Formal, non-formal and informal learning and higher education graduates' reemployment: evidence for Portugal

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Abstract

Unemployment rates among Portuguese Higher Education (HE) graduates have been rising. This trend becomes quite obvious when we compare Portugal and other European Member States whose labor markets have been facing similar difficulties. In fact, Portuguese graduates are not only more prone to facing unemployment but they are also enduring long term unemployment as a result of the current unemployment crisis.

Among the main reasons for this situation is the mismatch between the supply and demand for qualifications due to the inability of the Portuguese labor market to absorb higher skills (*chimney effect)*.

Nevertheless, competition in demand and the need to overcome labor productivity's weaknesses create the need for actions (education, training policies and labor market interventions) to improve the match between supply and demand for HE

qualifications in order to prevent social disinvestment and to foster inclusion and economic development. In the short and medium term, given the economic and social development strategy, adjustments will consider the need to redefine the HE graduates' skills and profiles throughout education and training. In this paper we are concerned with the effects on HE unemployed graduates' reemployment of additional education programs compared to informal and non-formal learning activities. We take life cycle theories and Willis (1986) as our main theoretical reference.

We use the database of the Adult Education Survey (AES 2007) developed by the Statistics Portugal, following methodological guidelines issued by EUROSTAT and adopted in all European Union Member States. The survey covers adult participation in formal and Non-Formal Education and informal activities and comprises 11289 cases (individuals).

When assessing the main influences of education, non-formal and Informal Learning activities on (re)employment, we use AES data on labor market transitions between two consecutive periods. We control for parents' education and occupation, individual's previous schooling, gender and age.

Our research methodology is quantitative. We use chi-square independence tests, correlation analysis and tests for equality of proportions.

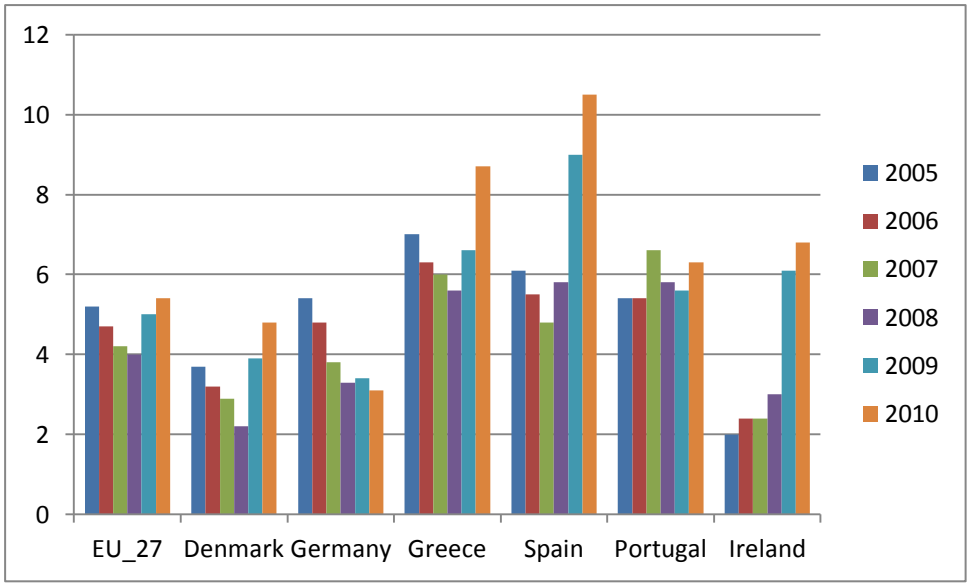
We expect to highlight the ability displayed by non-formal and Informal Learning to redesign educational formal skills, with a special insight into HE skills. The Portuguese HE system tends to be theoretically focused and practical internship is rare even in this post-Bologna phase. Accordingly Non-Formal Education - especially vocational training tailored to labor market occupations - could prove to be a most useful resource in reshaping graduates' profiles and promoting their employment/reemployment. Informal Learning is also expected to play a major role in the processes of skills acquisition and mobilization related to practical knowledge, thereby enhancing social networking and employability.

We aim to assess how much HE programs and non-formal and Informal Learning contribute to enhance graduates' employment opportunities and to identify pivotal areas for change in HE and non-formal programs.

1. Introduction

Unemployment rates among Portuguese Higher Education (HE) graduates have been rising, even before the present labor market crisis. This trend becomes quite obvious when we compare Portugal and other European Member States whose labor markets have been facing similar difficulties:

Figure 1: Evolution of the graduates (HE) unemployment rates (2005-2010), EU_27, selected countries



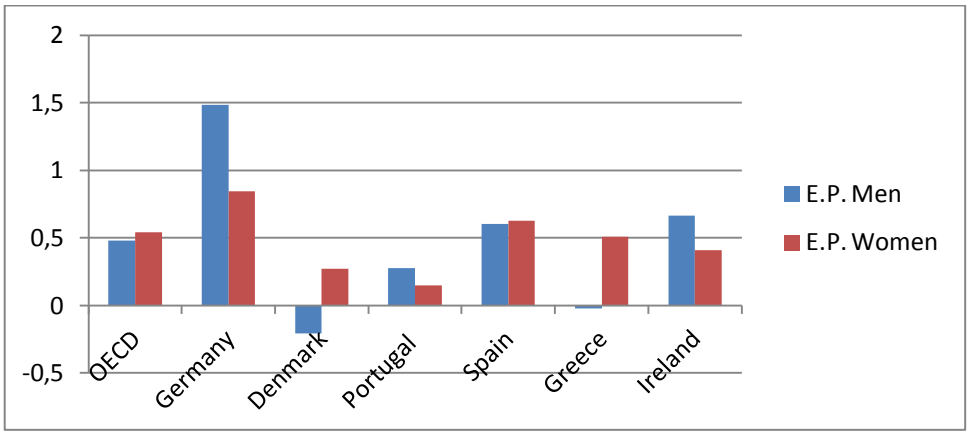
Source: Eurostat, Labour Force Survey

Actually, not only Portugal displays systematically very high unemployment rates for HE graduates, but those rates seem to be insensible to changes in economic conjuncture, in opposition to what happens namely in Greece, Spain and Ireland.

Additionally, the share of HE unemployed among long term unemployment has been increasing steadily, 6,4% in 2000, 9,5% in 2009 and 9,8% in 2010, according with the *Employment Survey* published by the Portuguese Institute for Statistics (INE).

Comparing with EU countries in Figure 1, namely Spain and Greece, employability premium for HE graduates is pretty smaller in Portugal, especially for women. Transition from Upper Secondary to HE displays much smaller increases in the probability of becoming employed than in most of the countries under analysis:

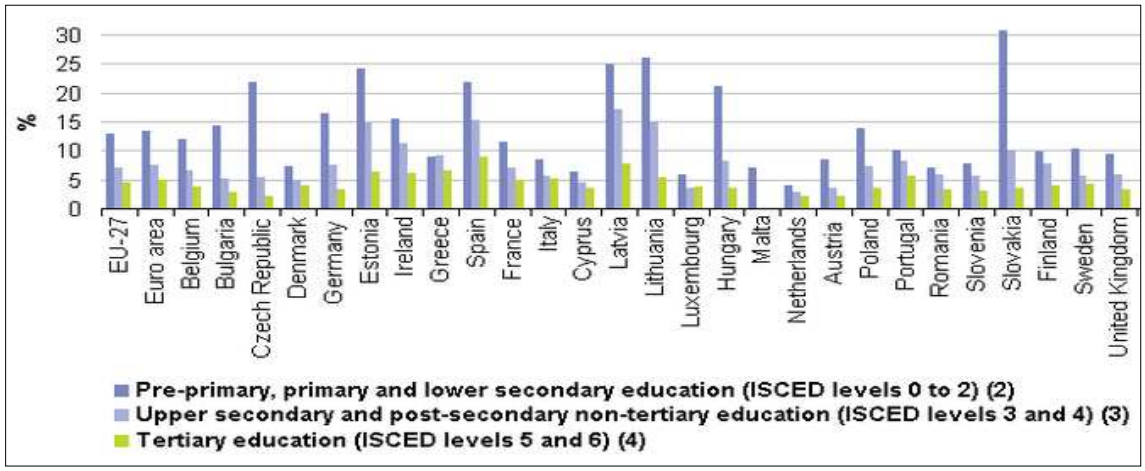
Figure 2: Employability premium for Higher Education, by sex (2008), for some European countries



Source: Eurostat, Labour Force Survey

Considering the EU_27 overall picture, Figure 3, we can observe the much wider employability levels associated with more education, especially in Slovakia, the Baltic States, Hungary, the Czech Republic, but also in Spain and Ireland, although in a minor degree. Conversely, Portugal – and Greece – exhibit very modest levels of employability premium associated with HE:

Figure 3: Unemployment rates by education level. ment rates by education level



Source: Eurostat, Labour Force Survey

Among the main reasons for this situation is the mismatch between the supply and demand for qualifications due to the inability of the Portuguese labor market to absorb higher skills (*chimney effect)*. A recent study from CEDEFOP found that although being ranked in the better matched group, Portugal faced an over education rate equal to 7,34%, compared to the corresponding 8,72% for the European Union. The Portuguese industrial structure being responsible for cc. 46,6% of the proportion of over skilled. (CEDEFOP 2010).

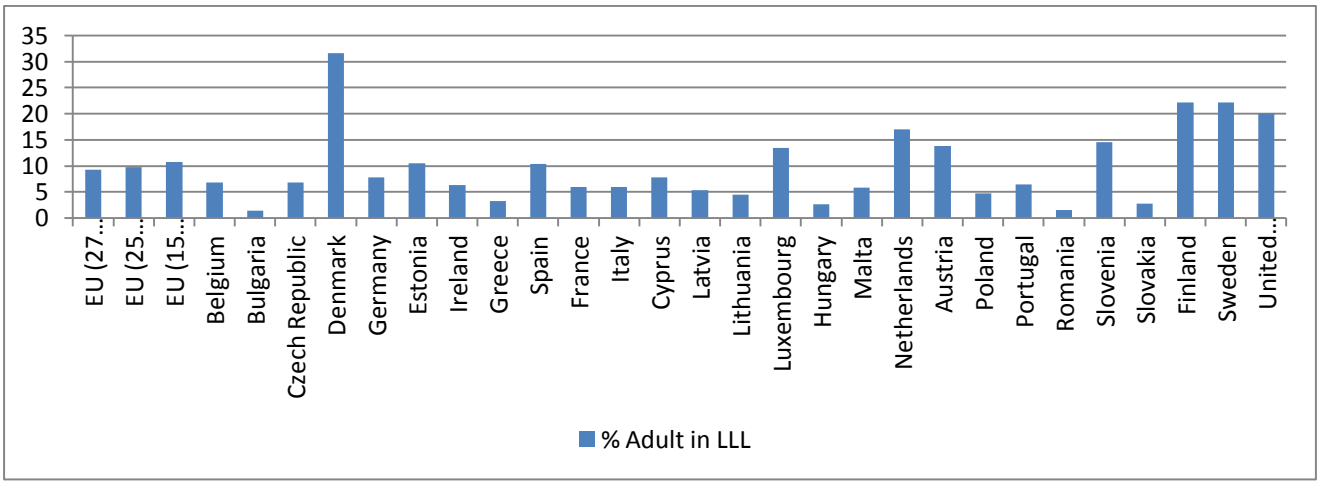
Demand competition and the need to overcome labor productivity's weaknesses compel education and training policies and labor market interventions to improve the match between supply and demand for HE qualifications in order to prevent social disinvestment and to foster inclusion and economic development. Also, some most recent studies on the employability of the Portuguese HE graduates stress the need to foster demand side policies and above all innovation and applied R&D to the

occupational structure in order to promote the up-skilling required to absorb the best qualified (Chagas Lopes 2011).

Nevertheless, in the short and medium term, given the economic and social development strategy, adjustments will consider the need to redefine the HE graduates' skills and profiles throughout education and training. In this paper we are concerned with the effects on HE graduates' employment opportunities of additional education programs compared to Informal Learning, Non-Formal Education and other forms of lifelong learning activities.

We must nevertheless observe that relatively to adult participation in Lifelong Learning Figure 4, the Portuguese situation lies under the EU_27 and Spanish values (6,5% against 9,3% and 10,4%, respectively, in 2009), approaches the Irish (6,3% in 2009) but clearly outnumbers the Greek one (3,3% in 2009):

Figure 4: Percentage of the adult population (25-64) participating in education and training, EU_27 (2009)



Source: CEDEFOP 2010

The questions to be approached are, therefore:

- Will Portuguese HE graduates meaningfully demand and attend Lifelong Learning?
- In such case, which types of Lifelong Learning (further education, Non-Formal Education, Informal Learning, other forms of LLL) do they demand more and which ones prove to be more successful in fostering employability?

Before entering into further analyses, we make a brief review of the leading theoretical assumptions which underlie the approach we develop in this paper.

2. The leading theoretical assumptions

Human capital theories (HCT) as a rationale to encompass the transition from school to the first employment have been under criticism on several grounds. Firstly, they depict the transitional process as a discrete moment in time (the famous Mincer's overtaking year) instead of a time dependent process marked by several (more or less well succeeded) attempts to obtain a first job. Secondly, HCT rely largely on the assumptions of the well known Say's law according to which the offer of qualified labor will (necessarily) generate the corresponding demand under the form of a well matched job. Thirdly, they generally consider that Formal Education takes place in the first portion of the individuals' life cycle and that further human capital development will depend mostly on occupational experience and eventually vocational training.

Obviously such kind of assumptions and predicted behaviors are unable to model the processes which HE graduates have to perform nowadays in order to achieve a first and relatively stable employment. Life cycle theories (LCT) prove to be much more realistic and suitable to provide an adequate theoretical foundation for those trajectories. These theories allow for a transitional period in which individuals may combine temporary occupations (e.g. internship), job search strategies and investing in

complimentary or alternative forms of education and training in order to improve employability.

In this paper we are not dealing with job search strategies and the underlying theories. We are concerned here with the complimentary or alternative education and training programs which HE graduates could have attended in order to reinforce the skills acquired in tertiary education to foster employability. Consider the life cycle model proposed and developed by Willis (1986):

$$\frac{dK}{dt} = K_0\ h \sum_{i=1}^{n} K_i - \ \partial \sum_{j=1}^{k} K_j$$

where *dk/dt* denotes individual learning accumulation and skills acquisition through time, K_0 initial schooling outcomes (in this case, HE graduation skills), $\sum_{i=1}^{n} K_i$ eventual occupational experience powered by h ($0 \leq h \leq 1$) during i employment periods, $\sum_{j=1}^{k} K_j$ the "human capital" depreciation during unemployment and/or inactivity spells *j*, and ∂ the rate of obsolescence. An obvious extension of the model allows $h \sum_{i=1}^{n} K_i$ to be broken down into two components:

- $h_u \sum_{u=1}^{k} Ku$ representing education and/or training programs attended besides HE graduation, eventually combined with internship or other transitory occupational situations before a first stable employment;
- $h_v \sum_{v=k+1}^{n} Kv$ representing the occupational experience powered by h_v taking place along the several jobs performed.

It is the first component, $h_u \sum_{u=1}^{k} Ku$, which deserves our main attention in this paper. Therefore, we analyze the attendance of other Formal Education courses (besides HE), Non-Formal Education, Informal Learning and other forms of lifelong learning by Portuguese HE graduates and investigate their relative contribution in improving the graduates employability.

3. Data and Methodology

3.1.- Data

This paper relies on data from the Adult Education Survey (AES) 2007, carried out by the Portuguese Institute for Statistics (INE-Statistics Portugal) in 2009, following EUROSTAT methodology. It was the first time that this Survey was carried in Portugal but a new wave is being prepared to be launched in 2011-2012, in order to address "*an increasing demand for information on adult education and learning…*" (INE 2009: 17). In this paper we only used data for Portugal main land.

The survey covers adult participation in formal and Non-Formal Education and training and Informal Learning and the "*characterization of individuals and learning activities; learning impacts in individuals' life; and the intergenerational transmission of education*" (ibidem: 17). The AES sample has data on 11289 adults who participated in at least one of the above forms of education and training, irrespective of their situation towards the labor market. We studied individuals' situation towards employment and work, both at the moment of the enquiry and one year before in order to analyze the effects on employability of each one of the attended learning forms. We are also concerned with the characterization of the public who attend each one of those forms of education and training.

Before carrying the analysis, let us just briefly characterize the AES sample.

Among the 11289 individuals, the feminization rate was equal to 52,6%, which confirms the general trend for women demanding more further education and training than men. However, the participation rate for women was quite diverse among the several forms of adult education and training: while in further Formal Education their participation rate was 11.1% (9.9% for men), in Non-Formal Education 19.9% (20.7% for men), in Informal Learning was 36,4% (34,6% for men) and in other forms of ALV 27,1% (27,3% for men). Likewise it seems that adult women outnumber men in Formal

Education and Informal Learning. This is probably due to women larger difficulties to attend education or training associated with family responsibilities and domestic chores.

The majority of those who attended adult education and training have less than 35 years. This result confirms HC theories expressing the advantages of investing in further studying in earlier ages, on the grounds of lower opportunities costs and higher return opportunities in the middle-long terms.

Despite the meaningful immigration trends, some 97% of the individuals have Portuguese nationality, which may reflect two possible situations: foreigner adults living in Portugal are not demanding or are not able to access further education and training, the case for Portuguese ex-colonies and Brazil immigrants; the average education level of the immigrated population, especially the youngest among them, is relatively higher than the nationals' in similar situations, the case for immigrants from Eastern Europe.

Relatively to initial education and/or training, the highest average level completed before interrupting was Lower Secondary (ISCED 2), 74%. Only 15,5% of the AES sample had completed Upper Secondary (ISCED 3) and 10,5% Tertiary Education. These results clearly confirm one of the major problems in the Portuguese education system, the high levels of early school leaving: in 2010, only 58,7% of the Portuguese aged 20-24 years had completed at least Upper Secondary Education (ISCED 3), a result which compares to 79% for EU_27 in the same year. For the cc. 83% among the AES sample who attended (cumulatively or not) other forms of adult learning besides Formal Education, some 20,3% attended Non-Formal Education, 35,5% Informal Learning and 27,2% other forms of lifelong learning (ALV).

3.2. Methodology

As we have previously referred, in this paper we are mostly concerned with the trajectories depicted by HE graduates between university and the labor market, in line with the hypotheses displayed by LC theories relatively to labor market insertion. Given the availability of the first AES wave, we purpose to investigate as well the leading trends in adult participating in further education or training, with a special insight on HE graduates' participation.

Therefore, in the following developments we will refer firstly to participation trends and secondly to HE graduates employability related with the participation in anyone of those forms of adult education and training.

We have information on individual characteristics (sex, age, school level, situation towards occupation and employment), type of labor market participation (no job \ part-time \ full-time job), parents' socio-economic background (mother and father school level, situation towards occupation and employment), region, degree of urbanization.

To find the factors that determine the participation in each of the above mentioned learning activities we first performed chi-square tests for independence and correlation analysis between participation in each of the education and learning activities and the above mentioned factors.

We made independent samples hypothesis tests for difference of proportions to confirm the previous statistics results. To perform these tests we took $H_0: \theta_i = \theta_j \; vs \; H_a: \theta_i \neq \theta_j \;\; (i \neq j)$ where θ_i, θ_j are the proportion of those with attribute i,j who participate in each of the education and learning activities. We reject the equality hypothesis for p-values lower than 1% or 5% level.

To study the effects on re(employability) of the selected activities we started by creating a variable–Employment Status Variation (ESV)- which takes value 1 if the

individual is unemployed in time *t-1* and employed in time *t* and value 2 if the individual is employed in time *t-1* and unemployed in time *t*.

Then we crossed this variable with participation in education and learning activities, analyzing independence, correlation and equality of proportions of those who are unemployed in time *t-1* and employed in time *t* among those who participate or don't in such activities.

4 – Some descriptive results

4.1 Participation in Formal Education and in other forms of adult learning

Considering individual's participation in (further) formal, Non-Formal Education, Lifelong Learning and Informal Learning from Table 1 we can say that women follow Formal Education and Informal Learning more than men but not Non-Formal Education or Lifelong Learning. Participation in Formal Education and learning activities decrease with age (Figure 5) for those above 25 years. Non-Formal Education participation increases until 35 years and decrease for older ones. Higher school levels are associated with higher participation in education and learning activities.

Figure 5 - Participation in education and learning by age

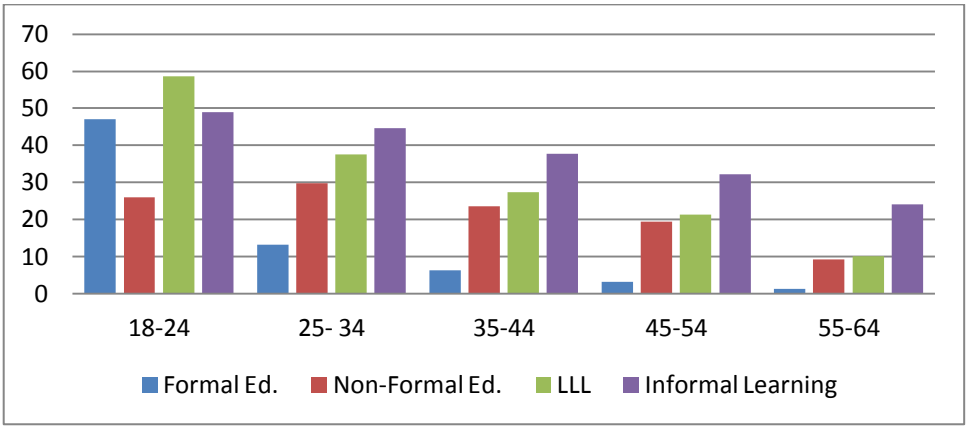


Table 1: Statistical Tests for Gender, Age and School Level

		Formal Education	Non-formal Education	Lifelong Learning	Informal Learning
Gender	Chi-Square test (p-value)	0.05	0.1458	0.799	0.05
	Correlation Coef. significance	0.019 (0.05)	-0.009 (0.321)	-0.002 (0.795)	0.019 (0.05)
	Equality of proportions test $\theta_W = \theta_M$ (p-value)	0.0188	0.1458	0.4058	0.4651
Age	Chi-Square test (p-value)	0.0000	0.0000	0.0000	0.0000
	Correlation Coef. significance	0.365 (0.000)	0.167 (0.000)	0.322 (0.000)	0.177 (0.000)
	Equality of proportions test (p-value) $\theta_{age\leq 34} = \theta_{age>34}$	0.0000	0.0000	0.0000	0.0000
School level	Chi-Square test (p-value)	0.0000	0.0000	0.0000	0.0000
	Correlation Coef. significance	-0.246 (0.000)	-0.337 (0.000)	-0.393 (0.000)	-0.309 (0.000)
	Equality of proportions test (p-value) $\theta_{Basic+Second.} = \theta_{HE}$	0.0000	0.0000	0.0000	0.0000

From Table 1 it is clear that participation rates of men and women are very weakly related with the several learning forms and are not significantly different. Nonetheless, statistical indicators converge in displaying that girls are generally better students than boys in their earlier ages and especially as they are progressing in Formal Education levels. Among all Portuguese HE graduates in 2009, more than 59% were women[1], Therefore, it is not surprising that women will outnumber men in the

[1] PORDATA Base de Dados (http://www.pordata.pt/site/ThemeSubThemes.aspx?ThemeId=17). Acc. 15th July 2007.

demand for further education (the higher level of which is HE in the AES sample) in adulthood.

The outcome that the demand for further education will decrease with age for those over 25 years old should perhaps be in line with the high percentage of study interruption during adolescence: Portugal displays a high drop-out rate after compulsory education (lower Secondary). Therefore, adulthood will come as the time to correct for previous wrong decisions related with Formal Education.

HE graduates (Tertiary) exhibit the highest participation rates in every form of adult education (Table 2): Non-Formal Education, lifelong learning and Informal Learning. This result confirms a great deal of literature which supports the auto-feeding nature of education. But it should also be in line with the fact that the higher educated are generally receiving higher income, especially under the form of wage gains, thereby allowing them to better face the costs with adult education. We will come later to this point.

Table 2: Participation in Adult Education and Learning by Educational Level

Education Level	Participation in Non-Formal Education (%)	Participation in Lifelong Learning (%)	Participation in Informal Learning (%)
No Level	0,012	0,012	0,105
Basic	0,135	0,183	0,285
Secondary	0,330	0,516	0,534
Tertiary	0,547	0,625	0,674

Source: Own computation on the basis of Statistics Portugal (INE 2009)

Those who are not employed attend Formal Education more than employed ones. This is due to the students' weight in this category (over 55% but for Non-Formal Education-29%) in the sample. The contrary happens in what concern Non-Formal

Education and Lifelong Learning (Table 3). Formal Education means to attend to an educational institution within a schedule timetable which often is very difficult for those who are employed. On the contrary, Non-Formal Education and Lifelong Learning are more easily compatible with employment. There is no difference between employed and non-employed individuals in what concerns participation in Informal Learning. It is an activity suitable for employed as well as for non-employed ones.

Employees participate more than own account employers (Table 3) probably because employees see participation as a means to increase qualifications/certifications, have better perspectives for future carrier developments, namely, changes in functional area, responsibility level and better wages and employers find it more difficult to have time to spend on education and learning activities or because they don't think that these activities impact on their business could be positive.

Table 3: Statistical Tests for Situation Towards Employment and Occupation and Net Monthly Wage

		Formal Education	Non-formal Education	Long Life Learning	Informal Learning
Situation towards employment	Chi-Square test (p-value)	**0.000**	**0.000**	**0.000**	**0.336**
	Correlation Coef. significance	**-0.072 (0.000)**	**0.103 (0.000)**	**0.058 (0.000)**	**0.011 (0.336)**
	Equality of proportions test $\theta_{empl.} = \theta_{OtherSit.}$ (p-value)	**0.0000**	**0.0000**	**0.0000**	**0.1711**

Situation towards occupation	Chi-Square test (p-value)	**0.0000**	**0.0000**	**0.0000**	**0.0000**
	Correlation Coef. significance	**-0.069 (0.000)**	**-0.100 (0.000)**	**-0.119 (0.000)**	**-0.045 (0.000)**
	Equality of proportions test (p-value) $\theta_{Employee} = \theta_{Employer}$	**0.0000**	**0.0000**	**0.0000**	**0.0000**
Net monthly wage	Chi-Square test (p-value)	**0.026**	**0.0000**	**0.0000**	**0.0000**
	Correlation Coef. significance	**-0.026 (0.026)**	**-0.273 (0.000)**	**-0.257 (0.000)**	**0.200 (0.000)**
	Equality of proportions test (p-value) $\theta_{NMw\leq1000} = \theta_{NMW>1000}$	**0.0207**	**0.0000**	**0.0000**	**0.0000**

Participation in any of the above mentioned education and learning activities seem to be well associated with net monthly wage (Table 3) and so confirm employees expectations. However the causal way could not be determined since it could be true in both ways. Participation increase wages but high wages have a positive effect on participation too.

Father's and mother's education level and occupation are associated with individual's participation in adult education and learning. Unlike father's situation towards employment, mother's influence on adult education and learning is always significant (Table 4 and 5).

Table 4: Statistical Tests for Father's School Level and Situation Towards Employment and Occupation

		Formal Education	Non-formal Education	Long Life Learning	Informal Learning
Father school	Chi-Square test (p-value)	**0.0000**	**0.0000**	**0.0000**	**0.0000**
	Correlation Coef.	**-0.048**	**-0.194**	**-0.231**	**-0.172**

level	significance	**(0.000)**	**(0.000)**	**(0.000)**	**(0.000)**
	Equality of proportions test $\theta_{Basic} = \theta_{Sec+HE}$ (p-value)	**0.0000**	**0.0000**	**0.0000**	**0.0000**
Father situation towards employment	Chi-Square test (p-value)	0.197	0,151	0,880	0,245
	Correlation Coef. significance	-0.013 (0.197)	0,014 (0.151)	0,001 (0.880)	0,011 (0. 245)
	Equality of proportions tes(p-value) $\theta_{empl.} = \theta_{OtherSit.}$	0.1183	0.0711	0.4430	0.1156
Father situation towards occupation	Chi-Square test (p-value)	**0.0000**	**0.0000**	**0.0000**	**0.003**
	Correlation Coef. significance	**-0.030 (0.002)**	**-0.030 (0.002)**	**-0.042 (0.002)**	**-0.029 (0.003)**
	Equality of proportions test (p-value) $\theta_{Employee} = \theta_{Employer}$	**0,0007**	**0,0000**	**0,0000**	**0,0014**

Table 5: Statistical Tests for Mother's School Level and Situation Towards Employment and Occupation

		Formal Education	Non-formal Education	Long Life Learning	Informal Learning
Mother school level	Chi-Square test (p-value)	**0.0000**	**0.0000**	**0.0000**	**0.0000**
	Correlation Coef. significance	**-0.110 (0.000)**	**-0.170 (0.000)**	**-0.215 (0.000)**	**-0.153 (0.000)**
	Equality of proportions test $\theta_{Basic} = \theta_{Sec+HE}$ (p-value)	**0.0000**	**0.0000**	**0.0000**	**0.0000**
	Chi-Square test	**0.0000**	**0,001**	**0,0000**	**0,0000**

Mother situation towards employment	(p-value)				
	Correlation Coef. significance	**0.131 (0.000)**	**0,030 (0.000)**	**0,083 (0.000)**	**0,051 (0.000)**
	Equality of proportions test (p-value) $\theta_{empl.} = \theta_{OtherSit.}$	**0.0000**	**0.0000**	**0.0000**	**0.0000**
Mother situation towards occupation	Chi-Square test (p-value)	**0.0000**	**0.0000**	**0.0000**	**0.003**
	Correlation Coef. significance	**-0.134 (0.002)**	**-0.067 (0.000)**	**-0.125 (0.000)**	**-0.113 (0.000)**
	Equality of proportions test (p-value) $\theta_{Employee} = \theta_{Employer}$	**0,0000**	**0,0000**	**0,0000**	**0,0000**

It is quite plausible that the family income effect that is highly correlated with parents' school level will stay behind this outcome given the delay in the transition into adulthood which characterizes most youngsters nowadays. But eventually the emulation effect exerted by family's educational capital should not be neglected, as well.

Both mothers and fathers which are employees have children participating more in these activities than those which are own account employers since most probably children get aware of how their parents' participation added to a successful professional trajectory and emulate them.

We further analyze the effect on education and learning activities of regional and urban density factors. From Table 6 we can see that participation and region are not independent. Differences in participation are significant across regions.

Table 6: Statistical Tests for Region and Degree of Urban Density

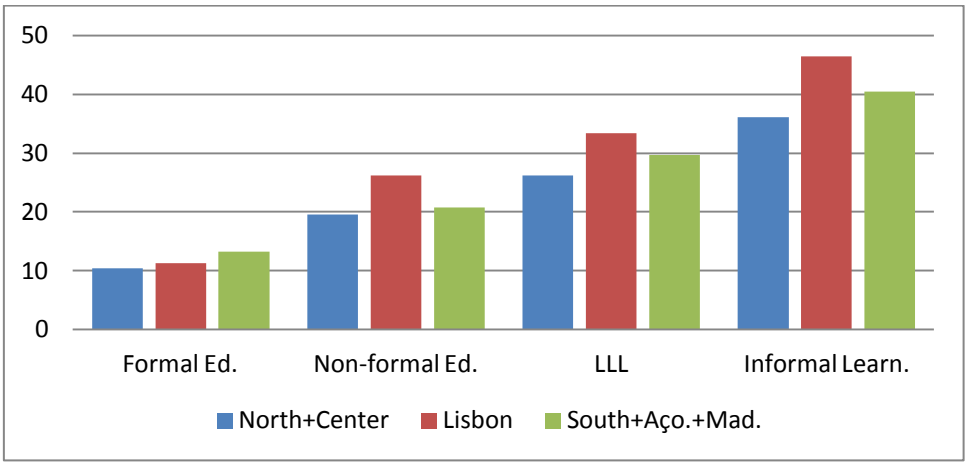
		Formal	Non-formal	Long Life	Informal

		Education	Education	Learning	Learning
Region	Chi-Square test (p-value)	**0.002**	**0.0000**	**0.0000**	**0.0000**
	Equality of proportions test $\theta_{North} = \theta_{South}$ (p-value)	**0.0009**	**0.0348**	**0.0001**	**0.0157**
	$\theta_{Lisbon} = \theta_{South}$ (p-value)	**0.0307**	**0.0000**	**0.0053**	**0.0000**
	$\theta_{Lisbon} = \theta_{North}$ (p-value)	0,0619	**0.0000**	**0.0002**	**0.0000**
Urban density	Chi-Square test (p-value)	0.957	**0.0000**	**0.0000**	**0.000**
	Correlation Coef. significance	0.001 (0.888)	**0.058 (0.000)**	**0.047 (0.000)**	**0.077 (0.000)**
	Equality of proportions test $\theta_{HighDensity} = \theta_{Med.Dens.}$ (p-value)	0,4824	**0,0036**	**0,0156**	**0,0000**
	$\theta_{Med.Density} = \theta_{LowDens.}$ (p-value)	0.3892	**0.0001**	**0.0015**	**0,0000**

Lisbon is the region where more people participate in Non-Formal Education and learning activities followed by the South. In North and Center regions participation is the lowest. Formal Education has a distinct pattern being more participated in South than in Lisbon and less participated in the North and Center (Figure 6). One of the reasons for this lower participation of North and Center than Lisbon in all forms of learning programs should be the lower average dimension of firms in those two regions, measured throughout the number of employees: 8,8 and 8,3, respectively against 11 in Lisbon, in 2008 (GEP 2010). Also average monthly earnings are much higher in Lisbon, followed by South, than in the other Portuguese regions (OEFP 2011). These two outcomes go in line with the well studied traits that

there is an important positive bias in lifelong learning towards the larger firms and higher individual incomes.

Figure 6 - Education and Learning Activities by Region



Participation in any of the education and learning activities is weakly associated with urban density, although statistically significant, but for Formal Education. Participation increases with urban density which is expected since the offer of such activities is usually bigger in cities with a high urban density.

4.2.- Participation in Adult Education and Employability

When all the individuals in the sample are considered (Table 7), Formal Education and Informal Learning don't seem to have any effect on employability but Non-Formal Education and Lifelong Learning are significantly associated with transition from unemployment to employment.

Table 7: Statistical Tests for Variable ESV

		Formal Education	Non-formal Education	Lifelong Learning	Informal Learning
	Chi-Square test (p-value)	0.709	**0.001**	**0.002**	0.689

Transition from unemployment to employment	Correlation Coef. significance	-0.018 (0.710)	**0.168 (0.010)**	**0.147 (0.002)**	0.019 (0.690)
	Equality of proportions test $\theta_{part.} = \theta_{no\ part.}$ (p-value)	0.3521	**0.0002**	**0.0011**	0.3418

When we analize the effect on employability of education and learning activities by school level (Table 8) results are similar to the above ones for individuals with basic Formal Education or less. According to the values in table 8 participation in education or learning activities doesn't have any impact on employability of people with Secondary education or higher.

Table 8: Statistical Tests for Employability

		Formal Education	Non-formal Education	Lifelong Learning	Informal Learning
Basic Formal Education or less	Chi-Square test (p-value)	0.683	**0.006**	**0.009**	0.818
	Correlation Coef. significance	0.023 (0.685)	**0.157 (0.006)**	**0.149 (0.009)**	-0.013 (0.819)
	Equality of proportions test (p-value) $\theta_{part.} = \theta_{no\ part.}$	0.3409	**0.0024**	**0.0092**	0.4053
Secondary Or Higher Education	Chi-Square test (p-value)	0.153	0,224	0,471	0,944
	Correlation Coef. significance	-0.137 (0.156)	0,117 (0.227)	0,068 (0.481)	0,096 (0.945)

5 – Conclusion and policy implications

Among individual characteristics our research pointed to gender, age, school level, situation towards employment and profession as main determinants of participation in education and learning activities.

Women follow Formal Education and Informal Learning more than men. There is evidence that girls are generally better students than boys during Formal Education levels and so it is not surprising that women outnumber men in the demand for further education (the higher level of which is HE in the AES sample) in adulthood. Adult women's family responsibilities and domestic chores make more difficult for them attending Non-Formal Education and Lifelong Learning but not Informal Learning, the latter being the least demanding in terms of formal attendance.

Demand for further education and/or learning decreases for those older than 25 for all kinds of education and learning activities but Non-Formal Education. Portugal has a high drop-out rate after compulsory education (Lower Secondary) therefore it is not surprising that from young age (under 25) individuals try to improve their qualifications but do that less when they grew older.

HE graduates showed the highest participation in Non-Formal Education, Lifelong Learning and Informal Learning which supports the auto-feeding nature of education. On the other hand higher school levels are associated with higher incomes which probably made it easier to support adult education and learning. Nevertheless, it remains to be confirmed which outcome implies the other: will it be that higher incomes will lead to further demand for education and training or conversely the latter trend will open opportunities for income raising?

As we expected, those not employed attend Formal Education more than the employed ones but these follow other kinds of adult education/learning more than the former ones. Actually Formal Education requires attending education institutions' scheduled timetables which is difficult for most of those who are employed. On the

contrary, Non-Formal Education, Lifelong Learning and Informal Learning are either by-products of the employment situation or more easily compatible with it.

Employees participate more in education and training than own account employers probably because they see such attendance as a means to enhance better perspectives for future career developments, such as changing functional area, improving responsibility level and wages, whereas employers find it more difficult to have time to attend education and learning activities and don't nurture career prospects which can depend upon those attending.

Most of SES variables considered in this analysis showed to be significant positive factors for adult education participation. Indeed, participation increases with parents' school level and for parents who are employees. Family income effect which is highly correlated with school level is, most probably, the reason behind this outcome given the delay in the transition into adulthood which characterizes most youngsters nowadays. But eventually the emulation effect exerted by family's educational capital should not be neglected, as well.

Parents which are/were employees have children participating more than those which are own account employers. This outcome should perhaps have to do with the fact that children get aware of how their parents' participation added to a successful professional trajectory and try to emulate them.

Going further in the explanation of participation in adult education and learning we found that participation in Non-formal, Lifelong Learning and Informal Learning increases with urban density due to a higher offer of such activities in big urban centers. This explains also why participation is higher in Lisbon than in other Portuguese regions. But also the higher average size of enterprises in Lisbon and the higher monthly average gains in this region, followed by South, contribute to explain the higher participation rates in one or several of the adult learning modalities

Employability is significantly associated with Non-Formal and Lifelong Learning participation aiding to get out of unemployment, but not with Formal Education and Informal Learning. This is also true for those with a Basic education level or less but not for those with a Secondary degree or HE degree.

When we studied the impact on (re)employability of participation in education and learning activities by school level we ended up with a number of observations for HE that was not enough to support any statistical methodology. So, we were not able to answer to our main research question: Does participation in education and learning activities enhance HE graduates' chances of (re)employability.

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APPENDIX 1

Proportions and number of observations for the equality of proportions hypothesis tests concerning participation

Variables	Formal Education	Non-Formal Education
Gender	$\theta_W = 11{,}1;\ \theta_M = 9{,}9$ $n_W = 5939;\ n_M = 5350$	$\theta_W = 19{,}9;\ \theta_M = 20{,}7$ $n_W = 5939;\ n_M = 5350$
Age	$\theta_{age\leq 34} = 28;\ \theta_{age>34} = 3{,}4$ $n_W = 3277;\ n_M = 8012$	$\theta_{age\leq 34} = 28;\ \theta_{age>34} = 17{,}1$ $n_W = 3277;\ n_M = 8012$
School Level	$\theta_{Basic+Second} = 10{,}3;\ \theta_{HE} = 17{,}2$ $n_{Basic+Second} = 9533;\ n_{HE} = 1186$	$\theta_{Basic+Second} = 17{,}1;\ \theta_{HE} = 54{,}7$ $n_{Basic+Second} = 9533;\ n_{HE} = 1186$
Situation towards employment	$\theta_{employed} = 6{,}4;\ \theta_{OtherSit.} = 12{,}3$ $n_{employed} = 7442;\ n_{OtherSit.} = 917$	$\theta_{employed} = 25{,}8;\ \theta_{OtherSit.} = 11{,}7$ $n_{employed} = 7442;\ n_{OtherSit.} = 917$
Situation towards occupation	$\theta_{employees} = 7{,}4;\ \theta_{employers} = 3$ $n_{Bemployees} = 7061;$ $n_{employers} = 3211$	$\theta_{employees} = 21{,}6;\ \theta_{employers} = 18{,}9$ $n_{Bemployees} = 7061;$ $n_{employers} = 3211$
Net monthly wage	$\theta_{NMW\leq 1000} = 6{,}1;\ \theta_{NMW>1000} = 7{,}8$ $n_{NMW\leq 1000} = 6009;$ $n_{NMW>1000} = 1201$	$\theta_{NMW\leq 1000} = 20{,}5;\ \theta_{NMW>1000} = 52{,}6$ $n_{NMW\leq 1000} = 6009;$ $n_{NMW>1000} = 1201$
Father school level	$\theta_{Basic} = 9{,}3;\ \theta_{Second.+HE} = 30{,}9$ $n_{Basic} = 9842;\ n_{Second.+HE} = 724$	$\theta_{Basic} = 18{,}5;\ \theta_{Second.+HE} = 49{,}4$ $n_{Basic} = 9842;\ n_{Second.+HE} = 724$
Father situation towards employment	$\theta_{employed} = 10{,}8;\ \theta_{OtherSit.} = 13{,}3$ $n_{employed} = 10335;\ n_{OtherSit.} = 264$	$\theta_{employed} = 20{,}7;\ \theta_{OtherSit.} = 17$ $n_{employed} = 10335;\ n_{OtherSit.} = 264$
Father situation towards occupation	$\theta_{employees} = 11{,}4;\ \theta_{employers} = 9{,}4$ $n_{Bemployees} = 7601;$ $n_{employers} = 3211$	$\theta_{employees} = 21{,}6;\ \theta_{employers} = 18{,}9$ $n_{Bemployees} = 7601;$ $n_{employers} = 3211$
Mother school level	$\theta_{Basic} = 9{,}1;\ \theta_{Second.+HE} = 35{,}7$ $n_{Basic} = 10430;\ n_{Second.+HE} = 630$	$\theta_{Basic} = 18{,}7;\ \theta_{Second.+HE} = 48{,}3$ $n_{Basic} = 10430;\ n_{Second.+HE} = 630$
Mother situation towards employment	$\theta_{employed} = 14{,}5;\ \theta_{OtherSit.} = 6{,}8$ $n_{employed} = 5506;\ n_{OtherSit.} = 5570$	$\theta_{employed} = 21{,}6;\ \theta_{OtherSit.} = 19{,}2$ $n_{employed} = 5506;\ n_{OtherSit.} = 5570$
Mother situation towards occupation	$\theta_{employees} = 18{,}1;\ \theta_{employers} = 7{,}9$ $n_{Bemployees} = 3616;$ $n_{employers} = 1719$	$\theta_{employees} = 23{,}8;\ \theta_{employers} = 17{,}8$ $n_{Bemployees} = 3616;$ $n_{employers} = 1719$
Region	$\theta_{North} = 9{,}9;\ \theta_{South} = 13{,}2$ $\theta_{Lisbon} = 11{,}3$ $n_{North} = 3043;$ $n_{South} = 2307$ $n_{Lisbon} = 1876$	$\theta_{North} = 18{,}8;\ \theta_{South} = 20{,}8$ $\theta_{Lisbon} = 26{,}2$ $n_{North} = 3043;$ $n_{South} = 2307$ $n_{Lisbon} = 1876;$
Urban density	$\theta_{HighDens.} = 10{,}5;\ \theta_{Med.Dens.} = 10{,}6$ $\theta_{Low.Dens.} = 10{,}4$ $n_{HighDens.} = 3815$ $n_{Med.Dens.} = 4013$	$\theta_{HighDens.} = 22{,}9;\ \theta_{Med.Dens.} = 20{,}4$ $\theta_{Low.Dens.} = 17{,}1$ $n_{HighDens.} = 3815$ $n_{Med.Dens.} = 4013$

	$n_{Low.Dens.} = 3461$	$n_{Low.Dens.} = 3461$
Variables	Long Life Learning	Informal Learning
Gender	$\theta_W = 27{,}1;\ \theta_M = 27.3$ $n_W = 5939;\ n_M = 5350$	$\theta_W = 36{,}4;\ \theta_M = 34{,}6$ $n_W = 5939;\ n_M = 5350$
Age	$\theta_{age\leq 34} = 46{,}8;\ \theta_{age>34} = 19{,}2$ $n_W = 3277;\ n_M = 8012$	$\theta_{age\leq 34} = 46{,}4;\ \theta_{age>34} = 31$ $n_W = 3277;\ n_M = 8012$
School Level	$\theta_{Basic+Second} = 24{,}4;\ \theta_{HE} = 62{,}5$ $n_{Basic+Second} = 9533;\ n_{HE} = 1186$	$\theta_{Basic+Second} = 33;\ \theta_{HE} = 67{,}4$ $n_{Basic+Second} = 9533;\ n_{HE} = 1186$
Situation towards employment	$\theta_{employed} = 29{,}4;\ \theta_{OtherSit.} = 21$ $n_{employed} = 7442;\ n_{OtherSit.} = 917$	$\theta_{employed} = 37{,}9;\ \theta_{OtherSit.} = 36{,}3$ $n_{employed} = 7442;\ n_{OtherSit.} = 917$
Situation towards occupation	$\theta_{employees} = 32{,}7;\ \theta_{employers} = 18{,}4$ $n_{Bemployees} = 7061;$ $n_{employers} = 3211$	$\theta_{employees} = 39{,}3;\ \theta_{employers} = 33{,}3$ $n_{Bemployees} = 7061;$ $n_{employers} = 3211$
Net monthly wage	$\theta_{NMW\leq 1000} = 624{,}3;\ \theta_{NMW>1000} = 55{,}8$ $n_{NMW\leq 1000} = 6009;$ $n_{NMW>1000} = 1201$	$\theta_{NMW\leq 1000} = 33{,}7;\ \theta_{NMW>1000} = 59{,}8$ $n_{NMW\leq 1000} = 6009;$ $n_{NMW>1000} = 1201$
Father school level	$\theta_{Basic} = 24{,}9;\ \theta_{Second.+HE} = 65{,}9$ $n_{Basic} = 9842;\ n_{Second.+HE} = 724$	$\theta_{Basic} = 33{,}8;\ \theta_{Second.+HE} = 66{,}4$ $n_{Basic} = 9842;\ n_{Second.+HE} = 724$
Father situation towards employment	$\theta_{employed} = 27{,}7;\ \theta_{OtherSit.} = 27{,}3$ $n_{employed} = 10335;\ n_{OtherSit.} = 264$	$\theta_{employed} = 36{,}1;\ \theta_{OtherSit.} = 32{,}6$ $n_{employed} = 10335;\ n_{OtherSit.} = 264$
Father situation towards occupation	$\theta_{employees} = 25;\ \theta_{employers} = 29{,}1$ $n_{Bemployees} = 7601;$ $n_{employers} = 3211$	$\theta_{employees} = 37{,}1;\ \theta_{employers} = 34{,}1$ $n_{Bemployees} = 7601;$ $n_{employers} = 3211$
Mother school level	$\theta_{Basic} = 25;\ \theta_{Second.+HE} = 66{,}3$ $n_{Basic} = 10430;\ n_{Second.+HE} = 630$	$\theta_{Basic} = 33{,}9;\ \theta_{Second.+HE} = 65{,}6$ $n_{Basic} = 10430;\ n_{Second.+HE} = 630$
Mother situation towards employment	$\theta_{employed} = 31{,}1;\ \theta_{OtherSit.} = 23{,}7$ $n_{employed} = 5506;\ n_{OtherSit.} = 5570$	$\theta_{employed} = 38{,}2;\ \theta_{OtherSit.} = 33{,}3$ $n_{employed} = 5506;\ n_{OtherSit.} = 5570$
Mother situation towards occupation	$\theta_{employees} = 35{,}5;\ \theta_{employers} = 23{,}1$ $n_{Bemployees} = 3616;$ $n_{employers} = 1719$	$\theta_{employees} = 42{,}3;\ \theta_{employers} = 30{,}5$ $n_{Bemployees} = 3616;$ $n_{employers} = 1719$
Region	$\theta_{North} = 25{,}1;\ \theta_{South} = 29{,}7$ $\theta_{Lisbon} = 33{,}4$ $n_{North} = 3043;$ $n_{South} = 2307$ $n_{Lisbon} = 1876;$	$\theta_{North} = 37{,}5;\ \theta_{South} = 40{,}4$ $\theta_{Lisbon} = 46{,}4$ $n_{North} = 3043;$ $n_{South} = 2307$ $n_{Lisbon} = 1876;$
Urban density	$\theta_{HighDens.} = 29{,}6;\ \theta_{Med.Dens.} = 27{,}4$ $\theta_{Low.Dens.} = 24{,}4$ $n_{HighDens.} = 3815$ $n_{Med.Dens.} = 4013$ $n_{Low.Dens.} = 3461$	$\theta_{HighDens.} = 42{,}9;\ \theta_{Med.Dens.} = 29{,}7$ $\theta_{Low.Dens.} = 34{,}1$ $n_{HighDens.} = 3815$ $n_{Med.Dens.} = 4013$ $n_{Low.Dens.} = 3461$

APPENDIX 2

Proportions and number of observations for the equality of proportions hypothesis tests concerning employability

Variables	Formal Education	Non-Formal Education
Transition from unemployment to employment (all)	$\theta_{part} = 42{,}3;\ \theta_{nopart} = 46{,}1$ $n_{part} = 26;\ n_{nopart} = 395$	$\theta_{part} = 63;\ \theta_{nopart} = 41{,}8$ $n_{part} = 81;\ n_{nopart} = 340$
Transition from unemployment to employment (Basic Formal Education or less)	$\theta_{part} = 47{,}1;\ \theta_{nopart} = 42$ $n_{part} = 17;\ n_{nopart} = 295$	$\theta_{part} = 62{,}5;\ \theta_{nopart} = 39{,}3$ $n_{part} = 40;\ n_{nopart} = 272$
Transition from unemployment to employment (Secondary Or HigherEducation)	$\theta_{part} = 33{,}3;\ \theta_{nopart} = 58$ $n_{part} = 9;\ n_{nopart} = 109$	$\theta_{part} = 63{,}4;\ \theta_{nopart} = 51{,}5$ $n_{part} = 41;\ n_{nopart} = 68$
	Long Life Learning	Informal Learning
Transition from unemployment to employment (all)	$\theta_{part} = 59;\ \theta_{nopart} = 47$ $n_{part} = 100;\ n_{nopart} = 321$	$\theta_{part} = 47;\ \theta_{nopart} = 45$ $n_{part} = 181;\ n_{nopart} = 240$
Transition from unemployment to employment (Basic Formal Education or less)	$\theta_{part} = 58{,}2;\ \theta_{nopart} = 38{,}9$ $n_{part} = 55;\ n_{nopart} = 257$	$\theta_{part} = 41{,}4;\ \theta_{nopart} = 42{,}8$ $n_{part} = 111;\ n_{nopart} = 201$
Transition from unemployment to employment (Secondary Or HigherEducation)	$\theta_{part} = 60;\ \theta_{nopart} = 53{,}1$ $n_{part} = 45;\ n_{nopart} = 64$	$\theta_{part} = 55{,}7;\ \theta_{nopart} = 56{,}4$ $n_{part} = 70;\ n_{nopart} = 39$
Transition from unemployment to employment (all)	$\theta_{part} = 0{,}057;\ \theta_{nopart} = 0{,}066$ $n_{part} = 193;\ n_{nopart} = 228$	$\theta_{part} = 0{,}264;\ \theta_{nopart} = 0{,}132$ $n_{part} = 193;\ n_{nopart} = 228$