Ceilings or floors? Gender wage gaps by education in Spain

Sara de la Rica · Juan J. Dolado · Vanesa Llorens

Published online: 24 October 2007
© Springer-Verlag 2007

Erratum to: J Popul Econ DOI 10.1007/s00148-006-0128-1

The original version of this article unfortunately contained a mistake. The presentation of section 2 “A model of statistical discrimination for the floor pattern”, fourth paragraph was incorrect. The correct Section should read:

To solve for both wages and the amount of training, we proceed backwards in time. Under the assumptions that the wage in period 2, W_{2i} ($i=f, m$), is offered before the shock ω is realized, firms will choose W_{2i} and to maximize expected profits in period 2, $\Pi_{2i}(\tau_i)$, namely

$$\max_{W_{2i}} \int_0^{W_{2i}} (a(\tau_i) - W_{2i}) dF_i(\omega) = \max_{W_{2i}} \frac{1}{\varepsilon_i} [a(\tau_i)W_{2i} - W_{2i}^2], i = f, m, \quad (1)$$

Responsible editor: Deborah Cobb-Clark

The online version of the original article can be found at: <http://dx.doi.org/10.1007-s00148-006-0128-1>

S. de la Rica

Universidad del País Vasco, Avda. Lehendakari Aguirre, 83, 48014 Bilbao, Spain
e-mail: sara.delarica@ehu.es

J. J. Dolado (✉)

Universidad Carlos III, C./ Madrid, 126, 28903 Getafe Madrid, Spain
e-mail: dolado@eco.uc3m.es

V. Llorens

LECG Consulting Spain S.L, Paseo de Recoletos 7-9, 28004 Madrid, Spain
e-mail: VLlorens@lecg.com

S. de la Rica · J. J. Dolado

Institute for the Study of Labor (IZA), Schaumburg-Lippe-Str. 7/9, 53113 Bonn, Germany

J. J. Dolado

Centre for Economic Policy Research,
53-56 Great Sutton St., London EC1V 0DG, UK

whereby the first-order condition (f.o.c.) w.r.t. W_{2i} implies that the wage paid in equilibrium to male and female workers will be $W_{2m}^* = a(\tau_m^*)/2$ and $W_{2f}^* = a(\tau_f^*)/2$ respectively, where τ_i^* , $i=m, f$ are the optimal amounts of training for each gender also chosen by the firm.¹³ By replacing W_{2i}^* in the bracketed term in Eq. 1, notice that the firm's profits in period 2 (Π_{2i}^*) when hiring men and women are given by $(\Pi_{2m}^*) = a^2(\tau_m^*)/4\varepsilon_m$ and $(\Pi_{2f}^*) = a^2(\tau_f^*)/4\varepsilon_f$. Denoting by Π_{12i}^* the sum of profits in both periods, i.e. $\Pi_{12i}^* = \Pi_{2i}^* - \tau_i^* - W_{1i}^* = \frac{a^2(\tau_i^*)}{4\varepsilon_i} - \tau_i^* - W_{1i}^*$, the f.o.c. of Π_{12i}^* w.r.t. to τ_i , implies that τ_i^* satisfies the condition $a^2(\tau_i^*)/4\varepsilon_i = a(\tau_i^*)/2d'(\tau_i^*)$. Using the functional form $a(\tau) = \beta\tau^{\alpha/2}$, it is straightforward to obtain that $\tau_i^* = (\alpha\beta^2/4\varepsilon_i)^{1/(1-\alpha)}$ and $W_{2i}^* = (\beta/2)(\alpha\beta^2/4\varepsilon_i)^{\alpha/2(1-\alpha)}$. Notice that $\tau_f^* < \tau_m^*$ if and only if $\varepsilon_f > \varepsilon_m$. Thus, women receive less training than men given their higher quit probability. Then, by defining the (logged) gender wage gap in period 2 as $GW_2 = (\ln W_{2m}^* - \ln W_{2f}^*)$, it follows that GW_2 is positive and equals $\alpha(\ln \varepsilon_f - \ln \varepsilon_m)/2(1-\alpha) > 0$.

Next, having chosen W_{2i}^* and τ_i^* , free entry of firms in the market implies that firms choose the wages in period 1, W_{1i}^* , so as to equate overall profits in both periods (Π_{12i}) to zero, that is

$$\Pi_{12i}^* = \Pi_{2i}^* - \tau_i^* - W_{1i}^* = \frac{a^2(\tau_i^*)}{4\varepsilon_i} - \tau_i^* - W_{1i}^* = 0 \quad (2)$$

which yields,

$$W_{1i}^* = \frac{1-\alpha}{\alpha} \tau_i^* = \frac{1-\alpha}{\alpha} \left(\frac{\alpha\beta^2}{4\varepsilon_i} \right)^{1/1-\alpha} \quad (3)$$

Given the higher female quit probability, the (logged) gender wage gap in period 1, $GW_1 = (\ln W_{1m}^* - \ln W_{1f}^*)$ is also positive and equals $(\ln \varepsilon_f - \ln \varepsilon_m)/(1-\alpha) > 0$.¹⁴ Finally, comparing GW_1 and GW_2 , the following result holds.

Proposition The gender wage gap in period 1 is larger than in period 2, i.e., $GW_1 - GW_2 = [(2-\alpha)/2(1-\alpha)](\ln \varepsilon_f - \ln \varepsilon_m) > 0$.

¹³ This is just the average of the worker's productivity and the outside wage, which is assumed to be zero. The weight 1/2 in the average is due to the choice of the uniform distribution in the illustration. Alternative distributions will give rise to a weighted average with unequal weights.

¹⁴ Notice that for H-type workers $\varepsilon_m = \varepsilon_f$ and, hence, the wage gap in periods 1 and 2 is zero. Thus, the glass ceiling pattern for this type workers has to be explained by some other theories, like those discussed in footnote 9, that we do not deal with in this paper.