How wide is the gap? An investigation of gender wage differences using quantile regression*

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Abstract. In this paper we re-examine the link between subjective perceptions and objective measures of wage discrimination by estimating the mean and several quantiles in the conditional wage distribution of men and women in order to decompose the gender wage gap into the part attributed to different characteristics and the part attributable to differential returns to these characteristics at points other than the conditional expectation. In the process we take into account the endogeneity of educational choice and the participation decision of women. The results suggest that the absolute wage gap and the component of the latter that can be attributed to different returns to characteristics increase over the wage scale.

Key words: wage differentials, quantile regression.

JEL classification: J7, C4

1. Introduction

The wage gap between men and women in Spain, in line with what happens in other countries, is quite substantive. Data from the 1995 Encuesta de Estructura Salarial show that on average women earn around 70% as much as men.1

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1 The unemployment rate for Spanish women, at 30%, doubles that of men.
A large part of this difference cannot be accounted for by observable variables such as experience, sector of employment or education. Indeed, when the wage gap is computed by levels of education, the same survey reveals that women who have completed a university degree earn on average only 60% of the salary received by men with the same educational level. The degree to which observed differences in salaries between men and women can be accounted for by observable characteristics has been a subject of interest in the labour economics literature, not least because unexplained differences have been interpreted as a degree of wage discrimination against women.

The usual methodological approach in the studies that attempt to measure it consists in decomposing the wage gap into a part attributable to differences in the vector of worker characteristics and a part attributable to differences in the return associated to each of these characteristics using the estimates for the expectation of the conditional wage distribution of both groups. The most recent results obtained with this methodology for the Spanish labour market are found in the works by Riboud and Hernández (1989), Ugidos (1993), Hernández (1995, 1996, 1997), de la Rica and Ugidos (1995), Prieto (1993) and Ullibarri (1996). Even if the data sources and methodologies applied are different, all these studies find that a substantial percentage of the wage gap is due to differences in the returns to observable characteristics in favour of men. Results for other countries detect the same qualitative pattern.

However, this methodology is limited in the sense that it considers the information provided by conditional means exclusively, and this could lead us to conclude that the size of the wage gap and the weights of the factors that make it up are constant along the whole of the wage scale. Stemming from the seminal work of Juhn et al. (1993), recent examples in the literature address this issue by analysing differences between quantiles of the wage densities of not only men versus women but also different countries or different points in time for a given population. For instance, Di Nardo et al. (1996) model the wage distribution using non parametric kernel regression methods. Thus these authors are able to gauge the extent to which changes in the distribution of worker characteristics can account for changes all over the wage density. In two related studies, Fortin and Lemieux (1998), using rank regression methods, and Machado and Mata (1999), by means of a quantile regression model and bootstrapping techniques, model the marginal wage distribution as a function of worker characteristics. Since these studies parameterise the relationship between wages and skills, the authors are able to measure not only the impact of differences in the distribution of skills but also the effect of differences in the return to these skills on the percentiles of the wage densities. The evidence that arises from these studies strongly suggests that average wage gaps and decompositions are not representative of the gaps (and factors that explain these gaps) at different quantiles of the wage distributions for the populations of interest.

In this paper we argue that there is a clear link between the unequal size of the gender wage gap over the wage scale and the concern in the literature about the partial ability of traditional discrimination measures based on wage expectations to capture the full extent of the phenomenon of discrimination.

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3 See Oaxaca (1973), Blinder (1973) or Neumark (1988).