Gender wage discrimination in Galicia

Yolanda Pena-Boquete*

IDEGA

Universidade de Santiago de Compostela

Abstract

The main aim of this paper is to analyse the existence of discrimination effects in women's work valuation in the Galician economy. The analysis departs from a known stylised fact: women average earnings are lower than men's. First, we will try to show which variables explain this differential, analysing the possible existence of wage discrimination against women. Next, we offer an analysis of the evolution of the wage differential between 1995 and 2002 with the objective to shed light on which factors can be influencing wage discrimination persistence in Galicia. In this second approach, we will incorporate to the analysis indexes applied to the study of the poverty as the Inverse of Generalized Lorenz Curve (Discrimination Curve) and the indexes family proposed by Foster, Greer and Thorbecke. These indicators have the advantage of being decomposable, which allows to make a more exhaustive analysis of the factors that characterize wage discrimination in Galicia. Furthermore they allow to calculate the incidence of the discrimination for different social groups.

JEL codes

Key Words**:** wage discrimination, labour market, regional economy, poverty indexes

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Address: Instituto de Estudios e Desenvolvemento de Galicia (IDEGA) Chalet dos Catedráticos, 1. Avda. das Ciencias s/n. Campus Universitario Sur, 15782 Santiago de Compostela **Telephone:** 981591166/981563100 Ext. 14441/14339 **Fax:** 981 59 99 35. e-mail: **ypbidega@usc.es**.

1. INTRODUCTION

In general, there exists a broad agreement concerning the women discriminatory situation in the Galician and Spanish labour markets. Any of the indicators that are usually used to measure workers labour situation are negative for women: they have a smaller presence in labour market, they experience higher unemployment rates, they are over-represented in fixed term jobs, are excluded totally or partly from some type of occupations (those of greater responsibility) and receive lower wages. Our work is focused on this last aspect. In 1995 woman's wage in Galicia was 80.80% of man's wage. This fact is an extended characteristic and is repeated in all the European countries with differences in its magnitude. In any case, Galicia seems to locate itself in a privileged position, far from countries like Ireland and Great Britain where wage differences between men and women are higher (wage gap is 34.3 and 35.2 percentage points, respectively), and closer to Belgium or Denmark (Gannon et. al. 2004 and Simón 2004). In fact in 1995, Galicia is the Spanish region with the smallest gender wage gap, far enough from the Spanish average where the woman's wage is only 68.36% of man's wage. Nevertheless, the gap evolution is far from being positive in the last years. In 2002 data show that Galician woman's average wage is 77.77% of man's.

Gender wage gap may be explained by different arguments, which supposes important differences at the time of interpreting these results. Interpretation differences concern which part of the wage represents discrimination. For the neoclassic economic literature, discrimination can only be considered as the wage gap that cannot be explained by "objective" differences of another type, as the education levels, industrial sector, type of occupation, etc. For the rest of authors, wage inequalities are a reflection of the different female discrimination types suffered in the labour market and they would not have to be considered separately. The authors following the first approach make a decomposition exercise of the differences, trying to estimate which part is explained by different women labour position and which part cannot be explained by these variables. Women lower wage would be justified on the fact that women as a group show a smaller experience, are in lower wages sectors (textile, manufacturing of wearing apparel, hotels and restaurants, trade), occupy smaller responsibility jobs within companies, have a lower tenure etc. But these differences only explain approximately

50% of the total differential and therefore, simple and pure wage discrimination would continue being of the sort of 12.5- 15%.

Alternative interpretation departs from a different consideration of discrimination. This is not limited to different wages for the same job, but to locate men and women in different labour spaces. First, women suffer from greater unemployment, with unemployment rates twice as large as man's rates. Some low wages sectors would depend more on their female character than a strict comparison of their respective productivities. In general, low wages sectors are highly feminine sectors (Fernandez et. al. 2004). The lower women presence in senior occupations, or simply in upper professional levels, is explained more by a persistent limitation of the women promotion by men than women's will. In fact, women are over-represented in high education level group and nevertheless they reach in a much smaller proportion the high responsibility positions[1]. The greater women presence in fixed term jobs (with a smaller tenure consequence) and in part-time jobs shows an overall discrimination situation with respect to men[2].

In this paper we will focus in wage discrimination analysis following the first approach. This means that we are going to concentrate in the pure and simple wage discrimination, which in any case doesn't suppose to despise the other gender discrimination aspects. In technical terms, we will say that wage discrimination exists when gender wage gap is not due to the existence of productivity differences[3]. Therefore, the aim of this paper is to analyse if gender wage discrimination in the Galician labour market exists, which is its magnitude, which are its main determinants and how all characteristics have evolved through time. Therefore we will make a first approach to calculate aggregate discrimination following Oaxaca's decomposition method. Next we will make a more exhaustive analysis calculating the Foster-Greer-Thorbecke indices (F-G-T).

In Galicia, the studies made on this subject are scarce. In addition to descriptive analyses made by Statistic National Institute using the Wage Structure Survey of 1995

[1] This fact can explain wage inequalities persistence in the public sector, which occupied most of women with superior education.

[2] Although most of part time jobs are female, the EPA shows that in Spain most of women who occupy these jobs aren't it by own will but due to the characteristics of the occupation or to not being able to find a full time job.

[3] We must consider that the productivity is not directly observable for the investigator. For that reason, it is necessary to estimate productivity level from observable characteristics. Its election is transcendental for the analysis of the discrimination since the omission of important characteristics would give a slant result that would overvalue discrimination.

and 2002, papers which have analysed wage discrimination are in general national studies which offer regional differences analysis. Thus, Aláez and Ullibarri (2000) state that Galicia is in an intermediate position in discrimination terms. This work concludes that in Galicia only 35.6% of the wage differences observed between men and women were explained by individuals productivity differences. This locates Galicia between the Spanish regions with a higher discrimination effect (is only exceeded by Murcia) although in absolute terms, when departing from a smaller wage differential, its importance is described like average. Recently Gradín, Arévalo and Otero (2003) show a detailed income distribution analysis in Galicia. An important part of the analysis is focused on wage discrimination. Through Oaxaca's decomposition, the wage discrimination present in the Galician economy is analysed, comparing it with the Spanish. The study analyses different non-discriminatory wage structures, paying special attention to the occupational variable. In this case the results for Galicia fix the wage gap in 17% of which only a 13.2% is due to characteristics and the remaining 86.9% to discrimination. Although the discrimination estimation differs widely, both studies agree in the importance that this phenomenon has in the Galician economy[4].

Although gender wage discrimination is forbidden in Galicia and in Spain and it has become one of the main axes of the collective bargaining, the results obtained in this investigation are certainly worrisome. Using a Wage Structure Survey sample we estimate that in 1995, 32.87% of gender wage gap are only explained by productivity differences between men and women. But this already bad situation has become even worse in 2002 when only 24.61% of the gap is due to productivity differences. This happens despite of the fact that during the last years Galician women have made an enormous educative effort. The change in public policies (privatizations of a certain number of activities) and the firm's flexibility policies which, in general, have increased the degree of discretionarily in control of the labour force, can explain the important wage inequalities persistence against women, mainly in high education level professions. This last fact seems to indicate that differences are explained mostly by different social practices than by simple qualifications.

[4] The observed differences in the discrimination estimations can be originated as much in the sub sample used as in the introduced characteristics to approximate the productivity. The high value obtained in the estimation of Gradín, Arevalo and Otero (2003) can be direct consequence of the non inclusion of part time wage-earning in the calculations, and mainly of the non consideration wage-earner activity sector like explanatory variable.

The structure of the paper is the following. Next sections briefly review relevant literature, show the methodology and the basic characteristics of the data source used. In the fourth part, we develop an econometric analysis of the wage differences per hour and an attempt of woman labour situation diagnosis begins. In section 5, we incorporate indicators applied to the study of the poverty as the Inverse of Generalized Lorenz (Curved of discrimination) and the family of indexes proposed by Foster, Greer and Thorbecke wage discrimination analysis. These indicators have the advantage of being decomposable, which allows to make a more exhaustive analysis of the factors which characterize the wage discrimination in Galicia. Furthermore they allow to calculate the discrimination incidence for different social groups. The sixth part summarizes the main results and presents some policy alternatives. The tables with the main results are included within the text whereas the more detailed results appear in a statistical appendix.

2. Review of the empirical evidence

Concerning the estimation of discrimination, one of the most used techniques is Oaxaca's (1973) and Blinder's (1973) decomposition. This technique consists of decomposing the wage gap in two elements, one reflecting the wage differential part corresponding to differences in characteristics (productivity) between men and women, and the other reflecting the part of the wage differential which isn't explained by differences in characteristics, which also is known as "discrimination". We can find a number of papers applied to the Spanish economy using this technique for different periods and regions and which in every case confirm the existence of an important wage discrimination phenomenon. Among them we may refer, not being an exhaustive list, to, Ugidos (1997a), de la Rica and Ugidos (1995), Hernández (1995), and Perez and Hidalgo (2000). Other authors focus their study in specific Spanish regions, as in the case of Aláez and Ullibarri (1999) for the Basque Country or Gradín, Arevalo and Otero (2003) for Galicia. Some authors have even made a comparison of the discrimination level for the different Spanish regions like Aláez and Ullibarri (2000).

Nevertheless, this method presents some disadvantages. Among them, one of most emphasized in the literature is that the results differ according to the reference payment scheme used as non discriminatory and with the different characteristics used to estimate productivity. As a consequence these papers offer different estimations

according to the payment scheme used as a reference or the characteristics introduced. Another problem that method shows, and independently of the previously mentioned, is that it only considers the "average" man and the "average" woman for the calculation of the discrimination. By this way we are assuming that the discrimination is distributed homogenously throughout the distribution without considering that there may be more women discriminated in some groups than in others. This means that we would analyse discrimination without considering that it can affect more to some social groups than to others. Therefore, and as del Río, Gradín and Cantó (2004) state in addition to a loss of an important volume of information, we would aggregate the different levels of discrimination assuming that the value of discrimination is independent of the discrimination level suffered by each individual[5].

Recently other techniques which consider wage distribution have been developed, with the intention to improve wage gap decomposition between men and women, or in other words, to make a better approach in the calculation of the discrimination, and to avoid being only focused on the distribution average. One of these techniques is the one proposed by Juhn-Murphy-Pierce (1991) used by authors like Blau and Khan (1996, 1997) or Simón (2004). This technique maintains the component of the decomposition of Oaxaca that captures the wage differential due to the difference in characteristics (productivity). The difference is in the part of the differential which is not explained by the characteristics introduced in the model (which Oaxaca's model considers discrimination). In this case that component is divided in two, one that reflects the wage differential attributable to their mean percentile ranks, that is interpreted as the level of unobserved ability; and a second one, which captures the wage differential due to the wage dispersion, interpreted as the abilities prices or the individual characteristics prices, which in this case we could interpret like discrimination.

Nevertheless, this technique also presents some problems. First, the interpretation of one of its components as unobserved abilities level is much dared. This value can be due as much to unobserved characteristics as to the simple explanatory variables omission. Second, as we are making reference to female discrimination, the interpretation of this component would be even more complicated, because it can be

[5] Other alternatives like the next presented allow for identifying the differences in discrimination terms that probably take place throughout the wage distribution. In addition it allows for valuing the discrimination undergone based on his personal incidence by each individual instead of calculating an aggregate value

reflecting only a part of the discrimination (in many cases unobservable directly). Besides, as Suen demonstrates (1997), this decomposition presents a bias as long as the position in the distribution is not independent of the standard deviation. Another technique developed recently and that has had an important acceptance are the quantilic regressions, which allow to consider the discrimination from different distribution points. For the Spanish case, authors like Gardeazabal and Ugidos (2003) or Dolado and Llorens (2004), have calculated the discrimination at different quantiles to see how the discrimination evolves throughout the distribution.

Other papers also point to the need to pay attention to the distribution of the discrimination. Thus, Jenkins (1994), makes emphasis in this aspect and using the poverty and inequality literature, defines the Discrimination Curve (that is equivalent to Inverse of Lorenz Generalized). This curve would reflect the discrimination per capita accumulated for the total of discriminated women. The discrimination curves as being an important graphic instrument can show us what it is happening in an economy at a first glance, but present the problem that it can be difficult when having to make comparisons, because if the curves are crossed they wouldn't be comparable.

In this same line del Río, Gradín and Cantó (2004), adapt the poverty indexes from Foster, Greer and Thorbecke (1984) to the calculation of the discrimination. These indexes show very desirable properties like continuity, dominion, symmetry, invariance in population replications, weak monotonocity and the weak principle of transferences. But these indexes also have a characteristic that is important for the objectives of our paper, which is the decomposability. This property allows to calculate the indexes for subpopulations, which is a important instrument to make a deeper discrimination study and to see in which population sub-groups, discrimination affect to a greater extent. This property can present the problem suggested by Sen(1976), that the poverty of a group (discrimination in our case) is not independent of another group.

3. The data: Wage Structure Survey

The main information source used in this paper is the Wage Structure Survey (WSS), elaborated by the National Statistics Institute for the years 1995 and 2002. It is a survey with a large number of observations, although it does not represent the whole employed

population. Actually, the reference population is formed by all employees[6] who work in establishments with ten or more workers, involved in any economic activity except agriculture, farming, fishing, Public Administration, Defence, Social Security, private households and extra-territorial organizations and bodies. The 1995 WSS does not include activity groups M (education); N (health and social work); and O (other community, social and personal service activities). All these groups have been excluded from the analysis to maintain homogeneity between both periods used in this work.

There are two main disadvantages for the analysis of wage discrimination using this Survey. In the first place, data about significant variables in wages determination analysis, potentially important to explain the gender wage differential -as working experience or civil state- are missing. Second, as it was mentioned above, the Survey is limited to private sector wage-earners employed by medium- and large-size companies and it excludes agriculture, fishing, and several services sectors. The potential influence of these characteristics on the degree of wage discrimination is not clear. Not including public sector employees could overestimate the wage differential[7]. Nevertheless, the lack of small-firm data and the inclusion of some private services sectors where discrimination can be higher than the average, could work in the opposite direction, undervaluing the estimation of the degree of wage discrimination[8]. Both facts can be very important in the Galician economy, where 30% of the wage-earners are employed in sectors not covered by the Survey. The incidence by sex of the excluded group is quite diverse (22% of male wage-earning workers and 41% of female ones). Nevertheless, disadvantages are somewhat countered by the advantage of working with a sample of the dimensions of the WSS , which includes a wealth of information about wage-earners and the establishments where they are employed. This richness of information allows to analyse the wage-determination process both from the labour demand as from the labour supply side. Moreover, the sectors included in the WSS coincide with those that historically have shown a higher degree of wage discrimination.

The degree of gender wage discrimination have been estimated from the computation of a normal hourly wage, obtained as the monthly earnings divided by the number of hours

[6] CEO, Board members and all other personnel whose earnings consist mainly in fees or profits instead of wages are excluded.

[7] Negative differential treatment in woman's wages concentrates in the private sector (Ugidos 1997 and García et. al. 1998).

[8] The small companies' exclusion leaves out many female earners who work in small trade and services companies where average wages are lower.

worked (normal and extraordinary) in the reference month (October). This month does not feature payments nor periods of absence of a seasonal character (payments due beyond the month or holyday periods) and so it is possible to obtain "normal" or "ordinary" monthly earnings, minimizing the incidences in questionnaire answers due to the beginning or conclusion of labour activity during this month. This supposes that the resulting hourly wage is lower than what would be obtained if annual data were used, because in that case extraordinary prizes and payments that are made in random periods or with regularity superior to the month would be added. The reason for using this method is that the estimation of the hours worked in the reference month is more precise than that of the annual hours. Nevertheless, this choice can lead to undervaluation of the degree of gender wage discrimination, since it obviates the potential discrimination due to greater wage prizes to male workers, not linked to their productivity. Finally, to allow for comparisons between workers, the monthly earnings of those who did not get a complete monthly wage due to unrewarded absences has been adjusted considering the days of complete wage[9].

Descriptive statistics of the sample for both years analysed can be found in tables 1A and 2A of the Annex. In the Galician labour market, the average of female employee's age is lower than that of male workers, like in the whole Spanish labour market. This reflects mostly delayed entrance of female workers in the labour market. In particular, in 1995 female employee' average age was 36.93 years as opposed to 40,72 for male ones. In 2002, employee average age was significantly lower. Age is closely related to the period of tenure in the company. Female employee present a lower relative tenure than male ones. In 1995, female employee had 9.87 years of tenure in average, against 11.30 in the case of their male colleagues. In 2002 the number of tenure average years in the company was considerably lower (5.91 and 8.19 respectively), as a direct consequence of the increase in employment and the higher number of fixed term contracts. The most significant fact is the drastic reduction in the relative weight[10] of employee with tenure superior to 9 years (for male employee it changed from 47.12% to 32.72% and for female ones from 41.10% to 23.12%). These data indicate clearly a

[9] The aim of these adjustments is to estimate the normal degree of discrimination, i.e. what we could call "base discrimination" as different from discrimination caused by other factors, like prizes, that are of a more discretionary character. Moreover, several filters have been applied (worker's age lower than years of tenure in the company, negative wages...) to eliminate atypical observations.

[10] The relative weight is obtained as the number of female (male) workers in the years of tenure segment divided between total female (male) workers.

renovation of the labour market, and show how female workers find more difficult to reach a long tenure.

Education is another important variable. The level of education of employee (measured by the level of the studies they finished) has a positive influence on wages: higher education levels correspond with higher wages. In this case the average number of formal education years is higher for female employees. This should justify (*ceteris paribus*) higher average earnings for female workers at the whole economy level. In 1995, female workers had 8.95 years of education in average, against the 8.57 of their male colleagues[11]. In 2002, this relative difference persists, although the average number of formal education years increased for both sexes (9.36 and 8.93 respectively). Nevertheless, this situation is not reflected in occupational distribution. Female employees do not get to settle down in those occupations entailing greater levels of human capital. Therefore, there is a high percentage of underemployed women that translates into an important wage gap between male and female employees by educative level[12]. In 1995 only 1.55% of the female employees were managers, 2.88% of them were professionals and 4.55% were technicians, against 4.37%, 3.34% and 8.21%, respectively, for male employees. In 2002, the relative situation of technician female employees was improved (a 10.62% of female employees were technicians against 11.63% in the case of male ones), whereas in the case of the professionals, their weight in the total of female employees increased (3,64%), although not as much as it did for male employees (5,03%). On the other hand, figures worsened in the case of managers. In 2002 only 0.75% of female employees were managers, against 2.72% of male employees. Moreover, it has to be noted that the relative weight of female employees employed as clerks (31,48%) is very superior to that of male employees (10,51%), who, in their turn, present a higher proportion of craft employees (34,74%) and operators (22,48%). In 2002 the distribution of female employees by occupation showed significant changes, with a reduced weight of clerks (around 10 percentage points , to 21.82%). Nevertheless, the most significant fact is the apparent transfer of skilled to non-skilled female employees during this period, a transfer that it does not seem to take place in the case of male employees. The relative weight of female employees in craft

[11] In order to estimate the number of years of formal education a person has followed, a number is attributed to each educative level that corresponds with the number of years that, in normal conditions, it would take to reach the end of that level.
[12] Seeing table A2 of the annexes

occupations has changed from 17.53% in 1995 to 7.19% in 2002 whereas in garbage collectors occupations changed from 6.97% in 1995 to 14.79% in 2002. These data seems to show the existence of a serious problem of underemployment in the case of female employees.

Data from the year 1995 show that female employees were more affected by temporary employment than male ones. In particular, 28.85% of male employees were temporary against 31.96% of female employees. In 2002 the proportion of male temporary employees had arisen to the point of slightly exceed that of female employees (33.29% of male employees against 33.01% of female ones)[13]. On the contrary, differences are large and increasing regarding the distribution of employment among full-time work and part-time work. In 1995, 7.49% of female employees were on part-time work against 0.97% of male employees, percentages that changed in 2002 to 20.01% for female employees and 3.88% for male ones). These data can be used to explain why average per hour wages were lower for female employees and why the difference with average per hour wages of male employees increased between the two years here analysed. Other remarkable differences between male and female employees come from the size of companies where they work and the type of collective agreement under which they work. Male employees concentrate themselves in companies with 20 to 50 employees, whereas female ones do it mainly in companies of greater size. Female employees are employed mainly under national agreements (46,87%), whereas male ones are mainly by provincial or regional agreements of single-industry scope (45,22%). Nevertheless, this situation was changed in 2002, when most of female employees happened to work under a provincial or regional single-industry agreement (48,69%). Despite this, it should be noted that the percentage of female employees working under national agreements (39,80%) is still substantially higher than that of male employees.

Finally, regarding the distribution of employment by activities, data allow to distinguish clearly "female" activities, like the dressing and dyeing of fur industry (85.96% of female employees in 1995), or the textiles industry (68,96%). In 2002 these percentages are even higher: 90.55% and 69.50% respectively. On the other hand, there are also activities with a negligible presence of female works, like the manufacture of

[13] These are highly relevant data, because they show the lack of increase in the average number of tenure years in the company of female workers cannot be explained by prevalence of temporary employment among them.

basic metals (2.32% of female employees in 1995) and the manufacturing of other transport equipment (2,81%). In these "male" industries, female employment acquired a little more weight in the period analysed with 2002 percentages of 6.04% and 5.28% respectively. In summary, we can characterize the female worker as younger, with less years of tenure, but more of education than her male colleagues, underemployed and working part-time.

4. Estimation of aggregate discrimination through the Oaxaca's decomposition

Next we offer an estimation of the aggregate discrimination in Galicia for 1995 and 2002, through Oaxaca's (1973) and Blinder's (1973) decomposition. This method is based on Becker (1957), according to which in the absence of discrimination the ratio of wages between two groups (in this case men and women) must be equal to the ratio of their respective productivities. In order to consider the productivity, estimate two ordinary Mincer wage equations by OLS, one for each sex,

$$\ln w_i = Z_i'\hat{\beta} + u_i$$

where w_i is the wage hour for each individual, Z_i' is an individual characteristics vector, $\hat{\beta}$ are the estimated coefficients and, u_i is the error term.

The wage discrimination has been calculated assuming that the non-discriminatory wage structure is men's. This means that in absence of discrimination, men and women would be paid the same prices, in this case men's. Although this non-discriminatory wage structure is the most frequently used, some authors have proposed other possibilities. For example, Oaxaca (1973) also proposed to use as non-discriminatory prices the women's payments, although in this case, we would obtain the nepotism, i.e., a favouritism towards men, where the men would receive payments over their productivity. Neumark (1988) proposes that the non-discriminatory structure is between female and the male one, in this case the unexplained part would be divided in two, one would represent discrimination and other nepotism. In our case, the wage discrimination would be obtained from the following expression:

$$\overline{\ln w_h} - \overline{\ln w_m} = (\overline{Z_h'} - \overline{Z_m'})\hat{\beta}_h + (\hat{\beta}_h - \hat{\beta}_m)\overline{Z_m'}$$

where the upper bar indicates the variable mean and subscripts *h* and *m* mean man and woman respectively. In this equation, the average wage differential is obtained as the sum of the wage differential explained by the characteristics[14] (first term), plus the discrimination, or what it is not explained by the characteristics introduced in the model (second term).

In table 1 we displayed the results for Galicia in 1995 and 2002. In 1995 the female wage represented a 80.80% of the male one, it means that the wage differential close to 20%. Although if there were not discrimination and the characteristics of men and women were paid to same prices (in this case to the male), the wage gap would be reduced to a 6.31%. This means that in 1995 the discrimination supposed 12.89%. In 2002 the wage gap between men and women increases locating female wage in only 77.77% of the masculine one. This increase of the differential takes place although the differences in characteristics between men and women are reduced (in 1995 they explain a 6.31% opposed 5.47% in 2002), which inevitably means an increase in the discrimination level, that now represent 16.76% of the masculine wage. That means that in 2002 the discrimination supposes more than 75.39% of the existing wage gap departing from 67.13% that it supposed in 1995. Indeed in 1995, although the woman were paid without no type of negative valuation, its wage would reach 93.69% of the man's wage (W_m/W_h)*. In 2002 the difference in characteristics between men and women are reduced. Thus, woman average payment without discrimination is 94.53% of the man's payment. Nevertheless, the discrimination has increased in this period, even compensating the approach in characteristics, the real wage differential between men and women increased (W_m/ W_h).

Table 1: Wage discrimination in Galicia through Oaxaca's decomposition

Year	W_m/ W_h	$(W_m/ W_h)^*$ (in absence of discrimination)	wage gap by differences in characteristics	Discrimination
1995	80,80%	93,69%	6,31%	12,89%
2002	77,77%	94,53%	5,47%	16,76%

[14] We have included variables related as worker individual characteristics (potential experience, antiquity or level of studies reached), as variables related to the job (occupation, type of contract, working time status, firm size, agreement type and activity sector).

This negative result, mainly if we consider the non discriminatory policies carried out by the different administrations during this period, requires a deep reflection on the real functioning of the labour market in Galicia. We can begin this reflection answering the following questions: What is behind this increased discrimination? Has this increase been distributed uniformly between sectors and social groups? In order to answer these questions we need to leave the framework of aggregate analysis proposed by Oaxaca and consider the individual wage discrimination

5. Distributive analysis

The calculation of individual discrimination offers the possibility of analysing the discrimination in all the points of the wage distribution, which allows us to focus on the wage discrimination distributive aspects. In order to obtain the individual discrimination we must calculate for each woman *i* the difference between the estimated wage if their characteristics are paid to the male average prices ($\hat{r}_{mi}$) and the estimate wage if their characteristics are paid to the female average prices ($\hat{y}_{mi}$)[15].

The study has been centred in the analysis of relative values, instead of absolute values, since the objective is not to know how much the women earn, but to measure earnings in relation to the men with the same characteristics. Therefore, for each woman we will consider its discrimination level with respect its payment in the absence of discrimination (i.e., male prices). Thus, we define v_{mi} such that:

$$v_{mi} = \left(\frac{\hat{r}_{mi} - \hat{y}_{mi}}{\hat{r}_{mi}} \right)$$

The individual information on the discrimination obtained, allows to calculate the Discrimination Standardized Curve or Inverse of Generalized Lorenz Standardized Curve. This curve would show the discrimination per capita accumulated for the total of women discriminated in decreasing order from the more discriminated women. Analytically we must calculate for each $p = k/n$ $(0 \leq p \leq 1)$,

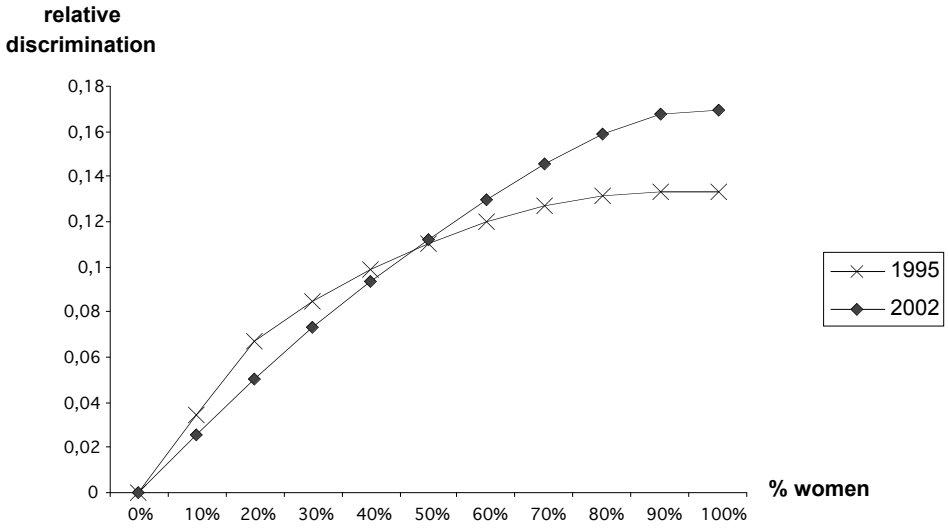
$$D(g; p) = \sum_{i=1}^{k} \frac{g_i}{n}$$

[15] Both wages are obtained according to the following expressions
$\hat{y}_{mi} = \exp(Z_{mi}\hat{\beta}_m)$; $\hat{r}_{mi} = \exp(Z_{mi}\hat{\beta}_h)$.

being: , $g_i(v_m) = \max\{v_{mi}, 0\}$ vector of individual wage discrimination, n total number of employees and k some number so that $k \leq n$.

We can define $q = k^* / n$ as the women percentage who suffers discrimination, which allows us to consider the discrimination intensity. Moreover, the higher or smaller concavity of the curve would show how discrimination is distributed. In the following graph are the Galician discrimination curves, for year 1995 and 2002.

Graph 1: Discrimination curves in Galician economy for 1995 and 2002



The curves show the different value from the wage discrimination in 1995 and 2002. To this fact we must add that in 2002 there is a higher percentage of discriminated women (a 95% as opposed to a 88% in the 1995). The higher curve concavity in the initial section for year 1995 indicates that the more discriminated women have improved their relative position with time. Nevertheless, we cannot say in which year the Galician economy presents greater welfare because the curves are crossed, which means that they are not comparable. In order to solve this problem we are going to resort to Foster's, Greer's and Thorbeke's indexes that we can define as:

$$dr_\alpha(v_{mi}) = \left(\frac{1}{n}\right)\sum_{i=1}^{k^*}(v_{mi})^\alpha$$

where _ would be the aversion coefficient to discrimination and k^* the number of discriminated women. The results of the calculation of the F-G-T indices, by income

deciles appears in table 2[16]. In 1995, the lower-middle income sections are supporting the highest discrimination risk. In 2002 this situation stays although the discrimination is distributed more homogenously between the different groups. Nevertheless, the most significant change is the important increase of the incidence in the superior income sections.

Table 2: F-G-T indices by deciles

	1995	2002
Women with less w/h than p10	0,0307	0,0448
Women with w/h between p10 and p20	0,0314	0,0416
Women with w/h between el p20 and 30	0,0353	0,0338
Women with w/h between el p30 and p40	0,0298	0,0304
Women with w/h between el p40 and p50	0,0331	0,0288
Women with w/h between el p50 and p60	0,0234	0,0281
Women with w/h between el p60 and p70	0,0207	0,0341
Women with w/h between el p70 and p80	0,0138	0,0352
Women with w/h between el p80 and p90	0,0240	0,0334
Women with more w/h than p90	0,0177	0,0325

In table 3 are the estimated F-G-T values according to the reached education level. In 1995, the incidence of the discrimination by education level is polarized. The discrimination risk is higher as much for the higher education levels ones like for the lowest levels. This characteristic is accentuated in 2002, where the increase of the discrimination incidence takes place to a greater extent in the non-studies group and in the employees with high education level (postgraduate). In the case of the employees without studies it is necessary to take that data with much given caution since the women percentage who are in that category is very small (1%).

[16] All indices have been calculated for a value _=2. Using a greater _ it could be considered an excessive discriminated women weight.

Table 3: F-G-T indices for reached education level		
	1995	2002
No studies	0,0249	0,0782
Primary	0,0399	0,0321
Lower Secondary	0,0262	0,0476
Bachelor	0,0146	0,0254
FP[17] (medium degree)	0,0195	0,0228
FP (superior degree)	0,0108	0,0323
Graduate	0,0212	0,0252
Postgraduate	0,0365	0,0509

In table 4 we show the discrimination incidence by occupation. In 1995 the qualified ones with managers and operators are the categories that show a higher index F-G-T value. In the other part the service employees and shop and market sales employees occupation where the index takes its minimum value. In this case they also take place a high quantitative and qualitative jump in 2002, where the managers and professionals are the occupations where a higher discrimination incidence increase has taken place and, therefore, now these occupations are those that present the higher discrimination risk. These results are in line with the ones shown in the previous table where the workers with a high studies level (those that in principle occupy the occupations of professionals and managers) were those that showed a higher discrimination risk.

Previously we have spoken of other discrimination types, among them occupational discrimination. Related to this it appears in literature a stated effect, which is in those more female occupations, i.e. with a higher women percentage, has an inferior average wage per hour. Is there then a relation between the occupational discrimination and the wage discrimination? The obtained results show an important correlation between the discrimination degree by occupation and the women percentage in that occupation (coefficient of equal correlation is -0,66 in 1995 and -0,56 in 2002). This result implies the need to analyse with detail the occupational discrimination since it can be the origin of a great part of the wage discrimination.

[17] This Spanish education level is an alternative to bachelor (FP medium degree) or graduate (FP superior degree)

Table 4: F-G-T indices for occupation				
	1995		2002	
	FGT Indices	% women	FGT Indices	% women
Legislators, senior Officials and Managers	0,0398	8,81%	0,1196	10,65%
Professionals	0,0155	19,07%	0,0717	23,85%
Technicians and Associate Professionals	0,0205	13,13%	0,0243	28,32%
Clerks	0,0187	44,98%	0,0289	58,43%
Service Workers and Shop and Market sales workers	0,0025	35,98%	0,0254	52,86%
Craft and related trade Workers	0,0579	12,10%	0,0600	8,46%
Plant and Machine operators and assemblers	0,0398	18,58%	0,0566	27,13%
Garbage Collectors and related labourers (service workers)	0,0073	54,14%	0,0283	73,67%
Garbage Collectors and related labourers (other activities)	0,0233	13,43%	0,0176	19,02%

Finally, in table 5 we display the indices by activity branches. The results show to the same temporary pattern present in the previous tables. The indexes of 2002 indicate a clear increase of the discrimination that in some branches we could even characterize like spectacular. Nevertheless, these results must be taken with caution because in some cases significance problems exist.

Just as in the previous case we could analyse if some relation between wage discrimination and "female" productive activities exists. That means, is there some relation between the women percentage activity branch and the degree of discrimination that this one presents? The data of table 5 show that there isn't any type of relation, neither direct nor inverse, between these two variables, it means that these two types of discriminations don't have to go together.

Table 5: F-G-T indices for sectors				
	1995		2002	
	FGT Indices	% women	FGT Indices	% women
Mining of non-metallic mineral products.	0,0021	9,68%	0,0298	10,91%
Manufacture of food products and beverages	0,0723	49,30%	0,0652	52,57%
Manufacture of textiles	0,0094	68,96%	0,0489	69,50%
Manufacture of wearing apparel; dressing and dyeing of fur	0,0185	85,96%	0,0684	90,55%
Manufacture of leather and leather products	0,0218	44,42%	0,0799	49,21%
Manufacture of wood and wood products	0,0165	8,46%	0,0165	16,20%
Manufacture of pulp, paper and paper products	0,0697	6,45%	0,0733	20,46%
Publishing, printing and reproduction of recorded media	0,0058	28,76%	0,0491	34,78%
Manufacture of chemicals, chemical products and man-made fibres	0,0149	20,50%	0,0607	23,47%
Manufacture of rubber and plastic products	0,0120	23,19%	0,0286	21,31%
Manufacture of other non-metallic mineral products	0,0861	19,04%	0,0364	8,69%
Manufacture of basic metals	0,0169	2,32%	0,0785	6,04%
Manufacture of fabricated metal products, except machinery and equipment	0,0093	3,31%	0,0236	9,55%
Manufacture of machinery and equipment n,e,c,	0,0127	4,34%	0,0414	7,69%
Manufacture of electrical machinery and apparatus n,e,c,	0,0172	25,53%	0,0196	20,00%
Manufacture of motor vehicles, trailers and semi-trailers	0,0035	6,82%	0,0225	12,64%
Manufacture of other transport equipment	0,0203	2,80%	0,0553	5,28%
Manufacture of furniture; manufacturing n,e,c,	0,0129	9,55%	0,0334	22,21%
Electricity, gas, steam and hot water supply	0,0306	6,55%	0,0466	8,51%
Collection, purification and distribution of water	0,0515	9,41%	0,0414	10,06%
Construction	0,0009	3,13%	0,0358	5,21%
Sale, maintenance and repair of motor vehicles and motorcycles; retail sale of automotive fuel	0,0178	9,99%	0,0243	12,92%
Wholesale trade and commission trade, except of motor vehicles and motorcycles	0,0060	22,85%	0,0143	27,87%
Retail trade, except of motor vehicles and motorcycles; repair of personal and household goods	0,0140	53,23%	0,0320	60,29%
Hotels and restaurants	0,0097	42,85%	0,0134	56,47%
Land transport; transport via pipelines	0,0102	6,52%	0,0278	9,42%
Supporting and auxiliary transport activities; activities of travel agencies	0,0047	18,64%	0,0139	22,17%
Post and telecommunications	0,0575	25,67%	0,0203	39,60%
Financial intermediation, except insurance and pension funding	0,0202	18,38%	0,0059	27,22%
Insurance and pension funding, except compulsory social security	0,0025	36,06%	0,1020	44,35%
Other business activities	0,0052	29,86%	0,0289	56,91%

6. Conclusions

Since democracy restoration, important advances in the recognition of women social and labour rights have taken place. Nevertheless, the situation of the Galician woman worker at the beginning of the 21st century is far of having reached the equality levels that the laws recognize. In this work we have analysed one of the main elements identifiers of this lack of equality of opportunities: the existence of discriminatory criteria in the women work valuation. The analysis starts from a stated fact: the women average gain is inferior to men's. Our immediate goal is to find the causes that explain this differential, analysing the possible existence of wage discrimination against women. Secondly, we analyse the evolution of the wage gap between 1995 and 2002 to shed some light on which factors can be influencing the wage discrimination persistence in Galicia. In this second point, the use of poverty indexes has allowed to calculate discrimination incidence for different social groups, in addition to the aggregate discrimination. The obtained results show that between 1995 and 2002 the wage gap and discrimination against woman has increased so much, mainly in those social groups that in 1995 were less discriminated, i.e., the more educate women, those which are in the best positions and in higher income deciles suffer a greater increase in the wage discrimination in 2002. This is similar to which Dolado, J.J. and V. Llorens (2004) find. However the discrimination has decrease or has practically remained equal in those groups where the discrimination was more intense in 1995. At the same time the discriminated women percentage has increased too.

Although in the calculations we are not analysing the whole Galician economy (neither the small firms, the agrarian sector, some sector services activities, nor the public sector are considered) these results are very worrisome. In fact, the sample reduction in the indicated direction and wage concepts not assure discrimination overestimation, maybe the opposite. For example, for using the normal wage, which supposes not to consider the distortions that prizes which a company can give discretionarily, can cause, i.e., everything what it is not habitual wage widely reduces the estimate discrimination value. In any case, the fact is that for a big part of the Galician economy the discrimination has increased, and this although different public organisms are carrying out policies to facilitate the woman incorporation to the labour market and make effective the opportunities equality between men and women. But what still can be the one worse news, the discrimination has increased more in the higher educate women

group who hold jobs with greater responsibilities. This supposes a clear disincentive for women and a serious inefficiency in the labour market. What is happening really? The obtained results are cruel as far as the effectiveness of the applied policies to reduce the wage discrimination. Nevertheless, they can have been more effective to attack the denominated discrimination a priori, that means, those factors which condition the access of the woman to the labour market in same conditions than men and which we'll try to analyse in the future. Very related to this point, we must underline the high number of underemployed women that seems to be translated in important paying differences with men.

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Annexe

Table A1: Mean years				
	1995		2002	
	Women	Men	Women	Men
Age	36,93	40,72	36,03	39,11
Experience	21,98	26,14	20,68	24,17
Tenure	9,87	11,30	5,91	8,19
Formal education	8,95	8,57	9,36	8,93

Table A2: W_m/W_h by education level		
	1995	2002
No studies	0,80	0,58
Primary	0,85	0,78
Lower Secondary	0,73	0,77
Bachelor	0,75	0,67
FP (medium degree)	0,64	0,85
FP (superior degree)	0,76	0,73
Graduate	0,75	0,65
Postgraduate	0,58	0,59