998). It is interesting to evaluate the transition probabilities in and out each working category by gender. This is a first basic snapshot on differences in tenure and careers' paths between men and women in Italy, a topic that needs to be further investigated and developed.

Table 4 and table 5 show results on transitions probabilities in and out the three white collar categories of *impiegati*, *quadri aziendali* and *dirigenti* over the period 1990-2005.

Table 4: Transition probabilities for male white collar workers from 1990 to 2005

	Impiegati	**Quadri aziendali**	**Dirigenti**	**Total**
Impiegati	91.26%	6.99%	1.76%	100%
Quadri aziendali	11.39%	80.07%	8.54%	100%
Dirigenti	7.09%	2.45%	90.46%	100%
Total	88.85%	9.31%	5.84%	100%

Source: Work Histories Italian Panel for 1990-2005

Each year, a male employed in the working category of *impiegati* had a 1.76% chance to improve his career and became a *dirigente*, while, for a male in the category of *quadri aziendali* this probability increases to 8.54%. In addition, each year, male *dirigenti* had a probability of 90.46% to stay in their working category.

Table 5: Transition probabilities for female white collar workers from 1990 to 2005

	Impiegati	Quadri aziendali	Dirigenti	Total
Impiegati	97.94%	1.81%	0.25%	100%
Quadri aziendali	19.32%	75.76%	4.92%	100%
Dirigenti	21.30%	3.31%	76.39%	100%
Total	96.96%	3.45%	0.58%	100%

Source: Work Histories Italian Panel for 1990-2005

Each year, a female working as a simple white collar employee had a probability of only 0.25% of breaking the glass ceiling and become a *dirigente*. For a female in the category of *quadri aziendali* this probability was higher, 4.92%, but still lower than that of males. In addition, each year, female *dirigenti* had a chance of only 76.39% to stay in this category. Instead, each year, women working as *impiegate* had a 97.94% probability to remain in this lower working category.

These results show that Italian females have a lower probability to improve in their working careers, compared to their male counterparts. These findings support the idea that a glass ceiling effect persists in this country. This despite the great improvements that Italian women have made in education and training in recent years.

4.2.2 Italian dirigenti: individual characteristics

Table 6 shows the average age of the Italian management class. The average age range is between 47 and 48 years for men and 40 and 44 for women. An increasing trend is registered for women, from 41 to 44 years old, while men show a more stable age range, varying from 47 to 49.

Table 6: Average age by gender from 1990 to 2005

	Male	Female
1990	47.26	40.95
1995	48.01	42.05
2000	47.84	42.80
2005	48.71	44.16

Source: Work Histories Italian Panel for 1990-1995-2000-2005

The advanced age of female individuals in the sample can be considered as the main cause of the very few data on maternity leave. In fact no maternity leaves have been registered in 1990, 1995 and 2000. Only two are found in 2005.

The analysis of the regions of birth and work reveals that the majority of both female and male *dirigenti* was born and actually works in Lombardia, the engine of Italian economy. In 2005, 25.43% of female *dirigenti* was born in this region and 37.67% was working there. The same percentages for men are 25.76% and 39.04% respectively. This is not surprising since this region is considered as the financial centre of the country and most of the companies have their headquarters located in Milano, its main city. Together with Lombardia, Lazio, the central region where Rome is located, Piemonte and Emilia Romagna, two regions in the North of the country, are the realities in which most of *dirigenti* work. It should be noticed that while men *dirigenti* are mainly from these Northern areas, a significant percentage of women was born in other realities, like the Southern region of Campania, especially when years 1990 and 1995 are considered. This fact indicates that a greater proportion of women moved from the region of birth because of work. Another interesting fact is that, for the year 2005, data on foreign destinations of work are included. In this case, only one woman is registered as working abroad, against 84 men. The main destinations are Switzerland, Russia, China, India, France, Great Britain and Belgium. It is known that individuals working in a foreign country earn higher wages. This fact should be accounted in the evaluation of the gender pay gap.

Another individual characteristic of fundamental importance in determining the individuals' wage level is the number of years of working experience. Table 7 reports the average number of years of working experience for male and female *dirigenti* in the four reference years. It should be remembered that the collection of data was implemented in 1985, so the accountancy of the years of working experience starts in that date.

Tables 7: Average number of years of working experience by gender from 1990 to 2005

	Male	**Female**
1990	3.72	3.26
1995	6.64	5.45
2000	7.53	6.10
2005	8.81	7.27

Source: Work Histories Italian Panel for 1990-1995-2000-2005

As it possible to see, women have, on average, less years of working experience than men, even if this differential does not seem so accentuated. Because of this, we do not expect a gap in wages due to the number of years of working experience. Nonetheless, some differences can be partly explained by the fact that, on average, men are older. In this sense, since returns to age and experience are larger in the market of the highly paid (Bertrand and Hallock, 2001), it is likely that the relative youth and low

seniority of women affects the gender pay gap. Because of this, the number of years of working experience will be considered among the determinants of the gender earnings differential.

An unexpected result has been found in the analysis of part-time work. The number of *dirigenti* working part time is usually very small in all the reference years, but, surprisingly, more males than females are accounted as part-time workers for three out of four years.

Table 8: Number of part-time *dirigenti* by gender from 1990 to 2005

	Male	Female	Total
1990	1	15	16
1995	15	4	19
2000	40	30	70
2005	46	21	67

Source: Work Histories Italian Panel for 1990-1995-2000-2005

This can be due to the fact that older *dirigenti*, who, according to the Italian law are close to the retirement age, may continue working for the firm they used to, playing the role of consultants or advisors. A part-time contract is suitable in this type of situations and it is likely that more males than females accept this function. In fact, it is not common among this category of workers to ask for a part-time for family reasons because these employees usually share high job attachment and career commitment. Table 9 shows the average years of male and female part-time workers. As expected, males working part time are older than females.

Table 9: **Average age of part-time *dirigenti* by gender from1990 to 2005**

	Male	Female
1990	55	35.6
1995	49	39.75
2000	45.65	40.9
2005	49.80	43.14

Source: Work Histories Italian Panel for 1990-1995-2000-2005

Given the relatively low number of part-time *dirigenti* this variable would not be included in the estimations.

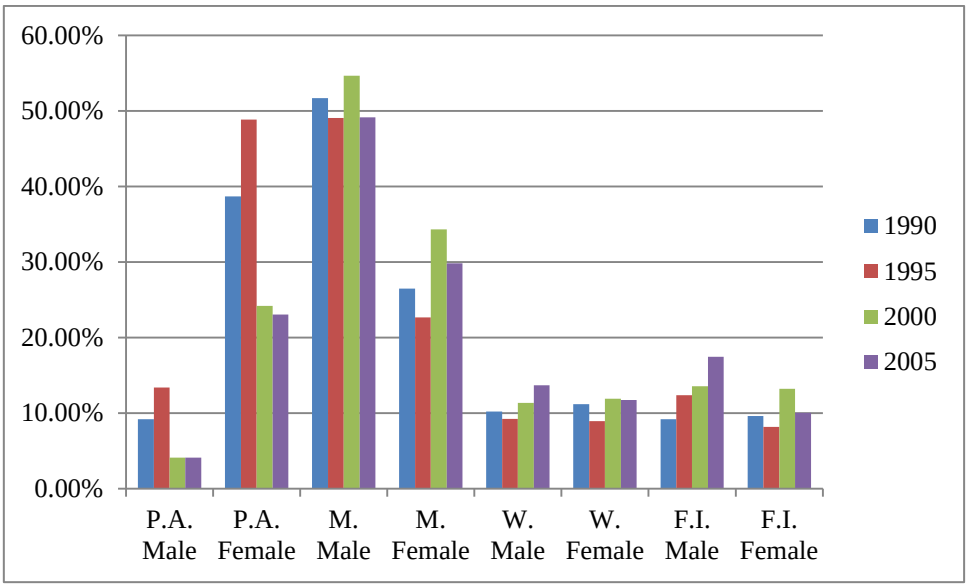
After the analysis of individual characteristics, the main traits of the firms ruled by the Italian management class are presented.

4.2.3 Italian dirigenti: firm characteristics

Firms' sector[11] and dimensions are two of the most significant factors affecting managers' wages. They are also fundamental in studies on occupational segregation, a salient issue influencing gender equality in the labour market[12].

Figure 2 shows the proportions of male and female *dirigenti* in the four main sectors of activity: public administration, defence, and compulsory security (P.A.), manufacturing (M.), wholesale and retail trade (W.), and financial intermediation (F.I.). The other sectors, such as agriculture, fishing, mining, construction, electricity, transport, real estate, education and health employ a really small percentage of *dirigenti*.

Figure 4: Share of male and female *dirigenti* by firms' sectors from 1990 to 2005



Source: Work Histories Italian Panel for 1990-1995-2000-2005

In 1990, 38.7% of women qualified as *dirigenti* was working in the public administration, defence, and compulsory social security sector. This includes the regulation of the activities of agencies that provide health care, education, cultural services and other social services. 26.49% of them was employed in the manufacturing sector, while 11.17% in the wholesale and retail trade. Among the manufacturing activities, women were mainly working in the manufacture of textiles and textile products, and of chemicals, chemical products and man-made fibres. In the same year, 51.70% of men in the sample

[11] In the WHIP database sectors are classified according to the Ateco91 classification, the Istat version of the international classification NACE Rev.1

[12] Gender based segregation is so pervasive that distinctions have multiplied in order to facilitate the analysis. Here the reference is to horizontal segregation, the under (over) representation of a given group in occupations or sectors, not ordered by any criterion (European Commission's Expert Group on Gender and Employment, 2009).

were employed in the manufacturing sector, in particular in the manufacture of electrical and optical equipment and fabricated metal products, 12.64% in the financial intermediation, and 10.23% in the wholesale and retail trade.

In 1995, more women resulted employed in the public administration, defence, and compulsory social security sector with respect to the previous wave. 22.6% of women are still working in the manufacturing sector, but it diminishes the presence in the textile and it increases the presence in the manufacture of electrical and chemicals. Among men, it diminishes the number of male *dirigenti* in the manufacturing sector, while it increases in the public administration, defence, and compulsory social security sector. 12.39% of them was in the financial intermediation sector.

The situation started to change during the 2000s. In 2000, the majority of women in the sample was working in the manufacturing sector: 34.32%. Among these, 11.15% was involved in the management of activities for the manufacture of electrical and optical equipment, 7.58% of basic metals and fabricated metal products, and 6.83% of chemicals, chemical products and man-made fibres. 24.19% still resulted employed in the public administration, defence, and compulsory social security sector and 13.24% in the financial intermediation sector. Anyway, a much larger majority of males, 54.66%, was in the manufacturing sector, 13.56% in the financial intermediation, and 11.36% in the wholesale and trade.

Almost the same situation characterizes the year 2005, with the only difference that it diminishes the number of both female and male *dirigenti* working in the manufacturing sector (29.84% and 49.15% respectively) and it increases that of those working in the financial intermediation sector.

By observing these results it is possible to assess that, in general, female *dirigenti* seem to be underrepresented in the manufacturing sector, usually one of the best paid, while, with respect to men, they tend to be concentrated in the public administration, defence, and compulsory social security sector. This is true especially during the 1990s. In 2000 and 2005 this difference is less accentuated, but still important.

It is evident that Italy faces problems of not only horizontal segregation, as just shown, but also of vertical and hierarchical segregation. These last two phenomena seem to be particularly strong. The first one refers to the under (over) representation of a specific group in occupations and sectors at the top of an ordering based on desirable attributes –income, prestige, job stability. The second one refers to the under (over) representation of a specific group at the top of specific ladders (European Commission's Expert Group on Gender and Employment, 2009).

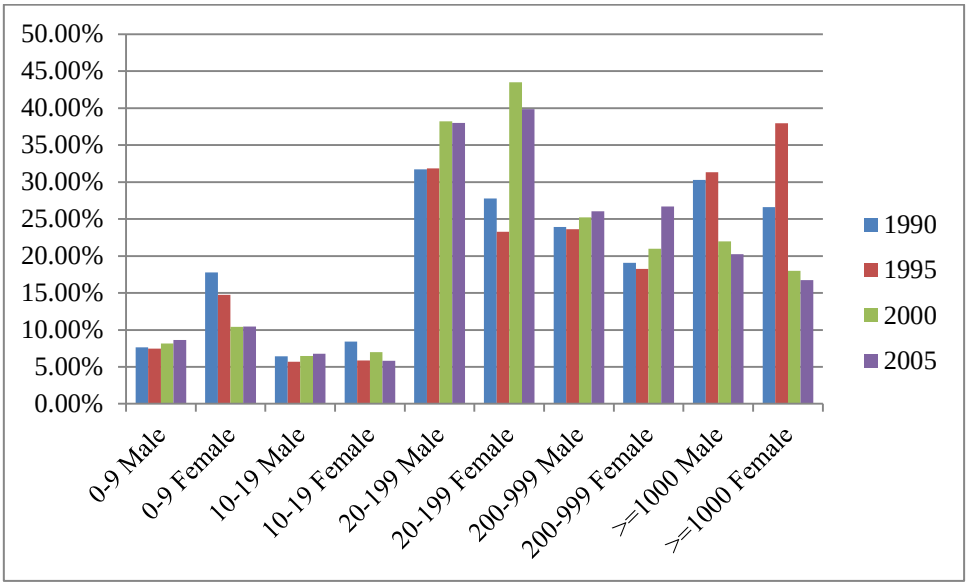
Together with firms' sector, firms' size plays an important role in determining both the wage levels and careers' possibilities for workers. Indicators as market value, total sales or total assets are commonly used in order to quantify the size of a firm. The WHIP database allows to distinguish firms according to the number of employees. It provides data on the average number of employees by different classes for each year.

The classes are:

1) Firms with 0-9 employees
2) Firms with 10-19 employees
3) Firms with 20-199 employees
4) Firms with 200-999 employees
5) Firms with 1000 employees or more

Figure 3 reports the proportions of male and female *dirigenti* by firm size in the four reference years.

Figure 5: Share of male and female *dirigenti* by firms' size from 1990 to 2005



Source: Work Histories Italian Panel for 1990-1995-2000-2005

Women tend to manage smaller firms with respect to men. The percentage of women at the top of firms with 0-9 employees is larger than that of men, especially for 1990 and 1995 (17.79% and 14.75% of females against 7.62% and 7.46% of males). It should be noticed that in 1995 a higher share of females was running large firms with more than 1,000 employees (37.93% against 31.32%). This looks like an exception since in all reference years the percentage of female *dirigenti* is larger in small-medium

firms. This is significant because it is well known that managers tend to be paid more the larger the firm's size (Bertrand and Hallock, 2001). In 2005 the situation looks more homogeneous, but more males than females are at the top of firms with more than 1,000 employees (20.22% against 16.72%). In the empirical estimations it will be assessed how much of the gender gap can be attributed to the under-representation of women in large firms.

4.2.4 Average earnings of male and female dirigenti and the raw gender pay gap

The WHIP database gives information on employees' total annual earnings in Euros. These represent the tax base for the calculation of insurance and social security contributions paid by enterprises and workers and of tax relieves.

In order to better understand the dynamics of the gender pay gap in Italy, total annual earnings and the unadjusted gender pay gap[13] will be shown for all white collar workers (*impiegati*, *quadri aziendali* and *dirigenti*) in the four reference years, then separately for each category, with a specific focus on that of *dirigenti*.

Table 10: Average total annual earnings by gender in Euros and the unadjusted gender pay gap from 1990 to 2005 – Total White Collars

	Male	**Female**	**U.G.P.G.**
1990	18,493.45	9,483.52	**48.72%**
1995	24,805.77	12,801.69	**48.39%**
2000	27,700.41	13,859.37	**49.96%**
2005	30,025.81	14,759.50	**50.84%**

Source: Work Histories Italian Panel for 1990-1995-2000-2005

In table 10, raw data on earnings for white collar workers show an increasing differential between men and women over the period under study. According to the results of the unadjusted gender pay gap, women earn half of men. Of course this is a raw evaluation, which needs to be examined in details, accounting for specific determinants of wages. In fact, white collars represent a highly heterogeneous group in terms of education, type of work and working time.

[13] According to Eurostat, the unadjusted Gender Pay Gap (GPG) represents the difference between average gross hourly earnings of male paid employees and of female paid employees as a percentage of average gross hourly earnings of male paid employees.). SITE DOESN'T WORK – AND MAYBE SOURCE IS NOT STRICTLY NECESSARY!

Table 11: Average total annual earnings by gender in Euros and the unadjusted gender pay gap from 1990 to 2005 - *Impiegati*

	Male	Female	U.G.P.G.
1990	16,728.73	9,384.81	**43.90%**
1995	22,452.3	12,636.97	**43.71%**
2000	22,508.89	13,158.29	**41.54%**
2005	23,800.03	13,820.68	**41.93%**

Source: Work Histories Italian Panel for 1990-1995-2000-2005

Table 11 shows that total earnings for *impiegati* have been slowly increasing over the period, especially for females. The unadjusted gender pay gap remains high and shows a little decrease, from 44% in 1995 to 42% in 2000 and 2005.

Table 12: Average total annual earnings by gender in Euros and the unadjusted gender pay gap from 1990 to 2005 - *Quadri Aziendali*

	Male	Female	U.G.P.G.
2000	44,575.98	36,610.33	**17.86%**
2005	51,195.69	43,615.50	**14.80%**

Source: Work Histories Italian Panel for 2000-2005

The category of *quadri aziendali* shows the smallest unadjusted gender wage differential between men and women. It was 18% in 2000 and further decreased in 2005, reaching 15% (see table 12).

Table 13: Average total annual earnings by gender in Euros and the unadjusted gender pay gap from 1990 to 2005 – *Dirigenti*

	Male	Female	U.G.P.G
1990	52,053.93	31,471.31	**39.54%**
1995	69,531.48	42,714.38	**38.57%**
2000	90,763.94	64,462.82	**28.98%**
2005	111,381.40	76,948.06	**30.91%**

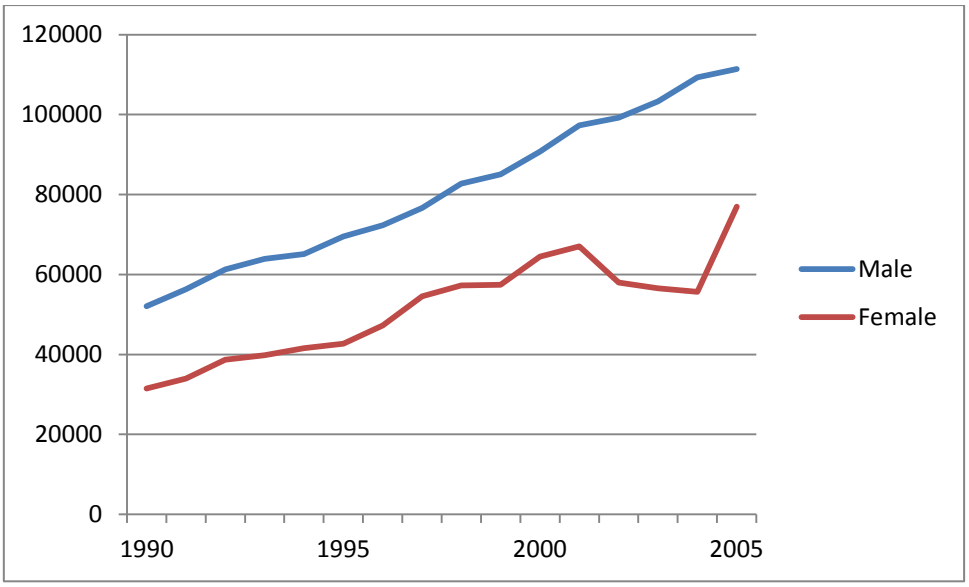
Source: Work Histories Italian Panel for 1990-1995-2000-2005

The evidence shows that female *dirigenti* earn much less than their male counterpart. Important differences are registered in each reference year, even if the unadjusted gender pay gap is smaller than the wage differential for white collar employees in general and *impiegati*. This can be partly explained by the fact that that of *dirigenti* is a more homogeneous working category in terms of education, type of responsibilities and working commitment. The unadjusted gender pay gap reached almost 40% in 1990, and it decreases significantly until 2000, varying from 38.57% to 28.98%. It started to increase again in 2005, when it was almost 31%.

It seems that total earnings of Italian *dirigenti*, both males and females, have been constantly increasing during the period under study, especially from 1995 to 2000. However, a deeper focus on each year from 1990 to 2005 reveals another fact.

In fact, figure 4 depicts the trend of total annual earnings of both men and women. As it is possible to see, males' earnings have been increasing at a more constant and higher rate with respect to females. In particular, in 2001, female wages received a consistent slowdown and started to increase again in 2004. Interestingly, not only women earn less than men, but also have more volatile earnings. This is an interesting aspect. The year 2000 seems to be a turning point. In fact, in that year, the number of total female *dirigenti* sharply decreased (from 956 of 1995 to 790) and, as this analysis reveals, female wages started to significantly decrease as well.

Figure 6: Trend in total annual earnings for male and female *dirigenti* from 1990 to 2005



Source: Work Histories Italian Panel for 1990-2005

A possible explanation of this trend stands in the analysis of the Italian economic performance during the last years of the 1990s and the first years of the 2000s, especially after the introduction of the Euro in 2002.

According to the Italian National Institute of Statistics (ISTAT), the years 2001, 2002 and 2003 have been characterized by a constant decrease in the number of new firms created in this country. Both between 2000 and 2001 and 2001 and 2002, the number of firms forced to close due to the new economic environment was greater than the number of new born firms. In fact, during those years, the firms' mortality rate was greater than the firms' birth rate, 1% and 1.7% respectively (ISTAT, 2005). In particular, in 2002, 9.1% more firms closed with respect to the previous year, with a total mortality rate of 7.9% (ISTAT, 2005). The manufacturing and trade sector have been the most affected (ISTAT, 2005).

These facts are reflected in the trend of the number of *dirigenti* in the WHIP database. The statistics show that female *dirigenti* were more affected by the negative economic environment of the first years of 2000. In fact, in 1999, the number of women leading manufacturing firms, which are the better paying, was 34.22%, especially in the textile (4.39%) and electronic (5.99%) sectors. In this year almost the same percentage of female *dirigenti* was employed in the less remunerative public administration, defence, and social security sector (32.89%). In 2000 and 2001 the situation seemed to improve, since 34% and 36.45% of women *dirigenti* was employed in the manufacturing sector. The number of female *dirigenti* working in the public administration consistently decreased to a 24.22% and 22.18% respectively. Things worsen in 2002. In that year the number of women leading manufacturing firms dropped to 29.17%, with an important reduction of female *dirigenti* in the textile sector, from 4.41% in 2001 to 3.05% in 2002. Another important aspect to underline is the fact that the number of women employed as *dirigenti* in the public administration, defence, and social security sector increased again to 36.84%. This fact can help to explain the drop in total annual earnings of female *dirigenti* in that year, since the public administration sector is much less remunerative than the manufacturing. This negative trend continued in the years 2003 and 2004. In 2003, 25.05% of female *dirigenti* was working in the manufacturing sector and in 2004 this percentage fell to 23.12%. The number of leading women in the public administration sector, instead, raised to 42.46% in 2003 and reached 44.35% in 2004. In 2005 the situation improved, as the trend in total annual earnings shows, with an increase in the number of female *dirigenti* working in the manufacturing sector (29.75%) and a decrease of those working in the public administration sector (22.92%).

Male *dirigenti* working in the manufacturing sector have been affected by this negative situation as well, with a decline from 55% in 1999 to 49.15% in 2005. Anyway, they increased their presence in other

sectors, better paid than the public administration. In particular, the number of male *dirigenti* working in the financial intermediation sector increased from 11.48% in 1999 to 17.50% in 2005.

Having shown that significant disparities in wages among male and female *dirigenti* are evident and substantial, the following chapter will be dedicated to the analysis of the determinants of these differences.

5. Empirical strategy

This chapter is dedicated to the presentation of the results of the empirical analysis, which is structured in the following four main steps:

1) Estimation of the Mincer-type earnings functions for all *dirigenti*. These include the gender dummy and a set of individual and firm characteristics in order to evaluate the gender pay gap and the determinants of total annual earnings for *dirigenti*.
2) Re-estimation of the Mincer-type earnings functions separately for male and female *dirigenti* in order to discuss the differentiated effects of the explanatory variables by gender.
3) Implementation of different decomposition techniques of the gender pay gap (Blinder-Oaxaca, Reimers, Cotton, Neumark).
4) Estimation of the Mincer-type earnings functions after having built three panel data (1990-1995, 1995-2000, 2000-2005) in order to control for omitted variable biases.

A detailed description of this strategy is presented in the following section. Then the estimations' results will be reported.

5.1 Description of the empirical strategy

5.1.1 Estimations of Mincer-type earnings functions

Traditional analyses of the gender pay gap rely on estimations of Mincer-type earnings functions. In fact, Mincer's (1974) model[14] represents a cornerstone of empirical economics (Carneiro and Heckman, 2003), and is used in different fields, especially for the estimations of returns to education and school quality and the determinants of the male-female wage gap.

This model commonly takes the form:

$$\ln(w_i) = \alpha + \beta x_i + \varepsilon_i \qquad (1)$$

Where:

[14]Jacob Mincer published in1974 his landmark book *Schooling, Experience and Earnings*. On the basis of both theoretical and empirical arguments, he defined the natural logarithm of wages as a function of years of education and years of potential labour market experience. This model is accounted in the framework of *Human Capital Theory*.

- $\ln(w_i)$ is the natural logarithm of the observed hourly earnings for individual *i*
- x_i is the vector of observed characteristics
- β is the vector of coefficients
- ε_i is the disturbance term with an expected value of zero

There is no universally accepted set of conditioning variables that should be included for describing the causes of gender labour market outcomes differentials. Following the model of Bertrand and Hallock (2001) and in accordance with data available, the following individual and firms' characteristics are included in the function specification:

- Individual: gender, age, age squared (in order to model the effect at different ages and capture a possible non-linear relationship between age and the dependent variable), region of birth, region of work, number of years of working experience.
- Firms: sector and size.

Firstly, a multivariate regression model with only individual characteristics will be estimated. Then, in a second specification, dummies on firms' sectors and size will be added. This will be done for all reference years (1990-1995-2000-2005). In a first step, the regressions will be run on all *dirigenti* including the gender dummy. This allows to estimate the gender pay gap and the determinants of wage and to assess their evolution over the time period. Then, in a second step, the regressions will be run separately for men and women in order to evaluate how the predictors of wage differently affect males and females' earnings.

5.1.2 Gender pay gap decomposition techniques

After the estimations of the gender pay gap and the separate effects of the predictors of earnings for males and females, mean differences in log wages will be decomposed in a counterfactual manner. This procedure is known in the literature as the Blinder-Oaxaca decomposition(Blinder, 1973Oaxaca, 1973). It divides the wage differential between two groups, in this case men and women, into a part that is explained by group differences in observed characteristics, and a residual part that cannot be accounted for by such differences in wage determinants (Jann, 2008). This unexplained part is usually referred to as discrimination, but it is important to specify that it also captures the effects of group differences in unobserved predictors.

The Oaxaca decomposition is defined as:

$$\overline{\ln(w_m)} - \overline{ln(w_f)} = \beta_m(\bar{x}_m - \bar{x}_f) + (\beta_m - \beta_f)\bar{x}_f \quad (2)$$

The first term, $\beta_m(\bar{x}_m - \bar{x}_f)$, indicates how much of the wage differential is due to differences in average characteristics between males and females. The second term, $(\beta_m - \beta_f)\bar{x}_f$, captures the wage gap attributable to differences in returns to those characteristics.

In empirical studies, this method is usually reported as the threefold decomposition and written as:

$$R = \{E(X_A) - E(X_B)\}'\beta_B + E(X_B)'(\beta_A - \beta_B) + \{E(X_A) - E(X_B)\}'(\beta_A - \beta_B) \quad (3)$$

or

$$R = E + C + I \quad (4)$$

Where:

- E is the part of the differential that is due to group differences in the predictors (endowments effect). It measures the expected change in groups B's mean outcome if group B had group A's predictor levels.
- C is the contributions of differences in the coefficients (including differences in the intercept). It measures the expected change in group B's mean outcome if group B had group A's coefficients.
- I is the interaction term accounting for the fact that differences in the endowments and coefficients exist simultaneously between the two groups.

An alternative decomposition technique prominent in the discrimination literature results from the idea that there is a non-discriminatory coefficient vector that should be used to determine the contribution of the differences in the predictors. This coefficient vector is usually indicated as β^*. In this case, the outcome difference, known as twofold decomposition, becomes:

$$R = \{E(X_A) - E(X_B)\}'\beta^* + E(X_B)'(\beta_A - \beta^*) + \{E(X_A) - E(X_B)\}'(\beta^* - \beta_B) \quad (5)$$

or

$$R = Q + U \quad (6)$$

Where:

- Q is the part of the outcome differential that is explained by group differences in the predictors (quantity effect).
- U is the unexplained part, capturing the potential effects of differences in unobserved variables and discrimination.

The main issue in this case is that an estimate for the unknown non-discriminatory coefficients vector β^* is needed. Different approaches have been proposed. Oaxaca (1973) assumes that discrimination is directed toward only one of the groups, so that $\beta^* = \beta_A$ or $\beta^* = \beta_B$. However, according to part of the literature, there is no reason to assume that the coefficients of one or the other group are non-discriminating. Moreover, economists have argued that the undervaluation of one group comes along with the overvaluation of the other (Jann, 2008). More specifically, in order to estimate β^*, Reimers (1983) proposes to use the average coefficients over both groups. Cotton (1988) suggests to weight the coefficients by the group sizes. Neumark (1988) advocates the use of the coefficients from a pooled regression over both groups. All these different techniques will be applied in the empirical analysis.

5.1.3 Analysis on panel data: fixed effects regressions

WHIP data are available from 1985 to 2005. Each individual in the database is followed through his/her working career. The panel nature of the data set enables to track the same individuals over time and, hence, to deepen the level of analysis through a fixed effects regression. This is a method for controlling for omitted variables in panel data when the omitted variables vary across individuals but do not change over time. In particular, since the variable education is missing, using the panel data can help to control for this unobserved important predictor of wage, which is likely to stay constant over time.

In this case, the regression model becomes:

$$\ln(w_{it}) = \beta_0 + \beta_1 x_{it} + \beta_2 Z_i + \varepsilon_i \qquad (7)$$

Where Z_i is an unobserved variable that varies from one individual to the other but does not change over time, like education. Because of this, the population regression model in Equation (7) can be interpreted as having *n* intercepts, one for each individual. Let $\alpha_i = \beta_0 + \beta_2 Z_i$, then equation (7) becomes a fixed effects regression model:

$$\ln(w_{it}) = \beta_1 x_{it} + \alpha_i + \varepsilon_i \quad (8)$$

In this model, $\alpha_{1,\ldots,}\alpha_n$ are treated as unknown intercepts to be estimated, one for each individual. The interpretation of α_i as an individual-specific intercept comes from considering the population regression line for the i^{th} individual: $\alpha_i + \beta_1 X_{it}$. The slope coefficient of the population regression line, β_1, is the same for all individuals, but the intercept varies from one individual to the next. The intercept α_i can be thought as the "effect" of being in entity (in this case individual) *i*. Because of this, the intercepts are known as entity fixed effects. The variation of the entity fixed effects comes from omitted variables that, like Z_i, vary across entities but not over time.

After the presentation of the empirical strategy from a theoretical point of view, estimations' results are presented in the next section.

5.2 Estimations results

This section is dedicated to the presentation of the results of the empirical analysis following the strategy previously described.

5.2.1 The gender pay gap among Italian dirigenti. Evolution from 1990 to 2005

Table A1.1 in Appendix 1 reports the results of the regressions on the gender wage differential among *dirigenti* for the four reference years of the analysis: 1990, 1995, 2000 and 2005. Model 1 refers to the regressions with individual characteristics only, while model 2 includes individual and firms' determinants of total annual earnings.

It is possible to assess that, keeping all the other predictors constant, the gender wage differential among Italian top paid workers has decreased over the period 1990-2000, varying from 26% to 22%, and then increased again, reaching 37% in 2005. This is a sign that female *dirigenti* faced a worsening of their remunerative conditions during the first years of 2000 with respect to their male counterpart.

The impact of age is particularly important for all years. Keeping all the other variables constant, getting older of one year positively affected total annual earnings by 18% in 1990, 10% in 1995, 8% in 2000 and 10% in 2005. The negative sign of the variable Age Squared reveals that as *dirigenti* get older, the effect of age on wages becomes weaker. The effect of the number of years of working experience decreases from 10% in 1990, 4% in 1995, and 2% in 2000 and 2005, *ceteris paribus*.

Results on region of birth are mainly not significant. This means that the place of birth does not significantly affect the wages of *dirigenti*. Regions of work are in most cases significant and negative: *dirigenti* working in other areas than Lombardia tend to earn less with respect to those working in this region, *ceteris paribus*.

The most important results are those regarding the effects of firms' sectors and size on total annual earnings. The most penalised sector is that of public administration, defence and compulsory social security. The *dirigenti* working in this sector earned 39% less than those working in the manufacturing in 1990, 42% less in 1995, 62% less in 2000 and 136% less in 2005. This findings are important since the majority of women were employed in this sector, especially during the 1990s. In fact, as figure 2 in chapter 3 shows, 38.7% of female *dirigenti* were working in this sector in 1990, 48.84% in 1995, 24.19% in 2000 and 23.04% in 2005, while the percentages of those managing firms in the manufacturing sector were 26.49%, 22.69%, 34.32%, 29.84% respectively. Male *dirigenti*, instead, are mainly employed in the manufacturing sector: 51.70% in 1990, 49.04% in 1995, 54.66% in 2000, and 49.15% in 2005.

A specular result regards firms' size. As expected, firms with 200-999 and more than 1,000 employees tend to pay higher wages with respect to those with 0-9 employees, respectively 37% and 50% in 1990, 36% and 45% in 1995, 21% and 24% in 2000, 16% and 21% in 2005. Since women tend to manage smaller firms these results are other important determinants of the gender wage gap.

5.2.2 Estimations for male and female dirigenti

Appendix A2 reports tables on the separate regressions for men and women in the sample for the four reference years. This is useful in order to assess if the determinants of wages differently affect males and females' total annual earnings.

The effect of age was stronger for men in 1990, when, everything else equal, getting older of one year positively affected their total annual earnings by 17% versus 13% of women. Instead, this effect was stronger for women in 1995, when getting older of one year increased their total annual earnings by 17% with respect to 7% of men, *ceteris paribus*. In 2000 and 2005 this variable is not significant for females, while it is positive and significant for males, 6% and 8% respectively.

The effect of the number of years of working experience was particularly high in 1990 for both groups, especially for women: keeping all the other predictors constant, one additional year of working experience increased their total annual earnings by 16%. This impact became less and less important over the period, reaching 2% both for women and men in 2005. Results on place of birth and work are very similar for the two groups. Regions of birth are mostly not significant, while regions of work are

mainly significant and negative, underlining the positive effect of working in Lombardia with respect to other areas of the country.

As in the regressions over the total sample, the most significant determinants of wages regard firms' sectors and size. Both women and men working in the public administration, defence and social security sector earned much less than their counterparts working in the manufacturing, but the effect is much accentuated for women. In 1990 females managing firms in the public administration, defence and social security sector were receiving almost half of the total annual earnings than women working in the manufacturing sector, *ceteris paribus*. This difference increased over the period reaching 208% in 2005.

As regards firms' size, again, the positive effect of being employed in bigger firms is greater for women than for men. Keeping all the other variables constant, women managing firms with more than 1,000 employees were earnings 107% more than those managing firms with 9 or less employees in 1990, 80% more in 1995, 53% more in 2000 and 42% more in 2005, while, for men, the results are 44 % in 1990, 40% in 1995, 21% in 2000 and 18% in 2005.

5.2.3 Decomposition of the gender pay gap

Appendix A3 reports the tables on the different decomposition techniques of the gender wage differential for each of the four reference years.

As already noticed, the raw gender wage gap decreased over the period 1990-2000 and then increased again in 2005. In 1990, the mean log of total annual earnings was 10.68 for males and 9.86 for females, with a raw gender wage differential of 0.69 log points. 72% of this differential was explained by differences in characteristics between men and women (i.e the endowment effect) and 40% was explained by differences in returns to these characteristics (i.e the coefficient effect). The remaining gap was due to the difference of constants between males and females (interaction). In 1995, male *dirigenti* were earning, on average, 0.59 log points more than females. 68% of this difference was due to endowments, 41% to coefficients and -9% to interactions between endowments and coefficients. In 2000, the mean log of total annual earnings for male *dirigenti* was 11.20, while for female *dirigenti* was 10.72, with a raw difference of 0.47 log point. 77% of this differential was due to differences in characteristics between men and women, 55% to differences in returns to those characteristics and -32% to interaction between these two factors. In the last year of the analysis, men were earning, on average, 0.72 log points more than women. 79% of this gap was due to differences in characteristics between male and female *dirigenti*, 69% to differences in returns to these characteristics and -48% to differences in constants between the two groups. It is possible to assess that the gap in endowments accounts for the great bulk of the gap in outcomes.

Appendix A3 also shows the proportions of the gap explained and not explained by the model according to the four main decomposition techniques: Blinder-Oaxaca, Cotton, Reimers and Neumark. Blinder-Oaxaca model (0) indicates that males are used as reference group in the calculation of the non-discriminatory coefficient β^*, while (1) indicates that females are used for this purpose. In the first case males' coefficients are used as an estimate of β^*, while in the second females'.

In 1990 the share of the gap explained by the predictors used in the model is important, ranging from 60% to 71%, depending on the different weighting scheme of the non-discriminatory wage structure. Among the single determinants, age seems to have a stronger effect in explaining the gap. In 1995 the share of the gap explained by the model decreases, varying from 58% to 67%. Again, the predictor age seems to be the major determinant of the gap. For years 2000 and 2005 results are more variant. In 2000, the share of the wage differential explained by the model ranges between 76.4% using the Blinder-Oaxaca (0) technique (which assumes that wage discrimination is directed only against women and there is no positive discrimination against men), to 48.43% using the Reimers' technique (which calculates β^* using the average coefficients over both groups). The Cotton's technique (β^* found weighting male and female coefficients by groups size) shows that 61% of the gap can be explained, while, according to the Neumark decomposition (β^* calculated as a pooled regression over both groups) this value reduces to 57.3%. In 2005, results are even more variant. The Oaxaca-Blinder (0) result indicates that 79.1% of the gender wage differential can be explained by the model, while applying the Neumark decomposition this value falls to 54.4%. Cotton and Reimers' results are 54.9% and 36.2% respectively. According to these findings, in these years, the two variables that mostly affect the differential are age and working in the public administration sector.

These results show that the share of the differential which remains unexplained is quite high, especially for year 2005. Usually, the unexplained part of the gap is attributed to discrimination. However, this would be a misleading conclusion as what it is actually observed is only the difference of residuals of wage functions, and not necessarily pure discrimination. These residuals can indeed be explained by many unobserved factors affecting men's and women's wages differently. According to the literature, education is one of the most important factor in this sense, but since it is not observed in the WHIP database, estimations on fixed effects have been made in order to control for this unobserved predictors.

5.2.4 Results on panel data

Tables A4.1, A4.2 and A4.3 in Appendix 4 show results of the regression on the unbalanced panel data built over the years 1990-1995, 1995-2000 and 2000-2005. The decision of building panel data was made to control for education, a fundamental variable in determining total annual earnings. In order to capture the gender pay gap, an interaction variable multiplying the dummy female with each year has been introduced.

Results on this model reveal that the pure gender pay gap after having controlled for all fixed-effects that change between male and female *dirigenti*, but are constant over time, is 1% over the period 1990-1995, not significant and equal to zero over the period 1995-2000 and 2% over the period 2000-2005. A worsening in the remunerative conditions of female *dirigenti* is confirmed by these results.

It seems that education, careers' commitment and attachment, ability and other individual characteristics constant over time but different among individuals play an important role for this category of Italian workers.

In this sense, it is important to report some statistics on the level of education attainment of Italian managers. Data from Eurostat[15] show that in 2005 the number of Italian managers with an upper secondary and/or a post-secondary (but non tertiary) level of education (ISCED 3 and 4) was 905,000 (45% of total managers). Among these, 68.89% were males and 33.11% females. In the same year, 263,100 (13% of total managers) managers had a short cycle tertiary education, bachelor or equivalent, master or equivalent, doctoral or equivalent (ISCED 5-8). Among this category, 72.56% were men and 27.44% women.

These statistics help to confirm the importance and relevance of some variables, like education and self-commitment missing in the database under study. This fact underlines the two most significant limitations of the study. First, the impossibility to account for the sample selection bias due to the lack of information on fundamental personal characteristics (education, education of the parents, marital status). In fact, the selection for a managerial position is not random: it is not coincidental whether there is a man or a woman in a top-corporate position. But not only the lack of some important variable is important. Also the fact that some unobservable may change over time due to life cycle (marriage, changes in the occupational position of the spouse, number of children) causes variations in

[15] Available at *www.ec.europa.eu/eurostat/data/database.*

carer ambitions. These facts need to be considered in further studies in order to give a more accurate view of the gender differences among Italian *dirigenti*.

6. Conclusions

The main purpose of this study was to verify the existence and the magnitude of the gender pay gap among the highly paid in Italy, and to find evidence of a glass ceiling effect that limits females' career path to top positions. The sample was made up by the highest working category in Italy, that of *dirigenti*. Data from the Work Histories Italian Panel allowed to cover a period of fifteen years, from 1990 to 2005. Four reference years had been chosen: 1990-1995-2000-2005. At the end, three panel data over the periods 1990-1995, 1995-2000 and 2000-2005 were built in order to control for education, a fundamental variable in this literature, missing in the data set.

The first important finding of the study regards the persistence of both horizontal and vertical segregation in Italy.

The first term refers to the under-representation or over-representation of a given group in occupations and sectors not ordered by any criterion(Eurofound, 2013). The results of the analysis show that Italian female *dirigenti* tend to be over-represented in the occupational sector of public administration, defence and social security, while the majority of male *dirigenti* work in the manufacturing sector. This difference is particularly marked during the 1990s, but still persists till 2005. In addition, the public administration, defence and social security sector pays lower wages than the manufacturing. This fact can partly explain the gender differential in total annual earnings between male and female *dirigenti*. Moreover, the separate regressions on males and females show that this negative effect is stronger for women. Italian female *dirigenti* tend also to be segregated in smaller firms, which pay less with respect to bigger ones, even if this fact is less accentuated.

Vertical segregation refers to the fact that, within a particular occupation, one group tend to hold lower status and lower rewarded positions (Eurofound, 2013). Results clearly show that Italian women constitute the majority of employees in the working category of *impiegati*, white collar workers with basic functions, reaching 58.60% in 2005, but are highly under-represented in the two top managerial categories of *quadri aziendali*, 21.15% in 2005, and *dirigenti*, 11.40% in 2005. They also have a lower probability of improving their careers. This fact is an evident sign that a glass ceiling effect affects Italian corporates.

The second main finding regards the magnitude and evolution of the gender pay gap for this working category. Female *dirigenti* earn less than their male counterpart. This differential decreased from 1990, when it was 26%, to 2000, when it was 22%, and then increased to 37% in 2005. These values demonstrate that the remunerative conditions of female *dirigenti* considerably worsen during the first years of the 21st century. This can be partly explained by the negative trend of the Italian economy during the years 2001-2002-2003, when the firms' death rate was higher than the birth rate. This fact particularly hit the manufacturing sector and forced the majority of female *dirigenti* to shift back to the administrative sector, while men increased their number in the financial intermediation sector.

The major determinants of total annual earnings are age (women are, on average, younger), sectors of employment (over-representation of women in low paid sectors) and firms' size (under-representation of women in big firms). The last two are particularly important for females. The number of years of working experience and places of birth and work do not seem to have a consistent effect on the wage level.

The third main finding regards the percentage of the gap not explained by the model. During the years, and according to the different weighting scheme used, it ranges from more than 20% to more than 60%. This indicates that a high percentage of the gap cannot be explained by differences between male and female *dirigenti* in observed characteristics. This fact captures the effects of other predictors not included in the model and the possible effect of discrimination.

In order to control for the effect of predictors of the wage gap that could not be observed, like education, three unbalanced panel data over the years 1990-1995, 1995-2000 and 2000-2005 were built. Results on this model assess that, controlling for all the effects that are unique for each individual and do not vary over time, the gender pay gap was 1% in the first wave, insignificant in the second, and 2% in the third.

Concluding, the main findings of this analysis reveal that in Italy a strong glass ceiling effect limits women in their careers to the top of managerial positions. Women who have reached this level are younger than their male counterpart, have fewer number of years of working experience, tend to be segregated in less remunerative sectors and smaller firms and face important remunerative differentials. Further research is needed in order to better explain these trends and to assess the impact of recent changes in the Italian legislation on these issues.

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Appendix A1

The Gender Pay Gap among Italian *dirigenti* from 1990 to 2005

Table A1.1: Gender Pay Gap for *dirigenti* when individual and firms' characteristics are considered – 1990-1995-2000-2005

(Dependent variable is the Log of Total Annual Earnings; Robust Standard Error in Parentheses)

	(1) 1990	(2) 1990	(1) 1995	(2) 1995	(1) 2000	(2) 2000	(1) 2005	(2) 2005
Female	-0.39***	-0.26***	-0.35***	-0.23***	-0.33***	-0.22***	-0.58***	-0.37***
	(0.03)	(0.03)	(0.03)	(0.02)	(0.04)	(0.03)	(0.05)	(0.037)
Age	0.22***	0.18***	0.12***	0.10***	0.09***	0.08***	0.14***	0.10***
	(0.02)	(0.02)	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)	(0.01)
Age²	-0.001***	-0.001***	-0.001***	-0.000***	-0.000***	-0.000***	-0.002***	-0.001***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Work Exp	0.12***	0.10***	0.05***	0.04***	0.03***	0.02***	0.03***	0.02***
	(0.01)	(0.01)	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)	(0.001)
Regions (birth)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Regions (work)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
P. A.		-0.39***		-0.42***		-0.62***		-1.36***
		(0.03)		(0.02)		(0.06)		(0.10)
W.		0.02		0.13***		0.04*		0.07***
		(0.02)		(0.02)		(0.03)		(0.03)
F.I.		0.06***		0.13***		0.02		0.03
		(0.02)		(0.02)		(0.02)		(0.03)
10-19		0.12***		0.06		-0.03		-0.02
		(0.04)		(0.04)		(0.04)		(0.04)

20-199		0.25***		0.23***		0.04		0.001
		(0.03)		(0.03)		(0.03)		(0.03)

Table A1.1: *Continued*

200-999		0.37***		0.36***		0.21***		0.16***
		(0.03)		(0.03)		(0.03)		(0.03)
>=1000		0.50***		0.45***		0.24***		0.21***
		(0.03)		(0.03)		(0.03)		(0.03)
Constant	-0.96	1.03	7.85***	8.06***	9.15***	9.28***	8.92***	9.599***
	(0.70)	(0.66)	(0.28)	(0.29)	(0.25)	(0.25)	(0.29)	(0.270)
R^2	0.29	0.35	0.26	0.33	0.16	0.20	0.18	0.27
N	10,354	10,354	9,879	9,879	8,709	8,709	8,074	8,074

Source: Work Histories Italian Panel 1990-2005

Note: P.A. = Public Administration sector, W .= Wholesale sector, F.I.= Financial Intermediation sector. 10-19 = firms with 10-19 employees, 20-199= firms with 20-199 employees, 200-999= firms with 200-999 employees, >=1000 = firms with more than 1,000 employees. Reference dummies are Lombardia for Regions of Birth and Regions of Work, Manufacturing for Firms' Sector and 0-9 employees for Firms' Dimension

*Statistically significant at the 0.10 level;**at the .05 level; ***at the .01 level

Appendix A2

Determinants of total annual earnings for Italian male and female *dirigenti* from 1990 to 2005

Table A2.1: Determinants of Total Annual Earnings for male and female *dirigenti* – 1990

(Dependent Variable is the Log of Total Annual Earnings; Robust Standard Errors in Parentheses)

	(1) Female	(2) Female	(1) Male	(2) Male
Age	0.24***	0.13***	0.21***	0.17***
	(0.04)	(0.04)	(0.023)	(0.022)
Age²	-0.001***	-0.001***	-0.001***	-0.001***
	(0.000)	(0.000)	(0.000)	(0.000)
Work Experience	0.2***	0.16***	0.11***	0.09***
	(0.02)	(0.02)	(0.005)	(0.005)
Regions (birth)	Yes	Yes	Yes	Yes
Regions (work)	Yes	Yes	Yes	Yes
P.A.		-0.49***		-0.38***
		(0.11)		(0.03)
W.		0.04		0.008
		(0.10)		(0.02)
F.I		0.162		0.051**
		(0.115)		(0.02)
10-19		0.13		0.11***
		(0.18)		(0.04)
20-199		0.55***		0.20***
		(0.13)		(0.03)

200-999		0.65***		0.33***
		(0.13)		(0.03)

Table A2.1: *Continued*

>=1000		1.07***		0.44***
		(0.13)		(0.03)
Constant	-3.50***	0.70	-0.39	1.40*
	(1.25)	(1.29)	(0.83)	(0.79)
R^2	0.40	0.52	0.23	0.29
N	773	773	9,581	9,581

Source: Work Histories Italian Panel for 1990

Note: P.A. = Public Administration sector, W .= Wholesale sector, F.I.= Financial Intermediation sector. 10-19 = firms with 10-19 employees, 20-199= firms with 20-199 employees, 200-999= firms with 200-999 employees, >=1000 = firms with more than 1,000 employees. Reference dummies are Lombardia for Regions of Birth and Regions of Work, Manufacturing for Firms' Sector and 0-9 employees for Firms' Dimension

*Statistically significant at the 0.10 level;**at the .05 level; ***at the .01 level

Table A2.2: Determinants of Total Annual Earnings for male and female *dirigenti* – 1995

(Dependent Variable is the Log of Total Annual Earnings; Robust Standard Errors in Parentheses)

	(1) Female	**(2) Female**	**(1) Male**	**(2) Male**
Age	0.21***	0.17***	0.09***	0.07***
	(0.03)	(0.03)	(0.01)	(0.01)
Age^2	-0.002***	-0.002***	-0.001***	-0.001**
	(0.000)	(0.000)	(0.000)	(0.000)
Work Experience	0.064***	0.05***	0.04***	0.03***
	(0.01)	(0.01)	(0.002)	(0.002)
Regions (birth)	Yes	Yes	Yes	Yes
Regions (work)	Yes	Yes	Yes	Yes

P.A.		-0.46***		-0.43***
		(0.10)		(0.02)

Table A2.2: *Continued*

W.		0.14		0.12***
		(0.09)		(0.02)
F.I.		0.10		0.13***
		(0.09)		(0.02)
10-19		-0.02		0.06
		(0.19)		(0.04)
20-199		0.49***		0.19***
		(0.12)		(0.03)
200-999		0.64***		0.32***
		(0.12)		(0.03)
>=1000		0.80***		0.40***
		(0.13)		(0.03)
Constant	5.65***	6.27***	8.54***	8.68***
	(0.69)	(0.74)	(0.27)	(0.27)
R^2	0.39	0.49	0.18	0.26
N	956	956	8,923	8,923

Source: Work Histories Italian Panel for 1995

Note: P.A. = Public Administration sector, W .= Wholesale sector, F.I.= Financial Intermediation sector. 10-19 = firms with 10-19 employees, 20-199= firms with 20-199 employees, 200-999= firms with 200-999 employees, >=1000 = firms with more than 1,000 employees. Reference dummies are Lombardia for Regions of Birth and Regions of Work, Manufacturing for Firms' Sector and 0-9 employees for Firms' Dimension

*Statistically significant at the 0.10 level;**at the .05 level; ***at the .01 level

Table A2.3: Determinants of Total Annual Earnings for male and female *dirigenti* – 2000

(Dependent Variable is the Log of Total Annual Earnings; Robust Standard Errors in Parentheses)

	(1) Female	(2) Female	(1) Male	(2) Male
Age	0.11**	0.08	0.07***	0.06***
	(0.06)	(0.05)	(0.010)	(0.01)
Age²	-0.001	-0.001	-0.001***	-0.001***
	(0.000)	(0.000)	(0.000)	(0.000)
Work Experience	0.044***	0.02***	0.03***	0.02***
	(0.01)	(0.01)	(0.001)	(0.001)
Regions (birth)	Yes	Yes	Yes	Yes
Regions (work)	Yes	Yes	Yes	Yes
P. A.		-1.10***		-0.47***
		(0.19)		(0.07)
W.		-0.05		0.05*
		(0.09)		(0.03)
F.I.		-0.210		0.05*
		(0.13)		(0.03)
10-19		0.06		-0.04
		(0.21)		(0.04)
20-199		0.23		0.02
		(0.14)		(0.03)
200-999		0.52***		0.18***
		(0.15)		(0.03)
>=1000		0.53***		0.21***
		(0.15)		(0.03)

Table A2.3: *Continued*

Constant	8.322***	8.92***	9.66***	9.67***
	(1.082)	(0.99)	(0.23)	(0.22)
R^2	0.30	0.40	0.12	0.15
N	789	789	7,920	7,920

Source: Work Histories Italian Panel for 2000

Note: P.A. = Public Administration sector, W .= Wholesale sector, F.I.= Financial Intermediation sector. 10-19 = firms with 10-19 employees, 20-199= firms with 20-199 employees, 200-999= firms with 200-999 employees, >=1000 = firms with more than 1,000 employees. Reference dummies are Lombardia for Regions of Birth and Regions of Work, Manufacturing for Firms' Sector and 0-9 employees for Firms' Dimension

*Statistically significant at the 0.10 level;**at the .05 level; ***at the .01 level

Table A2.4: Determinants of Total Annual Earnings for male and female dirigenti – 2005

(Dependent Variable is the Log of Total Annual Earnings; Robust Standard Errors in Parentheses)

	(1) **Female**	**(2)** **Female**	**(1)** **Male**	**(2)** **Male**
Age	0.18***	0.05	0.1'***	0.08***
	(0.05)	(0.05)	(0.01)	(0.0120)
Age^2	-0.002***	-0.00	-0.001***	-0.001***
	(0.001)	(0.001)	(0.000)	(0.000)
Work Experience	0.06***	0.02***	0.02***	0.02***
	(0.01)	(0.01)	(0.001)	(0.001)
Regions (birth)	Yes	Yes	Yes	Yes
Regions(work)	Yes	Yes	Yes	Yes
P.A.		-2.08***		-0.78***
		(0.19)		(0.10)
W.		0.15*		0.06**
		(0.08)		(0.03)

Table A2.4: Continued

F.I.		-0.05		0.02
		(0.09)		(0.03)
10-19		-0.14		-0.03
		(0.164)		(0.04)
20-199		-0.08		0.03
		(0.11)		(0.03)
200-999		0.41***		0.13***
		(0.12)		(0.03)
>=1000		0.42***		0.18***
		(0.12)		(0.03)
Constant	7.91***	10.15***	9.87***	9.99***
	(0.95)	(0.91)	(0.22)	(0.22)
R^2	0.35	0.52	0.10	0.15
N	922	922	7,152	7,152

Source: Work Histories Italian Panel for 2005

Note: P.A. = Public Administration sector, W .= Wholesale sector, F.I.= Financial Intermediation sector. 10-19 = firms with 10-19 employees, 20-199= firms with 20-199 employees, 200-999= firms with 200-999 employees, >=1000 = firms with more than 1,000 employees. Reference dummies are Lombardia for Regions of Birth and Regions of Work, Manufacturing for Firms' Sector and 0-9 employees for Firms' Dimension

*Statistically significant at the 0.10 level;**at the .05 level; ***at the .01 level

Appendix A3: Decomposition of the Gender Pay Gap from 1990 to 2005

Table A3.1: Decomposition of the Raw Gender Wage Differential - 1990

Mean prediction males	10.68
Mean prediction females	9.86
Raw Differential	0.69
- **% Due to endowments**	72
- **% Due to coefficients**	40
- **% Due to interaction**	-12

Source: Work Histories Italian Panel for 1990

Table A3.2: Analysis of the decomposition of the Gender Pay Gap by different decomposition techniques - 1990

	Oaxaca-Blinder (0)	**Oaxaca-Blinder (1)**	**Cotton**	**Reimers**	**Neumark**
% Unexplained	29.2	40.1	34.6	39.3	33.4
% Explained	70.8	59.9	65.4	60.7	66.6
of which:					
- **age**	0.82	1.07	0.96	1.05	1.18
- **work exp**	0.07	0.04	0.06	0.04	0.04
- **P.A**	0.14	0.11	0.13	0.11	0.13
- **>=1000**	0.04	0.02	0.03	0.02	0.02

Source: Work Histories Italian Panel for 1990

Note: Differential in 4th column = relative frequency of males

Table A3.2: Decomposition of the Raw Gender Wage Differential - 1995

Mean prediction males	10.97
Mean prediction females	10.38
Raw Differential	0.59
- **% Due to endowments**	68
- **% Due to coefficients**	41
- **% Due to interaction**	-9

Source: Work Histories Italian Panel for 1995

Table A3.4: Analysis of the decomposition of the Gender Pay Gap by different decomposition techniques - 1995

	Oaxaca-Blinder (0)	**Oaxaca-Blinder (1)**	**Cotton**	**Reimers**	**Neumark**
% Unexplained	33.1	42.0	37.6	41.2	33.7
% Explained	66.9	58.0	62.4	58.8	66.3
of which:					
- **age**	0.993	0.44	0.72	0.49	0.63
- **work exp**	0.06	0.04	0.05	0.04	0.04
- **P.A**	0.16	0.15	0.16	0.15	0.17
- **>=1000**	-0.05	-0.03	-0.04	0.03	-0.03

Source: Work Histories Italian Panel for 1995

Note: Differential in 4th column = relative frequency of males

Table A3.5: Decomposition of the Raw Gender Wage Differential - 2000

Mean prediction males	11.20
Mean prediction females	10.72
Raw Differential	0.47
- **% Due to endowments**	77
- **% Due to coefficients**	55
- **% Due to interaction**	-32

Source: Work Histories Italian Panel for 2000

Table A3.6: Analysis of the decomposition of the Gender Pay Gap by different decomposition techniques - 2000

	Oaxaca-Blinder (0)	**Oaxaca-Blinder (1)**	**Cotton**	**Reimers**	**Neumark**
% Unexplained	23.6	54.5	39.0	51.7	42.7
% Explained	76.4	45.5	61.0	48.3	57.3
of which:					
- **age**	0.40	0.32	0.35	0.32	0.42
- **work exp**	0.03	0.03	0.03	0.03	0.03
- **P.A**	0.21	0.09	0.15	0.10	0.13
- **>=1000**	0.02	0.01	0.01	0.01	0.01

Source: Work Histories Italian Panel for 2000

Note: Differential in 4th column = relative frequency of males

Table A3.7: Decomposition of the Raw Gender Wage Differential - 2005

Mean prediction males	11.37
Mean prediction females	10.66
Raw Differential	0.72
- **% Due to endowments**	79%
- **% Due to coefficients**	69%
- **% Due to interaction**	-48%

Source: Work Histories Italian Panel for 2005

Table A3.8: Analysis of the decomposition of the Gender Pay Gap by different decomposition techniques - 2005

	Oaxaca-Blinder (0)	**Oaxaca-Blinder (1)**	**Cotton**	**Reimers**	**Neumark**
% Unexplained	20.9	69.3	45.1	63.8	45.6
% Explained	79.1	30.7	54.9	36.2	54.4
of which:					
- **age**	0.21	0.35	0.28	0.33	0.47
- **work exp**	0.03	0.03	0.03	0.03	0.03
- **P.A**	0.37	0.14	0.26	0.16	0.27
- **>=1000**	0.01	0.01	0.01	0.01	0.01

Source: Work Histories Italian Panel for 2005

Note: Differential in 4th column = relative frequency of males

Appendix A4

Results on panel

Table A4.1: Gender Pay Gap for *dirigenti* when individual and firm characteristics are considered – Results on the panel data 1990-1995

(Dependent Variable is the Log of Total Annual Earnings; Cluster Standard Errors in Parentheses)

	(1)	**(2)**
Female*year	-0.01**	-0.01**
	(0.005)	(0.005)
Age	0.24***	0.24***
	(0.01)	(0.01)
Age²	-0.002***	-0.001***
	(0.000)	(0.000)
Work Experience	-0.004	-0.004
	(0.003)	(0.003)
Regions (birth)	Yes	Yes
Regions (work)	Yes	Yes
P. A.		-0.03
		(0.06)
W.		-0.004
		(0.04)
F.I.		0.03
		(0.04)
>=1000		0.02
		(0.10)

Table A4.1: *Continued*

Constant	5.95***	5.97***
	(0.86)	(0.90)
R^2	0.074	0.075
N	59,080	59,080
Number of id	15,382	15,382

Source: Work Histories Italian Panel 1990-1995

Note: P.A. = Public Administration sector, W .= Wholesale sector, F.I.= Financial Intermediation sector. >=1000 = firms with more than 1,000 employees. Reference dummies are Lombardia for Regions of Birth and Regions of Work, Manufacturing for Firms' Sector and 0-9 employees for Firms' Dimension

*Statistically significant at the 0.10 level;**at the .05 level; ***at the .01 level

Table A4.2: Gender Pay Gap for *dirigenti* when individual and firm characteristics are considered – Results on the panel data 1995-2000

(Dependent Variable is the Log of Total Annual Earnings; Cluster Standard Errors in Parentheses)

	(1)	**(2)**
Female*year	0.003	0.003
	(0.006)	(0.006)
Age	0.28***	0.28***
	(0.01)	(0.01)
Age^2	-0.002***	-0.002***
	(0.000)	(0.000)
Work Experience	-0.01***	-0.01***
	(0.001)	(0.002)
Regional Dummies (birth)	Yes	Yes
Regional Dummies (work)	Yes	Yes
P. A.		0.335**
		(0.166)

Table A4.2: *Continued*

W.		-0.03
		(0.04)
Financial Intermediation		-0.06
		(0.05)
>=1000		0.01
		(0.02)
Constant	8.78***	2.53**
	(1.28)	(1.24)
R^2	0.07	0.07
N	54,738	54,738
Number of id	16,835	16,835

Source: Work Histories Italian Panel 1995-2000

Note: P.A. = Public Administration sector, W .= Wholesale sector, F.I.= Financial Intermediation sector. >=1000 = firms with more than 1,000 employees. Reference dummies are Lombardia for Regions of Birth and Regions of Work, Manufacturing for Firms' Sector and 0-9 employees for Firms' Dimension

*Statistically significant at the 0.10 level;**at the .05 level; ***at the .01 level

Table A4.3: Gender Pay Gap for *dirigenti* when individual and firm characteristics are considered – Results on the panel data 2000-2005

(Dependent Variable is the Log of Total Annual Earnings; Cluster Standard Errors in Parentheses)

	(1)	**(2)**
Female*year	-0.02***	-0.02***
	(0.01)	(0.01)
Age	0.27***	0.27***
	(0.01)	(0.01)
Age²	-0.002***	-0.002***
	(0.000)	(0.000)
Work Experience	-0.002	-0.002
	(0.002)	(0.002)
Regions (birth)	Yes	Yes
Regional Dummies (work)	Yes	Yes
P. A.		0.38***
		(0.14)
W.		0.06
		(0.04)
F. I.		-0.003
		(0.04)
>=1000		-0.003
		(0.04)

Table A4.3: *Continued*

Constant	8.51***	8.54***
	(1.58)	(1.58)
R^2	0.04	0.05
N	49,978	49,978
Number of id	13,055	13,055

Source: Work Histories Italian Panel 2000-2005

Note: P.A. = Public Administration sector, W .= Wholesale sector, F.I.= Financial Intermediation sector. >=1000 = firms with more than 1,000 employees. Reference dummies are Lombardia for Regions of Birth and Regions of Work, Manufacturing for Firms' Sector and 0-9 employees for Firms' Dimension

*Statistically significant at the 0.10 level;**at the .05 level; ***at the .01 level