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The employability of young graduates in Europe

Analysis of the ET2020 benchmark

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Abstract

The Education Council has adopted in May 2012 a new benchmark on the employability of graduates from education and training that aims at measuring the contribution of education and training to the transition from education to employment. This new benchmark is defined as the share of young people employed among the 20-34 years old, who graduated 1, 2 or 3 years before, and are not currently in education or training. It is computed using the annual Labour Force Survey (LFS) microdata.

This report aims at analyzing the determinants of the employability of the individuals targeted by the benchmark. It starts with a short presentation of the benchmark indicator. It then estimates the probability of being employed for the 20-34 years old cohort that graduated one to three years before and is not currently enrolled in any further education or training activity, controlling for individual characteristics and institutional factors. In addition to the annual LFS data, we also make use of the LFS ad-hoc module of 2009 to identify more specifically, at country level, the role played by the orientation of the degree and the acquisition of a professional experience during the time of studies. Among those who are employed, we then analyze the nature of that employment by estimating the probability of having a permanent vs. temporary contract and the probability of working full-time vs. part-time.

Regarding the probability of being employed, we find that the contribution of education attainment is significant and constant, even after controlling for labour market contextual variables. Whereas education attainment is an important determinant for working full-time, it does not play a role in explaining the probability of having a permanent contract. We find that, overall, having a vocational oriented degree and/or working during studies does not affect significantly the probability of having a job. On the other hand, for a few countries, these two factors are important and our analysis shows that among the two, working during studies proves to be a more significant factor than the sole orientation of the degree.

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1 Introduction

On May 11, 2012, the Education Council adopted a new benchmark on the employability of graduates from education and training that aims at measuring the contribution of education and training to the transition from education to employment (Council of the European Union, 2012). This new benchmark is defined as the share of young people employed among the 20-34 years old, who graduated one, two or three years before, and are not currently in education or training. It is computed using the annual Labour Force Survey (LFS) microdata.

This report aims at describing and presenting this benchmark indicator and to carry out an econometric analysis to study the determinants to the employability of the individuals targeted by this benchmark. More specifically it attempts to identify the contribution of the individuals' education attainment after controlling for specific labour market settings. Furthermore, we look at specific potential determinants of employability such as the orientation of the degree (vocational vs mainstream) and the professional experience during studies. The methodology used is the probit model approach, in which the probability of being employed is modeled as a function of several individual observable characteristics and country's institutional factors. Subsequently, among those who are employed, we analyze the "nature" of that employment by estimating the probability of having a permanent vs. temporary contract and the probability of working full-time vs. part-time.

In order to take better into account the role played by the economic crisis on the changes in probability of employment for young graduates, we estimate our model separately for the pre-crisis period (2004-2007) and the crisis period (starting in 2008). We run the analysis first for the EU27 pooled sample (as in the benchmark indicator), then by country. The estimated probability of employment can be interpreted as an estimated employment rate after controlling for individual characteristics and institutional factors. For completeness, this exercise is also re-run stratifying by country and gender, and by

country and field of the degree, to obtain estimated probabilities for each of these sub-samples.

Regarding the probability of being employed, we find that the contribution of education attainment is significant and constant, even after controlling for labour market contextual variables. Whereas education attainment is an important determinant for working full-time, it does not play a role in explaining the probability of having a permanent contract. We find that, overall, having a vocational oriented degree and/or working during studies does not affect significantly the probability of having a job. On the other hand, for a few countries, these two factors are important and our analysis shows that among the two, working during studies proves to be a more significant factor than the sole orientation of the degree.

The report proceeds as follows. Section 2 discusses the concept of employability, mentions the steps taken until the final approval by the European Council of the education for employability benchmark and presents a detailed description of the indicator underpinning the benchmark. In Section 3 we present the figures of this benchmark indicator for several years, both at the EU27 and country levels. We analyze its trends, its disaggregation by level of education and by gender and, finally, we compare its performance with other employment rates indicators. The data from the LFS core survey from 2004 to 2010 and the LFS ad-hoc module of 2009, as well as methodology used in this report are discussed in Section 4. The results of the estimations of the determinants of the employability of new graduates are presented in section 5. The results of the analysis of the nature of the employability of new graduates employed are then reported in section 6. Section 7 synthesizes the results and concludes with recommendations for further research.

2 The approval of the benchmark on the employability of graduates from education and training

On May 25, 2011, the Commission unveiled plans for new European targets on the employability and the mobility of students to stimulate and guide education reforms in Europe. The two new benchmarks were formally adopted by the Council in November 2011 and May 2012 respectively. They complete a set of joint targets which EU countries have pledged to achieve by 2020, including reducing early school leaving, increasing the share of higher education graduates, and getting more adults to participate in lifelong learning. More specifically, the new benchmark on the employability of young graduates will monitor the success rate of young people with different education levels in the labour market in the years after graduation.

As depicted in the European Commission's Staff Working Report (SEC(2011) 670), the development of such benchmarks was motivated by a common political and scientific agreement that education and training lie at the heart of the EU's Europe 2020 strategy to exit the recession and establish the foundations for future knowledge-based growth and social cohesion. Helping young Europeans to acquire the knowledge, skills, experience and intercultural competences needed to succeed in the EU labour market is more essential than ever as the number of young jobseekers soars and youth unemployment stands at 21.4% (15-24 year olds in 2011). Ensuring that young people leave education with the best possible support to get their first job is critical, especially when the recession risks turning the inevitably difficult task of getting established on the labour market into something more long-term and structural. The potential cost of losing the "crisis" generation is very high both at individual and societal level. The *Education and Training 2020 (ET2020)* states that an important objective of monitoring employability is meeting labour market "challenges" in "changing circumstances". Such challenges can be described in a long-term (demographical change, global competition, migration, technological change) or in a short or medium-term perspective (e.g. the current economic crisis).

Employability is a complex and multi-faceted concept. The difficulty in applying a straightforward definition has been recognized by various studies (e.g., Gazier, 1999; McQuaid and Lindsay, 2005)[1]. McQuaid and Lindsay (2005) highlight the existence of two alternative perspectives in the employability debate. One focuses only on the individual's characteristics and skills, referring to the individual potential to obtain a job. The other perspective takes into account also external factors (e.g. labour market institutions, socio-economic status) that influence a person's probability of getting into a job, of moving between jobs or of improving his/her job. De Grip at al. (2004) call these factors 'effectuation conditions', i.e. the conditions under which workers can effectuate their employability.

There are a number of additional aspects considered in the literature such as the time lag between leaving education and employment (e.g., Boeteng et al., 2011), the degree of skills match between one's educational background and his/her occupation, as well as the type of contractual arrangement (full-time vs. part-time; permanent vs. temporary) (Arjona Peres et al., 2010a).

Any definition based only upon individual characteristics and skills would disregard the potential influence of the institutional settings that support personally or collectively the transition from school to work, and help the employed workers to stay in their job and the non-employed workers to find a job.

Because the interest of the Commission was in identifying ways in which policies impact and can further enhance employability, the definition given by Cedefop (2008) was retained as reference: "Employability is the combination of factors which enable individuals to progress towards or get into employment, to stay in employment and to progress during their career."

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[1] See Arjona Peres et al. (2010a) for a detailed overview of the most common definitions of employability.

According to this definition, a successful realization of individuals at each stage of their working life would require the presence of the right combination of employability factors. Education and training– formal, non-formal and informal - is a key determinant of a person's human capital, both initially and, through lifelong learning, in its updating and improvement over the working life. Good education and training should also stimulate motivation, build the skills important for the workplace and facilitate job search. Still, many employability factors lie beyond the scope of education and training policies. At the individual level, socio-economic determinants and personal attributes play an important role; while at the macro level, labour market regulations, structure of the economy and the overall economic situation constitute important employability conditions (Arjona et al., 2010a and 2010b; European Commission, 2011). Hence, education's support for employability can be seen in three distinct phases:

- "Preparation for employment" within the continuum of formal education and training. Irrespective of the educational pathway chosen and the level of qualification attained, all young people should leave their initial education equipped with key competences and the necessary motivation and understanding of the labour market to allow them to progress in their future careers, all the while bearing in mind that preparation for employment is not the only purpose of formal education.

- "Transition from education to employment" refers to the end of the "preparation for employment" phase. During this phase, the contribution of education and training systems could, for instance, occur through career guidance and counseling; and through the development of qualification frameworks which are transparent, comparable and understandable to potential employers.

- "Stay in employment and progress in career": this phase refers to the capacity of education and training systems to update and upgrade continuously the knowledge and skills of workers. It implies an openness and accessibility of education and training systems to all adult learners.

Of these three phases, two were already monitored by an extensive framework. "Preparation for employment" is covered by four of the five benchmarks under the

ET2020 and "Stay in employment and progress in career" is covered by the fifth ET2020 benchmark on adult participation in lifelong learning. The phase relating to the "transition from education to work" was not yet addressed. This is where a young person's employability will depend most directly on the quality of what he/she has learned in his/her formal education and its relevance for the labour market. It is therefore the phase upon which the new benchmark on the employability of young graduates has focused (European Council, 2012; Garrouste, 2011; Arjona et al., 2010a and 2010b).

Finally, the proposed benchmark indicator on the employability of graduates from education and training was defined as the share of employed individuals among the population aged 20-34 years old that graduated one, two or three years before and that is not currently enrolled in E&T (Garrouste, 2011; Boeteng et al., 2011). It is worthwhile mentioning and explaining in detail the cohort of individuals that are targeted by this benchmark:

- The age bounds were selected in order to be aligned with other Europe 2020 targets. In particular, 20 years is also the lower bound of the headline target of the Europe 2020 strategy (20-64) and 34 years is the upper bound of the ET 2020 benchmark on tertiary attainment (30-34).
- Only those graduating from ISCED levels 3-6 are considered in the benchmark indicator. The group of graduates with less than upper secondary education (ISCED 0-2 and ISCED 3C short) was excluded for two reasons: i) given the few number of individuals with 20 to 34 years old that graduated from such low levels of education in the last three years of reference; ii) given that there is already a benchmark targeting the 18-24 years old early school leavers from education and training.
- Only those graduating one to three years before the reference year are included. The minimum of one year was chosen to avoid the possible impact of short unemployment periods which are common in the early months of employment searching. The maximum of three years was chosen as this was considered to be the time range in which educational attainment contributes the most to the probability of finding a job.

- Individuals currently engaged in education are also ignored as the fact that they are upgrading their skills could impact their employability.

An exhaustive forecast exercise was developed by CRELL, in which four scenarios were considered (most pessimistic, pessimistic, optimistic and most optimistic) and four forecasting methods were used (one stochastic method, namely Monte Carlo simulations and three deterministic: linear trend analysis, compound annual growth rate and conditional trend analysis). This exercise pointed to a plausible range of variation of the indicator by 2020 of between 3.8 and 7.7 percentage points (Garrouste, 2011).

Finally, the adopted employability benchmark was formulated as follows (European Council, 2012): "By 2020, the share of employed graduates (20-34 year olds) having left education and training no more than three years before the reference year should be at least 82%".

3 The education for employability indicator

Table A.1 in the annex presents the trend series data from 2004 to 2011 of this new benchmarked indicator both at the European and country levels. Tables A.2 and A.3 present the same indicator for females and males, respectively.

Figure 1 plots the employability indicator between 2006 and 2011, together with: i) the EU2020 employment rate indicator, defined as the employment rate of the 20 to 64 years old; and ii) the employment rate of the 35 to 39 years old, which is the age group following the one in the employability indicator.

Figure 1 Comparison between the employability indicator and the employment rate of the 35-39 years old and of the 20-64 years old
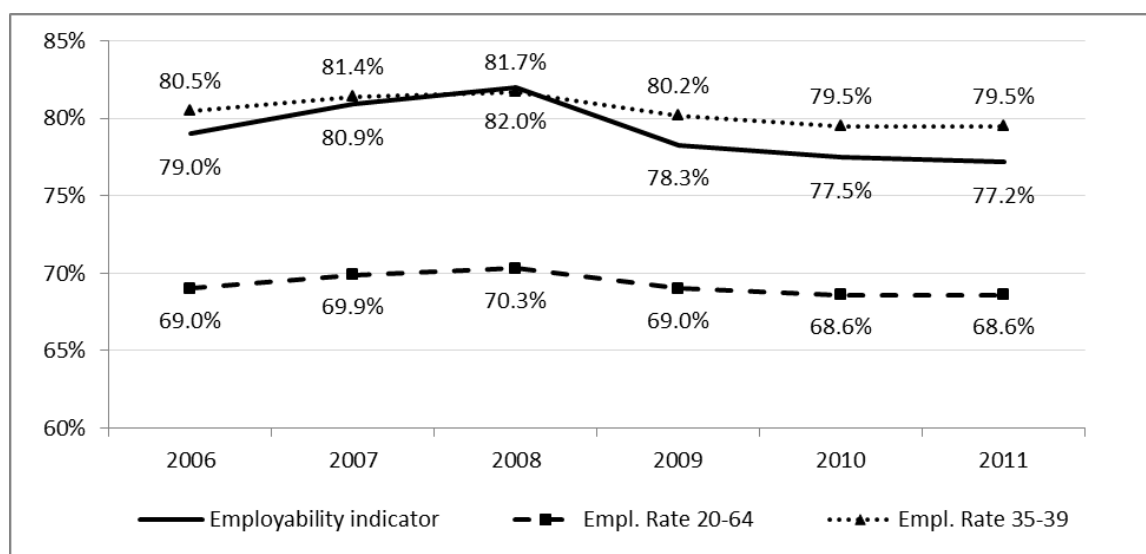
Source : Eurostat, EU LFS microdata (extraction date : June 13, 2012)

We can see that the employability indicator is definitely higher than the 20-64 employment rate, but, except in 2008, is lower than the 35-39 one. The main message of the Figure is that since 2008 the decrease in the employment rates was significantly more pronounced for the employability indicator, that dropped by 4.5 percentage points compared with 1.7 and 2.2 percentage points for the 20-64 and 35-39 indicators,

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respectively. This comparison makes clear that the cohort targeted by the employability rate suffers a higher vulnerability from the economic situation. In Figure 2 we plot the evolution of the employability indicator and its disaggregation by levels of education, ISCED 3-4 and ISCED 5-6.

Figure 2 The employability indicator and its disaggregation by level of education, 2006-2011
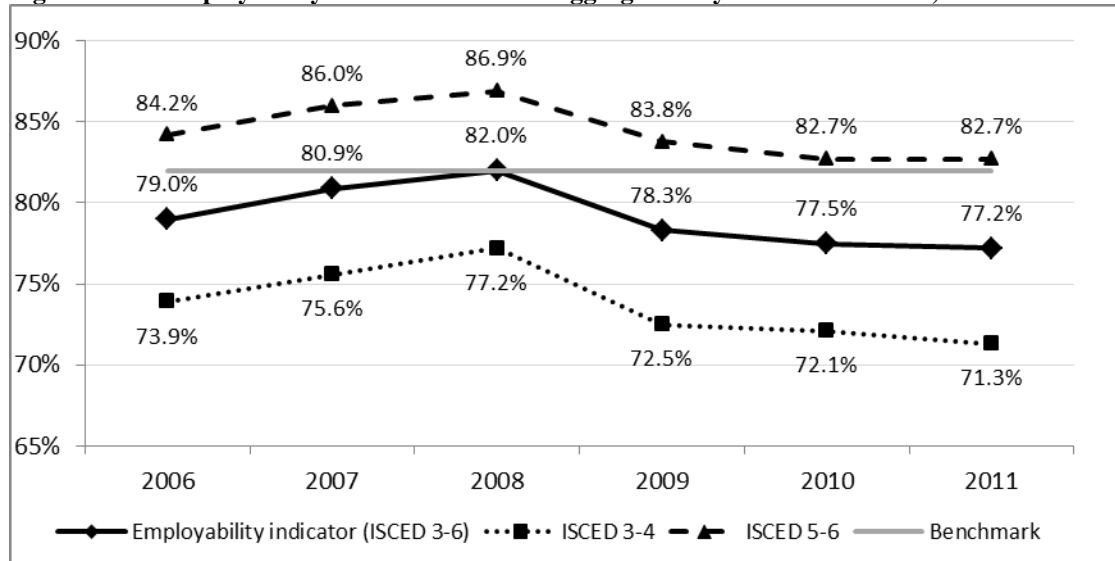
Source : Eurostat, EU LFS microdata (extraction date : June 13, 2012)

The Figure shows that the employability indicator has increased until 2008, year in which it reaches exactly 82%, the target level of the benchmark indicator for 2020. The decrease in the indicator was particularly strong between 2008 and 2009, of 3.7 percentage points, and dropped one further percentage point from 2009 to 2011.

The Figure also unveils that, as expected, the indicator is significantly higher for the young graduates from higher levels of education (ISCED 5-6). Even though the employment rate for both educational attainment levels show the same overall evolution of the aggregated indicator we can see that the oscillation of the medium educated graduates (ISCED 3-4) is stronger. In particular, between 2008 and 2010, the employment rate decreased by 5.1 versus 4.2 p.p. for ISCED 3-4 and ISCED 5-6, respectively, compared to an aggregate drop of 4.5 p.p. in the targeted indicator. Furthermore, between 2010 and 2011 the higher educated cohort was able to maintain

their employability rate while the medium educated cohort still experienced a further decrease of around one percentage point.

Analysing the benchmarked indicator at the country level between 2006 and 2011, it is clear that there are important cross country variations. The Netherlands, Malta, Luxembourg and Austria have always been the best performing countries since 2006, whereas Italy and Greece have always been among the worst performers. Some of the countries present the same position in the performance ranking even when disaggregating by level of education. For instance, the Netherlands and Malta regularly appear among the best performers in both educational levels, while, Greece appears as one of the worst performers. Italy consistently shows up as one of the worst performers for the highly educated cohort and, from 2007 on, for the ISCED 3-4 graduates too. Furthermore, from 2007 on, Spain presents one of the lowest employability indicator rates, but only for the highly educated group.

In terms of the negative evolution of the indicator, it is interesting to distinguish between two periods: between 2008 and 2010; and between 2010 and 2011. In the first period, all countries except Luxembourg reveal a drop in their employability rate. This was especially the case in Bulgaria, Estonia, Spain, Ireland, Latvia, Romania and Slovakia with a decrease of more than 10 percentage points (p.p.). In the second period however the variation in the employability indicator rate is more heterogeneous: while the indicator increased in France, Slovakia, Sweden, Germany, Austria and, especially, in Latvia and in Estonia (8.1 and 10.8 p.p., respectively); it decreased by more than 4 p.p. in Portugal, Slovenia, Lithuania, Spain, Cyprus and especially in Greece and Bulgaria (8.3 and 11.2 p.p., respectively). This heterogeneity led to a drop of 0.3 p.p. of the indicator at the European level, between 2010 and 2011.

Figure 3 shows the benchmark indicator disaggregation by gender between 2006 and 2011. It presents also the gender gap for each year, defined as the difference between the male and female employment rates.

Figure 3 The employability indicator for females and males and the correspondent gender gap, 2006-2011
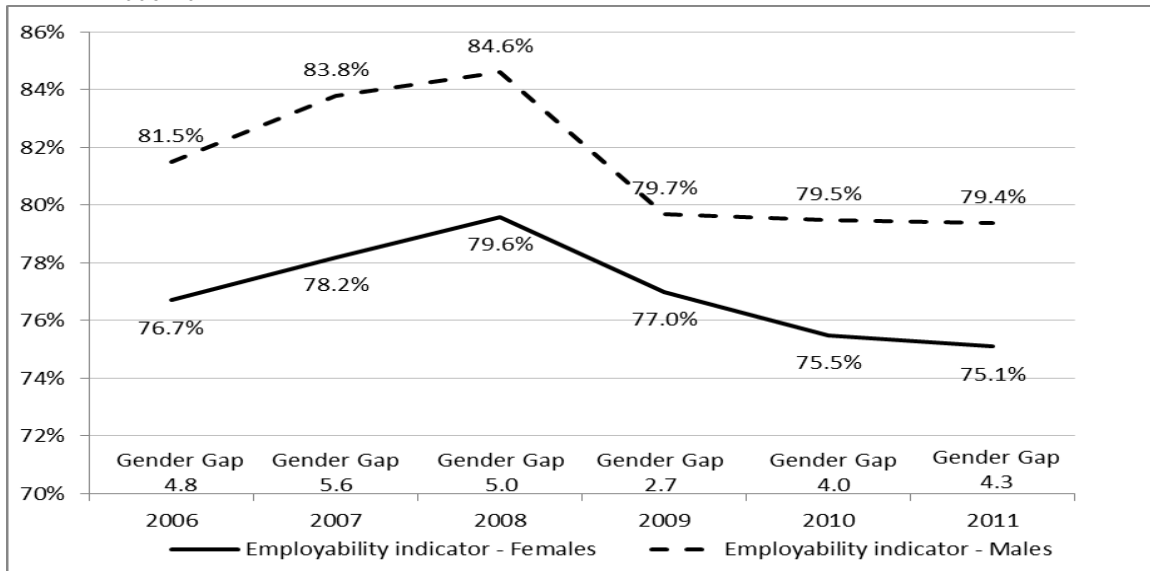
The Figure shows that the gender gap has been always positive, indicating that males have higher levels of the employability indicator. However, the gender gap almost halved between 2008 and 2009: even though the indicator decreased for both gender groups, it decreased almost two times more for the males (4.9 p.p. vs. 2.6 p.p. for females). It is interesting to see that after this almost 5 p.p. drop, the indicator for the male group has remained fairly constant, decreasing only by 0.3 p.p. between 2009 and 2011. The females instead continued to experience a significant drop, with a further drop of 2 p.p. from 2009 to 2001.

In our opinion, this descriptive analysis of the employability benchmarked indicator suggests two important issues that should be explored in more details when trying to identify the determinants of employability. One is the sharp difference of the benchmark indicator's performance before and after 2008, which leads to the decision to divide the sample in two periods, namely the pre-crisis period (2004-2007) and the crisis period (starting in 2008). The second is the gender dimension that lead us to use the gender as a control in all our estimations and to compute the estimated probabilities by gender, both at the EU27 and country levels. Data and estimation approach

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In this report we use two sources of data:

1) The LFS annual microdata between 2004 and 2010 (extraction date February 15, 2012). We generate two pooled sub-samples according to the year of the survey: the pre-crisis (2004-2007) and crisis (2008-2010) samples.

1) The microdata from the LFS ad-hoc module of 2009 that focus on the transition from education to work. This dataset allows to study in more detail issues related with the orientation of the degree and the combination of studies and work (see section 5.2).

For each source of data used and for each year between 2004 and 2010, we focus on the respondents that are targeted by the employability indicator: aged 20 to 34 years old, who graduated 1 to 3 years before the time of the survey from upper secondary education or from tertiary education and who were not enrolled in any further education or training activity in the four weeks preceding the interview.

Our methodological approach is to use a probit[2] model to estimate the probability of being employed for this cohort of individuals (i.e. the employability indicator), controlling for the following baseline set of explanatory variables:

- Observed individual characteristics $\mathbf{X}_i$: the exact age of the respondent; the gender of the respondent; his highest level of education (medium (ISCED 3-4) or high (ISCED 5-6)); whether the individual graduated one, two or three years before the survey year. In a second stage, to these variables, a set of dummy variables is added to control for the field of the degree to see whether the nature of the skills and knowledge acquired explains variation in employability.

- Country fixed effects, α_C, and survey-year fixed effects, γ_y, and the interaction between the two $\alpha_C * \gamma_y$, in order to capture the context in which the individual

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[2] We choose the probit approach rather than the logit approach because the actual event is more a proportion than a binary outcome and because there is a strong belief that the underlying distribution is normal (Wooldridge, 2004).

was surveyed. This set of variables controls for factors or occurrences that were common to all individuals in the same country and year. In this sense, they can be interpreted as a proxy of institutional and contextual factors.

The baseline model to be estimated is therefore:

$$\Pr(Y_i = 1 \mid X_i) = \Phi\left(X_i^{'}\beta + \alpha_c + \gamma_y + \alpha_c * \gamma_y\right) \tag{1}$$

where i is the index for individuals, c the index for countries and y is the index for years. Pr denotes probability, and Φ is the Cumulative Distribution Function (CDF) of the standard normal distribution. Y_i is the dummy variable indicating the employment status of the respondent (equals one if employed and zero if either unemployed or inactive). The parameters of the model are estimated by maximum likelihood.

Because the institutional factors, proxied by the country fixed effects, are estimated at a higher level of aggregation than the dependent variable, we adjust the estimated standard errors for the clustering effects induced by the aggregation at country level. All estimations are computed applying a weighting factor equal to the inverse of the individual inclusion probabilities.

Equation (1) is our baseline model and the one used to estimate the probability of being employed, which results are presented in section 5.1. The difference in the succeeding specifications of this model are:

- Either the inclusion of more explanatory variables, which we are of particular interest. In particular we add: labor market contextualizing variables (see section 5.1), whether worked during studies and/or the orientation of the degree (see section 5.2);
- or, in the analysis of the nature of the job for those employed (see section 6), replacing the probability of being employed (dependent variable in (1)) by (i) the

probability of having a temporary vs permanent contract, and then by (ii) the probability of working full-time vs part-time.

In each section we give details on the methodology used, the dependent variable and the set of explanatory variables included.

4 Determinants of the employability of new graduates

This section presents the results of the analysis of the determinants of the employability of the 20-34 years old who graduated no more than three years before. It starts by reporting the estimates of the probability of being employed (section 5.1) for all pooled countries, then by country, by country and gender and by country and field of education. This part of the analysis makes use of the LFS 2004-2010 microdata. It then presents the results of an analysis of the probability of being employed controlling for the orientation of the degree and for the acquisition of a work experience during studies (section 5.2). That second part makes use of the microdata from the LFS ad-hoc survey of 2009.

4.1 Probability of being employed 1-3 years after graduation for the 20-34 years old not currently in further education or training

In this section we start by presenting the results of equation (1):

$$\Pr\!\left(Y_i = 1 \mid X_i\right) = \Phi\!\left(X_i'\beta + \alpha_c + \gamma_y + \alpha_c * \gamma_y\right).$$

where $\mathbf{X}_i$ is the baseline set of individual explanatory variables and the other parameters represent country and year of survey fixed effects. This model allows assessing the contribution of the level of education attained by an individual to his/her probability of being employed. This is our proxy for the contribution of the Education and Training system to the employability of individuals.

After these first results we further control for labour market related variables since, as discussed above, employability may also be affected by factors external to the Education and Training systems, namely factors related with the labour market context. This inclusion will allow to conclude whether the role played by the individual educational

attainment is significantly altered. In particular, we control for the following two labour market related variables:

- Job Vacancy Rate (JVR)

  The JVR provides information on unmet labour demand that is used for business cycle analysis and assessing mismatches in labour markets. A job vacancy is defined as a paid post that is newly created, unoccupied, or about to become vacant: (a) for which the employer is taking active steps and is prepared to take further steps to find a suitable candidate from outside the enterprise concerned; and (b) which the employer intends to fill either immediately or within a specific period of time. A vacant post that is only open to internal candidates is not treated as a 'job vacancy'. The job vacancy rate (JVR) measures the proportion of total posts that are vacant, according to the definition of job vacancy above, expressed as a percentage as follows:

  $$JVR = \left(\frac{\text{Number of job vacancies}}{\text{Number of occupied posts} + \text{Number of job vacancies}} \right) * 100$$

  The JVR is collected by Eurostat on a quarterly basis and aggregated yearly. The rational to include it as an explanatory variable in the model is that it indicates the extent of labour market saturation (if the JVR is very small), which could significantly determine the low employment rate of the young graduates in certain countries.

- The regional youth unemployment rate

  The regional youth unemployment rate is the number of people aged 15-24 years old unemployed as a percentage of the youth labour force by NUTS2 region. The youth labour force is the total number of 15-24 years old either employed or unemployed. It is derived from the LFS survey on a quarterly basis and aggregated yearly. This indicator enables us to control for potential within-country disparities in the 20-34 years old employability due to regional factors affecting the insertion of the youngest cohort.

These two labour market controls, and the interaction between the two, are captured by vector **Z**. The probit model to be estimated in this case is:

$$\Pr\left(Y_i = 1 \mid X_i, Z_{cr}\right) = \Phi\left(X_i'\beta + Z_{cr}'\beta_{cr} + \gamma_y + \mu_r + \alpha_c * \gamma_y\right) \qquad (2)$$

where i is the index for individuals, cr the index for region r in country c, and y is the index for years.

4.1.1 Results for the pooled sample

Table 1 presents the estimation results correspondent to equation (1) on the pooled sample[3]. It reveals that, *ceteris paribus*:

- Having graduated at a medium education level (i.e. ISCED 3 or 4) decreases the probability of being employed 1-3 years after when compared to having graduated at a higher educational level (i.e. ISCED 5 or 6). Furthermore, the role played by the educational attainment did not change during the crisis compared to the pre-crisis period.
- The probability of employment increases with the time since graduation, meaning that the transition from education to employment is particular difficult immediately after graduation.
- Young female graduates are less likely to be employed in the three years following their graduation than their male peers. After the crisis this female disadvantage decreases slightly, revealing that men were the most negatively affected by the crisis.
- Age is positively related with the probability of being employed.

Each of these results still holds after controlling for the field of education, meaning that the role played by the level of the degree and by the gender is not absorbed by the field of the degree. Interestingly, when controlling for the field of the degree the educational

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[3] The descriptive statistics for the sample used in the estimations presented in this table are presented in Table B.1 in Annex B.

attainment coefficient decreases. This means that the field of education plays an important role in employability, and that, in the former specification, the education attainment was capturing the effect of the field of education.

Table 1 Probability of being employed, without and with controls for the field of study, before (2004-2007) and during (2008-2010) the crisis

VARIABLES	Pre-crisis 2004-2007	Crisis 2008-2010	Pre-crisis 2004-2007	Crisis 2008-2010
	Basic	Basic	Add field	Add field
age	0.02**	0.02***	0.02*	0.02**
	(0.007)	(0.006)	(0.008)	(0.007)
female	-0.21***	-0.18***	-0.18***	-0.18***
	(0.025)	(0.029)	(0.018)	(0.034)
Medium education attainment	-0.38***	-0.38***	-0.34***	-0.35***
	(0.046)	(0.028)	(0.036)	(0.039)
Graduation t-1	-0.25***	-0.22***	-0.26***	-0.24***
	(0.032)	(0.032)	(0.034)	(0.034)
Graduation t-2	-0.08***	-0.07***	-0.08***	-0.07***
	(0.014)	(0.012)	(0.015)	(0.014)
Constant	1.34***	1.14***	1.38***	1.26***
	(0.150)	(0.130)	(0.198)	(0.184)
Observations	209,003	152,577	195,066	149,073
Pseudo R-squared	0.063	0.066	0.067	0.0738

Notes: Robust standard errors in parentheses. *** p<0.001, ** p<0.01, * p<0.05.
Each probit regression controls for survey-year fixed effects, country fixed effects and for the interaction between country and year.

Table 2 presents the estimations from equation (2), where the labour market contextualizing variables are included as possible explanatory variables of the probability of being employed[4]. The overall findings are the same as the ones from Table 1[5]. This

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[4] The descriptive statistics for the sample used in the estimations presented in this table are presented in Table B.2 in Annex B.

[5] It should be noticed however the (very) different number of observations between the two tables, which is due to the missing data on either JVR or regional youth unemployment rate for some countries and/or years. The differences in the coefficients, specially the one regarding education attainment, should be therefore interpreted with caution as they could be due to the difference in the composition of the sample rather than to the introduction of the labour market contextualizing variables. However, this is not the case: in the annex Table A.4, we present the results of the equation (1) estimation for exactly the same sample of Table 2, but without including the labour market variables. Comparing the coefficients of these two tables, it is clear that the coefficients are not significantly different.

means that while the two labour market variables may have some explanatory value, the importance of education attainment is not diminished.

Focusing on the labour market variables, it seems that the probability of being employed depends essentially on the JVR. The higher the vacancy rate, the higher is the probability of being employed. This is indeed intuitive: in countries with a lower JVR, i.e. a more saturated labour market, the probability of employment for a young individual that graduated within three years is lower. Furthermore, the JVR coefficient is higher in the crisis period, indicating that the labour market situation was a more relevant determinant of employability in that period.

Table 2 Probability of being employed, without and with controls for the field of study, before (2004-2007) and during (2008-2010) the crisis, controlling for the JVR and the regional unemployment rate

	Pre-crisis 2004-2007	Crisis 2008-2010	Pre-crisis 2004-2007	Crisis 2008-2010
VARIABLES	Basic	Basic	Add Field	Add field
age	0.02*	0.03***	0.02	0.02***
	(0.007)	(0.005)	(0.011)	(0.007)
female	-0.21***	-0.18***	-0.20***	-0.19***
	(0.031)	(0.028)	(0.031)	(0.034)
Medium education attainment	-0.38***	-0.37***	-0.33***	-0.33***
	(0.043)	(0.027)	(0.047)	(0.045)
Graduation t-1	-0.20***	-0.24***	-0.20***	-0.26***
	(0.033)	(0.033)	(0.035)	(0.035)
Graduation t-2	-0.07***	-0.09***	-0.06***	-0.09***
	(0.015)	(0.015)	(0.015)	(0.017)
JVR	0.19***	0.71***	1.54	0.72***
	(0.045)	(0.146)	(0.971)	(0.148)
Regional youth unemployment rate	0.00	-0.00	0.00	-0.01
	(0.005)	(0.005)	(0.006)	(0.005)
JVR*Reg. youth unemployment rate	-0.01***	-0.01	-0.01**	-0.01
	(0.002)	(0.007)	(0.002)	(0.007)
Constant	0.30	0.02	-1.20	0.01
	(0.212)	(0.143)	(1.593)	(0.182)
Observations	76,996	97,545	73,033	95,228
Pseudo R-squared	0.0632	0.0779	0.074	0.0866

Notes: Robust standard errors in parentheses. *** $p<0.001$, ** $p<0.01$, * $p<0.05$.
Each probit regression controls for survey-year fixed effects, country and regional fixed effects and for the interaction between country and year.

4.1.2 Estimated probability of being employed by country

This section provides some results at the country level. The country-level models are respectively identical to equation (1) without the country fixed effects and the interaction between country and year of survey, and equation (2) without the JVR variable (but still with the interaction between JVR and regional youth unemployment rate). After the estimation of the new versions of models (1) and (2) (results from these estimations are not presented), we estimate the predicted probability of being employed at country level. For completeness, we also present the estimated probabilities at the EU27 level, computed after the estimation of the models in the previous section.

This analysis is then further stratified by country and gender and by country and field of education completed.

Estimated probability by country

Figure 4 shows the estimated probability of employment for both the pre-crisis and crisis samples, after controlling for age, gender, level and field of graduation, year of graduation and survey-year and regional fixed effects (see panel A of Table 3).

The EU27 estimated probability of being employed is 79%, both before and after the crisis. Stratifying the analysis by country reveals important cross-country variations in the impact of the crisis on the probability for a 20-34 years old of being employed 1-3 years after graduation. We find that the probability of employment decreased in the majority of the countries, particularly in Ireland (9 percentage points), Estonia, Spain and Latvia (7 p.p.) and Latvia (6.5 p.p.). On the contrary, the probability of employment increased in Poland (7 p.p.), Germany (4 p.p.) and Bulgaria (3 p.p.).

Figure 4   Estimated probability of being employed before (2004-2007) and during (2008-2010) the crisis, by country
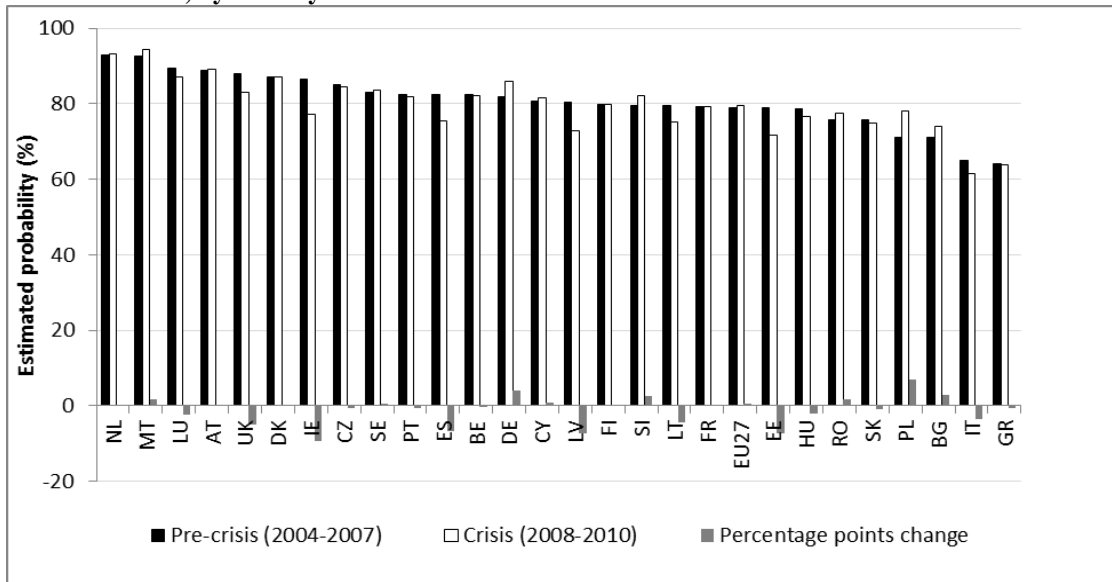
Source: Authors' estimations using the annual LFS microdata 2004-2010.
Note: The probabilities are estimated from a probit estimation controlling for age, gender, level of graduation, field of the degree, year of graduation and survey-year and country fixed effects.

After controlling for JVR and regional youth unemployment (see panel B of Table 3), we can see that the majority of the estimated probabilities of being employed increase in the pre-crisis period and decrease in the crisis one. This indicates that the labour market conditions indeed affect the employability, in general, in a positive way before the crisis and in a negative way afterwards. This fact also explains why the crisis effect is stronger (more negative) in this specification. The most striking differences between the pre-crisis and crisis periods are observed in Slovakia (9 p.p.), Czech Republic (5 p.p.) and Poland (4 p.p.).

Table 3 Estimated probability of being employed before (2004-2007) and during (2008-2010) the crisis, by country

	PANEL A (controlling for the baseline set of explanatory variables)			PANEL B (further controlling for JVR and regional unemployment rate)		
country	Pre-Crisis (2004-2007)	Crisis (2008-2010)	Crisis effect (p.p.)	Pre-Crisis (2004-2007)	Crisis (2008-2010)	Crisis effect (p.p)
EU27	0.79	0.79	0	0.83	0.79	-4
AT	0.89	0.89	0	0.87	0.89	1
BE	0.82	0.82	0	m	m	m
BG	0.71	0.74	3	0.72	0.75	3
CY	0.81	0.81	1	0.81	0.82	0
CZ	0.85	0.84	-1	0.91	0.86	-5
DE	0.82	0.86	4	0.84	0.86	2
DK	0.87	0.87	0	m	0.83	m
EE	0.79	0.72	-7	0.82	0.72	-10
ES	0.82	0.76	-7	0.83	0.73	-10
FI	0.80	0.80	0	0.81	0.79	-2
FR	0.79	0.79	0	m	0.77	m
GR	0.64	0.64	0	0.62	0.64	2
HU	0.79	0.77	-2	0.78	0.75	-3
IE	0.87	0.77	-9	m	0.74	m
IT	0.65	0.61	-3	m	0.62	m
LT	0.80	0.75	-4	0.80	0.75	-4
LU	0.90	0.87	-2	0.90	0.87	-2
LV	0.80	0.73	-7	0.82	0.73	-9
MT	0.93	0.94	2	m	0.94	m
NL	0.93	0.93	0	0.93	0.93	0
PL	0.71	0.78	7	0.75	0.78	3
PT	0.82	0.82	-1	0.83	0.82	-1
RO	0.76	0.77	2	m	0.76	m
SE	0.83	0.84	0	0.85	0.82	-2
SI	0.80	0.82	3	0.80	0.82	2
SK	0.76	0.75	-1	0.83	0.74	-10
UK	0.88	0.83	-5	0.88	0.82	-6

Notes: Panel A - Estimated probability controlling for age, gender, level of graduation, year of graduation, field of the degree and survey-year fixed effects. Panel B – Estimated probability further controlling for the regional unemployment rate and interaction between JVR and regional unemployment rate. m= missing values.

Estimated probability by country and gender

In this section we are interested in identifying gender differences at country level in the estimated probability of being employed after graduation. Table 1 shows that, overall, young female graduates tend to be less likely to be employed in the three years following graduation than their male peers. Based on Table 4, Figure 5 presents for both periods the gender gap, defined as the difference between the males' and females' probability of being employed. Therefore, a positive gender gap is interpreted as an advantage of the male population as far as employability is concerned.

Figure 5   Estimated gender gap in the probability of being employed before (2004-2007) and during (2008-2010) the crisis, by country
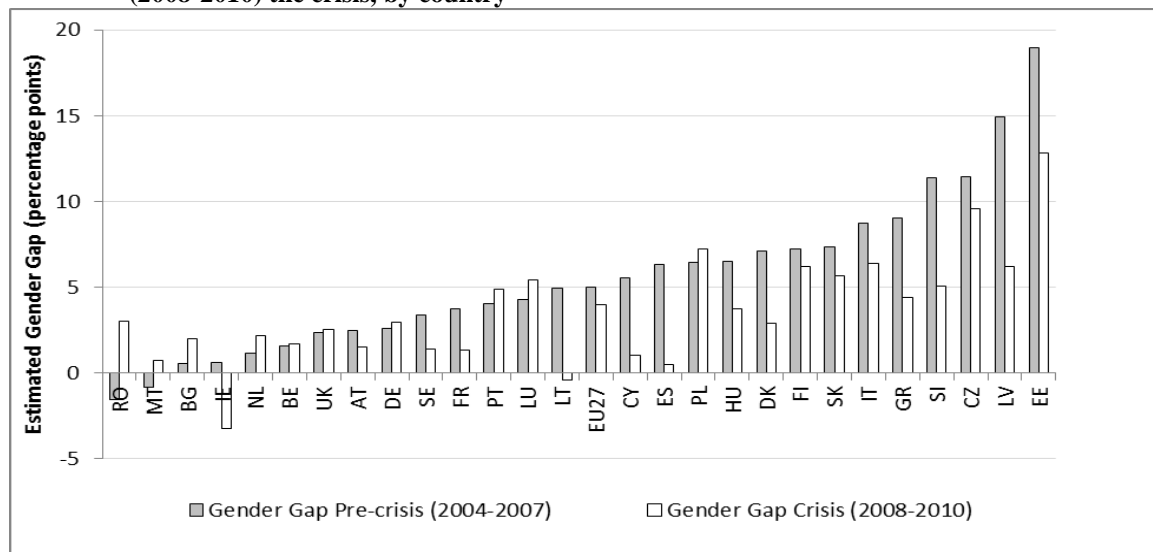
Source: Authors' estimations using the annual LFS microdata 2004-2010.
Note: Difference between the male's and female's estimated probability of being employed full-time. The probabilities are estimated from a probit estimation controlling for age, gender, level of graduation, field of the degree, year of graduation, field of the degree, survey-year fixed effects.

Overall, the gender gap has decreased since the beginning of the crisis, revealing that young graduated males have been the most hit by the crisis compared to their female peers. However, some different situations can be identified:

- Romania and Malta were the only countries in the pre-crisis period where the gender gap was negative. After 2008, the situation reversed.

- In Ireland and Lithuania the gender gap reversed at the benefit of the young female graduates.

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- In Spain the gender gap was almost eradicated.

However, a diminishing gender gap does not necessarily give a positive message about the youth's employability. For instance, in Spain, the lack of gender gap since 2008 hides a lower employability rate for both males and females compared to the pre-crisis period, but with a steeper drop for males. The employment likelihood of young Spanish female graduates dropped by 4 p.p. vs. 10 p.p. for young Spanish male graduates.

After including the regional unemployment rate and its interaction with the national JVR (panel B of Table 4), we see that the labour market conditions altered the likelihood of employment by gender already before the crisis, but especially during the crisis. Again, in general, the changes are positive in the former period and negative in the latter. This means that the labour market conditions played a stronger role in explaining gender gap in the crisis period that in the pre-crisis one.

Table 4 Estimated probability of being employed before (2004-2007) and during (2008-2010) the crisis, by country and gender

| | PANEL A (controlling for the baseline set of explanatory variables) | | | | | | PANEL B (further controlling for JVR and regional unemployment rate) | | | | | |
| | Pre-Crisis (2004-2007) | | Crisis (2008-2010) | | Gender Gap (p.p.) | | Pre-Crisis (2004-2007) | | Crisis (2008-2010) | | Gender Gap (p.p.) | |
country	Female	Male	Female	Male	Pre-crisis	Crisis	Female	Male	Female	Male	Pre-crisis	Crisis
EU27	0.76	0.81	0.77	0.81	5	4	0.80	0.85	0.77	0.81	5	4
AT	0.88	0.90	0.88	0.90	3	2	0.90	0.84	0.88	0.89	-6	2
BE	0.81	0.83	0.81	0.83	2	2	m	m	m	m	m	m
BG	0.71	0.71	0.73	0.75	1	2	0.71	0.74	0.74	0.76	3	3
CY	0.78	0.84	0.81	0.82	6	1	0.81	0.82	0.82	0.81	1	-1
CZ	0.79	0.91	0.79	0.89	11	10	0.89	0.93	0.81	0.91	5	9
DE	0.80	0.83	0.84	0.87	3	3	0.82	0.85	0.84	0.88	3	4
DK	0.84	0.91	0.86	0.89	7	3	m	m	0.81	0.84	m	2
EE	0.71	0.90	0.65	0.78	19	13	0.75	0.90	0.65	0.78	16	13
ES	0.79	0.86	0.75	0.76	6	0	0.79	0.87	0.72	0.74	8	2
FI	0.76	0.84	0.77	0.83	7	6	0.78	0.85	0.76	0.80	7	4
FR	0.77	0.81	0.79	0.80	4	1	m	m	0.76	0.78	m	2
GR	0.60	0.69	0.62	0.66	9	4	0.58	0.68	0.62	0.66	9	4
HU	0.76	0.82	0.75	0.79	7	4	0.74	0.82	0.74	0.76	8	2
IE	0.86	0.87	0.79	0.75	1	-3	m	m	0.75	0.71	m	-4
IT	0.61	0.69	0.58	0.65	9	6	m	m	0.59	0.65	m	6
LT	0.77	0.82	0.75	0.75	5	0	0.77	0.82	0.75	0.75	5	0
LU	0.87	0.92	0.84	0.90	4	5	0.87	0.92	0.84	0.90	4	5
LV	0.73	0.88	0.70	0.76	15	6	0.77	0.88	0.70	0.76	12	6
MT	0.93	0.92	0.94	0.94	-1	1	m	m	0.93	0.94	m	1
NL	0.92	0.94	0.92	0.94	1	2	0.93	0.94	0.93	0.94	1	1
PL	0.68	0.75	0.75	0.82	6	7	0.71	0.79	0.75	0.81	8	7
PT	0.81	0.85	0.80	0.85	4	5	0.81	0.85	0.80	0.84	5	4
RO	0.77	0.75	0.76	0.79	-2	3	0.76	m	0.74	0.78	m	3
SE	0.81	0.85	0.83	0.84	3	1	0.82	0.87	0.82	0.83	5	1
SI	0.74	0.86	0.80	0.85	11	5	0.74	0.86	0.79	0.84	12	4
SK	0.72	0.79	0.72	0.78	7	6	0.79	0.87	0.71	0.76	7	4
UK	0.87	0.89	0.82	0.84	2	3	0.87	0.89	0.81	0.83	2	2

Notes: Panel A - Estimated probability controlling for age, gender, level of graduation, field of the degree, year of graduation and survey-year fixed effects.
Panel B – Estimated probability further controlling for regional unemployment rate and interaction between JVR and regional unemployment rate.
m=impossibility to run the regression due to missing values.

Estimated probability by country and field of education

Tables A.5 and A.6 in the annex present the estimated probability of being employed by country and field of education for the pre-crisis and crisis samples, respectively. Table 5 presents the change in these probabilities between the two periods. From the seven fields of education for which more evidence is available - Engineering, manufacturing and construction (Field 4); General programmes (Field 6); Health and Welfare (Field 7); Humanities, languages and arts (Field 8); Services (Field 15); Social Sciences, business and law (Field 16) and Teacher training and education science (Field 17) – we find that:

- At the European level, the fields of education with highest estimated probability of finding a job is "Computer Science", "Health and Welfare" and "Teacher training and education".

- At the opposite end, having a degree from "General Programmes" gives the lowest probability of having a job both in both periods of analysis, not only at the European level, but also at country-level.

- Regarding the change of employability over time by field of education, at the European level, "Physical Science" and "General Programmes" suffered a slight decrease of 1 p.p., while the strongest increase occurred in the "Life Science" field.

- At the country level, there are very different patterns on how employability varied over time by field of education: whereas in Germany and Poland the probability of being employed increased in all fields of education, the opposite case was true in Spain and in the United Kingdom.

Table 5 Change in the probability of being employed over time, by country and field of education (in percentage points)

country	field 1	field 2	field 3	field 4	field 5	field 6	field 7	field 8	field 9	field 10	field 13	field 14	field 15	field 16	field 17
EU27	1.1	-0.5	1.3	-0.2	0.6	-1.2	0.8	1	5.3	-4.2	-0.7	2.4	0.1	0.9	2.8
AT	-	-	-	-0.94	-	-	4.59	-	-	-	-	-	-0.82	-0.04	5.46
BE	-	-	-	-0.01	-	-	0.19	-1.66	-	-	-	-	-2.59	3.10	0.43
BG	-	-	-	5.64	-	-	-	-	-	-	-	-	-	3.96	-
CY	-	-	-	-	-	-	-	-	-	-	-	-	-	1.16	-
CZ	4.47	-	-	-1.64	-	-	2.78	-	-	-	-	-	-4.05	-0.19	1.96
DE	-	-	-	4.82	-	-	4.78	-	-	-	-	-	3.21	4.94	2.88
DK	-	-	-	-6.06	-	-	-0.91	7.15	-	-	-	-	-	2.79	-
EE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
ES	-	-	-	-14.75	-	-	-0.93	-	-	-	-	-	-11.36	-6.35	-
FI	-	-	-	1.43	-	-	-	-	-	-	-	-	-1.22	1.20	-
FR	-3.27	-	-	-0.62	-	-	0.20	-0.70	-	-	-	-	2.27	-0.21	-
GR	-	-13.45	-	-2.00	-	6.69	1.88	-1.41	-	-	-	-	-3.37	-0.40	-
HU	2.32	-	-4.94	-5.14	-	1.73	-6.26	-	-	-	-	-	-0.08	-2.32	-1.17
IE	-	-	-	-15.39	-	-8.90	-	-	-	-	-	-	-	-7.57	-
IT	-5.22	-3.93	-	-6.23	2.08	-	0.79	2.38	4.60	-	-	-	-9.88	-2.48	14.83
LT	-	-	-	-10.75	-	-10.20	-	-	-	-	-	-	-	0.70	-
LU	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LV	-	-	-	-	-	-	-	-	-	-	-	-	-	-5.34	-
MT	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NL	-	-	-	-0.05	-	-	-0.37	-	-	-	-	-	1.54	-0.14	-1.35
PL	11.94	4.05	-	8.42	-	7.62	4.34	8.30	10.46	-	-	-	11.66	3.13	4.81
PT	-	-	-	-4.54	-	-	-3.22	3.07	-0.97	-	-	-	4.02	-0.41	3.84
RO	-	-	-	2.01	-	1.29	8.36	2.93	-	-	-	-	5.42	-1.25	-
SE	1.85	-	-	-1.24	-	0.52	1.22	-0.12	-	-	-	-	-1.48	1.80	2.19
SI	-	-	-	-1.01	-	-	-	-	-	-	-	-	0.24	4.12	-
SK	-	-	-	-1.51	-	-	-	-	-	-	-	-	-0.15	3.25	-
UK	-	-	-	-7.52	-	-	-5.55	-2.78	-	-	-	-	-7.28	-3.13	-

Notes: Difference between the probability of being employed in 2008-2010 and 2004-2007 periods, by country and field of education.

Legend: Field 1 – Agriculture and Veterinary; Field 2 – Computer Science; Field 3 – Computer use; Field 4 – Engineering, manufacturing and construction; Field 5 – Foreign languages; Field 6 – General programmes; Field 7 – Health and Welfare; Field 8 – Humanities, languages and arts; Field 9 – Life Science; Field 10 – Mathematics and Statistics; Field 13 – Physical Science; Field 14 – Science, mathematics and computing; Field 15 – Services; Field 16 – Social sciences, business and law; Field 17 – Teacher training and education science.

4.2 Do the orientation of the degree and working while studying make a difference?

In this section we make use of the microdata from the LFS ad-hoc module of 2009 on the transition from education to work to answer two questions:

1) Beyond the level of education attainment, how much does its curriculum orientation affect the probability of being employed soon after graduation? This question is raised to answer some of the concerns faced by many governments in Europe about the necessity to invest more in vocational education and training rather than mainstream (or general) curricula to meet better the expectations from the labour market. See for instance, the Council conclusions of November 2010 on the priorities for enhanced European cooperation in vocational education and training for the period 2011-2020 (OJ C 324, 1.12.2010).

2) Is it really the vocational nature of the degree that makes the difference or is it the fact of having acquired some professional experience during studies independently of the orientation of the degree?

In order to answer these questions we use the following variables available from the LFS ad-hoc module:

- The orientation of the degree is computed using the _HATVOC_ variable and generating a **VET** dummy taking value 1 if the completed upper secondary degree was (i) vocational education mainly (or solely) school based; (ii) a combination of school and work place based vocational education; (iii) vocational education mainly work place based; or (iv) vocational education with no distinction possible between the cases (i), (ii) and (iii). It takes value 0 if the degree was general education.

- The professional experience acquired during studies is computed using the _WORKEDUC_ variable and generating a dummy variable called **workedu** taking value 1 if the respondent (i) worked (only) as part of the educational programme; (ii) worked while studying but outside educational programmes; (iii) worked (only) during an interruption of studies; or (iv) worked as a combination of (i) and (ii), (i)

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and (iii), (ii) and (iii) or (i), (ii) and (iii). The dummy takes value 0 if the respondent did not work or worked less than 1 month per year.

We separate our analysis between those who have graduated from upper secondary education (ISCED 3-4) and those from tertiary education (ISCED 5-6). The results for each case are presented in the two following sub-sections.

4.2.1 Results for individuals graduating from ISCED 3-4

In Table 6 we present, for each country, the results of the following probit model, where only individuals graduating from ISCED levels 3-4 are considered:

$$\Pr(Y_i = 1 \mid X_i) = \Phi(\gamma_0 VET + \gamma_1 workedu + \gamma_2 VET * workedu + X_i' \beta + \mu_r),$$

where the vector $\mathbf{X}_i$ is composed of the age and gender of respondent and time since graduation (three years, two years or one year), and μ_r are regional fixed effects to capture regional institutional and contextual variations. The model includes the isolated effects of the variables *VET* and *workedu* on the probability of being employed but, because some vocational programmes include a work experience, an interaction effect between the *VET* dummy and the *workedu* dummy is also added.

Our estimated sample of young 20-34 yrears old who graduated from upper secondary level reveals that the countries with the highest share with a VET degree are Austria, Slovakia, the Czech Republic, Netherlands, Slovenia and Germany (with more than 90% of VET). On the other hand, the countries with the lowest share of VET completers are Luxemburg, Lithuania, Portugal and Ireland (with less than 50% of VET). Moreover, the countries with the highest share of graduated having worked during their studies are Austria, Netherlands, Denmark and France (at least 60% work during studies). The countries with lowest share of work during studies are Bulgaria, Slovakia and Romania (less than 25%). Surprisingly, in all countries, except Austria, Netherlands and Denmark,

less than half of the VET students had also acquired a working experience during their studies[6].

From our econometric analysis, we find that out of the 24 countries that responded to that specific ad-hoc module, only four have a statistically significant positive effect of a VET degree compared to a mainstream degree in improving the likelihood of employment, namely Bulgaria, Germany, Luxembourg and Sweden. In Greece, Ireland, Italy, Poland, and the UK, it is more important to have acquired a work experience during studies than to have graduated from VET. While in Sweden, a work experience during studies, independently of the orientation of the degree, is as important as having a VET diploma; in the UK, having worked during studies for a general diploma makes a significant positive difference compared to having worked during a VET diploma. On the other hand, the orientation of the degree and the work experience play no significant role in explaining variations in the probability of employment for new graduates in Austria, Belgium, the Czech Republic, France, Hungary, Lithuania, the Netherlands, Portugal, Romania, Slovakia and Spain.

Table 6 also reveals that, in most countries, graduates from upper secondary education have a harder time to find a job up to 1 year after their graduation. In Hungary, their hard time continues up to 2 years after graduation. In the Netherlands, young graduates from upper secondary education do not face significant difficulties to find a job immediately after graduation but they do more systematically in the second year following graduation. This result reflects the short-term and precarious nature of the first contracts of that specific cohort.

In terms of gender gap, *ceteris paribus*, only seven countries reveal a statistically significant negative influence of the fact of being a young medium educated female on the probability of being employed, namely Greece, Italy, Latvia, Poland, Portugal, Romania and Slovenia.

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[6] The descriptive statistics for the sample used in the estimations presented in this table are presented in Table B.3 in Annex B.

Table 6 Role of the orientation of the degree and of work experience during studies on the probability of the 20-34 years old (not currently in education or training) of being employed 1-3 years after upper secondary graduation, by country (ISCED 3-4)

VARIABLES	AT	BE	BG	CY	CZ	DE	DK	ES	FR	GR	HU	IE
female	-0.03	-0.13	-0.14	-0.02	-0.14	-0.21	-0.11	-0.07	-0.12	-0.36*	-0.06	0.16
	(0.163)	(0.202)	(0.162)	(0.498)	(0.123)	(0.135)	(0.243)	(0.146)	(0.136)	(0.140)	(0.104)	(0.093)
age	-3.70***	-2.74*	-	-	0.41	-0.78	1.07	-1.26*	1.09	-0.03	-0.77	-0.45
	(0.973)	(1.216)	-	-	(0.935)	(0.471)	(0.825)	(0.606)	(0.866)	(0.631)	(0.524)	(0.378)
Graduation t-2 (2007)	0.04	-0.16	-0.18	0.57	0.04	0.01	-0.01	-0.07	-0.23	-0.28	-0.24*	-0.05
	(0.205)	(0.230)	(0.177)	(0.567)	(0.140)	(0.170)	(0.310)	(0.162)	(0.149)	(0.159)	(0.117)	(0.104)
Graduation t-1 (2008)	-0.19	-0.51*	-0.32	-0.56	-0.35*	-0.10	-0.38	-0.45*	-0.48**	-0.62**	-0.41**	-0.29*
	(0.200)	(0.235)	(0.208)	(0.963)	(0.159)	(0.171)	(0.305)	(0.192)	(0.180)	(0.194)	(0.129)	(0.136)
VET	0.22	0.27	0.40*	-0.84	0.22	1.26***	-0.58	0.19	0.19	0.10	0.16	0.12
	(0.700)	(0.297)	(0.177)	(1.119)	(0.264)	(0.250)	(0.472)	(0.197)	(0.233)	(0.204)	(0.152)	(0.138)
workedu	0.87	0.32	0.62	0.23	1.01	-0.02	0.01	0.10	0.41	1.07*	0.75	0.28*
	(0.815)	(0.429)	(0.367)	(0.572)	(0.596)	(0.536)	(0.487)	(0.341)	(0.274)	(0.430)	(0.386)	(0.130)
VET_workEDU	-0.37	0.15	-0.42	1.26	-0.59	-0.07	0.83	0.35	-0.04	-0.73	-0.44	-0.04
	(0.872)	(0.496)	(0.431)	(1.384)	(0.610)	(0.559)	(0.608)	(0.387)	(0.310)	(0.464)	(0.403)	(0.193)
Constant	44.93***	31.88*	-0.26	0.58	-5.39	10.22	-13.88	15.97*	-14.77	1.04	9.79	5.61
	(12.569)	(15.754)	(0.261)	(0.427)	(12.037)	(5.914)	(10.586)	(7.730)	(11.147)	(7.942)	(6.702)	(4.833)
Observations	493	218	299	39	553	511	139	355	443	387	707	771
Pseudo R-squared	0.0506	0.1584	0.1181	0.1457	0.0907	0.1268	0.0879	0.081	0.1012	0.078	0.1088	0.0189

Notes: Robust standard errors in parentheses. *** $p<0.001$, ** $p<0.01$, * $p<0.05$. Each Probit regression controls for regional fixed effects. *graduation t-3 (2006)* is the reference category for the time since graduation.

Table 6 (cont'd)

VARIABLES	IT	LT	LU	LV	NL	PL	PO	RO	SE	SI	SK	UK
female	-0.18*	-0.22	0.11	-0.61**	-0.16	-0.36***	-0.43*	-0.34*	0.03	-0.56*	-0.10	-0.06
	(0.080)	(0.213)	(0.245)	(0.230)	(0.125)	(0.103)	(0.183)	(0.152)	(0.097)	(0.259)	(0.143)	(0.108)
age	-0.04	0.74	0.09	-0.44	-0.43	0.58	-0.50	-4.10***	0.48	1.23	-	-0.08
	(0.476)	(0.958)	(0.857)	(1.510)	(0.374)	(0.532)	(0.660)	(0.796)	(0.630)	(1.345)	-	(0.306)
Graduation t-2 (2007)	-0.09	-0.11	-0.56	0.09	-0.37*	-0.10	-0.10	-0.23	-0.12	-0.54	-0.31	-0.11
	(0.087)	(0.244)	(0.349)	(0.263)	(0.150)	(0.122)	(0.215)	(0.162)	(0.113)	(0.290)	(0.163)	(0.120)
Graduation t-1 (2008)	-0.38***	-0.31	-0.61	-0.19	-0.23	-0.37**	-0.53*	-0.98***	-0.41***	-0.82*	-0.55**	0.31*
	(0.101)	(0.250)	(0.342)	(0.297)	(0.159)	(0.124)	(0.207)	(0.225)	(0.115)	(0.335)	(0.177)	(0.157)
VET	0.05	0.23	1.10*	0.24	0.65	0.19	0.08	0.24	0.29*	0.25	-0.06	0.29
	(0.135)	(0.239)	(0.542)	(0.281)	(0.362)	(0.133)	(0.210)	(0.181)	(0.131)	(0.561)	(0.309)	(0.159)
workedu	0.55*	0.72	0.06	0.68	0.68	0.50*	0.51	0.51	0.29*	-0.79	-0.06	0.66*
	(0.247)	(0.449)	(0.294)	(0.468)	(0.405)	(0.251)	(0.300)	(0.494)	(0.138)	(0.784)	(0.854)	(0.260)
VET_workEDU	-0.26	0.01	-0.24	-0.36	-0.42	-0.31	-0.14	0.23	-0.13	0.43	0.46	-0.69*
	(0.261)	(0.543)	(0.648)	(0.548)	(0.429)	(0.276)	(0.395)	(0.651)	(0.188)	(0.840)	(0.875)	(0.292)
Constant	0.70	-10.44	0.28	5.98	6.99	-7.28	6.88	49.71***	-5.75	-15.64	1.05**	1.53
	(6.106)	(12.313)	(10.862)	(19.475)	(4.813)	(6.818)	(8.344)	(10.309)	(8.043)	(17.389)	(0.396)	(3.972)
Observations	1,199	169	156	139	898	726	286	358	916	147	367	664
Pseudo R-squared	0.1153	0.0832	0.1231	0.0716	0.0416	0.08	0.093	0.0959	0.0419	0.1316	0.0406	0.0384

Notes: Robust standard errors in parentheses. *** $p<0.001$, ** $p<0.01$, * $p<0.05$. Each Probit regression controls for regional fixed effects. *graduation t-3 (2006)* is the reference category for the time since graduation.

4.2.2 Results for individuals graduating from ISCED 5-6

In this section we are interested in evaluating to which extent having a work experience during the higher education studies improves the employability of tertiary graduates. In this section we estimate, for each country, the probability of being employed in 2009 for a 20 to 34 years old who graduated from tertiary education, controlling for his gender, age, time of graduation (one, two or three years before), the field of his degree, whether he worked during his studies, and regional fixed effects:

$$\Pr(Y_i = 1 \mid X_i) = \Phi(\gamma workedu + X_i'\beta + \mu_r),$$

Our sample of tertiary graduates (Table B.4 in Annex B) reveals a very strong heterogeneity across Europe in terms of frequency of work during tertiary degrees. While countries like Austria, Netherlands, France and Denmark report over 80% of work activities during studies, Spain, Hungary, Portugal and Romania report less than 40%.

The results, reported in Table 7, reveal that the combination of work and studies plays a positive and statistically significant role in the employability of young graduates in nine countries: Bulgaria, Czech Republic, Greece, Ireland, Italy, Lithuania, Poland, Portugal and Romania.

The countries where tertiary graduates seem to strive the longest to find a job are Greece and Romania where the probability of being employed is statistically significantly lower one year and two years after graduation than three years after. Comparatively, in Belgium, Bulgaria, France, Italy, the Netherlands, Poland, Portugal, Spain and Sweden, the probability of being employed increases after one year from graduation.

After controlling for work experience, it appears that female young graduates tend to be less likely to be employed than their male peers only in Bulgaria, Check Republic, Denmark, Hungary and Slovakia. The presence of a gender gap in favour of males had

already been observed in Table A.4 for the Check Republic, Denmark, Hungary and Slovakia. On the other hand, the fact that Bulgaria moved from a 0% gap (Table A.4) to a significant and negative effect of being a female after controlling for work experience (Table 7) may be due to the fact that males are more inclined to work during their studies than females in that country. Finally, it is worth noticing that the countries with a gender gap are not the same according to the level of educational attainment (see results from Table 6 vs. Table 7).

Table 7 Role of work during studies on the probability of the 20-34 years old (not currently in education or training) of being employed 1-3 years after tertiary graduation, by country (ISCED 5-6)

VARIABLES	AT	BE	BG	CY	CZ	DE	DK	ES	FR	GR	HU	IE
female	-0.58	-0.17	-0.55*	0.23	-1.49***	-0.19	-0.58*	0.05	-0.10	-0.15	-0.37*	0.07
	(0.484)	(0.239)	(0.239)	(0.430)	(0.435)	(0.327)	(0.244)	(0.108)	(0.148)	(0.132)	(0.176)	(0.100)
age	-0.60	-1.25*	-0.29	0.35	0.70	0.33	-0.94	-0.68**	-0.13	-0.21	0.58	0.27
	(0.990)	(0.626)	(0.502)	(0.800)	(0.554)	(0.656)	(0.599)	(0.247)	(0.345)	(0.329)	(0.360)	(0.223)
Graduation t-2 (2007)	-0.18	-0.56	-0.25	0.34	0.52	-0.07	-0.32	-0.21	-0.10	-0.32*	0.13	0.16
	(0.509)	(0.317)	(0.293)	(0.447)	(0.326)	(0.344)	(0.280)	(0.122)	(0.163)	(0.145)	(0.203)	(0.115)
Graduation t-1 (2008)	-0.28	-1.16***	-0.57*	-0.30	0.09	-0.37	-0.13	-0.45***	-0.36*	-0.44**	-0.15	-0.02
	(0.453)	(0.305)	(0.271)	(0.373)	(0.280)	(0.324)	(0.283)	(0.121)	(0.165)	(0.150)	(0.209)	(0.111)
workedu	0.27	0.06	0.50*	0.14	0.52*	0.14	0.39	0.18	0.10	0.48***	0.29	0.24**
	(0.481)	(0.226)	(0.220)	(0.342)	(0.242)	(0.253)	(0.292)	(0.106)	(0.165)	(0.116)	(0.179)	(0.091)
Constant	8.92	18.15*	5.04	-7.36	-6.39	-2.37	15.19	9.67**	2.35	2.89	-6.98	-2.51
	(13.216)	(8.165)	(6.406)	(10.650)	(7.526)	(8.869)	(8.481)	(3.274)	(4.428)	(4.226)	(4.792)	(2.899)
Observations	82	296	239	93	243	186	218	908	570	583	435	1,224
Pseudo R-squared	0.1893	0.0901	0.0714	0.0729	0.0579	0.1123	0.084	0.0927	0.0965	0.0912	0.0464	0.0427

VARIABLES	IT	LT	LU	LV	NL	PL	PT	RO	SE	SI	SK	UK
female	-0.16	-0.10	-0.03	0.16	-0.22	-0.11	-0.03	-0.22	-0.15	0.36	-1.03**	-0.02
	(0.102)	(0.252)	(0.310)	(0.341)	(0.150)	(0.142)	(0.185)	(0.248)	(0.148)	(0.357)	(0.315)	(0.112)
age	0.33	-0.55	-0.34	0.30	0.67*	-0.30	0.06	1.40**	0.43	-0.61	-0.62	0.26
	(0.219)	(0.532)	(0.656)	(0.679)	(0.306)	(0.309)	(0.378)	(0.525)	(0.309)	(0.672)	(0.646)	(0.264)
Graduation t-2 (2007)	-0.09	0.30	-0.24	0.02	-0.21	-0.08	-0.32	-0.87**	0.03	-0.28	-0.46	0.09
	(0.113)	(0.324)	(0.396)	(0.381)	(0.182)	(0.160)	(0.233)	(0.332)	(0.201)	(0.585)	(0.445)	(0.133)
Graduation t-1 (2008)	-0.53***	-0.06	-0.01	0.71	-0.37*	-0.33*	-0.77***	-0.89*	-0.50**	-1.08	-0.48	-0.16
	(0.115)	(0.296)	(0.400)	(0.379)	(0.165)	(0.161)	(0.223)	(0.353)	(0.170)	(0.555)	(0.388)	(0.128)
workedu	0.23*	0.57*	0.00	-0.34	0.28	0.38**	0.48*	1.19***	0.12	0.34	-0.49	0.13
	(0.093)	(0.248)	(0.312)	(0.365)	(0.172)	(0.129)	(0.200)	(0.316)	(0.171)	(0.328)	(0.275)	(0.105)
Constant	-3.55	7.89	4.15	-4.78	-7.43	5.48	1.82	-17.82**	-4.13	10.23	10.86	-3.86
	(2.998)	(7.064)	(8.769)	(9.163)	(4.068)	(4.176)	(4.985)	(6.884)	(4.287)	(9.263)	(8.779)	(3.461)
Observations	951	182	124	108	951	725	381	265	735	163	134	867
Pseudo R-squared	0.1706	0.1352	0.1352	0.111	0.0517	0.0789	0.0933	0.3049	0.1049	0.2095	0.0399	0.0383

Notes: Robust standard errors in parentheses. *** p<0.001, ** p<0.01, * p<0.05.
Each probit regression controls for the field of the degree and regional fixed effects. *graduation t-3 (2006)* is the reference category for the time since graduation.

5 Nature of the contracts of young graduates

In this section, we are interested in the nature of the contracts that the newly graduated young people get in Europe, therefore only the 20 to 34 years old *employed* in the three years after graduation are included in the analysis. More specifically, we look at the types of contract and at the duration of the contract in the three first years after graduation. We start by estimating the probability of being employed on a permanent contract compared to the probability of being employed on a temporary contract (Section 6.1). Then, we estimate the probability of working full-time vs. part-time (Section 6.2).

We estimate the probit models (1) and (2) above, in which we replace the dependent variable by (i) the probability of having a temporary vs permanent contract, and then by (ii) the probability of working full-time vs part-time.

5.1 Probability of being employed on a permanent vs. temporary contract

5.1.1 Results for the pooled sample

Table 8 presents the results for all pooled countries from the estimation of the probability of being employed on a permanent contract vs. on a temporary contract among 20-34 years old who graduated 1-3 years before and who are not currently engaged in any further education or training[7]. As before, we control for the age of the respondent, his gender, his level of educational attainment and the year of his graduation, as well as for survey-year fixed effects, country fixed effects and for the interaction between country and year of survey.

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[7] The descriptive statistics for the sample used in the estimations presented in this table are presented in Table B.5 in Annex B.

We find no significant difference between the pre-crisis and crisis results nor between the basic and the field added models, except for the gender that decreased its role when the field of education is added (as already observed for the estimated probability of being employed). The probability of having a permanent contract increases with the age and with the number of years since graduation. Furthermore, the level of education attainment is not a relevant determinant of having a permanent job. When controlling for the labour market contextualizing variables these overall findings are maintained (see Table A.7).

Table 8 Probability of being employed on a permanent contract vs. temporary contract, without and with controls for the field of study, before (2004-2007) and during (2008-2010) the crisis

	Pre-crisis 2004-2007	Crisis 2008-2010	Pre-crisis 2004-2007	Crisis 2008-2010
VARIABLES	Basic	Basic	Add field	Add field
age	0.05***	0.05***	0.05***	0.05***
	(0.011)	(0.011)	(0.009)	(0.011)
female	-0.11**	-0.12***	-0.07	-0.05
	(0.041)	(0.031)	(0.042)	(0.025)
Medium education attainment	0.04	0.04	0.05	0.03
	(0.077)	(0.089)	(0.073)	(0.088)
Graduation t-1	-0.35***	-0.39***	-0.35***	-0.40***
	(0.024)	(0.014)	(0.026)	(0.016)
Graduation t-2	-0.14***	-0.15***	-0.14***	-0.15***
	(0.017)	(0.015)	(0.019)	(0.013)
Constant	0.20	0.33	-0.04	-0.11
	(0.213)	(0.224)	(0.167)	(0.199)
Observations	139,275	99,270	130,921	97,177
Pseudo R-squared	0.131	0.1306	0.133	0.1385

Notes: Robust standard errors in parentheses. *** $p<0.001$, ** $p<0.01$, * $p<0.05$.
Each Probit regression controls for survey-year fixed effects, country fixed effects and for the interaction between country and year of survey.

5.1.2 Estimated probabilities of having a permanent contract by country

Results by country

When looking at the estimated probability of having a permanent contract at country level (Figure 6 and Table A.8), we see that on average, in the EU27, there is no difference between the pre-crisis and crisis periods. However, we observe significant cross-country differences in the impact of the crisis. The probability of having a permanent job: decreased in 7 countries, with particular high changes in Portugal (5 p.p.)

and Ireland (7 p.p.); and increased in 14 countries, particularly in Slovenia (8 p.p.), Finland (7 p.p) and Spain (6 p.p.).

Figure 6 Estimated probability of having a permanent job before (2004-2007) and during (2008-2010) the crisis, by country
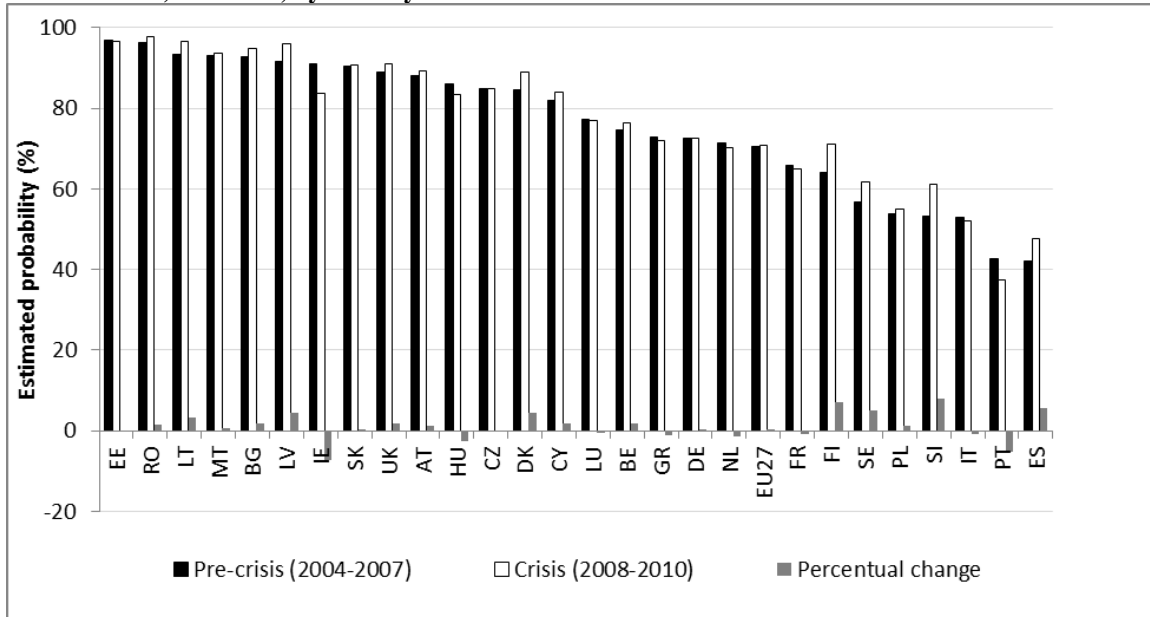
Source: Authors' estimations using the annual LFS microdata 2004-2010.
Note: The probabilities are estimated from a probit estimation controlling for age, gender, level of graduation, field of the degree, year of graduation and survey-year and country fixed effects.

It should be highlighted that the variations between periods in the probability of having a permanent job reflect as well the variations in the probability of being employed. Therefore, these variations should be interpreted with caution and in line with those of Figure 4.

For instance, in Ireland we observe in Figure 4 a decrease in the probability of being employed and in Figure 6 a decrease in probability of having a permanent contract. This suggests that those having a permanent contract were the most affected by the decrease in employability. We find the opposite example in Spain, where the probability of being employed decreased while the probability of having a permanent job increased. This suggests that those more affected by the decrease in employability were those who had a temporary contract.

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After further controlling for the labour market contextual variables (panel B of Table A.8), we find similar results, except for Austria where the impact of the crisis was significantly positive compared with the panel A figures.

Results by country and gender

Figure 7 shows the gender gap of the estimated probability of having a permanent job (see Table A.9). While the gender gap decreased in 14 countries from the pre-crisis to the crisis period, it increased in 8 countries. The magnitude of the changes between periods is particularly relevant for:

- Cyprus with a decrease of 6 p.p. in the gender gap, due mainly to an increase of the female figure.
- In Lithuania and Luxembourg the gender gap increased by 6 p.p., but for different reasons: in Lithuania this was mainly due to an increase in the male probability of permanent contract, while in Luxembourg it was due to a genuine increase in the gender gap (the female employment rate decreased and the male one increased).

Figure 7 Estimated gender gap in the probability of having a permanent job before (2004-2007) and during (2008-2010) the crisis, by country

Source: Authors' estimations using the annual LFS microdata 2004-2010.

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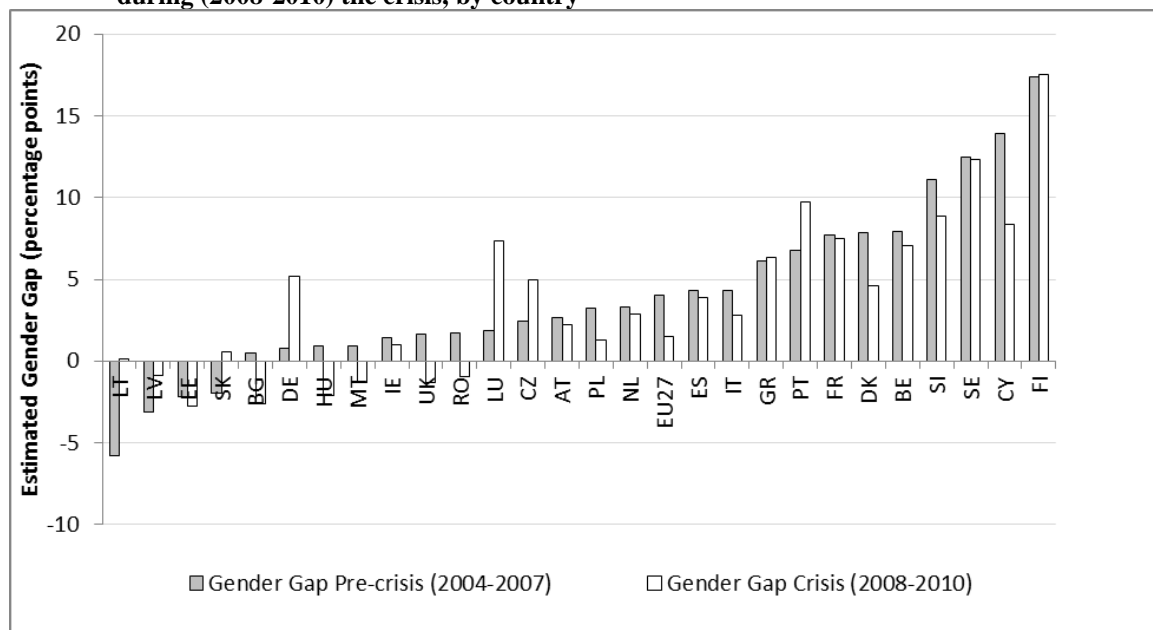
Note: Difference between the males and female estimated probability of being employed full-time. The probabilities are estimated from a probit estimation controlling for age, gender, level of graduation, field of the degree, year of graduation, field, survey-year fixed effects.

5.2 Probability of working full-time vs. part-time

5.2.1 Results for the pooled sample

Table 9 presents the results for all pooled countries from the estimation of the probability of being employed on a full time basis vs. on a part-time basis among 20-34 years old who graduated 1-3 years before and who are not currently engaged in any further education or training[8]. As before, we control for the age of the respondent, his gender, his level of educational attainment and the year of his graduation, as well as for survey-year fixed effects, country fixed effects and for the interaction between country and year of survey.

Table 9 Probability of being employed full-time vs. part-time, without and with controls for the field of study, before (2004-2007) and during (2008-2010) the crisis

	Pre-crisis 2004-2007	Crisis 2008-2010	Pre-crisis 2004-2007	Crisis 2008-2010
VARIABLES	Basic	Basic	Add field	Add field
age	-0.01	-0.00	-0.01	-0.01
	(0.007)	(0.005)	(0.008)	(0.007)
female	-0.59***	-0.57***	-0.45***	-0.44***
	(0.038)	(0.040)	(0.030)	(0.028)
Medium education attainment	-0.29***	-0.28***	-0.32***	-0.34***
	(0.052)	(0.054)	(0.063)	(0.056)
Graduation t-1	-0.16***	-0.17***	-0.18***	-0.17***
	(0.024)	(0.021)	(0.034)	(0.023)
Graduation t-2	-0.05***	-0.05*	-0.05**	-0.05*
	(0.013)	(0.021)	(0.017)	(0.022)
Constant	2.11***	1.92***	1.80***	1.55***
	(0.177)	(0.134)	(0.190)	(0.171)
Observations	151,572	109,511	142,273	107,230
Pseudo R-squared	0.088	0.0979	0.11	0.1196

Notes: Robust standard errors in parentheses. *** p<0.001, ** p<0.01, * p<0.05.
Each Probit regression controls for the field of the degree, survey-year fixed effects, country fixed effects and the interaction between country and year of survey.

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[8] The descriptive statistics for the sample used in the estimations presented in this table are presented in Table B.6 in Annex B.

We find no significant difference between the pre-crisis and crisis results nor between the basic and the field added models. The females are particularly less likely to work full-time when compared to men. It is interesting to notice that, when the field of education is controlled for, the role played by gender decreases substantially. This means that the coefficient of gender was partially capturing the fact that females graduate in fields in which part-time is more traditional.

Furthermore, the lower the level of education attained the lower the probability of having a full-time job. As for the probability of being employed and of having a permanent contract, the lower the time since graduation, the lower is probability of working full-time.

When controlling for the labour market contextualizing variables these overall findings are maintained (see Table A.10 in the annex).

5.2.2 Estimated probabilities of working full-time by country

Results by country

Figure 8 shows the estimated probability of working full-time by country for both pre-crisis and crisis samples (see Table A.11). While there is some cross-country differences in this probability it seems that the crisis did not have a significant impact within each country. The higher percentual changes in the probability of working full-time occurred in Ireland, Spain, Denmark and the UK.

Figure 8   Estimated probability of working full-time before (2004-2007) and during (2008-2010) the crisis, by country
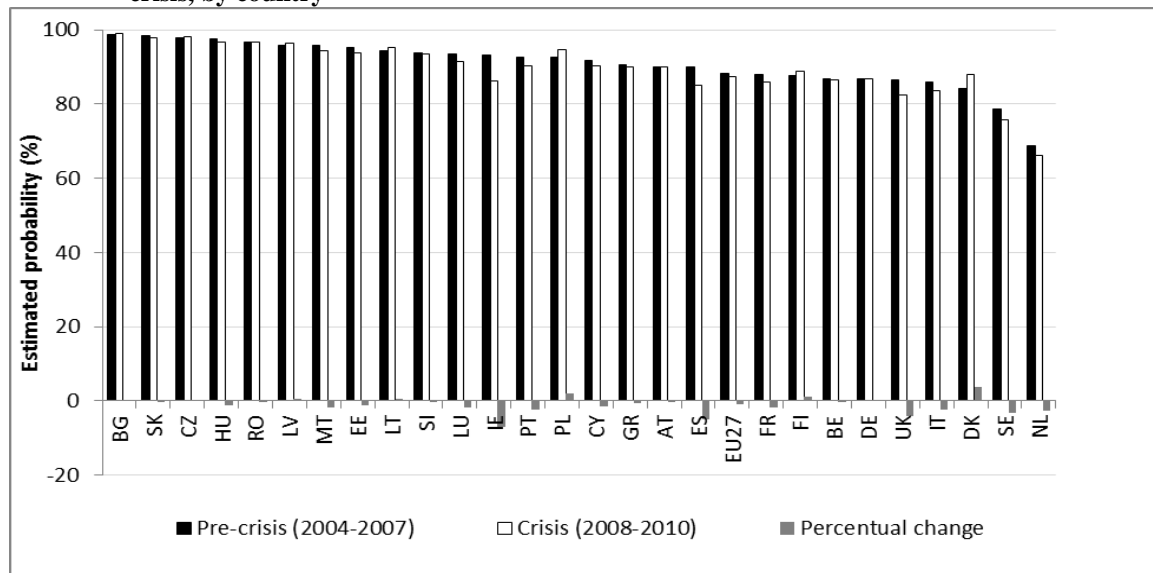
Source: Authors' estimations using the annual LFS microdata 2004-2010.
Note: The probabilities are estimated from a probit estimation controlling for age, gender, level of graduation, field of the degree, year of graduation and survey-year and country fixed effects.

When further controlling for labour market contextualizing variables, there are no significant changes except in Austria and Sweden (see panel B of Table A.11) where the crisis effect is much more pronounced.

Results by country and gender

Figure 9 shows the gender gap of the estimated probability of working full-time (see also Table A.12). While there are differences with respect to the level of the gender gap between countries, the evolution over time does not seem to vary dramatically within each country. The only exceptions worthwhile mentioning are:

- Malta and Estonia, where the gender gap increased by 5 p.p. and 4 p.p., respectively. In both cases this increase was due to a decrease in the female probability of working full-time and an increase of the male one.

- Austria, where the gender gap decreased by 4 p.p., thanks to the decrease of the male probability of working full-time and an increase of the female one.

Figure 9 **Estimated gender gap in the probability of working full-time before (2004-2007) and during (2008-2010) the crisis, by country**
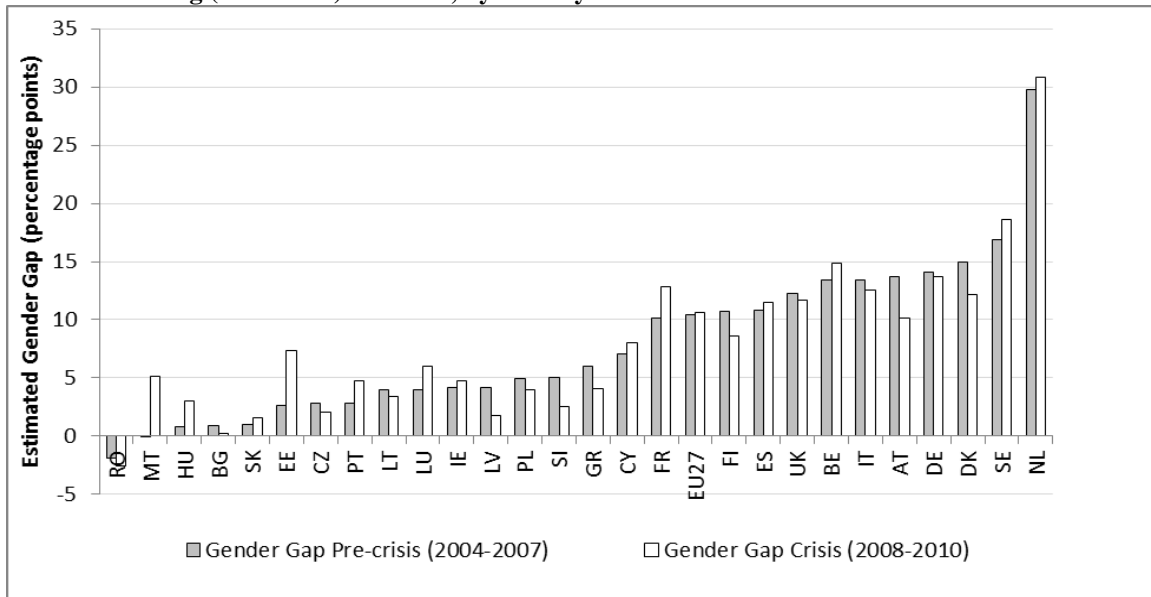
Source: Authors' estimations using the annual LFS microdata 2004-2010.

Note: Difference between the males and female estimated probability of being employed full-time. The probabilities are estimated from a probit estimation controlling for age, gender, level of graduation, field of the degree, year of graduation, field, survey-year fixed effects.

6 Conclusions

This report aims at analyzing the determinants of the employability of young graduates, as defined in the employability benchmark. It attempts to isolate the contribution of education attainment for the transition from education to work by controlling for specific labour market contextualizing variables. Furthermore, it considers the role of degree orientation and work experience during studies in explaining employability of upper-secondary graduates. Among those who are employed we analyze the quality of that job by estimating the probability of having a permanent vs. temporary contract and the probability of working full-time vs. part-time.

Regarding the probability of being employed, we find that the contribution of education attainment is significant and constant, even after controlling for labour market contextual variables. Overall, we find that females and those who graduated sooner face a disadvantaged situation in the labour market with respect to all the three dependent variables considered (i.e., probability of being employed, probability of having a permanent contract and probability of working full-time).

While we do not find significant differences in the contribution of the basic determinants of employability between the pre-crisis and the crisis periods, except for gender which role has decreased, the crisis affected negatively the estimated probability of being employed at the country level: in the majority of the countries this probability decreased after 2008. Additionally, the gender gap in the employability has decreased but at the expense of the male probability of being employed, rather than due to an increase in females' situation. Furthermore, we find that, overall, having a vocational oriented degree and/or working during studies does not affect significantly the probability of having a job. On the other hand, for a few countries, these two factors are important and our analysis shows that among the two, working during studies proves to be a more significant factor than the sole orientation of the degree. Finally, whereas education attainment is an important determinant for working full-time, it does not play a role in explaining the probability of having a permanent contract.

The results on the constant statistical significance of educational factors on the probability of being employed soon after graduation, even after controlling for labour market saturation, comfort the need to give a larger responsibility to Education and Training institutions in the preparation of young adults for their successful entrance into the labour market.

Until the adoption of the Employability Benchmark in May 2012, the employment status of the youth was mainly considered as the consequence and responsibility of labour market institutions. These new results highlight the need to also include the Education and Training partners into the discussion at the political level to ensure the adoption of reforms that target a higher degree of matching between the competences supplied by the Education and Training institutions and the competences demanded by the labour market.

Still, our analysis also revealed a lack of significance of the vocational orientation of a degree at upper secondary level in the majority of the EU Member States. This result should be interpreted as a motivation to first, understand what is particular in the vocational system of the countries where it does make a difference in employability and second, to go beyond the simple vocationalization of the programmes and to consider instead a more systematic inclusion of on-the-job training modules in all types of degrees, both at the secondary and tertiary level.

This report raises the need for further research in the role played by specific types of reforms on the probability of being employed in the three years following graduation and on the type of contract that young graduates can expect to get. Further research should also test for the role played by specific labour market reforms in isolation of education and training reforms and in a context of simultaneity, to better assist countries in their policy orientations.

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Annex A

List of tables in the Annex A

Table A.1- Trend series benchmark indicator data, 2004-2011, by level of educational attainment

Country	Benchmark indicator (ISCED 3-6)								Medium level of education attainment (ISCED3-4)								High level of education attainment (ISCED5-6)							
	2004	2005	2006	2007	2008	2009	2010	2011	2004	2005	2006	2007	2008	2009	2010	2011	2004	2005	2006	2007	2008	2009	2010	2011
EU27	m	m	79.0	80.9	82.0	78.3	77.5	77.2	m	m	73.9	75.6	77.2	72.5	72.1	71.3	m	m	84.2	86.0	86.9	83.8	82.7	82.7
AT	86.6	87.6	90.1	90.5	90.6	88.6	88.7	91.0	84.7	86.9	89.9	89.9	89.0	87.7	88.2	91.0	90.4	89.2	90.3	91.9	94.7	91.0	90.0	91.2
BE	85.0	79.0	81.1	82.1	83.9	81.0	81.3	80.8	79.8	68.1	72.0	73.2	73.6	71.9	71.5	73.5	88.3	87.2	87.5	88.5	90.8	87.8	88.2	86.0
BG	65.8	67.7	69.6	72.3	79.6	73.6	68.7	57.5	54.1	55.4	58.8	62.5	74.1	63.7	58.4	48.4	76.6	81.1	82.3	85.0	87.2	85.2	82.7	74.0
CY	82.7	77.4	80.5	82.3	85.8	81.2	78.6	73.1	72.1	57.0	74.0	71.5	80.9	73.8	70.0	57.6	86.4	85.1	82.6	85.3	87.0	83.0	80.1	76.7
CZ	m	m	82.8	87.6	87.9	84.5	81.3	80.3	m	m	80.9	86.1	87.6	81.7	77.4	76.1	m	m	87.5	91.2	88.5	89.0	87.1	85.6
DE	81.0	79.6	82.1	84.2	86.5	85.3	86.1	88.2	76.0	75.4	77.9	79.6	83.2	81.0	83.7	84.5	91.0	88.5	90.9	91.8	92.5	92.9	90.2	94.2
DK	82.6	86.4	89.0	90.9	90.6	87.9	83.5	83.0	83.6	84.5	89.3	89.0	90.2	84.2	82.0	82.9	81.2	88.5	88.7	92.8	90.9	91.0	84.8	83.1
EE	71.3	75.0	84.9	86.5	82.3	67.6	64.3	75.1	78.2	68.2u	78.6u	81.7u	81.9	64.5u	48.4u	68.4u	63.4	80.7	90.5	90.8	82.7	71.2u	76.7	81.5
ES	77.9	77.9	82.3	85.8	81.9	72.6	70.4	66.4	73.9	71.9	77.7	81.7	74.5	63.8	60.5	51.4	78.9	79.9	84.0	87.4	85.1	76.1	74.5	71.8
FI	77.0	79.3	79.7	82.8	82.3	77.8	79.7	78.4	72.3	75.9	75.3	81.4	78.9	72.9	76.3	73.6	84.1	84.8	87.4	85.1	87.8	84.1	84.9	85.1
FR	77.2	79.5	79.0	80.0	83.3	77.2	77.4	77.6	73.7	73.7	72.0	73.0	75.1	68.7	69.2	68.5	79.3	83.0	83.3	84.8	88.9	83.4	83.0	83.5
EL	63.6	59.2	66.6	67.8	67.9	64.7	58.5	50.2	59.7	53.7	62.6	64.2	62.9	60.1	55.8	46.2	67.4	65.3	69.2	69.9	70.8	67.7	60.3	52.5
HU	81.2	74.1	79.8	80.1	80.1	75.6	74.4	73.5	76.0	62.1	71.8	72.9	71.7	66.4	65.9	63.5	86.0	88.4	87.6	86.9	87.4	84.7	82.8	83.3
IE	86.1	85.3	88.5	87.4	85.7	75.5	71.5	71.4	74.2	77.9	82.0	81.2	79.2	61.8	56.9	52.6	91.5	89.0	91.4	90.4	88.7	83.3	80.2	81.7
IT	65.1	62.2	66.2	66.1	65.2	60.6	57.7	57.6	62.9	61.7	63.6	62.6	60.5	56.0	52.3	50.6	67.9	62.7	69.0	70.0	70.5	66.0	64.7	66.1
LT	71.9	78.3	83.3	83.7	79.3	72.9	73.6	69.4	63.3	68.6	74.7	72.8	67.8	56.9	54.3	48.2u	78.8	87.7	90.4	92.5	87.6	84.6	84.4	82.2
LU	89.6	90.1	91.1	88.0	86.9	85.5	89.5	86.1	87.1	87.6	86.5	87.7	80.0	79.3	86.6	78.5	92.3	92.9	95.8	88.3	92.9	90.4	91.3	90.7
LV	74.5	82.2	78.5	82.0	83.1	71.4	64.6	72.7	67.8	76.5	73.1	77.9	77.6	59.2	54.0	56.9	82.8	87.8	85.0	86.5	87.6	82.1	75.5	85.1
MT	92.8	92.5	91.2	93.7	95.7	94.1	93.8	91.2	91.2	91.6u	87.0u	89.9	96.3	89.7	87.3u	85.6	94.4	93.5u	94.2	96.5	95.3	97.5	98.0	94.7
NL	91.5	92.4	92.7	94.4	93.6	92.9	92.6	92.2	88.6	89.3	90.7	91.9	91.4	91.3	89.7	89.1	93.8	95.0	94.4	96.6	95.4	94.2	94.8	94.4
PL	64.0	67.3	71.3	74.8	79.3	78.4	76.5	75.4	50.3	54.4	60.7	64.9	70.1	68.7	67.4	65.7	80.7	80.9	81.6	84.4	87.0	85.7	83.7	82.6
PT	82.9	83.1	82.9	81.2	82.7	82.6	80.7	76.0	78.6	80.4	80.7	79.7	81.9	79.9	77.4	73.5	85.2	84.7	84.3	82.0	83.2	84.2	83.2	78.3
RO	73.9	72.1	74.7	79.3	84.8	77.6	71.2	70.4	65.5	62.7	64.8	70.7	77.1	69.1	61.3	58.8	83.9	84.7	86.4	89.0	92.9	85.7	81.9	80.7
SE	80.4	79.4	83.3	85.4	85.9	81.7	82.7	84.4	75.6	74.2	78.4	81.0	81.6	74.6	77.3	79.5	86.5	85.4	88.2	89.9	90.7	89.9	89.3	90.5
SI	73.4	78.4	80.8	81.6	83.4	82.3	80.7	76.0	69.9u	72.3	77.4	78.0	79.8	73.3	75.1	68.7u	78.3u	86.7	84.5	84.9	86.7	88.7	84.3	80.3
SK	65.0	72.8	77.5	81.0	81.4	74.4	69.4	70.3	59.9	66.4	71.7	77.8	79.5	67.9	60.5	61.7	76.0	84.9	87.9	86.4	84.3	83.5	80.6	79.5
UK	87.7	87.3	86.3	85.7	83.6	80.0	81.6	81.2	83.8	83.7	84.7	82.0	79.5	75.0	76.5	75.6	90.9	90.1	87.7	89.2	87.3	84.0	85.9	85.7

Source : Eurostat, EU LFS microdata (extraction date : June 13, 2012)
Notes: m=missing; u=values in brackets lack reliability due to small sample sizes.

Table A.2- Trend series benchmark indicator data for females, 2004-2011, by level of educational attainment

	ISCED 3-6								ISCED 3-4								ISCED 5-6							
Country	2004	2005	2006	2007	2008	2009	2010	2011	2004	2005	2006	2007	2008	2009	2010	2011	2004	2005	2006	2007	2008	2009	2010	2011
EU27	m	m	76.7	78.2	79.6	77.0	75.5	75.1	m	m	70.8	71.9	73.0	70.6	68.8	68.2	m	m	81.9	83.4	85.0	82.1	81.0	80.5
AT	88.8	85.4	88.2	87.8	89.9	87.7	87.7	89.9	89.3	85.8	89.5	87.7	89.3	87.5	89.4	91.4	88.0	84.6	84.6	87.8	91.5	88.5	83.9	86.4
BE	84.4	78.3	79.9	80.9	82.1	80.8	80.6	81.4	74.5	62.4	65.5	67.3	66.0	69.7	66.3	72.9	90.2	87.7	87.7	88.5	90.4	86.8	88.3	86.0
BG	66.7	66.9	69.2	70.2	76.0	71.2	71.3	58.9	50.5	53.8	59.8	59.7	72.3	59.3	61.4	50.1	76.7	76.9	77.8	80.2	79.9	80.2	80.0	69.8
CY	75.4	74.4	80.8	81.4	86.0	79.5	78.7	72.2	66.9u	57.7	76.6u	58.5u	85.5u	69.9u	78.5u	65.3u	78.7	79.7	81.4	85.0	86.1	80.7	78.7	73.3
CZ	m	m	76.4	82.5	82.4	79.5	76.7	73.9	m	m	73.8	79.9	82.1	75.9	71.9	66.9	m	m	81.7	87.0	82.9	84.0	81.9	79.6
DE	81.4	78.0	81.2	81.7	84.0	84.9	84.5	87.6	77.9	75.0	78.8	77.6	80.8	80.9	81.9	84.4	88.4	84.6	86.5	88.2	89.6	92.1	88.4	92.6
DK	79.9	82.3	85.7	87.5	89.1	86.9	82.3	78.3	78.9	79.8	86.8	84.6	89.4	83.7	82.7	77.0	81.1	84.9	84.7	90.2	88.8	88.9	82.1	79.3
EE	62.2	66.4	77.4	84.0	75.7	60.6u	57.2u	68.6	71.3u	m	m	m	74.7u	m	m	m	53.3u	73.5u	85.5u	86.6u	76.4u	62.5u	65.5u	73.5u
ES	74.8	74.5	79.1	83.6	81.2	72.4	70.0	65.5	69.3	65.6	72.9	80.0	70.7	66.7	58.9	48.0	76.2	77.2	81.2	84.7	85.4	74.6	73.6	70.8
FI	74.7	75.2	76.6	78.9	77.2	76.5	76.6	75.3	70.0	72.1	71.7	79.1	69.4	74.8	72.2	71.2	80.6	78.9	83.7	78.6	85.6	78.1	81.5	79.9
FR	76.5	77.0	76.1	78.6	83.3	76.7	75.8	75.7	71.1	67.0	65.4	69.8	72.4	66.7	64.4	65.9	79.3	81.9	81.6	83.5	89.2	82.8	82.6	81.2
EL	59.3	54.8	63.0	64.8	66.3	62.3	56.9	48.8	54.9	47.6	55.7	56.5	58.8	56.1	51.8	44.6	63.3	62.1	67.6	68.9	70.0	65.6	59.4	50.6
HU	78.5	70.4	77.5	76.5	76.1	73.8	74.7	71.4	72.5	56.1	66.8	65.5	65.0	63.9	62.8	59.0	83.5	84.9	85.7	84.1	83.3	81.1	83.1	80.7
IE	85.6	85.6	86.6	84.7	85.4	77.9	72.7	71.5	70.8u	75.2u	74.8	74.9	76.8	64.6	55.6	50.6	91.9	89.9	90.7	88.5	88.8	83.8	81.1	81.4
IT	61.9	57.2	61.7	61.3	61.5	57.4	55.4	55	57.9	56.2	56.4	56.5	55.1	51.8	49.7	46.2	66.4	58.1	66.1	65.2	66.7	62.1	61.0	63.1
LT	71.7	75.0	79.8	81.9	75.1	74.3	76.7	67.7	56.9u	62.5u	65.2u	67.1u	50.4u	54.7u	54.5u	m	83.1u	84.2	88.7u	90.8	87.4	85.1	85.2	80.5
LU	84.5	87.0	91.0	87.5	84.5	84.7	84.4	83.2	80.0	82.4	86.9	87.9u	78.4u	77.1u	84.3u	68.0u	89.5	91.0	95.5	87.1u	90.7u	90.0u	84.5u	90.8
LV	64.4	76.0	68.7	79.0	76.4	69.0	64.4	72.5	54.6	63.9u	53.4	72.8	63.7	53.3	49.6	48.2u	74.0	84.7	81.8	83.4	82.9	78.3	73.3	82.7
MT	95.4	90.9u	92.0	93.7	95.9	94.1	93.2	89.3	94.3u	m	m	m	94.7u	m	m	m	96.6u	92.0u	96.5u	97.7u	96.8u	96.4u	97.6u	93.1
NL	91.3	92.5	91.6	93.9	92.0	92.7	91.4	92	89.1	89.2	88.9	91.7	90.4	90.7	86.0	87.7	92.8	95.0	93.7	95.7	93.1	94.3	95.2	94.8
PL	60.6	63.8	69.3	71.5	75.6	75.2	73.4	70.8	43.1	48.6	55.3	58.0	62.8	60.8	58.8	54.4	77.2	76.7	79.4	81.6	83.8	82.6	81.6	78.9
PT	82.1	81.9	80.6	79.3	79.9	80.3	79.4	73.8	78.0	75.7	76.8	77.1	75.0	72.8	73.9	69.7	83.9	84.3	82.5	80.2	82.2	83.8	83.2	77.0
RO	76.9	71.3	75.4	79.6	82.3	76.3	70.5	68.6	70.9	61.6	64.0	68.3	71.3	65.0	58.2	54.0	83.5	83.3	86.5	89.6	92.0	85.0	80.9	78.9
SE	80.5	78.2	81.3	83.0	84.0	82.2	81.7	83.3	74.2	73.9	76.4	78.2	78.4	75.0	75.3	77.6	87.0	82.7	85.5	87.1	89.3	88.9	87.6	89.2
SI	66.4u	74.1	75.8	76.1	79.7	81.3	77.2	73.4	53.9u	63.3u	68.6u	67.2u	74.2u	68.8u	63.3u	59.3u	75.3u	84.9	80.9	80.8	82.6	86.6	81.6	77.6
SK	62.2	69.5	72.9	77.6	74.2	72.6	69.6	66.6	59.0	62.0	66.0	74.0	68.6	66.0	58.5	57.1	68.3	81.2	83.2	82.3	80.2	78.7	78.1	73.4
UK	85.6	84.9	85.3	83.3	82.3	79.7	78.6	79.1	77.5	78.1	80.7	77.6	75.5	72.2	70.7	69.7	91.9	90.0	89.2	88.4	87.7	85.4	85.5	86.3

Source : Eurostat, EU LFS microdata (extraction date : June 13, 2012)
Notes: m=missing; u=values in brackets lack reliability due to small sample sizes.

Table A.3 Trend series benchmark indicator data for males, 2004-2011, by level of educational attainment

Country	ISCED 3-6								ISCED 3-4								ISCED 5-6							
	2004	2005	2006	2007	2008	2009	2010	2011	2004	2005	2006	2007	2008	2009	2010	2011	2004	2005	2006	2007	2008	2009	2010	2011
EU27	m	m	81.5	83.8	84.6	79.7	79.5	79.4	m	m	76.8	79.0	80.8	74.2	75.0	74.0	m	m	87.2	89.4	89.3	86.0	85.0	85.5
AT	84.6	89.6	91.7	92.8	91.1	89.3	89.4	92.0	80.6	87.9	90.4	91.8	88.9	87.9	87.3	90.7	92.6	93.6	95.1	95.4	97.5	93.5	96.7	95.7
BE	85.6	79.8	82.4	83.3	85.6	81.4	82.2	80.2	84.3	72.9	77.2	77.5	79.1	73.6	75.9	73.9	86.4	86.4	87.1	88.4	91.2	89.2	88.1	86.0
BG	64.7	68.8	69.9	74.3	82.5	75.8	66.4	56.2	56.9	56.7	58.0	64.6	75.2	66.5	56.5	47.2	76.6	88.8	89.4	91.8	94.6	92.8	86.9	80.1
CY	90.8	81.3	80.3	83.5	85.6	84.0	78.4	74.1	79.0u	56.4	73.0	78.4	78.8	76.1	65.3	52.7	94.4	92.5	84.3	85.9	88.6	87.3	82.4	81.4
CZ	m	m	88.9	92.5	93.0	89.3	85.5	86.1	m	m	87.0	91.0	91.8	86.3	81.2	81.8	m	m	94.4	96.9	96.5	95.6	93.7	94.9
DE	80.7	81.1	82.9	86.8	88.8	85.7	87.7	88.8	74.3	75.7	76.9	81.6	85.4	81.0	85.3	84.6	93.5	91.9	95.0	95.5	95.4	93.7	92.1	95.8
DK	85.7	90.9	92.6	94.3	92.2	89.0	84.6	87.7	87.9	89.4	91.4	92.9	90.9	84.5	81.4	87.4	81.3	92.7	94.3	95.7	93.7	93.8	87.9	88.1
EE	89.1	89.4u	94.5	89.7u	89.7	75.1u	72.4u	82.2	89.1u	m	91.0u	83.3u	87.2u	69.2u	m	73.7u	m	m	98.9u	m	93.9u	m	94.1u	94.7u
ES	81.8	81.6	85.7	88.1	82.7	72.8	71.0	67.4	79.6	77.7	82.1	82.9	78.2	60.9	62.0	54.3	82.4	83.1	87.1	90.7	84.8	77.6	75.7	72.9
FI	80.0	83.8	83.4	86.7	89.0	79.2	82.9	81.4	74.8	79.2	79.0	83.2	87.5	71.4	79.6	75.5	89.8	94.5	93.1	94.7	93.2	93.7	90.1	91.2
FR	77.8	82.1	82.0	81.7	83.3	77.8	79.1	79.7	75.9	79.1	77.5	75.9	77.4	70.5	73.5	70.9	79.2	84.3	85.3	86.7	88.4	84.3	83.4	86.5
EL	69.5	65.4	71.6	71.7	70.2	68.0	60.7	52.2	65.9	61.5	71.5	72.1	67.4	64.1	59.5	47.7	73.4	70.2	71.7	71.4	72.1	71.1	61.8	55.4
HU	84.5	78.2	82.3	84.0	84.3	77.4	74.1	76.0	79.8	67.9	76.0	78.8	77.0	68.2	68.5	67.5	89.8	93.2	90.3	91.2	93.2	89.4	82.2	87.2
IE	86.7	84.9	91.1	90.8	86.0	72.6	70.1	71.2	77.6u	80.3	88.7	87.0	81.7	59.2	58.1	54.5	91.0	87.8	92.4	93.2	88.6	82.6	78.9	82.2
IT	68.5	67.3	70.8	71.1	69.1	64.0	60.2	60.4	67.6	66.2	69.3	67.4	64.6	59.2	54.6	54.2	69.8	68.9	73.1	76.7	76.0	71.8	70.0	70.4
LT	72.1	82.1	87.4	85.6	84.1	71.4	69.8	71.0	70.7u	73.7u	82.5u	77.2u	80.5u	58.7u	54.2u	55.4u	73.4u	93.2u	93.2u	94.9	88.0u	83.9	83.1	84.2
LU	94.6	93.1	91.3	88.6	89.6	86.2	93.8	89.7	94.3	91.5	85.9	87.5u	82.2u	80.9u	88.5u	88.4u	95.0	95.2	96.1	90.0u	95.0u	90.7	97.0	90.6u
LV	89.0	88.9	90.4	85.4	90.9	74.1	64.9	72.8	82.5	86.4	90.1	81.6	86.8	63.5	57.0	62.5	100.0	92.5	90.9	92.8	97.1	88.4	80.0	92.0
MT	90.5	94.3u	90.4	93.8	95.5	94.1	94.4	92.9	m	m	89.6u	92.5u	m	89.5u	m	88.5u	92.6u	m	91.1u	95.0u	93.4u	99.1u	98.4u	96.3u
NL	91.8	92.3	94.0	95.0	95.5	93.2	93.9	92.4	88.0	89.4	92.5	92.2	92.5	92.0	93.4	90.5	95.0	95.0	95.4	97.6	98.0	94.1	94.3	93.9
PL	67.8	71.6	73.6	78.9	84.1	82.0	79.9	80.3	56.7	60.0	65.2	71.4	76.9	74.5	73.7	73.3	85.9	87.7	85.1	89.2	92.2	90.6	87.0	88.0
PT	84.5	84.7	86.0	84.3	87.1	85.7	82.2	78.7	79.4	84.0	84.6	82.5	90.0	86.6	81.1	77.3	88.2	85.4	87.2	85.8	85.0	85.0	83.3	80.1
RO	70.3	72.9	74.1	78.9	87.2	79.0	71.9	72.4	59.6	63.8	65.5	72.7	81.8	72.6	63.7	62.8	84.3	86.4	86.4	88.1	94.1	86.8	83.3	83.1
SE	80.3	80.6	85.3	87.7	87.6	81.3	83.7	85.4	76.7	74.5	80.2	83.3	84.1	74.3	78.8	81.0	86.0	88.8	91.3	93.3	92.2	91.1	91.2	91.9
SI	83.9u	83.4	86.1	87.1	86.6	83.3	84.0	78.4	82.1u	80.2	83.5	84.2	82.7	75.9u	80.0u	72.7u	92.2u	89.5	90.7u	91.8u	92.5u	92.4u	88.7u	84.3u
SK	68.0	76.3	82.5	84.3	88.0	76.3	69.3	73.8	60.8	70.4	77.0	80.9	87.0	69.2	61.9	64.7	85.7	89.6	94.0	91.3	90.0	91.9	85.5	88.6
UK	89.9	89.5	87.4	88.2	84.9	80.4	84.9	83.7	89.9	88.5	88.8	86.2	83.1	78.0	83.0	82.1	89.9	90.3	86.1	89.9	86.8	82.3	86.4	85.0

Source : Eurostat, EU LFS microdata (extraction date : June 13, 2012)

Notes: m=missing; u=values in brackets lack reliability due to small sample sizes.

Table A.4 Probability of being employed, without and with controls for the field of study, before (2004-2007) and during (2008-2010) the crisis: The sample is restricted to observations for which the JVR and regional unemployment youth unemployment is not missing

	Pre-crisis 2004-2007	Crisis 2008-2010	Pre-crisis 2004-2007	Crisis 2008-2010
VARIABLES	Basic	Basic	Add field	Add field
age	0.02*	0.03***	0.02	0.02**
	(0.007)	(0.006)	(0.011)	(0.008)
female	-0.21***	-0.18***	-0.20***	-0.18***
	(0.031)	(0.027)	(0.031)	(0.034)
Medium education attainment	-0.39***	-0.37***	-0.34***	-0.33***
	(0.046)	(0.028)	(0.049)	(0.043)
Graduation t-1	-0.19***	-0.24***	-0.20***	-0.25***
	(0.032)	(0.031)	(0.034)	(0.032)
Graduation t-2	-0.07***	-0.09***	-0.06***	-0.10***
	(0.014)	(0.016)	(0.014)	(0.018)
Constant	1.09***	1.06***	1.07***	1.17***
	(0.164)	(0.130)	(0.299)	(0.198)
Observations	77,008	97,548	73,044	95,231
Pseudo R-squared	0.055	0.065	0.067	0.074

Notes: Robust standard errors in parentheses. *** p<0.001, ** p<0.01, * p<0.05.
Each Probit regression controls for survey-year fixed effects, country fixed effects and for the interaction between country and year of survey.

Table A.5 – Estimated probability of being employed before the crisis (2004-2007), by country and field of education

country	field 1	field 2	field 3	field 4	field 5	field 6	field 7	field 8	field 9	field 10	field 13	field 14	field 15	field 16	field 17
EU27	0.76	0.84	0.73	0.81	0.75	0.62	0.85	0.76	0.76	0.82	0.83	0.72	0.76	0.79	0.83
AT	0.87	i	m	0.90	i	0.75	0.90	0.86	i	i	m	m	0.88	0.90	0.88
BE	i	0.92	i	0.84	i	i	0.87	0.74	i	m	i	i	0.77	0.81	0.87
BG	0.60	i	m	0.69	i	0.55	i	i	i	i	i	m	0.77	0.78	0.76
CY	i	i	m	i	i	i	i	i	m	i	i	i	i	0.84	i
CZ	0.82	i	m	0.88	i	i	0.83	0.91	i	i	m	m	0.83	0.86	0.83
DE	0.77	0.91	i	0.83	i	0.49	0.85	0.82	i	i	i	m	0.80	0.84	0.88
DK	i	i	i	0.90	i	i	0.89	0.74	i	i	i	m	0.88	0.89	0.92
EE	i	i	m	i	m	i	i	i	m	m	m	m	i	0.79	i
ES	i	0.85	m	0.91	m	0.70	0.82	0.73	i	i	i	i	0.84	0.83	0.78
FI	i	i	m	0.82	i	0.75	0.80	i	m	m	i	m	0.78	0.81	i
FR	0.85	0.86	m	0.81	0.70	i	0.87	0.74	i	i	i	i	0.76	0.76	i
GR	0.65	0.67	0.69	0.70	i	0.51	0.59	0.60	i	i	i	i	0.73	0.68	0.57
HU	0.78	0.87	0.74	0.79	i	0.58	0.89	0.76	i	m	i	m	0.77	0.82	0.82
IE	i	i	i	0.91	m	0.74	i	i	i	i	i	i	i	0.90	i
IT	0.64	0.70	i	0.73	0.64	m	0.76	0.56	0.62	i	0.63	0.55	0.64	0.61	0.59
LT	i	m	i	0.82	i	0.67	i	i	i	i	m	i	0.73	0.82	i
LU	i	i	m	i	i	i	i	i	i	m	i	m	i	0.89	i
LV	i	m	m	i	m	i	i	i	m	i	m	m	i	0.83	i
MT	m	m	i	i	i	i	i	i	m	m	m	i	i	i	i
NL	0.92	0.93	i	0.95	i	0.84	0.94	0.90	i	m	i	m	0.92	0.93	0.95
PL	0.65	0.81	i	0.70	i	0.58	0.81	0.74	0.70	i	i	i	0.59	0.77	0.78
PT	i	i	i	0.87	0.84	0.86	0.89	0.77	0.82	i	0.72	i	0.81	0.81	0.79
RO	0.71	0.79	i	0.70	0.84	0.63	0.83	0.77	0.74	i	0.81	m	0.78	0.84	0.88
SE	0.79	0.88	m	0.87	i	0.76	0.84	0.76	i	i	i	0.80	0.85	0.87	0.85
SI	i	m	m	0.86	m	0.56	0.82	i	i	m	i	m	0.82	0.77	0.78
SK	0.71	i	i	0.75	i	0.67	0.79	i	i	m	i	i	0.71	0.76	0.82
UK	i	0.89	i	0.93	i	i	0.90	0.84	i	i	i	i	0.83	0.87	0.91

Notes: Estimated probability controlling for age, gender, level of graduation, year of graduation and survey-year fixed effects. m=impossibility to run the regression due to missing values; i=number of observations insufficient to provide reliable estimates.

Legend: Field 1 – Agriculture and Veterinary; Field 2 – Computer Science; Field 3 – Computer use; Field 4 – Engineering, manufacturing and construction; Field 5 – Foreign languages; Field 6 – General programmes; Field 7 – Health and Welfare; Field 8 – Humanities, languages and arts; Field 9 – Life Science; Field 10 – Mathematics and Statistics; Field 13 – Physical Science; Field 14 – Science, mathematics and computing; Field 15 – Services; Field 16 – Social sciences, business and law; Field 17 – Teacher training and education science.

Table A.6 – Estimated probability of being employed after the crisis (2008-2010), by country and field of education

country	field 1	field 2	field 3	field 4	field 5	field 6	field 7	field 8	field 9	field 10	field 13	field 14	field 15	field 16	field 17
EU27	0.78	0.84	0.74	0.81	0.76	0.61	0.86	0.77	0.82	0.77	0.82	0.74	0.76	0.80	0.85
AT	i	i	m	0.89	i	0.74	0.94	0.86	i	m	i	m	0.87	0.90	0.94
BE	i	i	i	0.84	i	0.61	0.88	0.72	i	m	i	i	0.75	0.84	0.87
BG	i	m	m	0.75	m	0.61	i	i	m	m	m	m	i	0.82	i
CY	m	i	m	i	i	i	i	0.76	m	i	i	i	0.85	0.85	i
CZ	0.86	i	i	0.87	i	i	0.86	0.78	i	m	i	m	0.78	0.85	0.85
DE	i	i	m	0.88	m	0.50	0.89	0.83	m	m	i	m	0.83	0.89	0.91
DK	i	i	i	0.84	i	i	0.88	0.81	i	i	i	m	i	0.92	0.91
EE	m	m	i	0.70	m	i	i	i	m	m	m	i	i	i	i
ES	i	0.84	m	0.76	m	0.63	0.81	0.71	i	m	i	m	0.72	0.77	0.73
FI	i	i	m	0.84	i	0.75	0.82	i	i	m	i	m	0.77	0.83	i
FR	0.81	0.89	m	0.81	i	i	0.87	0.74	i	i	i	i	0.78	0.76	m
GR	0.54	0.54	i	0.68	i	0.57	0.61	0.58	i	i	i	m	0.70	0.67	0.75
HU	0.80	0.86	0.69	0.74	i	0.59	0.83	0.79	i	m	m	i	0.77	0.80	0.81
IE	i	i	i	0.76	i	0.65	0.81	0.73	i	i	i	m	0.75	0.83	0.89
IT	0.59	0.66	i	0.67	0.66	0.45	0.77	0.58	0.67	i	i	i	0.54	0.59	0.74
LT	i	i	m	0.71	i	0.57	i	i	i	i	m	m	0.68	0.83	i
LU	m	i	m	i	i	i	i	i	i	m	i	m	i	0.87	i
LV	i	i	m	0.72	i	0.61	i	i	m	m	m	m	i	0.78	i
MT	m	i	m	i	i	i	i	i	m	m	m	m	i	i	i
NL	i	i	i	0.94	i	i	0.93	0.93	m	i	i	m	0.93	0.93	0.93
PL	0.77	0.85	i	0.79	0.85	0.65	0.85	0.82	0.80	i	0.80	i	0.71	0.80	0.83
PT	i	i	i	0.82	i	0.79	0.86	0.80	0.81	i	i	i	0.85	0.81	0.83
RO	0.71	0.82	i	0.72	i	0.65	0.92	0.80	i	i	i	0.71	0.84	0.83	i
SE	0.81	0.87	i	0.85	i	0.76	0.85	0.76	i	i	i	0.82	0.83	0.89	0.87
SI	i	i	m	0.85	i	i	0.83	i	i	i	i	m	0.82	0.82	i
SK	i	i	m	0.74	i	i	0.77	i	i	m	i	i	0.71	0.80	0.73
UK	i	i	i	0.85	i	i	0.85	0.81	i	i	i	i	0.76	0.84	0.89

Notes: Estimated probability controlling for age, gender, level of graduation, year of graduation and survey-year fixed effects. m=impossibility to run the regression due to missing values; i=number of observations insufficient to provide reliable estimates.
Legend: Field 1 – Agriculture and Veterinary; Field 2 – Computer Science; Field 3 – Computer use; Field 4 – Engineering, manufacturing and construction; Field 5 – Foreign languages; Field 6 – General programmes; Field 7 – Health and Welfare; Field 8 – Humanities, languages and arts; Field 9 – Life Science; Field 10 – Mathematics and Statistics; Field 13 – Physical Science; Field 14 – Science, mathematics and computing; Field 15 – Services; Field 16 – Social sciences, business and law; Field 17 – Teacher training and education science.

Table A.7 Probability of having a permanent job, without and with controls for the field of study, before (2004-2007) and during (2008-2010) the crisis, controlling for the JVR and the regional unemployment rate

	Pre-crisis 2004-2007	Crisis 2008-2010	Pre-crisis 2004-2007	Crisis 2008-2010
VARIABLES	Basic	Basic	Add field	Add field
age	0.05***	0.05***	0.05***	0.06***
	(0.007)	(0.011)	(0.007)	(0.011)
female	-0.08*	-0.11***	-0.04	-0.04
	(0.037)	(0.034)	(0.038)	(0.031)
Medium education attainment	0.13	0.05	0.16*	0.04
	(0.077)	(0.095)	(0.078)	(0.090)
Graduation t-1	-0.35***	-0.40***	-0.35***	-0.40***
	(0.034)	(0.017)	(0.042)	(0.019)
Graduation t-2	-0.14***	-0.14***	-0.13***	-0.14***
	(0.031)	(0.015)	(0.035)	(0.015)
JVR	-4.80***	0.32**	-4.53***	0.31**
	(0.923)	(0.104)	(0.911)	(0.107)
Regional youth	0.01	0.00	0.01	0.00
Unemployment rate	(0.003)	(0.004)	(0.004)	(0.004)
JVR * Reg. Youth	-0.01**	-0.01***	-0.01**	-0.01**
Unemployment rate	(0.003)	(0.003)	(0.004)	(0.004)
Constant	8.06***	-0.49	7.41***	-1.03***
	(1.440)	(0.260)	(1.437)	(0.248)
Observations	54,024	62,437	51,440	61,066
Pseudo R-squared	0.159	0.1462	0.169	0.1556

Notes: Robust standard errors in parentheses. *** p<0.001, ** p<0.01, * p<0.05.
Each Probit regression controls for survey-year fixed effects, country fixed effects and for the interaction between country and year of survey.

Table A.8 Estimated probability of being employed on a permanent vs. temporary contract before (2004-2007) and during (2008-2010) the crisis, by country

country	PANEL A (controlling for the baseline set of explanatory variables)			PANEL B (further controlling for JVR and regional unemployment rate)		
	Pre-Crisis (2004-2007)	Crisis (2008-2010)	Crisis effect (p.p.)	Pre-Crisis (2004-2007)	Crisis (2008-2010)	Crisis effect (p.p)
EU27	0.71	0.71	0	0.73	0.71	-2
AT	0.88	0.89	1	0.83	0.89	6
BE	0.75	0.77	2	m	m	m
BG	0.93	0.95	2	0.93	0.95	3
CY	0.82	0.84	2	0.83	0.84	1
CZ	0.85	0.85	0	0.90	0.90	0
DE	0.73	0.73	0	0.74	0.74	-1
DK	0.85	0.89	4	m	0.86	m
EE	0.97	0.97	0	0.98	0.97	-1
ES	0.42	0.48	6	0.41	0.48	7
FI	0.64	0.71	7	0.67	0.72	5
FR	0.66	0.65	-1	m	0.65	m
GR	0.73	0.72	-1	0.71	0.73	2
HU	0.86	0.83	-3	0.84	0.83	-1
IE	0.91	0.84	-7	m	0.83	m
IT	0.53	0.52	-1	m	0.52	m
LT	0.93	0.97	3	0.93	0.97	3
LU	0.77	0.77	0	0.77	0.77	0
LV	0.92	0.96	4	0.92	0.96	4
MT	0.93	0.94	1	m	0.93	m
NL	0.72	0.70	-1	0.71	0.70	-2
PL	0.54	0.55	1	0.53	0.55	2
PT	0.43	0.38	-5	0.43	0.38	-5
RO	0.96	0.98	2	0.96	0.98	2
SE	0.57	0.62	5	0.59	0.61	2
SI	0.53	0.61	8	0.55	0.62	7
SK	0.91	0.91	0	0.91	0.92	2
UK	0.89	0.91	2	0.89	0.92	2

Notes: Panel A - Estimated probability controlling for age, gender, level of graduation, year of graduation, field of the degree and survey-year fixed effects.
Panel B – Estimated probability further controlling for the regional unemployment rate and interaction between JVR and regional unemployment rate.
m=impossibility to run the regression due to missing values.

Table A.9 Estimated probability of being employed on a permanent vs. temporary contract before (2004-2007) and during (2008-2010) the crisis, by country and gender

| country | PANEL A (controlling for the baseline set of explanatory variables) | | | | | | PANEL B (further controlling for JVR and regional unemployment rate) | | | | | |
| | Pre-Crisis (2004-2007) | | Crisis (2008-2010) | | Gender Gap (p.p.) | | Pre-Crisis (2004-2007) | | Crisis (2008-2010) | | Gender Gap (p.p.) | |
	Female	Male	Female	Male	Pre-crisis	Crisis	Female	Male	Female	Male	Pre-crisis	Crisis
EU27	0.69	0.73	0.69	0.70	4	1	0.71	0.76	0.69	0.73	5	4
AT	0.87	0.89	0.88	0.90	3	2	0.83	0.82	0.88	0.90	-2	2
BE	0.71	0.79	0.73	0.80	8	7	m	m	m	m	m	m
BG	0.93	0.93	0.96	0.93	0	-3	0.91	0.94	0.96	0.94	3	-3
CY	0.76	0.89	0.80	0.88	14	8	0.77	0.90	0.81	0.89	13	8
CZ	0.84	0.86	0.82	0.87	2	5	0.90	0.90	0.89	0.90	-1	1
DE	0.72	0.73	0.70	0.75	1	5	0.73	0.76	0.72	0.76	3	4
DK	0.81	0.88	0.87	0.91	8	5	m	m	0.85	0.87	m	2
EE	0.97	0.95	0.97	0.95	-2	-3	0.96	0.98	0.97	0.95	2	-3
ES	0.40	0.44	0.46	0.50	4	4	0.40	0.42	0.44	0.52	3	7
FI	0.55	0.73	0.62	0.80	17	18	0.59	0.75	0.64	0.80	16	15
FR	0.62	0.70	0.62	0.69	8	7	m	m	0.60	0.69	m	9
GR	0.70	0.77	0.69	0.76	6	6	0.69	0.74	0.71	0.76	6	6
HU	0.86	0.86	0.84	0.82	1	-2	0.83	0.84	0.84	0.81	1	-3
IE	0.90	0.92	0.83	0.84	1	1	m	m	0.83	0.82	m	0
IT	0.51	0.55	0.51	0.54	4	3	m	m	0.51	0.54	m	3
LT	0.96	0.90	0.96	0.96	-6	0	0.96	0.90	0.96	0.96	-6	0
LU	0.76	0.78	0.73	0.80	2	7	0.76	0.78	0.73	0.80	2	7
LV	0.93	0.90	0.96	0.95	-3	-1	0.92	0.92	0.96	0.95	-1	-1
MT	0.92	0.93	0.93	0.92	1	-1	m	m	0.93	0.91	m	-2
NL	0.70	0.73	0.69	0.72	3	3	0.70	0.73	0.69	0.71	3	3
PL	0.52	0.56	0.54	0.56	3	1	0.49	0.56	0.54	0.55	7	1
PT	0.40	0.47	0.33	0.43	7	10	0.40	0.46	0.33	0.44	6	10
RO	0.95	0.97	0.98	0.97	2	-1	m	m	0.98	0.97	m	-1
SE	0.51	0.63	0.55	0.68	12	12	0.52	0.65	0.55	0.66	14	12
SI	0.48	0.59	0.57	0.65	11	9	0.49	0.60	0.59	0.66	11	7
SK	0.91	0.89	0.91	0.91	-2	1	0.92	0.89	0.92	0.92	-4	0
UK	0.88	0.90	0.92	0.90	2	-1	0.88	0.89	0.91	0.90	1	-1

Notes: Panel A - Estimated probability controlling for age, gender, level of graduation, field of the degree, year of graduation and survey-year fixed effects.

Panel B – Estimated probability further controlling for regional unemployment rate and interaction between JVR and regional unemployment rate.

m=impossibility to run the regression due to missing values.

Table A.10 Probability of having a full-time job, without and with controls for the field of study, before (2004-2007) and during (2008-2010) the crisis

	Pre-crisis 2004-2007	Crisis 2008-2010	Pre-crisis 2004-2007	Crisis 2008-2010
VARIABLES	Basic	Basic	Add field	Add field
age	-0.01	0.00	-0.02*	-0.00
	(0.007)	(0.006)	(0.009)	(0.007)
female	-0.59***	-0.56***	-0.46***	-0.43***
	(0.050)	(0.049)	(0.035)	(0.041)
Medium education attainment	-0.27***	-0.27***	-0.26***	-0.32***
	(0.057)	(0.051)	(0.056)	(0.061)
Graduation t-1	-0.15***	-0.18***	-0.18***	-0.18***
	(0.023)	(0.023)	(0.042)	(0.024)
Graduation t-2	-0.04***	-0.04	-0.05**	-0.04
	(0.013)	(0.031)	(0.018)	(0.033)
JVR	-0.46	-0.27	-0.36	-0.34*
	(0.749)	(0.140)	(0.601)	(0.138)
Regional youth	0.00	-0.00	0.00	-0.00
Unemployment rate	(0.004)	(0.005)	(0.003)	(0.005)
JVR * Reg. Youth	-0.01***	-0.01	-0.01***	-0.01
Unemployment rate	(0.001)	(0.006)	(0.001)	(0.006)
Constant	2.82*	2.45***	1.85	2.14***
	(1.190)	(0.208)	(0.970)	(0.364)
Observations	57,831	68,876	54,998	67,392
Pseudo R-squared	0.106	0.1114	0.136	0.133

Notes: Robust standard errors in parentheses. *** p<0.001, ** p<0.01, * p<0.05.
Each Probit regression controls for the field of the degree, survey-year fixed effects, country fixed effects and the interaction between country and year of survey.

Table A.11 Estimated probability of being employed full-time vs. part-time before (2004-2007) and during (2008-2010) the crisis, by country

country	PANEL A (controlling for the baseline set of explanatory variables)			PANEL B (further controlling for JVR and regional unemployment rate)		
	Pre-Crisis (2004-2007)	Crisis (2008-2010)	Crisis effect (p.p.)	Pre-Crisis (2004-2007)	Crisis (2008-2010)	Crisis effect (p.p)
EU27	0.88	0.87	-1	0.88	0.87	-1
AT	0.90	0.90	0	0.92	0.90	-3
BE	0.87	0.86	0	m	m	m
BG	0.99	0.99	0	0.99	0.98	0
CY	0.92	0.90	-2	0.91	0.91	0
CZ	0.98	0.98	0	0.98	0.98	0
DE	0.87	0.87	0	0.87	0.87	-1
DK	0.84	0.88	4	m	0.89	m
EE	0.95	0.94	-1	0.94	0.94	0
ES	0.90	0.85	-5	0.90	0.84	-6
FI	0.88	0.89	1	0.88	0.88	0
FR	0.88	0.86	-2	m	0.86	m
GR	0.91	0.90	-1	0.90	0.90	1
HU	0.98	0.97	-1	0.98	0.96	-2
IE	0.93	0.86	-7	m	0.84	m
IT	0.86	0.84	-2	m	0.84	m
LT	0.94	0.95	1	0.94	0.95	1
LU	0.93	0.92	-2	0.93	0.92	-2
LV	0.96	0.96	0	0.98	0.96	-1
MT	0.96	0.94	-2	m	0.94	m
NL	0.69	0.66	-3	0.69	0.65	-4
PL	0.93	0.95	2	0.93	0.94	1
PT	0.93	0.90	-2	0.92	0.90	-2
RO	0.97	0.97	0	0.97	0.96	0
SE	0.79	0.76	-3	0.80	0.75	-6
SI	0.94	0.94	0	0.95	0.93	-2
SK	0.98	0.98	0	0.98	0.98	-1
UK	0.87	0.82	-4	0.87	0.82	-5

Notes: Panel A - Estimated probability controlling for age, gender, level of graduation, year of graduation, field of the degree and survey-year fixed effects.
Panel B – Estimated probability further controlling for the regional unemployment rate and interaction between JVR and regional unemployment rate.
m=impossibility to run the regression due to missing values.

Table A.12 Estimated probability of being employed full-time vs. part-time before (2004-2007) and during (2008-2010) the crisis, by country and gender

	PANEL A						PANEL B					
	(controlling for the baseline set of explanatory variables)						(further controlling for JVR and regional unemployment rate)					
	Pre-Crisis (2004-2007)		Crisis (2008-2010)		Gender Gap (p.p.)		Pre-Crisis (2004-2007)		Crisis (2008-2010)		Gender Gap (p.p.)	
country	Female	Male	Female	Male	Pre-crisis	Crisis	Female	Male	Female	Male	Pre-crisis	Crisis
EU27	0.83	0.93	0.82	0.93	10	11	0.83	0.93	0.82	0.92	10	10
AT	0.83	0.96	0.85	0.95	14	10	0.87	0.94	0.84	0.95	8	11
BE	0.80	0.94	0.79	0.94	13	15	m	m	m	m	m	m
BG	0.98	0.99	0.99	0.99	1	0	0.98	m	0.97	0.90	m	-7
CY	0.88	0.95	0.87	0.95	7	8	0.86	0.96	0.87	0.95	9	8
CZ	0.96	0.99	0.97	0.99	3	2	0.96	0.90	0.97	0.98	-6	1
DE	0.79	0.93	0.80	0.93	14	14	0.80	0.94	0.79	0.93	14	14
DK	0.77	0.92	0.82	0.94	15	12	m	m	0.83	0.94	m	11
EE	0.93	0.95	0.90	0.97	3	7	0.91	0.95	0.90	0.97	5	7
ES	0.85	0.95	0.80	0.91	11	12	0.85	0.95	0.78	0.91	10	12
FI	0.82	0.93	0.84	0.93	11	9	0.83	0.93	0.84	0.92	9	7
FR	0.83	0.93	0.80	0.93	10	13	m	m	0.80	0.92	m	12
GR	0.88	0.94	0.88	0.92	6	4	0.87	0.93	0.89	0.92	6	3
HU	0.97	0.98	0.95	0.98	1	3	0.97	0.98	0.94	0.98	1	4
IE	0.91	0.95	0.84	0.89	4	5	m	m	0.82	0.87	m	5
IT	0.79	0.92	0.77	0.90	13	13	m	m	0.77	0.90	m	13
LT	0.92	0.96	0.93	0.97	4	3	0.92	0.96	0.93	0.97	4	3
LU	0.91	0.95	0.88	0.94	4	6	0.91	0.95	0.88	0.94	4	6
LV	0.94	0.98	0.95	0.97	4	2	0.96	m	0.95	0.97	m	2
MT	0.95	0.95	0.91	0.96	0	5	m	m	0.92	0.95	m	2
NL	0.55	0.85	0.51	0.82	30	31	0.55	0.84	0.50	0.81	29	32
PL	0.90	0.95	0.93	0.97	5	4	0.91	0.96	0.92	0.96	5	4
PT	0.91	0.94	0.88	0.93	3	5	0.91	0.93	0.88	0.92	3	4
RO	0.97	0.96	0.98	0.95	-2	-3	m	m	0.97	0.95	m	-2
SE	0.70	0.87	0.66	0.85	17	19	0.72	0.88	0.64	0.84	16	19
SI	0.91	0.96	0.92	0.95	5	3	0.93	0.97	0.91	0.94	4	2
SK	0.98	0.99	0.97	0.99	1	2	0.98	0.98	0.96	0.98	0	2
UK	0.81	0.93	0.77	0.89	12	12	0.80	0.92	0.76	0.87	12	10

Notes: Panel A - Estimated probability controlling for age, gender, level of graduation, field of the degree, year of graduation and survey-year fixed effects.
Panel B – Estimated probability further controlling for regional unemployment rate and interaction between JVR and regional unemployment rate.
m=impossibility to run the regression due to missing values.

Annex B

List of tables in the Annex B

Table B.1 - Descriptive statistics for the sample used in the estimations presented in Table 1

	Variables	Pre-crisis (2004-2007) Basic		Crisis (2008-2010) Basic		Pre-crisis (2004-2007) Add field		Crisis (2008-2010) Add field	
		mean	sd	mean	sd	mean	sd	mean	sd
Baseline variables	Dependent var.	0.78	0.41	0.79	0.41	0.79	0.41	0.79	0.40
	age	24.56	3.62	24.64	3.60	24.59	3.60	24.68	3.58
	female	0.52	0.50	0.52	0.50	0.52	0.50	0.52	0.50
	Medium educ. attainment	0.50	0.50	0.49	0.50	0.49	0.50	0.48	0.50
	Graduation t-1	0.30	0.46	0.30	0.46	0.30	0.46	0.31	0.46
	Graduation t-2	0.34	0.47	0.34	0.47	0.34	0.47	0.34	0.47
Survey year FE	year 1	0.20	0.40	0.33	0.47	0.18	0.39	0.33	0.47
	year 2	0.24	0.43	0.33	0.47	0.23	0.42	0.33	0.47
	year 3	0.25	0.43	0.34	0.47	0.27	0.44	0.34	0.47
Country FE	AT	0.02	0.13	0.02	0.13	0.02	0.13	0.02	0.13
	BE	0.02	0.15	0.02	0.15	0.02	0.15	0.02	0.15
	BG	0.01	0.12	0.01	0.12	0.01	0.12	0.01	0.12
	CY	0.00	0.04	0.00	0.05	0.00	0.05	0.00	0.05
	CZ	0.01	0.10	0.02	0.14	0.01	0.11	0.02	0.14
	DE	0.18	0.38	0.19	0.39	0.19	0.39	0.20	0.40
	DK	0.01	0.11	0.01	0.10	0.01	0.12	0.01	0.10
	EE	0.00	0.06	0.00	0.06	0.00	0.06	0.00	0.06
	ES	0.07	0.26	0.06	0.23	0.06	0.23	0.06	0.23
	FI	0.01	0.12	0.01	0.12	0.02	0.12	0.02	0.12
	FR	0.12	0.33	0.13	0.33	0.13	0.34	0.13	0.34
	GR	0.02	0.14	0.02	0.13	0.02	0.15	0.02	0.13
	HU	0.02	0.13	0.02	0.14	0.02	0.14	0.02	0.14
	IE	0.01	0.08	0.01	0.09	0.00	0.06	0.01	0.09
	IT	0.09	0.29	0.09	0.28	0.09	0.29	0.09	0.28
	LT	0.01	0.09	0.01	0.10	0.01	0.10	0.01	0.10
	LU	0.00	0.03	0.00	0.03	0.00	0.03	0.00	0.03
	LV	0.01	0.07	0.01	0.08	0.01	0.07	0.01	0.08
	MT	0.00	0.03	0.00	0.03	0.00	0.03	0.00	0.03
	NL	0.02	0.15	0.03	0.17	0.03	0.16	0.03	0.17
	PL	0.12	0.32	0.12	0.32	0.10	0.30	0.12	0.33
	PT	0.02	0.13	0.02	0.14	0.02	0.14	0.02	0.15
	RO	0.05	0.21	0.04	0.19	0.05	0.22	0.04	0.19
	SE	0.03	0.18	0.03	0.16	0.04	0.19	0.03	0.16
	SI	0.01	0.07	0.00	0.06	0.01	0.07	0.00	0.07
	SK	0.02	0.13	0.01	0.12	0.02	0.14	0.01	0.12
	UK	0.12	0.33	0.12	0.33	0.11	0.31	0.10	0.30
Field of education	Field 1					0.03	0.16	0.03	0.16
	Field 2					0.03	0.18	0.03	0.18
	Field 3					0.01	0.08	0.00	0.07
	Field 4					0.23	0.42	0.22	0.41
	Field 5					0.01	0.12	0.01	0.11
	Field 6					0.05	0.23	0.07	0.25
	Field 7					0.10	0.30	0.10	0.30
	Field 8					0.06	0.24	0.06	0.24
	Field 9					0.01	0.12	0.01	0.12
	Field 10					0.01	0.08	0.00	0.06
	Field 11					0.01	0.11	0.01	0.11
	Field 12					0.01	0.10	0.01	0.08
	Field 13					0.09	0.28	0.09	0.29
	Field 14					0.29	0.46	0.29	0.46
	Field 17					0.05	0.22	0.05	0.22
	Observations	209003		152577		195066		149073	

Source: Author's estimations using the core LFS survey 2004-2010 (extraction date : June 13, 2012).
Legend: Field 1 – Agriculture and Veterinary; Field 2 – Computer Science; Field 3 – Computer use; Field 4 – Engineering, manufacturing and construction; Field 5 – Foreign languages; Field 6 – General programmes; Field 7 – Health and Welfare; Field 8 – Humanities, languages and arts; Field 9 – Life Science; Field 10 – Mathematics and Statistics; Field 13 – Physical Science; Field 14 – Science, mathematics and computing; Field 15 – Services; Field 16 – Social sciences, business and law; Field 17 – Teacher training and education science.

Table B.2 - Descriptive statistics for the sample used in the estimations presented in Table 2

		Pre-crisis (2004-2007) Basic		Crisis (2008-2010) Basic		Pre-crisis (2004-2007) Add field		Crisis (2008-2010) Add field	
	Variables	mean	sd	mean	sd	mean	sd	mean	sd
Baseline variables	Dependent variable	0.82	0.38	0.79	0.41	0.83	0.38	0.79	0.41
	age	24.78	3.67	24.69	3.60	24.79	3.63	24.73	3.58
	female	0.51	0.50	0.52	0.50	0.52	0.50	0.52	0.50
	Medium educ. attainment	0.51	0.50	0.49	0.50	0.48	0.50	0.48	0.50
	graduation t-1	0.31	0.46	0.30	0.46	0.31	0.46	0.31	0.46
	graduation t-2	0.34	0.47	0.34	0.47	0.34	0.47	0.34	0.47
Survey year FE	year 1	0.15	0.36	0.15	0.35	0.15	0.36	0.15	0.36
	year 2	0.12	0.32	0.42	0.49	0.11	0.31	0.42	0.49
	year 3	0.21	0.41			0.21	0.41		
Labour market variables	JVR	2.18	0.95	1.30	0.83	2.19	0.96	1.29	0.84
	Reg. Unemp. Rate	15.47	7.03	19.31	8.95	15.61	7.18	19.33	9.01
	JVR*Reg.Unemp.rate	30.68	14.54	20.81	11.46	31.06	14.72	20.59	11.40
Country FE	AT	0.01	0.08	0.02	0.13	0.01	0.08	0.02	0.13
	BE	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	BG	0.01	0.11	0.02	0.12	0.01	0.11	0.02	0.12
	CY	0.00	0.05	0.00	0.05	0.00	0.05	0.00	0.05
	CZ	0.00	0.07	0.01	0.09	0.00	0.07	0.01	0.09
	DE	0.27	0.44	0.21	0.40	0.28	0.45	0.21	0.41
	DK	0.00	0.00	0.00	0.06	0.00	0.00	0.00	0.06
	EE	0.01	0.08	0.00	0.07	0.01	0.09	0.01	0.07
	ES	0.10	0.30	0.06	0.23	0.09	0.29	0.06	0.24
	FI	0.03	0.16	0.01	0.12	0.03	0.17	0.02	0.12
	FR	0.00	0.00	0.12	0.33	0.00	0.00	0.12	0.33
	GR	0.03	0.16	0.02	0.14	0.03	0.16	0.02	0.14
	HU	0.03	0.16	0.02	0.14	0.03	0.17	0.02	0.14
	IE	0.00	0.00	0.01	0.09	0.00	0.00	0.01	0.09
	IT	0.00	0.00	0.07	0.26	0.00	0.00	0.07	0.26
	LT	0.02	0.15	0.02	0.12	0.02	0.15	0.02	0.12
	LU	0.00	0.05	0.00	0.04	0.00	0.05	0.00	0.04
	LV	0.01	0.11	0.01	0.10	0.01	0.10	0.01	0.10
	MT	0.00	0.00	0.00	0.03	0.00	0.00	0.00	0.03
	NL	0.05	0.21	0.03	0.17	0.05	0.22	0.03	0.17
	PL	0.07	0.25	0.14	0.35	0.07	0.26	0.14	0.35
	PT	0.03	0.17	0.02	0.15	0.03	0.17	0.02	0.15
	RO	0.05	0.22	0.04	0.20	0.06	0.23	0.04	0.21
	SE	0.04	0.20	0.03	0.17	0.04	0.20	0.03	0.18
	SI	0.01	0.09	0.00	0.06	0.01	0.09	0.00	0.07
	SK	0.01	0.12	0.01	0.11	0.02	0.12	0.01	0.11
	UK	0.22	0.41	0.12	0.32	0.19	0.39	0.10	0.30
Field of education	Field 1					0.02	0.15	0.03	0.16
	Field 2					0.03	0.18	0.04	0.19
	Field 3					0.01	0.09	0.00	0.07
	Field 4					0.22	0.42	0.22	0.41
	Field 5					0.01	0.10	0.01	0.11
	Field 6					0.07	0.25	0.07	0.25
	Field 7					0.11	0.31	0.10	0.30
	Field 8					0.07	0.25	0.06	0.24
	Field 9					0.01	0.11	0.01	0.12
	Field 10					0.01	0.08	0.00	0.06
	Field 11					0.01	0.12	0.01	0.10
	Field 12					0.01	0.08	0.01	0.09
	Field 13					0.09	0.28	0.09	0.29
	Field 14					0.28	0.45	0.30	0.46
	Field 17					0.06	0.23	0.05	0.22
	Observations	76996		97545		73033		95228	

Source: Author's estimations using the core LFS survey 2004-2010 (extraction date : June 13, 2012).

Table B.3 - Descriptive statistics for the sample used in the estimations presented in Table 6

	Observations	employed	female	age	hatyear1	hatyear2	hatyear3	VET	workedu	VET&work
Austria	493	91%	46%	23	34%	37%	29%	96%	94%	90%
Belgium	218	76%	42%	22	35%	37%	28%	78%	43%	35%
Bulgaria	299	62%	36%	22	48%	33%	19%	60%	24%	17%
Czech Rep	553	78%	43%	22	43%	35%	22%	93%	42%	39%
Denmark	139	79%	40%	24	36%	31%	33%	76%	73%	60%
France	443	69%	44%	23	44%	37%	19%	76%	60%	46%
Germany	511	81%	50%	23	31%	33%	37%	91%	38%	37%
Greece	387	60%	53%	23	47%	34%	19%	70%	49%	44%
Hungary	707	68%	40%	23	47%	31%	22%	85%	31%	29%
Ireland	771	61%	47%	23	41%	40%	19%	44%	44%	25%
Italy	1199	56%	40%	22	42%	37%	22%	87%	39%	36%
Latvia	139	60%	38%	22	36%	40%	24%	52%	35%	27%
Lithuania	169	57%	37%	23	37%	34%	30%	49%	26%	19%
Luxembourg	156	81%	42%	23	29%	35%	36%	49%	58%	35%
Netherlands	898	92%	52%	23	36%	34%	31%	92%	76%	70%
Poland	726	66%	39%	23	37%	34%	29%	75%	31%	25%
Portugal	286	78%	53%	24	40%	30%	30%	44%	31%	13%
Romania	358	73%	42%	23	45%	41%	14%	71%	9%	6%
Slovakia	367	68%	42%	22	43%	34%	23%	93%	17%	16%
Slovenia	147	78%	41%	23	47%	35%	18%	92%	35%	32%
Spain	355	63%	47%	23	46%	34%	20%	75%	29%	23%
Sweden	916	78%	44%	22	35%	35%	29%	56%	52%	29%
UK	664	73%	54%	24	42%	36%	21%	79%	29%	22%

Source: Author's estimations using the LFS ad-hoc module of 2009.
Note: Descriptive statistics for the field of the degree and the region of survey are available upon reauest to the authors.

Table B.4 - Descriptive statistics for the sample used in the estimations presented in Table 7

	Observations	employed	female	age	hatyear1	hatyear2	hatyear3	workedu
Austria	82	89%	61%	27	41%	16%	43%	87%
Belgium	296	89%	59%	25	36%	33%	31%	51%
Bulgaria	239	84%	60%	26	33%	31%	36%	61%
Czech Rep	243	88%	62%	27	33%	27%	40%	56%
Denmark	218	83%	66%	29	29%	38%	33%	83%
France	570	82%	58%	25	34%	36%	30%	84%
Germany	186	90%	47%	28	26%	36%	38%	53%
Greece	583	63%	63%	25	35%	34%	31%	55%
Hungary	435	82%	61%	26	35%	33%	32%	31%
Ireland	1224	84%	61%	25	32%	32%	37%	60%
Italy	951	63%	61%	28	34%	34%	32%	51%
Latvia	108	84%	62%	27	31%	32%	37%	67%
Lithuania	182	82%	60%	26	34%	31%	35%	52%
Luxembourg	124	88%	52%	26	45%	24%	31%	56%
Netherlands	951	94%	54%	26	31%	32%	37%	86%
Poland	725	86%	62%	27	30%	32%	38%	49%
Portugal	380	84%	67%	26	26%	31%	43%	28%
Romania	265	84%	55%	26	37%	31%	32%	26%
Slovakia	134	74%	67%	27	27%	33%	40%	43%
Slovenia	163	91%	62%	28	28%	28%	45%	71%
Spain	908	77%	53%	26	36%	33%	31%	35%
Sweden	735	91%	54%	28	28%	30%	42%	77%
UK	867	84%	58%	25	33%	35%	31%	44%

Source: Author's estimations using the LFS ad-hoc module of 2009.
Note: Descriptive statistics for the field of the degree and the region of survey are available upon reauest to the authors.

Table B.5 - Descriptive statistics for the sample used in the estimations presented in Table 8

	Variables	Pre-crisis (2004-2007) Basic		Crisis (2008-2010) Basic		Pre-crisis (2004-2007) Add field		Crisis (2008-2010) Add field	
		mean	sd	mean	sd	mean	sd	mean	sd
Baseline variables	Dependent variable	0.70	0.46	0.71	0.45	0.71	0.46	0.71	0.45
	age	24.72	3.57	24.81	3.55	24.73	3.55	24.86	3.53
	female	0.51	0.50	0.51	0.50	0.51	0.50	0.51	0.50
	Medium education attainment	0.47	0.50	0.46	0.50	0.46	0.50	0.45	0.50
	graduation t-1	0.29	0.45	0.30	0.46	0.29	0.45	0.30	0.46
	graduation t-2	0.34	0.48	0.34	0.47	0.35	0.48	0.34	0.47
Survey year FE	year 1	0.19	0.40	0.34	0.47	0.18	0.38	0.34	0.47
	year 2	0.23	0.42	0.33	0.47	0.23	0.42	0.33	0.47
	year 3	0.25	0.43	0.33	0.47	0.27	0.44	0.33	0.47
Country FE	AT	0.02	0.14	0.02	0.14	0.02	0.14	0.02	0.14
	BE	0.02	0.15	0.02	0.15	0.02	0.15	0.02	0.15
	BG	0.01	0.11	0.01	0.12	0.01	0.11	0.01	0.12
	CY	0.00	0.04	0.00	0.05	0.00	0.05	0.00	0.05
	CZ	0.01	0.11	0.02	0.14	0.01	0.11	0.02	0.14
	DE	0.19	0.39	0.21	0.41	0.20	0.40	0.22	0.41
	DK	0.01	0.12	0.01	0.11	0.02	0.13	0.01	0.11
	EE	0.00	0.06	0.00	0.05	0.00	0.07	0.00	0.06
	ES	0.07	0.26	0.06	0.23	0.06	0.24	0.06	0.23
	FI	0.01	0.12	0.02	0.12	0.02	0.12	0.02	0.12
	FR	0.13	0.34	0.13	0.34	0.14	0.35	0.13	0.34
	GR	0.01	0.12	0.01	0.11	0.02	0.12	0.01	0.11
	HU	0.02	0.14	0.02	0.14	0.02	0.14	0.02	0.14
	IE	0.01	0.08	0.01	0.09	0.00	0.06	0.01	0.09
	IT	0.06	0.24	0.06	0.24	0.06	0.24	0.06	0.23
	LT	0.01	0.09	0.01	0.10	0.01	0.10	0.01	0.10
	LU	0.00	0.03	0.00	0.03	0.00	0.03	0.00	0.03
	LV	0.01	0.08	0.01	0.08	0.01	0.08	0.01	0.08
	MT	0.00	0.03	0.00	0.03	0.00	0.03	0.00	0.03
	NL	0.03	0.17	0.03	0.18	0.03	0.18	0.03	0.18
	PL	0.10	0.30	0.11	0.32	0.09	0.28	0.12	0.32
	PT	0.02	0.14	0.02	0.15	0.02	0.14	0.02	0.15
	RO	0.04	0.20	0.03	0.18	0.05	0.21	0.04	0.18
	SE	0.04	0.19	0.03	0.17	0.04	0.20	0.03	0.17
	SI	0.01	0.07	0.00	0.07	0.01	0.08	0.00	0.07
	SK	0.02	0.13	0.01	0.12	0.02	0.14	0.01	0.12
	UK	0.14	0.34	0.13	0.33	0.12	0.33	0.11	0.31
Field of education	Field 1					0.02	0.15	0.02	0.15
	Field 2					0.03	0.18	0.04	0.19
	Field 3					0.01	0.08	0.01	0.07
	Field 4					0.23	0.42	0.22	0.42
	Field 5					0.01	0.11	0.01	0.11
	Field 6					0.04	0.20	0.05	0.21
	Field 7					0.11	0.31	0.11	0.32
	Field 8					0.06	0.23	0.06	0.23
	Field 9					0.01	0.11	0.01	0.12
	Field 10					0.01	0.08	0.00	0.07
	Field 11					0.01	0.12	0.01	0.11
	Field 12					0.01	0.10	0.01	0.08
	Field 13					0.08	0.28	0.09	0.28
	Field 14					0.30	0.46	0.30	0.46
	Field 17					0.05	0.23	0.06	0.23
	Observations	139275		99270		130921		97177	

Source: Author's estimations using the core LFS survey 2004-2010 (extraction date : June 13, 2012).
Legend: Field 1 – Agriculture and Veterinary; Field 2 – Computer Science; Field 3 – Computer use; Field 4 – Engineering, manufacturing and construction; Field 5 – Foreign languages; Field 6 – General programmes; Field 7 – Health and Welfare; Field 8 – Humanities, languages and arts; Field 9 – Life Science; Field 10 – Mathematics and Statistics; Field 13 – Physical Science; Field 14 – Science, mathematics and computing; Field 15 – Services; Field 16 – Social sciences, business and law; Field 17 – Teacher training and education science.

Table B.6 - Descriptive statistics for the sample used in the estimations presented in Table 9

	Variables	Pre-crisis 2004-2007 Basic		Crisis (2008-2010) Basic		Pre-crisis 2004-2007 Add field		Crisis (2008-2010) Add field	
		mean	sd	mean	sd	mean	sd	mean	sd
Baseline variables	Dependent variable	0.88	0.32	0.87	0.33	0.88	0.32	0.87	0.33
	age	24.80	3.61	24.88	3.59	24.81	3.59	24.92	3.57
	female	0.50	0.50	0.50	0.50	0.50	0.50	0.51	0.50
	Medium education attainment	0.47	0.50	0.46	0.50	0.45	0.50	0.45	0.50
	graduation t-1	0.29	0.45	0.29	0.45	0.29	0.45	0.30	0.46
	graduation t-2	0.34	0.48	0.34	0.48	0.35	0.48	0.34	0.48
Survey year	year 1	0.20	0.40	0.34	0.47	0.18	0.38	0.34	0.47
year	year 2	0.23	0.42	0.33	0.47	0.22	0.42	0.33	0.47
FE	year 3	0.25	0.44	0.33	0.47	0.27	0.44	0.33	0.47
Country FE	AT	0.02	0.13	0.02	0.13	0.02	0.14	0.02	0.14
	BE	0.02	0.15	0.02	0.15	0.02	0.15	0.02	0.15
	BG	0.01	0.11	0.01	0.11	0.01	0.11	0.01	0.12
	CY	0.00	0.04	0.00	0.05	0.00	0.05	0.00	0.05
	CZ	0.01	0.11	0.02	0.14	0.01	0.11	0.02	0.15
	DE	0.18	0.39	0.21	0.41	0.20	0.40	0.21	0.41
	DK	0.01	0.12	0.01	0.10	0.02	0.12	0.01	0.11
	EE	0.00	0.06	0.00	0.05	0.00	0.06	0.00	0.06
	ES	0.07	0.26	0.05	0.23	0.06	0.23	0.06	0.23
	FI	0.01	0.12	0.01	0.12	0.02	0.12	0.02	0.12
	FR	0.12	0.33	0.13	0.33	0.14	0.34	0.13	0.34
	GR	0.02	0.13	0.01	0.12	0.02	0.13	0.01	0.12
	HU	0.02	0.13	0.02	0.13	0.02	0.14	0.02	0.14
	IE	0.01	0.07	0.01	0.09	0.00	0.05	0.01	0.09
	IT	0.07	0.26	0.07	0.25	0.08	0.27	0.07	0.25
	LT	0.01	0.09	0.01	0.10	0.01	0.10	0.01	0.10
	LU	0.00	0.03	0.00	0.03	0.00	0.03	0.00	0.03
	LV	0.01	0.08	0.01	0.08	0.01	0.07	0.01	0.08
	MT	0.00	0.03	0.00	0.03	0.00	0.03	0.00	0.03
	NL	0.03	0.17	0.03	0.18	0.03	0.17	0.03	0.18
	PL	0.11	0.31	0.12	0.32	0.09	0.29	0.12	0.33
	PT	0.02	0.14	0.02	0.15	0.02	0.14	0.02	0.15
	RO	0.05	0.21	0.04	0.19	0.05	0.22	0.04	0.19
	SE	0.03	0.18	0.03	0.16	0.04	0.19	0.03	0.17
	SI	0.01	0.07	0.00	0.07	0.01	0.08	0.00	0.07
	SK	0.02	0.13	0.01	0.12	0.02	0.14	0.01	0.12
	UK	0.13	0.34	0.13	0.33	0.12	0.32	0.11	0.31
Field of education	Field 1					0.03	0.16	0.03	0.16
	Field 2					0.03	0.18	0.04	0.19
	Field 3					0.01	0.08	0.00	0.07
	Field 4					0.24	0.43	0.22	0.42
	Field 5					0.01	0.12	0.01	0.11
	Field 6					0.04	0.20	0.05	0.22
	Field 7					0.11	0.31	0.11	0.31
	Field 8					0.06	0.24	0.06	0.24
	Field 9					0.01	0.11	0.01	0.12
	Field 10					0.01	0.08	0.00	0.06
	Field 11					0.01	0.12	0.01	0.11
	Field 12					0.01	0.10	0.01	0.08
	Field 13					0.08	0.27	0.09	0.28
	Field 14					0.30	0.46	0.30	0.46
	Field 17					0.05	0.22	0.05	0.23
	Observations	151572		109511		142273		107230	

Source: Author's estimations using the core LFS survey 2004-2010 (extraction date : June 13, 2012).
Legend: Field 1 – Agriculture and Veterinary; Field 2 – Computer Science; Field 3 – Computer use; Field 4 – Engineering, manufacturing and construction; Field 5 – Foreign languages; Field 6 – General programmes; Field 7 – Health and Welfare; Field 8 – Humanities, languages and arts; Field 9 – Life Science; Field 10 – Mathematics and Statistics; Field 13 – Physical Science; Field 14 – Science, mathematics and computing; Field 15 – Services; Field 16 – Social sciences, business and law; Field 17 – Teacher training and education science.

Abstract

The Education Council has adopted in May 2012 a new benchmark on the employability of graduates from education and training that aims at measuring the contribution of education and training to the transition from education to employment. This new benchmark is defined as the share of young people employed among the 20-34 years old, who graduated 1, 2 or 3 years before, and are not currently in education or training. It is computed using the annual Labour Force Survey (LFS) microdata. This report aims at analyzing the determinants of the employability of the individuals targeted by the benchmark. It starts with a short presentation of the benchmark indicator. It then estimates the probability of being employed for the 20-34 years old cohort that graduated one to three years before and is not currently enrolled in any further education or training activity, controlling for individual characteristics and institutional factors. In addition to the annual LFS data, we also make use of the LFS ad-hoc module of 2009 to identify more specifically, at country level, the role played by the orientation of the degree and the acquisition of a professional experience during the time of studies. Among those who are employed, we then analyze the nature of that employment by estimating the probability of having a permanent vs. temporary contract and the probability of working full-time vs. part-time.

Regarding the probability of being employed, we find that the contribution of education attainment is significant and constant, even after controlling for labour market contextual variables. Whereas education attainment is an important determinant for working full-time, it does not play a role in explaining the probability of having a permanent contract. We find that, overall, having a vocational oriented degree and/or working during studies does not affect significantly the probability of having a job. On the other hand, for a few countries, these two factors are important and our analysis shows that among the two, working during studies proves to be a more significant factor than the sole orientation of the degree.

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