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Macroeconomic consequences of gender discrimination: A preliminary approach

*Could gender wage discrimination explain regional differences in
productivity?*

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Abstract

Although the degree of gender wage discrimination has been estimated many times, its effects on the economy have not been too much studied, neither theoretically nor empirically. Consequently, in this paper we attempt to cover the existent void in this topic. First, we establish a theoretical framework of the macroeconomic consequences of gender discrimination and second, we attempt to check these results empirically.

The existence of a degree of discrimination means that there is a wage differential in which employer prefer to hire less productive workers instead of discriminated workers. Thus, on one hand, the employment level of discriminated workers would be lower than the neoclassic equilibrium. On the other hand, the cost of producing a unit of product would be higher than the cost of producing without discrimination. As a result, both the product by worker (productivity) and the female employment rate (discriminated group) would be lower. If we aggregate these microeconomic effects we should obtain macroeconomic effects in both productivity and employment. In order to check these effects of discrimination we analyse the correlation in the growth of discrimination and the variables possibly affected: productivity and employment. Using data of gender discrimination for Spanish regions we found a negative and significant relationship between discrimination and productivity. Effects on employment are more difficult to see since the growth of the degree of gender wage discrimination causes a change in the allocation of resources. Thus, we find the effect in the female employment rate relative to men and we do not find it in the female employment rate

Introduction

In last years, European policy-makers have focused on competitiveness and gender equality as independent concepts or even as opposite forces. Nevertheless, are these two concepts complete independent?

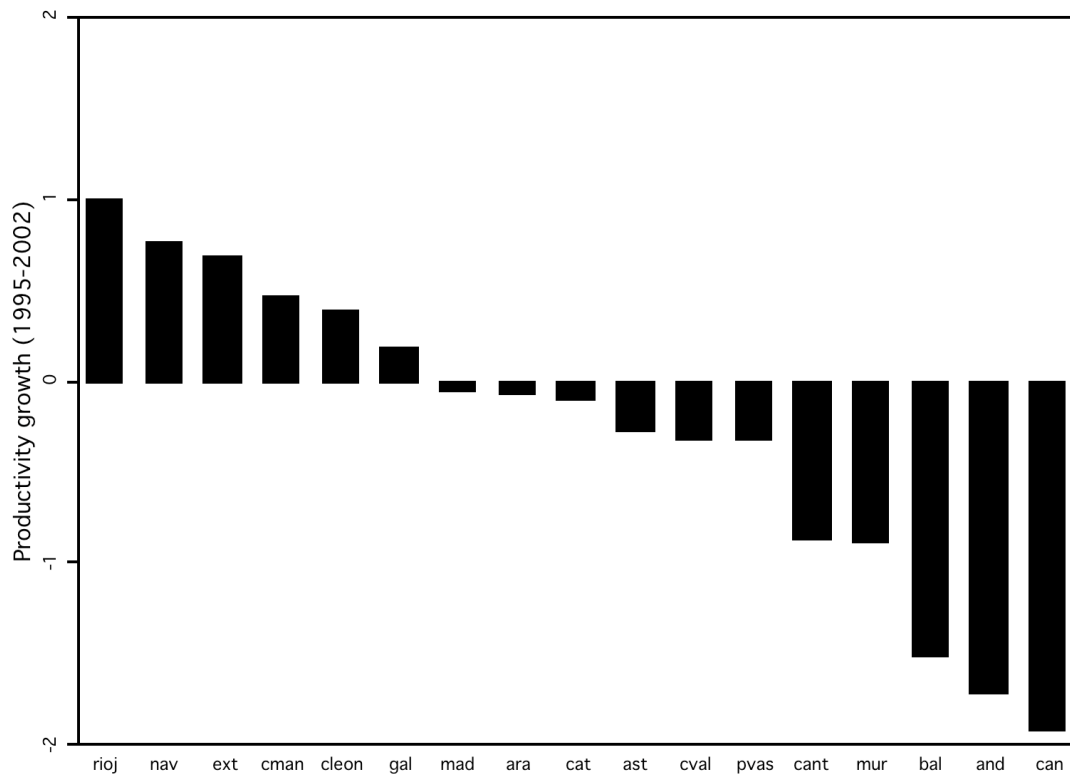
One of the main factors accounting by competitiveness seems to be productivity (Krugman, 1996 and Porter, 1990).¹ As a result European institutions are worry about the productivity of their Member States, especially about those countries such as Spain which have not shown any productivity growth in last years. Gómez-Salvador, R. et al. (2006) and Sibert, A. (2007) confirm a decline of the labour productivity growth in Spain since the mid-1990s. Nevertheless, this fact hides important differences between Spanish regions.² Actually, regions such as La Rioja or Navarra show positive growth rates during the period 1995-2002 while other regions as Andalucía or Canary Islands show an even negative productivity growth (see figure 1). The opposite performance of Spanish regions gives to Spain (in average) a productivity growth close to zero.

How could explain theses differences? Human capital and productive structure could account for an important part of the differences in productivity between Spanish regions (Cuadrado Roura, et al. 1999). Nevertheless, in this paper we attempt to underline the importance of other possible factor: the gender wage discrimination. Thus, we base on discrimination literature in order to prove that one of the mains outcomes of discrimination is a loss of productivity.

¹ National competitiveness is an ambiguous concept. In fact, Krugman (1996) points out several reasons against the idea of national competitiveness. He argues that firm success would often be at the expense of another, while the success of one country could creates rather than destroys opportunities for others.

² Spain is constituted by 17 regions which show important economic, cultural and social differences among them. The economic differences have been analysed many times and the different public administrations have made an important legislative and economic effort in order to reduce them (Cohesion Policy, European and Spanish regional policy)

Figure 1: Productivity growth for the Spanish regions (1995-2002)



Following neoclassic theory, where preferences are the main consequence of discrimination, there is neither inefficiency nor effects on labour markets.³ An employer with preferences not related to productive efficiency has a disadvantage and they have higher costs than other employers. Consequently, in a free market they would be dropped out. Under the neoclassic theory, discrimination disappears in the long term and differences in preferences explain wage differential. Nevertheless, theories such as the monopsony power assert that frictions in the labour market may avoid the disappearance of discrimination. Empirical studies show that discrimination has not decreased over time as neoclassic authors supposed. Actually, in Spain discrimination has not decreased, and in regions as Galicia it has even increased (Pena-Boquete, 2009). Moreover, nor the gender pay gap neither the gender wage discrimination is homogeneous between Spanish regions. In fact, the degree of gender wage

³ Taking individuals preferences as given make the automatic translation of different prices (wages) for the same good (job) in a loss of total utility impossible.

discrimination in 1995 goes from 14.32 for Castilla La Mancha to 27.29 for Murcia (Aláez and Ullibarri, 2000)

Since empirical research shows an important magnitude and persistence of discrimination in labour market, it is important to determine the effects of discrimination not only at a microeconomic level but also at a macroeconomic level. We argue that discrimination has consequences for the whole labour market, especially on productivity, and policymakers should realize about the need of correct this inefficiency.

After identifying the linkage between productivity and discrimination, we attempt to check if this relationship could exist for Spanish regions. In order to test it we will analyse the correlation in the growth of discrimination and productivity.

The structure of this paper is as follows: first, we explain the effects of a discriminatory behaviour in employer both at microeconomic and macroeconomic level, in order to show the relationship between discrimination and productivity. Second, we check if this relationship exists for Spanish regions. Finally, we draw some conclusions.

1. Theoretical approach: The relationship between productivity and discrimination

Before analysing the effects of discrimination on labour market outcomes, we should delimit the concept of discrimination. Then, what does discrimination mean? Discrimination in labour market means treating people differently because of characteristics that are not related to their merit or job requirements. These features include race, colour, sex, religion, political opinion, nationality and social origin. The International Labour Organization (ILO) defines discrimination in employment and occupation as “to treat people differently because of certain characteristics, such as race, colour or sex, which results in the impairment of equality of opportunity and treatment”. In other words, there is discrimination in labour market when two people are treated differently due to its race or sex, when race and sex do not have an effect on the productivity (Altonji and Blank, 1999).

1.1. Microeconomic consequences of discrimination

Discrimination could cause different outcomes in labour market. Subsequently, we analyse the consequences of discrimination in labour market using the most important theories for explaining discrimination.

Becker's theory "Taste for discrimination" is one of the main theories for explaining discrimination. The starting point of this theory is that if an individual has a "taste for discrimination", he must act as if he were willing to pay something, either directly or in the form of reduced income, to be associated with some persons instead of others. Thus, when actual discrimination occurs, he must either pay or forfeit income for this privilege. Different agents, such as employers, co-workers, customers, unions, government may have this "taste for discrimination" and their consequences are different in the labour market. In this case we focus on the employers "taste for discrimination".⁴

Suppose an employer were faced with the money wage rate (w_i) of a particular factor; he is assumed to act as if $w_i(1+d_i)$ were the net wage rate, with d_i as his discrimination coefficient against this factor.⁵ An employer discriminates by refusing to hire someone with a marginal value product greater than marginal cost. Thus, employer discrimination does not alter the criterion of minimizing net costs, and the ratio of any two marginal products (mp_i) still equals the ratio of their net factor prices.

$$\frac{mp_i}{mp_j} = \frac{w_i(1+d_i)}{w_j(1+d_j)}$$

However, equilibrium factor combinations would be quite different in situations of discrimination from those obtained with classical assumptions: there would be a

⁴Based on the Becker theory, consequence of co-workers "taste for discrimination" is segregation. In this context, Becker argues that segregation eliminates wage discrimination. Nevertheless, perhaps segregation will not permit equal wages because workers are too few to allow economies of scale in production, recognizing that their numbers must staff all skill levels (e.g., women in construction sector).

⁵ By using the concept of a discrimination coefficient, "DC", it is possible to give a definition of "taste for discrimination" that is parallel for different factors of production: employers, co-workers and customers. The DC gives the percentage by which either money costs or money return are changed to net magnitudes, for example the employer uses it to estimate his net wage cost.

smaller demand for discriminated factors. Moreover, the cost of producing each unit of output would be greater than the minimum cost (without discrimination).

Consequently, from Becker's model employers' taste for discrimination, discrimination would have direct effects on the wages and employment allocations. Besides, this model predicts a higher cost of producing each unit of output, i.e. smaller productivity for those discriminatory firms.

Another important model for explaining discrimination is the statistical discrimination model, which was developed by Phelps (1972), Arrow (1973) and Aigner and Cain (1977). When information is not costless, the employer takes into account the average characteristics of the group, in this case males and females. However, the employer who seeks to maximize expected profit will discriminate against women if he believes them to be less qualified, reliable, etc. on average than men and if the cost of gaining information about the individual applicants is excessive. Nevertheless if average characteristics are a good predictor of productivity, group discrimination is not present.⁶ Clearly, postulating lower characteristics for women would lead to their being paid a lower wage, nevertheless male and females would be paid in accordance with their average productivity, i.e. it would be differences in productivity not discrimination. If average characteristics or the assumptions about women are a bias predictor, discrimination between groups could appear, and the effects would be similar than Becker's theory: in wages and employment allocations. Besides, there would be a productivity effect; nevertheless in this case we should take into account the cost of getting more information.

Some researchers argue that in both models, "taste for discrimination" and "statistical discrimination" competitive forces eliminate discrimination since discrimination has effects on productivity. In this way, Arrow (1973) argues that competitive markets forces tend to drive discrimination toward zero in Becker's model: "only the least discriminatory firms survive." Nevertheless, Becker (1957, 1971) points out the possibility of the existence of discrimination in the long run because the generality of entrepreneurial skills and the long run elasticity of other factors determine

⁶ All individuals would be paid for the average characteristics of the group, some individuals would be paid lower and other higher, in average negative differences compensate positive differences.

the persistence of a discriminating cost differential in the long run under competitive conditions. In the same line, Aigner and Cain (1977) may doubt that a mistaken behaviour, systematically overpay men relative to women, will persist in competitive markets.

In this context a theory based on non-competitive forces arises. The idea that non-competitive forces (monopsony) could explain discrimination starts with Robinson (1933). For her, the monopsony power works because men are unionized and women are not. This idea has not being much followed. Nevertheless, Manning (2003) develops a modern idea of the monopsony based on the theoretic framework of Burdett and Mortensen (1998). Manning (2003) argues that labour market frictions can result in less than full information in a labour market because of search costs. Consequently, for any given employer, the labour supply curve may be upward sloping rather than appearing as a horizontal line⁷, giving him some monopsony power. To maximize profits, employers would like to obtain the lowest possible cost. But, unless the reservation wage can be perfectly predicted, the employer will be unable to capture the entire surplus. However, since reservation wage is correlated with some observable characteristics, we would expect to see employers making different wage offers to groups. Thus, wage discrimination must be based on characteristics of the worker that are non-manipulable (sex, age and job tenure).

Although, female labour supply is more elastic than men to the whole market, it is less elastic than men to an individual firm.⁸ As a result, the gender difference in labour market transition rates provides an incentive for employers to pay different wages to men and women.⁹ Consequently, the direct effect would be wage discrimination, but not employment discrimination neither productivity loss. Nevertheless, discrimination could reduce the effort of women, producing again a loss of productivity. When workers receive lower wages than they expected, they perform

⁷ In a competitive labour market, firm would be price-taking.

⁸ Home responsibilities, the need to live closer to one's place of employment, and less mobility in general could all account for why female labour supply to a given firm may be less elastic than that of males.

⁹ if we base on the model of Black (1995) the existence of employers with taste for discrimination could influence on the search cost of a particular groups, and to give to other employers certain monopsony power.

worse. Schwieren (2003) shows that workers receiving significantly lower wages react with lower effort.

Effects of discrimination in employment could be related with effects on female unemployment and labour force on labour markets but they are not so clear. The magnitude of these effects is different depending on competitiveness in the labour markets, perfectly or imperfectly competitive, and the elasticity of the female labour force, perfectly elastic or perfectly inelastic.

A) If the labour market is perfectly competitive (there is not voluntary unemployment), consequences of the labour market depend on the elasticity of the female labour supply. We look at the extreme cases in order to see how consequences vary:

- If female labour supply is completely inelastic, unequal treatment only produces wage discrimination. Cain (1986) argues that most empirical studies of discrimination analyze wage differentials by implicitly assuming that the supply curves of labour are perfectly inelastic. This assumption is difficult to support in the real world since female labour supply is considered more elastic than males.
- Nevertheless, if female labour supply is completely elastic, unequal treatment produces wage discrimination and differences in the supply of labour.¹⁰ An increase of discrimination¹¹ causes an increase of the wage discrimination but also a decrease of the female labour force participation. Baldwin and Johnson (1992) correct gender wage discrimination including employment discrimination using Heckman's sample selection approach. Thus, male-female differences in the average values of the sample selection variable reflect discriminatory differences in offer wages as well as non-discriminatory differences in tastes for work. The effect of wage discrimination on employment

¹⁰ If the supply of labour is sensitive to alternative wage offers, focusing only on wage differentials will not capture an important aspect of labour market discrimination.

¹¹ In terms of Becker's model it supposes an increase of the taste for discrimination and in terms of statistical discrimination, a decrease of the quality of information about women.

depends on the elasticity of labour supply for men and women.¹² The higher elasticity of women shows that the estimated wage loss provides an incomplete description of the impact of discrimination on women.

B) If we consider an imperfect competitive labour market, also there are consequences on unemployment of the discrimination in employment. We have another two scenarios based on the flexibility of female labour supply.

- If the female labour supply is completely inelastic the employment discrimination manifests via unemployment.
- Nevertheless, if the female labour supply is completely elastic, there would not be consequences for females via unemployment; all consequences would be via female labour force.

Of course, these are extreme cases; consequences of employment discrimination on unemployment rate and labour force participation are between these two points depending on the elasticity of the female labour force participation. We can model this framework throughout the search models with discrimination. Black (1995) develops a search model where a share of firms discriminates against minorities (women in our case).¹³ In this model there are two types of employers, prejudiced firms that only employ men and unprejudiced firms that employ both men and women. The presence of prejudiced firms causes a higher search costs for women. The presence of firms with distaste for women reduces its value and they search during a longer time. Firms will exploit this increased monopsonistic power and offer lower wages to women. Thus, the model predicts that women are poorly matched more often, on average, than workers who do not face discrimination.¹⁴ Women participate if the expected utility of search exceeds the utility of not participating. Using this model, an increase of discrimination

¹² The uncompensated wage elasticity calculated by Baldwin and Johnson (1992) are 0.10 and 0.33 for white and black men and 0.44 and 1.16 for white and black women, respectively. Because this elasticity refers to the participation decision rather than to choices of hours of work, they cannot be directly compared to other studies of labour supply.

¹³ He supposes that firms have a taste for discrimination, but it could be firms with worse information about women.

¹⁴ Indeed, the nomenclature of "unprejudiced employers" is somewhat misleading. The entire market discriminates against the minority workers: prejudiced firms refuse to hire the minority workers, and unprejudiced firms pay lower wages to the minority workers than to workers not facing discrimination, despite the fact that all the workers are equally productive.

(or the fraction of prejudiced firms) has an ambiguous effect on female unemployment rate. While the direct effect causes an increase of the search cost hence women search more, the higher fraction of prejudiced firms also reduces the worker's reservation utility level, which tends to reduce search and it leads women to not participate, leaving the net effect ambiguous. Consider an increase in the fraction of women in labour market, there is an increase in the expected profits of unprejudiced firms. This falls into the fraction of prejudiced firms in the market, causes an increase in the reservation wage of women, which in turn results in an increase in the wage offered to them.

1.2. *Macroeconomic consequences*

As we notice in the previous section, all theories of discrimination predict effects in wages, employment allocation and productivity. The most studied effect of discrimination in labour market is wage discrimination. Nevertheless, authors such as Becker (1971) or Thurrow (1976) argue that we should pay attention to discrimination in employment. However, there are not many studies on it due to the difficulties of measuring it. In spite of a clear employment effect, consequences on unemployment and labour market participation are difficult to determine even theoretically.

Moreover, as we said before, based on “taste for discrimination” or “statistical discrimination” there are a share of equally productive women, which are not hired due to discrimination, i.e. there is a share of less productive workers which are hired. Consequently, an increase of discrimination causes a loss of productivity. In the theory of monopsony this loss of productivity could be caused by lack of motivation.

Empirical research shows a persistent and significant magnitude of wage discrimination.¹⁵ Consequently, we should notice the consequences of discrimination in the aggregate variables: wages, employment allocations and productivity.

Up to my knowledge, researches have tested the effects of disparities on labour market but not the effects of discrimination. Neoclassical macro analyses of the direct effects of gender inequality on growth focus on education equity and the misallocation

¹⁵ We focus on wage discrimination in order to confirm the persistence of discrimination since it is the most standardized way of measuring it.

of labour. If male and female students have equal aptitudes, then educating more boys than girls will reduce overall quality of educated individuals. Alternatively, with decreasing marginal returns to education, educating more girls (who start out with lower education than boys due to gender inequities) will give higher marginal returns than educating more boys (World Bank 2001). However, early cross-country growth studies in the neoclassical vein show that women's schooling was negatively correlated with growth (Barro and Lee, 1994; Barro and Sala-i-Martin, 1995). Nevertheless, other studies correctly pointed out that this was largely a result of the multicollinearity between male and female education, as well as the influence of Latin American countries, which tended to have greater gender equity in education and low growth (World Bank 2001). In addition to education, those analyses have placed in the foreground the indirect effects of the women's entrance to the labour market on growth through changes in fertility.¹⁶ In any case, results are not very conclusive. While Esteve-Volard (2004) in a model applied to India, argues that in the short run, discrimination may act as a brake on economic growth and development,¹⁷ other authors such as Seguino (2002) argue exactly the opposite.¹⁸

Different authors such as Esteve-Volart (2000, 2004) and García-Miguez et al. (2003) point out the importance of estimating a macroeconomic model about the cost of discrimination on the aggregated output. The main idea is that gender discrimination is macroeconomically inefficient because the firms do not maximize its productive capacity. They find that these costs are indeed quite substantial. Policy makers should be concerned since one of their main aims is to increase output per capita in the long run. These authors attempt to include the effects of discrimination on growth,

¹⁶ Dollar and Gatti (1999) comment on the strongly negative coefficient of the fertility and they emphasize that "female education may well contribute to per capita income growth by reducing fertility and hence population growth".

¹⁷ Her hypothesis is that gender discrimination against women in the market place reduces the available talent in an economy, which has negative economic consequences. Concentrating on the labour market, she examines three possible scenarios: the labour market equilibrium without discrimination; gender discrimination as an exogenous exclusion of females from managerial positions and gender discrimination as a complete exclusion of females from the labour market.

¹⁸ Seguino (2000) analyses the empirical impact of gender inequality on economic growth and he finds a positive relationship between gender inequalities and income growth. Confining the analysis to a set of semi-industrialized countries over twenty-one years (1975 to 1995), the data capture countries that have adopted an export orientation with a large share of exports produced in female-dominated manufacturing industries. The main hypothesis tested is that gender inequality which works to lower women's wages relative to men's is a stimulus to growth in export-oriented economies. Gender inequality *leads to* export expansion that leads to technical change resulting in economic growth. Busse and Spielmann (2006) confirm the same result.

nevertheless, they use gender differences instead of gender discrimination for testing their theories due to the difficulty for measuring discrimination.

Difficulties for measuring discrimination in the labour market arise because workers are not homogeneous and the characteristics that determine their individual performance, as cognitive and non-cognitive abilities (motivation, trust) or the scholar and familiar environment, are not observable. Additionally, observed differences between groups could appear as a result of free choice. There is not an agreement between researchers, and some consider that gender differences are due to discriminatory practices while others attribute it to differences in tastes or human capital investments. Different treatment based on different levels of productivity is not discriminatory. Some workers and occupations are more productive than others, reflecting different skills, qualifications and abilities. This leads to different returns at work and it is fair and efficient. Thus, a different treatment based on individual merit, such as talents, knowledge and skill is not discriminatory.¹⁹

Nevertheless, it is important to distinguish between gender discrimination and gender disparities since policy implications are different. If gender disparities are due to differences in tastes, we should implement policies to motivate women to enter the labour market. Nevertheless, if gender disparities are due to discrimination, we should implement policies to eliminate the employer's prejudice or misinformation (depending on the source of the discrimination). Thus, the empirical analysis of the macroeconomic effects of discrimination on the labour market is an open question.

2. Empirical approximation: differences in productivity and in gender wage discrimination among Spanish regions

In order to check if gender wage discrimination could explain part of productivity differences between Spanish regions, we analyse the correlation in the growth of discrimination and productivity. Since employment is another outcome of discrimination we also pay attention to its relationship with discrimination. We analyse

¹⁹ From a legal point of view, a different treatment to meet the special needs of some individuals – and make sure that they have equal opportunities – is neither discriminatory. This is often known as affirmative action.

the case of gender discrimination since in our database the share of foreign people in labour market was minuscule, but we could do the same exercise with race discrimination.²⁰

Firs, we must calculate discrimination. From a technical point of view, we will say that wage discrimination exists when the gender wage gap cannot be attributed to differences in productivity. In order to calculate discrimination by region we use the traditional decomposition of Oaxaca (1973) and Blinder (1973). This method states that in 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 calculate productivities, we estimate two ordinary Mincer wage equations by OLS, one for each sex, $\ln w_i = Z'_i \beta + \varepsilon_i$, i being each individual person, w_i the individual hourly wage, Z'_i an individual characteristics vector, β the estimated coefficients vector, and ε_i the error term. The degree of discrimination has been calculated assuming that in absence of discrimination male and female characteristics would be paid at male prices.

The measure of gender wage discrimination that we calculated is obtained from the following expression:

$$\overline{\ln w_m} - \overline{\ln w_f} = (\overline{Z'_m} - \overline{Z'_f}) \hat{B}_m + \overline{Z'_f} (\hat{B}_m - \hat{B}_f)$$

where the upper bar indicates the mean of the variable and subscripts m and f represent male and female respectively. In the above equation, the differential of average wages is obtained by the sum of one part explained by the vector of observable characteristics (first term), plus another that is not and which is interpreted as explained by discrimination (second term).²¹

²⁰ Although the phenomenon of discrimination has common features, there are some differences depending on the group that suffers discrimination. For example women do not face the geographical concentration (ghettos) that ethnic groups suffer. In this case, we adapt the theoretical framework to gender discrimination, taking into account constraints imposed on women by the traditional time allocation due to domestic responsibilities.

²¹In the Mincerian equations we include both characteristics related to employees (potential experience, tenure and the level of studies completed) and job characteristics (occupation, time status, type of contract, firm size, type of agreement and economic activity). In the annex we explain the variables in detail and the source, EES.

The databases used to estimate discrimination, productivity and employment are detailed in the Annex. Besides, the data has been standardized in order to avoid bias due to the magnitude of the variables. We standardized data as following:

$$E_{ji} = (S_{ji} - \min_i S_{ji}) / (\max_i S_{ji} - \min_i S_{ji})$$

being E_{ij} the standardized value which corresponds to the variable i for the region j , S_{ij} the correspondent value not standardized, and \min_i and \max_i correspond to the minimum and maximum.

Thus, in next figures, axis y represents the growth of the degree of discrimination and axis x the growth of each variable possible affected by discrimination.²² To help us with the interpretation of the figures, additionally we show a table with the coefficients of correlations between these variables and the growth of the degree of discrimination. The clearest relationship that figures show is between the growth rate of the degree of gender wage discrimination and productivity. This relationship is negative and it is found significant, i.e. and increase of the degree of discrimination results in a loss of productivity²³.

Nevertheless, not all variables show this negative relationship with the growth rate of the degree of discrimination. The growth of the employment rate does not show any relationship with the discrimination, neither positive nor negative. However, we should take into account the fact that discrimination causes a different allocation of the resources, in this case the allocation of female employment. Thus, we analyse the relationship of the discrimination with the female and male employment rates separately. The figures confirm this different allocation of resources, and while the male unemployment rate grows together with the growth of discrimination, the relationship between the growth of discrimination and the female employment rate is negative. Although figures show the relationship in the sense of literature, it is not found to be significant. This could be due to the general evolution of the regional labour markets²⁴.

²² The line shows the linear prediction of the drawn variables.

²³ This is consistent with theory of taste for discrimination (Becker 1957, 1971)

²⁴ Favourable conditions of the economy could cause a high growth of both female and male employment rate, although the growth of the female employment rate could be lower relative to male one.

Thus, the suitable variable for this analysis is the female employment rate relative to male. The figure shows a negative and significant relationship between the increase of the degree of discrimination and the growth of the female employment rate relative to male, i.e. an increase of discrimination causes a smaller increase of the female employment rate relative to male.

Table 1b: Coefficient of correlation with the growth of discrimination

	Coefficient of correlation	p-value
Growth of productivity (1995-2002)	-0.58	(0.014)
Growth of the employment rate (1995-2002)	-0.10	(0.707)
Growth of the female employment rate (1995-2002)	-0.20	(0.435)
Growth of the male employment rate (1995-2002)	0.24	(0.350)
Growth of the relative employment rate (1995-2002)	-0.58	(0.015)
Growth of the relative labour-force participation (1995-2002)	-0.30	(0.244)
Growth of the relative unemployment rate (1995-2002)	0.07	(0.796)

Figure 2a: Relationship between the growth of discrimination and the growth of productivity and employment (1995-2002)

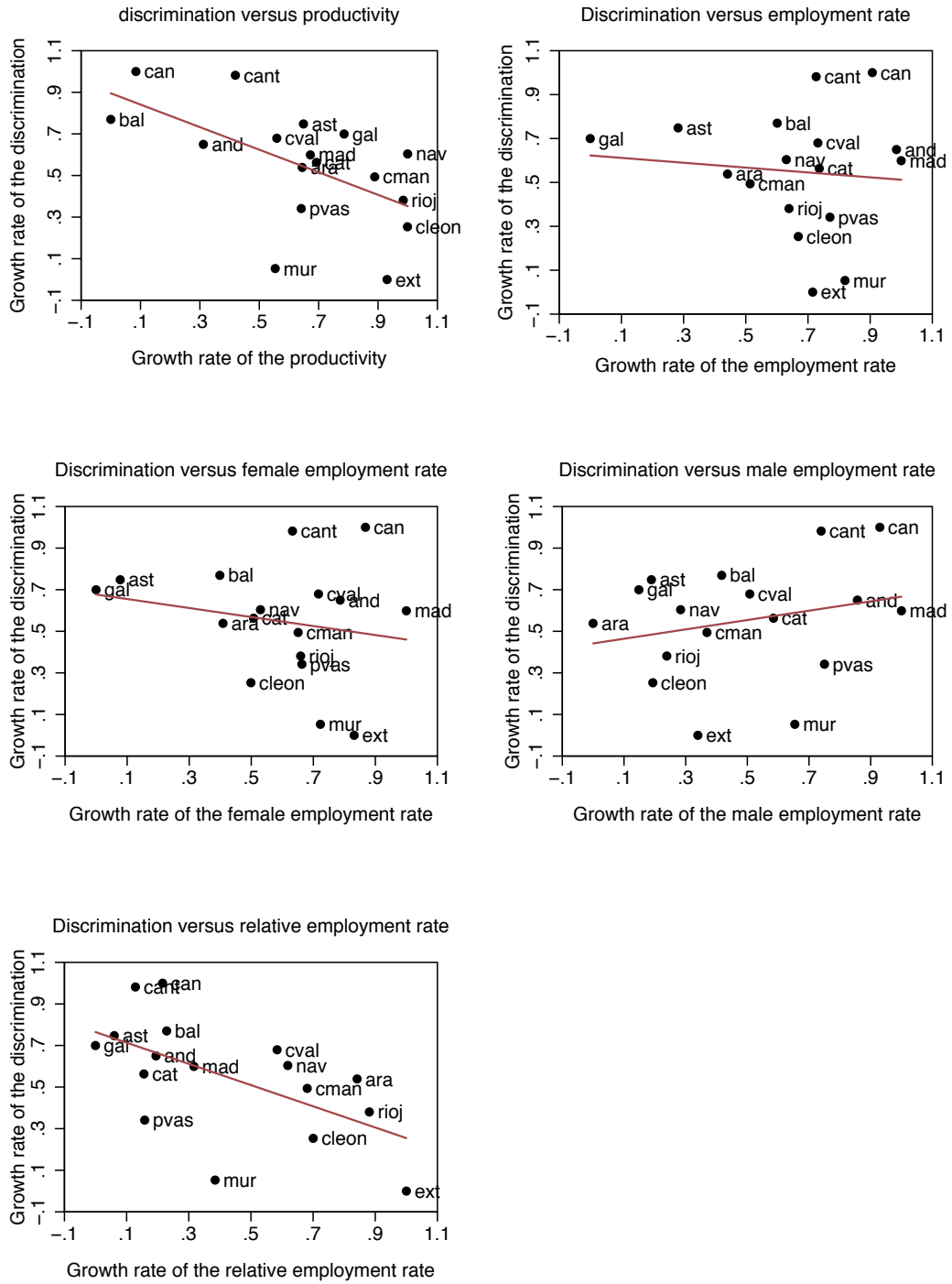
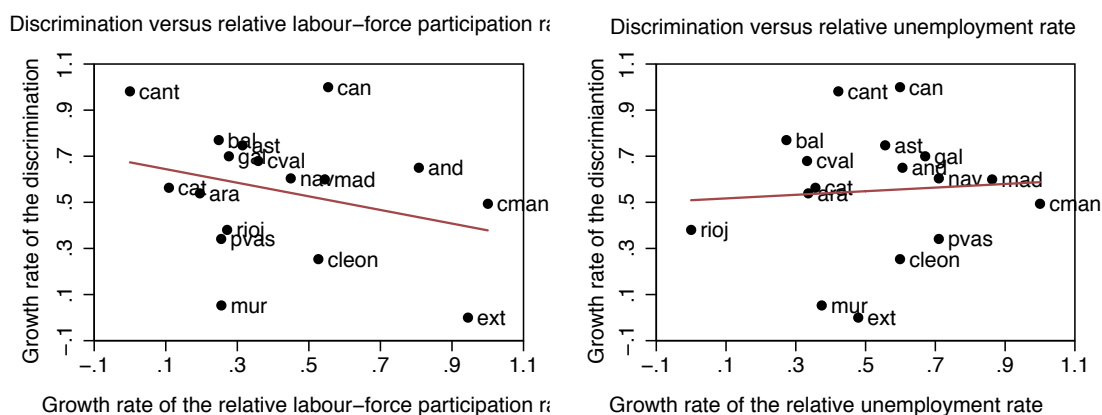


Figure 2b: Relationship between the growth of discrimination and the growth of productivity and employment (1995-2002)



This effect of discrimination over female employment should have an effect on female unemployment and female labour-force participation rate. The magnitude of the effect on each of these rates depends on the elasticity of the female participation. Nevertheless, we are not able to find a significant relationship, neither between the growth rate of the discrimination and the female participation rate relative to male, nor between the growth rate of the degree of discrimination and the female unemployment rate relative to male. This could be explained because of the fact that the Spanish regions may have different elasticity of the female participation rate.

Thus, aggregated results would be consistent with the discrimination literature. As theory indicates the degree of discrimination is related with productivity in the Spanish regions, i.e. discrimination could have effects on competitiveness. Effects on employment are more difficult to see since the growth of the degree of gender wage discrimination causes a change in the allocation of resources. Thus, we find the effect in the female employment rate relative to men and we do not find it in the aggregate employment rate.

3. Conclusions

A worry of the European Institutions is the low productivity growth of some member states such as Spain. Nevertheless, on the one hand, there are important

differences in the productivity growth rates of the Spanish regions. On the other hand, discrimination theories point out productivity as an outcome of discrimination. For this reason the main aim of this paper was to show the linkage between productivity and gender wage discrimination.

We based on the existent theories for explaining discrimination in order to identify its effects in labour market.

Following the “taste for discrimination” by Becker (1957, 1971), an employer who has a taste for discrimination does not change their criterion of minimizing cost, they include the disutility of hiring people from some groups (women) in their function. Although, the criterion of minimizing cost has been not altered, the equal allocation of resources is different from neoclassic assumptions. Thus, on one hand, the factor of demand of discriminated workers would be lower. On the other hand, the cost of producing a unit of product would be higher than the cost of producing without discrimination. Consequently, both the product by worker (productivity) and the female employment rate (discriminated group) would be lower.

The effects of discrimination on labour market are similar if we follow the “statistical discrimination theory”, nevertheless from the point of view of the “monopsony power” effects on productivity are not explained in the same way. In this case, employer does not hire the less productive worker, he/she just offer lower wages by using its monopsony power. Nevertheless, the dissatisfaction caused by these types of discrimination usually result in a loss of productivity. Employees who do not feel appreciated or adequately compensated will not work to the highest of their capabilities.

As a result, all theories predict effects on wages, productivity and employment allocations. Empirically, productivity growth is related with the growth of gender wage discrimination for the Spanish regions. However, we have not enough data for testing the causality of correlations, and more research is needed in this area. Preliminary results confirm theories predictions: an increase of the degree of discrimination causes a decrease of productivity and a change in the employment allocations between males and females.

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Annex

Estructura Salarial (EES, Wage Structure Survey)

In order to calculate wage discrimination, the main source used is the Encuesta de Estructura Salarial (EES, Wage Structure Survey) elaborated by the INE for 1995 and 2002. It is a survey with a large number of observations, even though it does not represent the whole employed population. In fact, the reference population is constituted by employees working in establishments with at least ten workers involved in any economic activity other than agriculture, farming, fishing, Public Administration, Defence, Social Security, private households and extra-territorial organizations and bodies.²⁵

We use this survey because it has a large sample size and it includes detailed information about wage-earners and about the establishments where they are employed. The Survey comprises a sample of workers at each firm and it consists of matched employer–employee data with a wealth of basic information used for our analysis on factors concerning the characteristics of the individual, job and workplace. Alternative surveys with individual level information on wages, like the ECHP, are all household surveys, thereby lacking the necessary matched employer-employee information. Their samples are significantly smaller and they don't provide us with a regional dimension (with the only exception of ECHP in 2000). The richness of information in the EES data allows us to analyse the wage-determination process from both the demand and the supply side of the labour market.

Nevertheless, the use of this survey for the analysis of wage discrimination presents us with two main disadvantages. The first one is the lack of data concerning variables like working experience or marital status which are potentially significant for

²⁵ The 1995 EES does not include the following activity groups: M (education), N (health and social work) and O (other community, social and personal service activities). All of these groups have been excluded from the analysis in order to maintain homogeneity between the two periods used in this work. Moreover, we have aggregated DB-DC activities and we have removed DF, since they had few observations.

explaining the gender wage differential. However, the inclusion of marital status as a determining factor of wage differentials is not widely accepted. Regarding working experience, we have calculated a proxy variable using age and education. A second disadvantage is that EES is limited to private sector wage-earners employed by medium and large size companies, excluding sectors such as agriculture, fishing or several services.²⁶

Contabilidad Regional de España (CRE, Spanish Regional Accounts)

Regional Accounts are a specification of the National Accounts, i.e. Contabilidad Nacional de España (CNE, Spanish National Accounts) constitutes the conceptual and quantitative reference framework for the Contabilidad Regional de España (CRE). The CRE is a statistical operation that the *Instituto Nacional de Estadística (INE, National Statistical Institute)* has been carrying out since 1986. Its main objective is to offer a quantified, systematic and as complete as possible description of the regional economic activity in Spain. CRE does not have data about workers, but rather about jobs. It defines a full time job equivalent as the total number of hours worked divided by the annual average of hours worked in full time jobs. These concepts are considered more appropriate than the number of employees in order to approximate work factor consumption used in productive processes. Thus, it is more precise for estimating productivity because there are not problems about the equivalence of a part-time worker to a full-time worker and about double accounting of the workers employed in several jobs.

The Encuesta de Poblacion Activa (EPA, Active Population Survey)

The Encuesta de Poblacion Activa (EPA, Active Population Survey) is a quarterly household sample survey and it provides information on employment, unemployment and inactivity together with breakdowns by age, sex, educational

²⁶ The influence of these characteristics on the degree of wage discrimination is unclear. Not including public sector employees could lead to overestimating the degree of wage discrimination. Nevertheless, the lack of small-firm data and the inclusion of some private services sectors in which discrimination can be higher than average, could underrate the degree of wage discrimination. Both facts can be very important for the Galician economy in which 30% of wage-earners are employed in sectors not covered by the Survey. The incidence by sex of the excluded group is also quite diverse, 22% of male-wage-earning workers and 41% of female ones.

attainment, temporary employment, full-time/part-time distinction and many other dimensions. Since 2005, in EPA the definitions of employment and unemployment, as well as other survey characteristics follow the definitions and recommendations of the International Labour Organisation (ILO).