

**STUDY OF WORKERS' EDUCATION LEVELS IN SPAIN AND PORTUGAL
(2006-2016)**

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Abstract

This paper considers the evolution of unemployment and occupation rates, per gender and level of education, in Spain and Portugal, based on the “Labour Force Survey” microdata from 2006 to 2016. The document analyses self-employed and employee rates, contracts (permanent vs temporary) and the distribution of education levels according to gender. The main results suggest that, in the period analysed, these rates have evolved similarly in Portugal and Spain and that, despite the economic crisis, the training and education levels of workers have increased.

Key words: labour market; employability; education;

JEL Classification: A200, J240, J400

1. Introduction

It is assumed that the supply and the demand of work defines wages and employment levels, and that any changes in these variables can affect the equilibrium of the labour market. Under this assumption, the variables that affect unemployment and those whose variations affect the requirements and qualifications demanded by employers, are important factors. Portugal and Spain are two countries in the European Union with different trajectories and economic rhythms, but with great historical ties and similar cultures. The main objective of this research is to evaluate and quantify the impact of education levels on employment during the period 2006-2016 in both countries. The outcomes are very relevant to our understanding and show that the labour markets were significantly affected, although employment rates per gender have evolved unevenly between the countries. In the case of men, employment rates in Portugal decreased from 71.36% in 2006 to 54.29% in 2016, while in Spain the drop was from 73.33% in 2006 to 62.21%. In Portugal, levels of education among the employed population have increased substantially. In 2006 the majority of the population had a maximum level of primary school study, but by 2016 the highest percentage of employed persons had attended secondary school. The most significant difference in Spain for this period was that the highest educational level for the majority of individuals was secondary education. Importantly, there was a decrease in the differences between employment rates for men and women. There was also a reduction of the gender gap by type of contract, both in Portugal and in Spain.

The paper is organised in sections. This introduction is followed by a background section where the bases of the relationship between education and the labour market are presented. A third section presents the methodology, which consists of a descriptive analysis using the LFS microdata base and an initial check of its robustness. The fourth

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section presents a descriptive analysis of employment rates for both Portugal and Spain, per gender and type of contract, according to the educational level of the workers

2. Background

Education is a key factor in the development of countries, because it contributes to improving competitiveness and long-term growth (Freire et al., 2011). A country that wants to be competitive in the field of innovation should make adequate investments in education, in addition to ensuring good management in order to improve the quality of academic investment and the professional integration of its graduates (Aghion and Cohen, 2004). The acquisition and accumulation of new knowledge are key elements in allowing individuals with a higher level of training to adapt to technological changes, and thus contribute to progress (Freire et al. al., 2018).

According to human capital theory, the costs of education are considered investments in knowledge and skills, which contribute, according to Becker (1962) and Urciaga and Almendarez (2006), to increasing the productivity of the individual and therefore empowering people with higher education to achieve better jobs. Education, analysed from the perspective of productivity, can thus explain the wages of the population, contribute to reducing social inequalities and decreasing poverty, and to promoting the economic growth of countries through new knowledge (Chávez and Sánchez, 2008). The origins of accumulated human capital resulting from investment in formal education and work experience are described in Fisher (1930), whose broad notion of capital enabled it to be viewed as a stock of resources that allows the generation of income streams (Marcenaro and Navarro, 2005). From this definition, the concept of capital was applied to individuals, and authors such as Mincer (1958), Schultz (1961), Becker (1962) and Denison (1964) developed human capital theory. The human capital theory conceives the demand for education (training) as the demand for any investment good that manifests itself by increasing the productive potential of the subject (Freire et al., 2018). That is to say, as the individual surpasses the different educational levels, they change in such a way that there will be significant differences between their productivity and that of workers who have not achieved the same level of education (Freire et al., 2018). As a rule, workers who have more years of schooling obtain better paid jobs, because they are the most productive and, consequently, employers prefer them (Moreno, 1998). The hypothesis indicates that labour supply and demand define the wages and employment levels of the economy, and any variation in these causes an increase or decrease in wages that modifies the conditions of equilibrium. Unemployment, in part, can also be caused by a failure to adapt the offer to the qualifications required according to demand, so that the solution to unemployment would be achieved by adapting education to existing work demands (Teijeiro et al., 2013).

In short, the level of human capital in a country plays an important role in economic growth; promoting integration in the labour market; improving living conditions; and, eventually, the rate of return on education (Sapelli, 2003). Knowledge is identified as a strategic asset in companies (Crook et al., 2011, Marimuthu et al., 2009, Mariz-Pérez et al., 2012). Graduates are less likely to make mistakes, are better able to face new problems, require less supervision, are more capable of taking risks and responsibilities, and can adapt easily to changes (Corrêa da Silva and Pereira, 2013). The expectation of obtaining a job is one of the main reasons to go to university (Monte and Schoier, 2015).

Despite this, a diploma does not guarantee access to work that matches an education level (Alves, 2005), although individuals with lower levels of education will be less valuable (Márquez, 2009).

Finally, education can be used as a differentiator between individuals according to the filters they have overcome, and can become a selection method for certain innate skills or acquired skills with productive relevance (Freire et al., 2018).

3. Methodology

Portuguese and Spanish workers are analysed for the period from 2006 to 2016, using microdata from the Labour Force Survey. The data has first been compared with the population data of the World Bank to reinforce the robustness of the conclusions drawn. Individuals are first classified as dependent workers (employed by others) or independent workers (self-employed) by gender, analysing their weight. The evolution of the maximum level of education reached by each group in the period 2006-2016 is then considered. We compare dependent workers (employees) with permanent contracts and temporary contracts, according to sex and education levels.

3.1. Robustness of the analysis

The data used in the analysis of the labour market and its relationship with the educational levels given in the Labour Force Survey (EU, 2018) and the census of the total population by the World Bank (WB, 2018) were compared to ensure the consistency of the information. This information can then be compared with the results obtained in the analysis to obtain a faithful representation of the study population.

Table 1. Total population and Population aged 16 to 65 years (Portugal)

	WB		LFS		WB		LFS	
	Total		Total		Population 16-		Population 16-	
	Femal	Male	Femal	Male	Femal	Male	Femal	Male
200	51.69	48.31	52.18	47.82	46.70	53.30	48.54	51.46
200	51.78	48.22	52.32	47.68	47.08	52.92	48.41	51.59
200	51.89	48.11	52.51	47.49	47.24	52.76	48.43	51.57
200	52.00	48.00	52.72	47.28	47.75	52.25	48.32	51.68
201	52.12	47.88	52.57	47.43	48.18	51.82	48.44	51.56
201	52.24	47.76	52.64	47.36	47.77	52.23	48.18	51.82
201	52.36	47.64	53.05	46.95	48.20	51.80	48.03	51.97
201	52.46	47.54	53.00	47.00	48.51	51.49	48.05	51.95
201	52.56	47.44	52.76	47.24	48.66	51.34	48.11	51.89
201	52.62	47.38	52.65	47.35	48.84	51.16	48.00	52.00
201	52.66	47.34	52.69	47.31	48.77	51.23	47.90	52.10

Sources: data of Labour Force Statistics from EU(2018), WB (2018), and own calculations

As shown in Table 1, the total population of Portugal in the WB census and in the sample from the LFS have no relevant differences, but in the population aged 16 to 65 years there is a slight difference between the years 2006 to 2009, as the percentage of women is greater than that of men in the LFS.

Table 2. Total population and population aged 16 to 65 years (Spain)

	WB		LFS		WB		LFS	
	Total		Total		Population 16-		Population 16-	
	Femal	Male	Femal	Male	Femal	Male	Femal	Male
200	50.63	49.37	51.57	48.43	47.44	52.26	50.69	49.31
200	50.58	49.42	51.77	48.23	48.35	51.65	50.88	49.12
200	50.55	49.45	51.62	48.38	49.66	50.34	50.67	49.33
200	50.54	49.46	51.80	48.20	50.77	49.23	50.94	49.06
201	50.55	49.45	51.75	48.25	51.54	48.46	50.71	49.29
201	50.60	49.40	51.85	48.15	52.12	47.88	50.84	49.16
201	50.68	49.32	51.99	48.01	52.64	47.36	50.99	49.01
201	50.78	49.22	51.93	48.07	52.61	47.39	51.03	48.97
201	50.86	49.14	51.82	48.18	52.37	47.63	50.98	49.02
201	50.92	49.08	51.71	48.29	52.31	47.69	50.83	49.17
201	50.95	49.05	51.71	48.29	52.30	47.70	50.94	49.06

Source: data from EU(2018) and WB (2018), own calculations

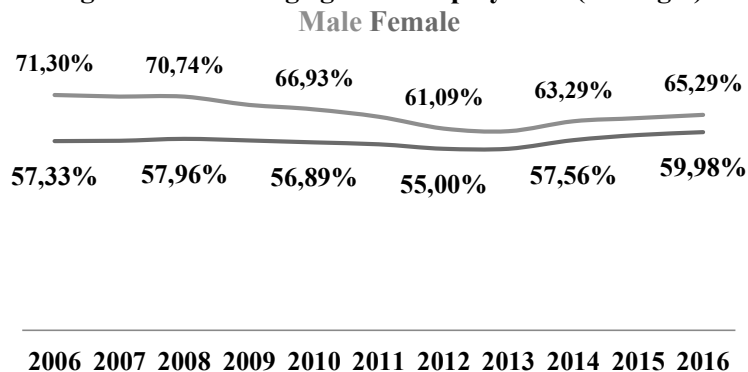
Table 2 compares the total population and individuals aged 16 to 65 years, by gender, in Spain, according to the LFS and WB. No significant differences were found in the first group, but in the second group, the rate of females is higher in the LFS in the period from 2006 to 2009, and is lower from 2011 to 2016.

4. Descriptive analysis

4.1. Portugal

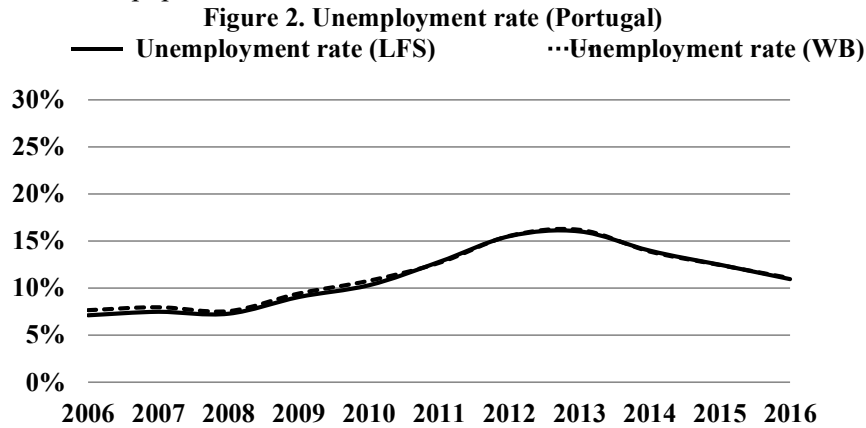
Figure 1 shows the employment rates by gender in Portugal in the period from 2006 to 2016. The information obtained shows that male employment is higher than that of the females throughout all the years analysed, but the data appears to suggest that levels are equalising. In 2006 male employment was 14% higher than that of females (male 71.30% and female 57.33%), however, this gap has been gradually reduced over the years and in 2016 the difference is 5%.

Figure 1. Percentage gender employment (Portugal)



Source: data from EU(2018) and WB (2018), own calculations

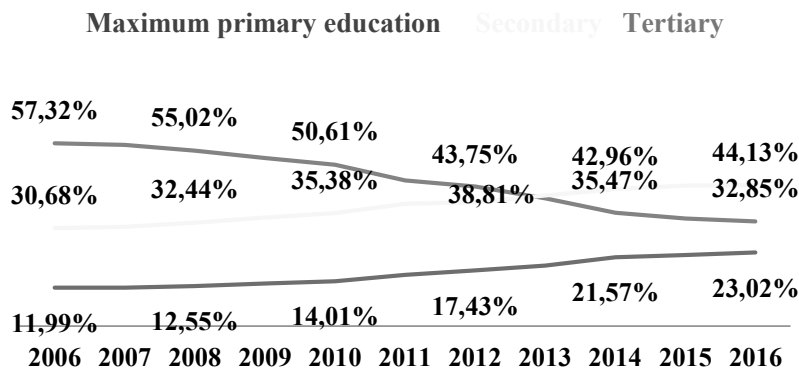
Figure 2 shows the unemployment rate in the Portuguese labour market for the period analysed. In 2006 the unemployment rate stood at 7.12%, and increased significantly until reaching a maximum in 2013 of 16.03%, with a year-on-year change rate of 15.64%, partly due to the global crisis and also, as a consequence of economic intervention by the International Monetary Fund, the European Central Bank and the European Commission. From 2014 to 2016, unemployment reduced to levels close to 10% of the active population.



Source: data from EU(2018) and WB (2018), own calculations

Figure 3 shows the percentage distribution of people employed by educational level, distinguishing between primary, secondary and tertiary level. The reduction of people educated only to primary level is significant, from 57.32% in 2006, to 32.85% in 2016, which represents almost 24%. On the other hand, employees who had obtained secondary education increased from 30.68% in 2006 to 44.13% in 2016, and became the largest group. Workers with tertiary education also show an increasing trend, going from 11.99% in 2006 to 23.02% in 2016. These changes in the education of the working population reflects an increase in the stock of human capital, which is very important in order to promote economic growth and innovation, despite the period of economic crisis.

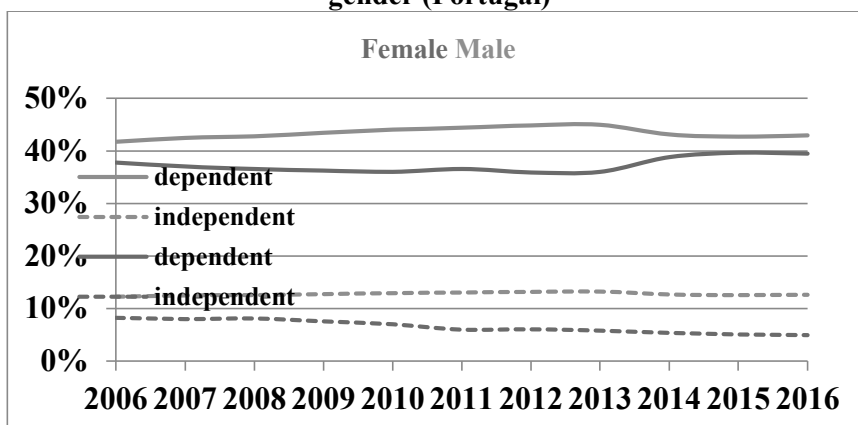
Figure 3. Percentage of employed persons by educational level (Portugal)



Source: data from EU(2018), own calculations

This research also assessed the distribution of the employed population, according to dependency (dependent workers/ employees and self-employed/entrepreneurs), and the type of contract (temporary or permanent).

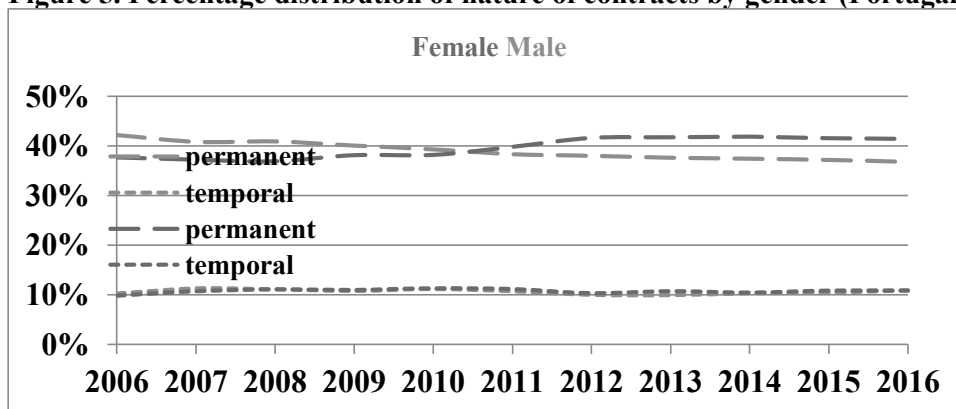
Figure 4. Percentage distribution of independent and dependent workers by gender (Portugal)



Source: data from EU(2018), own calculations

Figure 4 shows that most employed persons are dependent workers, with 42% male and 38% female, and that the gender gap reduced in the period analysed since 2014, until reaching a difference of 3% in 2016. Self-employed workers were 12% male and 8% female in 2006, but in 2016, female participation fell to 5%.

Figure 5. Percentage distribution of nature of contracts by gender (Portugal)

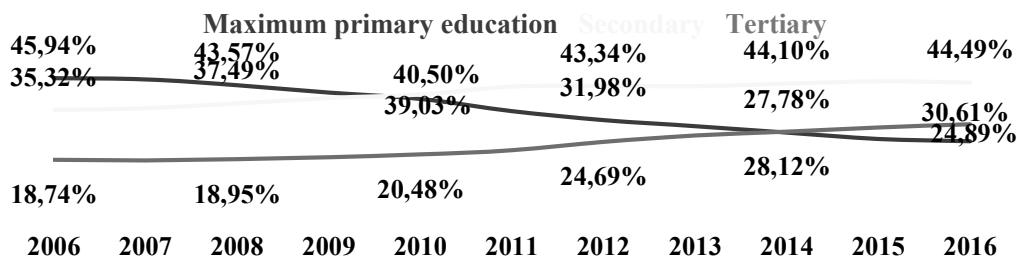


Source: data from EU(2018), own calculations

Figure 5 shows that the majority of employees have permanent contracts. There were significant changes in the total number of people hired during the period analysed. In 2006, 43% of men and 37% of women had permanent contracts, and around 10% of both men and women had temporary contracts. In 2012, the percentage of women with permanent contracts slightly surpassed that of men.

Finally, we study the educational level of dependent workers with permanent contracts, who comprised the majority in the analysed period.

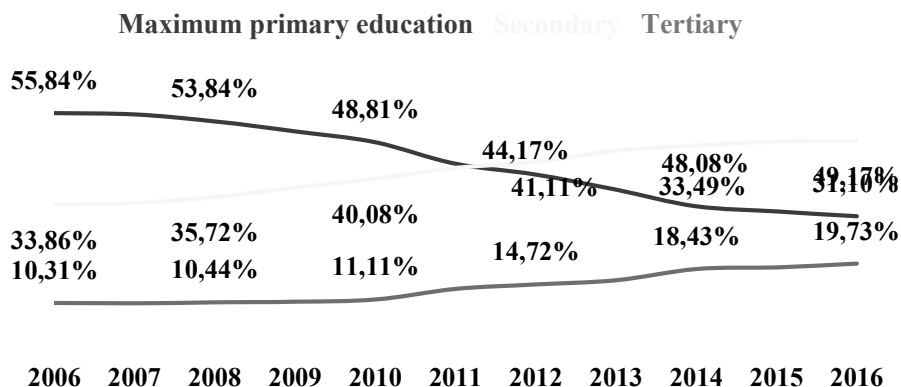
Figure 6. Female education levels with permanent contracts (Portugal)



Source: data from EU(2018), own calculations

Figure 6 shows the rate of female workers with permanent contracts. In 2006, 45.94% had a maximum level of elementary school, followed by 35.32% with secondary education and, 18.74% in tertiary education. The evolution of the female labour market contributed to the increase in the number of women with higher education, and in 2016, high school levels had increased to 44.49%, and higher education to 30.61%, while those with only primary studies dropped to 24.89%.

Figure 7. Male education levels with permanent contracts (Portugal)



Source: data from EU(2018), own calculations

Figure 7 shows the rate of males with permanent contracts according to the level of education reached. In 2006, 55.84% of maleworkers with permanent contracts had a maximum of primary education, 33.86% secondary education and 10.31% tertiary education. The increase in educational levels, in general, has led to the creation of a highly skilled labour force, and in 2016, 49.17% of employees with permanent contracts had secondary education, 31.10% primary and 19.73% higher education. Despite the fact that the rate of workers with the highest level of qualification, remained low throughout the period, it did increase by 9%.

4.2. Spain

The labour situation in Spain during the period 2006 to 2016 is analysed in this section. Figures 8 and 9 present the employment rate by gender, and the unemployment rate, respectively. This data offers a first impression of the evolution of the labour market in Spain.

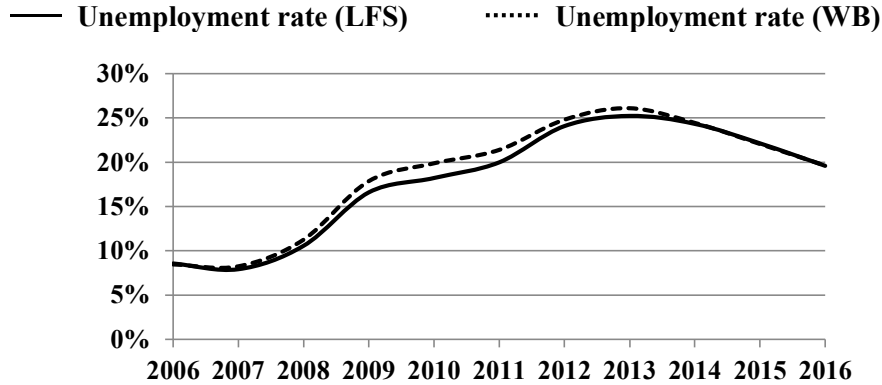
Figure 8. Percentage gender employment (Spain)

		Female Male										
		73,33%	71,43%	63,38%	58,93%	58,49%	62,21%					
		49,33%	51,85%	50,32%	49,35%	49,09%	51,51%					
		2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016

Source: data from EU(2018), own calculations

Figure 8 shows that the employment rate is higher for males than for females in the analysed period. The biggest difference is in 2006 with 24%, but the gap gradually reduces until reaching 10% in 2016.

Figure 9. Unemployment rate (Spain)



Source: data from EU(2018) and WB (2018), own calculations

Figure 9 shows unemployment rates in Spain, according to the EU and to WB databases. There is an increase in those unemployed, from levels below 10% in 2006 to 25% in 2013. This high percentage, caused by the economic crisis, gradually reduces to below 20% in 2016. This was caused by the economic and financial crisis, which resulted in a decrease in the demand for employment.

Figure 10. Employment rate by educational level (Spain)

		Maximum primary education Secondary Tertiary										
		51,85%	52,00%	51,46%	51,19%	51,68%	51,10%					
		33,01%	33,92%	36,70%	39,40%	38,99%	39,26%					
		15,14%	14,08%	11,84%	9,40%	9,33%	9,64%					
		2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016

Source: data from EU(2018), own calculations

Figure 10 shows the rate of employed people according to educational levels. The available data suggests that there were few changes during the analysed period: in 2006, 51.85% of the workers had secondary education, 33.01% had a tertiary level and 15.14% had a primary level. In 2016, 51.10% had secondary level, 39.26% had tertiary education, and 9.64%, primary.

The employed population was also compared according to dependency: dependent workers or employees compared to independent workers or entrepreneurs; and according to the nature of the contract, permanent or temporary. Figure 11 shows that most employed individuals were dependent workers in 2006, with approximately 46% males and 36% females versus independent workers as 13% of male workers and 5% of female. In 2016, the gender gap in dependent workers was reduced to about 2%, while the difference between dependent workers remained constant throughout the period.

Figure 11. Percentage of independent and dependent workers by gender (Spain)

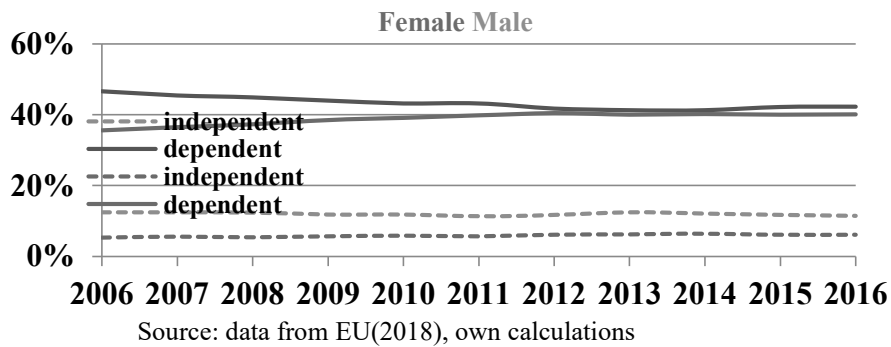


Figure 12. Distribution of temporary and permanent contracts by gender (Spain)

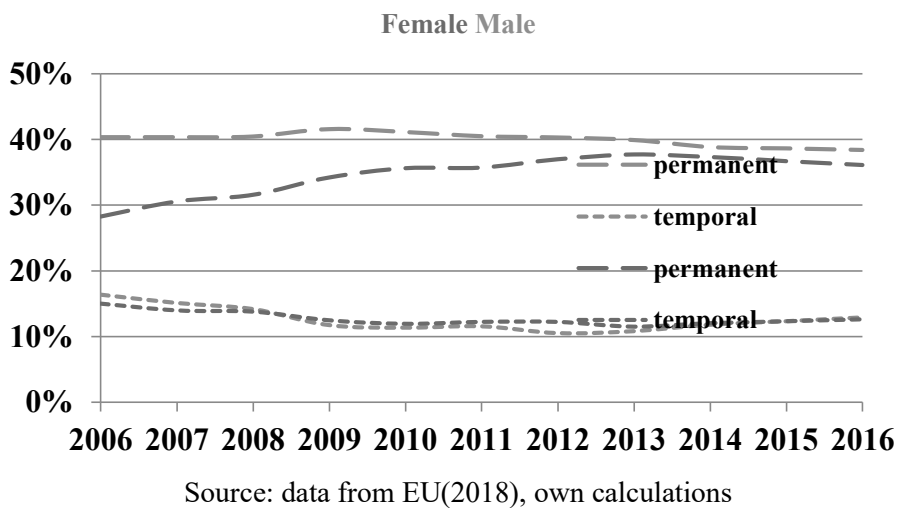
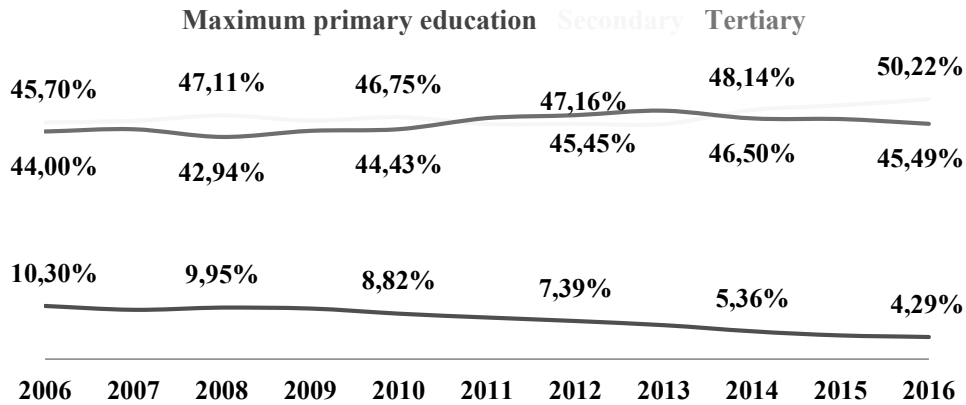


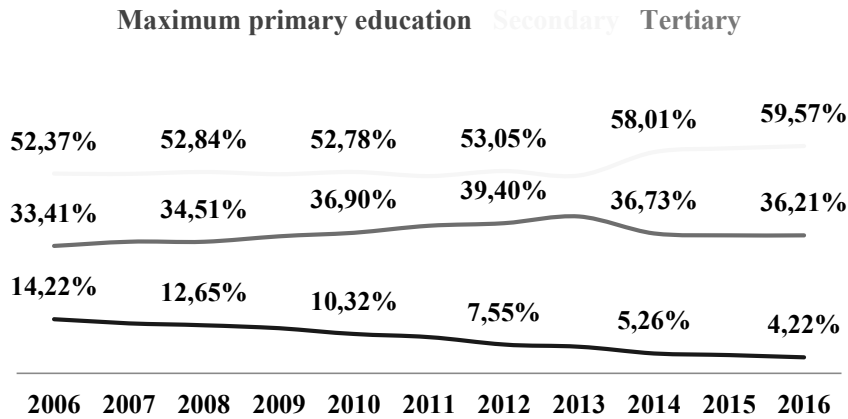
Figure 13. Female education levels with permanent contracts (Spain)



Source: data from EU(2018), own calculations

Figure 14 shows that 52.37% of male workers with permanent contracts had secondary education in 2006 and this percentage increased to 59.57% in 2016. The rate of workers with high school level or education was 33.41% in 2006, and reached 36.21% in 2016, which is significant. Male employees with a maximum of primary level education decreased from 14.22% in 2006 to 4.22% in 2016, reflecting the same decrease for females.

Figure 14. Male education levels with permanent contracts (Spain)



Source: data from EU(2018), own calculations

5. Conclusions

The first and most important conclusion of this research is that the financial and economic crisis affected the labour market in both Portugal and Spain. Unemployment rates in both countries rose to unexpected levels. Unemployment in Portugal reached its maximum value in 2013 at 16.8%, and in Spain at 25.23% in the same year.

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Employment rates by gender, evolved differently due to the economic crisis. Of every 100 workers in Portugal, 71 were men in 2006 and in 2016 it drops to 54, the same trend has been experienced in Spain, where in 2006 of every 100 workers 73 were men, and in 2006 over 62.

The two countries had different trajectories of development and evolution in the educational levels of workers. In Portugal, the education levels of the population who were employed between 2006 and 2016 increased substantially. The majority of the population (57.32%) had a maximum of primary studies in 2006, but by 2016, 44.13% of workers had attended secondary school. The group with tertiary education had increased 11% in this period. The most significant difference with Spain is that the main educational level among employees for this period was secondary education. The percentage of those with university level education or equivalent increased during these years by 6% among employed persons. In 2016 they represented 39.26% of the population between 16 and 65 years old.

The differences between employment rates for males and females are low in both countries, and a reduction in the gender gap is observed for the two types of contract (permanent and temporary) in both Portugal and Spain.

Despite the negative impact of the economic and financial crisis in both countries, the proportion of skilled labour has increased.

Finally, there are no significant differences in the labour market in Spain and Portugal regarding the rate of dependent and independent workers, nor disparities in the type of contracts given to workers.

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