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YOUTH LABOUR MARKET PERFORMANCE IN SPAIN AND ITS DETERMINANTS - A MICRO LEVEL PERSPECTIVE

ECONOMICS DEPARTMENT WORKING PAERS N° XX

By Juan J. Dolado, Marcel Jansen and Florentino Felgueroso, Andrés Fuentes and Anita Wölfl

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ABSTRACT/RESUME

Youth labour market performance in Spain and its determinants - a micro-level perspective

This paper provides both descriptive and empirical evidence about the main youth labour market problems in Spain. Using the experiences of other EU economies as a benchmark, we document the performance of Spain as regards a wide set of youth labour market dimensions. These include employment and unemployment rates, youth wages, decisions to work and study, youth mobility, type of employment contract, time to find a first job, skill mismatch, etc. Cross-country econometric evidence from different micro-datasets is reported to understand the role played by several underlying supply/demand factors which might explain the difficulties faced by the Spanish youth labour market (www.oecd.org/eco/surveys/Spain).

JEL classification codes: J20, J30, J40, J60.

Keywords: youth unemployment, Spain, youth employment, youth labour market youth mobility, duality, overqualification, skill mismatch, job search.

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L'insertion des jeunes sur le marché du travail espagnol : résultats et facteurs déterminants - Une perspective microéconomique

Le présent document apporte des éléments descriptifs et empiriques sur les problèmes principaux auxquels sont confrontés les jeunes sur le marché du travail en Espagne. Nous comparons les résultats de l'Espagne avec ceux d'autres États membres de l'UE au regard de multiples indicateurs de l'emploi des jeunes, notamment les taux d'emploi et de chômage, le salaire des jeunes actifs, les décisions relatives au travail et aux études, la mobilité des jeunes, les types de contrat de travail, la durée nécessaire pour trouver un premier emploi, l'inadéquation des compétences, etc. Des données économétriques internationales, tirées de plusieurs micro-bases de données, sont utilisées pour mieux comprendre le rôle joué par plusieurs facteurs sous-jacents de l'offre et de la demande pouvant expliquer les difficultés du marché du travail des jeunes en Espagne (www.oecd.org/eco/etudes/Espagne).

Classification JEL : J20, J30, J40, J60.

Mots clefs : chômage des jeunes, Espagne, emploi des jeunes, marché du travail des jeunes, dualité, surqualification, inadéquation des compétences, recherche d'emploi.

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Youth labour market performance in Spain and its determinants - a micro-level perspective

By Juan J. Dolado, Marcel Jansen and Florentino Felgueroso,

Andrés Fuentes and Anita Wölfl[1]

Key points

- While long-term unemployment among youth has risen sharply in most European countries during the crisis, higher unemployment and NEET (not in employment, education or training) rates in Spain largely reflect much higher worker turnover rather than a higher prevalence of long-term unemployment. Further, the transition from education to a first stable job takes longer in Spain.

- The high incidence of temporary employment in Spain is found to be the main determinant of both high worker turnover and the volatility of youth employment.

- Sectoral characteristics of the Spanish economy, notably the construction boom and bust cycle, plus the relatively large weight of low-knowledge intensive services, are not the most important factors explaining the high incidence of temporary employment and the sharp increase in youth unemployment. Yet, these characteristics have played some role in discouraging participation in education, in part by pushing up wages for unskilled jobs during the long expansion prior to the crisis.

- Demographic developments and immigration do not contribute to explaining youths' employment performance directly, although there appear to be negative effects of regional cohort sizes on participation in education, pointing to education supply bottlenecks.

- Since the arrival of the crisis, participation in education has risen in Spain. Yet, NEET rates and school drop-out rates among teenagers remain the highest in cross-country comparisons, while vocational education degrees are much less widespread. At the same time, there has been a strong reduction of employment rates among unskilled youth during the crisis. Individual data evidence

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1. This working paper draws on consultancy work carried out by Juan J. Dolado, Florentino Felgueroso and Marcel Jansen for the Economics Department of the OECD. Juan J. Dolado is Profesor at Universidad Carlos III de Madrid and is affiliated to IZA and CEPR. Florentino Felgueroso is Professor at the Universidad de Oviedo and affiliated to FEDEA. Marcel Jansen is Professor at Universidad Autónoma de Madrid and is affiliated to FEDEA and IZA. Andrés Fuentes and Anita Wölfl are Senior Economist and Economist, respectively, in the Economics Department of the OECD. The authors are grateful to Sylvie Ricordeau, Maartje Michelson and Sylvie Foucher-Hantala for essential editorial assistance. The views expressed are those of the authors, and not necessarily those of the OECD or of its member countries.

suggests that participation in dual work-training programmes, which is low is Spain, could markedly improve the transition of youth to work.

- Mismatch of young workers' skills with jobs and over-qualification are widespread phenomena although they have diminished with the crisis. To some extent this can be related to low worker mobility and difficult access to rented housing. As regards policies to favour mobility, there is evidence that a means-tested housing benefit for young workers, introduced in 2008 and abolished in 2011, was effective in raising mobility and job match of tertiary graduates.

- Data from before the crisis show that relatively few youth in Spain were on jobs with very low pay, reflecting a low incidence of part-time work and of youth combining work with education and training. The absence of a specific, lower, minimum wage for young workers and collective wage bargaining may also have contributed to explain this fact.

- International and Spanish evidence from past recessions suggests that youth unemployment could have long and substantial scarring effects on the future earnings prospects of those cohorts entering the labour market during recessions. Labour market reforms aimed at fighting labour contract dualism could be effective in reducing such scarring effects.

Introduction

This study provides both descriptive and econometric evidence, using both aggregate and individual data, about the main features of the Spanish youth labour market in comparison with the corresponding features in a set of representative European economies. The first section provides a detailed description of the performance of the Spanish youth labour market, while the following two sections provide an analysis of the driving forces. For this purpose, the Spanish outcomes are compared with the corresponding outcomes in four reference EU countries. These countries are: France, as an example of a neighbouring economy with similar labour market and education institutions to Spain's, Germany, The Netherlands and the United Kingdom.

The main micro datasets used throughout the paper are the following:

- The European Labour Force Survey (EU-LFS; yearly sub-samples 2002-10) regarding time series on youth labour markets.
- The 2009 EU-LFS ad hoc module on the entry of youth into the labour market regarding information about school-to-work transitions and the characteristics of first jobs (youth aged 15-34 years in 2009).
- The European Survey on Income and Living Conditions (EU-SILC, 2004-10 cross-sectional and 2006-2009 longitudinal data) regarding information on labour market experience and wages.
- The Spanish Labour Force Survey/*Encuesta de Población Activa* (EPA; 2005-11 with quarterly, regular and rotating panel data).
- The Continuous Sample of Work Lives/*Muestra Contínua de Vidas Laborales* (MCVL, with yearly samples of Social Security records 2005-11) regarding more detailed data for the Spanish case.

Stylized facts about the Spanish youth labour market in international comparison

This section looks at the following indicators of Spain's youth labour market performance: the unemployment and employment rates, the share of youth who are neither in employment, education nor

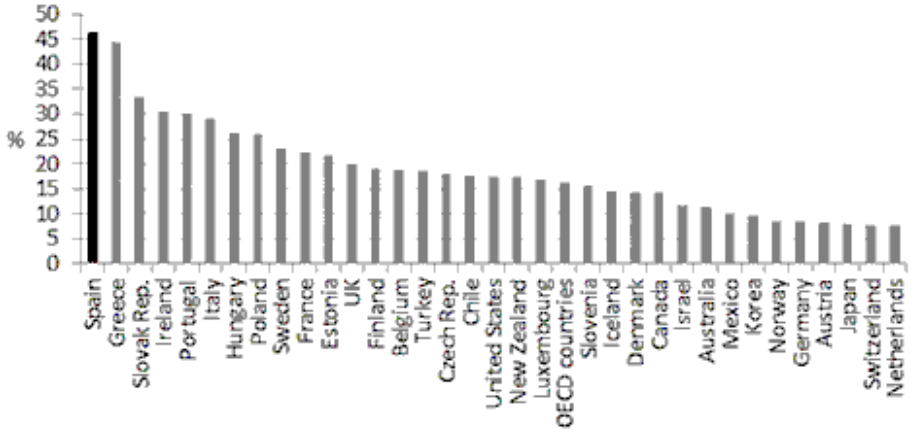
training (NEET) and the proportion of young people who combine study and work; the time required to find a first job after leaving formal education; indicators of youth labour market dynamics, notably hiring and separation rates, transitions from NEET to formal or non-formal education or training, and duration and number of spells of unemployment; characteristics of jobs taken by youth workers (temporary employment and part-time work); qualification and skill mismatches; and, finally, the evolution of wages paid to young workers.

***Unemployment and employment rates*[2]**

Noticeable problems in the Spanish youth labour market have reappeared dramatically during the Great Recession. As Figure 1 illustrates, the unemployment rate for workers under 25 years of age has surged to above 45% in 2011 (53% by 2012q2), nearly three times the corresponding OECD average rate.

Figure 1. Youth unemployment rates in the OECD countries

(15-24 years, 2011)



Source: OECD Stat.

It should be stressed that very high rates of youth unemployment in Spain are far from being a new phenomenon. As Figure 2 shows, this is the third time during the last three decades that it exceeds 40%. In every recession that the Spanish economy has suffered since the late 1970s, youth unemployment has been dramatically affected. Furthermore, the ratio between the unemployment rates of youth and adults has stabilized since the early 1990s at a value of around 2.5, regardless of the business cycle phase. Notice that this ratio is not particularly high when compared to the corresponding figures for other countries, suggesting that, to a large extent, the poor youth unemployment record in Spain is just a reflection of more general structural problems in the overall labour market which affect the entire working population rather than specific age groups.

Figures 3 and 4 report the employment rates by age and gender over the period 1983-2011. Careful inspection of these figures allows one to draw the following conclusions:

- While the differences in employment rates of prime age males (30-54) are relatively small across countries and are even favourable to Spain among older workers (55-59 and 60-64), this country has much lower employment rates among the cohorts aged 15 to 30/34 years.

2. The employment rates are calculated as a proportion of the entire age category of young people, and not only of the active labour force. The reason for choosing this definition is that it avoids biases related to differences across countries in youth still remaining in school. Moreover, they can also be used to identify all those individuals who are jobless, and not simply those identified as unemployed under the ILO definition (OECD 2010b).

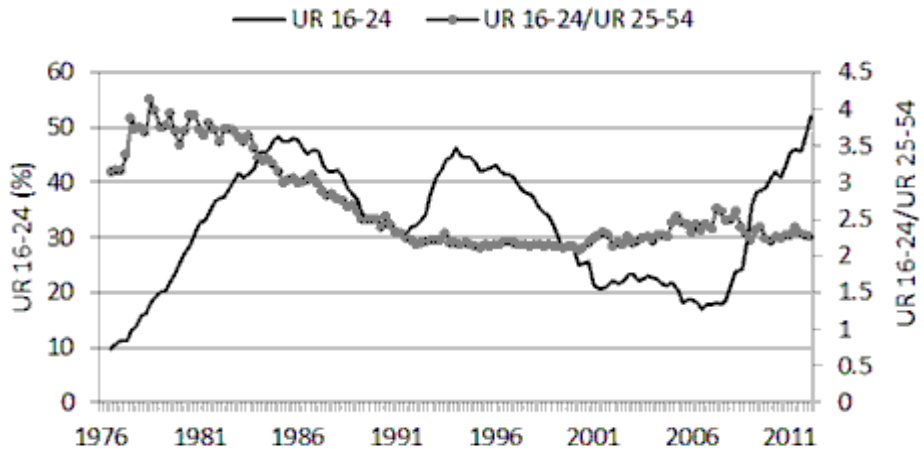
- The employment rates for Spanish females older than 20 have experienced a very steep increase over the last 30 years. This rise is only comparable to the one taking place in the Netherlands.

- During the long expansion that preceded the crisis, the overall employment rate in Spain approached the existing levels in the reference countries. Yet, youth employment rates lagged behind. Even at the end of the expansion, the youth employment rates were still substantially lower in Spain than elsewhere, with the exception of workers aged 15-24 in France.

- Spain has the most volatile employment rates for all male cohorts, especially among young adults aged 20-29. For this age group, employment rates fell by almost 20 pp. during the crisis. Furthermore, it also has the most volatile employment rates for young females and their drop during the crisis is larger than anywhere else.

Figure 2. Youth unemployment rates (UR) and ratio UR 16-24/UR25-54

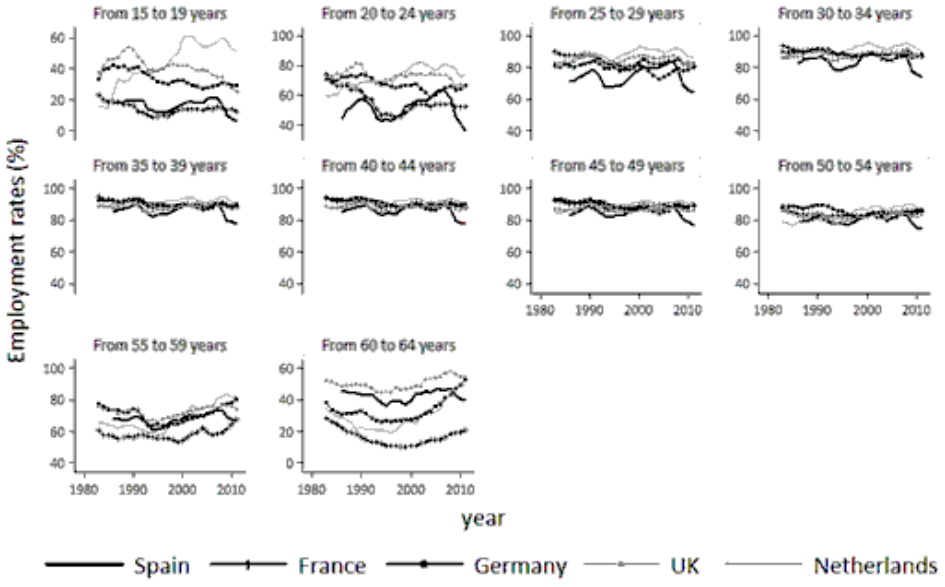
(1976-2011)



Source: Spanish Labour Force Survey (EPA, INE)

Figure 3. Employment rates by age, Males

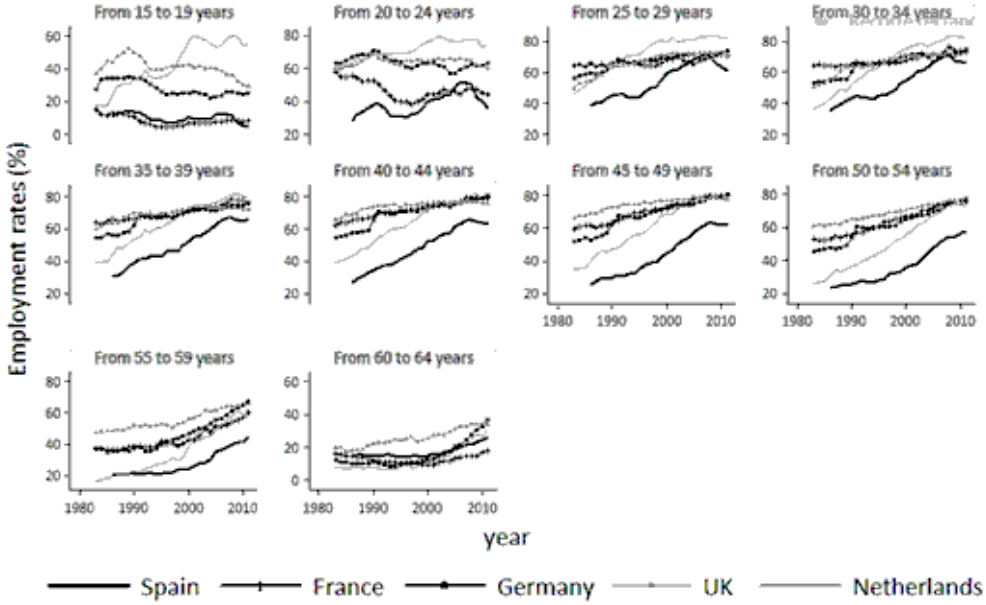
(1983-2011)



Source: European Labour Force Survey (Eurostat)

Figure 4. Employment rates by age, Females

(1983-2011)



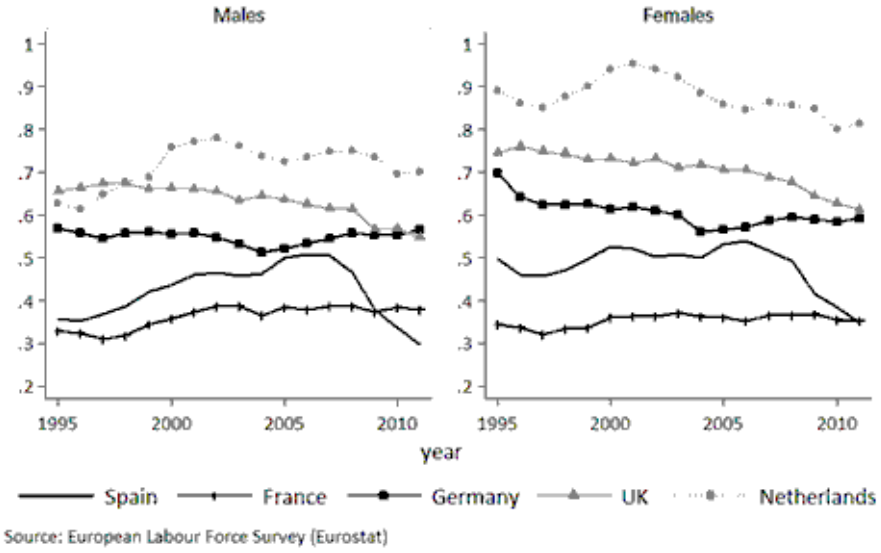
Source: European Labour Force Survey (Eurostat)

Figure 5 depicts the ratio between the employment rates of youth aged 15-25 and of adult workers aged 25-54. This relative employment rate (denoted in short by RER) provides an indicator of the degree to which youth are under-represented in the pool of employed workers relative to their share in the population. Although the RER was larger in Spain than in France before the slump, it turns out to be substantially lower than in the other three reference countries. Further, this adverse gap has widened considerably during the crisis. Thus, while the RER for males in Spain increased from 0.35 to 0.50 during the expansion, it has plummeted to 0.3 during the recession. As mentioned earlier, both the large volatility

and the low average value of the RER in Spain reflect more general structural problems which are behind the relatively unfavourable labour market position of youth in this country.

Figure 5. Relative employment rates of youth

(ER 15-24/ER 25-54, 1995-2011)



Source: European Labour Force Survey (Eurostat)

Study and/or work

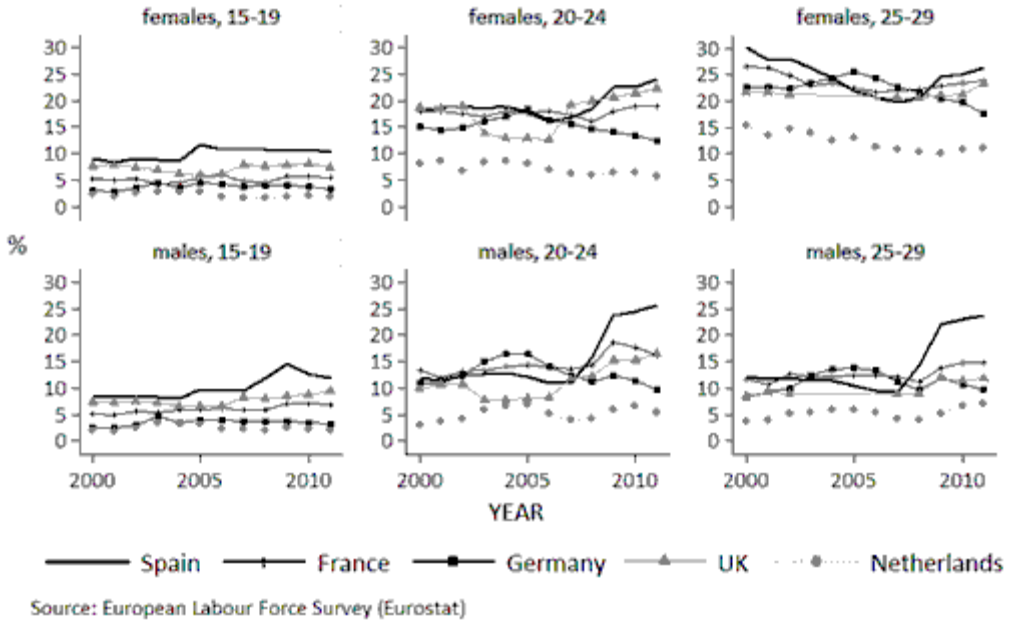
The changes over time in the share of young individuals who are "not in employment, education or training" (NEET) provide a useful indicator of the difficulties that youth encounter in the transition from school to work. Figure 6 depicts the NEET rates by gender and age during 2000-10 for the five countries under consideration.

With regard to the group aged 15-19, Spain has uniformly the highest NEET rate even before the crisis hit. In fact, the NEET rates for this age group are twice as high as in France for both genders, despite the similarity in the employment rates regarding this age cohort in both countries. The much higher percentage of early school-leavers in Spain than in France is probably one of the main reasons for these differences.

Before the crisis, the NEET rates for the youth workers older than 19 years of age were similar in all countries, with the exception of the Netherlands where these rates are lower for all age cohorts. Figure 6 shows that the increase in NEET rates is particularly strong among males aged 20-29 years, reaching values close to 25%, while the comparable rates in the remaining economies have remained fairly constant at a much lower level. Regarding the younger age group (15-19), Spain and (to a lesser extent) the UK, are the two countries with the highest proportion NEET among teenagers. Although there has been a reduction in this proportion during the slump, Spain still remains the country with the highest share of male and female NEET among teenagers.

Figure 6. Young people not in employment and not in any education and training by age and sex

(NEET rates, 2000-11)

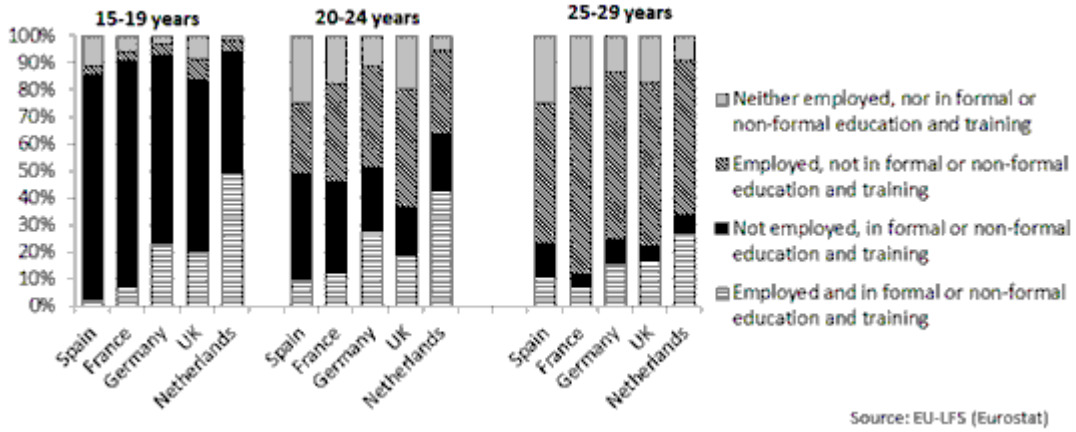


Source: European Labour Force Survey (Eurostat)

To better understand the major cross-country differences in NEET rates before and after the crisis, it is convenient to start by analysing separately the patterns followed by the different potential combinations of the decisions taken by young individuals on whether to participate or not in formal/ non-formal education/ training systems and on whether to work or not. Figure 7 shows the fraction of the population aged 15-29 in each of these four categories, namely: *i*) neither employed nor in education/training (NEET), *ii*) employed, but not in education/training, *iii*) not employed, but in education/training, and *iv*) both employed and in education/training. More detailed information on this issue can be found in Table 1 where, besides distinguishing among the three above-mentioned age groups as well as by gender, it also provides evidence for 2007 to analyse the recent changes that may have taken place during the crisis.

Figure 7. % Population employed and participating in formal or non-formal education and training, by age

(15-29 years, 2011)



Source: EU-LFS (Eurostat)

From the previous evidence, the following conclusions can be drawn:

- During the crisis, enrolment rates in the Spanish education/training system have increased for all the three age groups. This increase is particularly pronounced for the age group aged 20-24 where the proportion of those not employed but enrolled in the education/training system is already higher than in the reference countries.

- Regarding the younger age group (15-19), Spain and (to a lesser extent) the UK, are the two countries with the highest proportion of NEET. Although there has been a reduction during the crisis, Spain still remains the country with the highest share of male and female NEET among teenagers.

- The reduction of the proportion of young people in Spain who are employed but not in the education/training system has been rather large in all age groups, especially among males aged 20-24 (almost 23 pp.). This phenomenon could be behind the recent increasing demand for formal and non-formal education in this country during the crisis.

- One of the most outstanding differences with the reference countries is the low proportion of youth in Spain who combine employment with education/training. These differences remain large even at older ages. Since the possibility of combining study and work facilitates the school-to-work transitions (*e.g.* OECD 2010b), the high percentage of Spanish youth who fail to do so may be one of the most important determinants of the high NEET rates of adolescents and young adults in this country.

Table 1. Participation of young people in education and training, by employment status age and sex

(2007 and 2011, %)

	% population in formal or non-formal education and training				% population, employed and participating in formal or non-formal education and training				% population, employed and no participating in formal or non-formal education and training				% population, not employed and participating in formal or non-formal education and training				% of population, not employed and not participating in formal or non-formal education and training (NEET rates)			
	Males		Females		Males		Females		Males		Females		Males		Females		Males		Females	
	2007	2011	2007	2011	2007	2011	2007	2011	2007	2011	2007	2011	2007	2011	2007	2011	2007	2011	2007	2011
15-19 years																				
Spain	75.6	84.3	82.1	87.1	6.4	2.4	5.4	2.4	14.8	3.8	7.2	2.6	69.2	81.8	76.7	84.7	9.6	11.9	10.7	10.3
France	89.5	89.9	92.7	91.9	11.2	9.6	5.9	5.5	4.5	3.2	2.6	2.8	78.3	80.3	86.8	86.4	6.0	6.9	4.7	5.4
Germany	92.7	92.5	93.0	92.7	26.3	25.1	22.7	21.2	3.5	4.3	3.2	3.9	66.4	67.4	70.3	71.5	3.8	3.2	3.8	3.4
UK	78.6	80.9	80.6	84.3	22.7	17.1	25.9	22.1	12.2	8.6	10.7	7.2	55.9	63.8	54.7	62.2	8.4	9.4	7.8	7.5
Netherlands	92.0	93.5	93.7	94.6	51.5	47.7	53.8	51.0	5.7	4.4	4.5	3.6	40.5	45.9	39.9	43.6	2.3	2.0	1.7	1.8
20-24 years																				
Spain	38.4	46.4	46.8	51.0	12.6	8.1	14.6	11.5	50.6	27.9	36.4	24.9	25.8	38.3	32.2	39.5	11.0	25.7	16.8	24.1
France	43.6	43.3	48.6	49.0	10.9	12.1	13.3	12.3	42.8	40.4	34.0	32.0	32.8	31.2	35.3	36.7	13.5	16.3	17.3	18.9
Germany	48.3	50.3	49.8	52.6	24.8	26.9	26.2	28.4	39.4	40.0	34.6	35.1	23.5	23.4	23.6	24.2	12.3	9.7	15.6	12.4
UK	38.6	36.2	40.2	37.2	23.9	18.6	25.1	19.6	48.9	46.9	39.9	40.1	14.7	17.5	15.1	17.7	11.8	16.6	19.3	22.4
Netherlands	59.4	63.5	59.5	63.7	44.4	42.0	43.4	43.3	36.7	31.1	34.3	30.5	14.9	21.5	16.1	20.4	3.9	5.4	6.2	5.7
25-29 years																				
Spain	19.6	22.2	22.1	24.8	12.6	10.4	13.9	12.8	71.0	54.1	58.1	48.9	7.0	11.7	8.2	12.0	9.3	23.8	19.8	26.3
France	12.2	11.0	13.1	12.6	8.3	7.0	7.7	7.4	75.6	74.2	64.8	63.5	3.9	4.0	5.4	5.2	12.2	14.8	22.0	23.9
Germany	26.0	25.9	22.4	23.0	14.6	15.8	14.1	15.3	62.9	64.3	54.8	59.4	11.5	10.0	8.4	7.7	11.1	9.8	22.7	17.7
UK	24.4	20.9	30.5	23.9	20.8	16.0	24.0	18.0	66.0	66.9	48.2	52.5	3.6	5.0	6.4	6.0	8.9	11.8	20.8	23.3
Netherlands	34.1	35.5	31.7	31.7	30.4	28.6	26.0	25.2	61.7	57.4	57.4	57.2	3.6	6.9	5.7	6.5	4.2	7.1	10.9	11.1

Source: European Labour Force Survey (Eurostat).

Tables 2 and 3 provide further evidence confirming how low the proportion of Spanish teenagers is who combine study and work. There are different ways of combining work and formal/ non-formal education such as *i*) by means of a dual apprenticeship system, as in Germany, *ii*) by a vocational training system firmly anchored in on-the-job training, as in France and the United kingdom (Table 2), or *iii*) by jobs not necessarily related to educational programs, as in the Netherlands (Table 3).

Further, the fact that young people represent a large proportion of the NEET is related to the persistently high levels of the school dropout rates. The school drop-out phenomenon has been, and still remains, one of the major problems in Spain, not only because it is much more widespread than in the majority of OECD countries but because it has been very persistent over the last two decades (OECD 2008a, 2010a and b).

Table 2. Orientation of the highest level of formal education attained

Per cent. People aged 15-34 in 2009 with at least secondary level of education and have left formal education

Distribution	SP	FR	DE	UK	NL
General education	80.2	39.0	21.9	57.1	23.1
Vocational education	19.8	61.0	78.1	42.9	76.9
Mainly (or solely) school based	17.6	37.8	1.7	6.7	
Combination of school and work place based	1.9	0.0	75.2	0.0	
Mainly work place based	0.2	21.6	1.2	31.7	
With no distinction possible	0.1	1.6	0.0	4.5	76.9

Source: Calculations based on the 2009 ad-hoc module of the European Labour Force Survey

Table 3. Work while studying outside educational programmes

Per cent of 15-19 years olds in 2009

	SP	FR	DE	UK	NL
Currently out of formal education	7	11	3	15	40
Currently in formal education	7	16	4	1	48
Total	7	15	3	4	47

(*) Work more than one month per year and not only during interruptions of studies

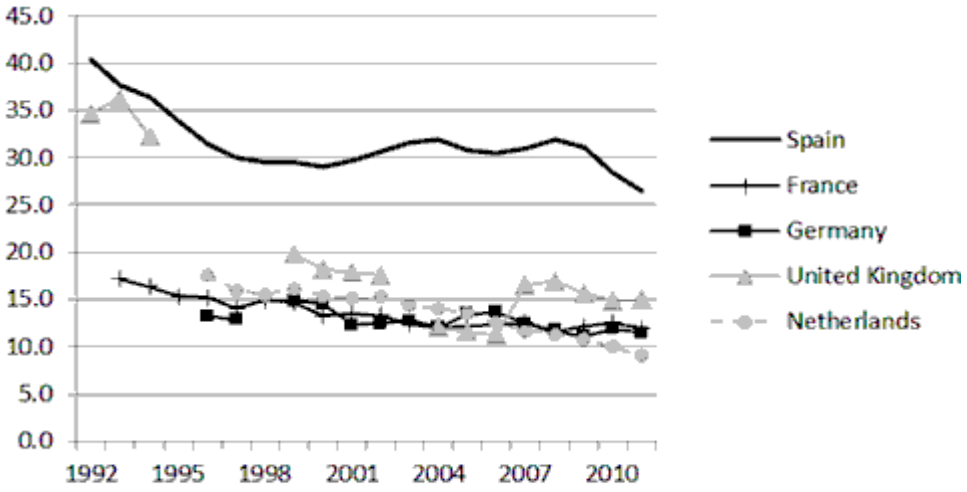
Source: EU-LFS (2009 module ad-hoc)

Next, Figure 8 shows the share of the youth population aged 18-24 who are neither attending school nor are enrolled in training and who have not completed upper secondary education (drop-outs). Since the beginning of the crisis, this drop-out rate has fallen by about 5 pp., after a long period of stagnation in which it hovered around 30%.

The high drop-out rate explains the differences in the distribution of NEET by level of educational attainment (Figure 9). Spain not only exhibits the highest share of NEET among 15-29 youth (24%) but also that of low-educated youth who dropped out of formal education without having completed upper secondary education. This is particularly worrisome since this group is ill-prepared for today's labour market, without "a minimum credential required for successful labour market entry and a basis for further participation in lifelong learning, puts them at a disadvantage in the labour market" (Scarpetta *et al.*, 2010).

Figure 8. School drop-out rates

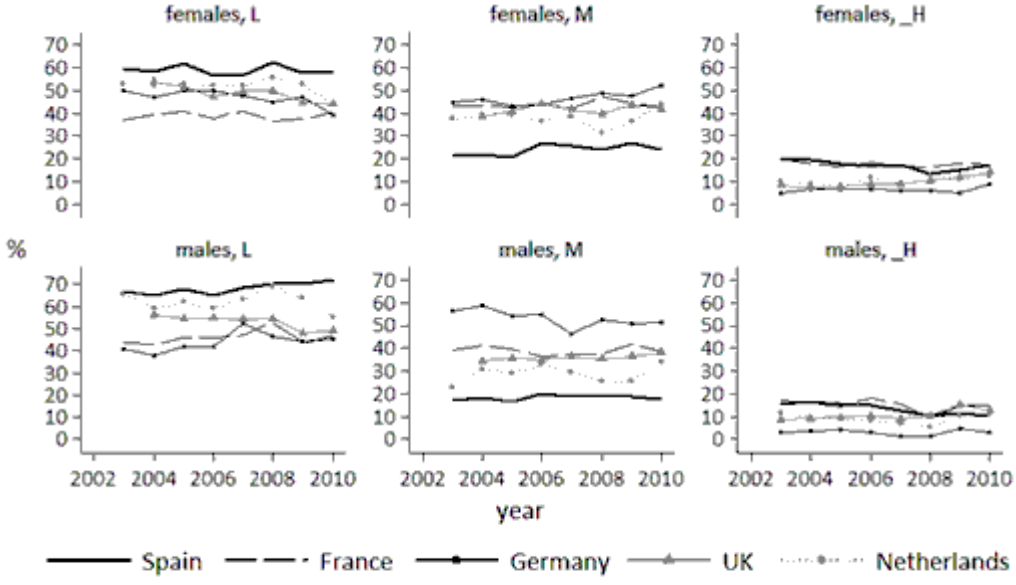
Per cent, 1992-2011



(*) Population aged 18-24 years, with a lower-secondary educational level, neither in formal education, nor in training. Source: European Labour Force Survey (Eurostat).

Figure 9. Distribution of NEET

Per cent, by level of education ("L" denotes low, "M" medium and "H" high level), 15-29 years olds, 2003-10



Source: Calculations based on yearly sub-samples of the European Labour Force Survey (2003-2010)

Time required to find a first job after leaving school

The available cross-country evidence suggests that the length of this time period was considerably longer in Spain than in the reference countries even before 2008. This is found to be the case both when considering the time needed to find any type of job (temporary or permanent) and the first permanent job.

As regards the time required to find a first job after leaving school, Quintini and Manfredi (2006, 2009) make use of the self-assessment calendar in the European Community Household Survey (1994-2001) to provide cross-country comparisons of this indicator. Their main finding is that young people in Europe need on average more time to find a job than their counterparts in the US. The only exceptions are those countries with strong dual training systems (Austria, Denmark and Germany) where these transitions turn out to be faster than in the U.S.

Likewise, Quintini and Martin (2006) provide additional evidence on this issue by following school leavers for a period of seven years (1994 to 2000) to examine how long it takes them to find their first stable job, so that apprenticeships and part-time jobs of less than 15 hours are excluded. Their findings indicate that Spain, Finland and Italy were among the worst performing countries. On average, school leavers in these countries take more than 2 years to find their first job while, at the other extreme, the corresponding duration in Denmark, Germany and Ireland lies on average between 1 and 1.5 years. Moreover, they also quantify the time required to find a first permanent job which ranges from a low of just under 2 years in Denmark to a high of almost 6 years in Spain. This last figure reflects the high degree of labour market segmentation between temporary and permanent jobs.

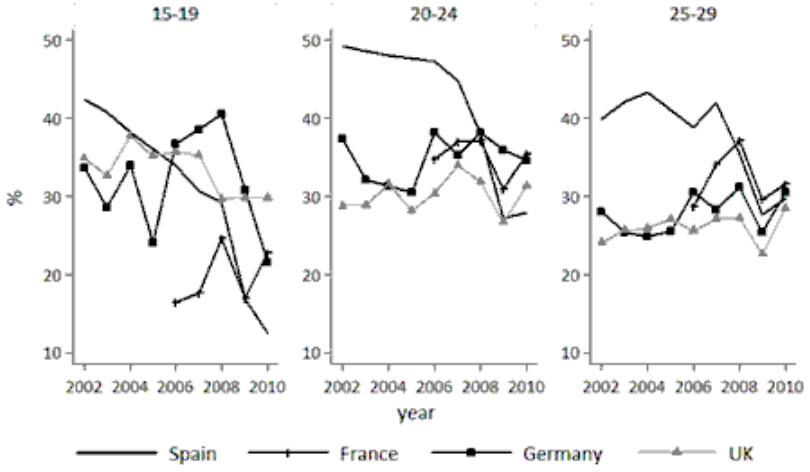
Youth labour market dynamics

Hiring rates

As shown in Figure 10, during the first half of the 2000s, Spanish youth enjoyed the highest hiring rates in all the three age categories under consideration. By 2010, the hiring rates have become lower than in the reference countries, while those of the NEET aged 25-29 converged to the levels reached in the other countries.

Figure 10. NEET youths' hiring rates by age

% of NEET in year t-1, employed in year t, 2002-10



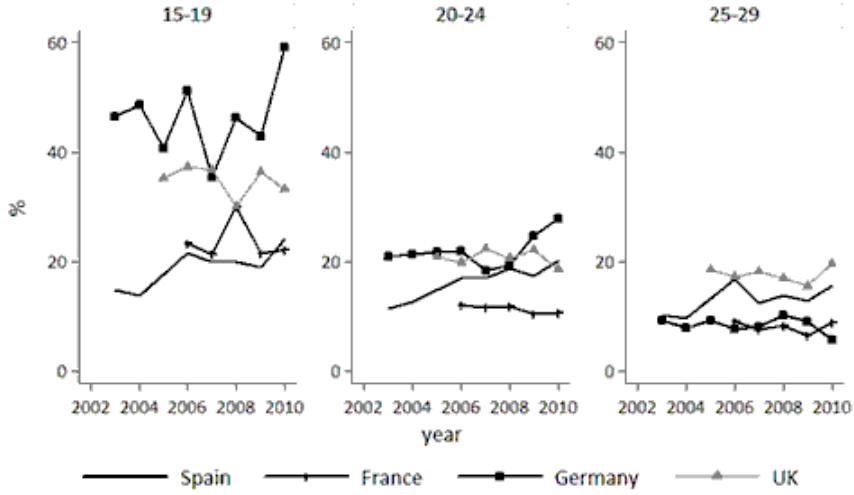
Source: calculations based on the yearly sub-samples of the European Labour Force Survey

Transitions from NEET to education or training

Since the beginning of the crisis, NEET young people have increasingly returned to the schooling system or to some formal or informal training programs. Yet, as shown in Figure 11 (Panel A), this process is taking place at a low pace, which is particularly problematic among teenagers.

Figure 11. NEET youth returning to school or training by age

Per cent of NEET in year t-1, in education or training in year t, 2002-10

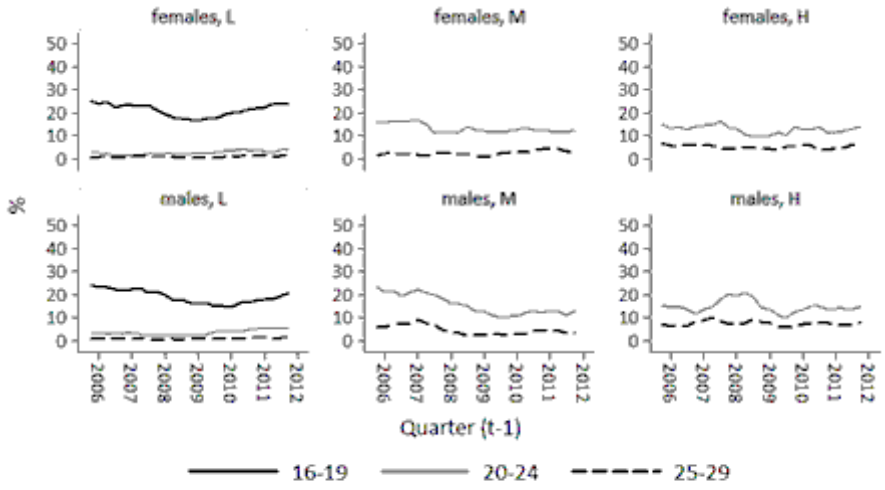


Source: calculations based on the yearly sub-samples of the European Labour Force Survey

The data from the rotating panel of the EPA permit to undertake a more detailed analysis of the recent trends in the above-mentioned transition rates. In particular, Figures 12 (Panels B and C depict the quarterly e transition rates from NEET to formal and informal education/ training over the period 2006-I to 2012-I, distinguishing by age, gender and level of education. The evidence reported in Figure 12 (Panel B) reveals that the proportion of low-educated teenage NEET (lower-secondary education or less) who return to formal education has increased only slightly during the crisis.

Figure 12. NEET youth returning to formal schooling, SPAIN

Per cent of NEET in year t-1, in education or training in year t. By gender, age and educational attainment (quarterly transitions, 2005-11). L denotes low, M medium and H high level education.



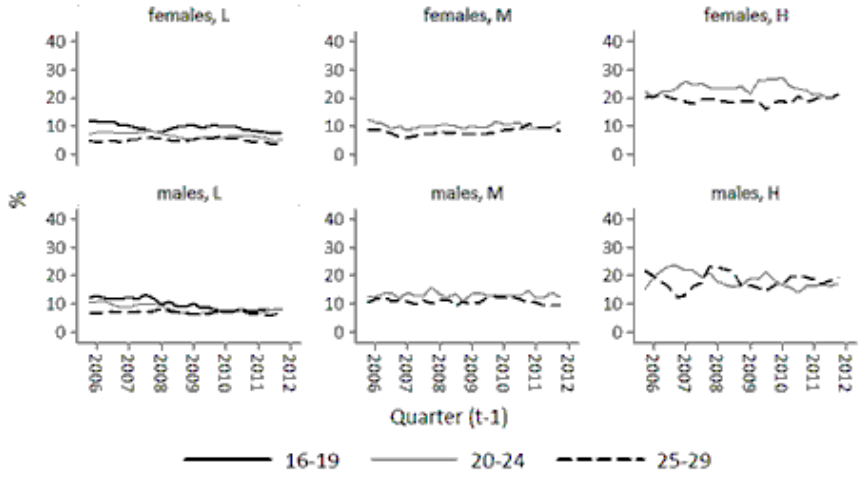
Note: moving averages of the last 4 quarters

Source: calculations based on the rotating panel of the Labour Force Survey (EPA)

Additionally, the take-up of non-formal education or training (including active labour market programmes) is very low among those individuals who would need it most, while it is higher among those with a more appropriate level of skills (Figure 13).

Figure 13. NEET youths' transition to non-formal education/training, SPAIN

By gender, age and educational attainment (quarterly transitions). L denotes low, M medium and H high level.



Moving averages of the last four quarters

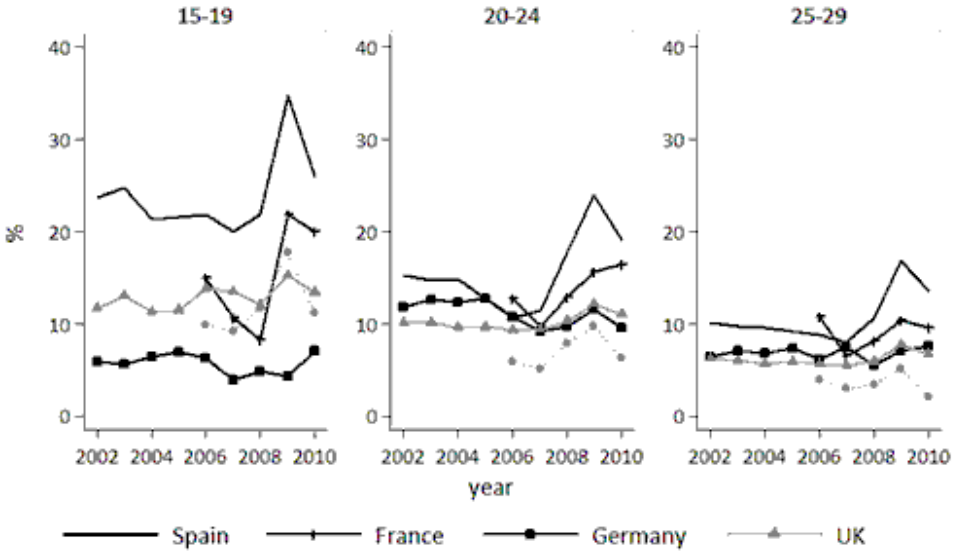
Source: calculations based on the rotating panel of the Spanish Labour Force Survey (EPA)

Separation rates

Figure 14 reports the proportion of young workers who move from employment to non-employment in a given year. The main finding is that Spain has higher separation rates for all three age groups than the reference countries and that these differences decline with age.

Figure 14. Transitions from employment to non-employment by age

Per cent of employed in year t-1, non-employed in year t, 2002-10



Source: calculations based on the yearly sub-samples of the European Labour Force Survey

However, one potential caveat in the previous evidence is that the rates reported in Figure 13 do not completely capture the true separation rates since they only reflect transitions from employment to non-employment. Hence, the proportion of workers who changed jobs during the last 12 months but who continue to be employed at the time of the interview happens to be missed. Although precise information on this issue is not available, we try to address this problem by reporting a proxy of job-to-job moves in Table 4. In particular, this Table shows the percentage of individuals in 2007 and 2010 who report to be employed with different employers in *t-1* and *t*. Although the proportion of young job changers in 2007 was much higher in Spain than in the remaining countries, the differences have narrowed substantially in recent years as a result of the steep drop in this share that has taken place in Spain. The country with the second-highest percentage of job movers is the UK, but the youth in this country experiences fewer intervening spells of non-employment, as will be discussed below.

Table 4: Job changers

Per cent of employed in year t-1, who are employed in year t with a different employer

	15-19 years		20-24 years		25-29 years	
	2007	2010	2007	2010	2007	2010
Spain	43.9	31.6	33.5	19.5	23.6	13.4
France	19.7	28.0	23.9	26.5	12.8	13.3
Germany	19.3	18.5	20.0	22.3	14.9	16.3
UK	34.2	23.5	29.2	19.8	20.1	15.5
Netherlands	23.5	14.9	24.0	9.9	19.5	6.3

Source: Calculations based on the yearly subsamples of the European Labour Force Survey (2007 and 2010).

Duration and frequency of unemployment spells

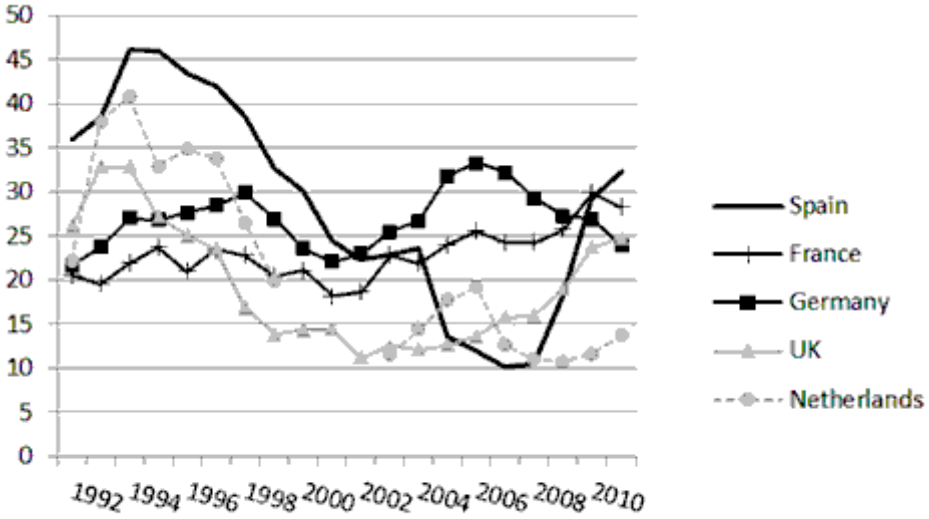
Figure 15 illustrates the evolution over time of the incidence of long-term unemployment (unemployment spells longer than 12 months) among youth aged 15-24 in all five countries. In Spain this figure declined from a height of 46% in 1994, at the end of the previous crisis, to a low of roughly 10% in 2007-08 at the beginning of the current crisis. The Netherlands is the only country in the reference group that has managed to achieve a similar reduction in the incidence of long-term unemployment. Nonetheless, the incidence of long-term unemployment in this country has remained fairly stable during the crisis, while the Spanish figure more than tripled since the start of the slump. One remarkable feature of this evidence is that the much higher youth unemployment rate in Spain is not reflected in a larger incidence of long-term unemployment. Instead, as illustrated in the previous section, higher worker turnover is what mainly explains the much higher youth unemployment in Spain.

A complementary piece of evidence on this issue is the average number of unemployment spells that an individual has suffered in a given year. Table 5 provides this information for 2006 and 2009 as regards those individuals who left education. Due to data limitations, the figures are calculated on the basis of the main self-declared activity during a particular month, rather than on the total time spent in a certain labour market state. In other words, if an individual spends some days in unemployment and the rest of the month in employment, then their main activity is taken to be this last state, so that the days spent in unemployment do not count as an unemployment spell. Hence, a spell is defined as a period in which the main activity is unemployment, either from the start of the year or after a change in the main activity from work to unemployment during the year.

In 2006, the percentage of youth with no unemployment spells was much lower in Spain than in the rest of the countries, except in France, while the percentage of youth who have experienced many unemployment spells is larger. Again, these differences have increased substantially during the crisis.

Figure 15. Long-term unemployment

15-24 years, 1992-2011



(*) Long-term unemployment (12 months or more) as a percentage of the total unemployment (%). Source: European Labour Force Survey (Eurostat)

Table 5. Number of unemployment spells per year, youth out-of-school

By age (2006 and 2009)

	% No spell		% 1 spell		% 2 or more spells	
	2006	2009	2006	2009	2006	2009
15-19 years						
Spain	66.0	47.7	28.6	45.9	5.4	6.5
France	67.9	72.3	28.9	20.6	3.2	7.1
Germany	87.8	90.0	11.6	9.6	0.5	0.4
UK	93.0	87.6	6.0	8.6	0.9	3.7
Netherlands	99.8	99.1	0.2	0.7	0.0	0.2
20-24 years						
Spain	73.3	59.8	21.5	33.6	5.1	6.6
France	73.2	69.8	23.8	27.2	3.0	3.0
Germany	80.4	84.4	17.7	14.9	1.9	0.7
UK	91.3	84.2	6.0	12.4	2.7	3.3
Netherlands	96.6	95.5	1.6	4.4	1.8	0.1
25-29 years						
Spain	80.5	71.2	16.3	24.1	3.2	4.7
France	82.8	82.4	15.4	15.8	1.7	1.7
Germany	86.1	87.8	12.9	11.9	1.0	0.3
UK	95.0	92.8	4.6	5.8	0.5	1.5
Netherlands	94.0	96.5	5.1	3.1	0.8	0.4

Source: Calculations based on the cross-sectional samples of the EU-SILC (2007 and 2010).

Job characteristics

Temporary contracts

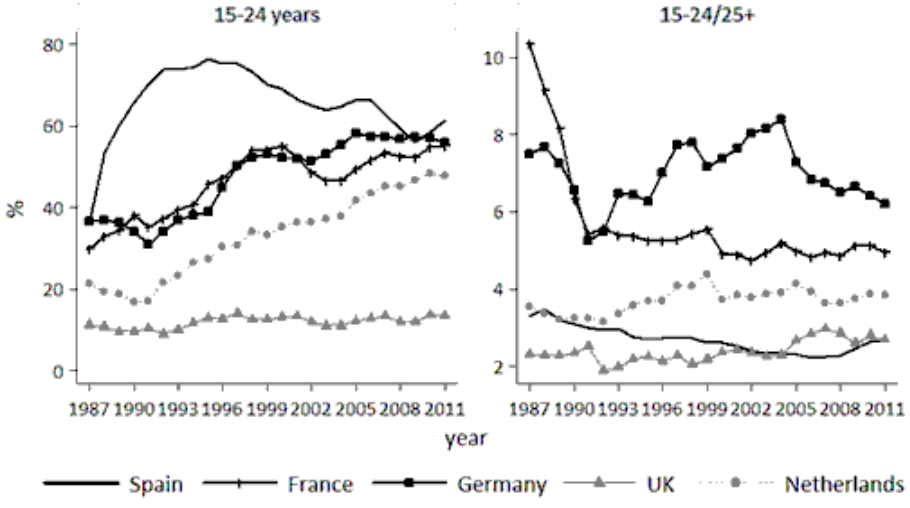
A substantial portion of the documented differences between Spain and the reference countries, such as the relatively high hiring and separation rates and the more frequent incidence of unemployment, can be attributed to a well-known phenomenon: the high share of temporary employment in Spain. As in other OECD countries, a large number of young people enter the labour market under a temporary contract. However, Spain is unique in that youth tend to stay on temporary contracts for a much longer period than elsewhere, interspersed with frequent unemployment spells when moving from one temporary contract to the next.

The two panels of Figure 16 show the percentage of temporary employment among young workers in the age group 15-24 (left), and the ratio between that percentage and the proportion of temporary employment among older workers aged 25-64 (right). Prior to the Great Recession, Spain has had the highest rate of youth temporary employment, especially during the second half of the 1990s. Since then, there has been a process of convergence which is partly driven by a fall in the Spanish rate and a steady rise in the share of temporary employment in the other countries (except in the UK). However, temporary employment is less persistent (more of a stepping stone than a dead end) in these countries than in Spain.

This conjecture is further confirmed by the evidence presented in Figure 17 about rates of temporary rates by gender, age and education in 2010. The conclusion drawn from this evidence is again very clear: for all these groups, Spain exhibits the largest shares. For example, among low-skilled individuals aged 30-40, the incidence of temporary employment still remains between 25% and 30%in this country while, for the high-skilled in that age bracket, the corresponding rates are between 15% and 20%.

Figure 16. Temporary employment rates

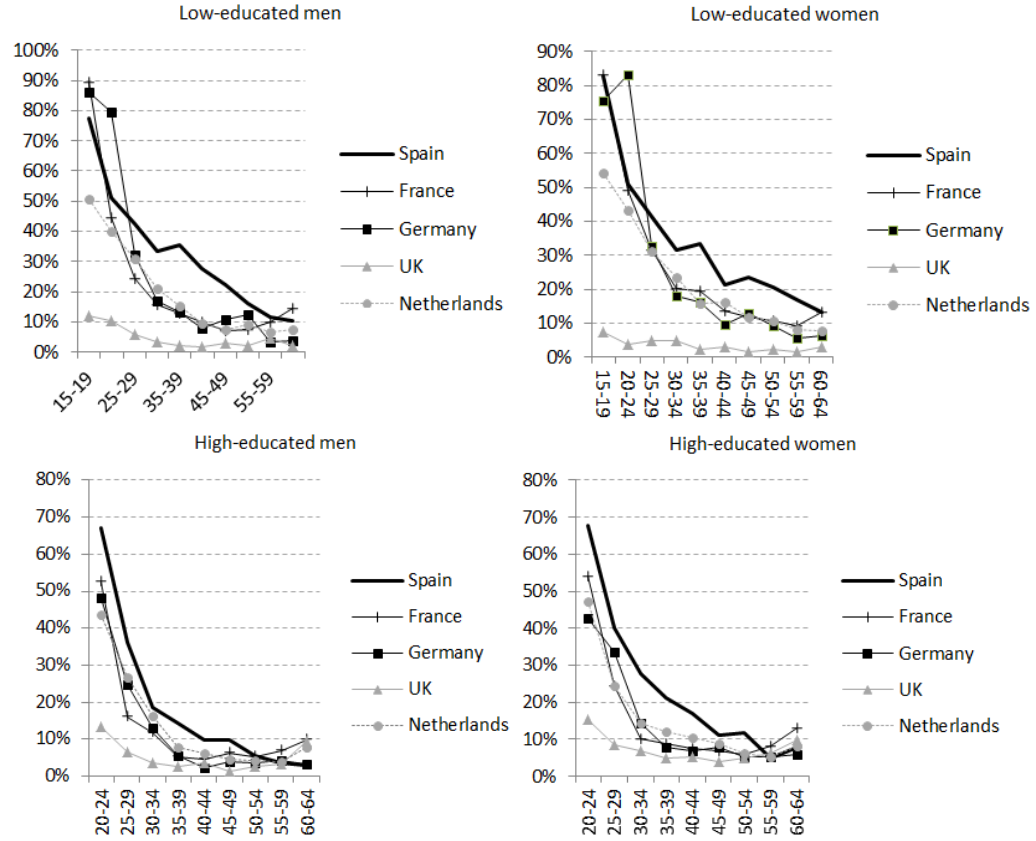
15-24 year olds and ratio 15-24/25+ year olds, 1987-2011



(*) Temporary employees as percentage of the total number of employees

Source: European Labour Force Survey (Eurostat)

Figure 17. Temporary employment rates, by gender, age and educational attainment (2010)



Source: calculations based on the yearly subsamples of the European Labour Force Survey (2010).

Moreover, there are important differences across countries among the main motivations to use of temporary contracts. As shown in Table 6, the vast majority of temporary contracts for teenagers in Germany or France cover a training period (as apprentices or trainees), while 46 to 63% of the teenagers with a temporary contract declare to prefer such contracts to a permanent job in the Netherlands and the UK. By contrast, the majority of teenagers in Spain have accepted a fixed-term contract simply because they could not find a permanent job, being this involuntary acceptance of temporary jobs even more prominent among young adults.

Table 6. Reasons for having a contract of limited duration, by age (%, 2007 and 2010)

Reasons	Spain		France		Germany		UK		Netherlands	
	2007	2010	2007	2010	2007	2010	2007	2010	2007	2010
15-19 years old										
Period of training	20.6	25.0	51.9	63.4	94.5	94.4	6.4	6.4	3.6	3.0
Could not find a permanent job	59.1	66.2	18.3	15.8	2.2	0.6	23.8	27.0	20.4	16.7
Did not want a permanent job	16.9	6.0	20.2	19.4	1.6	1.8	64.0	63.3	46.7	46.1
Probationary period	3.3	2.8	9.6	1.4	1.7	3.2	5.9	3.3	29.4	34.1
20-24 years old										
Period of training	10.1	8.9	21.2	23.1	74.0	74.6	17.2	14.3	6.4	4.1
Could not find a permanent job	76.7	83.9	45.5	51.1	15.4	10.9	42.0	56.8	37.5	32.3
Did not want a permanent job	10.6	6.2	25.1	21.5	1.4	2.6	34.4	23.7	18.4	21.7
Probationary period	2.6	1.0	8.2	4.3	9.2	11.9	6.4	5.2	37.7	41.9

Source: calculations based on the yearly subsamples of the European Labour Force Survey (2007 and 2010).

The main implications of having a high share of temporary jobs are the lack of employment stability and increasing job insecurity.[3] Spanish youth are subject to more frequent transitions from employment to non-employment than the youth elsewhere and a relatively large share of these transitions stem from the termination of temporary contracts. Table 7 provides detailed information about the underlying reasons for the transitions from employment to non-employment over the period 2007-10. The first column (A) reports the overall percentage of individuals who held a job for some time in the 12 preceding months and who are unemployed at the time of the interview. The next three columns distinguish between three possible causes for this kind of transition: a dismissal (B), the ending of a temporary contract (C) or a voluntary quit (D), where A = B+C+D. Table 7 indicates that the differences between Spain and the reference countries in both the levels and the growth of separation rates can be attributed to the short duration of temporary contracts in Spain.

Table 7: Annual transitions from employment to non-employment: reasons for leaving the last job

	Emp. to non-emp. (% of employed in the previous 12 month, who are currently not employed) (sum of following 3 columns)		Of which: Dismissed (% of employed in the previous 12 month, currently not employed and dismissed in last job)		Of which: End of limited duration job (% of employed in the previous 12 month, currently not employed and last job of limited duration)		Of which: Quit (% of employed in the previous 12 month, currently not employed and left last their job voluntarily)	
	2007	2010	2007	2010	2007	2010	2007	2010
15-19 years								
Spain	24.6	31.5	1.3	1.4	13.8	24.4	9.4	5.7
France	7.7	7.2	0.3	1.1	5.5	4.9	1.9	1.2
Germany	3.3	3.6	0.9	0.9	0.8	1.2	1.6	1.5
UK	5.3	6.2	0.8	1.4	0.9	1.7	3.5	3.0
Netherlands	0.6	6.4	0.0	0.1	0.1	0.1	0.3	5.2
20-24 years								
Spain	12.0	17.7	0.6	2.8	7.2	11.9	4.2	2.9
France	7.3	8.0	1.2	1.1	4.9	5.6	1.2	1.3
Germany	5.5	4.1	0.8	1.0	1.9	1.3	2.8	1.9
UK	3.7	5.5	0.6	1.3	0.6	1.4	2.5	2.9
Netherlands	1.6	5.1	0.0	0.4	0.2	0.4	0.6	2.6
25-29 years								
Spain	6.7	10.2	0.5	1.7	4.4	7.0	1.8	1.4
France	4.7	4.7	0.7	1.1	2.9	2.9	1.1	0.7
Germany	3.9	3.5	1.6	0.9	1.0	1.4	1.4	1.2
UK	1.7	3.0	0.4	0.8	0.2	0.6	1.2	1.5
Netherlands	1.1	2.8	0.0	0.6	0.2	0.3	0.4	1.0

Source: Calculations based on the yearly subsamples of the European Labour Force Survey (2007 and 2010).

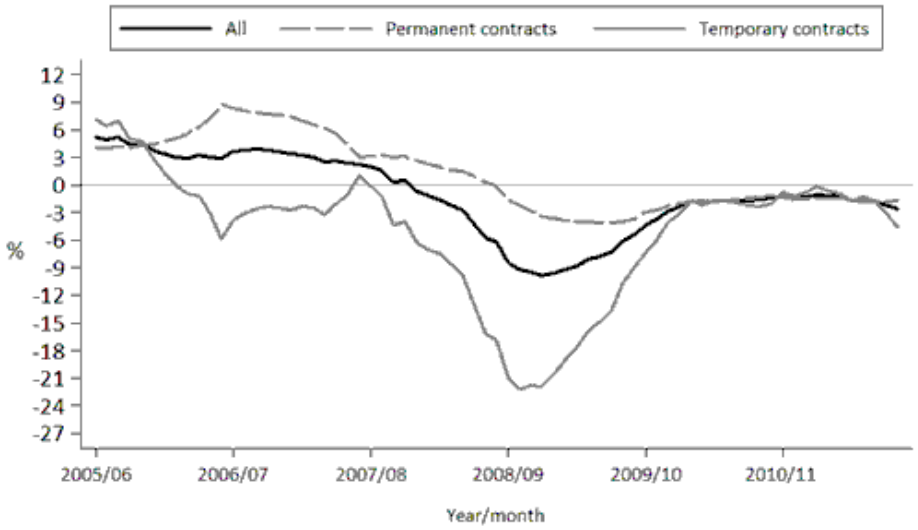
The aggregate effects of having a high share of temporary employment in Spain is illustrated in Figure 18 which reports the annual growth rate of the number of employment relationships (henceforth denoted as matches) by type of contract. It clearly illustrates that the very intense employment shedding during the first stages of the crisis was mainly borne by temporary workers. For

3. For instance, Dolado, Felgueroso and Jansen (2010) show that already before the crisis, the increasing relationship between perceived job security and age is much steeper in Spain than anywhere else.

example, in 2009, the annual rate of job losses reached the maximum level of 9%, while the number of temporary jobs was falling at an annual rate of 22%. By contrast, the total mass of permanent contracts continued to grow during the first year of the crisis and in subsequent years the annual growth rate of these jobs never fell below -4%.

Figure 18. Annual growth rate of matches by type of contract

(all ages, month by month, January 2005-December 2005, Spain)

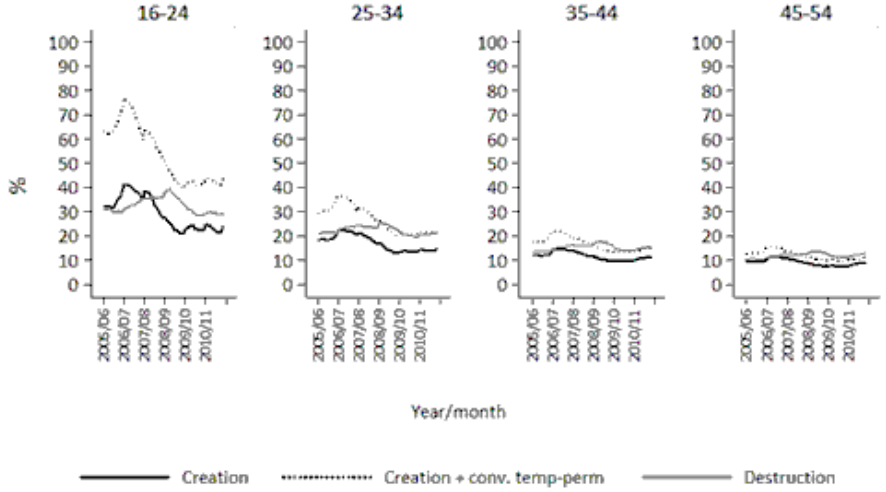


Source: calculation based on the samples of Muestras Continuas de Vidas Laborales (2005-2011)

In turn, Figures 19 and 20 illustrate the different patterns followed by permanent and temporary employment, respectively, by looking at changes over time in the type of jobs held by four different groups of workers according to age. Inspection of Figure 19 reveals that the drop in the permanent job creation rate (plus the conversion of temporary jobs in permanent jobs) was most pronounced in the case of teenagers and young adults, which were precisely the two cohorts with the highest job creation rates before the crisis. Moreover, there are no signs of recovery. After the initial drop the rates of job creation stabilized at half their pre-crisis levels. Next, as far as the destruction of permanent jobs is concerned, a concentration of the effects among the youngest cohorts is also observed. Job destruction rates start to rise with a few months delay and since 2010 these rates are back at their pre-crisis levels for all four age groups.

Figure 19. Rate of creation and destruction of matches, permanent contracts

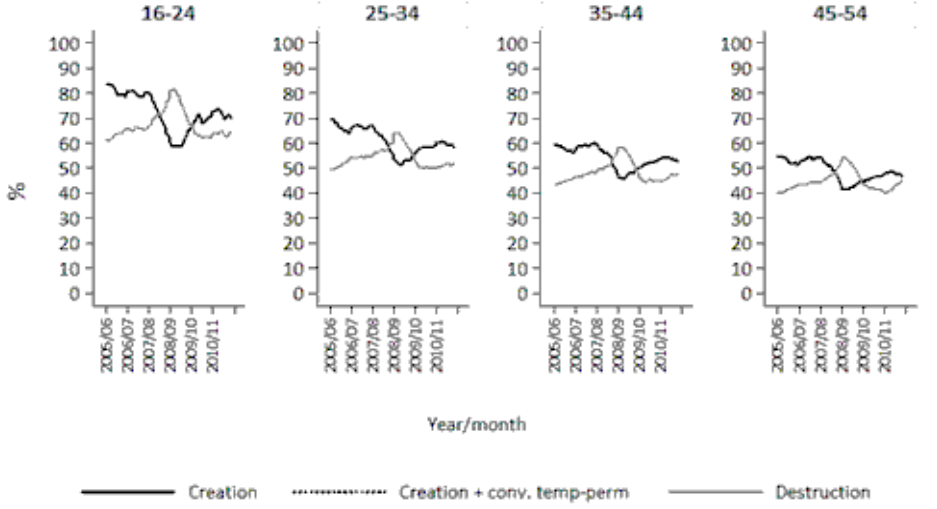
Per cent, annual rates, month by month, January 2005-December 2011, Spain, by age group



Note: matches created (or destructed) during the period/average number of matches at the start and the end of each period. Source: calculations based on the samples of Muestras Continuas de Vidas Laborales (2005-2011)

Figure 20. Rate of creation and destruction of matches, temporary contracts

Per cent, annual rates, month by month, January 2005-december 2011, Spain, by age group



Note: matches created (or destructed) during the period/average number of matches at the start and the end of each period. Source: calculations based on the samples of Muestras Continuas de Vidas Laborales (2005-2011)

Next, as far as temporary jobs are concerned, Figure 20 shows that all age groups experienced a steep drop in the job creation rate at the start of the crisis. This initial drop has been followed by a moderate recovery that started in 2009, but the levels reached in 2011 are still far below those in the pre-crisis period. Finally, there has also been a fall in the rate of renewals of temporary contracts which has also mainly affected the youngest cohorts.

The OECD´s study "Off to a good start? Jobs for Youth" (OECD, 2010b) contains estimates of the probability that an individual is employed under a permanent contract conditional on her/his status one year earlier, using data from the European Survey on Income and Living Conditions (EU-SILC 2005-06). In all the nine European countries for which data are available, employment on a temporary

contract provides a better access to a permanent job than unemployment. However, together with France, Spain is one of the countries with the lowest transition rates from unemployment or from temporary employment into permanent employment.

Table 8 provides an update of the above-mentioned estimates, this time for the period 2006-09. The estimations are based on data from the longitudinal samples of the EU-SILC for Spain, France and the Netherlands. For all age groups, the transition rates from unemployment to permanent employment are far lower in Spain than in France or the Netherlands. By contrast, regarding the transition probabilities from temporary to permanent employment, Spain ranks in an intermediate position for those aged below 30, whereas it reaches the top position for adults in the age group 30-34.

Table 8. Transitions to permanent employment in year t, either from unemployment or from temporary employment in year t-1 (2006-09)

Age	From unemployment			From temporary employment		
	Spain	France	Netherlands	Spain	France	Netherlands
16-24	3.6	17.8	51.8	17.0	12.4	38.3
20-24	12.2	19.5	-	23.4	18.1	32.8
25-29	10.3	24.2	61.1	22.2	17.7	27.3
30-34	7.6	23.6	26.3	22.7	14.5	20.6

Source: calculations based on the longitudinal samples of the EU-SILC (2006-2009).

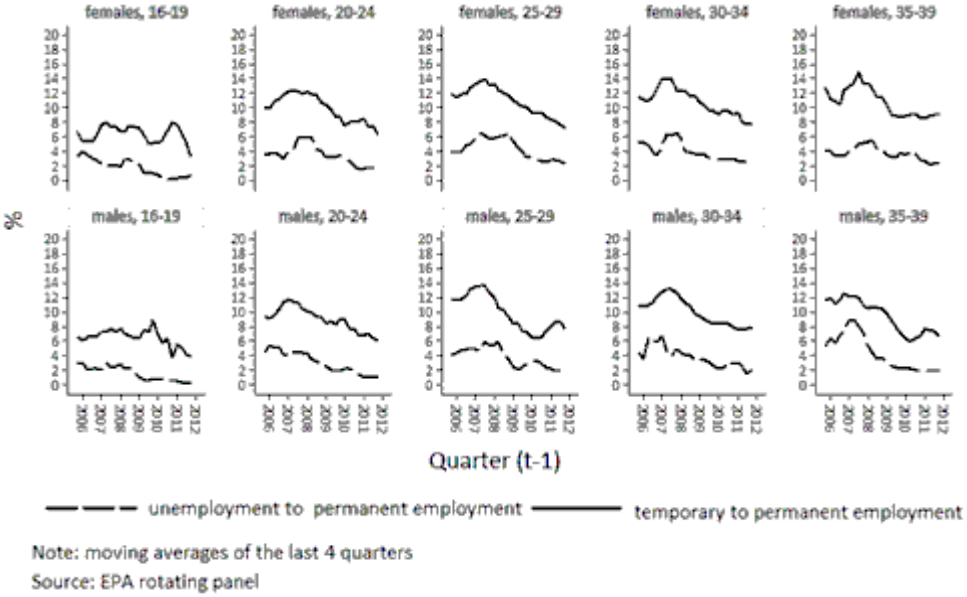
While Spain is the only country in which the transition rate from temporary to permanent employment is larger than the corresponding rate from unemployment to permanent employment, this does not imply that temporary contracts can be considered as stepping stones. Using Social Security Records for the period 1996-2003, García-Pérez and Muñoz-Bullón (2007) show that, although the transition rate to a permanent employment increases with the length of a temporary job, this transition rate falls quite drastically when a worker accumulates several fixed-term contracts of very short duration.

To conclude this section, Figure 21 provides detailed evidence for the recent evolution of the transition rates for different cohorts of males and females in Spain. The calculations are based on data from the rotating panel of EPA. In all cases the transition rate from temporary to permanent employment is larger than the transition rate from unemployment to permanent employment. Moreover, both rates have fallen substantially during the crisis, but the transition rates from unemployment to permanent employment seem to have stabilized in recent months. By contrast, those from temporary to permanent jobs still exhibit a negative trend for males under 25 and females under 35 years of age.

Finally, as shown in Figure 22, it is important to notice that the transition rates from permanent employment to unemployment among young adults have been increasing since 2006. This pattern seems related to the fact that many of the permanent positions filled by these workers correspond to subsidized jobs that are frequently terminated at the end of the entitlement period of the subsidy. Hence, many of the permanent jobs obtained by young adults are essentially disguised temporary positions.

Figure 21. Quarterly transition rates between unemployment/temporary employment to permanent employment by age and sex

Per cent, 2005(Q4)-2012(Q1), Spain

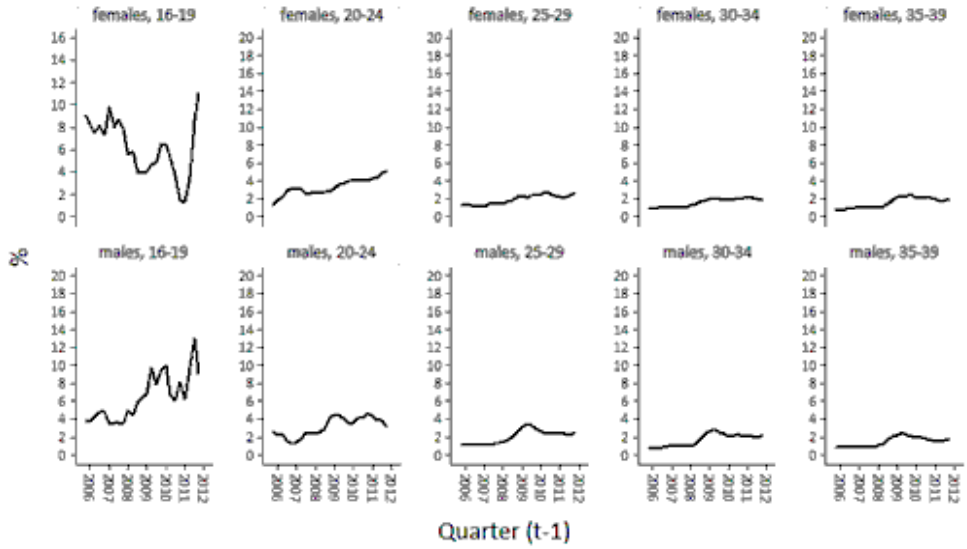


Note: moving averages of the last 4 quarters

Source: EPA rotating panel

Figure 22. Quarterly transition rates from permanent employment to unemployment

Per cent, by age and sex, 2005(Q4)-2012(Q1) Spain



Note: moving averages of the last 4 quarters

Source: EPA rotating panel

Qualification and skill mismatch

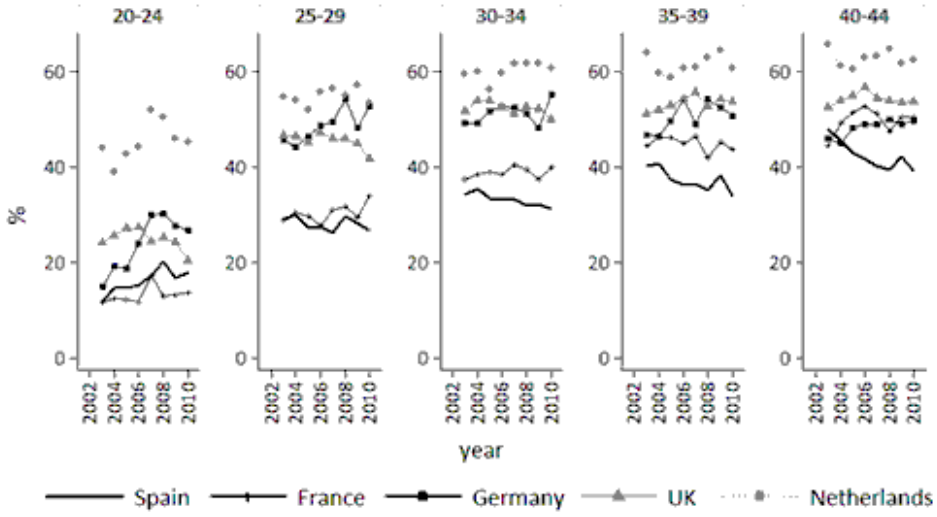
Another manifestation of the poor performance of the Spanish youth labour market is the high degree of mismatch, both in terms of qualifications and skills. Using standard terminology, an individual is considered to be (a) "over-(under)qualified" for a job if he/she possesses higher (lower) qualifications than those required by the job, and (b) "over-(under)skilled", if he/she reports to "have

the skills to cope with more demanding duties at work" (to need further training to cope with the duties demanded by the job)[4].

A direct measure of over-qualification, which can be easily compared across countries, is the share of individuals with tertiary education (university education and equivalent vocational degrees) who work in occupations that demand the highest level of qualification (manager or professionals) . The lower this share, the higher is the degree of qualification mismatch. On the basis of this indicator, Figure 23 shows that Spain ranks as one of the countries with the highest degree of qualification mismatch in the EU and the OECD. It is also interesting to notice that the share of over-qualified and non-employed university graduates varies substantially over the business cycle. In particular, non-employment falls and mismatch rises during booms, while the opposite patterns hold during slumps.

Many of the overqualified individuals with a tertiary education level end up in jobs that are most suitable for workers with upper-secondary level education. This, in turn, may force some workers with upper-secondary education to accept jobs below their qualification.[5] The share of individuals with upper-secondary education who work below their level in elementary occupations (ISCO 1d = 9) or as plant and machine operators or assemblers (ISCO 1d = 8) is illustrated in Figure 24. The share of over-qualified individuals with upper-secondary education stood out in Spain for the youngest age groups in the years before the Great Recession. Furthermore, the data reveal a strong decline in this indicator during the crisis due to the fall in employment for this type of occupations.

Figure 23. Share of population with a tertiary educational level working as managers or professionals
Per cent, by age, not in education, 2003-09



(*)ISCO 1 digit = 1,2

Source: calculations based on the yearly sub-samples of the European Labour Force Survey(2003-2010)

The previous definition of mismatch is subject to several caveats. One of them is the implicit assumption that the qualification requirements for the various occupations remain constant over time. Moreover, while so far only the possibility of over-qualification has been considered, workers may also be under-qualified for their jobs. There is, however, an alternative indicator of qualification mismatch, which is also commonly used in the literature that addresses both problems. It does so by

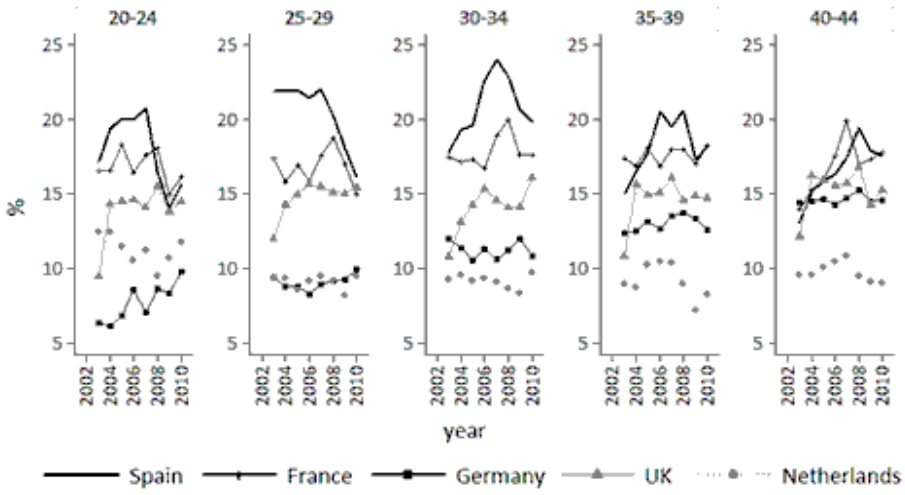
4. See OECD Employment Outlook 2011 (Chapter 4).

5. See Dolado *et al.* (2000) and Dolado *et al.* (2009).

assuming that the modal qualification in each occupational group (at the two-digit level) reflects the qualification requirements for that particular occupational group. This implies that those who have a qualification below this level are ranked as under-qualified and those who have a qualification above this level are ranked as over-qualified.

Figure 24. Share of population with an upper educational level working low qualified occupations

Per cent, by age, not in education, 2003-10



(*)ISCO 1 digit = 8 and 9

Source: calculations based on the yearly sub-samples of the European Labour Force Survey(2003-2010)

Quintini (2011) uses data from the International Social Survey Programme (2004, 2005) and the European Survey of Working Conditions (ESWC, 2005) to provide evidence on this issue. According to her findings, Spain is the OECD country with both the highest degree of over- and under-qualified workers. In particular, both types of mismatch affect more than 30% of the workers, while the un-weighted averages for the OECD are equal to 25.3% and 22.2%, respectively.

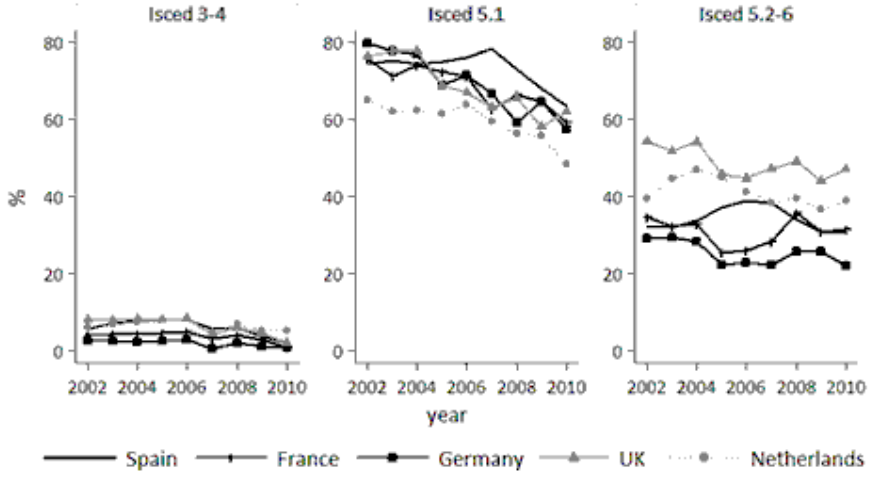
An update of the previous evidence is presented in Figure 25 (over-qualification) and Figure 26 (under-qualification), using ELFS data. The evidence presented here also uses Quintini´s approach but covering a longer time span and distinguishing among occupational groups at the more disaggregate 3-digit level and five different levels of education, albeit using a somewhat different definition.[6]

Figure 25 shows the results for the age group 15-29 which suggest that Spain ranks in a middle position regarding the share of overqualified workers among the individuals with the highest qualification levels (level 5, ISCED 5.2 & 6). Spain differs from the other countries as regards its high degree of over-qualification at tertiary level (ISCED 5.1). Moreover, as documented in Figure 26, around 40% for the workers with ISCED 1 levels were under-qualified before the crisis, a proportion which is very high by international standards.

6. Pre-primary and primary education (ISCED 0 and 1); 2. Lower-secondary education (ISCED 2); 3. Upper secondary (ISCED 3) and post-secondary non-tertiary level of education (ISCED 4); 4. Tertiary education of type B (practical, technical or occupational skills-based with a minimum duration of two years full-time equivalent at the tertiary level (ISCED 5.1); and 5. Tertiary educational of type A (largely theory-based with a minimum cumulative theoretical duration of three years' full-time equivalent, ISCED 5.2) and second stage of tertiary education (ISCED 6).

Figure 25. Share of over-qualified population by educational level

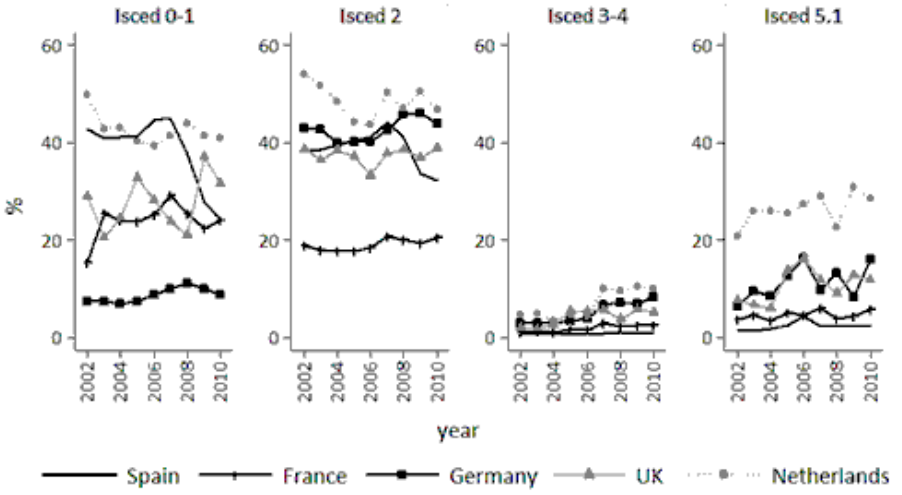
Per cent, aged 15-29, 2002-10



Modal qualification in each occupational group at the three-digit level is used to measure qualif. requirements
Source: calculations based on the yearly sub-samples of the European Labour Force Survey(2002-2010)

Figure 26. Share of under-qualified population by educational level

Per cent, 15-29 years, 2002-10



Modal qualification in each occupational group at the three-digit level is used to measure qualif. requirements
Source: calculations based on the yearly sub-samples of the European Labour Force Survey(2002-2010)

With regard to skill mismatch, Quintini (2011) provides a comparison of its incidence among the EU member states. Her proxy for this variable is constructed on the basis of the replies to the following question in the 2005 wave of the ESWC: "*Which of the following alternatives would best describe your skills in your own work*?" The individuals who select the reply "*I have the skills to cope with more demanding duties at work*" are ranked as over-skilled. By contrast, those who select the reply "I need further training to cope well with my duties at work" are ranked as under-skilled. On the basis of this methodology, Spain is ranked just above the EU average of over-skilled workers (33.5%) with a score of 35%, and substantially below the EU average as regards under-skilled workers (13%) with a score of 7%.

Table 9 presents an update of the previous evidence with the latest available data from the 2010 wave of the ESWC. Specifically, we compare the degree of skill mismatch in 2005 and 2010 considering three broad age groups (under 30, 30-49 and above 50).

Table 9. Skill mismatch by age (2005 and 2010, per cent)

Under-skilling	2005			2010		
	Under 30	30-49	50+	Under 30	30-49	50+
Spain	6.4	8.5	6.5	8.2	11.3	8.9
France	13.3	9.3	10.8	15.9	9.5	4.9
Germany	25.0	23.9	14.4	31.0	20.0	20.9
UK	14.0	5.7	2.6	11.6	7.2	6.1
Netherlands	9.6	11.9	6.8	14.6	12.9	7.4
Over-skilling	2005			2010		
	Under 30	30-49	50+	Under 30	30-49	50+
Spain	47.1	33.7	23.9	38.1	38.2	31.6
France	35.8	46.7	50.8	25.0	31.1	33.0
Germany	30.3	25.9	29.4	23.4	27.7	27.8
UK	37.8	48.3	37.3	40.9	38.5	39.9
Netherlands	44.4	30.9	26.4	40.0	32.6	24.1

Source: European Survey of Working Conditions.

As can be observed, Spain was the country with the highest share of over-skilled youth in 2005 while it ranks third, after UK and the Netherlands, in 2010. Note that, like in the Netherlands, this share decreases with age in Spain. With regard to under-skilling, Spain does not rank particularly high in any of the age groups.

Table 10 provides somewhat more detailed evidence on this issue for youth in Spain using data from the Encuesta de Condiciones de Vida en el Trabajo (ECVT) during the period 2006-10. This survey contains the following question: "*Do you consider that you occupy the right job given your preparation?*" The respondents can choose between the following four answers: "*I occupy the right job*" (column A); "*The job is below my qualification*" (column B); "*The job is above my qualification*" (column C); "*I would need a different type of education than the one that I have received*" (column D). Table 10 reports the shares of the corresponding replies by young people aged 16-29.

Table 10. Skill mismatch of youth in Spain by educational attainment

16-29 years, average 2006-2010, per cent

Educational attainment	A	B	C	D
Lower-secondary or less	79.1	15.8	2.7	2.4
Upper-secondary (Vocational)	71.4	21.8	2.8	3.9
Upper-secondary (General)	58.7	33.6	2.2	5.5
Tertiary (Vocational)	66.8	26.3	2.6	4.3
Tertiary (University-diploma)	68.8	27.2	1.2	2.8
Tertiary (University-graduates)	59.9	35.2	0.9	4.0

Source: Calculations based on the Encuesta de Condiciones de Vida en el Trabajo (ECVT, 2006-2010).

Inspection of the resulting shares reveals the presence of skill mismatch at all levels of educational. The degree of over-qualification (B) ranges from 16% among the less educated to 35% among those with a university degree, while the degrees of under-qualification (C) and mismatch (D) are much more reduced.

Finally, besides the higher rates of over-qualification and over-skilling among Spanish youth, it is worth pointing out that there are also substantial cross-country differences regarding how individuals acquire the relevant skill requirements for their job. To examine this issue, Table 11 provides evidence based on the ESWC which contains detailed information on training activities. In particular, its 2010 wave contains the following question: "*Over the past 12 months, have you undergone any of the following types of training to improve your skills or not*?" The possible replies are: "*Training paid for or provided by your employer or by yourself*" (column A); "*Training paid for by yourself*" (Column B); "*On-the-job training* (co-workers, supervisors)" (column C).

Inspection of the results shows that the provision of firm-financed training is quite less frequent in Spain and France than in the other three countries and that this holds for all three age groups. Spanish teenagers are more likely to finance their own training activities than in the reference countries. On-the-job training is also much less frequent in Spain and France than the UK, Germany or the Netherlands.

Improving the matching of young workers is closely related to their geographical mobility which is investigated further below.

Table 11. Types of training to improve skills, by age (2010, per cent)

	Under 30			30-49			50+		
	A	B	C	A	B	C	A	B	C
Spain	25.9	16.9	25.4	34.4	17.4	25.9	27.2	10.4	18.9
France	22.1	7.0	31.6	28.1	4.5	25.7	20.5	4.3	18.8
Germany	32.8	7.1	52.6	40.4	10.0	39.0	33.3	11.0	32.0
UK	40.9	7.9	49.6	50.9	8.2	48.2	37.2	5.7	33.9
Netherlands	51.5	7.1	40.1	50.6	8.4	43.0	43.6	10.4	37.7

Source: European Survey Working Conditions (2010).

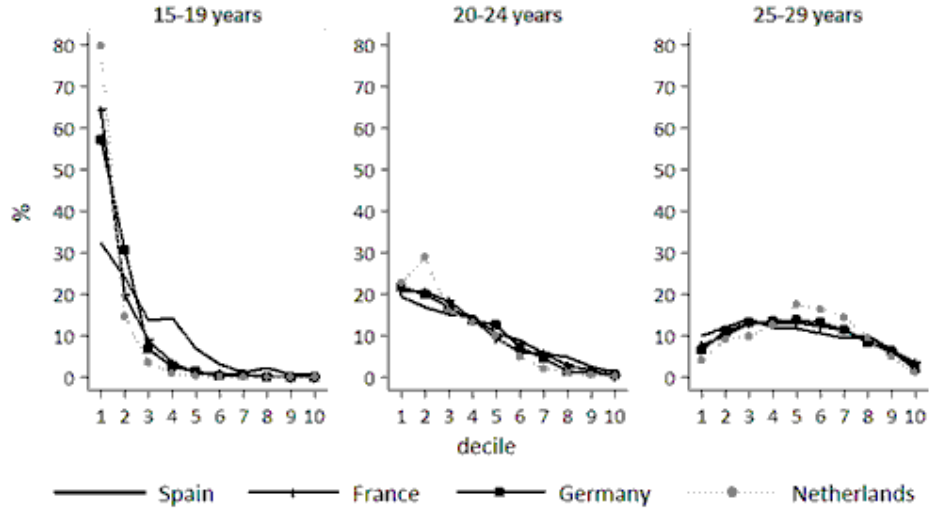
Youth wages

Pay is another very important dimension of job quality and, in the case of youth, the concern is that young workers may get stuck in low-paid jobs. Quintini *et al.* (2007) define young workers as being in low-paid employment if they work at least 15 hours per week and receive an hourly wage of less than two-thirds the median value in a given country and year. Using data from the ECHP, they show that Spain is one of the few European countries (together with Ireland and Portugal) in which the incidence of low-paid employment among youth (15-28 years) was lower in 2001 than in 1995. Moreover, this incidence is substantially lower in Spain than in the reference countries.

Figure 27 confirms this finding using the most recent data from the EU-LFS for Spain and the reference countries (except Germany where the required data is not available). The horizontal axis reports the deciles of the overall wage distribution while the vertical axis shows the fraction of young workers who earn the corresponding wage in each of the deciles. The data refer to the monthly pay of

an individual's main job since EU-LFS does not provide information on hourly wages and on the total pay for workers who hold more than one job.

Figure 27. Distribution of youth earnings by decile of the country's wage distribution (2009-2010)



(*)Monthly pay from main job. Spain, France and Germany (2009), Netherlands (2010)
Source: calculations based on the yearly sub-samples of the European Labour Force Survey(2009,2010)

With these limitations in mind, the first important finding is that the wage distribution of young adults is quite similar in the four countries under consideration. However, this is not the case for adolescents where quite noticeable differences exist. In effect, while the majority of adolescents in France, Germany and the Netherlands earn a wage placed in first decile of the wage distribution, only 30% of the adolescents in Spain do so. Moreover, Spain is the country where more adolescents appear in the deciles 3 to 5.

One plausible explanation of this result is related to the relatively low incidence of part-time work among adolescents in Spain. Part-time work accounts for the bulk of employment in the first decile of the distribution of monthly pay, but the fraction of Spanish adolescents with this type of jobs is lower than in the other countries. This is most clearly visible when comparing Spain and the Netherlands. As shown in Table 12, part-time employment accounts for 85.5% and 96.1% of the employment in the first decile in Spain and the Netherlands, respectively. However, while part-time employment accounts for 90.8% of the total employment of adolescents in the Netherlands, this figure is only 37.9% in Spain. The remaining adolescents in Spain occupy full-time jobs and very few of these workers (7.5%) earn a wage in the first decile. By contrast, in the case of the Netherlands, France and Germany this Figure is 4 to 8 times higher.

Table 12. Incidence of part-time work in decile 1 of the wage distribution (young employees aged 15-19 years)

Country	Part-time emp. as % of total employment	Part-time emp. as % of total emp. in decile 1	Emp. in decile 1 as % of total part-time emp.	Emp. in decile 1 as % of total full-time emp.
Spain	37.9	85.5	72.9	7.5
France	28.0	35.9	82.7	57.4
Germany	20.1	30.1	85.5	50.1
Netherlands	90.8	96.1	84.5	33.9

Note: Monthly pay from main job. Spain, France and Germany (2009), Netherlands (2010).
Source: calculations based on the yearly sub-samples of the European Labour Force Survey (2009, 2010).

At first sight, part-time employment does not seem to be the dominant explanation for low-wage employment in France and Germany. As shown in Table 13, the main reason for the relatively low incidence of part-time work in these two countries is the abundance of training or apprenticeship positions, with an incidence of 45% in France and almost 70% in Germany. Thus, the low wages in these training positions may explain the very high share of youth in the first decile of the wage distribution. In France, 56.1% of the jobs in the first decile are training jobs and the corresponding figure for Germany is 65.3%. By contrast, in Spain only 10% of the adolescents have a training contract and only 22% of the workers on these contracts have a wage in the first decile of the wage distribution.

Table 13. Incidence of training contracts in decile 1 of the wage distribution (young employees aged 15-19 years)

	Emp. with training contracts as % of total emp.	Emp. with training contracts as % of total emp. in decile 1	Emp. in decile 1 as % of total emp. with training c.	Emp. in decile 1 as % of emp. with other types of contracts.
Spain	10.0	6.9	22.1	33.4
France	45.4	56.1	79.7	51.8
Germany	69.5	65.3	53.7	65.2
Netherlands	0.7	0.7	84.6	79.8

Note: Monthly pay from main job. Spain, France and Germany (2009), Netherlands (2010).

Source: calculations based on the yearly sub-samples of the European Labour Force Survey (2009, 2010).

Beside the above-mentioned differences in the relative weight of part-time and training positions, there are institutional and macroeconomic factors that help to explain the differences in the wage distributions of adolescents. *First*, unlike France or the Netherlands, Spain does not have separate statutory minimum wages for young and adult workers since 1996. Dolado *et al.* (1996) provide evidence that this legal change had a detrimental effect on the employment rates of workers aged 16-17 whose minimum wage raise significantly as a result of abolishing their sub-minima. *Secondly*, the effective minimum wages for most young workers in Spain are determined in collective agreements. These bargaining agreements are predominantly negotiated at the provincial level and in many instances they set wage floors that lie substantially above the statutory minimum wage[7]. Moreover, there is evidence pointing out that changes over time of bargained wages do not seem to respond to the labour market tightness of young workers.[8] Finally, it is important to highlight that there has been a rise in the relative wage of low-skilled workers and the decrease in the skill premium (measured in wages) that started in the mid-nineties and lasted until the beginning of the crisis. In particular, in

7. Recently, using the registry of Collective Agreements between 1990-2009, Lacuesta *et al.* (2012) have documented that the wages settled for unskilled workers actually bind, as there is substantial concentration of actual wages of young workers around the levels bargained in collective agreements. They use the concept of "base wage" as a proxy for actual wages received by young workers. The base wages exclude any premia linked to tenure on the job, age or performance, and then are closely linked to entry wages.

8. Lacuesta *et al.* (2012) show that changes of bargained wages over time respond to the labour market tightness of workers older than 40 years, but not to that of young workers.

contrast to the experience in most of the OECD countries, Spain has experienced a drop in the returns to medium and tertiary education due to a sharp increase in the wages for low-skilled workers.[9]

Table 14 provides information on the real hourly wage growth for young Spanish workers during the period 1995-2006. It contains disaggregated information for five different age groups and three distinct levels of educational attainment. Furthermore, it compares the evolution of real wages in the construction sector to that in the other sectors. The calculations are based on data from the Encuesta de Estructura Salarial (ESS). One striking finding is the increase by almost 40% in the wage of low-educated adolescents, while the real wage of university graduates in the age group 30-34 fell by almost 12% during the same period. In a recent study, Bonhomme and Hospido (2012) provide evidence about the counter-cyclicality of the real wage dispersion in Spain, where they document that the construction sector has played a major role in this explaining this pattern. They find that the housing boom of the late 1990s and 2000s partly explains the fall in earnings inequality during that period, and the sharp increase during the recent recession and housing bust. Consistently with the implications of a demand shock in one particular sector, relative employment and earnings of construction workers have risen and subsequently fallen.

Table 14. Real hourly wages in 2006, in per cent of the 1995 real hourly wage level, by age and educational attainment, Spain

	Lower-secondary education	Upper-secondary education	Tertiary education
16-19	138.9		
20-24	114.8	112.9	
25-29	110.2	100.6	98.1
30-34	104.6	90.3	88.4

Source: Calculations based on the Encuesta de Estructural Salarial (1995 and 2006).

Explaining youth labour market performance in Spain with demand and supply factors

Addressing the youth labour market problems in Spain outlined above requires identifying their origins. This section is devoted to analyzing those factors which are often thought to be the source of the current adverse gaps in Spain´s youth employment rates and school-to-work transitions in comparison to the set of reference countries. In addition to providing a broad descriptive analysis of the role played by these factors, it also reviews the available empirical evidence concerning their potential effects on several relevant outcomes of youth labour markets. Some of the most salient findings reported here will be subject to a formal econometric analysis in Section 3.

The first subsection starts by examining demand-driven factors that may have affected youth labour markets, paying particular attention to study whether differences in industrial structure at the economy-wide level and/or problems within specific sectors can explain cross-country differences the relative evolution of youth employment via-á-vis overall employment. The second subsection is in turn devoted to the analysis of supply-driven factors, specifically as regards the effects of changes in skills composition, demographics and immigration on youth labour market outcomes. The following section deals with labour mobility of young people focusing on how temporary contracts, family networks and the functioning of the rental market may affect regional mobility. The final section addresses specific problems of Spain that might be due to some dysfunctional institutions both in the labour market and the educational system.

9. See Felgueroso *et al.* (2010), Pijoan and Sanchez-Marcos (2010) or Lacuesta and Izquierdo (2012) for detailed studies on the reduction of the wage skill premium in Spain.

Demand-driven factors: The structure of employment by industry

Some recent studies, such as Bell and Blanchflower (2010), have argued that high youth unemployment is essentially a consequence of insufficient aggregate demand. According to these authors, the sensitivity of youth (un)employment to the overall rate of unemployment can be explained to a large extent by age-specific demand effects against younger workers and in favour of older workers since the onset of the Great Recession.[10] The impact of the Great Recession has been different across economic sectors. Hence, this section first analyzes whether differences in the sectoral composition of economic activity across countries can explain differences in the structure of employment rates by age. Secondly, it focuses on cross-country differences in the relative importance of those sectors in which young people find opportunities to combine education/training and employment. Thirdly, it describes the types of labour contracts which are available across sectors and to what extent they facilitate job access and stability for young people. Finally, in the case of Spain, it reviews the available empirical evidence concerning the effect of the housing boom the wages of young workers as well as on their drop-out rates of adolescents from the education system.

The evolution and structure of youth employment by industry

Table 15 presents the distribution of youth employment across sectors during the expansion up to the crisis, namely, 1995-2007. As regards Spain, its most salient feature is the large employment share of the construction sector. In 2007, 17.1% of youth employment in Spain (28% in the case of males) was concentrated in this sector while the corresponding figures for the other countries lie in the range between 4.6 and 11.6%.

Table 16 shows the pattern of employment destruction in Spain during the crisis, together with the distribution of youth employment by industry in the five countries under consideration by 2011. The fall in youth employment is larger than the fall in total employment in all sectors, with reductions of 72% and 61% in construction and manufacturing. As argued above, this disproportionate cut of youth employment in Spain is due to both the fall in the hiring rates at the beginning of the recession and the high shares of temporary jobs for young workers in all sectors during the pre-crisis period.

Table 15. Distribution of youth employment by economic activity, 15-24 years olds

Economic activities (Nace rev. 1.1)	Spain		France		Germany		UK		Netherlands	
	1995	2007	1995	2007	1995	2007	1995	2007	1995	2007
Wholesale and retail trade	21.7	21.1	20.4	20.1	18.1	17.5	25.2	26.4	27.6	27.7
Construction	11.3	17.1	8.2	11.6	12.4	7.4	6.6	9.1	5.6	4.6
Manufacturing	23.0	15.0	19.1	14.7	23.3	22.6	17.8	9.2	13.9	8.5
Hotels and restaurants	9.4	10.6	7.0	7.5	4.4	6.8	8.8	11.5	8.3	12.5
Real estate, renting, business activities	5.5	7.6	8.3	9.2	5.1	8.4	7.9	8.9	7.9	10.8
Community, social &personal services	5.0	5.8	6.2	5.5	4.4	5.3	6.0	8.0	3.7	4.8
Agriculture; fishing	7.6	4.2	3.8	3.0	2.3	2.0	1.8	1.2	4.2	3.6
Transport, storage and communication	3.2	4.2	4.4	4.6	4.7	4.1	4.8	4.8	4.5	5.6
Health and social work	2.8	3.9	8.3	8.5	10.3	12.0	6.5	7.3	10.0	10.3
Activities of households	3.6	3.4	1.5	2.3	0.3	0.5	0.9	0.4	0.0	0.0
Education	2.5	2.8	5.4	3.6	2.1	4.0	2.7	3.6	2.0	2.6
Public administration	2.8	2.7	5.2	5.6	7.1	6.0	3.9	3.6	4.1	2.7

10. On the cyclical sensibility of youth unemployment, see also OECD 2008b.

Financial intermediation	1.1	1.2	1.8	2.1	4.4	2.5	5.2	4.4	2.0	1.4

Note: Economic activities classified by NACE rev.1.1 with more than 1% as share of youth employment in the four countries and sorted by the share of youth employment in Spain in 2007.

Source: European Labour Force Survey (Eurostat).

Table 16. Employment growth and distribution of youth employment by economic activity, 15-24 year olds, 2008 and 2011

Economic activities (Nace rev. 2)	Employment growth 2008-11 Spain		Distribution of youth employment by industry in 2011 (%)				
	15+	15-24	ES	FR	DE	UK	NL
All activities	-10.6	-43.5	100.0	100.0	100.0	100.0	100.0
Wholesale and retail trade	-8.6	-38.3	24.1	19.3	17.8	25.1	28.3
Accommodation and food service activities	-4.2	-28.6	14.5	8.9	6.6	13.5	12.4
Manufacturing	-21.9	-61.2	9.8	13.0	19.4	7.2	5.4
Construction	-43.2	-72.3	6.9	11.1	7.4	7.2	3.9
Human health and social work activities	13.1	-13.1	6.7	9.1	13.1	9.1	11.9
Agriculture, forestry and fishing	-7.2	-22.3	4.5	2.1	1.4	0.8	2.8
Public administration	10.7	-16.7	4.3	5.1	5.4	2.5	2.0
Administrative and support service activities	-2.7	-40.6	4.1	4.8	4.8	4.6	3.6
Activities of households as employers	-7.5	-32.5	3.9	2.0	0.0	0.0	0.0
Education	2.5	-29	3.9	3.4	4.6	5.4	3.2
Arts, entertainment and recreation	0.1	-34.8	3.7	1.9	1.4	4.8	2.9
Other service activities	-8.5	-37.5	3.1	4.0	2.7	3.7	1.9
Transportation and storage	-8.7	-50	2.9	4.1	3.4	2.6	3.6
Information and communication	-8.9	-43.2	2.9	2.1	2.9	2.2	3.1
Professional, scientific and technical activities	-6.5	-51.1	2.6	4.3	4.2	3.7	4.1
Financial and insurance activities	-11.3	-51.6	1.1	2.4	2.8	3.2	0.9

Notes: Economic activities classified by NACE rev.2 with more than 1% as share of youth employment in the four countries and sorted by the share of youth employment in Spain in 2011.

Source: European Labour Force Survey (Eurostat).

Differences in youth employment rates across-countries: the roles of the sectoral composition of employment and of relative employment rates of youth within industries

Two factors seem to determine the main differences in the youth employment rates across countries: i) cross-country differences in the size of industries (as measured by the percentage of the working age population employed in each sector) and ii) cross-country differences in the ratio between young and adult workers in each sector. The first component points at economy-wide factors that have little or no relationship with the specific problems faced by youth, while the second component points at barriers to youth employment that may vary across sectors.

In what follows, these two effects are disentangled using shift-share analysis of the differences in youth employment rates between Spain and each of the reference countries. Formally, let $ER_T{}^j$ and $ER_Y{}^j$ denote, respectively, the employment rate of the total working age population (denoted by *T*) and of the youth population (denoted by *Y*) in country *j* in a given year at the aggregate level. Similarly, let $ER_{Ti}{}^j$ and $ER_{Yi}{}^j$ denote the shares of the working age population and the youth population that are employed in sector *i* in each of the countries. Thus, the relative employment rate (RER) of youth in

sector *j* in country *i* can then be expressed as $RER_i^j = ER_{Yi}^j / ER_{Ti}^j$. When this share is smaller (larger) than unity, this signifies that young workers are under-represented (over-represented) in the *i*-th sector. Using this notation the gap in youth employment rates between Spain (SP) and and a given reference country C can be decomposed into two terms as follows**:**

$$ER_Y^{SP} - ER_Y^C = \sum_i^6 ER_{Ti}^{SP}\left(RER_i^{SP} - RER_i^C\right) + \sum_i^6 RER_i^C\left(ER_{Ti}^{SP} - ER_{Ti}^C\right)$$

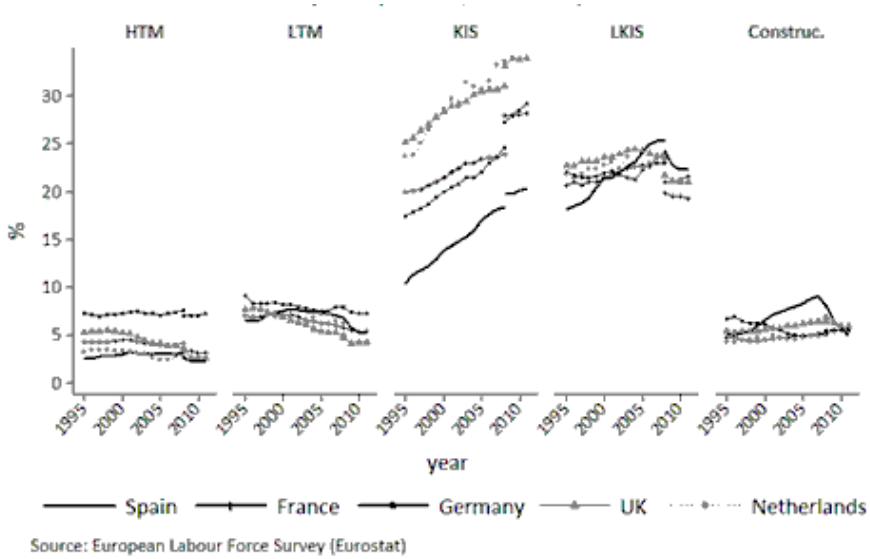
where the overall employment rates of Spain (ER_{Ti}^{SP}) are used as weights for the differences in the relative employment rates of youth $\left(RER_i^{SP} - RER_i^C\right)$, while the differences in overall employment rates $\left(ER_{Ti}^{SP} - ER_{Ti}^C\right)$ are weighted by the sectoral employment rates ($RER^C{}_i$) of the reference country.

The shift share analysis is based on employment data by age at the two-digit classification of economic activities (NACE) from the EU-LFS are used. Given that there was a methodological change in the NACE classification in 2008, a separate analysis is performed for the pre-crisis period 1996-2007 (with 62 economic activities) and the crisis period, 2008-10 (with 88 activities). The results are presented for seven broad sectors according to their technological intensity (*e.g.*, in manufacturing) and if they are more or less knowledge-intensive (*e.g.*, in services), following the classification of Eurostat.[11] The manufacturing sector is divided in high-tech (HTM) and low-tech (LTM) manufacturing, and services into knowledge-intensive services (KIS) and less knowledge-intensive sectors (LKIS). The remaining sectors are construction & energy (CONSTRUC), agriculture and others.

Figure 28 displays the share (ER) in the overall working age population of the workers in each sector (except for agriculture and others) for the sample of countries during 1995-2011).

Figure 28. Evolution of employment rates by industry

(15-64 years old, 1995-2011)



Source: European Labour Force Survey (Eurostat)

The lower overall employment rate in Spain before the late nineties is driven by a deficit in the services industries relative to the reference countries, which is especially large in the KIS sector.

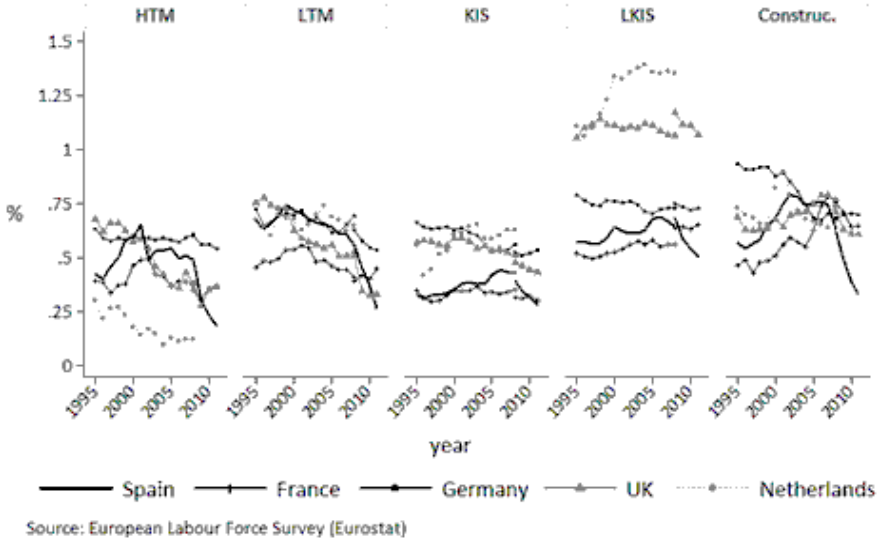
11. http://epp.eurostat.ec.europa.eu/cache/ITY_SDDS/Annexes/htec_esms_an2.pdf and http://epp.eurostat.ec.europa.eu/cache/ITY_SDDS/Annexes/htec_esms_an3.pdf

These patterns have changed during the long expansion up to 2008 when the KIS and CONSTRUCT sectors experienced very high growth rates in Spain. More specifically, while the gap in the KIS sector did not decrease due to a similar growth of these industries in the other countries, the employment rates in the LKIS and CONSTRUCT sectors widely exceeded the ones in the reference countries. Later on, however, the Great Recession has meant a big drop in both sectors whose employment rates have converged to those in the remaining countries.

Figure 29 shows the relative youth employment rates (denoted as RERY) by sector. Services turn out to be the sector in Spain with the largest negative differences in relation to the benchmark countries but France. These negative gaps are particularly large in the LKIS sector with respect to the Netherlands and UK, two countries where their RERYs in this sector exceed unity, meaning that these are industries where youth is over-represented. The highest RERYs in Spain correspond to the manufacturing LTM and CONSTRUCT sectors, which exhibit a steep increase during the long expansion preceding the crisis. However, the Spanish youth RERYs in these sectors do not stand out in comparison to the reference countries.

Figure 29. Evolution of employment rates of youth by sector

(ER15-24/ER15-64, 1995-2011)



Source: European Labour Force Survey (Eurostat)

Table 17 reports the results from the shift-share decomposition analysis. There are noteworthy differences in the size contribution of particular sectors that do explain a substantial part of the cross-country variation in the gaps of youth employment rates. For example, the largest differences in the TER terms are concentrated in the KIS sector. In Spain this sector offers employment to a substantially smaller fraction of the working population as a whole than in the other countries and this translates into a lower employment rate for the Spanish youth.

The growth of the CONSTRUCT sector in Spain managed to partially offset the shortfall in employment in the KIS sector although, even during the housing boom period, this sector contributes modestly to boost employment rates of youth in this sector, in comparison to other countries. In 2011 the share of the gap in youth employment rates that is explained by this sector is nonetheless small, especially with respect to Germany, the UK and the Netherlands. Since the onset of the crisis the differences in the RERY terms for Spain have switched from positive in 2008 to negative in 2011 in virtually all sectors. Overall, one of the most remarkable results of the shift-share decomposition

analysis is the strong negative difference in the RERY term (and not in the TER term) in the LKIS sector, especially in comparison to the UK and the Netherlands

Table 17. Shift-share decomposition of the differences in youth employment rates between Spain and other EU countries

RERY: differences in relative employment rates of youth between Spain and country C, weighted by the total employment rate of Spain TER: differences in total employment rates between Spain and country C, weighted by the relative employment rate of youth of country C**%)**

France	2001			2008			2011		
Sector	RERY	TER	TOTAL	RERY	TER	TOTAL	RERY	TER	TOTAL
High-tech. manufacturing	0.5	-0.6	-0.1	0.4	-0.3	0.0	-0.4	-0.3	-0.7
Low-tech manufacturing	1.4	0.0	1.5	1.4	0.1	1.6	-0.7	-0.4	-1.1
Knowledge-intensive services	0.2	-2.3	-2.2	1.4	-2.5	-1.1	-0.5	-2.4	-2.9
Less knowledge-int. services	0.0	1.5	1.6	-0.6	4.5	3.9	-4.8	3.4	-1.3
Construction & energy	1.1	1.6	2.8	-0.6	1.7	1.0	-1.6	-0.3	-1.9
Agriculture	0.3	0.5	0.8	0.4	0.2	0.6	0.1	0.2	0.3
Other	0.1	0.0	0.1	0.1	-0.4	-0.3	-0.1	-0.2	-0.3
Total	***3.6***	***0.7***	***4.3***	***2.4***	***3.3***	***5.7***	***-7.9***	***0.1***	***-7.8***
Germany									
High-tech. manufacturing	0.2	-2.5	-2.3	-0.2	-2.7	-3.0	-0.6	-2.9	-3.5
Low-tech manufacturing	0.1	-0.6	-0.4	-0.1	-1.0	-1.1	-0.9	-1.7	-2.5
Knowledge-intensive services	-3.2	-4.3	-7.6	-1.8	-4.8	-6.6	-4.5	-5.5	-10.0
Less knowledge-int. services	-3.3	0.0	-3.3	-1.7	2.5	0.8	-4.4	-0.1	-4.6
Construction & energy	-1.1	1.3	0.2	-0.1	1.6	1.5	-1.5	-0.8	-2.3
Agriculture	-0.4	1.1	0.7	-0.2	0.7	0.5	-0.5	0.7	0.3
Other	0.1	0.0	0.1	0.2	0.0	0.2	0.0	0.0	0.0
Total	***-7.5***	***-5.0***	***-12.6***	***-3.9***	***-3.7***	***-7.6***	***-12.5***	***-10.2***	***-22.7***
United Kingdom									
High-tech. manufacturing	0.2	-1.1	-0.9	0.5	-0.4	0.1	-0.4	-0.2	-0.6
Low-tech manufacturing	1.1	0.5	1.6	0.6	0.8	1.4	-0.2	0.2	0.0
Knowledge-intensive services	-3.0	-8.6	-11.6	-1.3	-6.8	-8.1	-2.6	-6.4	-9.0
Less knowledge-int. services	-11.2	-1.4	-12.6	-11.4	2.6	-8.9	-11.1	-0.1	-11.3
Construction & energy	0.7	1.0	1.7	1.0	-1.1	-0.1	-1.4	-0.6	-2.0
Agriculture	-0.7	1.8	1.2	-0.3	1.1	0.8	-0.1	0.7	0.6
Other	0.1	-0.4	-0.3	0.0	-0.6	-0.6	-0.2	-1.0	-1.1
Total	***-12.8***	***-8.2***	***-21.0***	***-10.9***	***-4.5***	***-15.4***	***-16.0***	***-7.3***	***-23.3***
The Netherlands									
High-tech. manufacturing	1.7	0.0	1.6	1.1	-0.1	1.0	0.4	0.0	0.4
Low-tech manufacturing	1.9	-1.0	0.9	1.2	-0.3	0.9	-0.3	-0.2	-0.5
Knowledge-intensive services	-3.6	-9.2	-12.8	-2.0	-10.5	-12.5	-3.0	-8.6	-11.6
Less knowledge-int. services	-17.9	-0.2	-18.1	-20.6	3.2	-17.4	-21.5	1.7	-19.8
Construction & energy	-1.1	2.0	0.9	-0.9	2.4	1.5	-1.2	0.3	-0.8
Agriculture	-2.5	1.6	-0.9	-1.7	0.5	-1.2	-1.3	0.4	-0.9
Other	0.0	-7.0	-7.0	0.1	-3.9	-3.8	0.0	-5.8	-5.8

Total	***-21.6***	***-13.8***	***-35.3***	***-22.9***	***-8.6***	***-31.5***	***-26.9***	***-12.1***	***-39.0***

Source: Calculations based on the European Labour Force Survey (Eurostat).

Combination of work with studies, and temporary employment by industry

Following the discussion in Section 1, both the low proportion of youth in Spain who are able to combine work with studies and the relatively high share of temporary contracts could explain its lower employment rates of young people. As mentioned earlier, combination of work and studies may facilitate youth access to the labour market whereas the wide availability of temporary contracts may also do so but at the cost of high job instability if these contracts become dead ends rather than stepping-stones.

Table 18 reports the proportion in total youth employment (15-24) of individuals who combine work with studies across 15 different sectors. The main finding is that Spain exhibits the lowest figures in the majority of industries. This is especially the case in the manufacturing and construction sectors. While only 13% to 15% of the Spanish youth employed in these two sectors combine both activities, the corresponding figures for Germany and the Netherlands lie between 48% and 58%. Similarly, in the sector that accounts for the bulk of youth employment – Wholesale and retail trad – the Spanish fraction is 22% while the Dutch figure reaches almost 80%. Hence, on the basis of this evidence, it is possible to safely discard the hypothesis that the low proportion of youth in Spain who belong to this category of young workers is driven by a concentration of economic activity in sectors for which this proportion happens to be low in all countries.

Table 18. Proportion of young employed workers in formal education by economic activity (per cent, 15-24 years olds, 2010)

Economic activities (Nace rev. 2)	Spain	France	Germany	UK	Netherlands
Wholesale and retail trade	21.9	33.4	54.1	39.1	79.4
Accommod. and food service activities	34.5	29.6	57.4	46.0	82.1
Manufacturing	12.4	28.7	51.1	14.1	56.8
Construction	14.3	35.0	58.0	20.3	48.2
Human health and social work activities	14.0	19.8	45.5	23.1	50.7
Agriculture, forestry and fishing	16.0	33.9	44.4	12.3	67.8
Public administration	8.9	17.5	42.1	11.0	43.1
Education	42.4	31.8	68.4	24.7	64.8
Arts, entertainment and recreation	53.3	30.0	58.8	34.6	82.2
Activities of households as employers	15.6	37.4	70.6	27.1	100.0
Other service activities	11.9	37.7	49.9	26.3	46.4
Transportation and storage	21.1	16.4	41.9	12.4	58.9
Admin. and support service activities	20.8	21.1	36.6	13.4	51.5
Profes., scientific and technical activ.	32.1	32.2	57.9	21.2	73.1
Information and communication	14.0	28.1	68.0	13.3	68.5

Notes: Economic activities classified by NACE rev.2 with more than 1% as share of youth employment in the four countries and sorted by the share of youth employment in Spain in 2010. Source: calculations based on the yearly sub-samples of the European Labour Force Survey).

As regards the role of temporary contracts, the main difference is that, as argued earlier, Spanish youth encounter much more difficulties in the transition from temporary to permanent contracts than

youth elsewhere. To further document this feature, Table 19 reports the percentage of adults in the age group 25-34 who accepted a temporary job in 2010 because they were unable to find a permanent job, using the same sectoral classification as in Table 19. It should be pointed out that, due to the large destruction of this type of flexible jobs during crisis, the share of temporary jobs in Spain was much lower in 2010 (26.5%) than before (see Chapter 1, Section 1.5) when on average it reached one-third of all employees.

Table 19. Temporary employment rates by economic activity (per cent, 25-34 years olds, 2010)

Economic activities (Nace rev. 2)	Spain	France	Germany	UK	Netherlands
Wholesale and retail trade	15.6	5.4	2.5	1.3	4.9
Manufacturing	19.9	10.6	3.1	3.2	6.7
Construction	41.6	7.3	1.5	2.7	4.0
Accommod. and food service activities	32.7	7.1	6.0	2.3	11.1
Human health and social work activities	35.9	12.6	3.7	1.4	4.5
Education	33.9	21.9	7.8	5.1	5.9
Prof., scientific and technical activities	16.7	9.3	4.0	1.4	5.0
Public administration	27.5	15.3	1.1	1.4	9.3
Admin. and support service activities	35.5	13.2	6.4	3.8	12.4
Transportation and storage	22.7	8.0	4.5	3.6	9.3
Information and communication	21.8	6.4	3.2	1.4	5.3
Activities of households as employers	32.3	10.0	0.0	0.0	0.0
Agriculture, forestry and fishing	55.4	15.8	2.9	3.7	8.3
Other service activities	25.3	15.7	5.6	3.2	8.4
Financial and insurance activities	13.1	4.5	1.3	1.7	7.5

Notes: Economic activities classified by NACE rev.2 with more than 1% as share of youth employment in the four countries and sorted by the share of employment of population aged 25-34 in Spain in 2010. Source: calculations based on the yearly sub-samples of the European Labour Force Survey).

Nonetheless, despite the recent decline in the rate of temporary employment, the results in Table 19 show that the share of this type of jobs in each of the sectors is still much higher in Spain than in the reference countries. Therefore, an explanation based on composition effects can be discarded. Indeed, although only 15.6% of the youth employed in Wholesale and Retail Trade hold temporary contracts, compared to an economy-wide average of 26.5%, this figure is still three times larger than that of France, the country with the second-highest share of this type of contracts. Finally, another striking finding is that, despite the burst of the housing bubble, the Spanish figure in the Construction sector by 2010 was still a startling 41.6% compared to 7.3% in France.

Employment structure by industry, wages and school dropout rates

As explained in Section 1, one of the most detrimental effects of the housing boom in Spain has been the distortion in the education decision of many young workers. The excellent employment opportunities and the sharp rise in the wages in this sector improved the labour market prospects for low-educated workers, drawing many young people into the labour market with no more preparation than lower secondary education.

There has been some recent research trying to quantify the impact of the housing boom on the number of high school dropouts in Spain. For example, Aparicio-Fenoll (2010) uses date from EPA, Regional Accounts and the Ministry of Housing for the period 2003-07 to estimate the effects of an

increase in the regional construction activity on the dropout rates in each region. Her results show that an increase in the share of construction in total value added in a region leads to a rise in the dropout rate of males, while the education decisions of females are not affected. Specifically, a one-percentage point increase in this share leads to a 2.9% rise in the probability that a young male aged 17-24 drops out of school.

Moreover, unlike most of the OECD countries, Spain has experienced a drop in the returns to medium and tertiary education and a sharp increase in the wages for low-skilled workers. [12] Table 20 provides evidence on the real wage growth for young Spanish workers over 1995-2006. Using disaggregated information for four different age groups and three distinct levels of educational attainment, it compares the evolution of the wages in the construction sector to that in the remaining sectors. The calculations are based on data from the EEES. The most interesting finding is that the real wage of low-educated adolescents has increased by almost 40%, while the real wage of university graduates in the age group 30-34 fell by almost 12% during the same period.

Table 20 Real hourly wages in 2006, in per cent of the 1995 real hourly wage level, by age, educational attainment and industry (Spain)

	Low-secondary educ.			Upper-secondary educ.			Tertiary educ.		
	All	Construction	Other	All	Construction	Other	All	Construction	Other
16-19	138.9	150.5	134.9						
20-24	114.8	114.0	113.5	112.9	111.8	113.1			
25-29	110.2	116.2	107.6	100.6	98.5	100.8	98.1	110.1	96.9
30-34	104.6	109.4	103.7	90.3	96.9	90.1	88.4	92.4	88.3

Source: Calculations based on the Encuesta de Estructural Salarial (1995 and 2006).

Regarding this issue, a relevant piece of empirical evidence is provided by Lacuesta *et al.* (2012) who estimate the expected returns to schooling by using skill-specific wages bargained in collective agreements which they find are binding for less-skilled workers. In particular, using data from EPA (1992-2009), administrative records on earnings from the MCVL (2007) and the base wages agreed in industry-province collective agreement (Registry of Collective Agreements between 1990-2009), they estimate how the drop and subsequent increase of the relative wages of unskilled workers in Spain between 1986 and 2009 has affected the type of human capital acquired by young people. Specifically, they estimate the response of schooling attainment to changes in the returns to skill that adults may observe when they were 17 years old. Their results suggest that a 10% increase in the ratio of wages of unskilled workers to the wages of mid-skill workers decreases the fraction of males completing at most compulsory schooling by between 2 and 5 pp. Again, this effect is relatively small when compared to other countries.

Supply-driven factors: Ageing, cohort size effects and immigration

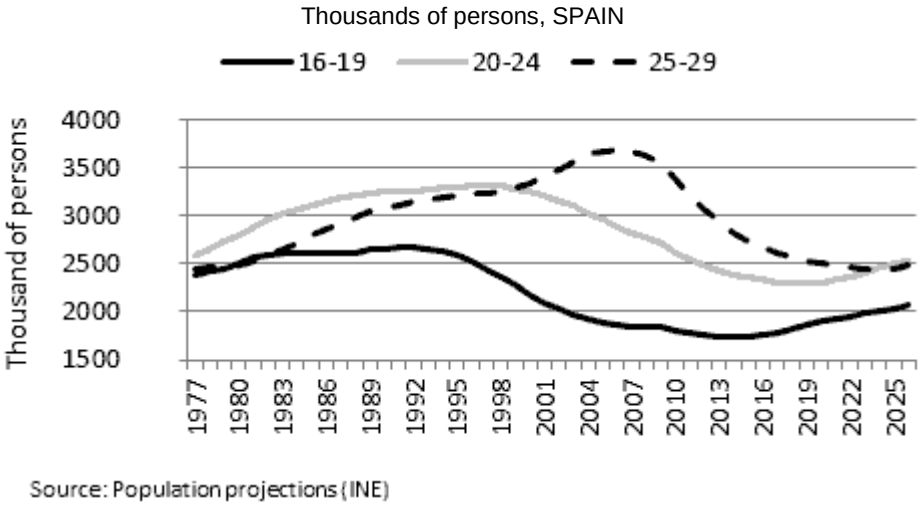
The OECD area is experiencing an ageing process with a declining share of youth in its working-age population. However, this process is more pronounced and occurring at a faster pace in some countries than in others. In theory, the relative scarcity of the labour force over the longer term should favour stronger labour market outcomes for the smaller cohorts of young entrants to the labour force. However, the sharp declining share of youth in the OECD working-age population between 1975 and

12. See Felgueroso *et al.* (2010), Pijoan and Sanchez-Marcos (2010), and Lacuesta and Izquierdo (2012) for a detailed analysis of the determinants of the fall in the wage skill premium in Spain.

2005 (6 pp.) did not translate into better youth labour market outcomes across-the-board. So, by the mid-2000s, the youth unemployment issue was far from being resolved, with unemployment concerning on average one youth in six in the OECD labour force.

Indeed, as discussed in Section 1, it turns out difficult to explain why the relative ratios of youth employment/ unemployment with respect to their overall working age population counterparts have not experienced major changes over a long period in which there have been considerable demographic changes in the age structure of the Spanish labour force. Specifically, as illustrated in Figure 30, the adolescent population (16-19) is nowadays about one- third lower than in the early nineties, while those in the 20-24 age bracket are about one- quarter smaller. Only the fraction of workers aged 25-29 years has remained more stable, but it has started to fall since the onset of this crisis. Thus, with an unemployment rate similar to the one in the first quarter of 1994 (46%), the number of youth unemployed under 24 years of age is currently 30% lower than in that year. Alternatively, while in 1994 the number of those unemployed aged 16-19 years more than doubled those in the 55- 64 age bracket, it is now less than 60% of the latter. Further, as shown in Figure 31, the demographic changes by age in Spain have been much larger than in the reference countries. Thus, the stability of youth employment and unemployment rates relative to their aggregate counterparts leads to some doubts about supply side effects possibly being relevant in explaining youth labour market outcomes. Yet, the available empirical evidence on these effects shows that they are not negligible.

Figure 30. Youth population by age



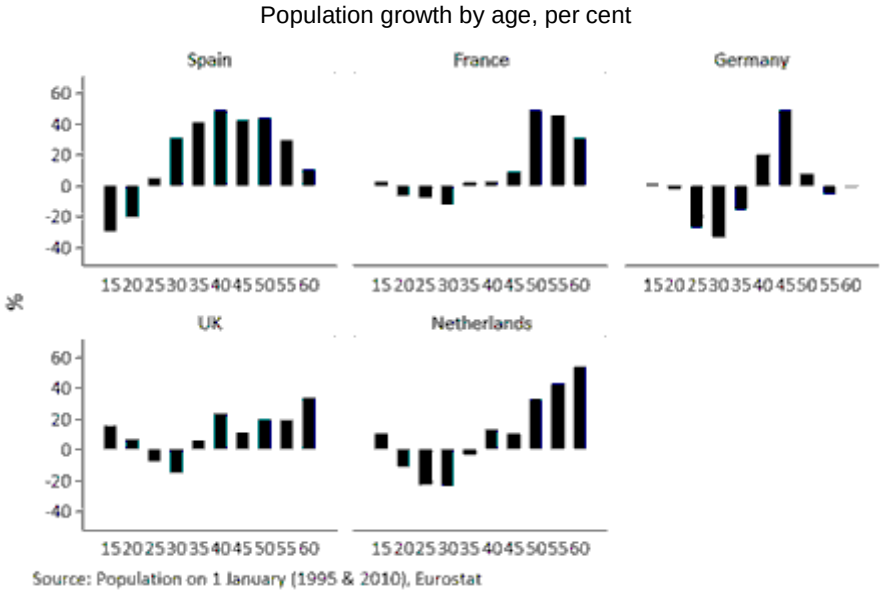
Source: Population projections (INE)

For example, regarding the effects of ageing on employment and unemployment in Europe and the US, Korenman and Neumark (2000) and Jimeno and Rodriguez-Palenzuela (2002) investigate whether changes in cohort size have significantly affected relative unemployment rates. Using pooled cross–section data for a group of OECD countries, they find evidence of a positive, albeit not large, correlation between the youth cohort size and youth unemployment rate. Likewise, Ahn *et al.* (2000) also find a positive relationship between the relative size of the youth population and youth unemployment in a sample of Spanish regions. Finally, Bertola *et al.* (2007) show that demographic shocks, such as changes in cohort size, interacted with labor market institutions, contribute to explaining the gap between the aggregate unemployment rates of Europe and the US.

As regards the research on the relationship between cohort size and earnings, it was initially motivated by the entry of the baby–boom birth cohorts in the US labor market during the 1970s in the US. Assuming that individuals born in the same age cohort are perfect substitutes, an increase in the relative cohort size of the young is expected – ceteris paribus – to deteriorate their earnings because of

the higher competition they face in the labor market – a relative supply effect. Korenman and Neumark (2000) review the existing empirical literature on this topic for the US and, broadly speaking, they find support for the hypothesis stating that individuals born in large cohorts face depressed (real) earnings.

Figure 31. Demographic changes between 1995 and 2010



In a similar vein, Card and Lemieux (2001) argue that the increase in the skill premium for employees with tertiary education in the US in the 1980s was concentrated in younger age cohorts at that time. They argued that this was due to a low supply of graduates in the 1980s relative to previous cohorts, reflecting broader demographic trends.

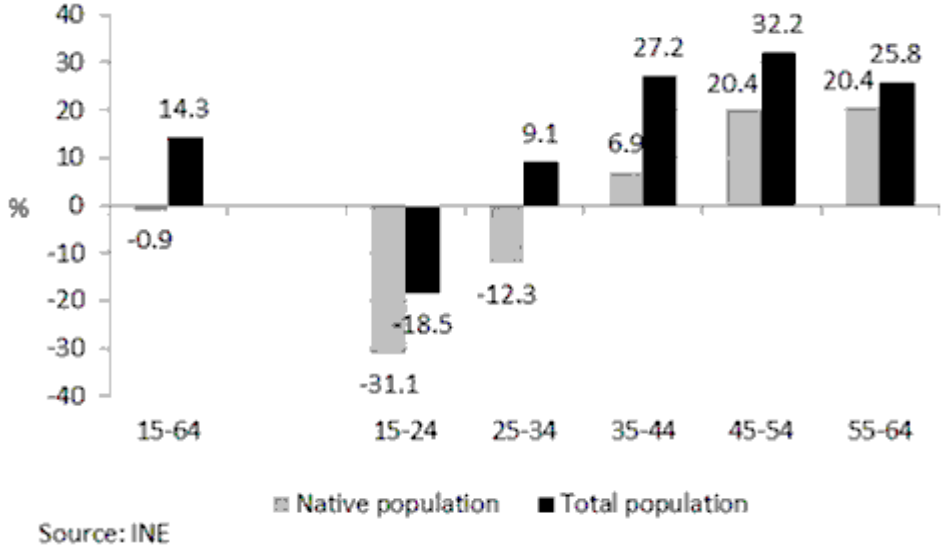
Brunello (2010) adds to this literature by providing empirical evidence on the impact of cohort size on real earnings in Europe using the seven waves (1995 to 2001) of the ECHP. He shows that the effects of cohort size are by no means homogeneous within Europe, and relate this heterogeneity to a key labor market institution, namely, the degree of employment protection. He shows that an increase in cohort size has a negative effect on (real) hourly earnings of European high school and college graduates, and relates this effect to the elasticity of substitution involving workers of different age but equal educational attainment: the larger the effect, the lower the substitutability. Perhaps not surprisingly, he finds that substitutability is lower within the older age group. In line with the predictions, he also finds that workers with tertiary education are less substitutable across age than high school graduates. He also finds that earnings respond significantly more to cohort size in Southern Europe, which points to the lower substitutability of workers in these countries. It is argued that that this lower substitutability can be due to the much higher employment protection there. Hence, a common demographic shock which hits Europe by reducing the cohort size of the young and by increasing the cohort size of the old – a baby bust after a baby boom – may tilt the age–earnings profile in favor of the young more in Southern than in Northern Europe.

With respect to immigration, the demographic changes by age and nationality during the years from 2000 to 2010 displayed in Figure 32, show that Spain has experienced an increase of 14.3% in its overall population despite a fall of 0.9% in its native population. This is due to the massive

immigration inflows over that period when it has become the most important country of destination in OECD, after the US. Thus, accounting for this phenomenon is paramount in order to understand the performance of the Spanish youth labour market in the recent past and the challenges to be faced in the future**.**

Figure 32. Demographic changes by age and nationality

Per cent, 2000-10, SPAIN

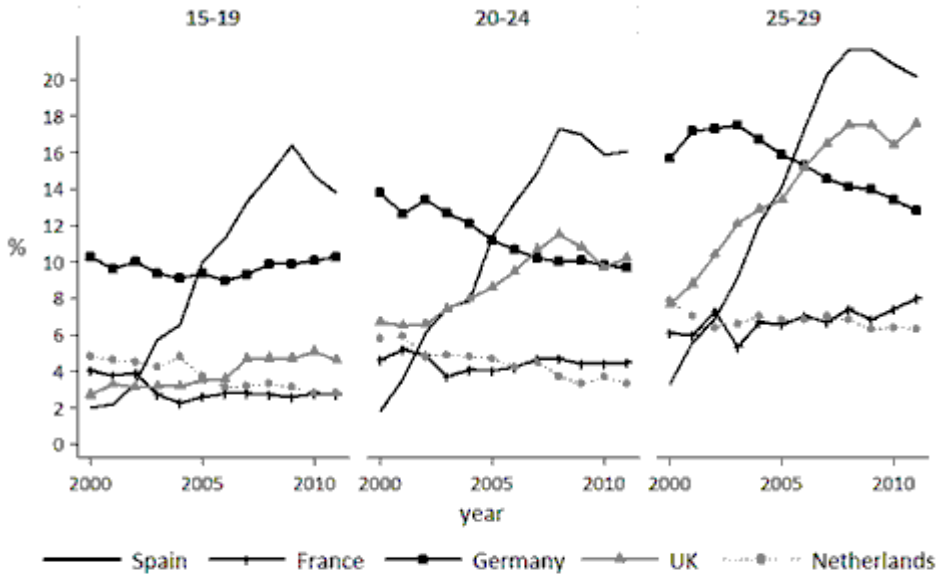


Source: INE

Figure 33, in turn, shows the proportion of foreign workers in youth population in Spain and the reference counties over the period 2000- 2011. At the beginning of the 2000s, the share in Spain was below the corresponding shares for all age groups in the other countries. More recently, although the recession has slowed down immigration inflows, the fraction of young foreign workers still remains quite above those in the reference countries. For example, among those aged 15-19 years, it is 5 pp. higher than in Germany and 10 pp. above the shares in the other three countries.

Figure 33. Share of foreign population by age

Per cent, 2000-2011

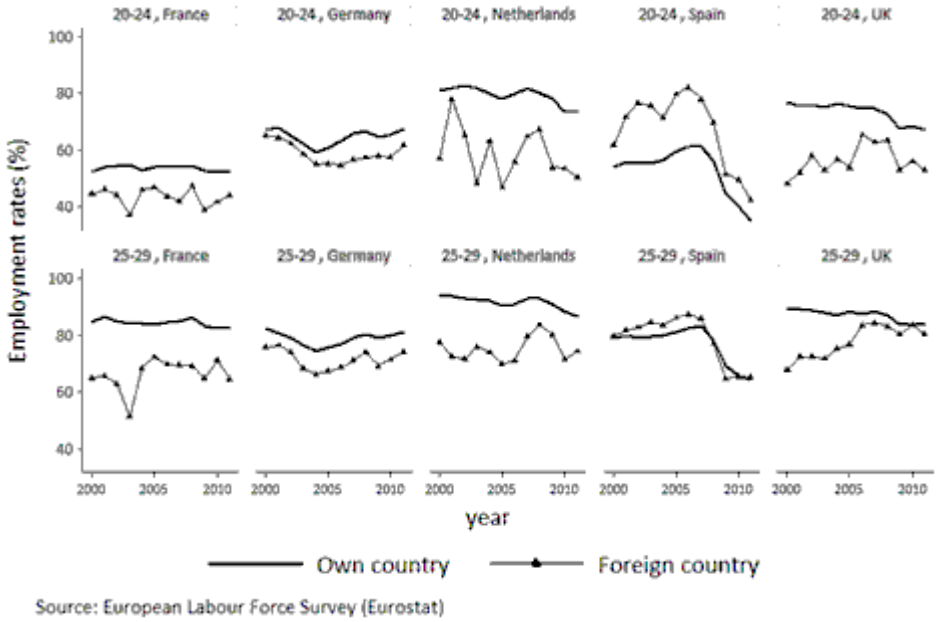


Source: European Labour Force Survey (Eurostat)

As can be observed in Figure 33, most of the immigrants in Spain were first-generation immigrants who came to this country looking for a job. This may explain why, as shown in Figure 34, the employment rates of immigrants are higher in Spain than in the other countries. This may be further confirmed by the observation that the large reduction of employment rates during the crisis has been borne disproportionally by foreign workers, as documented in Figure 35.

Figure 34. Employment rates by age and nationality

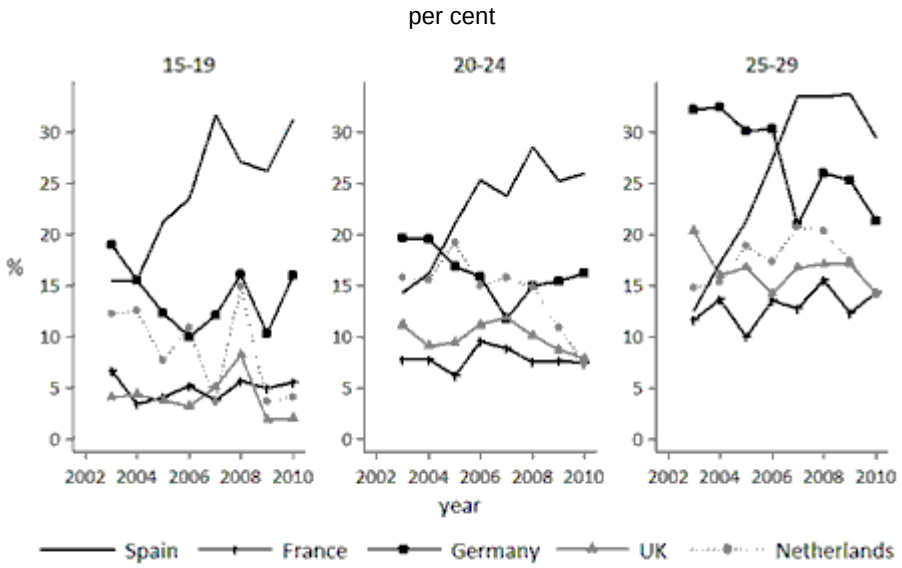
Males, 2000-11, per cent



Source: European Labour Force Survey (Eurostat)

Figure 35. Share of NEET with foreign nationality by age

per cent



Source: calculations based on the yearly sub-sample of the European Labour Force Survey

Family networks, youth emancipation and labour mobility

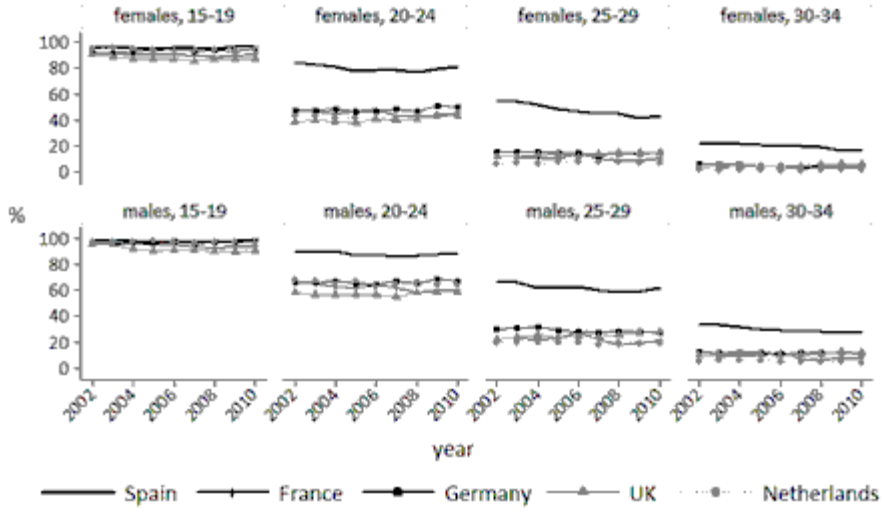
Residential emancipation and youth employment rates

Figure 36 displays the recent trends in the percentage of youth who live with their parents, irrespectively of whether they are employed or not. The reported evidence suggests that the fraction of

those who have not yet "left the nest" among those aged 20-24 and 25-29 years is much higher in Spain than in the reference countries, with gaps reaching 30 to 40 pp. Furthermore, during the preceding expansion, cohabitation was falling slowly for these age groups as a result of the employment boom. However, there has been a reversal of this trend since the beginning of the crisis.

Figure 36. Young people living in the parent household by age and sex

Per cent

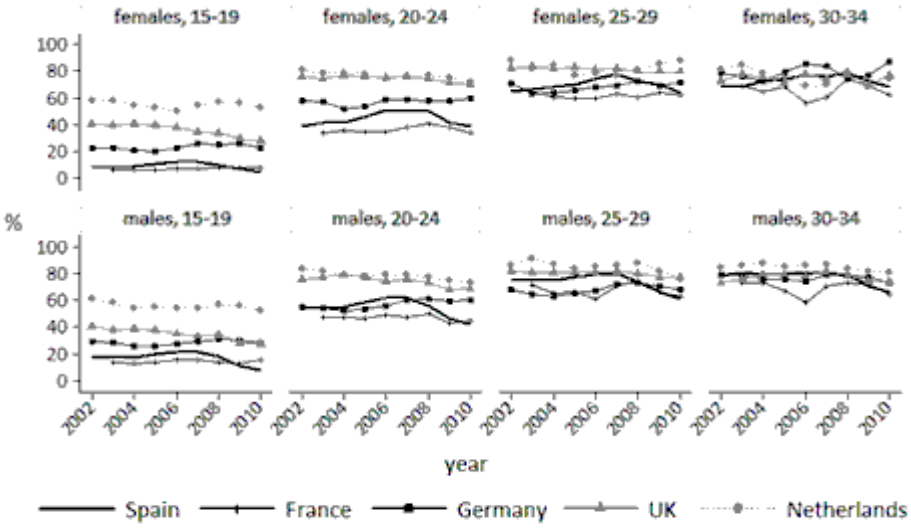


Source: calculations based on the yearly sub-samples of the European Labour Force Survey

Figure 37 and Figure 38 display the employment rates during the 2000s for those who live with their parents and those who have left the parental home, respectively. Regarding the first group, the Spanish employment rates are comparatively low throughout that decade. By contrast, for males who live outside the parental home, Spain had one of the highest employment rates for the age group 20-29 prior to crisis. The latter finding suggests that Spanish youth predominantly leave the parental home when they are offered a permanent job, while youth in other countries may decide to leave the parental home before. This confirms recent evidence by Ayllón (2009) who shows that in Southern European countries, like Spain, employment rates are typically larger than emancipation rates. As a result of the severe employment cuts during the crisis, currently Spain has become the country with the lowest employment rates for young adults who have left the parental home.

Figure 37. Employment rates of young people living in the parental household by age and sex

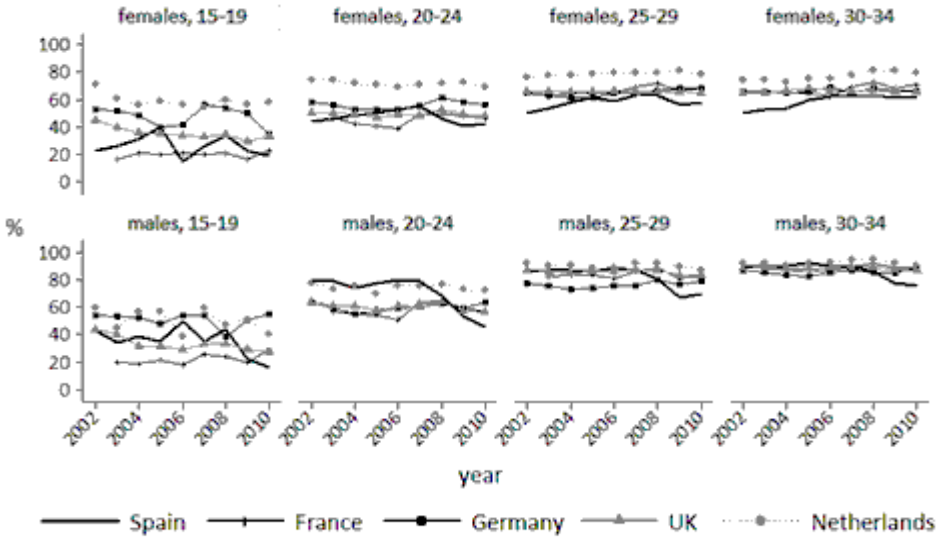
Per cent



Source: calculations based on the yearly sub-samples of the European Labour Force Survey

Figure 38. Employment rates of young people not living in the parental household by age and sex

Per cent



Source: calculations based on the yearly sub-sample of the European Labour Force Survey

Emancipation and precarious temporary employment

The lack of job security is known to have an impact on the emancipation decisions of the youth. For example, Becker *et al.* (2010) have shown that the lack of job security for young adults in combination with higher employment protection of their parents lead to delays in the emancipation of the former.

Table 21 reports the percentage of young employees aged 20-29 who do not live with their parents. It distinguishes between twelve different cohorts depending on gender, level of education and the type of contract held by each individual. With the exception of young Spanish males with low- or medium-level education attainment, the emancipation rates are significantly higher for young workers with permanent contracts. This confirms the evidence that job insecurity matters a lot for emancipation decisions. These figures also reveal another interesting difference, namely that while the emancipation rates increase with the level of education in the reference countries, the opposite pattern seems to hold in Spain.

Given that emancipation rates are lower for workers with temporary jobs and that Spain is a country in which youth tend to work on temporary contracts for protracted periods, it seems reasonable to claim that the high incidence of temporary contracts is an important factor behind the relatively low emancipation rates in Spain. Nonetheless, even for workers on permanent contracts, the emancipation rates are low by international standards. Therefore there must be other factors at play that delay the emancipation of Spanish youth, like e.g., the way the housing market operates, which the issue we examine next.

Table 21. Emancipation rates by type of contract, sex and educational attainment (per cent, 20-29 years old, 2010)

Country	Type of contract	Males			Females		
		Low	Medium	High	Low	Medium	High
Spain	permanent	31.3	31.6	29.2	50.0	48.6	42.5
	temporary	30.7	32.2	22.5	45.0	39.4	26.1
France	permanent	66.6	71.7	83.6	77.3	83.2	89.3
	temporary	51.0	51.4	61.5	70.1	65.8	73.1
Germany	permanent	60.4	64.9	79.1	70.1	74.3	83.9
	temporary	27.0	51.9	76.2	44.9	61.8	83.6
UK	permanent	45.5	57.6	69.7	63.0	67.8	70.4
	temporary	45.9	50.8	51.8	68.6	48.6	63.2
Netherlands	permanent	43.6	59.4	84.0	65.5	70.5	89.1
	temporary	41.3	48.3	75.8	62.5	63.1	84.3

Source: calculations based on the yearly sub-sample of the European Labour Force Survey (2010)

Rental market, housing allowance and emancipation

One of the main factors that may explain why employment stability plays such an important role in the emancipation decisions of Spanish youth is the poorly functioning of the rental market for housing. With respect to the housing market, and in particular the rental market, the data from the EU-SILC allow us to draw three interesting conclusions. *First*, the percentage of youth who live in a rented house is much lower in Spain than in the reference countries. Less than 10% of the emancipated youth in the age group 22-29 who are responsible for their own housing live in a rented house, compared to 58% in Germany, 47% in France, 42% in the Netherlands or 33% in the UK. *Secondly*, renting is relatively expensive in Spain: for youth who rent their own house, the rent absorbs more than half of the disposable household income, while the corresponding figures for the reference countries lie between 25.1% (the Netherlands) and 35.3% (France). *Thirdly*, Spain has the lowest percentage of youth who are entitled to a housing allowance. For example, only 16.2% of the

youth who rent their own house are entitled to such an entitlement compared to 54.2% in France or 36% in the Netherlands. The only other country with a comparably low figure for the entitlement to housing allowances is Germany, but rents in Germany absorb a much smaller proportion (22.8%) of the disposable income of young households.

Table 22. Distribution of young people aged 22-29 by housing tenure status, rental cost and coverage of housing allowances (per cent, 2010)

Country	(A) Owner	(B) Rent at market price	(C) Rent at reduced rate	(D) Free accom-modation	(E) % rent/ disposable household income	(F) % housing allowance
Spain	15.8	8.3	1.1	3.4	51.1	16.2
France	17.2	28.7	18.5	4.1	35.3	54.2
Germany	6.9	53.5	4.3	1.6	22.8	15.2
UK	22.3	21.7	10.9	0.7	32.8	28.1
Netherlands	25.2	41.8	0.0	0.3	25.1	36.0

Denominator in (A), (B), (C) and (D): young people aged 22-29 who are not at parental home and responsible responsible of their accommodation. (F) % of young people paying a rent who receives a housing allowance.

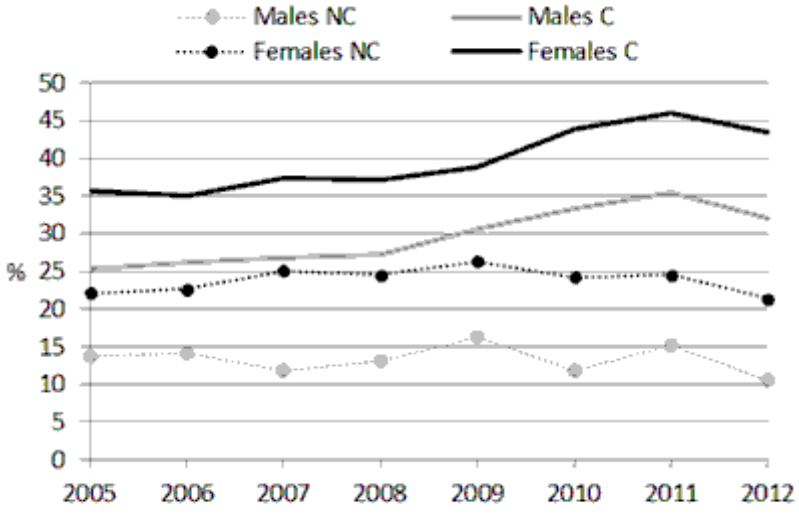
Source: calculations based on the 2010 cross-sectional sample of the EU-SILC.

Some preliminary evidence on the role played by housing allowances (RBE, *Renta Básica de Emancipación*, introduced in 2008 and abolished in 2012) can be obtained from Figure 39 which shows the emancipation rates for high-educated youth (22-29 years) by gender before and after the introduction of the RBE. The group of entitled individuals is labeled C. Entitlement required an employment contract of six or more months and depended on the level of annual income but the EPA does not provide the necessary information. The label NC refers to the group of youth in the same age cohort who are not entitled to the housing allowance because they do not meet the requirements.

Figure 39. Emancipation rates

Per cent of people aged 22-29 with tertiary education who have left the parental home, Spain

"C" refers to youth receiving housing allowance (*Renta Básica de Emancipación*), "NC" youth not receiving it.



(*) Source: calculation based on the Spanish Labour Force Survey (1st quarters)

Figure 39 shows a clear increase of more than 8 pp. in the emancipation rates of the entitled groups of males and females between 2008 and 2011. By contrast, no significant changes are detected in the the corresponding rates of the groups who are not entitled to the housing allowance during the same period. Moreover, the increase in the emancipation rate of the entitled group is much stronger in the three years following the introduction of the RBE than during the three years prior to its introduction, suggesting that the housing benefit was useful to foster geographic mobility among the young. Moreover, Aparicio-Fenoll and Oppedisano (2012) provide a formal econometric evaluation of the impact of RBE on youth emancipation. They restrict attention to the cohort of 21 to 22 years' old. They find that the introduction of the RBE has a positive effect on the emancipation of youth (a 14-18% rise in the emancipation rate of youth compared to the average emancipation rate of the population), cohabitation in couples (an 11-22% increase) and an increase in the fertility rate of emancipated youth (a 13-22% increase in the probability of at least one child).

Econometric evidence on the determinants of youth labour market problems in Spain

This section provides some new econometric evidence about the role played by a variety of factors underlying youth labour market performance. Section 3.1 presents estimates of a bivariate probit model for Spain and the other reference countries to analyze the determinants of the decisions by young people whether to study/get trained and/or to work. Section 3.2 presents results of a duration model to analyse the factors explaining the time required to find the first regular job since leaving school. Finally section 3.3 presents some estimates, this time only for Spain, of the scarring effects on young people´s future wages of entering the labour market during a recession.

The decisions to study and/or work across countries: A bivariate probit model

The econometric evidence relies on the estimation of a bivariate probit model for each country, as well as a pooled specification, to study the effects of several relevant covariates on the decisions taken by individuals aged 15-29 about whether to study or not and whether to work or not. The estimation relies on micro data from the yearly samples of the EU-LFS covering the period 2003-10.

The following groups of variables are included as controls in the above-mentioned model: i) individual demographics (such as gender, age, education level, and their interactions, plus nationality and years of residence in the country of destination for immigrants, ii) age group demographics (size and emancipation rate of the individual´s cohort), iii) regional and industry characteristics (such as the demographic density of the region of residence, and employment shares by sector; the exception being the Netherlands where, lacking regional information, these variables are used at the nationwide level) and iv) individual labour market characteristics (such as youth unemployment, temporary work and part-time rates).

The descriptive statistics of the variables used in the estimation are presented in Table A.1. Tables A.2 and A.3 (all at the end of this paper) report the individual marginal effects of the covariates on the predicted univariate probabilities (working vs. not working and studying vs. not studying) in the pooled and individual country specifications, respectively. Finally, Table A.4 presents a brief summary of the marginal effects of the covariates on the bivariate predicted probabilities for each of the four available combinations of studying/working, as well as for each of the countries under consideration.

The results broadly confirm the findings of the descriptive analysis above. The most important results can be summarized as follows:

- Even after controlling for the previous list of observable covariates, there seems to be a higher degree of substitutability between studying and working in Spain than in the other countries. This reflects the fact that very few young people combine both activities in Spain. This conclusion can be drawn from the sign of the correlation between the error terms in both equations: the more negative is this correlation, the more difficult is to combine both activities since they are stronger substitutes. As expected, the estimated correlations are negative in all countries, but the largest (in absolute value) corresponds to Spain (-0.63), followed by France (-0.52), Germany (-0.33), United Kingdom (-0.24) and The Netherlands (-0.23).

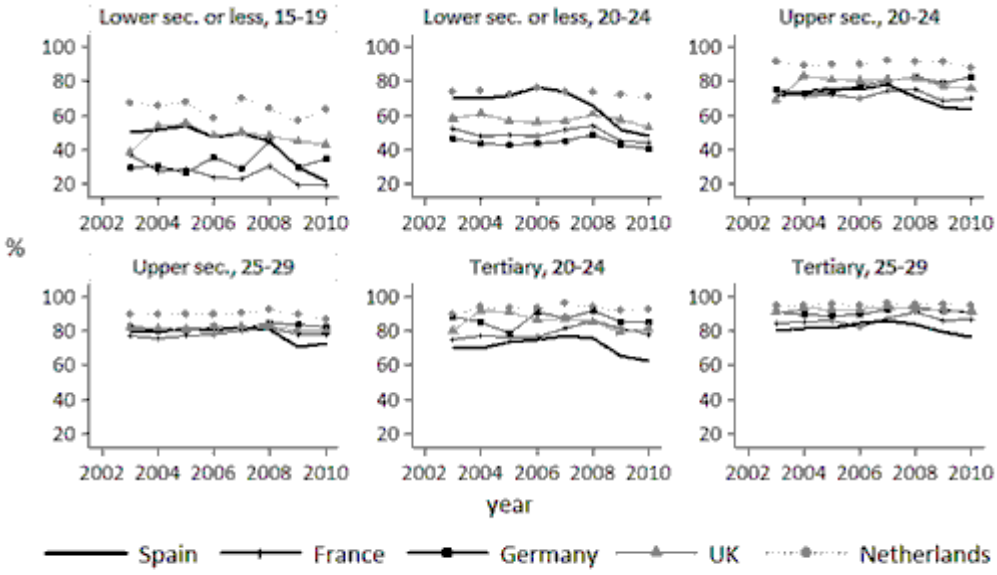
- The observable individual and age group controls are not able to explain a large part of the employment and education gaps in Spain relative to the other economies (see the country intercepts in the pooled estimation reported in Table A2, where Spain is the reference category). France and Spain are the only two countries where women have a higher probability to study than men (about 5.5 pp. larger) whereas the opposite result holds in terms of the probability of working (11-12pp. lower). For the remaining countries, the genders gaps are fairly small and mostly statistically insignificant.

- As for the regional unemployment rates, France and Spain are again the only countries where significant positive marginal effects are found on the probability of studying. A one pp. rise in the unemployment rate raises this probability by about 0.2-0.3 pp. The results also suggest that, with the exception of the Netherlands, higher regional unemployment significantly increases the probability of becoming a NEET while it reduces the probability of studying and working.

- Concerning the impact of educational attainment on employment**,** there are noteworthy differences across education groups and across countries. These differences can be easily interpreted using the evidence reported in Figure 40 which displays the youth employment rates by age for those individuals who are no longer enrolled in formal education. As can be observed, the employment rates for low-educated youth before the onset of the recession were comparatively high in Spain. Yet, the picture has dramatically changed during the crisis. As a result of the burst of the housing bubble, the employment rates for low-educated males in Spain have dropped by 20-30pp. in all three age cohorts, and currently are converging downwards to those in France and Germany. In contrast to the high employment rates for less-educated youth before the crisis, Spain had the lowest employment rates for youth with intermediate and high levels of education, together with France. For example, around 30% of the 20-24 years old highly educated youth who were out of the education system in 2003 were not employed. Yet, as before, these employment rates have dropped dramatically during the crisis whereas they resisted fairly well in the reference countries. Thus, Spain has consistently had a poor performance for young (adults) with intermediate and high levels of education.

Figure 40. Employment rates of youth who have left formal education

Per cent, by age group



Source: calculations based on the yearly sub-samples of the European Labour Force Survey

- There are no statistically significant marginal effects of being an immigrant on the probability of working in Spain, irrespectively of the years of residence. This is in stark contrast with the findings for other countries where there is a negative effect on working for those coming from outside the EU-15. The t estimation results also distinguish between individuals with foreign nationality arriving from other EU-15 countries (defined as a group of 15 countries that joined the European Union earlier than others) and those from outside the EU-15. Further, these two areas of origin are interacted with the number of years of residence in the country of destination. There is a negative marginal effect on the probability of studying among young immigrants arriving to Spain from outside the EU-15. Yet, this effect tends to vanish as they stay longer in this country.

- The countries under consideration have followed different demographic trends that could have affected the decisions by young individuals on studying and/or working. This is reflected in the estimates of the marginal effects of the size of regional age cohorts on the studying/working, which differ quite a lot across countries. For example, in Spain, the effect of this variable on the probability of studying turns out to be large and negative (a one pp. increase in the cohort size reduces this marginal probability by 2pp.). This negative effect, albeit smaller, is also found for the UK while the estimated marginal effects are not significant in the other countries. There is no evidence of cohort size effects on the probability of working in Spain, while results are mixed for other countries. Overall, there does seem to be a significant positive effect of cohort size on the incidence of NEET in Spain, but not in the other countries.

- With regard to the effect of living in the parental home on employment and education decisions, regional emancipation rates are used as an instrumental variable for the individual emancipation decisions to deal with the potential endogeneity of the latter. In the individual country level regressions (Table A3), the marginal effects of regional emancipation rates on the propensity to study in Spain, France or Germany are not significant, while it is positive and significant in the Netherlands and the UK . This positive sign could reflect emancipation decisions by students that leave the parental home to study elsewhere. Finally, for Spain and

Germany the relationship between the regional emancipation rates and the probability of working is positive. Moreover, for these same two countries, the bivariate probability of being NEET does seem to be negatively related to the regional emancipation rates. The pooled regressions for all countries (Table A2) provide additional variation in the emancipation rates beyond the regional variations within each of the countries. According to these results, a higher regional emancipation rate reduces the marginal propensity to study, while there is no significant relationship between the regional emancipation rate and the marginal probability of working.

- As for industry specialisation, the pooled regression for all five countries appears to indicate that an increase in the share of employment in the construction sector exerts a negative effect on the probability of studying. In contrast, a larger share of employment in high and high-medium tech manufacturing seems to be associated with a positive effect on the probability of being employed. The country-level regressions confirm the negative effects of the employment share of the construction sector on education and training for Spain, France and the Netherlands. In Spain, the effect is equal to -0.78 for each percentage point of employment in the construction sector. The marginal effect on the probability of employment is of similar size but with the opposite sign. Another sector whose relative size positively affects the probability of employment for youth in Spain is low and medium-low tech manufacturing, while the rest of the sectors do not exert a stronger effect on employment than the LKIS sectors.

- The estimated specification controls for the overall share of temporary jobs by sector as well as the regional share of temporary jobs among young workers in the age group 15 to 29. Although in the pooled regression, there is no statistically significant effect of the share of temporary jobs on either the probability of a young person working or studying, this result changes in the separate country-level regressions. For example, in the regression for Spain, a higher share of temporary jobs decreases the probability of studying, while the opposite is true for the Netherlands and no significant effects can be found for the other countries. Finally, in the pooled regressions, the regional shares of part-time work among the young seem to exert a positive effect on the probability of enrolment in education or training, while there is no statistically significant effect for the probability of being employed.

Time required to find a first regular job: A duration analysis

We provide some new econometric evidence about the role of several relevant covariates in explaining cross-country differences in the duration of the school-to-work transitions. Specifically, standard survival analysis is applied to characterize the transitions of individuals aged below 35 in 2009 who left formal education between 2002 and 2009. Immigrants who completed their studies elsewhere are excluded from the sample. Further, Germany is dropped from the sample of reference countries due to missing data.

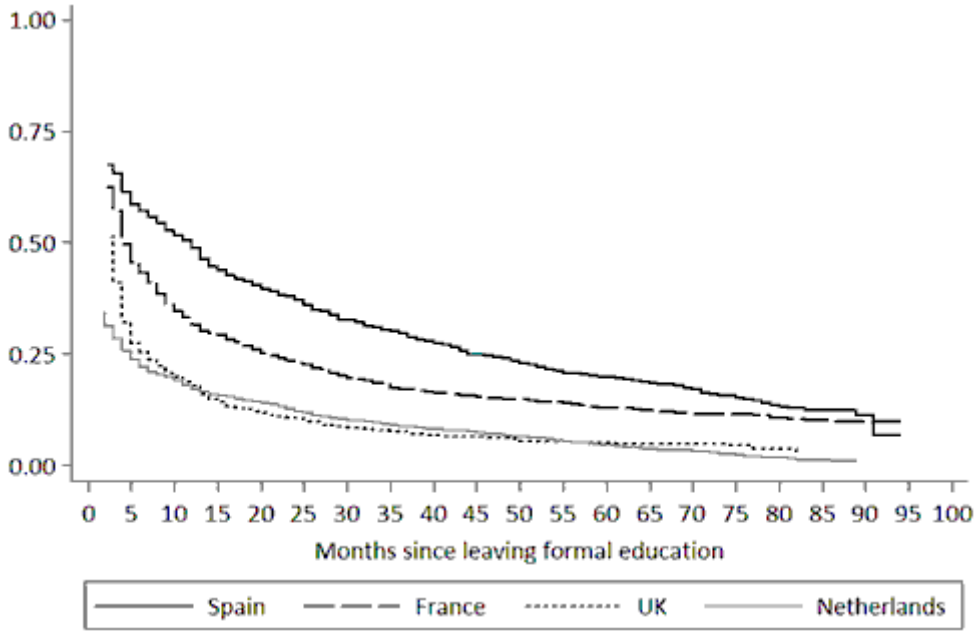
The information about the school-to-work transitions is based on retroactive questions undertaken in 2009. Hence, the data are censored because a substantial part of young people are still looking for their first regular job at the time of the interview. Moreover, the issue of having data with delayed entry has to be dealt with, since the different cohorts leave school at different dates. The longest period for which observations for the same individual exist is 96 months corresponding to a small number of individuals who left school in January of 2005 and who report not having found their first regular job by December of 2012. Another limitation of the data is the lack of information about the region in which the individuals found their regular jobs. Finally, it is worth mentioning that whether an individual has acquired work experience while being a student, either as part of their

formal studies or during holiday breaks, can be observed. Since one of our objectives is to evaluate how this work experience affects the length of the school-to-work transition, the availability of this information is very useful.

Figure 41 shows baseline estimates of the Kaplan-Meier survival functions, where the term "survival" signifies that an individual continues in the sample because he or she has not yet found a regular job after leaving education. These functions confirm the evidence provided earlier about Spain being the country with the lowest share of school leavers who immediately start working in a regular job. As can be observed, the job finding rates in Spain remain consistently lower (i.e., the "survival" rates in non-employment are higher) than in the other countries. The Netherlands stands out as the country with lowest intercept. Indeed, it takes about two years before the survival function of Spain reaches the same level as the initial one in the Netherlands.

Figure 41. Individuals who have not found a regular job since leaving formal education

Kaplan-Meier survival estimates, 2002-2009



Source: estimates based on the 2009 ad hoc module of the European Labour Force Survey

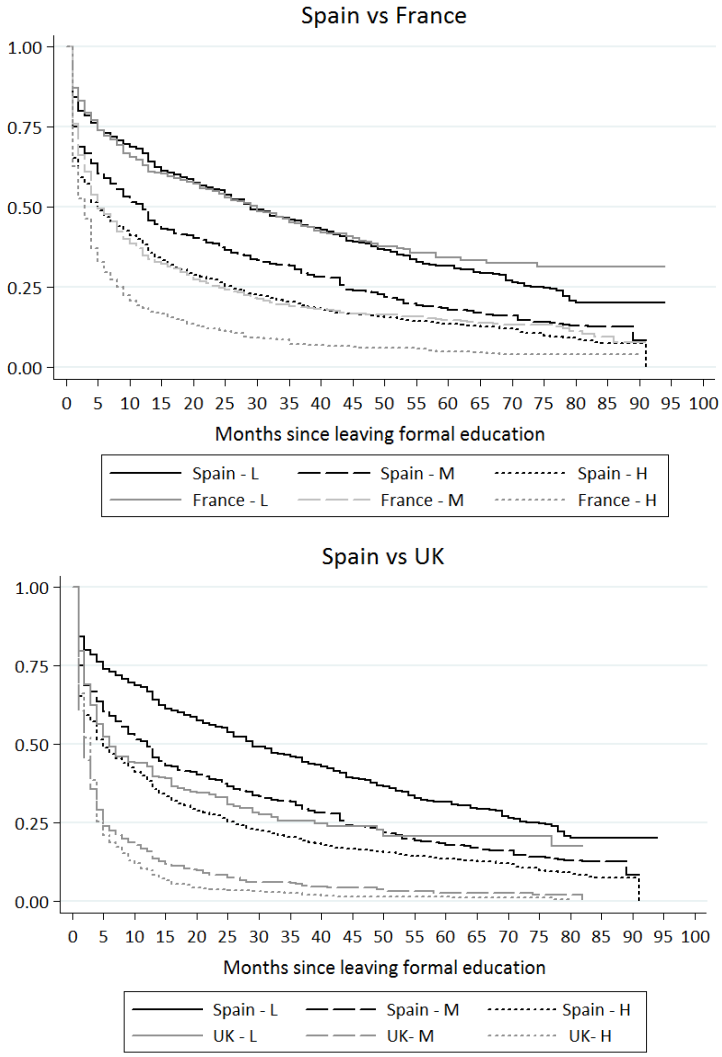
Figure 42 provides similar country-by-country comparisons, but now distinguishing among the survival functions of individuals with three levels of completed education: at most lower-secondary education (L), upper-secondary education (M), and tertiary education (H). In all cases the survival function of the L group is much flatter during the first months than the survival functions of the other two groups. Not surprisingly, a higher level of education offers a faster access to regular employment. However, the results differ considerably across countries.

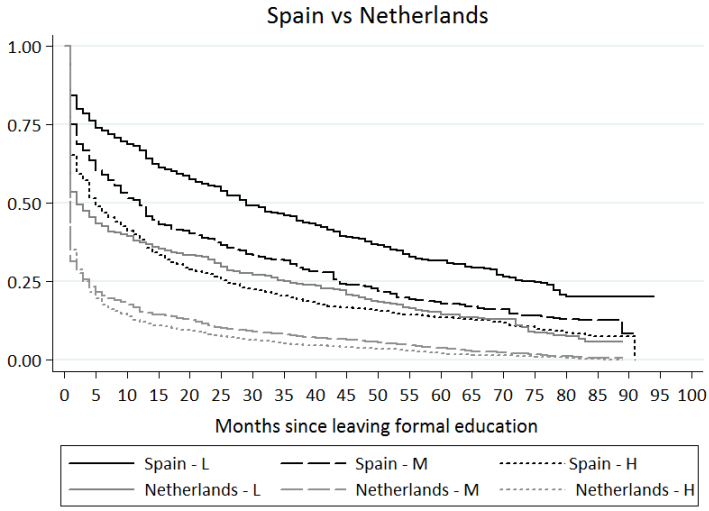
As far as the workers in the L group are concerned, France and Spain exhibit similar features. The survival functions for this education group are almost identical in both countries up to 40 months though, later on, the fraction of workers still looking for the first regular job is even lower in Spain than in France. Nonetheless, access to regular employment is quicker in France for the workers in the M and H groups. Interestingly, the survival function for H-group workers in Spain virtually coincides with the survival function of the M-group workers in France. The differences are even more striking

between Spain and the UK and the Netherlands. The survival functions of these two countries lie above the Spanish ones for all three levels of education. Strikingly, during the first 12 months, the survival function of Spanish university graduates is comparable to those of L-type workers in the UK and the Netherlands.

Figure 42. **Individuals who have not found a regular job since leaving formal educational attainment**

Kaplan-Meier survival estimates (L refers to low, M to medium and H to high attainment), 2002-2009





Source: estimates based on the 2009 ad hoc module of the European Labour Force Survey.

Though the estimation of a fully-specified model is beyond the scope of this section, a few relevant covariates related to the "hazard" (exit) rate are analysed by assuming that durations follow a Weibull distribution. In particular, standard controls – like gender, completed education, nationality (distinguishing between those born in the country of reference and those born elsewhere) and the year of completion of formal education – are included. In addition, controls related with the work experience acquired while being a student are included, making a distinction between those who worked during the regular academic year or during holidays and the rest. The coefficients of our Weibull duration model are reported in Table 3.5 of the Annex. The interpretation of the reported estimates is as follows: a positive (negative) coefficient on a covariate increases (decreases) the hazard rate. In other words, such covariate reduces (increases) the length of the transition period until a school leaver finds the first job at a given moment of time (not having found it before).

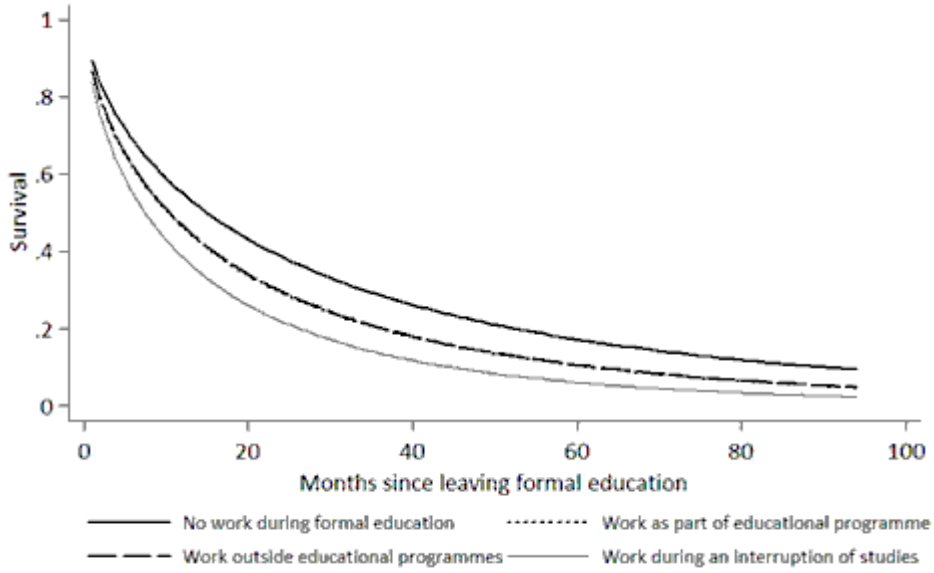
The results show that the length of the transition period is shorter for males than for females in all countries but the Netherlands, where gender differences are small and non significant. Secondly, the results confirm our earlier observation that the length of the average transition period is decreasing in the level of completed education being shortest for those in the H group.

As far as the combination of work and study is concerned, several interesting results stand out:

First, the transition from school to regular work in Spain is shorter for those individuals who worked during the interruptions of their studies and longer for those individuals who did not combine study and work. On the contrary, the work performed *at the same time* as studying, either as part of the educational program or outside education, does not seem to have a significant effect on the length of the transition. It should be noted that the three types of work while studying are not mutually exclusive. Figure 43 therefore presents the survival functions for each of the three types assigning the average value to the two alternative forms of work. Careful inspection of this evidence reveals that the survival functions for those who worked as part of their educational program and those who worked outside it, but during the term period, basically coincide. These curves lie below the survival functions associated with no work and above the survival function associated with work outside the term period.

Figure 43. Weibull regression, survival estimates by type of work during formal education

Spain, 2002-2009



Scarring effects of the business cycle in Spain

There is an extensive literature showing that a long spell of unemployment at the start of working life tends to have persistent negative effects, either in the form of a lasting wage penalty or a relatively poor employment record later in life.[13] In other words, unemployment while young can cause permanent scars and the evidence suggests that the risk of such scars is particularly high for young individuals who enter the labour market during recessions.

Although the evidence about the scarring effect on unemployment is mixed,[14] most available studies tend to agree that lost work experience has sizeable effects on wages, implying that youth unemployment carries with it a significant wage penalty. Moreover, it is important to stress that the scarring effects on wages are not confined to vulnerable groups, like the less educated. For example, some recent studies find evidence of persistent negative effects for university graduates who entered the US labour market during a recession.[15]

13. For a review of the literature on scarring effects, see Bell and Blanchflower (2010) and Scarpetta, Sonnet and Manfredi (2010).

14. The empirical evidence that youth unemployment experience drives unemployment in subsequent years comes essentially form UK. Joblessness leaves permanent scars on people by reducing the probability of employment and increasing the risk of future unemployment. (see, inter alia, Arulampalam (2001) and Gregg (2001) and the references therein). Yet, the evidence for the US is not so conclusive (see Elwood (1982); Kletzer and Fairlie (1999) and Mroz and Savage (2006)).

15. Oyer (2008) and Oyer (2006) look at the effects of completing an MBA or an Economics Ph.D. during a recession and find persistent negative effects for those holding both degrees in the US. Likewise, Kahn (2010) shows that graduating from college in the US during a recession has a negative persistent impact on wages and occupational attainments. In particular, this author finds that the wage differential persists over time both within job and within occupation. Finally, Oreopoulos and von Wachter (2008) analyze the effects of graduating from college in a recession using

The issue of the scarring effects of early spells of unemployment are particularly relevant in a country like Spain with persistently high and very volatile youth unemployment rates. The analysis below (see also Arenas, 2012) presents estimates of the effect of the business cycle conditions at the start of working life on workers´ posterior labour market outcomes in Spain.[16] Specifically, it uses longitudinal matched employer-employee data from the Muestra Continua de Vidas Laborales (MCVL) to analyse the long-term effects for young male workers in Spain of having entered the labour market during the last two recessions (the current slump is excluded since it is too recent).

In line with Kahn (2011), the modelling strategy relies on the estimation of a standard Mincerian earnings equation, using pooled OLS (POLS). The instantaneous effect of the business cycle conditions on the outcome variable and the potential dissipation of these effects over time are captured by the inclusion of the youth unemployment rate at the time of entry plus the interaction of this variable with experience. In particular, the following set of control variables are used in the regression:

- The number of years since the worker entered in the labour market (hereafter potential experience, *exp*) and its square (*exp2*).
- The youth unemployment rate at the moment of starting the working life (*yur*).
- The interaction of the previous two variables.
- Time (year) dummies, the educational level (*DH* is a dummy variable for high skilled workers while the group of less-skilled workers is the reference category), Industries (DMS and DCS are dummies for the manufacturing and construction sectors, respectively; services is the reference category) and interactions between *DH*, *DMS* and *DCS* with potential experience.

Results for the scarring effects in terms of (logged) daily wages are shown in Table 23. It focuses attention on two groups of workers who entered the labour market during the latest two downturns preceding the current one. The first group consists of those workers who started to work during 1984-86 (the first recession, R1) while the second group are those who entered the labour market during 1993-95 (the second recession, R2).

As can be observed, the initial youth unemployment rate has a statistically significant negative impact on wages in both recessions for the reference group of low skilled workers in the service sector. For example, during the R1, the wage loss for the reference group is equal to 0.42 log points. In turn, starting in the construction or manufacturing sector decreased the initial wage even by a startling 0.97 and 1.42 log points, respectively. A similar picture holds for those un-experienced workers who joined the labour market during R2. In this case, labour -market entrants suffered wage penalties of respectively 1.30, 1.17 and 1.31 log points in the service, manufacturing and construction sectors.

Canadian university- employer-employee matched data and find that the strong initial negative effects are dissipated over time.

16. More detailed evidence can be found in Arenas (2012).

Table 23. Estimates of the scarring effect of the business cycle on daily wages in Spain. Dependent variable: Log daily wages.

	(1) R1	(2) R2
yur	-0.4219**	-1.2988**
	(0.2141)	(0.2740)
yur x exp	0.0053***	0.0705***
	(0.0015)	(0.0117)
exp	0.0244***	0.0477***
	(0.0011)	(0.0038)
exp^2	-0.0006***	-0.0028***
	(0.0000)	(0.0002)
DH	-0.0378	0.3441***
	(0.1800)	(0.0401)
DH x yur	1.4354*	0.5533**
	(0.4094)	(0.1111)
DMS	0.6259***	0.1894***
	(0.0059)	(0.0315)
DCS	0.3467*	0.0744***
	(0.1846)	(0.0180)
DMS x yur	-0.9991***	-0.0202
	(0.0133)	(0.0853)
DCS x yur	-0.5504	0.1247***
	(0.4199)	(0.0453)
Number of observations	171370	193331
R2	0.5102	0.4507

Note: Standard errors (in parenthesis) are clustered by entry year; * p<0.1, ** p<0.05, *** p<0.01 .Entry years: R1(1984-1986), R2 (1993-1995). POLS estimated coefficients. Other controls: year dummies.

Source: own estimations.

Furthermore, the estimates on the interaction terms point out that this effect dissipates at the almost negligible rate of 0.005 log points per year for R1 and by 0.07 log points per year for R2. As a result, there is no evidence of any catch-up following the first recession – the full dissipation of the wage penalty for the benchmark group would have taken 80 years – whereas full dissipation would do so after 19 years in the second recession. The differences in the size of the wage penalties and the speed of dissipation may reflect the different nature of the two recessions, but the increase in the speed of dissipation may also respond to relevant changes in the Spanish labour market. Finally, as the coefficients on the interaction between skill and the youth unemployment rate show, high skilled workers seem to be less affected by a bad initial situation than low skilled (1.44 and 0.53 log points respectively).

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Annex: Results of the bivariate probit model for school attendance or training and employment

Table A1. Descriptive statistics for the bivariate probit model for school attendance or training and employment (age 15-29 years, European Labour Force Survey, yearly samples, 2003-2010))

	Spain	France	Germany	UK	Netherlands
Period	2003-2010	2003-2010	2003-2010	2005-2010	2003-2010
N	183266	355685	174104	114188	154027
Rho (++)	-0.632***	-0.517***	-0.332***	-0.237***	-0.226***
Means					
Males	0.511	0.498	0.502	0.484	0.507
Highest level of education or training successfully completed * age					
Low-second. * age 15-19 (+)	0.205	0.253	0.311	0.126	0.316
Low-second. * age 20-24	0.132	0.059	0.088	0.072	0.077
Low-second. * age 25-29	0.123	0.053	0.045	0.068	0.056
Upper-second * age 15-19	0.058	0.097	0.020	0.187	0.067
Upper-second * age 20-24	0.148	0.190	0.246	0.189	0.184
Upper-second * age 25-29	0.091	0.126	0.214	0.153	0.143
Tertiary * age 20-24	0.083	0.090	0.013	0.071	0.044
Tertiary * age 25-29	0.160	0.123	0.061	0.129	0.110
Nationality * years of residence in the country					
Own country (+)	0.789	0.863	0.798	0.719	0.877
EU15, born in declaring country	0.000	0.001	0.008	0.000	0.002
EU15 * years of residence (1-10)	0.011	0.015	0.023	0.048	0.019
EU15, > 10 years of residence	0.001	0.003	0.003	0.003	0.002
Extra-EU15, born in declaring country	0.001	0.001	0.022	0.002	0.004
Extra-EU15 * years of residence (1-10)	0.190	0.104	0.133	0.219	0.091
Extra-EU15, > 10 years of residence	0.008	0.013	0.013	0.009	0.005
Degree of urbanization					
Densely populated area (+)	0.440	0.573	0.491	0.715	0.632
Intermediate populated area	0.244	0.304	0.320	0.154	0.343
Thinly populated area	0.316	0.123	0.189	0.131	0.025
Regional variables					
Cohort size (by age)	0.374	0.393	0.387	0.386	0.397
Unemployment rate	0.123	0.090	0.100	0.059	0.041
Emancipation rate (by age)	0.196	0.435	0.449	0.461	0.416
Temporary employment rates (15-29)	0.531	0.351	0.396	0.092	0.339
Part-time work rates (15-29)	0.151	0.172	0.178	0.258	0.546
Share of employment by industries					
High and medium-high tech. manufacturing	0.041	0.056	0.107	0.049	0.032
Low and medium-low tech. manufacturing	0.114	0.094	0.115	0.071	0.087
Knowledge intensive sectors	0.269	0.406	0.343	0.446	0.435
Less knowledge intensive sectors (+)	0.380	0.326	0.330	0.322	0.322
Construction	0.130	0.083	0.080	0.094	0.065
Other industries	0.066	0.036	0.026	0.019	0.060

Notes: (+) individual of reference; (++) rho: coef. of correlation between the two regression equations (***, **, * significance of the Wald test rho = 0 at 1,5 and 10% respectively).

Source: estimates based on the yearly sub-samples of the European Labour Force Survey (2003-10).

Table A2. Bivariate probit model for school attendance or training and employment (marginal effects on the univariate (marginal) predicted probabilities, pooled regressions))

	In education or training	Employed
Means		
Males	-0.032**	0.089***
Educational attainment * age		
Low-second. * age 20-24	-0.518***	0.675***
Low-second. * age 25-29	-0.679***	0.746***
Upper-second * age 15-19	-0.102	0.152***
Upper-second * age 20-24	-0.261***	0.657***
Upper-second * age 25-29	-0.482***	0.891***
Tertiary * age 20-24	-0.248***	0.733***
Tertiary * age 25-29	-0.402***	1.026***
Nationality * years of residence in the country		
EU15, born in declaring country	-0.074**	0.024
EU15 * years of residence (1-10)	-0.040	-0.001
EU15, > 10 years of residence	0.004	-0.008
Extra-EU15, born in declaring country	-0.066*	-0.076**
Extra-EU15 * years of residence (1-10)	-0.065*	-0.105***
Extra-EU15, > 10 years of residence	-0.006	-0.026***
Degree of urbanization		
Intermediate populated area	0.064***	-0.069***
Thinly populated area	0.091***	-0.092***
Regional variables		
Cohort size (by age)	0.443	1.676**
Unemployment rate	0.078	-0.920***
Emancipation rate (by age)	-0.392***	0.020
Temporary employment rates (15-29)	0.027	-0.072
Part-time work rates (15-29)	0.278***	0.101
Share of employment by industries		
High and medium-high tech. manufacturing	-0.008	0.216*
Low and medium-low tech. manufacturing	0.068	0.063
Knowledge intensive sectors	0.246	-0.001
Construction	-0.347*	0.780
Other industries	0.563**	-0.536**
Countries	0.047***	-0.054
France	0.145***	0.071**
Germany	0.014	0.083***
UK	0.035	0.299***
Netherlands		

Source: estimates based on the yearly sub-samples of the European Labour Force Survey (2003-2010).

Table A3: Bivariate probit model for school attendance or training and employment, country regressions (marginal effects on the univariate predicted probabilities))

	In education or training					Employed				
	Spain	France	Germany	UK	Netherlands	Spain	France	Germany	UK	Netherlands
Males	-0.056***	-0.054***	-0.008	-0.029***	0.016***	0.121***	0.115***	0.036***	0.083***	0.042***
Lower second, 20-24	-0.967 ***	-0.932***	-0.387***	-0.835***	-0.897***	0.517***	0.668***	0.225**	0.865***	-0.029
Lower second, 25-29	-1.166 ***	-1.194***	-0.831***	-1.021***	-1.381***	0.509***	0.799***	0.113	0.949***	0.199
Upper second, 15-19	0.159 ***	0.139***	0.610***	0.123***	-0.188***	-0.064***	0.234***	0.288***	0.181***	0.125***
Upper second, 20-24	-0.439 ***	0.593***	0.445***	0.524***	0.714***	0.247***	0.706***	0.253**	0.980***	0.040
Upper second, 25-29	-0.857 ***	-1.075***	-0.626***	-0.874***	-1.235***	0.533***	1.004***	0.314**	1.183***	0.361
Tertiary educ. , 20-24	-0.571 ***	-0.536***	-0.614***	-0.556***	-0.785***	0.394***	0.743***	0.480***	1.108***	0.088
Tertiary educ., 25-29	-0.788 ***	-0.951***	-0.668***	-0.725***	-1.181***	0.586***	1.121***	0.527***	1.358***	0.456*
EU15, born in declar. country	-0.004	0.012	-0.140***	-0.145*	-0.013	-0.121	0.114	0.055***	-0.012	-0.079***
EU15 * years of resid. (1-10)	-0.028***	0.000	-0.016***	0.021***	0.009**	0.012	0.009	-0.005	-0.014*	-0.023***
EU15, > 10 years of residence	-0.086	-0.059	-0.132***	0.048*	0.045	0.091**	0.050**	0.051***	-0.109***	-0.123***
Extra-EU15, born in declar. c.	-0.169 ***	0.047	-0.153***	0.205***	-0.040*	-0.038	-0.204***	-0.026*	-0.117***	-0.160***
Extra-EU15 * y. resid. (1-10)	-0.048***	0.009***	-0.022***	0.017***	0.013***	0.004	-0.032**	-0.029***	-0.024***	-0.046***
Extra-EU15, > 10 y. of resid.	-0.206***	-0.024*	-0.194***	0.052***	0.036**	-0.014	-0.118***	-0.054**	-0.084***	-0.211***
Intermediate populated area	-0.036 ***	-0.071***	-0.117***	-0.028***	-0.057***	0.033***	0.077***	0.071***	0.051***	0.061***
Thinly populated area	-0.059 ***	-0.109***	-0.150***	-0.035***	-0.066***	0.045***	0.117***	0.111***	0.063***	0.043***
Cohort size (regional)	-2.073***	-0.225	1.160	-0.719*	-0.271	0.041	0.970***	0.079	3.387***	-2.329*
Unemployment rates (reg)	0.303**	-0.901***	-0.209	0.084	0.774*	-0.500**	-1.168***	-0.514***	-2.331***	-0.116
Emancipation rates (reg, age)	0.016	-0.042	-0.108	0.327***	0.506*	0.272***	-0.001	0.306***	-0.134*	-0.491*
Temp. emp. (reg., 15-29)	-0.008	0.142*	0.250***	0.097	1.680***	-0.115	-0.024	-0.220**	-0.554***	0.724
Part-time (reg.,15-29)	0.079	0.226*	0.260***	0.039	-0.083	0.086	-0.076	-0.379***	0.410**	0.159
H & MH tech. manuf. (reg.)	-0.388	0.503**	0.364***	0.726**	7.029*	0.451	0.034	0.292***	0.102	5.762**
L & ML tech. manuf. (reg.)	-0.094	-0.213	-0.136	-0.278	-5.293*	0.317*	0.089	-0.122	-0.077	-3.517
Knowledge intens. serv (reg.)	-0.048	0.391**	0.039	0.476**	4.515*	0.213	-0.223**	0.149	-0.205	4.065*
Construction (reg.)	-0.780*	-0.066*	0.279	0.097	-3.168*	0.748**	-0.257	0.430	0.124	-
Other industries (reg.)	0.659***	0.784**	-0.470	0.788***	-	-0.602**	-0.599***	-0.525	-1.694***	-2.711*

Notes: all regressions include also year dummies; std. err. adjusted for clusters in regions; (reg) stand for regional-level variables.

Source: estimates based on the yearly sub-samples of the European Labour Force Survey (2003-2010).

Table A4: Bivariate probit model for school attendance or training and employment, country regressions (marginal effects on the bivariate predicted probabilities)

	In education or training and employed					In education or training and non-employed				
	Spain	France	Germany	UK	Netherlands	Spain	France	Germany	UK	Netherlands
Males	0.027***	0.034***	0.018***	0.024***	0.044***	-0.083***	-0.088***	-0.026***	-0.053***	-0.028***
Lower second, 20-24	-0.200***	-0.052**	-0.080	-0.092	-0.734***	-0.767***	-0.880***	-0.307***	-0.743***	-0.163
Lower second, 25-29	-0.290***	-0.094***	-0.401***	-0.168**	-0.948***	-0.876***	-1.100***	-0.430***	-0.852***	-0.433**
Upper second, 15-19	0.042***	0.057***	-0.167***	0.172***	-0.056***	0.117***	-0.196***	-0.443***	-0.049***	-0.132***
Upper second, 20-24	-0.086***	0.103***	-0.095	0.168***	-0.537**	-0.353***	-0.696***	-0.349***	-0.692***	-0.177
Upper second, 25-29	-0.146***	0.053*	-0.160	0.047	-0.713***	-0.711***	-1.128***	-0.466***	-0.921***	-0.522**
Tertiary educ. , 20-24	-0.081***	0.143***	-0.050-	0.213***	-0.558**	-0.490***	-0.680***	-0.563***	-0.769***	-0.227
Tertiary educ., 25-29	-0.093***	0.159***	0.052	0.233***	-0.600**	-0.695***	-1.111***	-0.617***	-0.958***	-0.582***
EU15, born in declar. country	-0.053	0.060***	-0.046***	-0.100	-0.068**	0.049	-0.047	-0.095***	-0.045	0.055**
EU15 * years of resid. (1-10)	-0.007**	0.004	-0.012***	0.006***	-0.010***	-0.021***	-0.005	-0.004	0.015**	0.019***
EU15, > 10 years of residence	0.001	0.000	-0.043**	-0.025	-0.055**	-0.087**	-0.060*	-0.089***	0.073***	0.100***
Extra-EU15, born in declar. c.	-0.090***	-0.080***	-0.103***	0.072***	-0.150***	-0.079*	0.126***	-0.050***	0.133***	0.110***
Extra-EU15 * y. resid. (1-10)	-0.019***	-0.012***	-0.030***	-0.001	-0.024***	-0.029***	0.043**	-0.050***	0.062***	0.164***
Extra-EU15, > 10 y. of resid.	-0.096***	-0.067***	-0.144***	-0.010	-0.128***	-0.110***	0.021***	0.008***	0.018***	0.037***
Intermediate populated area	-.001	0.009***	-0.022***	0.008	0.000	-0.034***	-0.079***	-0.094***	-0.036***	-0.057***
Thinly populated area	-.006	0.013***	-0.017***	0.010**	-0.020**	-0.053***	-0.122***	-0.134***	-0.045***	-0.045***
Cohort size (regional)	-0.884***	0.379***	0.707	1.283***	-1.939	-1.189**	-0.604**	0.453	-2.002***	1.668
Unemployment rates (reg)	-0.317***	-0.928***	-0.460***	-1.148***	0.889**	0.078	0.026	0.212	1.232***	-1.114
Emancipation rates (reg, age)	0.123***	-0.017	0.129**	0.142**	0.038	-0.107	-0.024	-0.236***	0.185***	0.468**
Temp. emp. (reg., 15-29)	-0.052**	0.045	0.005	-0.223	1.869***	0.045	0.096*	0.245***	0.320***	-0.189
Part-time (reg.,15-29)	0.071	0.054	-0.088	0.236***	0.051	0.008	0.172*	0.348***	-0.198	-0.135
H & MH tech. manuf. (reg.)	0.023	0.219**	0.388***	0.520***	9.843***	-0.411	0.284*	-0.024	0.206	-2.814
L & ML tech. manuf. (reg.)	0.094	-0.043	-0.153	-0.218	-6.804**	-0.188	-0.170	0.017	-0.059	1.511
Knowledge intens. serv (reg.)	0.070	0.050	0.115	0.201*	6.592***	-0.118	0.342***	-0.076	0.275	-2.077
Construction (reg.)	-0.021	-0.151	0.425*	0.126-	-	-0.760**	0.085	-0.146	-0.030	-
Other industries (reg.)	0.030	0.026	-0.593	0.366	-4.521***	0.629***	0.758***	0.122	1.154***	1.353

Notes: all regressions include also year dummies; std. err. adjusted for clusters in regions.

Source: estimates based on the yearly sub-samples of the European Labour Force Survey (2003-10).

Table A4 (continued)

	Not in education or training and employed					Not in education or training and non-employed				
	Spain	France	Germany	UK	Netherlands	Spain	France	Germany	UK	Netherlands
Males	0.094***	0.081***	0.018***	0.059***	-0.002	-0.038***	-0.027***	-0.010***	-0.030***	-0.014***
Lower second, 20-24	-0.717***	0.720***	0.305***	0.95***	0.70***	0.249***	0.212***	0.082	-0.122***	0.193***
Lower second, 25-29	-0.799***	0.893***	0.514***	1.117***	1.148***	0.367***	0.301***	0.317***	-0.096*	0.233***
Upper second, 15-19	-0.106***	0.177***	0.456***	0.008	0.182***	0.053***	-0.038***	0.155***	-0.131***	0.006***
Upper second, 20-24	-0.333***	0.603***	0.348***	0.812***	0.577***	0.106***	-0.010	0.097	-0.288***	0.137*
Upper second, 25-29	0.679***	0.951***	0.474***	1.136***	1.074***	-0.179***	-0.124***	-0.152*	-0.262***	-0.161*
Tertiary educ. , 20-24	0.474***	0.599***	0.530***	0.895***	0.646***	0.097***	-0.063**	0.083	-0.339***	0.139*
Tertiary educ., 25-29	0.679***	0.962***	0.579***	1.125***	1.056***	0.109***	-0.011	0.089	-0.400***	0.125
EU15, born in declar. country	-0.067	0.054	0.101***	0.088	-0.010	0.072	-0.066***	0.040***	0.057	0.023**
EU15 * years of resid. (1-10)	0.019***	0.005	0.007**	-0.021***	-0.013***	0.009**	-0.005	0.009***	-0.001	0.004***
EU15, > 10 years of residence	0.089**	0.050*	0.094***	-0.083***	-0.068***	-0.004	0.010	0.038***	0.036**	0.023***
Extra-EU15, born in declar. c.	0.052	-0.124***	0.077***	-0.189***	-0.010	0.118***	0.077**	0.076***	-0.016	0.050***
Extra-EU15 * y. resid. (1-10)	0.023***	-0.020***	0.002	-0.022***	-0.022***	0.025***	0.011***	0.020***	0.005***	0.009***
Extra-EU15, > 10 y. of resid.	0.081***	-0.052***	0.090***	-0.074***	-0.083***	0.125***	0.075***	0.105***	0.022	0.047***
Intermediate populated area	0.034***	0.068***	0.093***	0.043***	0.061***	0.001	0.003	0.024***	-0.015***	-0.004***
Thinly populated area	0.052***	0.104***	0.127***	0.053***	0.063***	0.007	0.004	0.023***	-0.018***	0.002
Cohort size (regional)	0.925*	0.592**	-0.628	2.103***	-0.390	1.148***	-0.366***	-0.532	-1.384***	0.661
Unemployment rates (reg)	-0.183	-0.240	-0.054	-1.183***	-0.773	0.422***	1.142***	0.303***	1.099***	-2.001**
Emancipation rates (reg, age)	0.149**	0.016	0.177***	-0.276***	-0.529**	-0.165***	0.025	-0.069*	-0.052	0.023
Temp. emp. (reg., 15-29)	-0.063	-0.069	-0.225***	-0.331**	-1.145**	0.070**	-0.072*	-0.025	0.234**	-0.535***
Part-time (reg.,15-29)	0.015	-0.130	-0.291***	0.174	0.107	-0.094	-0.096	0.031	-0.212***	-0.024
H & MH tech. manuf. (reg.)	0.427	-0.185	-0.096	-0.419	-4.081	-0.040	-0.318**	-0.268***	-0.308	-2.948***
L & ML tech. manuf. (reg.)	0.223	0.131	0.031	0.142	3.287	-0.128	0.081	0.105	0.136	2.006**
Knowledge intens. serv (reg.)	0.143	-0.273***	0.035	-0.406*	-2.527	-0.095	-0.119	-0.073	-0.070	-1.988***
Construction (reg.)	0.769**	-0.106	0.005	-0.002	-	0.012	0.172	-0.284*	-0.094	-
Other industries (reg.)	-0.632***	-0.625***	0.068	-1.328***	1.810	-0.027	-0.159	0.403*	0.540**	1.358***

Notes: all regressions include also year dummies; std. err. adjusted for clusters in regions.

Source: estimates based on the yearly sub-samples of the European Labour Force Survey (2003-2010).

Table A5: Duration from school to a first regular job: Weibull survival regression (estimated coefficients)

	Spain	France	UK	Netherlands
Males	0.267***	0.093*	0.191***	0.053
Educational level:				
Upper second. Education (M)	0.440***	0.634***	0.913***	0.633***
Tertiary education (H)	0.641***	1.045***	1.013***	0.695***
Work while in formal education:				
As part of educational program.	0.107	0.256***	0.809***	0.145***
Outside educational programmes	0.125	0.103	0.603***	0.023
During an interruption of studies	0.342**	0.052	0.535***	0.377***
No work	-0.497***	-0.416***	0.233***	0.256***
Nationality:				
Nationality EU15, born in the declaring country	0.436	-0.333	-	0.326
Nationality EU15, born in another country	-0.532	0.751*	-0.057	-0.605*
Nationality ex-EU15, born in the declaring country	-0.363**	0.693***	1.015***	-0.288
Nationality ex-EU15, born in another country	-0.900***	-0.625*	-0.534	-0.003
Year leaving formal education:				
2003	0.200*	0.128	0.349**	0.137
2004	0.347***	0.108	0.355**	0.295***
2005	0.465***	-0.006	0.148	0.371***
2006	0.574***	0.179*	0.213	0.417***
2007	0.441***	0.177**	0.337**	0.574***
2008	0.477***	0.070	0.402***	0.641***
2009	0.351***	-0.566***	0.849***	0.725***
cons	-2.645***	-2.591***	-3.033***	-2.134***
N	5,292	3,590	1,539	6,061

(***), (**), (*) significant at 1,5 and 5%, respectively.

Source: 2009 EU LFS ad hoc module.

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