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Who can (still) afford to retire early? Cross-country comparison of incomes of senior workers and young retirees using LIS data for 2007 & 2010

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Abstract

The aim of this paper is to compare the economic situation of young retirees with their peers who decided to continue their working life before and during the recent economic crisis using the micro-data from the Luxembourg Income Study Database (LIS) for four countries (Greece, Spain, the UK and the US) for the years 2007 and 2010. In order to have comparable samples across countries with different institutional settings, we delimit our sample to the age group up to ten years prior to the statutory retirement age. In a first section we look at the income mix of early retirees and senior workers from a gender perspective taking into account the disposable household income. In a second section, we apply multinominal logistic regression models to explain the labour market status of seniors, focusing on the income predictors, distinguishing between personal income derived from the labour market participation, other personal income and other household income. We consider as well the alternative exit pathways from the labour market such as unemployment, disability and other types of inactivity. Our results show changes over time in the impact of incomes from different sources on the labour market status of seniors as well as gendered life courses. The paper contributes to the literature by a comparative analysis of the labour market behaviour in conjunction with income from different sources before and after the crisis.

Keywords:

income distribution, senior workers, early retirement, gendered life course

1. Introduction: early retirement patterns before and after the economic crisis

With the implementation of active ageing policies and recent pension reforms, the main goal is the prolongation of the working life. However, these policies were introduced in the context of fewer opportunities on the labour market for senior workers. The economic crisis affects the labour market participation of senior workers additionally: once unemployed, they are more likely to take up early-retirement, since in many countries there are institutional settings which facilitate the early retirement of unemployed seniors. At the same time, early retirement comes with a (substantial) financial penalty. Has the early-exits trend changed over time due to the fact that early retirement becomes less affordable in the time of crisis?

The current early retirement culture in place in many European countries is in large part the result of labour market policies implemented in the '80s, which aimed at decreasing the unemployment by encouraging retirement at early ages through generous financial incentives. At the same time, living healthier and longer lives, people tend to value leisure time more (Blanchard: 2004), reflected in an increase in the social support of early retirement and, consequently, many countries have developed a *"deeply rooted early retirement culture"* (OECD: 2004). However, due to the unsustainability of the actual pension system in the era of demographic ageing in most developing countries, in the last decade there is a trend to restrict early retirement exits through active ageing policies.

Moreover, during the economic crisis in some countries like the US, Greece and Spain that were seriously affected, elderly workers were among the most vulnerable groups at risk of lay off. Early retirement was again used as a tool to avoid long term unemployment for senior workers. On the other hand, due to the financial crisis, capital income was at risk of being devalued and people who relied on their savings for early retirement could have been forced to postpone their (early) retirement for financial reasons.

In this paper we aim to analyse the complex effect of various sources of income on their labour market status, focusing not only on their main labour derived income but also on other sources of income, such as other personal income, incomes of other household members, and capital income. How do the incomes of senior workers and early retirees compare across countries and over time? Do early retirement patterns reflect gendered life courses? Can people still afford to retire early after the economic crisis?

2. Literature review

Retirement behaviour and especially the decision to leave the labour market in late career is a complex process, influenced by a multitude of factors, from income (both the current wage and the prospective (early) retirement benefits) to attitudes and values towards work, including the social policy in place in each country. In this section we will look at the literature on the main predictors of early retirement exits from the labour market from an institutional and life course perspective, looking at the gender and time dimension, with a focus on the economical crisis.

In a first step we focus on income from different sources and wealth as a predictor of early exits from the labour market. Income can have a complex effect on the labour market behaviour of senior workers: a higher labour income can encourage some people to retire, since they can afford it, while other people will continue working in order to support the same standard of living they are accustomed to. In fact, Bütler *et al.* (2004) found that the key determinant of early retirement in Switzerland is its *affordability*, which enables wealthier men to retire earlier than less wealthy ones. For women they found a less strong effect, but also positive. Likewise, Bardasi *et al.* (2002) showed that labour income has a different impact on the retirement decision of men and women and that the professional status of the individual before retirement influences this decision. The same positive effect of high income on early retirement decision was confirmed by Bloom *et al.* (2004). Similar, Post *et al.* (2013) found that higher incomes are associated with intentions to retire earlier. Börsch-Supan and Schnabel (1998), Fischer and Sousa-Posa (2006), Gruber and Wise (1997) and others showed that more generous pension benefits are encouraging people to retire earlier. Hence, income is an important predictor of early retirement and we distinguish between the different types of income: individual or household, from labour activities or not, since they could have different effects on the early exits from the labour market.

Furthermore, we look at the effect of capital income and ownership of the house as a proxy measurement of wealth of the household. Mann (2011) found in his study that the probabilities of (early) retirement increase slightly with higher wealth or assets. Burtless (2010) showed in his study that the financial crisis influenced the retirement behaviour, since assets are more vulnerable during the crisis to the financial market fluctuations, people would be more likely to postpone retirement in order to secure more savings.

Many European countries implemented social policies which facilitated long-term unemployed old workers to enter directly into (early) retirement. Maes (2011) pointed out that elderly unemployment schemes created work disincentives and are one of the alternative routes out of the labour market. In their study of early retirement patterns in Germany, Börsch-Supan and

Schnabel (1998) concluded that disability is one of the major pathways to early retirement. Duval (2003) found that in OECD countries for the 55-59 age group disincentives to continue working are to be found more in social transfer schemes such as unemployment and disability, which were used as de facto early retirement pathways, rather than in the provisions of the old-age pension systems; while for the 60-64 age groups eligibility age for (early) pension has a specific impact on the retirement decision. Vegas *et al.* (2009) found that in Spain people who were unemployed in the preceding year are more likely to become (early) retired due to the special scheme for elderly unemployed. Their findings are supported by Gruber and Wise (1997): disability and unemployment are often used as early retirement paths.

We focus on gender dimension because, as Rubery (2014) points out, the crisis had a gendered impact due to the different position on the labour market and on the household' labour division that men and women have. A stronger impact on the male employment was observed while the impact of crises on the female employment was delayed due to their lower presence in the sectors most affected by the crisis (eg. construction, finances). Labour market participation of women is still low in many European countries, especially in late careers. Bardasi *et al.* (2002) found that almost 30 percent of the women in their study were out of the labour market prior to the statutory retirement age by becoming *family carer*. Moreover, Soidre (2005) claimed that the push and pull factors are gender specific, for example women with more children would be more likely to retire earlier (even through alternative paths) in order to take care of their (grand)children, while men will be more likely to work longer in order to provide for an extended family. Likewise, Bütler *et al.* (2004) found that the effect of the marital status on the retirement decision was differentiated by gender: while single men are retiring earlier than non-single ones who have to support their families (especially if they have an inactive partner), single women work longer than married ones because of the financial burden of being the only family provider. Furthermore, Lorretto and Vickerstaff (2013) considered that retirement is a household decision rather than individual one, and that the exit from the labour market is a complex and gendered process, with different meanings for men and women. In the same time, (married) couples tend to synchronise their retirement (see Szinovacz and Deviney: 2000; Szinovacz and Deviney: 2001; Coile: 2003; Gustman and Steinmeier: 2005).

People are more likely to take up early retirement benefits as soon as they qualify for them. However, if they decide to prolong their working life, they are more likely to postpone retirement until they reach the statutory retirement age, and therefore age can have a nonlinear effect on the early exits. Burtless (2008) showed in a cross-country study that particularly female employment increased around the world, therefore women in later cohorts collected more

entitlements for pension benefits, which may impact on their eligibility for early retirement benefits.

Regarding human capital characteristics, Blanchet and Debrand (2008) found that having a higher level of education has a negative influence on the desire to leave the labour market which can also be explained by the fact that people who spend more years in schooling also enter the labour market later and, consequently, they will be more likely to work until a later age.

Bloom *et al.* (2004) showed that longevity and healthier lives tend to increase the working life. Health status is a key determinant for early exits, especially in the case of disability ones. The study of Johnson and Favreault (2001) confirmed the hypothesis of synchronised couple retirement, however they pointed out that when one of the spouses retires due to health problems, the other spouse is more likely to continue working in order to provide for the family rather than to retire for care giving reasons.

The financial crisis of the late 2000s puts early exits from the labour market in a specific context, shifting the balance towards financial sustainability of the desired labour market status in times of financial market turmoil. The economic crisis started with a steep decline of housing prices, which had sharply increased in the years before (Claessens et al. 2010). This decline led to an essential drop of net wealth combined with a step devaluation of financial products, particularly private pension funds (Whitehouse 2009). In this context pension assets in liberal countries such as the UK and the US with a strong relevance of private pension funds were at risk (Mabbett 2009). Particularly individuals who are approaching retirement age and who have based their future retirement income annuities strongly on private defined contribution (DC) pension plans might expect serious decreases in their retirement income flows (Bonnet et al. 2010). Decreased net wealth makes it financially challenging to retire early, and people which based their consumption mostly on private assets find it difficult to maintain the same level of consumption as before the losses and therefore would be more likely to continue working (Burtless 2010). However, the increased risk of unemployment may offset this trend to postpone retirement. Coile and Levine (2009) showed in their study that during the financial crisis the risk of unemployment increased substantially, especially in the case of senior workers. Once unemployed, they may find it difficult to re-enter the labour market in the times of financial crisis, and therefore unemployment is even more likely to be an alternative path towards (sometimes involuntary) early retirement.

3. Institutional review

This section will briefly describe the early retirement schemes, unemployment benefits, with focus on special provisions for elderly, disability schemes and minimum income schemes for the countries in our sample in the reference year 2007, and if changes occurred until 2010 we will present the changes as well.

3.1. Early retirement

Greece was very generous with early retirement provisions. Persons insured before 1993 (which are the ones that are early retired at our reference time) can retire early with full pension if they paid contributions for 37 years regardless of age (ex. someone who started working and contributing since the age of 16 years and had a continuous insurance period could retire as early as the age of 53 with a full pension). Moreover, men can retire with full pension at 62 years and women at 57 years if they contributed for 10,000 working days; while if they contributed for 35 years men can retire at 58 years. In case of arduous and unhealthy work, men can retire from 60 years and women from 55 if 15 insurance years (of which 3,600 are days of arduous and unhealthy work and 1,000 days worked during the 13 years preceding the retirement) and from 55 years for both if at least 35 years of contributions (of which 7,500 days must have been spent doing arduous and unhealthy work). Additionally, mothers of a minor child can retire at 55 years if they contributed for 18 insurance years.

With reduced pension (with 1/267 for each missing month until statutory retirement age) men can retire at 60 years and women at 55 years if they paid contributions for 15 years (of which 100 days have been worked during the last five years) or if they had 33 insurance years (of which 100 days worked per year during the last five years) with a reduced pension in the latter case only until the age of 62 for men and 57 years for women. People working under arduous or unhealthy conditions can retire with a reduced pension from the age of 53 years if they were insured for 35 years (of which 7,500 days they worked under arduous or unhealthy conditions) with a reduced pension until the age of 55 years. Mothers of a minor or disabled child can retire with reduced pension (only until the age of 55 years) at 50 years old if they contributed for 18 insurance years.

In Spain, after the reform of 2002, except for those working in arduous and unhealthy conditions, there are only specific cases in which early retirement is possible. Those who were insured before 1967 and contributed for at least 15 years can retire at the age of 60 years. People who got insured after 1967 need a minimum 30 years of contributions to be able to retire starting with the age of 61 years and only if they were involuntary registered unemployed for at least six months

preceding the claim for early retirement. Early retirement at the age of 64 years with minimum 15 contributory years is possible without prior unemployment period if their employer hires another worker for a minimum period of a year (substitution contract). Additionally, since 2002, partial retirement from the age of 60 years is also possible (if another person is hired to compensate for the reduction in working time), while the mandatory retirement age at 65 was effectively abolished. Spain is not as generous as Greece where people can retire early with full pension and all Spanish people who retire early have their pension reduced with 8% for each year in advance of the statutory retirement age that the person retires. According to the evaluation study of the 2002 reform of Vegas *et al.* (2009), the disincentives imbedded in the reform, especially the financial ones, were effective in reducing early retirement exits in Spain.

In the US there is the possibility to retire early from the age of 62 years with a proportionally reduced pension for each month of receipt before the full retirement age. In the UK there are no special early retirement provisions; however people working in arduous and unhealthy conditions can retire early under certain conditions. On the other hand, we have to mention that in the US and the UK the occupational pensions and private ones represent an important share of the pension mix and some countries like the US offer as well tax incentives in order to promote individual savings for retirement.

3.2. Special provisions for seniors for alternative exit pathways from the labour market

Regarding unemployment benefits, in Greece there are special provisions for unemployed aged 49 years and more: they can benefit of the maximum duration of benefits (12 months) with only 210 days of contributions in the last 14 months previous the unemployment compared with a minimum of 250 days of contributions for younger unemployed. The maximum period of benefits can be prolonged for another three months (or longer under certain conditions) at a reduced rate. The replacement rate of unemployment benefits for the average earner as calculated by OECD[1] increased slightly, from 56% in 2007 to 59% in 2010, despite the crisis, however this relative increase could be attributed to the decrease in wages.

In Spain the normal six months duration of the unemployment assistance benefits is extended for the unemployed over 52 years old who fulfil all the conditions to retire except for the age until reaching the retirement age. Furthermore, for long-term unemployed over 45 years of age the regular unemployment benefits period is prolonged for another six month period in which they receive a special rate, which is lower than the initial benefit. As we saw in the previous paragraph, being registered unemployed for at least six months is a condition sine qua non (together with having a minimum of 30 years of contributions) to be able to retire early at the age

of 61 years. Additionally, the years spent in unemployment and receiving unemployment benefits are considered as contributory years for the pension. In Spain the unemployment benefits are the most generous, with a replacement rate of the average earner of 77% in 2007 and a slight decrease of 76% in 2010.

In the UK and the US there are no special provisions for unemployed elderly. The regular duration of the unemployment benefits in the UK is 182 days while in the US, in general 26 weeks (some States have different duration). However, during the crisis, in the US there were several extensions of the minimum period of payments. In the UK the replacement rate of unemployment for the average earner living in a dual-earner family remained unchanged between the two points in time at 49%, the lowest values from the countries in our sample while in the US they slightly decreased from 72% in 2007 to 70% in 2010.

Regarding the disability pension in all four countries there are no special provisions for elderly workers, they have to demonstrate as all the other disability benefits claimants a minimum loss of working capacity of: 50% in Greece, 33% in Spain, 100% in the UK and in the US depends on each state's legislation. If not specified otherwise, the institutional settings that we look at in this section did not change between 2007 and 2010 in the countries in our sample.

4. The economic crisis in the sample countries

The following section provides an overview on the impact of the crisis in each of the four countries under study. We show statistics on the development of GDP, inflation, and unemployment rates for the age group 25-54 and senior workers (separated in two age groups: 55-59 and 60-64).

The *GDP annual growth* indicator signals if the country's value of all produced goods and services increased or decreased from one year to another during the crisis. Whereas the annual growth rates for the year 2007 were for all countries positive (in Greece, Spain, and the UK even above 3 percent), annual growth became negative in Greece, Spain, and the US in the following year (see Table 1), while Spain followed this negative trend a year later. Among the four countries under study, Greece was in a deep recession which particularly evolved in the following two years reaching a negative growth of -4.9 percentage points for 2010. Spain, the UK, and the US were also substantially affected by the crisis in the year 2009. While Spanish figures still show a small decline for 2010, the British and the American economies had a good recovery, with a positive growth in 2010.

Inflation rate[2] particularly increased during the beginning of the crisis in 2008 (see Table 1). With annual increases of inflation around four percent, the cost of living increased similarly in all countries under study. In the previous period 2002 to 2007 inflation was, in average, around two to three percent in OECD countries (OECD 2013). The real value of wages, pensions and other social transfers decreases over time if wages and transfers are not adjusted in line with inflation. The decrease in inflation rate in 2009 in the US and Spain shows positive signs of possible stabilisation of the economy during the crisis.

Table 1: GDP and inflation devlopment in percent

country	year	GDP - annual growth*	annual inflation**
Greece	2007	3.5	2.9
	2008	-0.2	4.2
	2009	-3.1	1.2
	2010	-4.9	4.7
Spain	2007	3.5	2.8
	2008	0.9	4.1
	2009	-3.8	-0.3
	2010	-0.2	1.8
UK	2007	3.4	2.3
	2008	-0.8	3.6
	2009	-5.2	2.2
	2010	1.7	3.3
US	2007	1.8	2.9
	2008	-0.3	3.8
	2009	-2.8	-0.4
	2010	2.5	1.6

* GDP Annual GDP growth is calculated as an annual percentage change of the value of produced goods and services of the previous year.

** Annual inflation is calculated as an annual percentage change of the consumer prices of the previous year.

Source: OECD (2013a)

In the following paragraph we will analyse the labour force participation in order to assess the impact of the crisis in each of the four countries. In a first step we look at the employment rates and labour force participation rates in the age groups 55 to 59 and 60 to 64 (Table 2). In a second step we focus on unemployment rates (Table 3) and whether or not the crisis particularly increased unemployment among the elderly. Each of the statistics are shown for men and women separately to account for gendered labour market outcomes.

As expected, in all four countries labour force participation was substantially lower in the older age group of 60 to 64; furthermore women were less integrated in the labour market in both age groups, especially in the Southern countries. In the age group 55 to 59 both labour force

participation as well as the employment rate were rather similar in the US and the UK. In contrast to the two liberal countries Greece and Spain showed rather different outcomes. Compared to each other, they could be grouped again to a rather similar very gendered *Mediterranean* pattern. In 2007, gender differences were particularly strong in Greece and Spain, which signifies that the elderly labour force was still dominated by a male breadwinner model. Looking at the Liberal countries, we observed that the participation of British women was much lower than men's in the age group 60 to 64, which in this case can be linked to the lower statutory retirement age, which is 60 years for women. However, still one out of three women was part of the labour force in the age group 60 to 64.

Table 2: Employment rate and labour force participation rate by age group and gender

		employment rate*				labour force participation rate**			
		55-59		60-64		55-59		60-64	
country	year	men	women	men	women	men	women	men	women
Greece	2007	73.5	33.6	43.2	20.1	76.0	35.6	44.1	20.6
	2008	74.3	35.7	44.0	19.5	76.5	37.8	45.4	19.8
	2009	71.0	36.3	43.7	19.6	74.2	39.1	45.4	20.1
	2010	69.9	38.0	42.0	20.3	75.0	41.1	44.3	21.2
Spain	2007	72.8	38.1	45.6	21.3	76.6	41.5	48.0	22.8
	2008	73.3	40.1	47.3	21.6	78.5	44.2	50.3	23.5
	2009	69.3	41.1	43.0	22.9	78.3	48.0	48.2	25.8
	2010	67.7	41.7	40.4	24.2	79.6	49.0	46.6	27.3
UK	2007	74.2	63.9	57.2	32.6	77.7	65.4	59.2	33.2
	2008	76.9	63.9	58.4	34.1	80.0	65.5	60.0	34.6
	2009	76.4	65.1	56.1	34.1	81.6	67.2	59.3	34.8
	2010	76.1	65.4	54.4	33.6	81.0	67.9	58.1	34.2
US	2007	75.3	64.6	57.3	46.6	77.7	66.6	59.2	47.9
	2008	75.8	65.1	57.7	47.0	78.8	67.7	59.9	48.7
	2009	72.4	64.4	56.6	46.8	78.0	68.5	60.9	49.9
	2010	72.3	64.2	55.1	47.5	78.5	68.4	60.0	50.7

* employment rate of a specific age group is defined as the proportion of employed persons of that age group to total population of that age group.

** labour force participation rate of a specific age group is defined as the proportion of employed and unemployed persons of that age group to total population of that age group.

Source: OECD (2013b)

Table 3: Unemployment rate* by age group and gender

		25-54		55-59		60-64	
country	**year**	**men**	**women**	**men**	**women**	**men**	**women**
Greece	2007	12.0	4.7	3.3	5.6	2.2	2.0
	2008	10.9	4.5	2.8	5.4	3.0	1.4
	2009	12.4	6.4	4.3	7.0	3.7	2.8
	2010	15.5	9.4	6.7	7.7	5.1	4.2
Spain	2007	9.7	5.4	4.9	8.1	4.8	6.8
	2008	11.8	8.9	6.7	9.3	6.0	8.1
	2009	16.9	16.2	11.6	14.4	10.8	11.2
	2010	19.2	18.1	15.0	15.0	13.2	11.6
UK	2007	3.8	3.7	4.5	2.3	3.4	1.9
	2008	3.7	4.1	3.9	2.4	2.7	1.4
	2009	5.2	6.8	6.4	3.2	5.3	2.1
	2010	5.4	6.7	6.0	3.8	6.4	1.7
US	2007	3.8	3.7	3.2	3.1	3.2	2.8
	2008	4.6	5.0	3.8	3.8	3.7	3.5
	2009	7.2	9.2	7.2	6.0	7.1	6.1
	2010	7.8	9.3	7.8	6.2	8.2	6.3

* unemployment rate of a specific age group is defined as the proportion of unemployed persons of that age group to labour force (the total number of people employed plus unemployed) of that age group.

Source: OECD (2013b)

In Greece as well, where the statutory retirement age for women is also 60 years, approximately 20 percent of women were still active on the labour market after this age. Labour force participation of women in the age group 60 to 64 was by far the highest in the US. Men's labour force participation varied less between the four countries, it ranged between 76 and 78 percent in 2007 for the age group 55 to 59, and between 44 to 60 percent in the age group 60 to 64. The two liberal countries were on the upper end of this range, while the Mediterranean countries were on the lower end.

Among the four countries in our sample we observed in Greece a decline in the active population (notably in the age group 55 to 59) between 2007 and 2010, whereas in all three other countries men's labour force participation increased. Women's labour force participation increased during the crisis in all four countries and within both age groups. Particularly Spain showed rather strong increases both for men and women. The crisis thus seems not to have encouraged early retirement, but rather the opposite.

The crisis' impact can be best observed when the labour force participation is broken down in employment and unemployment. Whereas more persons remain (and probably some even became) active on the labour market, the employment rates show a different picture. Men's employment rates dropped in all countries and both age groups in the years 2009 and 2010. A rather small decrease occurred for British men in the age group 55 to 59. The strongest outcome

could be observed again in Spain: the strong increase in the active population was combined with a strong drop in the employment rate; consequently, the unemployment rate severely increased by more than six percentage points within two years (2008 to 2010) for the age group 55 to 59. Employment rates for women remained constant or increased slightly. A notable increase occurred among Greek women in the age group 55 to 59; however with only 38 percent employed women, Greece still has the lowest employment rate for women.

Unemployment rates are a key indicator for evaluation of an economic crisis, as they signal that the crisis has consequences for individual situations of workers; being laid off substantially changes the income mix and potentially their decision to exit the labour market if they have alternatives. As an outcome of the crisis unemployment rates for the core work force group aged 25 to 59 increased essentially from 2007 to 2010 (see Table 3). The figures doubled for Spanish men: in 2010 every fifth man was unemployed in the age group 25 to 54. The increase was even higher for Spanish women, the unemployment rate nearly more than tripled. Also in all three other countries the unemployment rates showed higher increases for women than for men: the numbers more than doubled for women in all three countries and for American men, while Greek men's incidence of unemployment increased by 30 percent and British men's by more than 40 percent.

Unemployment rates among the elderly labour force were in most countries lower than among the age group 25 to 54. This was particularly the case for Greek men. However the increases of the unemployment rates for the age groups 55 to 59 and 60 to 64 document a substantial impact of the crisis.

In the following we will concentrate on the evaluation of the unemployment rates of the age group 55 to 59. We do so because the situation for age group 60 to 64 is not substantially different. Incidence of unemployment was slightly lower in the age group 60 to 64 which might be linked to early exit from the labour market. The strongest increase in unemployment rates among the elderly labour force group 55 to 59 occurred in Spain where the unemployment rate for men aged 55 to 59 tripled from 2007 to 2010 (15 percent in 2010) and the one for women almost doubled in the same period (15 percent in 2010). The increases were similarly high as the ones for the age group 25 to 54, however reversed by gender: particularly the elderly men are more affected by the crisis. This reversed pattern for men and women applies in the same way also to Greece and the US. The increases were similarly high for both age groups 25 to 54 and 55 to 59. Only in the UK the elderly labour force showed lower increases in the seniors' unemployment rate than among the younger group of workers. The unemployment rate for British men aged 55 to 59 increased by 30 percent, the one for British women by 60 percent from

2007 to 2010. The relative measure of unemployment rates has limitations as these percentage rates depend strongly on the inactivity patterns in each of the countries. Thus for example the low numbers for Greece hide the strong impact of the crisis on the labour force. As shown in Section 3, the country offers various pathways to early retirement and the ones who retired early do no longer show up in the unemployment rate.

5. Research questions and hypotheses

The research questions which this paper aims to answer are:

- How do the incomes of senior workers and early retirees compare across countries and over time?
- Do early retirement patterns reflect gendered life courses across the selected countries?
- Can people still afford to retire early after the economic crisis? More specifically, how do incomes of other household members and capital income influence the labour market participation of seniors?

In order to answer to our first research question, we look into the income distribution of people in the sample age range by their labour market status and by gender in Greece, Spain, the UK, and the US in 2007 and 2010.

In most of the countries early retirement has financial disincentives embedded in it, as we saw in Section 3, therefore we expect that the income of early retirees is, in general, lower than the income of their peers who decided to continue their working lives. However, during the crisis in many countries budget cuts and lay-offs affected the labour income while the (early) pensions were not concerned for those who already left the labour market. Since with the data at hand we cannot observe the drop in income for people who retire earlier or are unemployed or disabled (therefore there is a certain endogeneity between their labour market status and their main source of income), we will focus more on the impact of other personal income and other household income and capital income in order to offer a comprehensive picture of their financial situation.

Regarding alternative exit pathways, we expect that in countries where early retirement options are restricted like in the UK, people would be more likely to continue working or, if they decided to leave the labour market, they would be more likely to use the alternative exit paths such as disability, unemployment, and other inactivity. From a life course perspective we will test our hypotheses separately for men and women in order to see if their labour market behaviour in later life reflects gendered life courses.

6. Data used and operationalisations

6.1. Luxembourg Income Study Database and sample selection

We used the Luxembourg Income Study Database from LIS which contains harmonised microdata from 37 high- and middle-income countries from all over the world, many of them with data since the 70's (each cross-sectional wave is reported at a 3-5 years interval) and continues to expand.[3] In order to study the labour market status of seniors in conjunction with their income before and after the crisis, we selected the two most recent waves of the Luxembourg Income Study Database from 2007 and 2010 and the available countries: Greece, Spain, the UK and the US. On the one hand we have two liberal countries, in one of which the financial crisis started (the US), and on the other hand we have two Southern European countries that were hit hard by the crisis later on.

Regarding the sample selection, since we have countries with different institutional settings in our data, we delimit our sample to individuals between 10 years prior to statutory retirement age up to actual retirement age by country and by gender for countries in which there was still a gender difference at the reference time, like in Greece[4] and the UK[5] (for more details on the institutional settings, see Table 4).

Table 4: Sample selection by country and by gender

country	statutory retirement age		minimum early retirement age*		effective retirement age				our sample	
	men	women	men	women	men		women		men	women
					2007	2010	2007	2010		
Greece	65	60	60	55	62.4	61.9	60.9	59.6	55-64	50-59
Spain	65	65	61	61	61.4	61.8	63.1	63.4	55-64	55-64
UK	65	60	-	-	63.2	64.3	61.9	62.1	55-64	50-59
US	66	66	62	62	64.6	65.5	63.9	64.8	56-65	56-65

* these are minimum retirement ages for (excluding particular cases such as mother of minor children who can retire in Greece from the age of 50 years) that depend on other conditions such as minimum years of contributions; for the different eligibility conditions, see Section 3.1. In the UK there are no general early retirement schemes; still, people working in specific sectors or in hazardous jobs can retire earlier, under specific conditions.

sources: MISSOC data for 2007 & 2010 for European countries; SSA data for the US, OECD (2011) for effective retirement age.

Looking at Table 4 we can see that in most of the countries there is a gap between the statutory retirement age and the effective one, with the largest difference being observed for Spanish men in 2007 with 3.6 years. In the case of women in Greece and Spain we observed a higher effective retirement age than the statutory one (by 0.9 percentage points and 1.9 respectively) which could

be explained by the fact that the full pension entitlements are based on years of contributions. Women are less likely to fulfill the criteria because they have interrupted careers due to child rearing, therefore they are more likely to exit through alternative pathways such as disability or other types of inactivity. Between 2007 and 2010 the trend was to decrease this gap in the UK, the US and Spain, while only in Greece the gap increased even further, for men by 0.5 percentage points and for women by 1.3 percentage points.

For the regression models we selected all people in the sample age range[6] who were in dependent paid employment and worked full-time (self-defined) and for at least 15 hours/week or were not working, or were unemployed, or in early retirement, or inactive because of disability, or inactive for other reasons. We excluded the self-employed since their decision on retirement and their old-age provision behaviour is quite different from the one of a dependent employed person. We also dropped all part-time employees (less than 14 hours) and those partially retired due to their low case number in the Southern-European countries[7]. Due to data limitations, we had to restrict the sample to head and spouse only.[8] The sample size (N) used in the regression models for 2007 (and in the brackets the sample for 2010) is equal to: 2,031 (1,845) individuals from Greece; 4,116 (4,046) from Spain; 5,738 (5,977) from the UK and 16,713 (18,039) from the US, in total 25,786 (26,896) individuals from which 52 percent women. Additionally, we used macro-data from the OECD, the EUROSTAT and World Bank.

6.2. Operationalisation of the main variables focusing on income predictors

In this section we explain how we constructed the variables used in our models based on original variables of the LIS database. We start with the description of our dependent variable, *the labour market status of people within a 10-years age range prior to the statutory retirement age*.

The alternative labour market statuses are: *full time dependent employment* (our reference category), *early retirement*, *disability*, *unemployment* and *other types of inactivity* not included in the previous categories. In a large sense, we consider *early retired* all those who exit[9] the labour market before the statutory retirement age, either taking early retirement packages or through alternative paths such as unemployment, disability or other types of inactivity. Unemployed people are considered, in general, still active on the labour market. However, in many countries, especially during a financial crisis, long-term unemployed benefit of more favourable eligibility conditions for early retirement (as we saw in Section 3.1); therefore we included unemployment among our alternative early exit pathways out of the labour market.

In the *full-time employment*[10] (the reference category) are grouped those people who self-defined themselves as working full-time in dependent employment and work for at least 15 hours per week. In the *early retirement* status are included people who declared themselves as being (early) retired and who receive a public or an occupational pension. In the *disability* exits group are people who declared themselves as being inactive because of disability or receive a disability pension or benefits. In the *unemployment* category are people who declared themselves as being unemployed, even if they do not receive (any longer) unemployment benefits. And finally, in order to have a comprehensive labour market status, in the *other types of inactivity* group, are people inactive on the labour market and not classified in the previous categories.

We constructed our dependent variable based on the self-defined labour market status. However, some of the respondents declared themselves as retired or inactive whereas they were actually still receiving labour income. Therefore, we cross-checked the self-defined employment status against the labour income or type of benefits received and excluded those individuals who declared themselves active although they were not receiving any labour income or just self-employed income, while including those who received different types of benefits (e.g. unemployment or disability) in the respective category for a more accurate measurement of the actual activity status. We also identified a small group of people that received both wages and a public or occupational pension, which we drop from our sample since they concurrently belong to two different labour market statuses at the same time, being probably partially retired.

Our main predictor is the income from different sources and we differentiate between *personal main income*, *other personal income*, *other household non-capital income* and *household capital income*, since all these incomes can have different impact on early retirement decision. The main personal income was constructed based on the labour market status of individuals: for employees it is represented by their yearly wage; for early retirees it represented by their public and/or occupational pension; for unemployed it is their unemployment benefits[11]; for people in disability it is represented by the disability benefits and for people in other types of inactivity it is composed by all the other social security transfers that are received at personal level (for example family transfers are received at the household level, therefore they would be included in the household income). We transformed the main income in relative terms, as a percentage of the average main income within the same labour market status by country, therefore comparison between relative labour income and relative early retirement income is feasible. In *other personal income* we included all the other types of incomes (survivors pensions, personal individual pensions, private transfers, etc.) that people declared.

Other household income is calculated by deducting the personal income that we already took into account from the total household income. The household income is composed by all the social transfers that occurred at the household level as well as the labour income, pensions, social benefits or other type of personal income of the other household members. We equivalised the *other household noncapital income* by dividing the sum of the other household member's personal income by the number of household members to whom these incomes belong[12]. *Household capital income* is equivalised by redistributing it in equal shares to all household members. For comparability reasons all incomes were transformed in Purchasing Power Parity (PPP) prices adjusted to the reference point in time, the year 2010. In order to have a proxy for the *wealth assets*, we included in our models the ownership of the house.

We controlled for socio-demographic characteristics such as gender and age. Since people who do not retire early when they qualify for early retirement packages are more likely to work until the statutory retirement age, a non-linear effect of age was taken into account by including the quadratic term of age. We also included an '*older cohort'* dummy for people 5 years younger than the statutory retirement age (by country and by gender) in order to control for the heterogeneity of the sample. Having a health problem is a condition sine qua non for the disability pension and a central determinant of the early exit from the labour market, therefore we control for the self-defined health status as the indication of any health problems (limitation in their daily life due to health problems, existence of an illness/disability or self-evaluated health status as poor/very poor) recoding the information in a dichotomous variable: poor health.

From a life course perspective, educational background and the investment in human capital play a role in the (early retirement) decision too, therefore we control for education level grouped in three main categories: *low* (no education, pre-primary and primary), *secondary level* (lower secondary education, secondary or post-secondary education- used as reference category) and *high education* (first and second stage of tertiary education). Also from a life course perspective, we will use the number of children as a proxy for the career interruption that a women for child rearing. A limitation of the data is that we have information only about the number of children still in the household, however from a gender perspective the number of children in the household can have a different impact on the main bread winner of the family who would be more likely to prolong the working life in order to provide for the larger family.

Since many couple tend to synchronise their retirement we consider the partner's labour market status in our model, distinguishing between having a retired or inactive partner (reference being an employed partner), because it can have different impact on the other partner's decision to

retire early or to continue working. We controlled as well for the presence of a partner (cohabitating or married) in the household.

We control for country differences by introducing country dummies in our model. In the next section we will present descriptive statistics by country and by gender, focusing on the income components.

7. Cross-country comparison of income of senior workers and early retirees before and during the crisis

In this section we present descriptive statistics which show the differences between countries by gender at two points in time: before the crisis (2007) and during the crisis (2010). A first figure shows the large differences between the countries and within countries between men and women with regard to main activity status of seniors. A second set of figures describes the average income for people in each labour market status, by country and by gender and at the two points in time.

Figure 1 reports the percentages of each activity status for the respective individuals who fall in the age range 10-years prior the retirement age and statutory retirement age by gender in 2007 and 2010 using the two respective waves VII and VIII of the Luxembourg Income Study Database. Initially, we distinguished eight statuses: full-time employed, part-time employed, self-employed, partially retired, early retired, unemployed, disabled, and other inactives. Besides the labour market statuses already defined in the operationalization section, the *part-time employed* are those persons who self-defined themselves as working part-time or work less than 15 hours/week; the *self-employed* persons are those who declared themselves as being self-employed or their main income is from self-employment, and the *partially retired* are those people who declared themselves as retired but have both pension and labour income[13] or only labour income.

Figure 1: Activity status for 10-year age range before statutory retirement by gender

Source: own calculations based on Luxembourg Income Study Database

At both points in time, employment (both dependent one and self-employment) is the prevalent status only for men in all countries and for British women. If in 2007 women from the US were mostly employed (51% of them), over time we observed a slight decrease until 2010 when only 49% of them were in employment. Against the expected effect of the crisis, which could have caused a drop in the employment rate, the percentage of working people is rather stable between the two points in time, except in Greece where it dropped significantly. However, the Greek economy was hit hard by the crisis, which led to a high increase in the unemployment rate (from 4 percent in 2007 to 14 percent in 2010).

Figure 1 shows as well large gender differences that are more prominent in the Southern European countries, which are still strongly influenced by the male breadwinner model. Rather than being active on the labour market or being early retired, women in this age range are mostly in other types of inactivity status because there is a large share of Greeks who were never insured; therefore they have not built up pension rights. Moreover, the increase of unemployment among women is remarkable; it tripled in Greece and increased by 80 percent in Spain, showing, once again, that the crisis strongly impacted these countries. In all countries in this study, the share of other inactive persons declined in this period, which could signal that individuals, as a result of the crisis, are less likely to exit from the labour market through other types of inactivity

path, which is less financially sustainable. Furthermore, some of the people who were already inactive may have re-entered the labour market[14] in order to prevent old-age income poverty.

The numbers of early retired persons has not changed substantially during the two points in time, with exception of Greek men, for which we observed an increase of 7 percentage points. It slightly declined in the US for both men and women, and slightly increased in Spain and in the UK. With only 17 percent of employed persons, dependent employment is remarkably low in Greece, while the self-employment, mostly small businesses or farming activity, is much more represented than in the other countries.

Part-time employment is less likely to occur in the selected countries, with the exception of the UK which shows a higher share of approximately 20 percent of the sample. The UK and the US show a structure of phased retirement particularly for men, the group of partially retired persons appears to be almost of similar size as the early-retired group itself. For comparability reasons with the other countries, where phased retirement is less likely to occur, we dropped the partially retired from our analysis.

In the following we provide an overview on selective labour forces statuses (unemployment, disability, and other inactivity) and recipient rates of respective benefits. The statistics were calculated for women (Table 5.1) and men (Table 5.2) separately. The categories full-time employees and early retired are not shown as the category full-time employees is conditioned on actual paid dependent employment income and the category early retired is conditioned on actual retirement pension income. Therefore in both categories all employees receive wages and all early-retirees receive retirement pensions.

Those looking for a job can be in various situations. They can either receive insurance based unemployment benefits through previous employment or universal unemployment benefits. They could be also no longer eligible due to the expired maximum period of granted benefits. Some might not have qualified at all for benefits due to the fact that they did not fulfil the eligibility criteria in the first place (not long enough contributions period for insurance based benefits or financial resources above the eligibility threshold for assistance unemployment benefits). In fact the recipient rates show that in our selected sample the recipient rates for the unemployment benefits vary largely across the four countries due to their different institutional settings that were presented in the previous section. With the exception of the UK (2007 and 2010) men had higher recipient rates. The Spanish had the highest rates in 2007 (61.4 percent for women; 65.5 percent for men). The increased unemployment during the crisis was combined with a stable recipient rate for Spanish men and a lower recipient rate for women (50.2 percent in 2010). As

shown in Section 3, Spanish regulations on early retirement foresee substantial decreases in the pension amount the earlier one retires before the statutory retirement age.

Also Greek men were less in receipt of unemployment benefits during the crisis (45.2 percent in 2007; 29.6 percent in 2010). Greek women had a very low recipient rate, with around 20 percent of them receiving benefits also before the crisis. The low rates might be linked also to the lack of insurance coverage in previous employment[15]. In the other two countries, the US and the UK, the group of unemployed were better covered with unemployment benefits in the later point in time for both women and men. American recipient rates increased remarkably by 30 percentage points for men and about 20 for women. British figures increased by 14.2 percentage points for men and 17.2 for women.

Table 5.1: Recipient rates of social benefits by labour force status - women

country	year	unemployed : unemployment benefits	disabled : disability benefits	other inactive : assistance and other social benefits
Greece	2007	20.0%	56.4%	2.7%
	2010	22.7%	50.0%	4.4%
Spain	2007	61.4%	57.4%	3.8%
	2010	50.2%	51.3%	1.3%
UK	2007	27.1%	74.4%	26.9%
	2010	44.3%	77.1%	26.9%
US	2007	35.0%	75.2%	7.3%
	2010	56.2%	76.2%	22.5%

Source: own calculations based on Luxembourg Income Study Database.

Table 5.2: Recipient rates of social benefits by labour force status - men

country	year	unemployed : unemployment benefits	disabled : disability benefits	other inactive : assistance and other social benefits
Greece	2007	45.2%	86.7%	37.5%
	2010	29.6%	90.2%	28.6%
Spain	2007	65.9%	84.4%	44.2%
	2010	65.5%	80.0%	20.8%
UK	2007	26.3%	79.9%	71.4%
	2010	40.5%	79.9%	72.6%
US	2007	35.0%	80.1%	10.6%
	2010	64.8%	81.5%	26.3%

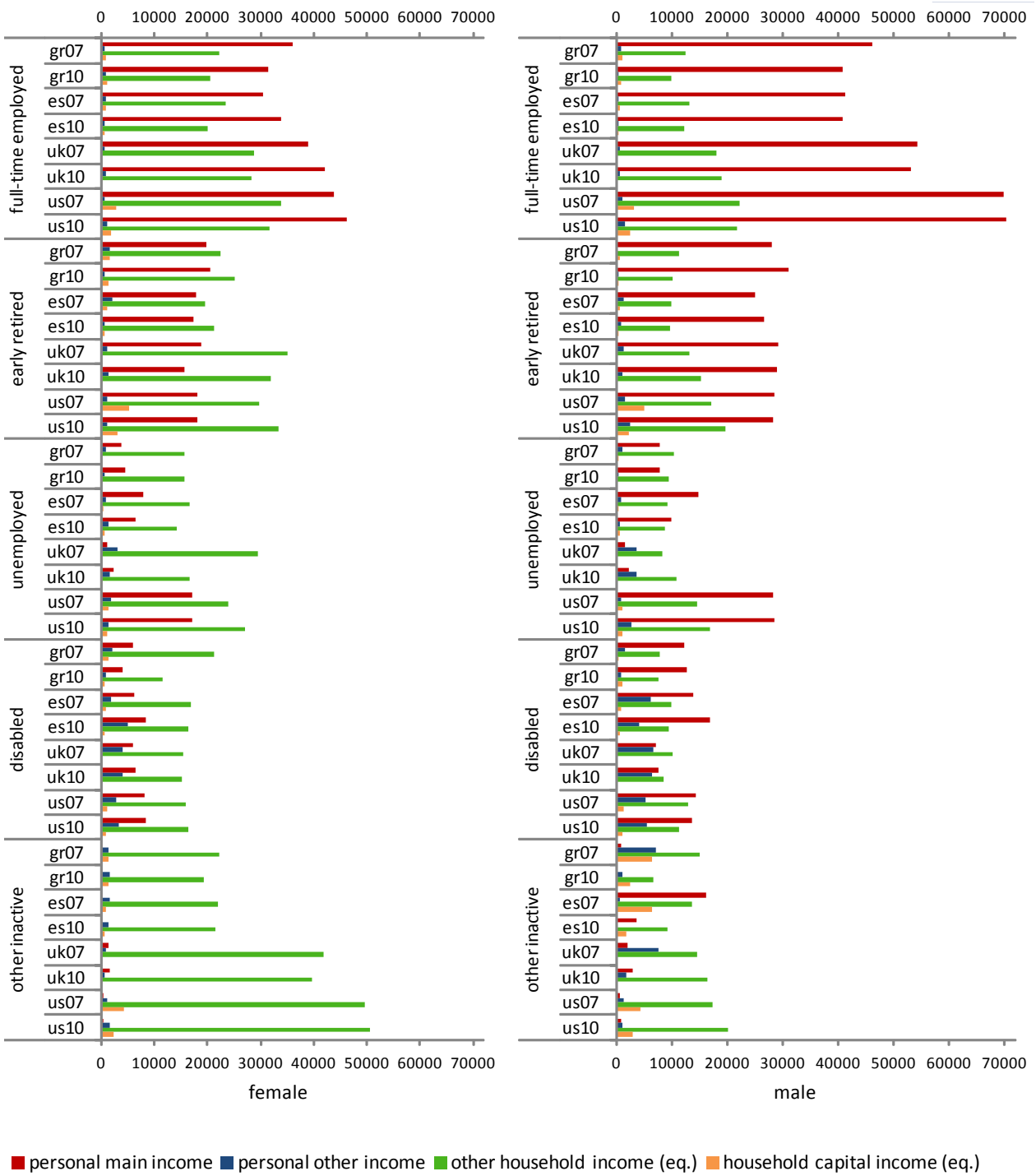
Source: own calculations based on Luxembourg Income Study Database.

Disabled men received, in the majority of cases, benefits which are linked to their disability status. Recipient rates were in all countries around 80-90 percent. Women were less protected by benefits linked to disability; this was especially the case in Greece (56.4 percent in 2007; 50

percent in 2010) and Spain (57.4 percent in 2007; 51.3 percent in 2010), where women might be less likely to be insured due to their lower labour market participation where the disability benefits are not universal ones. Three out of four American and British women were provided with disability benefits. These patterns remained unchanged during the crisis.

For the group of other types of inactive persons we observed large gender differences in Greece and Spain; men were receiving more social assistance benefits; however, some of them are family benefits. During the crisis, the recipient rates decreased substantially in Greece and Spain, whereas, with around 75 percent the rates remained rather high in the UK. As the group of other inactives is a very heterogeneous one, it is important to understand whether or not these persons receive other types of income (for example capital and self-employment income).

Figure 2: Gross incomes by activity status, by country and by gender in 2007 and 2010



Source: own calculations based on Luxembourg Income Study Database

Figure 2 depicts the average gross incomes decomposed by different sources of income, by gender and by country at two points in time. All incomes are transformed in comparable values using Purchasing Power Parity (PPP) and price adjusted to the point in time 2010. Thus income values are comparable between the two points in time and across the four countries. As described in Section 6.2, main income of the full-time employed are wages, whereas the main incomes of

the early-retired are the occupational and/or public pensions. The other statuses also have each their own main personal income.

We can see from Figure 2 that those who stayed in employment have by far higher main income (their wage) than the ones who were early-retired (their pension income), which is as we expected, since in most of the countries the replacement rates of pension are under 100 percent, still with large differences across countries: according to the OECD (2011), the gross mandatory pension's replacement rate of the median earner was ranging from 95.2 percent in Greece and 81.2 percent in Spain, to only 37 percent in the UK, and to 42.3 percent in the US. [16]

Based on the mean values of the earnings and the pensions of our eight samples we could construct a pensions to earnings ratio which allows us to assess the level of early-retirement pensions. Before the crisis, in 2007 the pensions to earnings ratio ranged from 40 percent in the US, 58 percent in the UK, 62 percent in Spain, and up to 63 percent in Greece. Three years later, during the crisis, the ratios decreased to 39 percent in the US, to 55 percent in the UK, while in Greece they increased up to 76 percent. The increase in the pensions to earnings ratio in Greece can be linked to the enormous cuts of wage incomes in times of crisis, which on average were 12 percent lower in 2010 compared with 2007. The decrease of the pensions to earnings ratio in the US could be explained by a devaluation of risky pension assets. In Spain the ratio did not change between the two points in time.

The pensions to earnings ratios can be also evaluated in a gender perspective. In the US there are hardly any gender differences. In the other three countries women's pensions to earnings ratio were lower than men's: 17 percent in Greece, 21 percent in Spain, and 32 percent in the UK in 2007. In 2010 the gender gap tended to increase in all countries.

Regarding the labour income, whereas in the US in 2007 the annual wages are the highest among the countries in our sample with almost on average 57,000 International Dollars (ID), in Spain they are the lowest with 37,500 ID in the same year. In the middle there is the UK with 46,500 ID and Greece with 41,000 ID. In 2010, the average wage income remained nearly unchanged, except in Greece, where average wage incomes dropped to 36,500 ID. However, in some countries like UK and US, surprisingly the labour incomes increased during the crisis, especially for men. Jenkins *et al.* (2012) found that actually average incomes increased in the UK during the crisis when the economy was contracting and the impact of the crisis started to be felt in the UK only after the economy had stopped contracting.

Looking at the average early retirement income, in 2007 these transfers were highest in the UK (27,000 ID), followed by Greece (26,000 ID), Spain and the US (both 23,000 ID). The level of

average pension income slightly decreased during the crisis in the US, remained relatively unchanged in the UK, and slightly increased in Spain and Greece. Surprisingly, even if they were hit hard by the crisis, the most generous system in terms of early retirement packages continued to be the Greek one and the evidence for that is that in 2010 Greek early retirees had the highest pensions (27,500 ID). In all countries the gender differences are substantial; women's pensions are on average only 63 percent of men's pensions in the US for 2007, followed by 64 percent in the UK, 69 percent in Greece and 71 percent in Spain.

Decomposing the income by its sources, we see that for all full-time dependent employees the wages were the main source of income, as expected. For the early retired group the main source of income is different by gender: for men it is represented by their own pension, while for women a large share of it is represented by the *other household members' income* (most likely their spouse's income, whether a wage or a pension). This shows that women are mostly dependent on their partner's income. The pattern is similar for the unemployed and even for the disabled. *Own main income* of other inactives is, as expected, the lowest. Women in this age group have substantial other household income because they mostly rely on their spouse's labour income. Their own *other personal income* is more substantial among the group of disabled persons, which might come from casual employment and eligibility to other social security transfers.

Capital income is, on average, not particularly high, but may have a strong influence on the exit from the labour market for the ones who receive such income. Figure 2 shows that capital income quite strongly declined from 2007 to 2010: capital incomes dropped by 40 percent in the UK, 37 percent in the US, 18 percent Greece and 16 percent in Spain. Before the crisis, capital income is particularly spread among the early retired and the other inactive group. In 2010, during the crisis, average capital income essentially decreased among the early retired.

8. The affordability of early retirement before and after the economic crisis

8.1. Methodology

Regarding the explanatory analysis, we applied multinominal logistic regressions using data from the Luxembourg Income Study Database, wave VII and wave VIII for the available countries. We employed robust estimation of the standard errors since our data are clustered by country. The models are weighted using personal weights provided in the data. Our dependent variable is the labour market status of seniors up to 10 years younger than the statutory retirement age by country and by gender. We consider different pathways out of the labour

market, therefore the competing statuses in our models are: full-time dependent employment (our reference category), early retirement, unemployment, disability and other types of inactivity.

Our main predictors are income related: main personal income (either labour income, or pension or social security benefits), other personal income, other household income and capital income. In a first step we run our models separately for men and women in order to see the gender differences in the early retirement patterns and income using wave VII of the Luxembourg Income Study Database. In a second step we run our models by gender for wave VIII, thus comparing the development over two dimensions: time and gender. Additional country models for each country and in the two points in time were run to reveal further country particularities; however due to space limitations, they will not be presented in this paper. A graphical representation of the country models which shows within countries by gender differences in the early exit paths out of the labour market can be found in Figure 1 in the Annex.

8.2. Results: comparative impact of personal income and household disposable income on the labour market status of seniors across-countries and over time

We run our models at two points in time: in 2007, at the beginning of the economic crisis, and in 2010 when the effects of the crisis were felt in most countries, by gender. In a first stage, we look at gender differences in 2007 in the impact of different income components on the labour market status of people in the age range 10 years prior to statutory retirement age. We have to acknowledge that there is a certain level of endogeneity between the source of the main income and labour market status. However, we are limiting our sample to the pre-retirement age, age at which (except some involuntary exits) people have the choice between continuing working until the statutory retirement and retiring early, including through alternative pathways. In the same time we express the main income in relative terms, as a percentage of average main income within the same labour market status, therefore comparison is feasible.

From Table 6 and Table 7, in 2007 we observed a positive correlation of main income on early retirement status and a negative effect on other inactivity status for both men and women. For example this could be interpreted that a person who would receive an early pension that is 90 percent of the average early pension in that country would be more likely to retire earlier than a person who earns 80 percent of the average wage who instead would be more likely to continue working in order to build up more pensions rights. In addition, for women we observed a negative correlation of the main income with the probability of being unemployed or disabled.

Furthermore, other components of income could give a better picture of the complex decision of staying active or retiring early even through alternative pathways. Other personal income has a

positive effect on the probability of being early retired for men and a positive effect on the probabilities of being unemployed or in disability for all. The other household members' income has a negative correlation with the probability of being early retired or in disability and a positive one with the probability of being in other types of inactivity for both men and women; additionally for men it has a negative correlation with the probability of being in unemployment. The capital income has a positive correlation with the probabilities of being early retired or in other types of inactivity while it has a negative one with the probabilities of being unemployed or in disability for both men and women. This means that a higher value of capital income will increase the probability to exit from the labour market even through other types of inactivity path, because people can afford it, even if they do not qualify for early retirement. The ownership of the house[17], used as a proxy for wealth assets, has a significant impact on the labour market status of seniors: it increases the probability to be in early retirement, while it has a negative correlation with the probability of being in unemployment or in disability.

Table 6: Model women all countries 2007

predictors	**early retired**	**unemployed**	**disabled**	**other inactive**
	beta	beta	beta	beta
age	**-1.992*****	-0.106	-0.231	-0.585
age square	**0.020*****	0.000	**0.003***	0.006
older cohort	**0.324*****	0.340	-0.176	-0.042
low education(medium ref.)	**0.520*****	**0.761*****	**1.281*****	**0.626*****
high education	**-0.095****	0.206	**-0.480*****	0.032
poor health	**1.273****	**1.012*****	**4.460*****	0.807
partner in household	**-0.423*****	-0.129	-0.046	**0.327*****
partner retired	**1.469*****	0.037	**0.377*****	**0.398****
partner inactive	**0.473*****	**0.587*****	**1.004*****	**0.418****
no. children in household	**-0.162*****	-0.037	0.049	**0.263*****
main income(% average)	**0.001*****	**-0.010***	**-0.005*****	**-0.059*****
other personal income	0.016	**0.043*****	**0.051*****	0.015
other household income(eq.)	**-0.001*****	-0.002	**-0.008*****	**0.005*****
capital income(eq.)	**0.014*****	**-0.034*****	**-0.007***	**0.014*****
owned	**0.496*****	**-0.408***	**-0.772*****	0.083
GR(UK ref.)	**1.723*****	**0.528*****	**-0.974*****	**0.443*****
ES	**-0.583*****	**1.361*****	**-1.703*****	0.227
US	0.026	0.156	**0.678*****	**-0.424***
constant	45.767***	3.006	0.518	14.439

R-squared = 0.419; N =**13302**; * p<0.10, ** p<0.05, *** p<0.01

Table 7: Model men all countries 2007

predictors	early retired	unemployed	disabled	other inactive
	beta	beta	beta	beta
age	**-1.795*** **	0.561	0.683	0.190
age square	**0.018*** **	-0.005	-0.005	-0.001
older cohort	**0.251*** **	0.195	-0.084	0.094
low education(medium ref.)	0.006	0.243	**1.075*** **	0.012
high education	**-0.503** **	-0.167	**-0.971*** **	**0.345*** **
poor health	**1.199** **	**0.784*** **	**4.555*** **	**0.716** **
partner in the household	**-0.835*** **	**-0.701***	**-0.523*** **	**-0.607*** **
partner retired	**1.029*** **	-0.039	**-0.388*** **	**0.615***
partner inactive	**0.629*** **	**0.369***	**0.384** **	**0.682*** **
children in the household	**-0.241*** **	-0.063	**-0.180*** **	-0.013
main income(% average)	**0.002** **	-0.005	0.001	**-0.036** **
other personal income	**0.022*** **	**0.036*** **	**0.069*** **	0.028
other household income(eq.)	**-0.001*** **	**-0.007*** **	**-0.003** **	**0.001*** **
capital income(eq.)	**0.011*** **	**-0.051*** **	**-0.012*** **	**0.018*** **
owned	**0.551** **	**-0.423*** **	**-0.500*** **	0.146
GR(UK ref.)	**1.726*** **	**0.283*** **	**-0.952*** **	0.249
ES	**0.579*** **	**0.928*** **	**-1.476*** **	**-0.478*** **
US	0.344	**-0.354** **	**1.220*** **	0.031
constant	41.685***	-18.783	-27.963	-9.468

R-squared= 0.343; N=11770; * p<0.10, ** p<0.05, *** p<0.01

Regarding the socio-demographic control variables, in 2007 age has a nonlinear negative effect on being early retired for all, confirming that, if someone did not retire as soon as he/she qualified for early retirement benefits, he/she would be more likely to continue working until the statutory retirement age. Furthermore, people belonging to the older cohort are more likely to be early retired than those belonging to the younger cohort, as we would expect.

Concerning the education level, highly educated people are less likely to be early retired than those with medium level of education and less likely to be in disability status as well. Looking at the alternative labour market statuses we observed that people with low level or no formal education are more likely to be in disability than those with a medium level of education. Regarding gender differences, women with low or no education are more likely to be in early retirement or any other alternative statuses out of the labour market than women with medium

level of education, while highly educated men are more likely to be in other types of inactivity than men with medium education level, a rather surprising result. As expected, people in poor (self-defined) health are more likely to be early retired, disabled, or unemployed (because they are more likely to qualify for disability benefits) than their peers in good health; additionally men in poor health are more likely to be in other inactivity status.

People who live together with their partner are less likely to be early retired than people who do not have a partner in the household, with further gender differences: while men living in couple are less likely to take any of the alternative routes out of the labour market, their women counterparts are more likely to be in other types of inactivity than the ones who live alone. Moreover, having a retired partner increases the probability to be (early) retired themselves or in other types of inactivity, confirming the hypothesis of synchronised couple retirement. We observed further gender differences: having a retired spouse increases the probability of being in disability for women, being used as an alternative exit route when they do not qualify for early retirement, while for men it decreases the probability to be in disability. Having an inactive partner increases the probability to be in early retirement, unemployment, disability or other types of inactivity for both men and women, concurring once again with the synchronisation of retirement, even taking alternative exit paths. People with more children in the household are less likely to retire early and more likely to continue their working life in order to provide for their family. Moreover, women with more children are more likely to be in other types of inactivity status than women without (or with less) children in the household, showing that care needs can generate inactivity on the labour market, even in late career. This could also be an indication that women with more career interruptions for children rearing are less likely to qualify for early retirement benefits, therefore more likely to take alternative exit pathways.

Regarding the country differences (with the UK as reference) we observed that Greeks and Spanish men are more likely to be in early retirement than their British counterparts, while the Spanish women are less likely to be early retired than British women. For Americans we did not observe statistically different early retirement behaviour than for the British. Concerning the unemployment of senior workers, the Spanish and the Greeks are more likely to be unemployed in 2007 than the British, while American men are less likely. Less people are likely to be in disability status in Spain and Greece compared with the UK, while only the Americans are more likely to be in disability than the British. Looking at the country differences in other types of inactivity status, we observed that Greek women are more likely to be in other types of inactivity than British women, while Spanish men are less likely to be in other types of inactivity than the British men. Women from the US are less likely to be inactive than British women, while men from the two countries have similar labour market behaviour in this regard.

In a second step, looking at Table 8 and Table 9, which show the models by gender using 2010 data we want to see if the country differences observed in 2007 changed, possibly being affected by the economic crisis that spread from the US towards Europe between these two points in time.

Table 8: Model women all countries 2010

predictors	early retired	unemployed	disabled	other inactive
	beta	beta	beta	beta
age	**-0.930*** **	0.333	0.336	-0.194
age square	**0.011*** **	-0.003	-0.002	0.002
older cohort	**-0.227** **	-0.133	0.003	0.034
low education (medium ref.)	**0.420*** **	0.429	**0.936*** **	**0.787*** **
high education	-0.094	**-0.279***	**-0.691*** **	0.071
poor health	**1.430** **	**0.765** **	**4.513*** **	0.812
partner in household	**-0.533*** **	-0.100	-0.224	**0.400*** **
partner retired	**1.470*** **	-0.060	**0.305*** **	**0.372** **
partner inactive	**0.471*** **	**0.382** **	**0.733*** **	0.071
no. children in household	**-0.236*** **	0.025	0.070	**0.191*** **
main income (% average)	**-0.001*** **	**-0.007** **	**-0.004*** **	**-0.044*** **
other personal income	0.004	**0.014***	**0.053** **	0.006
other household income (eq.)	**0.003*** **	-0.001	-0.001	**0.006*** **
capital income (eq.)	**0.011*** **	-0.018	**-0.017*** **	**0.007*** **
owned	**0.308*** **	**-0.595*** **	**-0.707*** **	0.099
GR (UK ref.)	**2.608*** **	**2.201*** **	**0.515***	**1.187*** **
ES	**-0.529*** **	**1.764*** **	**-0.882*** **	**0.686*** **
US	**-0.388***	0.248	**1.386*** **	0.145
constant	12.755***	-11.892	-15.451*	2.598

R-squared= 0.364; N= 13952; * p<0.10, ** p<0.05, *** p<0.01

Table 9: Model men all countries 2010

predictors	early retired	unemployed	disabled	other inactive
	beta	beta	beta	beta
age	**-0.859***	**2.931*****	**0.567*****	0.292
age square	**0.010****	**-0.024*****	**-0.004*****	-0.002
older cohort	0.075	**0.174***	**0.248***	**0.337*****
low education(medium ref.)	0.072	**0.454*****	**0.895*****	**0.299*****
high education	**-0.456****	**-0.218****	**-0.862*****	**0.085****
poor health	**1.220****	**0.435***	**4.383*****	**1.312****
partner in household	**-0.747*****	**-0.453*****	**-0.514*****	**-0.543*****
partner retired	**1.319*****	**-0.227*****	**-0.069****	0.180
partner inactive	**0.600*****	**0.099****	0.206	**0.328****
no. children in household	**-0.273*****	-0.055	**-0.254*****	0.010
main income(% average)	**0.003*****	**-0.004***	-0.000	**-0.021*****
other personal income	**0.026*****	**0.041*****	**0.058*****	**-0.029*****
other household income(eq.)	**0.003*****	**-0.002*****	**-0.008*****	**0.003*****
capital income(eq.)	**-0.013*****	**-0.025*****	**-0.017*****	**0.007*****
owned	0.211	**-0.522*****	**-0.673*****	-0.003
GR(UK ref.)	**2.733*****	**1.789*****	**0.400*****	-0.072
ES	**1.250*****	**1.437*****	**-0.402*****	**-1.302*****
US	**0.586****	**0.381*****	**1.674*****	0.052
constant	11.262	-89.009***	-22.451***	-12.695

R-squared=0.301; N=12458; * p<0.10, ** p<0.05, *** p<0.01

Compared with 2007, in 2010 we observed differences in women's early retirement behaviour: American and Spanish women are less likely to be in early retirement than the British women (while in 2007 no significant differences were observed), while American men are more likely to be early retired than British men. The Southern European countries in our sample maintain the same positive correlation compared with the UK that was already observed in 2007. In 2010 American men are more likely to be unemployed than British men, whereas in 2007 the probabilities were not significantly different, suggesting a possible effect of the crisis on American economy. The Spanish and the Greeks continued to be more likely to be in unemployment than the British in 2010 as well. Regarding the disability status, we observed that in 2010 Greeks are more likely to be in disability status than the British, while in 2007 they were

less likely. Looking at the changes in women's labour market behaviour we observed that, compared with 2007, when the American women were less likely to be inactive than the British ones, in 2010 does not appear to be any significant difference between the two groups as far as regards the other types of inactivity status.

Regarding the change in the impact of the different income components between the two points in time, the most notable change that we observed is in the effect of the *main income* on women's probability to be in early retirement: if in 2007 having an higher than average pension would increase the probability to be early retired, in 2010 it has the opposite effect, pointing out to the fact that the generosity of the early retirement packages does not act anymore as a pull factor (see Ebbinghaus: 2006) out of the labour market and, during the crisis people are more likely to continue their working life rather than retiring early. *Other personal income* maintained the same effects over time on the labour market status of both men and women, except a negative effect in 2010 on the probabilities of being in other types of inactivity for men.

The impact of *other household income* has changed as well over time: in 2010 it has a positive effect on probabilities of men and women of being in early retirement (while in 2007 we observed a negative effect). This suggests that, after the crisis, people tend to rely more on the household income, including the personal income of the other household members.

Looking at the impact of household *capital income* we observed significant changes over time: in 2010 men with higher capital income are less likely to be in early retirement, while in 2007 there was no significant effect observed and the direction of the observed effect is opposite in the case of women (positive correlation at both points in time). *House ownership* does not seem to have a significant effect in 2010 (while it had a positive correlation in 2007) on men's probabilities of being early retired, which could be explained by the fact that the value of assets decreases during the crisis. Nevertheless, for women the house ownership maintains the same positive correlation with the probabilities of being early retired, even during the crisis.

Overall we observed that the effects of different income components changed over time and these results need to be examined further. We explored this more in details in the country models graphically presented in Figure 1 in the Annex, which reveals further country differences, specifically on the probabilities to exit at each age from our age range sample selection by country and by gender at the two points in time from which we can see that the most spectacular changes in the labour market participation of people in our sample age range occurred in the Southern countries, and especially the increased in the early retirement exits of Greek men before the age of 60 is remarkable.

9. Conclusion and policy relevance

So, who can (still) afford to retire early? We saw that only Greeks are more likely to be in early retirement in 2010 than in 2007 and with the most generous benefits as well. In the same time, they are also more likely to be unemployed: we observed a substantial increase of unemployment (by 10 percentage points) and a slight decrease of the group in other types of inactivity. For the other countries we did not observe a significant difference in the proportion of people who were (early) retired in 2010 compared with 2007. We observed a very gendered labour market, especially in the Southern European countries with a large proportion of women being in inactivity and only a limited number qualify for early retirement, while a large proportion of men are in early retirement and only very few are in other types of inactivity. In the other countries the gender gap is less pronounced.

Furthermore, decomposing the income by the source and by type offers us a better view of the differences in the financial situation of people in different labour market statuses. Looking at the two points in time we observed that labour income decreased in Greece, while in the US, the UK, and in Spain only for women, we observed a slight increase. The (early) retirement benefits seem to be stable over time, with a slight increase in Greece, while in the UK and Spain we observed a slight overall decrease over time. As expected during a financial crisis, the capital income decreased in 2010 compared with 2007.

This corroborates the findings of the multinominal logistic models. In 2007, capital income had a significant impact on the labour market participation of pre-retirement age seniors. In 2010, the incomes of other household members seem to be more correlated with the labour market status of seniors than the capital income of the household.

We have to acknowledge the limitations of our paper: using cross-sectional data did not allow us to observe the income situation of seniors before and after their transition out of the labour market. At the same time, another limitation was that current incomes were not available in the data, only the annual income from the previous year. For this reason we could not distinguish between those who were truly partially retired, meaning that they were working and receiving a pension concurrently in the year of the survey and those who retired between the start of the income reference year and the interview date and they still had some wages in the previous year, while in the survey year they were receiving only a pension. At the same time we could not distinguish as well between those who worked part-time their whole career or at least for a long period of time and those who reduced their working hours in the late career as a phased retirement measure. We also acknowledge that there is a certain endogeneity between labour market status of an individual and the level of the main income. However, the sample is

restricted to the group of individuals in the age range 10 years prior to the statutory retirement age, therefore to people of working age who have the choice[18] to continue working or retire early, even through alternative pathways.

We observed that alternative pathways such as unemployment, other types of inactivity, and even disability are more likely to be used when people do not qualify for early retirement, and especially in the case of women, due to their interrupted careers.

Beside the gender and over time differences, we observed cross-countries differences in the way different income components influence the labour market behaviour in later career, results that were explored further in the country models. For more insights into these results, these effects should be tested in a further research with longitudinal data, focusing on the individual decline in income at the time of early retirement and including more countries.

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Annex

Fig.1. a. Predicted probabilities by the multinominal models to be in a certain labour market status at every age, 2007& 2010, men

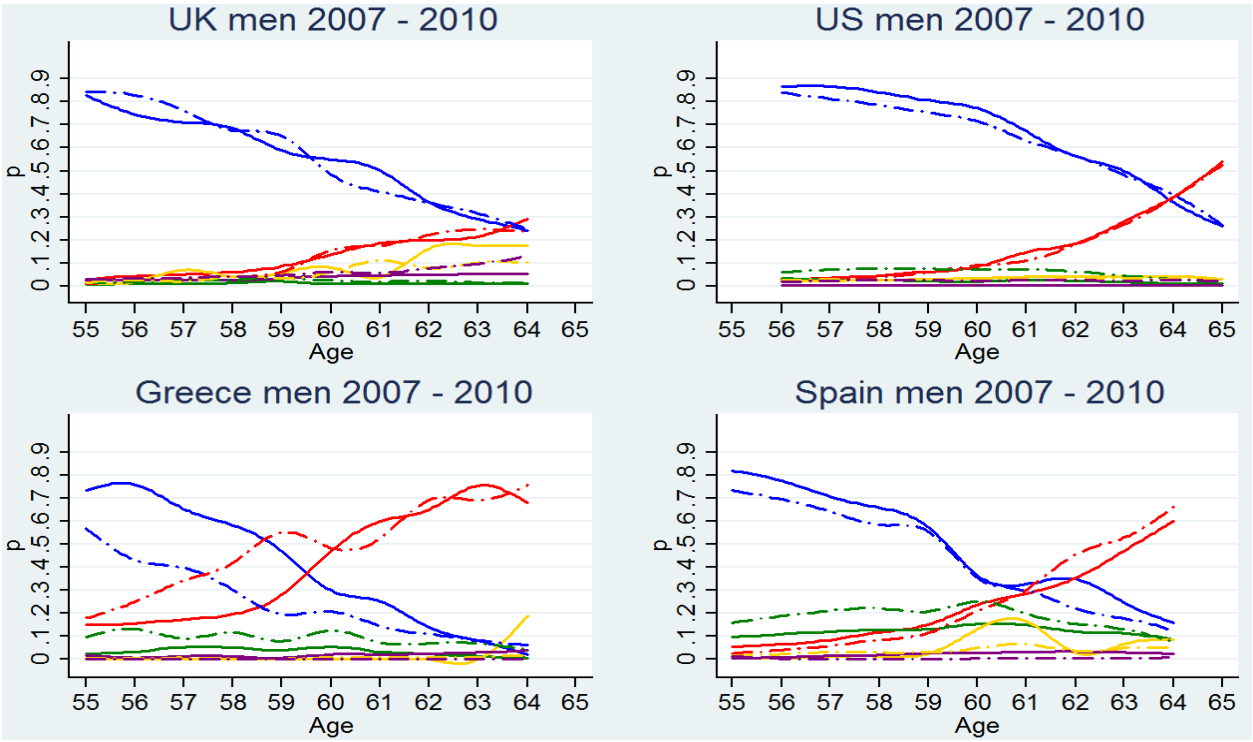
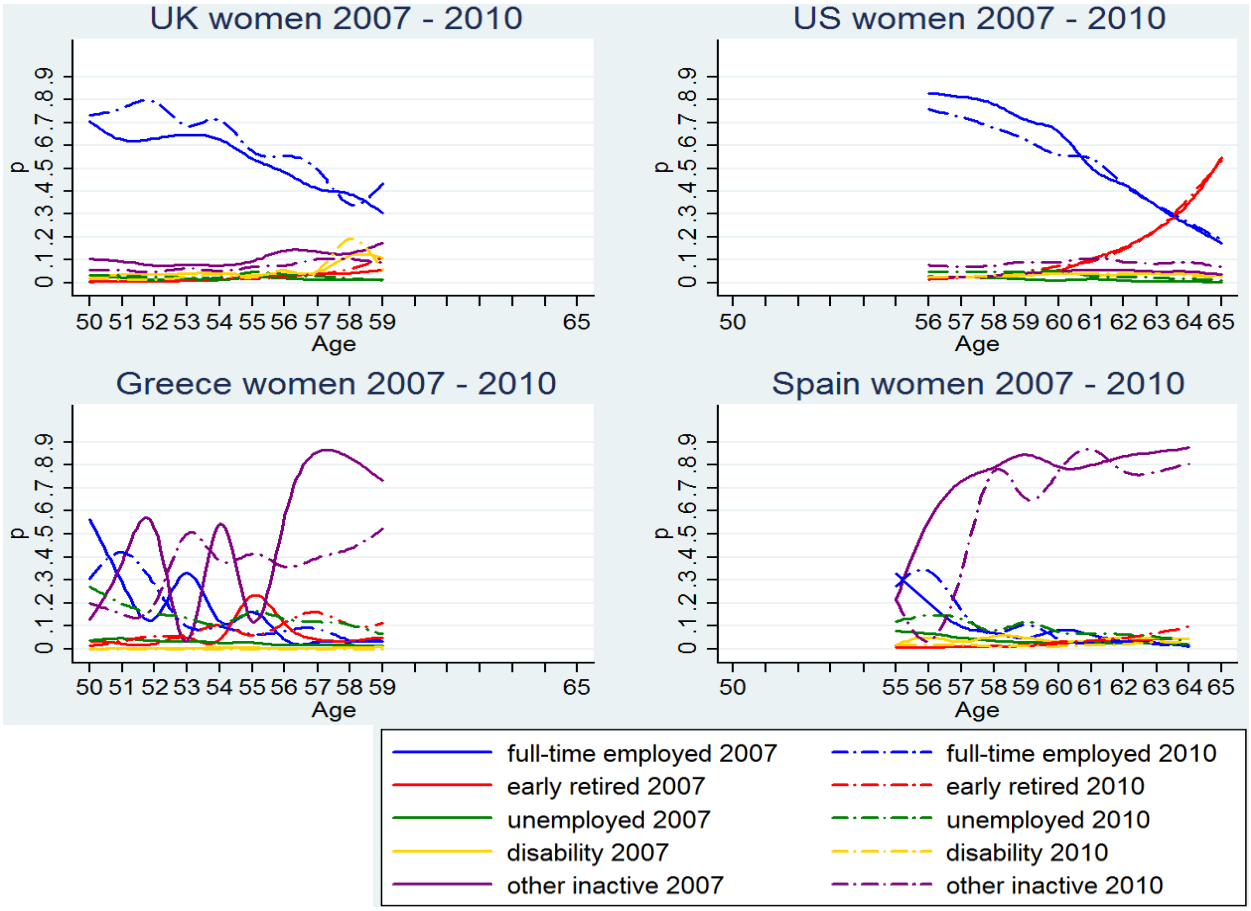


Fig.1. b. Predicted probabilities by the multinominal models to be in a certain labour market status at every age, 2007& 2010, women



[1] The replacement rates of unemployment benefits in the initial phase of unemployment are calculated based on annualised benefit values and we considered the OECD calculated values for average earner married in a dual-earner family without children and the spouse is assumed to earn 67% of average wage. Source: OECD, Tax-Benefit Models data for 2010 & 2007, available at www.oecd.org/els/social/workincentives

[2] Inflation rate is measured as the annual increase in consumer prices.

[3] For more details about the Luxembourg Income Study Database see the LIS institute website at: http://www.lisdatacenter.org/

[4] In Greece, the 1993 reform closed the gender gap in retirement age; since most of women in our sample got insured under the old system which regulations still continue to apply for people insured before 1993, we keep the statutory retirement age of 60 as upper threshold of our sample selection for Greek women.

[5] UK is closing the gender gap in the retirement age and the statutory retirement age for women increased gradually since 2010 aiming to reach 65 years by 2020.

[6] We limited the sample to heads and spouses of the head, because we could not identify the partners of the other members of the households. However the proportion of men who are not heads or spouses of the head of the total men's sample of the selected age group (55-64) is only 3.2 percent, while the proportion of women who are not heads or spouses of the head of the total women's sample of the selected age group (50-59) is only 4.6 percent.

[7] In 2007, part-time workers represented only about 2 percent in Greece and Spain; while the partially retired, those who received both an pension and labour income represented only about 1 percent in Spain.

[8] We could identify in the data only for head and spouse their respective partner, therefore we dropped all individuals in the sample age range who were not head and spouse, which represented from 2 percent in the UK (2010) up to 9 percent in the United States (2010).

[9] However, with the cross-sectional data it is not possible to identify if the persons in other inactive categories were active on the labour market.

[10] We did not consider part-time employees because in some countries like in the US, where phased retirement schemes exist, part-time employment could be an indication of a partial retirement, a path worth exploring. However with our data we could not distinguish between those who worked part-time their whole career or at least for a long period of time and those who reduced their working hours as a phased retirement measure.

[11] One limitation of our data is that we have the available income for the previous year; therefore, in order to have a better estimate of the yearly disposable income of the unemployed we applied the replacement rates as provided by the OECD on their previous labour income.

[12] We deduced from the total number of household members the individual selected in our sample.

[13] With only the previous annual incomes being available in the LIS database, we cannot distinguish between those who currently receive a wage and declare themselves as being retired (the truly '*partially retired'* ones) and those who retired between the income reference year and the date of the interview and still had some labour income in the reference year, while currently receiving only pension income. In this case, they belong to the '*early retired'* category. Therefore this is another reason for which we discarded this category in our multinominal models.

[14] LIS being a cross-sectional database we cannot observe the re-enter rate of seniors on the labour market, a path worth exploring in future research with longitudinal data.

[15] According to according to controls carried out by the Hellenic Labor Inspectorate in the first three months of 2013 uninsured work in Greece reached 39.4%, a very high rate. Source: http://www.ansamed.info

[16] These calculations are simulated for persons entering the labour market in 2010 with the regulations in place in 2010; therefore the replacement rates do not apply to current (early) retirees, but they can point to essential country-specific differences.

[17] For the European countries we could also distinguish between owners with a mortgage and those without a mortgage and the positive effect on early retirement was maintained in most of the cases only for owners without a mortgage.

[18] Early retirement is not always a choice, people can also be pushed out of employment, however we could not explore this path with the data at hand.