# The Changing Nature of Gender Selection into Employment over the Great Recession

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Long-term changes in selection patterns into the labour market have drawn plentiful of attention in the literature on gender wage gaps. The main finding of this literature has been that, while male labour force participation (LFP) is high everywhere in developed countries (around 90%), this is not the case for female LFP where large differences exist across countries. When looking at Europe, these differences in LFP rates are particularly acute in the periphery (Greece, Italy, Portugal and Spain). Instead they are much less relevant in central and northern European countries where female LFP is high. As a result, while observed means of male and females wage distributions accurately represent their population counterparts in the latter countries, this is not the case in the former countries. In peripheral EU economies, selection issues could seriously disrupt the interpretation of the computed (male-female) wage gaps as measuring pay (typically measured in terms of hourly wages) between men and women with the same observable and unobservable characteristics, except gender.

Figure 1: Wage gaps and Employment gaps (Olivetti and Petrongolo, 2008)
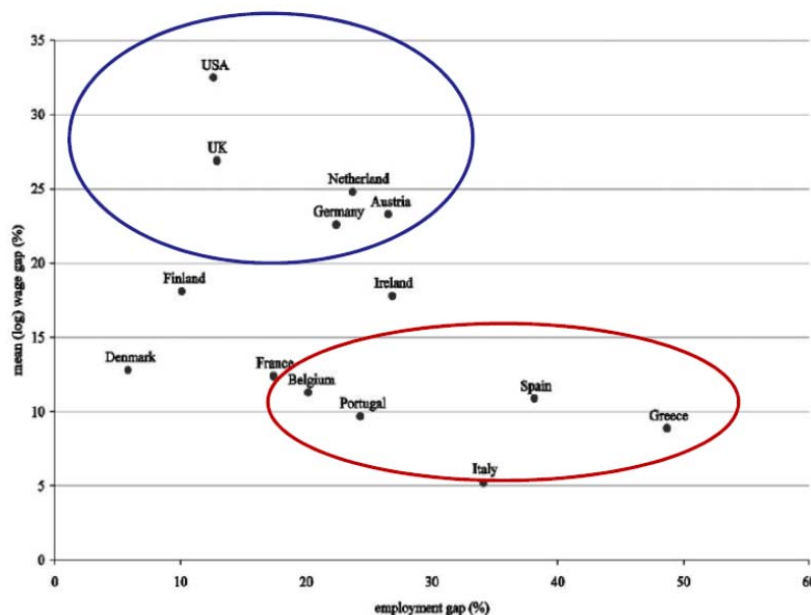
For example, using imputation techniques for the missing wages of those women of working age who are out of the labour force in the European Household Panel Survey (for Europe) and the Panel Study of Income Dynamics (for the U.S.), Olivetti and Petrongolo (2008) were able to explain the seemingly puzzling feature that, in the late

1990s, gender wage gaps in culturally more retarded peripheral EU countries were much lower than in more liberal central- northern and anglosaxon countries, including the U.S. As can be observed in Figure 1 -- where the vertical axis measure the mean log gap, and the horizontal axis the male-female employment rate gap—the correlation between both variables is negative (around -0.50) in a group of EU member states and the US. In other words, while countries with very low gaps between male and female employment rates have large wage gender gaps (e.g., The Netherlands, UK, and US) countries with high gaps in employment rates (low female LFP) exhibit much lower gender wage gaps (e.g., Greece, Italy, and Spain).

Did this mean that gender policies were more effective in conservative southern EU countries than in progressive northern/anglosaxon countries? Olivetti and Petrongolo (2008) convincingly argue that this correlation disappears once gender wage gaps are computed using imputed wages for the non-participating women (on the basis of education, age, experience, former wages if previously employed, etc.). Because the median of the wage distribution is a much more robust centrality statistic than the mean when imputing values, in the sequel wage gaps are measured as male-female differences in median wages [1]. In Table 1, one can observe how the low median gender gaps in peripheral countries, in terms of imputed wages, become much higher when selectivity bias in corrected whereas for the remaining countries remain more or less the same. Therefore, the negative correlation between gender pay and employment rate gaps switches sign, from negative to strongly positive, as one would a priori expect if selection among participating women in peripheral EU countries is positive: only the best women participate. Hence, if (almost) all men participate (no selection issue as regards males), computation of the gender wage gap in terms of observed wages, would be comparing the median wage of all men with the median wage of those women who are more productive in the labour market. By contrast, in central-northern EU, the median gender gap would be comparing the wages of all men and all women. Not surprisingly, the observed gender wage gap in the periphery is lower than in the remaining countries.

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[1] This is so since the median estimator remains an unbiased estimator of the true *median* in potential wages as long as the missing wage observations are imputed on the correct side of the median, that is, to its left or right sides. This is a much weaker requirement than predicting the true potential wage which would be needed to get an unbiased estimator of the *mean* of the potential wage distribution (see Neal, 2004)

Table 1: Median Wage Gaps for Imputed Wages (Olivetti and Petrongolo, 2008)

Table 4
Median Wage Gaps under Alternative Imputation Rules:
Wage Imputation Based on Observables—Probabilistic Model

|	Base Sample	Weighted Imputation	
	(1)	(2)	(3)
Country:			
United States	.339	.359	.371
United Kingdom	.256	.264	.292
Finland	.160	.179	.199
Denmark	.086	.100	.100
Germany	.191	.200	.232
Netherlands	.178	.229	.235
Belgium	.078	.117	.154
Austria	.192	.205	.236
Ireland	.232	.319	.341
France	.095	.182	.186
Italy	.059	. . .	.229
Spain	.097	. . .	.333
Portugal	.150	.272	.272
Greece	.111	. . .	.593
Correlation	−.329	.291	.686
Coefficient of variation	.484	.339	.427

Sources.—Michigan Panel Study of Income Dynamics and European Community
Household Panel Survey.

As mentioned earlier, the previous findings correspond to the late 1990s. Thus, a relevant research question is whether the large employment changes that have taken place during the Great Recession in Europe (2008-2012, covering the global financial crisis followed by sovereign debt crisis in the Eurozone) could have altered the selection patterns documented above. This is the issue I addressed in my keynote lecture at the 2017 COSME Workshop. Relying on recent findings by Dolado, Garcia-Penalosa and Tarasonis (2016) using EU-SILC data from 2002 to 2012, we conjecture that in those economies which were more severely hit during the slump (i.e., the peripheral countries and Ireland), selection issues might have become more relevant among men and less so among women.

One plausible explanation of this *changing nature* of selection by gender in the EU periphery during the downturn is that the crisis has led a much more intense shedding of male less-skilled jobs, either in construction (Ireland, Spain), market-related services (Greece or Italy) or public-sector employment (Portugal), than in other member states. This implies that the distributions of observed male wages in the peripheral countries have become (to the left) censored versions of their potential wage distributions with the bottom tail of the wage distribution being no longer observed. On the contrary, as a result of the so-called *added-worker* effect – whereby less-skilled women who were

previously out of the labour force start looking for jobs when their husbands become unemployed—female selection is likely to have experienced a reduction. Of course this fall in female selection will happen as long as the their higher job search effort translates into employment gains instead of remaining unemployed, which is denoted as the *labour demand proviso*. In such a case, the observed median wage for men will go up since low wages are now censored whereas the female median observed wage will go down since now the sample of female employees includes more unskilled women than before the crisis. As a result, one would expect a higher gender median wage gaps in southern Europe. As for the other countries, where job losses have been much more minor during the slump, it has been argued that (see, e.g., Bettio et al., 2012) gender wage gaps should have gone down since variable components (bonuses and premiums) in the pay-packages are the first ones to be foregone in recessions and they accrue disproportionally to men. Likewise, early retirement policies to alleviate social pressure against collective dismissals and to facilitate youth employability are likely to reduce the gender median observed wage gap since men are a majority among elderly workers with long professional careers.

**Figure 2: Gender medium wage gaps during the Great Recession in Europe**

Source: OECD
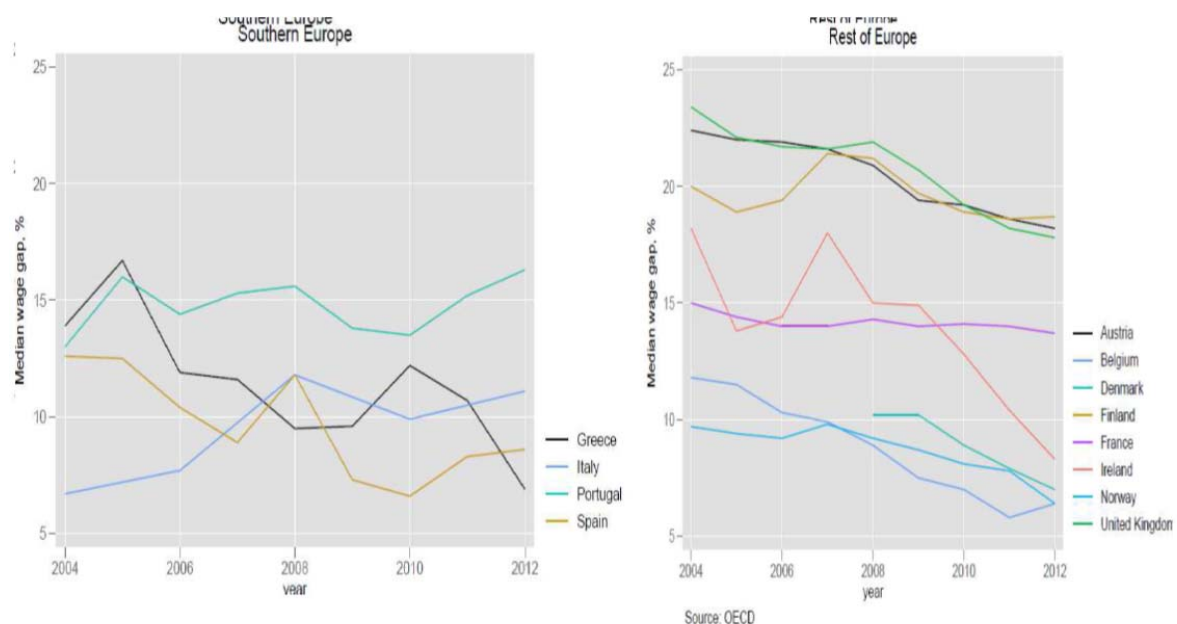
These predictions seem to be supported by the evidence show in Figure 2 where a declining gender wage gap is observed in most central and northern EU countries, whereas there is a wider range of patterns in peripheral countries. A nice illustration of the contrasting findings in the latter group is provided by Portugal and Spain, where

the gender gap goes up in the former during the Great Recession while it goes down in the latter.

The opposite patterns followed by the gender wage gap in Portugal and Spain can be rationalized in term of the labour-demand proviso above. In both countries, married low-skilled women was the group that increased LFP the most (9 pp. and 13 pp., respectively), and our evidence point out that in most cases they started looking for a job after their husbands transited from employment to unemployment, in line with the *added-worker* effect. However, while the employment rate of these women hardly changed in Portugal, it fell by 7 pp. in Spain. This is due to the much larger share of temporary jobs in the Spanish economy, which were massively destroyed during the recession and in which women are over-represented. Hence, whereas in Portugal less-skilled women found their way into the labour market, leading to a lower female selection and larger male selection, in Spain the increasing labour supply of less skilled women was more than offset by adverse shifts in the labour demand for these women. As a result, not only male but also female selection became more favourable in this country. These patterns can be seen in Figure 3 where selection biases and employment rates by gender are presented for each country in panels I and II

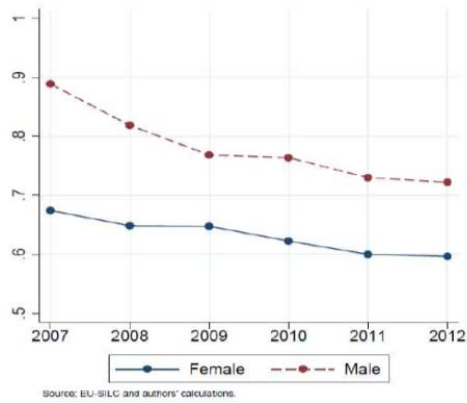**Figure 3: Selection Biases and Employment Rates in Portugal and Spain**

(I)   Portugal

(a) Selection Bias
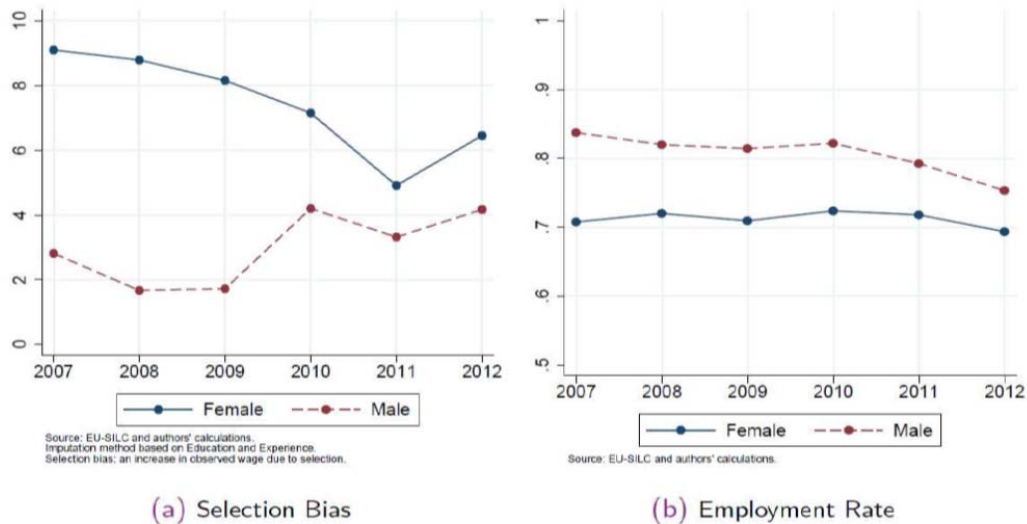
(b) Employment Rate

(II)   **Spain**
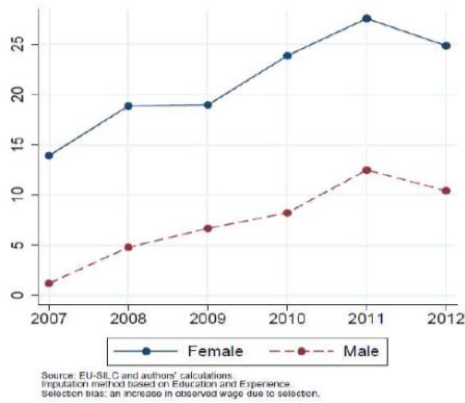
(a) Selection Bias

(b) Employment Rate

A similar pattern to the Portuguese one can be found for Italy, whereas Greece (and Ireland), two countries with massive job losses for both genders, the pattern is more alike the Spanish one

Overall, we find that male selection, which was an issue before the Great Recession, seems to have raised in most EU countries since then. By contrast, female selection has decreased except in those countries where female job destruction has been very large, like in the Spanish dual labour market. While female selection is bound to decrease in the future given the persistence in higher female LFP, male selection may decrease in the future as a result of long-term unemployment and automation. If this happens, we may observe increasing gender gaps in terms of observed wages even if the gaps in potential wages fall.

References

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