

HAVE THE ECONOMIC CRISES REDUCED THE GENDER GAP ON THE SPANISH LABOUR MARKET?¹

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Over recent decades, women in Spain have continued to suffer a much higher unemployment rate than men, with a figure almost twice as high in some periods. This gap has however almost disappeared during the ongoing economic crisis. The aim of this paper is to explain this gender difference in the response of unemployment to the business cycle in Spain. The decomposition of changes in female employment shows the important role of the buffer effect in the 1992-1993 recession, while the segregation effect has been more significant in the ongoing recession. Estimation results support the segregation hypothesis: the concentration of women in less-cyclical sectors reduces their job losses during recession, so that the unemployment gap falls. However, the buffer effect for men appears to be greater than that for women, which is partly explained by more temporality in male-dominated industries.

Keywords: Gender gaps, Economic cycles, Labour market.

Women and men suffer differently from the effects of the business cycle due to labour-market sector segregation and an uneven and unbalanced position in employment. The study of economic crises from a gender perspective allows us to analyse their differential economic effects on women and men.

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Conditions have deteriorated dramatically in the Spanish labour market during the recent recession, mostly in terms of unemployment. The unemployment rate (8.6 percent at the start of the recession in December 2007) rose to a peak of 26.0 percent in December 2012, its highest level in recent decades.² Although women have continued to have a much higher unemployment rate than men over the past two decades, the unemployment gender gap has almost disappeared during the current economic crisis. This pattern is not exclusive to this period, nor to this country: Pissarides (2013), regarding the ongoing recession in the Euro area, and Goodman *et al.* (1993), for the recession of the 1980s and early 1990s in the United States, find the same pattern. This does not mean that women do not suffer any consequences from crises. Spain has the highest female unemployment rate in the European Union, reaching 25 percent in 2012, and with a rate higher than that in the EU15 and EU27 on average in recent decades. Moreover, Addabbo *et al.* (2012) argue that the crisis has led to a rise in gender inequality and poverty.

There is a vast literature analysing the sensitivity of the Spanish employment to the business cycle (Bande *et al.*, 2008; Bentolila *et al.*, 2006 and Bentolila *et al.* 2010). Nevertheless, we are not aware of any work focusing on the analysis of gender unemployment gaps in Spain.

The aim of this paper is to explain gender differences in the response of unemployment to the business cycle in Spain. Analysing women's situation on the labour market could help us to better understand the gender differences in economic upturns/downturns. In Section one, we will describe the situation of women in the Spanish labour market, as well as their position relative to men. Section two then breaks down the changes in female employment in Spain over the 1987-2012 period. Using the methodology developed by Humphries (1988), we will try to explain the dynamics of female employment, and underline the role of gender segregation in the labour market during recessions. Three periods with a negative growth rate (after correcting for seasonality) are

2. One of the most salient features in the Spanish economy during downturns is the dramatic increase in the unemployment rate. The unemployment rate in other European countries has been more stable over time and much lower than in Spain.

distinguished: (1) from the first quarter of 1992 to the third quarter of 1993; (2) from the second quarter of 2008 to the third quarter of 2010 (the ongoing recession's first phase); and (3) from the second quarter of 2011 (the ongoing recession's second phase). We will check if all these downturns produce similar effects on the dynamics of female employment and the gender employment gap. In Section three, we develop a model to explain the female-male unemployment ratio, using both variables reflecting the labour-supply behaviour of men and women and labour demand. Female labour-force participation (FLFP) rates and education have been shown to be important determinants of labour supply (Seeborg and Deboer, 1987), and the aggregate unemployment rate is an important proxy for aggregate demand (Niemi 1977). Sectoral shifts in labour demand are also hypothesised to be an important demand-side determinant of the ratio of male and female unemployment rates.

1. Women in the Spanish labour market

Women in the Spanish labour market have experienced a remarkable transformation over the past couple of decades. Two of the most important achievements have taken place in education and employment. Women's qualifications are now higher than males', and the decline in the gender employment gap has been among the highest in OECD countries (OECD, 2008). Nevertheless, women remain far from reaching the male employment rate or the EU objective of 60% women in employment by 2010. Neither the distribution of employment across occupations nor the quality of employment have improved. The share of women in temporary employment has not fallen and women have a higher probability of receiving low wages. They also continued to have a much higher unemployment rate than men up until the ongoing economic crises, when the gender gap in unemployment almost disappeared. This section provides some details about women's situation in the Spanish labour market and the latest trends, taking the average of EU15 and EU27 countries as a comparison.³ The data source used in this Section and in the paper in general is described in Box.

3. The period between the dashed vertical lines in the figures corresponds to the recession phases.

Box. Labour force survey data

Spanish data is taken from Encuesta de Poblacion Activa (EPA, the Active Population Survey) carried out by the Instituto Nacional de Estadística (INE, National Statistics Institute). Data for the EU15 and EU27 comes from the Labour Force Survey (LFS), the European equivalent of the EPA. The EPA data allows us to analyse a longer period and also to capture the crisis of the early 1990s.

Quarterly household sample surveys provide information on employment, unemployment, and inactivity, together with breakdowns by age, sex, education, temporary employment, full-time/part-time employment, and many other characteristics. Since 2005, in both EPA and LFS, the definitions of employment and unemployment, as well as other survey characteristics, have followed the definitions and recommendations of the International Labour Organisation (ILO). In addition, harmonization is achieved through adherence to common principles of questionnaire construction, the definition of unemployment, and common definitions of the main variables and response categories. The main difference between the two surveys is the definition of the working age population. The target population is 16 years old in the EPA, while it is 15 years or older in the LFS. There are however no significant differences in the main aggregates.

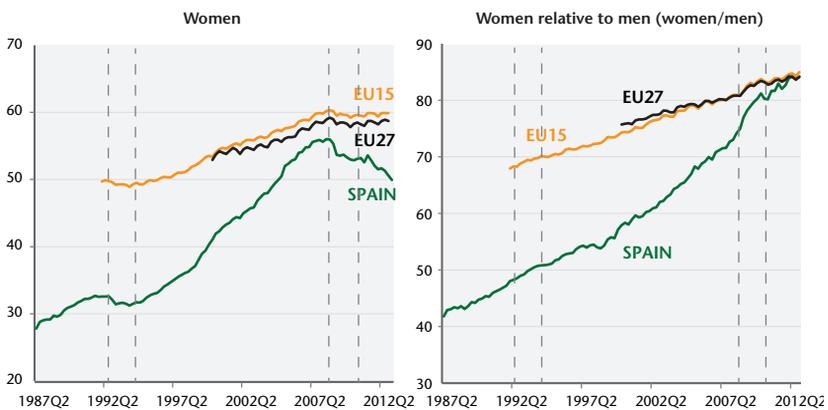
1.1. Employment

One of the main targets of the European Commission in the Lisbon strategy (2000-2010) and the Europe 2020 strategy (2010-2020) was employment growth. The specific gender objectives of the Lisbon strategy were that the average female employment rate in the European Union should reach 60% by 2010, with an intermediate objective of 57% by 2005. National governments had to design programs to help them reach these objectives. The Spanish labour policy (Law on Employment in 2003) focused on increasing the efficiency of the labour market and implementing active labour market policies (ALMP) to improve the employability of the unemployed, with women being one of the priority groups. After the 2005 review of the Lisbon strategy, Spanish policies focused more on gender equality. The Equality of Men and Women Act was implemented, promoting equal opportunities in access to employment, fighting against wage discrimination between men and women, and encouraging companies to design equality plans and

implement positive actions targeting women (this was compulsory for firms with over 250 employees). The Act to promote personal autonomy and care for dependent people (the “dependency law”) was put into practice and aimed to reconcile personal and professional life. This program encouraged new sources of employment, and helped to raise female employment and activity. The Spanish government took into account Spanish conditions and set a new objective of a female employment rate of 57% in 2010. Figure 1 shows the employment rate for women aged between 15 and 64 and the Spanish and European objectives for 2010. Even though the female employment rate in Spain increased by over 10 percentage points from 2000 to 2010, it has not reached any of the objectives (neither 60%, nor 57%). It is however also true that in 2008 Spain was very close to the national target (57%), and that the crisis interrupted the previous trend, and led to a fall in the female employment rate.

This specific target for female employment has disappeared in Europe 2020: the employment target is now “75% of 20-64 year-olds to be employed”, with female employment becoming a possible instrument to this end, “achieved by getting more people into work, especially women, the young, older and low-skilled people and legal migrants”.

Figure 1. Employment rates



Source: Own calculations based on EPA (INE) and LFS (EUROSTAT) data.

The female employment rate is still far from that of men in Spain: the 2012 female employment rate was 80% of the male rate. This difference is due to both a lower female participation rate and a higher female unemployment rate. Although the female employment rate has grown greatly, policies to further increase it remain important in trying to bring the gender employment ratio closer to 1. Longer mandatory parental leave, incentives to reduce the interruptions in women's careers, and childcare provisions all lead to higher female employment rates.

1.2. Labour-force participation

Figure 2 shows the evolution of the female labour-force participation rate and the ratio of that of women relative to men.⁴ Women's participation in the labour market was much lower in Spain than in the European Union on average in the 1980's. This rate has risen hugely in recent decades, by over 20 percentage points in ten years. Note that in spite of the economic crises, both in 1992-1993 and after 2008, the Spanish FLFP rate continued to rise.

Two of the factors behind this rise are education and labour-market flexibility. Following human-capital theory, education is one of the most important explanatory variables for both wage differentials and labour-force participation. There is a positive relationship between labour-force participation and education, as skilled workers have a higher opportunity cost than do the unskilled. This relationship is especially strong for women, as skilled women have greater attachment to the labour market than do the unskilled. The share of women with completed tertiary education in Spain has increased in recent years, and has risen above that of men since 2005.⁵

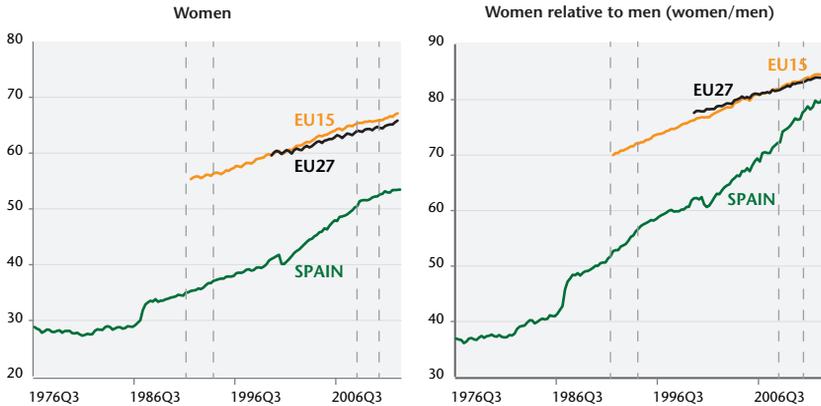
The share of women holding part-time jobs has increased over the past few decades, although it remains considerably lower than that in the EU15 (on average). Nevertheless, the female rate is similar to that of men: both sexes work part-time less than their European counterparts. Although part-time work may help women

4. Some authors argue that gender differences in participation rates are partly explained by discrimination in pre-market conditions, i.e. supply-side discrimination.

5. Recent work has confirmed that it is boys, rather than girls, who are increasingly found on the unfavourable side of the education gender gap in many developed countries.

enter the labour market, we should take into account that some women work fewer hours involuntarily (30% of women have a part-time job because they are not able to find a full-time job) and that there is some kind of wage penalty in part-time jobs for both sexes.

Figure 2. Labour-force participation



Source: Own calculations based on EPA (INE) and LFS (EUROSTAT) data.

In spite of its considerable rise, the FLFP rate in Spain has not yet attained the European average, and is still under 85% of that of men (Figure 2). The participation rate of women relative to men from 1980 to 2012 follows a similar pattern, as shown in the first graph in Figure 2: Spanish women have become more similar to their EU15 and EU27 counterparts. Note that there are sharp differences in female participation across European countries, so that Spain is still far removed from the Nordic countries, where the FLFP rate is above 90% that of men.

1.3. Industry segregation

Nilsen (1984), Williams (1985) and Goodman *et al.* (1993) have all underlined the industry mix as one of the most important factors behind the gender equalization of unemployment rates during recessions.⁶ They argue that men are concentrated in industries that are more affected by economic crises, while women are

6. Rives and Turner (1985, 1987) and Rives and Sosin (2002) have analysed the distribution by occupation instead of industry to explain the difference in male and female unemployment-rate volatility.

concentrated in jobs less affected by economic shocks, such as the service sector.⁷ Some service jobs are considered as an externalization of the activities traditionally carried out by women at home (cleaning, cooking, taking care of ill people, *etc.*). The new occupational opportunities offered by these jobs may have favoured women's entry into the formal labour market (Charles 1992).

We appeal to Hakim (1993) to identify female-dominated, male-dominated, and mixed sectors. Figure 3 shows the proportion of women by sector in both crises. The reference line indicates the average share of women in total employment, and the two dashed lines the ± 15 percentage-point window around this average. *Female-dominated* sectors are those where the share of women exceeds their mean share by +15% (over the upper boundary in the figure). Conversely, *male-dominated* sectors are those where the share of women is less than 15 percentage points below the mean share (under the lower boundary in the figure).⁸ *Mixed sectors* are found in the interval around the mean.

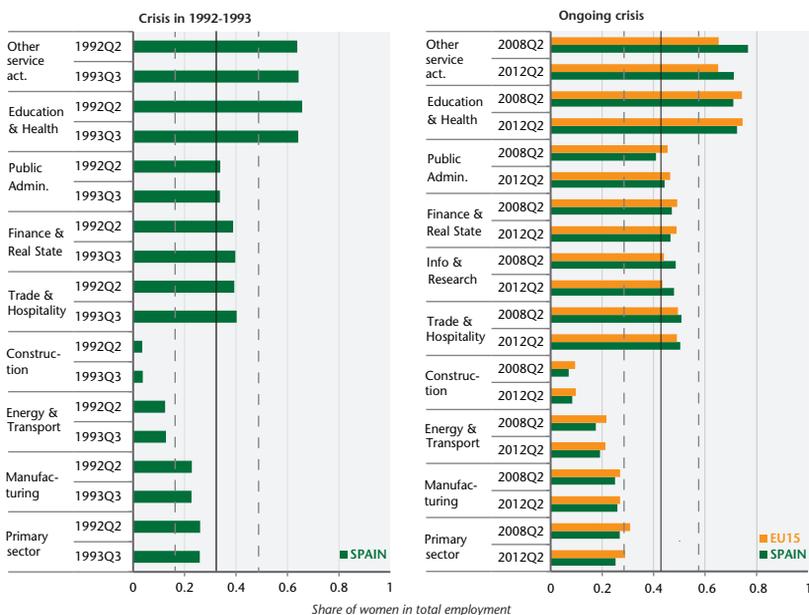
The first point to note in Figure 3 is that the average share of women in total employment has increased by around ten percentage points from the previous to the current crisis. Nevertheless, the classification of female/male-dominated sectors has not changed much: Construction, Energy, and Transport are *male-dominated* sectors, and Health, Education, and Other service activities are *female-dominated*. This classification is similar to that used by the European Union.

The most significant change is that women have lost some of their share in the primary and manufacturing sectors, which are no longer clearly mixed in the current crisis. In the current crisis, the female share in "other service activities" has fallen by five percentage points (even though the share of women is still over 70%).

7. Manufacturing employment (male-dominated) is more cyclical than service employment (female-dominated). We should also note that manufacturing employment rises more in recoveries (Pissarides, 2013).

8. We are aware that different intervals have been used in the literature to identify sex-dominated industries (see Reskin and Roos, 1990, and Jacobs, 1989). We have chosen this approach as it adapts to changes in female employment, since the thresholds are defined relative to the mean.

Figure 3. Female employment shares by sector



Note: The reference line indicates the average share of women in total employment, the dashed lines indicate the +/-15 percentage-points window around this average.
 Source: Own calculations based on Labour Force Survey (LFS).

Using this classification it is not easy to see changes in the sectoral distribution female employment during the crises. We therefore now calculate dissimilarity indices: the index of dissimilarity (ID) of Duncan and Duncan (1955) and the standardised, or Karmel and MacLachlan, index (IP). The index of dissimilarity (ID) has been widely-used, and shows the proportion of either women or men who would have to change industry for the two groups to be equally-distributed by industry. The ID is calculated as follows:

$$ID = \frac{1}{2} \sum_i \left| \frac{M_i}{\sum_i M_i} - \frac{F_i}{\sum_i F_i} \right|$$

where F and M are respectively the frequencies of women and men in sector i . The ID shows the percentage of women or men required to make the distribution of employment equal (it varies from 0 to 100). The ID index is sensitive to the number of sectors.⁹

9. It tends to rise with the detail of the classification adopted (Bettio and Verashchagina, 2009).

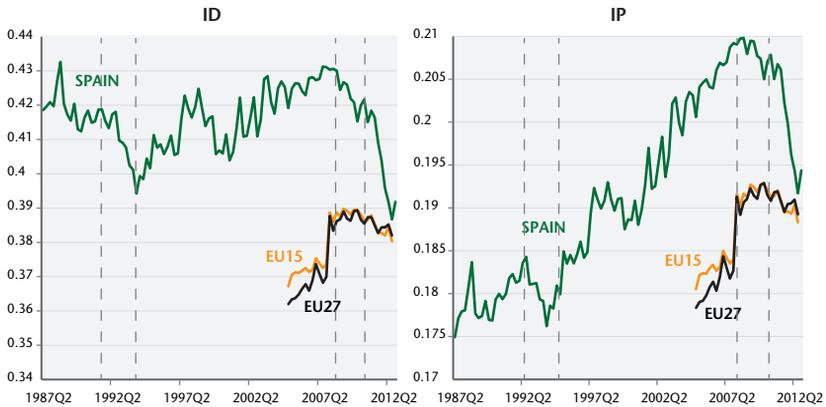
In order to take into account the female share of employment, we calculate the standardised or Karmel and MacLachlan index (IP):

$$IP = \frac{1}{T} \cdot \sum_i \left| \left(1 - \frac{\sum M_i}{T} \right) M_i - \frac{\sum M_i}{T} F_i \right|$$

where T is total employment and F and M are respectively the frequencies of women and men in sector i . Note that with this index, segregation may increase over time as women’s employment rises.

Figure 4 shows the change in ID and IP over the last two decades for Spain, EU15 and EU27.¹⁰ The proportion of women who would have to change industry for there to be an even distribution of employment between men and women is higher in Spain than in Europe. After the economic crisis, the dissimilarity index starts to fall, revealing that the crisis had an uneven effect across industries.

Figure 4. Dissimilarity indices by industry



Source: Own calculations based on EPA (INE) and LFS (EUROSTAT) data.

Note that for both economic crises, segregation falls during downswings and rises during upswings.

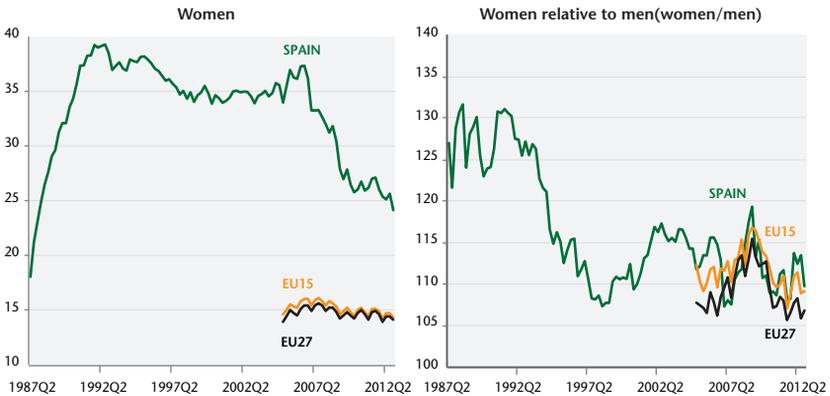
10. We calculate the ID and IP using the two-digit industry classification shown in the Appendix. Note that there is a classification change in 2008 from NACE Rev. 1.1 to NACE Rev. 2, and the results are not completely comparable; for this reason we see a small jump in 2008 where the series overlap.

1.4. Temporary jobs and unemployment

In 1984, temporary contracts were liberalised to make the labour market more flexible: first, their use was extended to the hiring of employees performing regular activities; second, they came with much lower dismissal costs than regular permanent contracts. Spain soon became the European country with the highest incidence of temporary employment, rising from 15% in 1987 to over 30% from 1990. As we can see in Figure 5, the development of temporary contracts has been one of the prominent characteristics of the Spanish labour market. The share of temporary employees in Spain is almost double the EU average, although the difference has fallen over the last decade.

This kind of contract mainly affects traditionally weaker groups in the labour market, such as immigrants, young people and women. As Figure 5 indicates, the share of employees with temporary contracts is higher for women than for men in both Spain and Europe. In the first part of the period, and during the 1992-1993 recession, the gender gap in the incidence of temporary jobs was larger (women 35% and men 30%), than in the current recession (31% and 28%).

Figure 5. Proportion of workers with temporary jobs

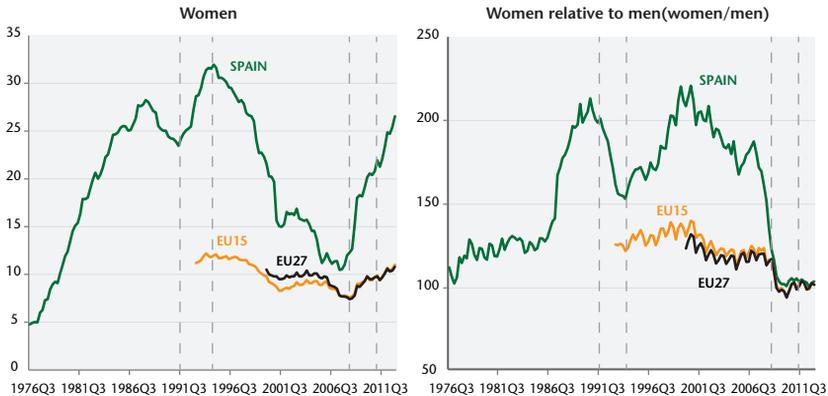


Source: Own calculations based on EPA (INE) and LFS (EUROSTAT) data.

Note that the greater incidence of temporary jobs for women has negative consequences: these jobs typically pay less and are associated with lower satisfaction (Amuedo-Dorantes, 2000; Ahn, 2005).

Last, Spain has the highest female unemployment rate in the European Union, at 25 percent in 2012, with figures that have been over the EU15 and EU27 level, on average, for the entire period (Figure 6). Furthermore, the gender unemployment gap is much higher in Spain, where the female unemployment rate is double that for men on some occasions, than in the EU15.

Figure 6. Unemployment rates



Source: Own calculations based on EPA (INE) and LFS (EUROSTAT) data.

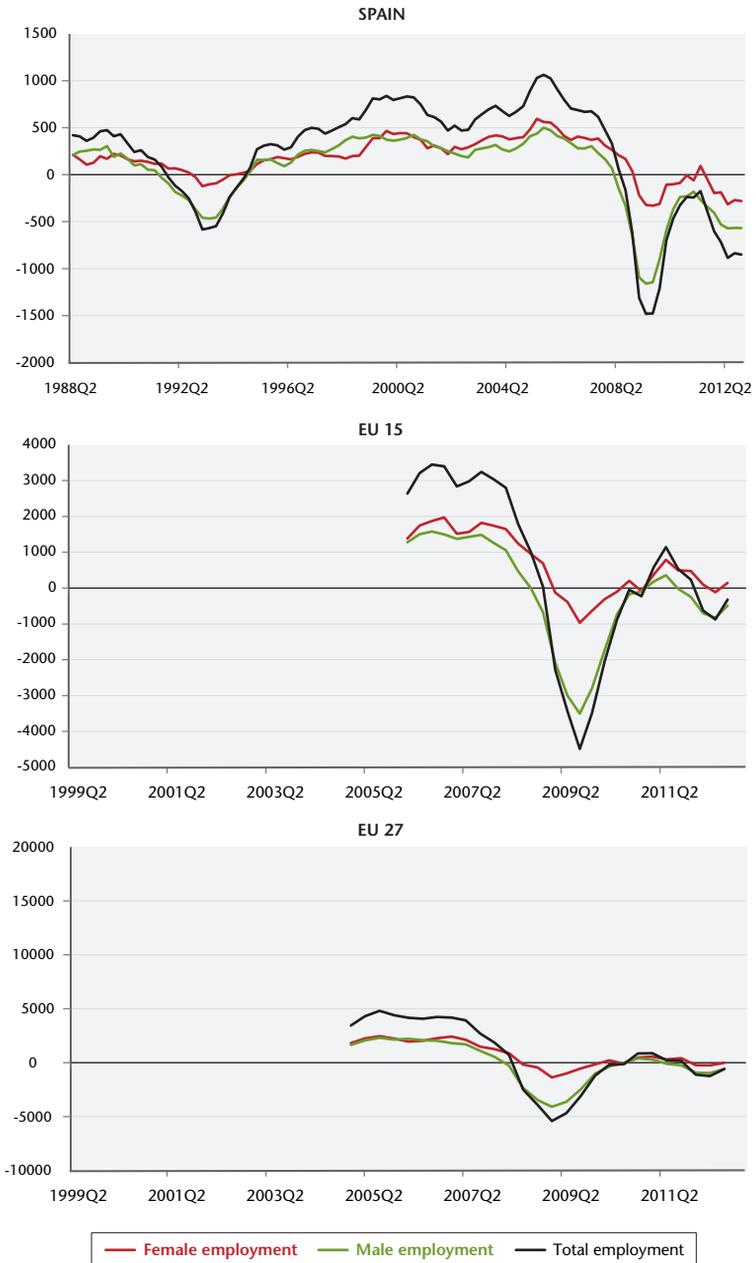
2. The dynamics of female employment during recessions

In the previous section we described the past and current trends in women's situation on the Spanish labour market, and their position relative to men. We now turn to the analysis of the dynamics of female employment during recessions. Since the sensitivity of employment to the business cycle is greater in Spain than in other European countries, we would like to ask how this differs by sex.

Figure 7 shows the employment change for men and women, and the total employment change.¹¹ Job destruction has been more significant for men than for women in the three recession periods for both Spain and the European Union. Nevertheless, it seems that crises affect Spanish women more than other Europeans, and especially so in the last phase of the current recession, i.e. after 2011.

11. In order to avoid the seasonality found in quarterly data we calculate employment growth relative to the same quarter of the previous year.

Figure 7. Employment growth



Source: Own calculations based on EPA (INE) and LFS (EUROSTAT) data.

Following Humphries (1988, rev. 2012), we break down the changes in female employment ($\Delta F_t = F_t - F_{t-4}$) into growth, share, and interaction effects as follows:

$$\Delta F_t = \underbrace{\sum_i (T_{it} - T_{it-4}) p_{it-4}}_{\text{growth effect}} + \underbrace{\sum_i (p_{it} - p_{it-4}) T_{it-4}}_{\text{share effect}} + \underbrace{\sum_i (p_{it} - p_{it-4}) (T_{it} - T_{it-4})}_{\text{interaction effect}}$$

Here F_t is female employment in year t , p_{it} the proportion of female employment in sector i ¹² in year t , and T_{it} total employment in sector i in year t .¹³

The *growth effect* picks up the effect of changes in total employment in each industry holding the share of women in each industry constant. The *share effect* measures the effect of changes in the share of women workers in each industry holding total employment in each industry constant. Finally, the *interaction effect* measures the interaction between changes in industrial employment and the share of women. All of these effects can be positive or negative, and it is their sum that determines the final change in female employment.

We use this decomposition to explain the changes in female employment in Spain over the two crises. As can be seen in Figure 8, these changes are mainly driven by the growth effect, although the share effect also plays an important role.

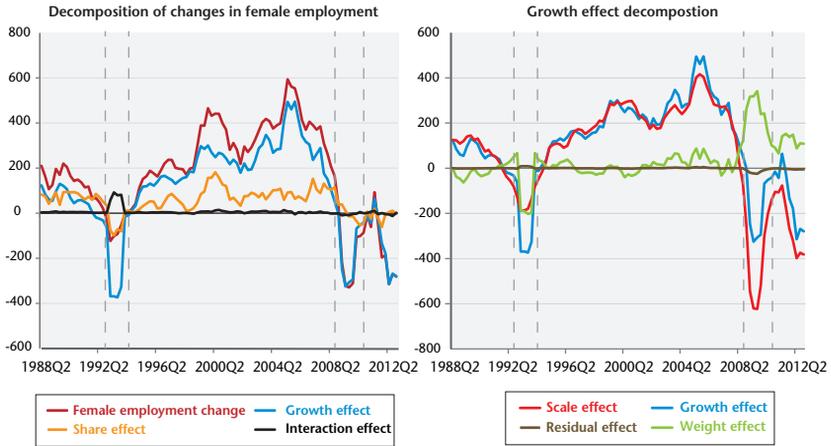
The share effect was negative in the recession of the early 1990s, i.e. the proportion of women workers in some sectors fell keeping total employment in that sector constant. On the contrary, in booms the share effect was positive, showing a recovery in the share of women by sector. This negative share effect in downswings and the positive effect in recoveries suggest that women acted as a “buffer” labour force (Rubery, 1988, rev. 2012; Humphries, 1988, rev. 2012) in the early 1990s: they were considered as a flexible reserve to be hired in upturns and fired in downturns, at a time when their share of temporary jobs was particularly high relative to men. In the current recession, the share and buffer effects seem less significant as explanations of female employment changes: women have become relatively more stable.

12. We use the two-digit NACE disaggregation. See the Appendix for more details.

13. Note that $F_t = \sum_i T_{it} p_{it}$, we nevertheless use p_{it} to simplify notation.

The fact that the sum of the share and growth effects is larger than the observed change in female employment in the 1992-1993 informs us that there was a considerable interaction effect in the opposite direction (positive).¹⁴

Figure 8. The decomposition of changes in female employment



Source: Own calculations based on EPA (INE) and LFS (EUROSTAT) data.

It is important to delve deeper into the growth effect, as this is the main determinant of employment changes. Letting $W_{it} = T_{it} / \sum_i T_{it}$ be the weight of employment in sector i in year t in total employment, we are able to decompose the growth effect $GE = \sum_i (W_{it} T_t - W_{it-4} T_{it-4}) p_{it-4}$ as follows (Humphries, 1988, rev. 2012):

$$GE = \underbrace{\sum_i (T_t - T_{t-4}) W_{it-4} p_{it-4}}_{Scale\ effect} + \underbrace{\sum_i (W_{it} - W_{it-4}) T_{t-4} p_{it-4}}_{weight\ effect} + \underbrace{\sum_i (W_{it} - W_{it-4}) (T_t - T_{t-4}) p_{it-4}}_{residual\ effect}$$

The *scale effect* reflects changes in total employment holding the relative weights of sectors constant. The *weight effect* then measures changes in the relative weights of the sectors holding total employment constant, and the *residual effect* measures the

14. The sum of the share and growth effects would imply a greater fall in female jobs in the 1992-1993 recession. This loss was compensated by a positive interaction effect, i.e. the interaction between changes in total employment or in women’s share by industry.

change derived from the interaction between changing total employment and sector weights.

As can be seen in Figure 8, the growth effect is explained mainly by the scale effect. Nevertheless, the weight effect, i.e. the changes in the relative weight of the industries holding total employment constant, plays an important role during recessions and is the main difference between the two crises considered here: in the 1993 recession the weight effect was negative while it is positive in the current recession.

In the ongoing recession (especially in the first phase), the distribution of female employment worked to reduce female job losses (the segregation effect). The first phase of the crisis mainly affected the male-dominated construction sector.¹⁵ After that, the crisis spread to other sectors and the fall in public employment mainly affected women.¹⁶ Consequently, in the second phase of the ongoing crisis, fewer women's jobs have been saved due to sector segregation – the weight effect has been smaller in the second phase of the ongoing crisis. In the 1992 crisis, it seems that sector segregation was associated with the concentration of women in relatively unstable jobs or unstable firms. As a result, the buffer mechanism operated through job segregation and not in opposition to it.

3. Model and Results

In this section, we attempt to explain the female-male unemployment ratio using variables reflecting both the demand for labour and the labour-supply behaviour of men and women.

Although, there is a vast literature on gender wage gaps using different data sources from various countries, such as Ugidos (1997) and De la Rica *et al.* (1995) for Spain, few papers have analysed the gender unemployment gap and, to our knowledge, none have considered this aspect in Spain. Our reference model is based on Seeborg and Deboer (1987) and includes the aggregate

15. Spanish growth during the last decade was labour-intensive and relied mostly on the construction sector. The weight of this sector has increased significantly: two-thirds of the housing units built in Europe between 1999 and 2007 were built in Spain (Éltető, 2011).

16. Fiscal consolidation (austerity) had an immediate negative impact on the economy as it operates via aggregate demand, affecting all sectors.

unemployment rate, the change in the share of total employment working in male-dominated industries, the percentage of men enrolled in education, and female labour-force participation. Based on the results in the previous section, we also incorporate variables accounting for gender differences in temporary jobs. We formulate the following model:

$$R = \beta_1 + \beta_2 X + \mu$$

with R being the gender gap in the unemployment rate, X a set of explanatory variables explained below, and μ an error term.¹⁷

We first consider the aggregate unemployment rate as a proxy for the business cycle. Niemi (1977) and Seeborg and Deboer (1987) show that this is an important demand-side variable.

Job destruction is one of the main contributors to the unemployment rate. As we have seen in the decomposition of female employment changes, there could be a number of explanatory factors. Sectoral segregation has been important in explaining fewer female job losses during the ongoing crisis, while it seems that women holding unstable jobs resulted in a buffer effect during the 1992-1993 crisis.

Sectoral shifts in labour demand are hypothesised to be an important demand-side determinant of the gender unemployment ratio, as women and men are concentrated in different sectors (Queneau and Sen, 2008). As we have seen in previous sections, the female/male-dominated industry classification is quite stable over time.¹⁸ Hence, the demand for female labour depends on the demand in female-dominated sectors. As such, sectoral shifts in labour demand could be more important in explaining female employment than cyclical factors. It is thus important to account for the industry mix to explain the gender gap in unemployment rates (Nilsen, 1984; Williams, 1985; Goodman *et al.*, 1993). We include the change in employment generated by the dynamics of male-dominated industries over the whole period, i.e. Construction, Energy, and Transport. Taking into account a potential non-

17. We choose the dependent variable as the ratio rather than the difference between male and female unemployment rates as the difference is likely more sensitive to the huge changes in overall unemployment in Spain.

18. The gender division of housework in households and the existence of ideological or socially-constructed boundaries between jobs contribute to the perpetuation of labour-market gender segregation over time.

linear relationship between this variable and the gender unemployment gap, we also include its square and cube.

The gap in the incidence of temporary jobs could also be important in explaining the female to male unemployment ratio (the buffer effect). As noted above, employment and unemployment in Spain are very sensitive to the cycle. Wölfl and Mora-Sanguinetti (2011) argue that nominal wage inertia and the high proportion of temporary contracts could explain this strong cyclical reaction of employment in Spain. Greater turnover in Spain, coupled with limited worker geographical and occupational mobility, is likely to raise unemployment as workers seek new jobs. In addition, Bentolila and Cahuc (2010) and Pissarides (2013) underline that Spain exhibits a strikingly different response in unemployment relative to other European economies, due to its larger gap between the dismissal costs of workers with permanent and temporary contracts. The overrepresentation of women or men in unstable jobs could help explain the gender unemployment gap. We capture this effect by including the share of women holding fixed-term jobs.

As we have seen, not only job destruction but also greater labour supply can influence the unemployment rate. Rising female labour-force participation can increase the unemployment rate since the newcomers may be unemployed in the short-run. The effect will depend on the distribution of the female newcomers between employment and unemployment. For instance, Niemi (1977) found that an increase in female labour-force participation increased the relative female unemployment rate. Hotchkiss and Robertson (2006) and Queneau and Sen (2008) argue that women respond to positive and negative changes in labour-market conditions differently, while men respond in the same way. As a result, we might expect that women will react more symmetrically to labour-market conditions as they become more attached to the labour market.

Niemi (1977) and Seeborg and Deboer (1987) show that education is an important determinant of the gender unemployment gap for younger age groups, as they suggest that male enrolment is more volatile than female enrolment. However, in Spain, enrolment volatility turns out to actually be quite similar for men and women. We did include in the model male and female school-

enrolment rates separately, and that of women relative to men. All of these produced similar results. The retained specification, as in the previous literature, includes male school enrolment only.

Another potential group of explanatory factors are institutional features such as the unemployment-insurance system, family benefits, and the wage gap. However, we do not consider such institutional factors here as we want rather to focus on a simple model.

We present the results in Table 1. We use quarterly Spanish data from the second quarter of 1987 to the fourth quarter of 2012 for the estimations. The first column shows the reference equation following Seeborg and DeBoer (1987), and columns 2 and 3 add the share of temporary employment (job instability).

Table 1. Results for the female unemployment rate relative to male unemployment rate

	(1)	(2)	(3)
Aggregate Unemployment rate	-0.039***	-0.039***	-0.028***
Enrolment rate _{MALE}	0.928	-1.08	0.89
Labour force participation _{FEMALE}	-0.042***	-0.047***	-0.055***
Δ Employment _{MALE INDUSTRIES}	3.424	2.354*	1.229
$(\Delta$ Employment _{MALE INDUSTRIES}) ²	-7.713***	-5.744***	-1.72
$(\Delta$ Employment _{MALE INDUSTRIES}) ³	-61.239*	-43.629**	-19.766
Temporary _{GAP}		-1.363***	-1.807***
Temporary _{MALE INDUSTRIES}			-0.460***
Constant	4.049***	6.067***	6.993***
Observations	99	99	72
R-squared	0.9	0.93	0.96
Adjusted R-squared	0.89	0.93	0.95

* p<.1, ** p<.05, *** p<.01.

Note: We include quarterly dummies accounting by seasonality.

As might be expected, the aggregate unemployment rate attracts a negative estimated coefficient which is significant in all specifications: the unemployment gap is pro-cyclical, and is lower in recessions. This is consistent with female unemployment being

less cyclically-sensitive than male unemployment (Seeborg and DeBoer, 1987).

From the demand side, the change in employment in male-dominated industries attracts a positive coefficient, meaning that a negative shock to employment in male-dominated industries will reduce the gender unemployment gap. Nevertheless, the fact that square and cube of this variable are negative indicates that large sectoral changes in employment patterns have much smaller effects on the gender unemployment gap. These findings are consistent with the importance of the segregation hypothesis in explaining cyclical changes in female employment: the concentration of women in less-cyclical sectors reduces their job losses and so the unemployment gap in recessions.

From the supply side, the share of men in education turns out to be insignificant in all specifications. However, this variable is arguably more important for younger age cohorts (Niemi, 1977; Seeborg and DeBoer, 1987).

Female labour-force participation is negative and significant in all specifications, so that rising female labour-force participation does not necessarily lead to a worsening in the relative unemployment position of women. These results are consistent with Seeborg and DeBoer (1987).

Finally, we include the share of women relative to men holding fixed-term contracts to see whether gender differences in job instability affect the unemployment gap. This variable attracts a negative and significant coefficient, so that more female temporary jobs relative to men reduces the unemployment gap. This could imply that the buffer effect for men is higher than that for women, perhaps due to the combination of segregation and temporary work in the sectors that are first hit in recession. Male-dominated sectors such as construction are, at the same time, sectors with a great deal of temporary work. To test the hypothesis of a combination of segregation and temporary work, we include the share of workers holding fixed-term jobs in male-dominated industries relative to the average in total employment.¹⁹ This

19. Note that we only have data on fixed-term contracts by industry from 1992; as a result, the sample is reduced to 72 observations.

attracts a negative and significant coefficient: as the share of temporary jobs increases in male-dominated industries relative to the average in the economy, the gender unemployment gap falls. This is consistent with a greater buffer effect for men than for women due to being employed in sectors which are more affected by both temporary work and recessions.

4. Conclusions

The labour-market situation of women has improved in Spain over the past two decades with respect to almost all outcomes: they have increased their education, employment rate and labour-force participation. However, as we have seen, Spanish women have not yet attained European levels in most of the categories.

Unemployment, one of the most important problems in the Spanish labour market, usually affects women more than men. Nevertheless, the female unemployment rate has become closer to the male rate during the current recession.

Analysing the changes in female employment since 1987, we have seen that there are a number of different explanations for job losses during recessions. While the buffer effect was important for women in the 1992-1993 recession, it seems to play no role in the current recession. Gender segregation in the labour market has to an extent spared female job losses in the ongoing recession, while it had reinforced the buffer effect in the 1992-1993 recession.

Our regression results shed some light on these differences with the. To explain the cyclical behaviour of the relative unemployment rate we consider both the demand side (general economic conditions and industry shifts) and the supply side (female labour-force participation, education, *etc.*). We should first underline out that the gender unemployment gap in Spain is countercyclical: a higher aggregate unemployment rate reduces the gender unemployment gap.

The estimation results confirm the segregation hypothesis, i.e. the concentration of women in less-cyclical sectors reduces both their job losses and the unemployment gap. In particular, negative shocks affecting employment in male-dominated industries will affect the male unemployment rate more than the female rate (i.e.

reduce the gender unemployment gap). The buffer effect for women is more difficult to identify in the estimation results. The share of women with fixed-term contracts relative to men actually seems to have a negative effect on the gender unemployment gap. One possible explanation is that the buffer effect for men is higher than that for women. Moreover, both the segregation and buffer effects could appear on the labour market at the same time. Our results show that a larger share of temporary jobs in male-dominated industries is associated with a lower gender unemployment gap.

Finally, from the supply side, we should emphasise that the rising female labour-force participation does not necessarily worsen women's relative unemployment position. On the contrary, the more women participate in the labour market, the more they stay in employment during recessions.

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Appendix

Abbreviation	Industry 2 digits
A01	Crop and animal production, hunting and related service activities
A02	Forestry and logging
A03	Fishing and aquaculture
B05	Mining of coal and lignite
B06	Extraction of crude petroleum and natural gas
B07	Mining of metal ores
B08	Other mining and quarrying
B09	Mining support service activities
C10	Manufacture of food products
C11	Manufacture of beverages
C12	Manufacture of tobacco products
C13	Manufacture of textiles
C14	Manufacture of wearing apparel
C15	Manufacture of leather and related products
C16	Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials
C17	Manufacture of paper and paper products
C18	Printing and reproduction of recorded media
C19	Manufacture of coke and refined petroleum products
C20	Manufacture of chemicals and chemical products
C21	Manufacture of basic pharmaceutical products and pharmaceutical preparations
C22	Manufacture of rubber and plastic products
C23	Manufacture of other non-metallic mineral products
C24	Manufacture of basic metals
C25	Manufacture of fabricated metal products, except machinery and equipment
C26	Manufacture of computer, electronic and optical products
C27	Manufacture of electrical equipment
C28	Manufacture of machinery and equipment n.e.c.
C29	Manufacture of motor vehicles, trailers and semi-trailers
C30	Manufacture of other transport equipment
C31	Manufacture of furniture
C32	Other manufacturing
C33	Repair and installation of machinery and equipment
D35	Electricity, gas, steam and air conditioning supply
E36	Water collection, treatment and supply
E37	Sewerage
E38	Waste collection, treatment and disposal activities; materials recovery
E39	Remediation activities and other waste management services
F41	Construction of buildings
F42	Civil engineering
F43	Specialised construction activities
G45	Wholesale and retail trade and repair of motor vehicles and motorcycles
G46	Wholesale trade, except of motor vehicles and motorcycles
G47	Retail trade, except of motor vehicles and motorcycles

H49	Land transport and transport via pipelines
H50	Water transport
H51	Air transport
H52	Warehousing and support activities for transportation
H53	Postal and courier activities
I55	Accommodation
I56	Food and beverage service activities
J58	Publishing activities
J59	Motion picture, video and television programme production, sound recording and music publishing activities
J60	Programming and broadcasting activities
J61	Telecommunications
J62	Computer programming, consultancy and related activities
J63	Information service activities
K64	Financial service activities, except insurance and pension funding
K65	Insurance, reinsurance and pension funding, except compulsory social security
K66	Activities auxiliary to financial services and insurance activities
L68	Real estate activities
M69	Legal and accounting activities
M70	Activities of head offices; management consultancy activities
M71	Architectural and engineering activities; technical testing and analysis
M72	Scientific research and development
M73	Advertising and market research
M74	Other professional, scientific and technical activities
M75	Veterinary activities
N77	Rental and leasing activities
N78	Employment activities
N79	Travel agency, tour operator reservation service and related activities
N80	Security and investigation activities
N81	Services to buildings and landscape activities
N82	Office administrative, office support and other business support activities
O84	Public administration and defence; compulsory social security
P85	Education
Q86	Human health activities
Q87	Residential care activities
Q88	Social work activities without accommodation
R90	Creative, arts and entertainment activities
R91	Libraries, archives, museums and other cultural activities
R92	Gambling and betting activities
R93	Sports activities and amusement and recreation activities
S94	Activities of membership organisations
S95	Repair of computers and personal and household goods
S96	Other personal service activities
T97	Activities of households as employers of domestic personnel
T98	Undifferentiated goods- and services-producing activities of private households for own use
U99	Activities of extraterritorial organisations and bodies

WOMEN AND MEN'S EMPLOYMENT IN THE RECESSIONS OF THE 1990s AND 2000s IN SWEDEN

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The segregation hypothesis predicts that women are sheltered in recessions, since they are over-represented in the public sector and this sector is less affected by the economic cycle, than are male-dominated manufacturing and construction. Gender segregation in the labour market is strong in Sweden, especially as the local government sector is big and many women work in this sector. It could then be expected that women's employment should be protected relative to men's. However this has not been the case. On the one hand, employment has been lost in local government, while on the other hand women have found jobs to a greater extent than men in the private sector. This is partly because of employment transfers from local government to the private sector, due to privatisation, outsourcing, etc. But structural transformations towards a bigger private service sector and the recruitment of employees with higher education may also benefit women.

Keywords: Sweden, Recession, Gender segregation, Employment, Public sector, Private sector.

At the onset of an economic recession, men tend to lose comparatively more jobs than women. The reason is that the labour market is gender segregated, with a greater concentration of male workers in cyclically sensitive sectors, such as construction and manufacturing. In contrast, women are over-represented in less volatile areas such as care, health, education and the public sector in general (Applebaum, 2011; Bettio *et al.*, 2012; McKay *et al.*, 2013; Rubery and Rafferty, 2013). In fact the overall level of gender segregation in a country is positively associated with