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Conference Paper

Unequal distribution of salary from a gender perspective and the impact of recession on the catalan labor market

54th Congress of the European Regional Science Association: "Regional development & globalisation: Best practices", 26-29 August 2014, St. Petersburg, Russia

Provided in Cooperation with:

European Regional Science Association (ERSA)

Suggested Citation: Adillón, M.Jesús Gómez; Piqué, M.Àngels Cabasés (2014) : Unequal distribution of salary from a gender perspective and the impact of recession on the catalan labor market, 54th Congress of the European Regional Science Association: "Regional development & globalisation: Best practices", 26-29 August 2014, St. Petersburg, Russia, European Regional Science Association (ERSA), Louvain-la-Neuve

This Version is available at:

<https://hdl.handle.net/10419/124209>

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Unequal Distribution Of Salary From a Gender Perspective and the Impact Of Recession On the Catalan Labor Market

Index: 1. Introduction. 2. Labor market development in Catalonia. 2.1. Evolution of the main figures of the Catalan labor market. 2.2. Wage recipients, pensions and unemployment benefits in Catalonia. 3. Gender wage structure in Catalonia (2005-2011). 3.1. Evolution of the average wage. 3.2. Analysis of intra-group wage inequality. 3.3. Wage gap or gender pay gap (GPG). 4. Conclusions. Bibliography and Webgraphy.

1. Introduction

One of the fundamental social and juridical recognized rights is the equality between men and women, this being one of the five underpinning values of the European Union¹. The European commitment in the fight for non-discrimination on grounds of sex is materialized in the last European Commission document “Strategy for equality between women and men, 2010-2015” detailing specific actions to advance in equality and at the same time, to integrate a gender perspective into all policies developed within the European Union, due to the persistence of vertical (concentration of women in lower occupational categories), horizontal (traditionally female occupations) and salary (and, consequently, lower levels of tax contribution), despite numerous legislative actions at national, European and international level.

Today, the increased presence of women in the labor market, as well as the higher level of education achieved suggest a positive trend. However, the current economic and financial recession with unemployment exceeding even the highest levels of the early 1990s (close to 22%), and since the number of households with all their members unemployed is growing rapidly (at the end of the year 2012, the percentage of Catalan households with all their working-age members unemployed was 13%, when at the end of the year 2007 it was 2.4%) means that groups such as women

¹ Charter of Fundamental Rights of the European Union, DO C 303 of December 14th 2007, article 23.

and young people², who have traditionally been the victims of major differences in the labor market (in salary, position of responsibility...) can be strongly affected and, consequently, the abovementioned European commitment could take longer.

Analyzing the impact of the current recession on the labor market in Catalonia from a gender perspective and quantifying the gender wage inequality between women and men is the aim of the present study as a framework for effective European action in this area.

2. Labor market development in Catalonia.

After a long and intense cycle of 12 years of economic expansion (1995-2007), with an average yearly growth rate of 3.5%, the Catalan economy began a phase of slowdown starting in the summer of 2007. Recession has intensified more than initially expected, mainly due to a strong decline in the housing sector worsened by the persistence of liquidity restrictions in the financial system, generating high rates of unemployment and precarious employment³.

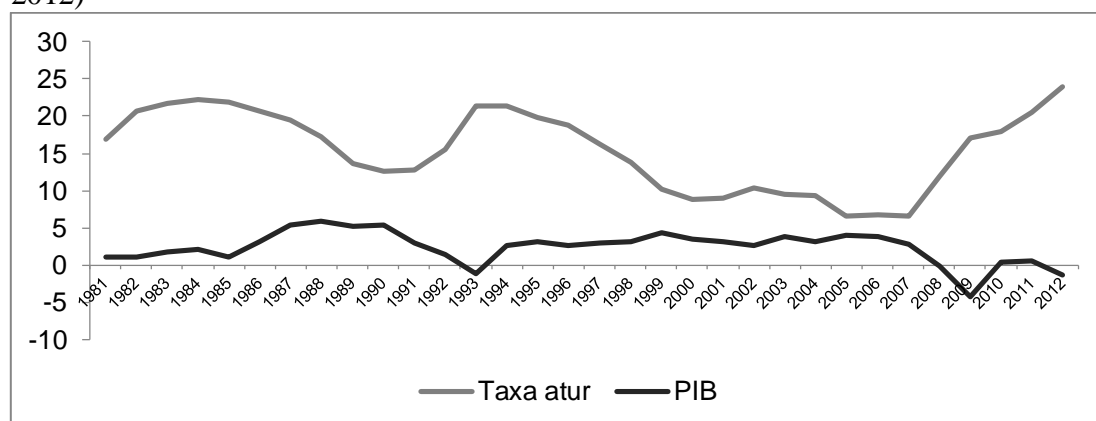
The cycles of economic recession impact negatively on the labor market in Catalonia, as the evolution of unemployment rates in the periods 1981-1995 and 1996-2012 show, as seen in Figure 1 (both with periods of expansion and recession) mainly due to the lack of adjustment mechanisms to adverse economic conditions: an economic structure with preponderance of low-productivity sectors, duality in hiring, rigidity in collective negotiations, low training level of a high percentage of workers and active policies which did not focus on the individual adaptation of the worker⁴.

² Gradin and Del Rio, 2013: 181-186.

³ Bank of Spain, 2009

⁴ Merino, A.; Aguado, T. and others, Research Project FIPROS 2008.

Figure 1. GDP growth at constant prices and unemployment rates in Catalonia (1981-2012)



Source: INE and self-elaboration.

With the aim of analyzing the effect of the current recession in Catalonia on the labor market from a gender perspective (period 2005 – 2012), a set of measures are calculated to quantify inequality in the distribution of wages, using first data from the INE's (National Statistics Institute) Survey of Active Population (Enquesta de Població Activa) to examine the evolution of its main figures and, secondly, using data from the Tax Agency, NSI⁵ and Eurostat.

2.1. Evolution of the main figures of the Catalan labor market.

In the period under study, 2005-2012, Catalonia has increased its population over 16s in 208,600 citizens (out of which a 21.9% are of Spanish citizenship and a 78.1% are foreign nationals), mainly due to the growth of female population (151,800 women who represent a 72.8% of the total figure and 57% of whom are immigrants). Figure 1 shows how until 2007 the growth of both groups is similar, but from 2008, with the start of recession, the decline is more pronounced for men, becoming negative as from 2009, while women have negative growth rates as from 2012, primarily due to a greater fall in foreign population. Summarizing, from 2008 to 2012 the male population over 16-year-olds has been reduced by 73,800 (79% of whom were immigrants) while the female population has increased by 44,000 (despite a reduction of 18,600 women).

⁵ With the data provided by the Inland Revenue by means of the statistics of the "Labor market and pension in tax sources", provided by the NSI since 2004, and updated until 2011 with "Survey of structural wages".

Table 1: Rates of annual variation of the population of 16-years-olds and above, grouped by nationality and gender (2005-2012)

Year	Men			Women		
	Total	Spanish	Foreign	Total	Spanish	Foreign
2005	--	--	--	--	--	--
2006	2.3%	-0.8%	25.9%	1.7%	0.6%	10.2%
2007	2.3%	0.7%	12.2%	1.9%	-0.6%	19.7%
2008	1.0%	-0.5%	9.0%	1.2%	0.6%	5.1%
2009	-0.3%	0.2%	-2.8%	0.2%	-0.1%	2.0%
2010	-0.4%	0.0%	-2.4%	0.3%	0.4%	-0.3%
2011	-0.8%	0.4%	-7.2%	0.1%	0.4%	-1.9%
2012	-1.9%	-0.7%	-8.8%	-0.4%	1.0%	-8.8%

Source: INE(National Statistics Institute) and self-elaboration.

The same behavior is observed as far as labor force is concerned. As Table 2 shows: (a) variation rates are negative for men from the beginning of recession and for women as from 2012 and (b) in both groups for the past year, the rates of variation of foreign workers are the most negative in recent years.

These figures show a greater incorporation of women than of men to the workplace beginning with the start of the period of recession, specifically, during the 2008-2012 period, the male labor force has fallen in 201,100 men (70% of them of Spanish nationality) while the female labor force has increased by 98,500 (also of Spanish nationality).

Table 2: Annual variation rates grouped by nationality and gender (2005-2012)

Year	Men			Women		
	Total	Spanish	Foreign	Total	Spanish	Foreign
2005	--	--	--	--	--	--
2006	2.0%	-2.3%	26.0%	3.9%	1.9%	16.0%
2007	2.7%	2.9%	1.9%	2.7%	-1.0%	22.7%
2008	-0.4%	-2.1%	7.1%	3.9%	4.2%	2.5%
2009	-3.3%	-3.1%	-4.0%	-0.3%	0.4%	-3.3%
2010	-0.1%	0.6%	-3.0%	2.6%	1.4%	8.1%
2011	-2.2%	-1.8%	-3.9%	0.5%	1.7%	-4.8%
2012	-3.6%	-1.8%	-11.0%	-0.7%	0.6%	-6.6%

Source: INE (National Statistics Institute) and self-elaboration.

As it can be seen in the above analysis, regarding the activity rate, if the difference between both groups in 2005 was of 20.19 pp, in 2012 the distance has been

shortened to 11.6 pp, as it can be seen in Table 3. Moreover, it must be noted that the activity rate of immigrant women is the one that presents greater growth.

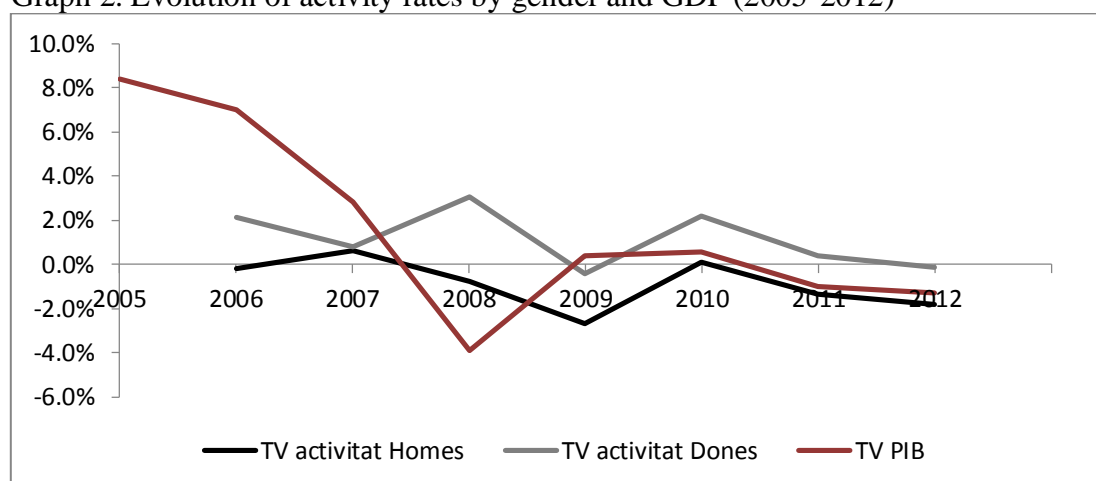
Table 3. Activity rates by gender and nationality (2005-2012)

Year	Men			Women			Variation rates	
	Total	Spanish	Foreign	Total	Spanish	Foreign	Men	Women
2005	72.1	69.9	87.5	51.9	50.6	62.0	--	--
2006	72.0	68.7	90.3	53.0	51.3	65.5	-0.2%	2.1%
2007	72.5	69.6	88.1	53.4	51.5	64.0	0.6%	0.8%
2008	71.9	68.9	87.0	55.1	53.0	66.6	-0.8%	3.1%
2009	70.0	66.9	85.7	54.8	53.0	65.2	-2.7%	-0.4%
2010	70.0	66.8	87.7	56.0	53.8	68.6	0.1%	2.2%
2011	69.1	65.6	89.4	56.3	54.2	68.3	-1.3%	0.4%
2012	67.8	64.9	85.9	56.2	54.2	69.3	-1.8%	-0.1%

Source: INE (National Statistics Institute) and self-elaboration.

As it is known, the activity rate⁶ decreases when the population growth rate is superior to the active labor force rate. This happened to the male group beginning from 2008 (some men became unemployed) and, as shown in Figure 2, they are the group that most deeply suffer the effects of recession. However, for women the highest fall in GDP coincides with the year of the greatest growth in their activity rate.

Graph 2. Evolution of activity rates by gender and GDP (2005-2012)



Source: INE (National Statistics Institute) and self-elaboration.

⁶ Activity rate indicates the relationship between labor force and the total population of 16 or older.

In relation to activity/employment rates by level of education, two things stand out. On the one hand, the group with higher education studies has the highest number of employed members, both in the male and female groups, with employment rates above 80%. On the other hand, as shown in Table 4, the major difference between male and female employment rates occur at lower levels of education, while the difference is negative in the doctoral group showing a significant improvement in 2009. It is also observed that the difference has narrowed down during the recession period among all education levels.

Table 4. Differences between male and female employment rates by educational level in percentage (2005-2012)

	Illiterate	Primary education	Secondary education and early years of vocational studies	Secondary education and the last years of vocational studies	Last years of secondary education	Higher education	PhD
2005	32%	26%	21%	14%	0%	4%	5%
2006	15%	24%	21%	17%	100%	2%	-8%
2007	24%	24%	22%	15%	23%	3%	-21%
2008	41%	24%	18%	14%	0%	0%	7%
2009	23%	23%	19%	8%	50%	-1%	-21%
2010	31%	20%	16%	9%	17%	-3%	-9%
2011	23%	19%	14%	8%	-10%	0%	-1%
2012	16%	14%	15%	9%	100%	0%	-3%
<i>Average difference 2005-2007</i>	24%	25%	22%	16%	41%	3%	-8%
<i>Average difference 2008-2012</i>	27%	20%	16%	10%	31%	-1%	-5%

Source: INE (National Statistics Institute) and self-elaboration. The current working population decreasing trend⁷, as shown in Table 5, is similar for both groups, and it is more intense for people under 35. Although the loss of jobs is higher for men, in that from the beginning of recession, the male working population has been reduced in

⁷ The working population includes public and private sector employees, employers, the self-employed and businessmen without employees, members of cooperatives, family adjustments and other professional situations.

561,000 workplaces and the female in 174,000 workplaces, it should be emphasized that from 2008 to 2012, women over 35's employment rate has increased (35,000 more women employed). Consequently, the employment rate⁸ shows a decreasing trend from 2008 which is less intense for women, so that the gap between male and female rates fluctuates from 20.5 pp in 2005 to 8pp to 2012.

Table 5. Evolution of the employed population by sex and age in thousands (2005-2012)

Year	Men			Women		
	Total	Under 35s	Over 35s	Total	Under 35s	Over 35s
2005	1,946	740	1,207	1,413	583	830
2006	1,983	751	1,232	1,469	610	859
2007	2,037	778	1,260	1,510	600	910
2008	1,888	656	1,233	1,511	566	944
2009	1,702	552	1,150	1,434	493	941
2010	1,677	516	1,161	1,456	501	955
2011	1,610	473	1,137	1,397	452	945
2012	1,476	408	1,067	1,336	390	945
<i>Difference 2008-2012</i>	<i>-561</i>	<i>-369</i>	<i>-192</i>	<i>-174</i>	<i>-209</i>	<i>35</i>

Source: INE and self-elaboration.

The numbers of employed population by type of working day, Table 6 continue showing the existence of gender differences, in that the percentage of female part-time employees is almost four times the male rate, and adds yet a new element, i.e. an increase in part-time employees in both groups from 2010.

Table 6. Evolution of the employed population by gender and type of working day, in thousands and percentage (2005-2012)

Year	Men		Women		Part-time % women	
	Full time	Part-time	Full-time	Part-time	Men	Women
2005	1,867	79	1,102	311	4.06%	22.01%
2006	1,900	83	1,151	318	4.17%	21.67%
2007	1,953	85	1,174	337	4.15%	22.29%
2008	1,808	81	1,181	330	4.27%	21.83%
2009	1,622	81	1,136	298	4.74%	20.78%
2010	1,599	79	1,145	311	4.70%	21.38%
2011	1,516	94	1,073	324	5.85%	23.16%
2012	1,377	99	1,024	312	6.70%	23.32%
<i>Difference</i>	<i>-576</i>	<i>14</i>	<i>-149</i>	<i>-25</i>		

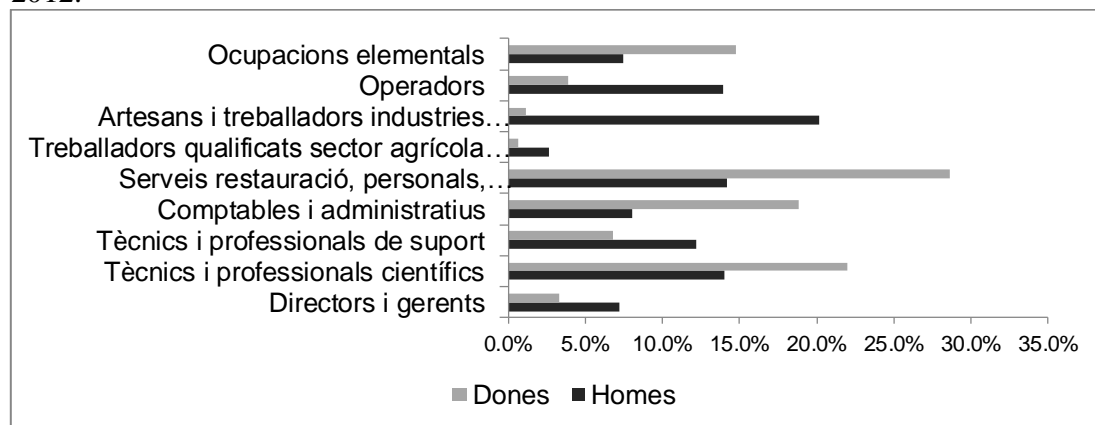
⁸ The employment rate is the ratio between the employed population and the population aged 16 or older.

2008-2012					
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Source: INE and self-elaboration.

By type of employment, and in reference to 2012, women stand out in areas related to accounting and administrative tasks, personal services and protection in basic tasks, and as technicians and professional scientists.

Figure 3. Percentage of employed population by gender and type of occupation, 2012.



Source: INE and self-elaboration.

The loss of employment between 2008 and 2012, Table 7 has concentrated mainly in the segment of workers with secondary education studies. However, employment among women with higher education levels has increased by 41,000 jobs, thus coinciding with the group that presents the highest employment rates.

Table 7. Evolution of the employed population by gender and level of education in thousands (2005-2012)

	Men			Women		
	Primary education or no studies	Secondary education	Higher education	Primary education or no studies	Secondary education	Higher education
2005	398	965	583	207	654	552
2006	359	1,044	580	192	729	548
2007	392	1,056	589	217	740	553
2008	361	930	598	218	712	581
2009	329	796	576	197	663	575
2010	288	847	542	206	651	600
2011	222	837	551	150	658	589
2012	188	745	543	151	591	594

<i>Difference 2008-2012</i>	-204	-311	-47	-66	-149	41
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Source: INE and self-elaboration.

By economic sectors, the sector with the highest degree of occupation is the service sector, to the extent that, in 2012, it employed 61% of men and 88% of women. In all sectors, as shown in Table 8, the decline in jobs has been staggered: the building industry in 2007, the industrial sector in 2008 and the service sector at the beginning of 2012 (despite the negative peak in 2009). We can also observe a greater impact on the male group, so that the total amount of workplaces lost during the recession are distributed as follows: 256,000 in the building industry, 168,000 in the general industry, 95,000 in services and 23,000 in the agricultural sector.

Table 8. Variation rates of the employed population by gender and economic sector (2005-2012)

Year	Agriculture		Industry		Building		Services	
	Men	Wome n	Men	Wome n	Men	Wome n	Men	Wom en
2005	--	--	--	--	--	--	--	--
2006	6.9%	17.9%	1.8%	-2.3%	17.2%	26.6%	-0.6%	5.3%
2007	-13.1%	-8.5%	-3.4%	-3.1%	7.5%	0.7%	4.2%	5.1%
2008	-24.1%	-7.3%	-2.4%	0.0%	-10.5%	7.1%	1.9%	2.9%
2009	-2.6%	-11.4%	-20.6%	-6.2%	-19.9%	0.3%	-3.3%	-5.7%
2010	14.5%	16.1%	-1.1%	-8.5%	-14.3%	-11.8%	-0.6%	1.1%
2011	-16.7%	6.9%	-3.5%	-12.0%	-14.3%	-22.0%	0.7%	1.7%
2012	-11.3%	-26.6%	-5.9%	-14.6%	-28.1%	-31.1%	-8.3%	-5.1%
Difference 2008- 2012 (thousa nds of euros)	-23	-4	-168	-75	-256	-14	-95	-65

Source: INE and self-elaboration.

Employees mostly work in the private sector, as shown in Table 9. However, it is noteworthy that from the year 2009, the ratio or “percentage of employees in the public sector in relation to the total number of employees” in the female group has increased at the expense of the percentage of self-employed workers and employees in the private sector. In contrast, in the male group the weight of self-employed workers has increased, although in absolute terms, the number of male employees, from 2008 to 2012, has fallen by 452,000 (the 94% of the private sector) against the

fall by 216,000 female employees (the 91% of the private sector, despite an increase of employees in the public sector by 31,000).

Table 9. Percentage of employees by gender and professional status (2005-2012)

Year	Men			Women		
	Self-employed workers	Public sector employees	Private sector employees	Self-employed workers	Public sector employees	Private sector employees
2005	19.9%	8.8%	71.2%	13.3%	14.1%	72.6%
2006	20.9%	7.4%	71.7%	12.2%	14.4%	73.4%
2007	20.7%	8.1%	71.2%	11.5%	14.0%	74.6%
2008	20.9%	8.6%	70.4%	12.5%	14.7%	72.8%
2009	19.6%	9.8%	70.6%	12.3%	17.0%	70.8%
2010	20.1%	8.8%	71.1%	10.7%	17.7%	71.6%
2011	20.0%	9.6%	70.4%	11.0%	17.9%	71.1%
2012	21.1%	9.4%	69.4%	11.7%	18.1%	70.2%

Source: INE and self-elaboration.

The analysis of the effects of recession on employees by type of contract, Table 10, shows that the effects have been deeper for employees with an indefinite contract in the private sector, since the public sector has increased the number of new indefinite contracts in the female group in 44,000 new jobs.

Table 10. Difference in the work force by gender and type of contract (2008-2012)

	Men		Women	
	Indefinite contract	Temporal contract	Indefinite contract	Temporal contract
Difference 2008-2012 total	-285,000	-167,000	-40,000	-118,000
Difference 2008-2012 Private sector	-263,000	-164,000	-84,000	-105,000
Difference 2008-2012 Public sector	-23,000	-3,000	44,000	-13,000

Source: INE and self-elaboration.

Regarding the unemployed, in 2007, just before recession started, the total amount of unemployed people was 252,000 (121,000 men and 131,000 women). By the end of 2012 the figure has increased to 885,000, that is to say, it is 3.5 times more (481,000 men and 404,000 women) in five years. The effects of the recession have been harsher on men, primarily because of the masculine nature of the hardest hit sectors, for instance the building sector (in 5 years 270,000 jobs have been lost, 94% of which were occupied by men). Looking at age, it can be observed in Table 11 that

the highest increase of unemployment occurs in the year 2008 for those under 35, with more intensity in men than in women.

Table 11. Variation rates of unemployed population by gender and age (2005-2012)

Years	Men		Women	
	Under 35 years	Over 35 years	Under 35 years	Over 35 years
2005	--	--	--	--
2006	-16.3%	38.1%	-15.0%	26.7%
2007	-8.3%	13.5%	2.1%	0.6%
2008	176.9%	67.6%	61.1%	36.4%
2009	30.4%	63.2%	31.6%	42.7%
2010	1.5%	10.4%	-0.7%	17.4%
2011	-5.3%	15.7%	17.8%	28.4%
2012	11.9%	16.5%	12.6%	14.7%

Source: INE and self-elaboration.

The unemployment rate⁹, as shown in Table 12, has increased from 5.6% for men and 8.1% for women in 2007 to 24.6% and 23.2%, respectively, in 2012, that is to say, they have more than doubled in a 5-year-recession period, with a major impact on those under 25, exceeding the 54%. In conclusion, before recession started the unemployment rate for women was higher and after 5 years of recession, it is just the opposite.

Table 12. Unemployment rates by gender and age (2005-2012)

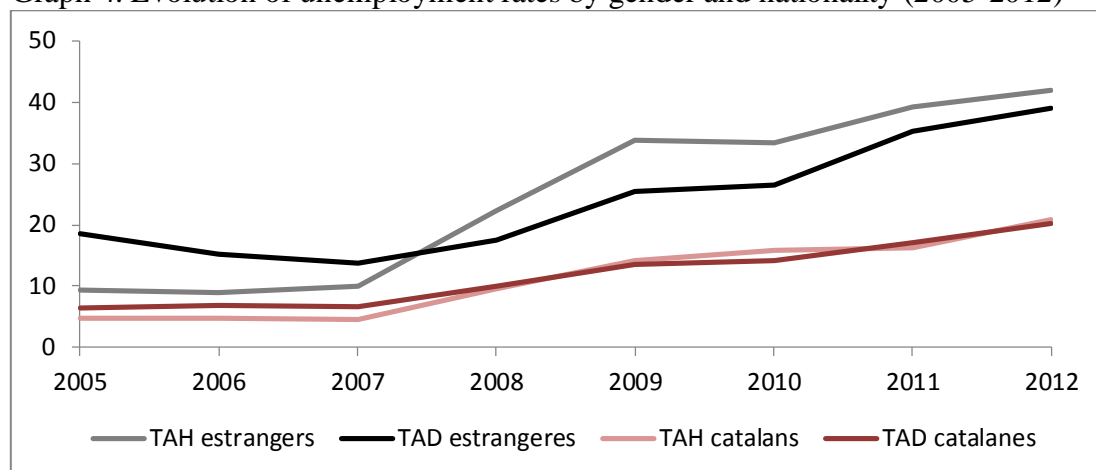
Years	Under 25 years			Over 25 years			Total		
	Men	Women	Difference	Men	Women	Difference	Men	Women	Difference
2005	13.8	18.0	-4.2	4.5	6.9	-2.4	5.5	8.2	-2.7
2006	13.2	17.0	-3.9	4.8	7.0	-2.2	5.6	8.1	-2.5
2007	12.8	15.3	-2.5	4.8	7.1	-2.3	5.6	8.0	-2.4
2008	29.8	22.9	6.9	10.3	10.0	0.3	12.2	11.4	0.8
2009	44.8	30.2	14.5	15.6	14.2	1.4	18.2	15.6	2.5
2010	48.0	30.3	17.7	16.6	15.1	1.4	19.2	16.5	2.7
2011	50.0	45.9	4.1	18.3	17.8	0.5	20.7	20.3	0.4
2012	54.4	49.5	4.9	22.1	21.0	1.0	24.6	23.2	1.4
Variation 2008-2012	41.6	34.2	--	17.3	13.9	--	19.0	15.2	--

Source: INE and self-elaboration.

⁹ The unemployment rate is the ratio between the unemployed and the labor force.

By nationality, the unemployment growth rate of foreigners has become higher than the Catalans', in that foreign male unemployment has risen from 9.9% in 2007 to 41.9% in 2012, and female unemployment from 13.7% to 38.8%, as shown in Figure 4.

Graph 4. Evolution of unemployment rates by gender and nationality (2005-2012)



Source: INE and self-elaboration.

By regions (CCAA) and analyzing three periods (before the recession, beginning of the recession and worsening of the recession), those groups with lower rates for both gender groups (Table 13) are the Basque Country and Navarre, being also the ones which show less variation between 2007 and 2012. Meanwhile, Catalonia, Madrid and the Balearic Islands have a female unemployment rate lower than the male's.

Table 13: Unemployment rate by regions (CCAA) and gender (2000-2012)

Regions	Period 2000-2007		Period 2008-2009		Period 2010-2012	
	Men	Women	Men	Women	Men	Women
<i>Global</i>	7.7	14.7	13.9	15.7	22.6	23.6
Andalusia	12.6	24.2	22.5	26.2	30.3	33.6
Aragon	3.8	8.9	11.8	11	16.2	18.2
Asturias	6.9	14.6	10.7	13.7	19.6	19.2
Balearic Islands	6.5	9.3	16.6	15	24.4	23.3
Canary Islands	8.8	14.9	22.9	25.6	31.3	30.5
Cantabria	6.7	12.9	10.3	11.4	16.1	17.3
Castile	6	15.6	10.5	15.7	16.2	19.9
Castile - La Manxa	5.7	16.4	15.3	19.7	22.5	29.1
Catalonia	6.6	10.9	15.1	13.5	21.5	19.9
C. Valencia	7.4	13.1	18.6	18.8	25.3	25.6
Extremadura	12	24.5	16	24.8	25.9	32.7

Galicia	7.6	15.3	10.3	12.5	18.1	18.8
Madrid	5.5	9.9	12	12.9	18.2	17.8
Murcia	6.9	14.7	19.7	18.1	26.8	27.4
Navarre	3.6	7.5	8.4	10.5	13.7	14.8
Basque Country	6.2	12	9.4	10.8	12.6	13.8
La Rioja	4.2	8.8	10.8	13	16.7	18.9

Source: EPA and self-elaboration.

In short, in Catalonia from 2008 to 2012, the employment trend is different according to gender. As shown in Table 14, the male working population has declined by - 561,500 men, while the number of unemployed has increased by 360,400. The difference between the two figures is because 127,300 people dropped out their activity since the number of people over 16 had fallen by 73,800. In contrast, unemployment of women is reduced to a lesser extent, 174,400, and the number of unemployed women increases by 273,100. In short, 54,100 women entered the labor force, since the number of working women increased by 98,500 while the growth of women over 16 was of 44,400.

Table 14. Yearly variation in absolute values of the population aged 16 and over in relation to economic activity by gender (2007-2012)

<i>Men</i>			
Year	Unemployed	Employed	Working force
2007	--	--	--
2008	+140,700	-148,700	-8,100
2009	+115,900	-186,400	-70,400
2010	+21,900	-24,900	-2,800
2011	+21,000	-67,300	-46,400
2012	+60,900	-134,200	-73,400
Total in 5 years	+360,400	-561,500	-201,100
Population of 16 and over	-73,800		
<i>Women</i>			
Year	Unemployed	Employed	Working force
2007	--	--	--
2008	+63,400	+600	+63,800
2009	+71,300	-76,200	-4,900
2010	+21,800	21,800	+43,600
2011	+67,700	-59,300	+8,400
2012	+48,900	-61,300	-12,400
Total in 5 years	+273,100	-174,400	+98,500
Population of 16 and over	+44,400		

Source: INE and self-elaboration.

2.2. Wage recipients, pensions and unemployment benefits in Catalonia.

From the database provided by the Inland Revenue¹⁰, the labor market analysis is complemented by studying the recipients of wages, pensions and unemployment benefit (excluding those who receive funds through other means). In 2011 (latest data available), 54.8% (53.7% men and 46% women) were paid a salary, 29.1% were paid pensions and 16.1% were paid unemployed benefit, out of a total of 5,849,206 citizens who receive some remuneration in Catalonia. These percentages change the distribution of 2005 before recession, so that, respectively, the distribution was respectively of the 63.7%, 27.6% and 4.4%.

By gender, as shown in Table 15, from 2005 to 2011, the percentage of employed men has decreased while they have become recipients of unemployment benefit in a larger proportion than women.

Table 15. Proportion of all remuneration recipients by gender

Recipients	Men			Women		
	2005	2011	Variation	2005	2011	Variation
Employees	67.4%	56.3%	-11.2%	59.5%	53.2%	-6.3%
Pensioners	24.4%	26.9%	2.4%	31.1%	31.6%	0.5%
Recipients of benefits	8.1%	16.9%	8.7%	9.4%	15.2%	5.8%

Source: Inland Revenue and self-elaboration.

The average income of the groups studied, as shown in Table 16 highlights two aspects: a) the difference between the types of return and also, that between 2005 and 2011 the level of income increased; b) the average income difference between men and women in the three modalities.

Moreover, women who have received a salary have shortened the salary distance regarding men, from a ratio of 1.47 to 1.33, however, the ratio of women recipients of benefits has worsened instead. Male recipients of benefits, which in 2011 accounted for 16.9% of the total average, received an average of 4,323 euros per year, whereas female recipients of this very same group, representing 15.2% of the

¹⁰ Research based on census and that takes into account the Recipient Ratio of Salaries, Pensions and unemployment benefits when employers submit their Tax Return (Model 190). [Declaració Anual de Retencions i Ingressos a Compte sobre Rendiments de Treball.]

total average, received an average of 3,691 euros per year. These quantities are below the thresholds that establish the minimum wage (MW: it stood at 8,979.60 euros in 2011p.a.), and the minimum pension (MP: 7,985.60 euros p.a.).

Table 16. Average annual return per gender

	Men			Women			Ratio M/W	
	2005	2011	Variation	2005	2011	Variation	2005	2011
Employees	20,669	24,087	3,418	14,072	18,164	4,093	1.47	1.33
Pensioners	12,451	15,305	2,854	7,874	10,375	2,501	1.58	1.48
Recipients of benefits	3,557	4,323	766	3,102	3,691	589	1.15	1.17

Sources: Inland Revenue and self-elaboration.

Also, considering the information grouped by MW and MP income levels for 2011, the table shows that 27.3% of wage recipients and the 28.6% of pensioners have received remuneration below the minimum threshold and, if they are calculated by gender, according to Table 17, the percentage is higher in the group of women than of men.

Table 17. Percentage of employees and pensioners under MW and MP

Year 2011		
	Men	Women
Wage recipients under 1 MW	25.0%	30.1%
Pensioners under 1 PM	23.2%	33.6%
Year 2005		
	Men	Women
Wage recipients under 1 MW	36.7%	32.3%
Pensioners under 1 PM	17.8%	32.8%

Source: Inland Revenue and self-elaboration.

3. Gender wage structure in Catalonia (2005-2011)

Looking at the most important areas in the study of the labor market in the period between 2005-2012, it is clear that its evolution by gender is different and that it manifests inequalities in the average yearly income despite legislative and social progress in labor matters¹¹. However, in this time period, women's wages have

¹¹ Consejo Económico y Social, 2012, and Carrasco, R., Jimeno, J.F. and Ortega, A., 2012.

grown at an average rate higher than men's, a 4.3% against a 2.6%¹² (with similar figures in Catalonia as well as Spain globally).

Then, based on the survey "labor market and pensions in tax sources", and the survey "wage structure", we can delve into the structure of wages in Catalonia in order to detect and quantify the differences due to gender difference and to analyze the distribution¹³ of intergroup and intragroup inequality between men and women. The conclusions of this study, in line with other studies¹⁴, confirm that the overall wage dispersion has shown a countercyclical behavior, although, a major incorporation of women with a higher level of education and qualification in the labor market can be observed in the recession period.

3.1. Evolution of the average wage.

During the period under study the increased presence of women in the labor market is evident, with an increase from 43.8% in 2005 to 46.8% in the percentage of the total employed in 2011, as shown in Table 18. Also, their workforce volume increased from 34.7% to 39.4%, respectively. Despite the improvement, the figures already indicate a wage gap by reason of gender.

Table 18. Percentage of recipients of wages and workforce by gender (2005-2011)

Year	Recipients of wages		Workforce	
	Men	Women	Men	Women
2005	56.2%	43.8%	65.3%	34.7%
2006	55.7%	44.3%	64.8%	35.2%
2007	55.2%	44.8%	64.1%	35.9%
2008	54.9%	45.1%	63.0%	37.0%
2009	54.4%	45.6%	61.6%	38.4%
2010	54.1%	45.9%	61.1%	38.9%
2011	53.7%	46.3%	60.6%	39.4%

Source: *Inland Revenue and self-elaboration.*

¹² Recent contributions on wage structure are the following: Del Rio i Alonso-Villar (2008), Simon (2009), Merino, Aguado, et al (2010), Pazos (2010), Pijuan and Sánchez (2010), Lacuesta and Izquierdo (2012), Bonhome and Hospido (2012) and Arranz and García-Serrano (2012) among others.

¹³ The differences in absolute values that can be observed in relation to those presented in the previous section is mainly due to statistical sources, ones proceeding from a EPA survey and the others, used to calculate inequality, from a census.

¹⁴ Bonhomme and Hospido (2012).

If the evolution of employees and workforce are circumscribed to the 2008-2011 period, a growth can be observed in the female group, as is shown in Table 19, although the number of employees as a whole experiences a significant decline.

Table 19. Differences in wage and salary by gender.

Period	Men		Women	
	Employees	Workforce	Employees	Workforce
Difference 2005-2007	32,829	5,930,299,361	88,883	4,461,838,152
Difference 2008-2011	-234,440	-4,209,538,934	-107,733	1,341,058,132

Source: Inland Revenue and self-elaboration.

This result is a consequence of an increase in the average wage of women as opposed to men, in that before recession the ratio was 1.45 while after the recession period it was 1.32, mainly due to the increase experienced in the years 2008 and 2009, as evidenced in Table 20. Moreover, from 2010, and especially in 2011, men's average salary is maintained and even slightly reduced, leading to a clear loss of disposable income due to the fact that the increase in consumer prices exceeded the average wage variation (3.3%).

Table 20. Evolution of the average wage by gender (2005-2011)

Year	Average salary men	Average salary women	Relation M/W	Men wage rate variation	Women wage rate variation
2005	20,669	14,072	1.4689	--	--
2006	21,604	14,796	1.4601	4.5%	5.1%
2007	23,353	16,091	1.4513	8.1%	8.7%
2008	24,312	17,365	1.4001	4.1%	7.9%
2009	24,079	17,898	1.3453	-1.0%	3.1%
2010	24,103	18,120	1.3302	0.1%	1.2%
2011	24,087	18,164	1.3261	-0.1%	0.2%

Source: Inland Revenue and self-elaboration.

Also, by activity sector and in 2011, the concentration of women in activities related to social services is verified, and to a high percentage of activities with lower average wages (51.6%), as shown in Table 21 (vertical and horizontal inequality).

Table 21. Average annual wages by sector (NACE) and gender (2011)

	Men		Women	
Agriculture, forestry and fishing	9,476	2.1%	9,116	0.6%

Extractive industries, energy and water	29,422	1.6%	22,097	0.6%
Industry	28,850	18.2%	21,350	9.5%
Construction and real estate	19,634	12.8%	18,151	3.6%
Trade, transportation and repairs	23,977	22.3%	15,674	21.7%
Information and communication	30,685	3.6%	21,991	2.6%
Financial and Insurance institutions	35,994	3.6%	25,943	3.5%
Business services	22,968	12.6%	15,207	17.1%
Social services	27,359	13.5%	23,174	28.1%
Other personal services and entertainment	13,666	9.7%	10,285	12.8%

Source: Inland Revenue and self-elaboration.

Regarding Spain, the average wage is higher in Catalonia. In particular, the differential for women stood at 1,272 euros per year in 2005 and 1,900 in 2011, while for men it stood at 2,348 and 2,665, respectively. Also, it follows from Table 21, firstly, that Catalan women are the group whose average salary has increased the most the between the two periods, with an average of 4,092 euros and, second, that the salary gap between men and women in 2011 (as average salary in absolute values) in Catalonia has been of 5,923 euros and, in Spain, of 5,128 euros. That is, the wage gap in Catalonia is 15% higher when compared to Spain.

Table 21. Evolution of the average wage by gender (2005 and 2011)

Year	Men		Women		Total	
	Catalonia	Spain	Catalonia	Spain	Catalonia	Spain
2005	20,669	18,321	14,072	12,800	17,778	16,018
2011	24,087	21,422	18,164	16,264	21,348	19,102
Difference	3,418	3,101	4,092	3,464	3,570	3,084

Source: Inland Revenue and self-elaboration.

3.2 Analysis of intra-group wage inequality.

Taking into account the salary intervals facilitated by the Inland Tax Revenue, we analyzed wage concentration in both groups (women and men). The most significant results, as shown in Table 22 are: (a) the percentage of employees (men and women) who receive payments above 10 MW has decreased between 2005 and 2011, (b) the percentage of employees placed under MW 1 shows a different trend between Catalonia and Spain. While the Catalan population that in 2005 were paid less than 1

MW have redistributed into the following scales, in contrast, in Spain, the percentage of the population earning less than 1 MW has increased. These early findings already point to a worse redistribution in terms of wages in Spain.

Table 22. Percentage of population by gender and salary scale (2005 and 2011)

<i>Spain</i>						
Salary Scale	Men			Women		
	2005	2011	<i>Variation</i>	2005	2011	<i>Variation</i>
Up to 1MW	23.07%	28.11%	<i>5.04%</i>	37.96%	36.57%	<i>-1.40%</i>
From 1 to 2 MW	26.69%	24.45%	<i>-2.24%</i>	28.45%	28.51%	<i>0.06%</i>
From 2 to 3 MW	22.21%	20.59%	<i>-1.63%</i>	15.95%	16.43%	<i>0.48%</i>
From 3 to 4 MW	26.50%	25.57%	<i>-0.93%</i>	17.32%	18.19%	<i>0.87%</i>
More than 10 MWs	1.52%	1.28%	<i>-0.24%</i>	0.31%	0.30%	<i>-0.02%</i>
<i>Catalonia</i>						
Salary Scale	Men			Women		
	2005	2011	<i>Variation</i>	2005	2011	<i>Variation</i>
Up to 1MW	31.92%	25,.01%	<i>-6.91%</i>	32.34%	30.06%	<i>-2.28%</i>
From 1 to 2 MW	16.55%	19.65%	<i>3.09%</i>	28.92%	28.48%	<i>-0.44%</i>
From 2 to 3 MW	21.65%	22.91%	<i>1.26%</i>	19.10%	20.07%	<i>0.97%</i>
From 3 to 4 MW	27.88%	30.60%	<i>2.71%</i>	19.20%	21.00%	<i>1.80%</i>
More than 10 MWs	1.99%	1.84%	<i>-0.15%</i>	0.44%	0.39%	<i>-0.05%</i>

Source: Inland Revenue and self-elaboration.

Contrasting the percentage of employees with their overall workforce percentage, high inequality in the distribution of wages can be clearly seen in Table 23, both in the men's and women's group: a) in 2005 31.9% of men accounted for the 4.4% of the salary mass, while another 2% received 12.5%, and in 2011 25% accounted for the 3.9% of total salaries, while another 1.8% accounted for the 10.8% ; b) meanwhile, in 2005, 32.3% of women accounted for the 7.3% of the salaries, and only 0.4% received the 3.2%, while in 2011, 30.1% received 6.7% of the salaries and the 0.4% the 2.7%, c) nevertheless, a better redistribution is observed in the intermediate salary scale from 2005 to 2011 and, even so, it is clear that the higher in the salary scale, the more inequality there exists.

Table 23. Percentage of employees by gender and wage (2005 and 2011)

Salary Scale	2005		2011	
	% men	% work force	% men	% work force
From 0,5 to 1 SMI	31.9%	4.4%	25.0%	3.9%
From 1 to 2 MW	16.6%	10.1%	19.6%	11.2%
From 2 to 3 MW	21.7%	21.0%	22.9%	21.0%

From 3 to 4 MW	27.9%	52.1%	30.6%	53.0%
More than 10 MWs	2.0%	12.5%	1.8%	10.8%
	% women	% work force	% women	% work force
From 0,5 to 1 SMI	32.3%	7.3%	30.1%	6.7%
From 1 to 2 MW	28.9%	22.2%	28.5%	21.2%
From 2 to 3 MW	19.1%	23.7%	20.1%	24.2%
From 3 to 4 MW	19.2%	43.6%	21.0%	45.2%
More than 10 MWs	0.4%	3.2%	0.4%	2.7%
	MW: 7,182 euros		MW: 8,979.60 euros	

Source: Inland Revenue and self-elaboration.

From another perspective, we calculated two measures of inequality such as the Gini index and the Pietra index to quantify the dispersion in the distribution of wages between men and women in the period 2005-2011. For this purpose, considering the economic nature of the variable (wages), the model of concentration *Kakwani* has been adjusted, and it has provided a high goodness grip: $q(x) = p(x) \cdot A \cdot p(x)^\alpha (1-p(x))^\beta$, with A, α and β , parameters greater than zero, which determine the measures of concentration¹⁵.

We identify in the context as the random variables $p(x)$, the cumulative portion of the population in each stratum and in which the wage income has been divided and $q(x)$ as the cumulative portion of salary at each interval in which the entire range of possible wages has been divided, in both cases in an orderly distribution in per capita terms. The model is estimated using the method of minimum squares after transformation:

$$\ln p-q = \ln A + \alpha \cdot \ln p + \beta \cdot \ln 1-p + \varepsilon$$

Based on estimates, the Gini (G) and Pietra (P) measures of concentration are calculated. The former¹⁶ corresponds to twice the average of all distances between accumulation of population and their wages, and the latter¹⁷ is associated with greater

¹⁵ *Kakwani* equation shows the Standard proprieties of a concentration curve: domain between: domain: $0 \leq p \leq 1$: $p \in (0,1) \rightarrow q \in (0,1)$, increasing monotony: $dq/dp \geq 0$ and convexity: $d^2q/dp^2 \geq 0$.

¹⁶ The index that shows the expression: $G = 2E(p - q) = 1 - 2E(q)$, in the *Kakwani* expression takes the form $G = 2 \cdot A \cdot B(\alpha + 1, \beta + 1)$, with $B(\alpha + 1, \beta + 1)$ function *Beta d'Euler*.

¹⁷ The Index is expressed as $P = p_m - q(m)$ and in *kakwani's* equation is expressed as $p_m = \frac{\alpha}{\alpha + \beta} \cdot q_m = \frac{\alpha}{\alpha + \beta} \cdot A \cdot \alpha^\alpha \cdot \beta^\beta \cdot (\alpha + \beta)^{\alpha + \beta}$.

accumulations of distance between population and wages. Coefficient P is usually used as a lower bound to the G index, although it responds to twice the area of the largest triangle that can be inscribed within the area bounded by G, that is to say, it coincides with half the relative mean difference: $P = \frac{DMR}{2} \leq G$.

The results shown in Table 24 indicate a considerable degree of inequality in the distribution of wages per capita, which is larger in the group of women than in the group of men. In Catalonia, from 2005 to 2011 there has been a slight reduction in inequality, both for women and for men, while in Spain the effect has been the opposite for men, in line with some studies that have carried out their analyses from a gender perspective.

Table 24. Calculation of the Gini and Pietra indexes for wages and per capita

	Men		Women	
	<i>Gini</i>	<i>Pietra</i>	<i>Gini</i>	<i>Pietra</i>
Catalonia				
2005	0.282	0.357	0.296	0.323
2011	0.250	0.281	0.278	0.310
Spain				
2005	0.249	0.315	0.339	0.345
2011	0.262	0.329	0.323	0.337

Source: Inland Revenue and self-elaboration.

3.3 Wage gap or gender pay gap (GPG)

The gender pay gap (GPG) or wage gap¹⁸ is a measure that allows a global vision of gender inequality in terms of pay between men and women as the source of information¹⁹ to make comparisons in Europe. As shown in Table 25, the latest data provided by the NSI, the wage gap between men and women in Catalonia in 2010 was higher than in the rest of Spain and the whole of the 27 European Union member states. In contrast, it was the same as the Netherlands and inferior to Germany and Great Britain. Nevertheless, from 2004 to 2010, the gap has been reduced by 8pp in Catalonia, going from a difference in relation to the Spanish global from 6pp to 2.9pp.

¹⁸ The wage gap is measured by the “gender pay gap” (GDP), which represents the difference between the average gross revenue per hour of male and female employees as the average percentage of the gross revenue per hour of men employees.

¹⁹ It is estimated from the Harmonized Labor Cost Index, one of the euro indicators that member states, at the request of Eurostat, use to calculate the convergence of labor costs.

Table 25. Wage gap (GPG) (2004-2010)

Year	Catalonia	Spain	U-27	Netherlands	Germany	Great Britain
2004	25,8%	19.8%	--	--	--	--
2005	23.3%	18.8%	--	--	--	--
2006	22.7%	18.8%	17.7%	23.6%	22.7%	24.3%
2007	22.1%	19.1%	--	19.3%	22.8%	20.8%
2008	19.5%	15.7%	17.3%	18.9%	22.8%	21.4%
2009	19.1%	15.9%	16.6%	18.5%	22.6%	20.6%
2010	17.8%	14.9%	16.2%	17.8%	22.3%	19.5%

Source: Eurostat, INE and self-elaboration.

By type of employment in Catalonia, as shown in Table 26, the largest wage gap in 2010 and growing since 2004, is located between catering workers, staff and sellers. Then, the operators of facilities and equipment, assemblers, masculinized professions, as well as technical and support staff, directors and managers, the latter being the ones in which the gap has been reduced the most since 2006.

Table 26. Wage gap by type of employment in Catalonia (GPG) (2004-2010)

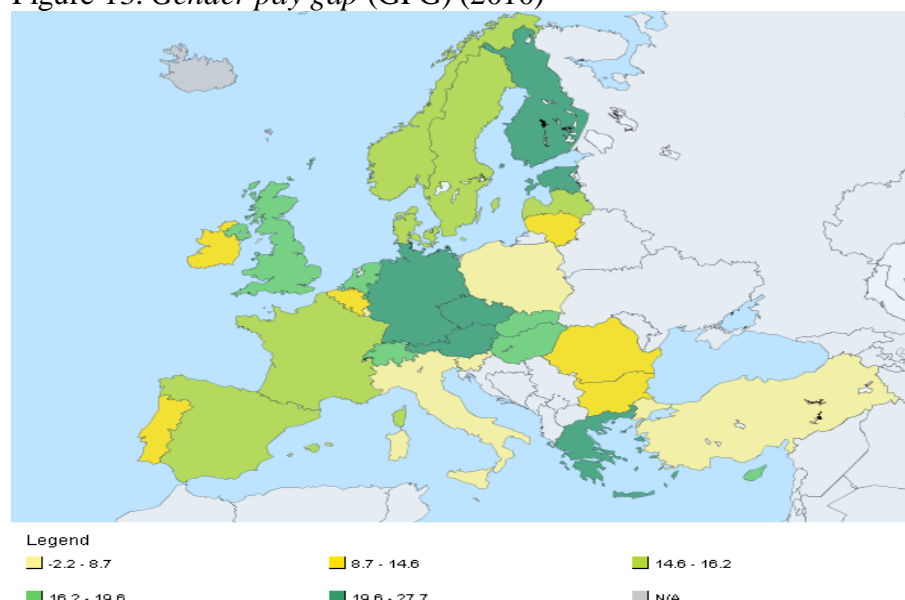
	2004	2005	2006	2007	2008	2009	2010
Directors and managers	--	--	46.2%	36.8%	28.7%	20.9%	20.9%
Professional scientists and intellectuals	27.9%	18.3%	19.0%	16.9%	10.7%	16.2%	16.2%
Technical and support staff	28.5%	22.3%	23.0%	24.5%	21.1%	21.6%	21.6%
Office staff, Accounting and administrative	23.7%	24.5%	29.3%	25.7%	21.9%	19.8%	19.8%
Restaurant workers, personal and sellers	19.9%	24.3%	18.2%	14.1%	26.2%	26.8%	26.8%
Artisans, workers and construction industries	25.6%	23.7%	26.4%	23.1%	23.0%	18.5%	18.5%
Facilities and machinery operators and assemblers	24.1%	31.8%	28.0%	27.5%	28.2%	23.5%	23.5%
Elementary occupations	13.1%	11.7%	14.9%	17.5%	17.7%	15.9%	15.9%

Source: Eurostat, INE and self-elaboration.

The latest figures provided by Eurostat, and also referring to 2010, show the differences between the member states of the EU, as shown in Figure 13. There are different reasons that explain the differences between countries in the GPG (the type of jobs held by women, the consequences of career breaks or part-time jobs due to maternity and parental decisions in favor of family life). However, it should also be added that the institutions and attitudes that govern the balance between work and

private life differ significantly among them. Consequently, the wage gap is linked to a number of legal, social and economic factors well beyond the single issue of equal pay. It is also noteworthy that, on average, women earn 16% less than men in the European Union (EU-27), that 17% of employees received the lowest wages and that the countries with the highest proportion of women with low salaries were Cyprus and Estonia (over 30%), while at the other end, there are Sweden, France, Finland and Denmark (10% less). These figures can be complemented with those provided by the last study of the World Economic Forum²⁰ that quantifies gender inequalities in education, health, economy and politics and with the analyses of the last seven years it ranks Iceland, Finland, Norway and Sweden in the best positions.

Figure 13. *Gender pay gap (GPG) (2010)*



Source: Eurostat

4. Conclusions

The balance of the five years of recession (from 2007 to 2012) shows an increase in the workforce of 44,400 women over 16 and, therefore, with the possibility to enter the labor market, while the active male labor force has fallen by 73,800 (79% of which were immigrants). During this period a part of the male population has been

²⁰ The Global Gender Gap Report (2012) and Hausman, Tyson and Zahidi (2012).

expelled from the labor market, 30% of which foreign nationals, while the female workforce shows a different trend: the incorporation of women (of Spanish nationality) in the labor market has increased, as a consequence of the increase in population aged 16 and over and partly, because of women who had not worked previously (it must be kept in mind that 75,900 of foreign women have been incorporated as labor force). In this sense, the difference in the rates of activity between genders has been reduced during the recession years, mainly due to the decline of male labor force rates: if the difference between both groups in 2005 was 20.19 pp, in 2012, the distance has been reduced to 11.6 pp. And, specifically, there has been the largest reduction of differences between male and female working force rates, to the point of being negative at higher education levels and doctorate levels.

The destruction of jobs has been more intense in the group of men: the working male population has declined in 561,000 workplaces, in the period 2005 to 2012, and the female population in 174,000 workplaces. By sector, men have lost more jobs in the building sector, with 256,000 lost jobs, and in the industrial sector it has been the women who have lost 75,000 jobs. Consequently, the difference between male and female employment rates fluctuates from 20.5 pp in 2005 to 8 pp in 2012. In contrast, women with higher education and over 35 years of age have not seen their employment rate reduced; to the contrary, the number of these workplaces has increased in 41,000 jobs, this being the group that presents higher employment rates than men.

Recession has generated a high number of female unemployed, but lower than that of men's, mainly because of the type of sector worst hit by recession (the construction sector) and by the existing structural unemployment. In 2007, the total number of unemployed people was 252,000 (121,000 men and 131,000 women) and at the end of 2012 there were 885,000 unemployed, that is, in 5 years unemployment had increased 3.5 times (481,000 men and 404,000 women). The reduction of female employees took place mainly in the private sector, even though the "percentage of female employees in the public sector in relation to the total number of employees" increased its ratio in 2009, mainly with permanent contracts. In Catalonia, female unemployment rate in 2012 was 3.6 pp, below the national average, while male employment was only 1 pp. The communities that, during the period analyzed show the lower rates for both groups are the Basque Country and Navarre, the latter being

the one that in turn presents a minor variation between 2007 and 2012. It should be emphasized that the number of unemployed immigrants has intensely grown: men unemployment has increased from 9.9% in 2007 to 41.9% in 2012, and women unemployment from 13.7% to 38.8%. These figures are much higher than those corresponding to unemployed Catalans.

As for the recipients of wages, pensions and unemployment benefits, from 2005 to 2011, there are fewer men employed and the percentage of recipients of unemployment benefits is greater in intensity than women. During this period, the annual income of women has shortened the distance in relation to men, mainly the employed group, from a ratio of 1.47 to 1.33, but in contrast, the number of women receiving unemployment benefits has worsened. However, out of the total recipients, a 39.4% (19.5% men and 19.9% women) are below the considered minimal resources (MW and MP): in relation to employees, a 25% of men and 30.1% of women of the total number within this subgroup and in relation to pensioners a 23.2% and a 33.6%, respectively.

In relation to the average annual wages, the wages of women have grown at a higher rate than those of men, on average 4.3% against 2.6%. Regarding Spain, the average wage is higher in Catalonia and so is the wage gap between men and women (as average wage in absolute terms), in that in the year 2011 it is estimated in 5,923 euros in Catalonia and 5,128 euros in Spain. That is to say, the wage gap is 15% higher in Catalonia than in Spain.

Over the same period, intragroup inequality is evident, with greater intensity the higher the wage scale is and, at a national level, a poorer redistribution of the workforce in the increase of percentage of workers that are paid less than I MW, while in Catalonia the opposite has happened. It is also estimated that the level of inequality²¹ in the distribution of wages per capita is higher in women than in men even though the relationship between the average salary of men and women has decreased.

And, finally, we conclude of the study of inter-group inequality wages mentioning that in Catalonia, the gender gap or gender pay gap (GPG) between men and women,

²¹ Measured by the Gini and Pietra indexes.

during the studied period, was higher than in the whole of Spain (although from 2004 to 2010 the gap was reduced to 8pp in Catalonia, going from a differential respect the Spanish total of 6 pp to 2.9 pp), in the euro area and the EU-27.

In conclusion, the available data indicates that the historical wage differences between men and women are perpetuated in history, despite the increasing incorporation of women into the labor market together with higher levels of education that a percentage of these women are achieving. Therefore, at the present time it is more necessary than ever to have all the necessary talent to overcome a very difficult situation and, in this sense, the implementation of positive action in favor of women to correct inequalities, as a smart, sustainable and inclusive growing factor is needed (European Council of 30 November 2009).

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