

Evaluating the risk of unemployment: Comparison between the two most populated Greek regions with the entire country

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Abstract

The basic aim of this paper is to investigate the impact that educational level of individuals and participation in training programmes (apprenticeship, intra-firm training, continuing vocational training, popular training) have on their job prospects in the two most populated Greek regions, Attica and Central Macedonia, during the implementation of the first Community Support Framework – CSF (1989-1993). We also research the differences between the two regions under study and the entire country. More specifically, we research what are the social and demographic characteristics that increase the chances of someone in the examined population finding a job, how those chances change (if they do) after the introduction of training courses and, also, whether University graduates, in contrast to most of the rest of the EU member states, face greater difficulties in finding a job than non-University graduates, as a series of studies or aggregate statistics for Greece conclude. We use individual anonymised records (micro-data) of the Labour Force Survey (LFS) for both employed and unemployed at both national and NUTS-2 level. The findings of the logit model show that although concerning education the picture is mixed, the more trained a person did not improve his position in the labour market during the examined period.

Keywords: Cross-sectional models; Labour economics policies; Human capital; Skills; Regional, urban and rural analyses.

JEL classification: C21, J08, J24, O18

1. Introduction

The aim of the paper is to study the impact that education and training programmes (apprenticeship, intra-firm training, continuing vocational training-CVT, popular training) had on the labour market in the Greek regions of Central Macedonia and Attica, as well as in Greece as a whole, during the implementation of the CSF-1 (1989-93). The vocational training programmes of the CSF-1 in the regions under examination started in March 1990 and ended in March 1994 in Central Macedonia, whereas they ended in March 1995 in Attica. During the examined time period both regions belonged to the Objective 1 of the EU Structural Funds, as well as the entire country.

We choose Central Macedonia and Attica because the above regions are the largest in Greece in terms of population, and the two biggest urban agglomerations in the country (Athens and Thessaloniki) are situated in the regions under study; so, we research half of the Greek population and compare them with Greece as a whole.

The main questions to be answered are:

- (i) What are the social and demographic characteristics that increase the chances of someone in the examined population finding a job?
- (ii) How does the participation in training courses affect the chances of getting an employment?
- (iii) Whether University graduates, in contrast to most of the rest of the EU member states, face greater difficulties in finding a job than the non-University graduates, as a series of studies (see Meghir *et al.*, 1989; OECD, 1990; Iliades, 1995; IN.E./GSEE-ADEDY, 1999; Katsikas, 2005) or aggregate statistics (LFS; Eurostat: Education and Employment Prospects, 1995) for Greece conclude.

We test the human capital theory, which underpins many of the important developments in modern economics and provides one of the main explanations for wage and salary differentials by age and occupation, and the uneven incidence of unemployment by skill (education and training). We try to research whether the more educated and the more trained a person is, the higher the probability of him finding a job. We cannot examine the impact of training on earnings, because this kind of information does not exist in the questionnaire of the Greek LFS.

Previous labour market studies for Greece were based on qualitative research and LFS aggregated data. The analysis of investigating the impact of training on the Greek labour market - at both national and NUTS 2 level - is based on the micro-data of the Greek LFS. The access to the individual anonymised records of the Greek LFS was not allowed to researchers until the summer of 2005, due to the Data Protection Act.

Also, all training actions in Greece are co-financed by the EU funds and so we try to see what happened with the EU money during the period of the CSF-1 in the domain of training. Thus, we do not simply research early 1990s, but for a specific reason namely the management of EU funds in the first programming period. There is the opportunity for other researchers to compare the 2nd and 3rd CSFs with the CSF-1 based on empirical analysis.

The article starts examining the relation between education, training and unemployment in the EU, and especially the impact of training programmes on the employment prospects of individuals in the EU and the rest of the OECD according to a series of studies; the results are based on both cross-sectional and longitudinal data. We also discuss the vocational training policies for the unemployed in Greece. Then, we refer to the macroeconomic indicators of the examined areas, discuss the limitations of the research working with Greek LFS micro-data and follow a logistic regression for the years 1988 and 1992 - based on micro-data of the Greek LFS - for the two regions under study and compare them with the entire country. The article concludes with the impact of training on employment probability in Europe and the examined areas, and ends with some general comments on the merit and value of this study.

2. Unemployment and skills in Greece and the rest of the EU

2.1 Educational level and unemployment in the EU

Table 1 gives unemployment rates by qualification in different EU countries according to Eurostat data. The differences were enormous. There are only a few countries where this inverse relation between unemployment and qualification did not exist: in Greece and Portugal unemployment among people on ISCED (International Standard Classification of Education) 3 level (Lyceum) was higher than among the less qualified, but not among the University graduates (ISCED 5-7); in Italy and Luxembourg, unemployment rates among the highly qualified (ISCED 5-7, University) exceeded those of people with intermediate qualifications.

Table 1: Unemployment rates by level of educational attainment⁽¹⁾; EU 1994

Country	ISCED 0-2 ^c	ISCED 3 ^b	ISCED 5-7 ^a
BEL	12.5	7.5	3.7
DEN	12.6	8.3	4.6
GER	14.8	8.9	5.3
GRE	6.2	8.3	5.3
ESP	22.4	20.0	15.1
FRA	14.8	9.7	6.6
IRL	21.0	9.1	5.3
ITA	9.3	7.4	8.1
LUX	3.7	1.9	2.4
NL	12.6	7.7	5.5
POR	6.1	6.4	2.4
UK	11.2	7.9	4.1
EU-12	13.2	8.8	6.1

(1) 25-59 years old

Source: Eurostat: Education and Employment prospects, 1995.

^a All first and higher degrees. All teaching, nursing qualifications. HNC/HND.

^b 1 or more A-level passes, GNVQ 3 and equivalent, NVQ 3 and equivalent. Trade apprenticeship. GNVQ 2 or equivalent, NVQ2 or equivalent.

^c ISCED 2: 1 or more O-level/ GCSE passes, 1 or more CSE passes. All other qualifications.

ISCED 0-1: No qualifications.

Looking at the long-term unemployment (LTU) of different skill levels, we again find that intermediate and higher educated people were less affected. This is true for the whole Union except Spain and Greece, where LTU was higher on ISCED levels 3 and 5-7 compared to levels 0-2, for Italy where LTU was the highest on ISCED 3 level, and for Luxembourg and Portugal where the ratios of ISCED levels 0-2 and 3 were equal (Eurostat, Education and Employment Prospects, 1995).

2.2. CVT and unemployed in the EU

For the EU as a whole, unemployment in the 20-29 age group with supplementary vocational education and training was less than half that of those in the same age group without such further training (11.5% compared to 23.5%). With regard to the individual member states, young people with additional vocational education and training were in a more advantageous position on the labour market than those without, except in Spain, Portugal and Greece (see Table 2).

Table 2: Unemployment rates among young people (20-29) with basic education and those with supplementary vocational education and training (EU - 1995 figures)

COUNTRIES	BASIC EDUCATION	BASIC EDUCATION PLUS SUPPLEMENTARY VOCATIONAL EDUCATION / TRAINING
EU-14	23.5	11.5
Belgium	24.3	19.7
Denmark	17.7	8.5
Germany	16.2	7.6
Greece	14.3	20
Spain	33.9	34.9
France	30	17.1
Italy	22.2	15.9
Luxembourg	5.7	:
Netherlands	14.8	7.2
Austria	:	4
Portugal	11.2	16.2
Finland	35.4	23.6
Sweden	21.7	:
UK	18.5	10

Ireland – No figures available

: = Data unreliable

Source: Eurostat (as quoted in Economic and Social Committee of Greece, 1998, p.31).

3. Training evaluation in Europe and Greece

3.1. *Impact of training at micro-economic level*

The early European evaluation studies are mostly characterized by the fact that research was not based on longitudinal and non-experimental data, as is the norm in the second generation studies (see section 3.1.2), but on cross-sectional and (quasi) experimental data. Experimental evaluations are common in the U.S. but scarce in Europe (Bjorklund and Regner, 1996). The micro-economic studies on active labour market policies (ALMPs) were effectively summed up in OECD (1993a) and Fay (1996). Regarding training the basic conclusion was a frequently weak return to the training of the unemployed. In the majority of cases the most significant force decreasing the return was deadweight (i.e. a trained job-hunter is taken on but would have been employed in any case without training) - (Jackman *et al.*, 1996).

3.1.1. *The findings from European training evaluations (first generation studies)*

Among the ALMPs the greatest advance has been in the evaluation of training programmes, whilst the majority of training studies focused on the impact of training on future remuneration or on the likelihood of re-employment. The impact on the duration of the following employment period, too, has just been examined in studies done lately (e.g. Kaitz,

1979; Ridder, 1986; Card and Sullivan, 1988; Ham and Lalonde, 1991; Gritz, 1993; Bonnal *et al.*, 1994; Torp, 1994; Zweimuller and Winter-Ebmer, 1996) – it is important to separate the length of employment from the duration of job tenure (Cockx *et al.*, 1998).

Examination of accessible micro studies on training forces us to realize that it has been remarkably difficult to be clear about the foreseeable positive impact on those taking part (Jackman, 1995). It could be thought more extraordinary, according to Calmfors and Skedinger (1995), in view of the powerful theoretical points suggesting a positive impact when programmes were concentrated on a set of outsiders like these, that there is no more definite evidence on the impacts of centreing on the young.

A large number of different sorts of training programmes and their impacts were studied by OECD (1993a). In general it was found that programmes aimed at a few people only whose requirements are easily recognizable and at quite a high cost per person, frequently seemed to succeed relatively well in improving the remuneration and job possibilities of a number of the participants (this might account for the fact that training programmes in Norway, which were not that large, seemed to have succeeded much more effectively than in Sweden - Calmfors, 1995). In contrast, wider programmes involving more participants at quite a low cost per person normally appeared to make almost no difference (if any) to the prospects of those involved (Jackman, 1995). According to Rosholm and Skipper (2003) training raises the unemployment rate of participants but this effect disappears over time and this would indicate a locking-in effect.

These findings can be explained in different ways. One is that the characteristics of the unemployed differ to a great extent and taking into account their age, education and occupational backgrounds, just a few were able to gain from more training. Therefore, the only training programmes that had economic returns were those aimed at particular groups. Another explanation is that due to greater returns to training, only programmes with large inputs, i.e. targeted programmes, succeed. For instance, this could apply where the trainees are not used to the kind of skills they are learning, or for those not used to gaining skills by formal means (Jackman, 1995).

It follows that a labour market policy desirous of putting all unemployed people on a programme or giving them temporary work, cannot be largely made up of effective training programmes (OECD, 1993b; Calmfors, 1994).

3.1.2. Findings from recent European Programme evaluation on training (second generation studies)

In contrast to the early European evaluation studies - cited in section 3.1.1 - cross-sectional data is hardly to be found and training research in Europe has replaced it with the more useful longitudinal data, allowing for the possibility that impact assessments will be more robust (Kluve and Schmidt, 2002). Namely, the studies of section 3.1.2 examined the same population groups over time, apart from those of Winter-Ebmer (2006) and Cueto and Mato (2009) which used only one reference year in their research; also, only one study (that of Malmberg-Heimonen and Vuori, 2005) used experimental data.

These results show that the more expensive programmes having a significant amount of training appear to be most effective at increasing employment prospects (see Kluve *et al.*, 1999; Brodaty *et al.*, 2001; van Ours, 2001; Kluve and Schmidt, 2002; Raaum and Torp, 2002). Lately, national studies do not all find positive impacts (Gerfin and Lechner, 2000; Regner, 2002); but bearing in mind that job creation and subsidies for employment in the public sector usually do not succeed (Kluve *et al.*, 1999; Brodaty *et al.*, 2001), especially if their one aim is to remove unemployed people from the register (Lechner, 2000), training seems to have a significant impact.

Concerning the most recent research (Weber and Hofer, 2003; Graversen, 2004; Graversen and Jensen, 2004; Hujer *et al.*, 2004; Rosholm and Svarer, 2004; Centeno *et al.*, 2005 - on earnings as well; Hogelund and Holm, 2005; Aakvik and Dahl, 2006; Meadows and Metcalf, 2008; Rosholm and Skipper, 2009), there is no impact of training on employment probability in the European labour markets. Also, according to a series of studies (Lechner *et al.*, 2005 - on earnings as well; Malmberg-Heimonen and Vuori, 2005; Steiger, 2005; Lechner *et al.*, 2007 - on earnings as well; Cueto and Mato, 2009 - a locking-in effect of trainees is shown that it may be decreasing labour mobility) the employment effects of training are mixed, namely there are positive and negative results. Furthermore, recent research on Europe has also found that training has positive effects on employment probability, although in some cases more for specific age groups or areas [Cockx, 2003; Hamalainen and Ollikainen, 2004 - on earnings as well; Leetmaa and Vork, 2004; Albrecht *et al.*, 2005 - for young men on employment effects (research on earnings as well, but no impact on income effects); Arellano, 2005 - higher positive effects for women than for men; Cavaco *et al.*, 2005; Fitzenberger and Speckesser, 2005 - more in West Germany than in East Germany; Kluve *et al.*, 2005; Lorentzen and Dahl, 2005 - but modest effects and only on earnings; Stenberg, 2005; Winter-Ebmer, 2006 - for men and on earnings as well; Biewen *et al.*, 2007 - in West Germany; Mato and Cueto, 2008 - but no effects on earnings].

In conclusion, up-to-date evaluation studies point to minor impacts of European training policies and they are most likely less significant and not always as positive as those responsible for designing them had wished. Although the cross-national figures show a few positive results from programmes, it is impossible to disregard the more negative results. The findings allow us to conclude that training programmes seem to have some positive effects on employment and no effects on earnings. Moreover, effects diminish over time. The negative effects reported by several evaluations can be explained, on the one hand by a locking-in effect, and on the other by the fact that some participants seem to enrol in training merely in order to collect unemployment insurance benefits (Cueto and Mato, 2009). The conclusions based on the recent studies are somewhat similar to those of Heckman *et al.* (1999) and Stanley *et al.* (1999) for the U.S.

3.2. Vocational training policies for the unemployed in Greece

The structure of expenditures for “active” interventions in 1997 shows that the level of expenditures in Greece (0.35%), as a percentage of the GDP, is behind that of the EU-15 average (1.13%) concerning all specific interventions, with the exception of “measures for the young” (youth vocational education and training, etc. – 0.10%) which are comparable to the European average (0.13%). Furthermore, there is an extremely low level of expenditures on the training of adults (0.06% for Greece in comparison to 0.29% for the EU-15) - (OECD, Employment Outlook, 1999).

The system of CVT in Greece was developed mainly due to its incorporation in Community funding programmes (Iliades, 1995; Chletsos, 1998; Papakonstantinou, 1998). Policies concerned with training and retraining for the unemployed have been confined to continuing training programmes. Vocational training programmes for the unemployed were wholly unconnected with employment policies, and were thus wasteful of training resources (Gravaris, 1991, p. 37; Christodoulakis and Kalyvitis, 1995; Balourdos and Chryssakis, 1998; Economic and Social Committee of Greece, 1998). This is reflected in the fact that the unemployment rate for those (20-29 years old) with complementary vocational training in Greece was 20%, compared to 14% for those with only compulsory schooling; the corresponding figures for the EU were 11.5% and 23.5% (see *Table 2*).

Particularly with regard to training programmes for the unemployed in Greece, the method of identifying skills requirements, on the basis of which the programmes were offered, was wholly inadequate. It was based on changes in labour force categories derived from the LFS, on

estimates of the impact of investment programmes on employment (where these existed or where such estimates were possible) and on Job Market Surveys. These last record shortages of skills on the basis of company estimates of their own shortages, which were often inaccurate or did not correspond to the capacity of the firms to utilise the skills demanded (Linardos-Rylmon, 1998).

It is noteworthy that there are authors like Economou (1997) who suggest that the first Greek CSF (1989-1993) turned out to be a failure due to the reproduction of the clientist relations, which are claimed to be the essence of Greek policy and administration.

4. Macroeconomic data of the examined areas

4.1. Greece as a whole

In 1988, Greece's GDP was equal to 58% of the EU-12 average, whereas in 1996 the country improved its position since its GDP was 68% of the EU-15 mean and 82.2% of the EU-25 mean in 2004 (www.economics.gr). In 2008 the Greek GDP (PPP) per capita was 80% of the EU-15 (World Economic Outlook Database, April 2009, IMF). Also, according to the UN classification of human development index - which was released on December 18, 2008 and covers the period up to 2006 - Greece is ranked 18th in the world and 11th in the EU. Central Greece, Southern Aegean and Attica are the richest regions since 1991, whereas three out of four regions in the west of the country, Epirus, Western Macedonia and Western Greece were during the time period 1991-2004 among the poorest Greek regions in per capita GDP (Eurostat; www.economics.gr). Greece (from 2000 onwards) and Ireland (from the early 1990s onwards) have the highest GDP growth rates in the EU-15 (Eurostat). In 2008, roughly 66% of the workforce in Greece was involved in the service sector, 23% in industry, and 11% in agriculture (ESYE).

In Greece, in the years 1988-1998²¹ the unemployment rate climbed from 7.7% in 1988 to 11.5% in 1998²² (LFS). In 1995 the unemployment rate in Greece passed the 10% mark for the first time in the second half of the century (Ioakimoglou, 1995). Unemployment in Greece is now a structural phenomenon of considerable dimensions and with a particular dynamic that tends to keep it going. According to Eurostat data, the unemployment rate in the EU-15 increased from 8.2% in 1991 to 10.9% in 1996 (Eurostat, Unemployment in the EU, 1997). The unemployment rate in Greece rose above the EU average for the first time in 1998, and the gap was spreading, since the EU average was falling and the unemployment rate in Greece was still rising (IN.E./GSEE-ADEDY, 2000).

4.2. The Region of Central Macedonia (RCM)

Central Macedonia is the largest region of Greece (19,147 km² - 14.5% of the country's surface) and is situated in the centre of Northern Greece. The RCM consists of seven NUTS-3 areas (Thessaloniki, Serres, Chalkidiki, Imathia, Pella, Kilkis and Pieria) and is the second largest Greek region in terms of population (about 1.7 million inhabitants according to 1991 census) after that of Attica, whereas the population of the entire Greece was approximately 10.26 million. Between the census of 1991 and 2001 the population rose by 9.6%, a rise higher than the national

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²¹ The percentage of unemployment is characterized by an augmentative tendency from 1988 to 1998 with the exception of the two year period 1989-1990, during which it shows a temporary decrease.

²² On the basis of Eurostat figures, unemployment in 1998 was 10.8% (1997=9.6%). However, on the basis of the definitions used up until 1997, the unemployment rate in 1998 was 11.5%.

mean (6.9%). Also, the major urban centre and capital of Central Macedonia is Thessaloniki, which is the second most important Greek city. According to 1991 census the population of the Thessaloniki Area was about 750,000 inhabitants, whereas that of the county of Thessaloniki was approximately 945,000 inhabitants. The main cities are Thessaloniki-Veria-Serres-Katerini-Naoussa-Edessa-Polygyros-Kilkis. The main industries were textiles, plastic-chemicals, food-beverages and clothing. In 2003, the region's per capita GDP (PPS) was 17,110 euro (83% of the EU-25 average), whereas Thessaloniki and Chalkidiki were the richest counties of the region having a GDP per head equal to 90.3% and 89.5% correspondingly of the EU-25 mean. In 2003 the region produced 17.6% of the country's GDP (the second largest contributor after Attica) - 18% of the national agricultural produce (first in the country), 20% of the manufacturing production (second in the country) and 18% of services (second in the country). The unemployment rate in the RCM was 9.2% in 1992 and increased to 11.5% in 2002 (source: www.economics.gr).

4.3. The Region of Attica

The Region of Attica (NUTS-2) - which is geographically situated in Central Greece - is the one and only region-county (NUTS-3) in Greece, since according to 1991 census its population size was about 3.5 million inhabitants; namely, 3 out of 10 Greeks lived in Attica. The capital of the region is the city of Athens, which is by far the most important Greek city in economic, administrative and political terms.

In 1988, Attica's GDP was equal to 61% of the EU-12 average (58% for Greece as a whole), whereas in 1996 the region improved its position since its GDP was 77% of the EU-15 mean (68% for the country as a whole) and 86% of the EU-25 mean in 2003 (80.9% for Greece as a whole). The Region of Attica produces 37.4% of the country's GDP - 2.7% of the country's agricultural produce, 35.5% of the manufacturing and 42% of services (2001) - (sources: www.ypes.gr/attiki and www.economics.gr).

There was an increase in the percentage of unemployed from 10% in 1988 to 11.7% of the workforce in 1995²³. The male unemployment rate was 6.47% in 1988 and 8.4% in 1995, whereas the corresponding female percentages were 16.32% and 16.86%. LTU - as percentage of total unemployment - amounted to 45.4% in 1988 and 50.9% in 1995 (LFS).

5. Econometric model: Logistic regression for unemployment

5.1. The problems with selection bias, self-selection and proxy interviews on training in the LFS

There is a huge literature (see section 3) that shows the importance of taking into account selection bias and self-selection into training when attempting to evaluate the impact of training on employment status. Selection bias comes from differences between participants and non-participants. There can be three kinds of selection bias: because of comparing non-comparable subjects, because of a different distribution of the observable characteristics or because of non-observable characteristics. Researchers rely on analyzing programmes that have been designed to be evaluated; that is, the program intervention is randomly assigned to a

²³ The percentage of unemployment is characterized by an augmentative tendency with the exception of the two year period 1989-1990, during which it shows a temporary decrease.

treatment group and results are compared with the control group. In the absence of randomization like in the case of the Greek LFS, there are other advanced micro-econometric evaluation techniques like generalised propensity score (in case of missing values, non-response) - propensity scores actually serve to substitute for randomised matching, differences-in-differences (selection on unobservables), or heterogenous and multiple treatment. However, regarding the LFS data for Greece for the years under examination, the use of new techniques could not provide us with reliable results, mainly due to the sample's design, but also the questionnaire's design.

Felstead *et al.* (1998) has pointed to difficulties connected to using European LFS, such as the fact that the questionnaire was greatly modified in 1992, leading to an interrupted sequence in the data. A larger difficulty is that of proxy interviews when the person is not there to be interviewed and a member of their household provides information on their behalf. In the ELFS proxy interviews are common because they are cheaper than returning to the houses to interview the individuals in person. According to Felstead *et al.* (1998) proxy interviews create a special difficulty for the analysis of training data. Although the person answering the questions by proxy might know a certain amount about the status of a member of their household in the labour force, they could be unaware of their household in the labour force and of training details, especially if this was casual and on-the-job. The difficulty is increased since the young are more likely to be covered by proxy interviews and they are also the group with the greatest possibility of being involved in training.

5.2. *The logistic regression based on the micro-data of the Greek LFS*

European Community Household Panel (ECHP) and Survey on Income and Living Conditions (SILC) data have been designed for the country as a whole in the case of Greece, so we cannot really work at regional level. Also, individual census records do not exist in Greece, like e.g. in Denmark, so the only way is to base our research on the LFS micro-data.

The questionnaire of the Greek LFS was greatly modified in 1992. The originality of this research is that we use individual anonymised records (micro-data) of the LFS for both employed and unemployed (about 1.5% of the total population of each area).

Table 3 shows the numbers of records eligible for analysis in the LFS samples of the two regions under examination, and Greece as well, in 1988 and 1992. Apart from the system missing records, following the limitation of age (15-64 years old) and removing the non-active population, we ended with the following numbers of records eligible for analysis in each area (in the spring and early summer, namely from the 14th to 26th week of the year):

Table 3: Numbers of records eligible for analysis in Greece, RCM and Attica (LFS samples)

Year	Region	No. of records
1988	Greece	56,212
	RCM	9,708
	Attica	19,922
1992	Greece	53,297
	RCM	9,290
	Attica	20,301

The basic aim of the econometric analysis is to test the impact that training programmes (apprenticeship, intra-firm training, CVT, popular training) and educational level had on people's job prospects in the Regions of Central Macedonia and Attica, as well as in the entire country, during the implementation of the CSF-1 (1989-93) accounting for demographic characteristics such as age, gender, marital status and area of residence. We compare the two regions with Greece as a whole. In the paper, we use a logistic regression model due to the categorical nature of the dependent variable (employed versus unemployed) that allows for group comparisons adjusting for demographic and socio-economic variables. It should be noted that regression-adjusted comparisons may still provide misleading results when other important variables that might have an effect are omitted.

The dependent variable takes two possible values (employed versus unemployed). A full description of the explanatory variables (six for 1992 and five for 1988) is given below and are among the most important variables generally acknowledged as affecting access to labour market.

The logistic regression model used is:

$$\text{logit } P(y = 1 | x_1, \dots, x_k) = \log \left[\frac{P(y = 1 | x_1, \dots, x_k)}{1 - P(y = 1 | x_1, \dots, x_k)} \right] = \beta_0 + \sum_{k=1}^K \beta_k x_k ,$$

where $P(y = 1 | x_1, \dots, x_k)$ denotes the conditional probability a randomly selected individual to be 'unemployed'. The exponent of the coefficient β_k denotes the multiplicative effect that a unit increase in the explanatory variable x_k has on the odds of being 'unemployed' than 'employed' controlling for all other variables in the model and β_0 is the intercept of the model and the value of the logit when all the explanatory variables take the value zero. More specifically, a unit increase in the explanatory variable x_k multiplies the odds by e^{β_k} controlling for all other variables in the model.

Solving the above formula with respect to the conditional probability we have:

$$P(y = 1 | x_1, \dots, x_k) = \frac{e^{\beta_0 + \sum_{k=1}^K \beta_k x_k}}{1 + e^{\beta_0 + \sum_{k=1}^K \beta_k x_k}}$$

Due to data limitations, we cannot explore the impact that the duration of courses, thematic fields, number of participants, duration of unemployment period of the trainees have on unemployment. Another limitation of the research is that the data available are cross-sectional rather than longitudinal and therefore we cannot study any population changes across time. The Greek LFS data are non-experimental.

5.2.1. Description of the variables

We define now the complete list of variables together with their coding values that we use in the model. The reference category of each variable is underlined.

Dependent variable

Employment Status (STA1) (Unemployed, Employed)

Explanatory variables

- 1) *Gender (STA 2) (Female, Male)*
- 2) Marital status (STA 3) (Married or divorced or widows *against* Non-married)
- 3) Level of education
 - STA 8A = University graduates
 - STA 8A1 = MSc or PhD holders
 - STA 8B = Technological Educational Institutions (TEI) graduates
 - STA 8C = Lyceum graduates (12 years of schooling) or not finished University
 - STA 8C1 = High-school graduates (9 years-compulsory education)
 - STA 8D = Primary school graduates or not finished primary school or never in school.
- 4) Urbanization level of settlement system
 - STA 9A = Athens Area
 - STA 9B = Thessaloniki Area
 - STA 9C = Rest of urban areas
 - STA 9D = Semi-urban areas
 - STA 9E = Rural areas
- 5) Participation in the past in training course(s)
 - STA 26A = apprenticeship
 - STA 26B = intra-firm training
 - STA 26C = continuing vocational training (CVT)
 - STA 26D = popular training
 - STA 26E = Non-participation in the past in training course(s)
- 6) Age groups
 - STA 40A = 15-24
 - STA 40D = 25-34
 - STA 40E = 35-44
 - STA 40C = 45-64

The base (or reference) categories are those that appear in the *Tables 4, 5 and 6* with empty cells and with which the rest of the corresponding variables are compared. The reference categories are chosen so as to match the needs of the research.

The working age population is between 14-65 years old. However, marking in SPSS the ages 14 and 65 we also include those who are 13 and 66 years old something which we want to avoid; so, we include people from 15 to 64.

The variable “participation in the past in training course(s)” first appeared in the 1992 questionnaire; it means that the interviewee had completed one or more training courses. This is also an indication of the attitude towards training in Greece at the beginning of the 1990s. The

duration of apprenticeship and intra-firm training had to be at least one year according to the questionnaire of the Greek LFS. The term “popular training” (*laiki epimorphosi* in Greek) means training courses intended mainly for elderly people independently of their educational level, where the curriculum includes largely courses of general knowledge.

The following tables present the estimated coefficients (B) and their standard errors (S.E.) of each explanatory variable in the logistic regression for unemployment, together with the Wald test for significance, calculated as the squared ratio B/SE. The column “Sig.” (level of statistical significance or p value) corresponds to the probability of the rejection area, so coefficients with a value not higher than 0.05 are highly and significantly different from zero.

5.3. Results for Greece

Table 4 presents the results from the logistic regression in Greece as a whole for 1988 and 1992. Both in 1988 and 1992, women, non-married individuals, people in the age group 15-24 years old, people who lived either in Athens Area or Thessaloniki Area or the rest of urban areas or semi-urban areas were more likely to be unemployed than men, married people, people in the age between 25 to 64 and those in rural areas. The results are in accordance with the family strategies and the gender roles in traditional Greek families, as well as to the unequal opportunities and discrimination against women by companies. The gender differences could also be attributed to the fact that women often join the labour market earlier. Compulsory military service and further education (not a likely explanation anymore) were the major reasons for men’s delay in entering the labour market. Extended family protection, with a view to preparation for entry into the labour market, applies to both sexes, of course. The effect of urbanization level can be explained since in the Greek agrarian sector unemployment was not properly counted, because hidden unemployment is quite high.

In addition, for 1988, significant differences in education have been found only between lyceum graduates and university graduates (the reference group), indicating that lyceum graduates were more likely to be unemployed than university graduates, whereas in 1992 university graduates were less likely to be unemployed compared to all other educational categories apart from MSc or PhD holders (these differences were not found significant). Finally, none of the four types of training programmes seemed to reduce the odds of unemployment.

Table 4: Results for Greece, 1988 and 1992

(parameter estimates b_k , standard errors (s.e.), p-value, exponent of b_k)								
Variables	1988				1992			
	b_k	s.e.	Sign.	Exp(b_k)	b_k	s.e.	Sign.	Exp(b_k)
Gender	0.92	0.03	0.000	2.52	1.01	0.03	0.000	2.74
Marital Status	-0.68	0.04	0.000	0.51	-0.62	0.04	0.000	0.54
Aged 15-24	-----	-----	-----	-----	-----	-----	-----	-----
Aged 25-34	-0.94	0.05	0.000	0.39	-0.88	0.05	0.000	0.42
Aged 35-44	-1.50	0.06	0.000	0.22	-1.39	0.06	0.000	0.25
Aged 45-64	-1.78	0.07	0.000	0.17	-1.65	0.06	0.000	0.19
University graduates	-----	-----	-----	-----	-----	-----	-----	-----
MSc or PhD	-0.20	0.25	0.424	0.82	0.37	0.27	0.167	1.45

holders									
TEI graduates	0.00	0.07	0.995	1.00		0.23	0.09	0.008	1.26
12 years of schooling	0.23	0.05	0.000	1.26		0.39	0.05	0.000	1.47
9 years-compulsory education	-0.007	0.07	0.914	0.99		0.30	0.07	0.000	1.35
Primary school graduates and below	-0.07	0.06	0.203	0.93		0.31	0.06	0.000	1.36
Athens Area	0.93	0.06	0.000	2.52		0.77	0.05	0.000	2.16
Thessaloniki Area	0.72	0.07	0.000	2.06		0.66	0.07	0.000	1.93
Rest of urban areas	1.02	0.06	0.000	2.78		0.96	0.06	0.000	2.62
Semi-urban areas	0.63	0.07	0.000	1.87		0.77	0.06	0.000	2.16
Rural areas	-----	-----	-----	-----		-----	-----	-----	-----
Apprenticeship	NA	NA	NA	NA		-0.13	0.21	0.544	0.88
Intra-firm training	NA	NA	NA	NA		-0.62	0.54	0.250	0.54
CVT	NA	NA	NA	NA		0.22	0.25	0.381	1.25
Popular training	NA	NA	NA	NA		-0.66	1.05	0.531	0.52
Non-participation in the past in training course(s)	NA	NA	NA	NA		-----	-----	-----	-----
Constant	-2.16	0.07	0.000	0.14		-2.38	0.08	0.000	0.09

5.4. Results for Central Macedonia

Table 5 presents the results from the logistic regression in the RCM for 1988 and 1992. Both in 1988 and 1992, women, non-married individuals, people in the age group 15-24 years old, people who lived either in the area of Thessaloniki, the rest of urban areas or semi-urban areas were more likely to be unemployed than men, married people, people in the age between 25 to 64 and those in rural areas. Concerning the results on gender and urbanization level the likely explanations are the same as those for the entire country (see section 5.3).

In addition, for 1988, significant differences have been found only between high school graduates and university graduates (the reference group), indicating that high school graduates were less likely to be unemployed than university graduates, whereas in 1992 university graduates were less likely to be unemployed compared to lyceum graduates and primary school graduates (other differences were not found significant). As for the entire country, the 1992 findings confirm the human capital theory that the more education one receives the more chances he has on employment. As for the whole of Greece, none of the four types of training programmes seemed to reduce the odds of unemployment.

Table 5: Results for Central Macedonia, 1988 and 1992

(parameter estimates b_k , standard errors (s.e.), p-value, exponent of b_k)								
Variables	1988				1992			
	b_k	s.e.	Sign.	Exp(b_k)	b_k	s.e.	Sign.	Exp(b_k)
Gender	0.85	0.09	0.000	2.33	0.91	0.09	0.000	2.48
Marital Status	-0.96	0.11	0.000	0.38	-0.69	0.11	0.000	0.50
Aged 15-24	-----	-----	-----	-----	-----	-----	-----	-----
Aged 25-34	-0.86	0.12	0.000	0.42	-0.67	0.12	0.000	0.51
Aged 35-44	-1.49	0.16	0.000	0.23	-1.25	0.16	0.000	0.29
Aged 45-64	-1.58	0.17	0.000	0.21	-1.53	0.17	0.000	0.22
University graduates	-----	-----	-----	-----	-----	-----	-----	-----
MSc or PhD holders	0.18	0.63	0.771	1.20	0.43	0.55	0.435	1.54
TEI graduates	-0.20	0.21	0.335	0.82	0.15	0.21	0.457	1.17
12 years of schooling	-0.02	0.13	0.884	0.98	0.43	0.15	0.004	1.54
9 years-compulsory education	-0.34	0.16	0.032	0.71	0.11	0.17	0.543	1.11
Primary school graduates and below	-0.26	0.14	0.063	0.78	0.32	0.16	0.042	1.37
Thessaloniki Area	0.84	0.14	0.000	2.31	0.95	0.14	0.000	2.59
Rest of urban areas	1.17	0.15	0.000	3.23	1.19	0.16	0.000	3.30
Semi-urban areas	0.42	0.18	0.021	1.53	0.62	0.17	0.000	1.87
Rural areas	-----	-----	-----	-----	-----	-----	-----	-----
Apprenticeship	NA	NA	NA	NA	0.49	0.38	0.203	1.62
Intra-firm training	NA	NA	NA	NA	-0.36	0.79	0.645	0.70
CVT	NA	NA	NA	NA	-0.73	0.74	0.326	0.48
Popular training	NA	NA	NA	NA	0.56	1.08	0.607	1.75
Non-participation in the past in training course(s)	NA	NA	NA	NA	-----	-----	-----	-----
Constant	-1.97	0.18	0.000	0.14	-2.69	0.21	0.000	0.07

5.5. Results for Attica

Table 6 gives the results of logistic regression in Attica. For 1988 and 1992, women, non-married individuals, and young people (15-24 years old) were more likely to be unemployed than men, married individuals and people in older age groups.

In 1988, education was not found to be statistically significant. On the contrary, for 1992 university graduates were more likely to be employed compared to Lyceum, high school and primary school graduates. Those results are in contrast to some studies which assert the opposite (see section 1). Also in the Region of Attica, all training variables were found to be statistically non-significant; this means that the results of training variables are not compatible with the human capital theory, so the more trained a person did not affect his chances of finding a job, in Attica, during the time period of the CSF-1. The same results on training were found for other Greek regions as well (see Rodokanakis and Tryfonidis, 2009; Rodokanakis, 2010a and 2010b; Rodokanakis and Moustaki, 2010). However, since there is always the question of wages which we cannot examine, there is nothing incompatible with rational economic decision making in searching longer for a job, if the expected wage gain is sufficiently high.

For 1988, people who lived in the Athens Area or in the rest of urban areas were more likely to be unemployed than people in rural areas. Living in semi-urban areas was not found statistically significant. In 1992, all categories of the urbanization variables were found non-significant. This seems reasonable for Attica, since - as we have already mentioned - Attica is the only county-region in Greece, so, in Attica, the meaning of semi-urban and rural areas is very relevant.

Table 6: Results for Attica, 1988 and 1992

(parameter estimates b_k , standard errors (s.e.), p-value, exponent of b_k)								
Variables	1988				1992			
	b_k	s.e.	p-value	Exp(b_k)	b_k	s.e.	p-value	Exp(b_k)
Gender	0.81	0.05	0.000	2.24	0.92	0.05	0.000	2.50
Marital status	-0.68	0.06	0.000	0.51	-0.55	0.06	0.000	0.58
Aged 15-24	-----	-----	-----	-----	-----	-----	-----	-----
Aged 25-34	-0.93	0.07	0.000	0.40	-0.90	0.07	0.000	0.41
Aged 35-44	-1.40	0.09	0.000	0.25	-1.37	0.09	0.000	0.25
Aged 45-64	-1.62	0.10	0.000	0.20	-1.48	0.09	0.000	0.23
University graduates	-----	-----	-----	-----	-----	-----	-----	-----
MSc or PhD holders	-0.42	0.30	0.154	0.66	0.54	0.31	0.081	1.71
TEI graduates	-0.10	0.09	0.279	0.91	0.15	0.11	0.162	1.17
12 years of schooling	0.02	0.07	0.813	1.02	0.32	0.08	0.000	1.38
9 years-com pulsory education	0.02	0.09	0.801	1.02	0.41	0.10	0.000	1.51

Primary school graduates and below	0.05	0.08	0.496	1.06		0.67	0.08	0.000	1.95
Athens Area	0.89	0.31	0.004	2.42		0.18	0.24	0.445	1.20
Rest of urban areas	0.82	0.33	0.013	2.26		0.39	0.26	0.133	1.47
Semi-urban areas	0.29	0.35	0.414	1.33		0.23	0.26	0.380	1.26
Rural areas	-----	-----	-----	-----		-----	-----	-----	-----
Apprenticeship	NA	NA	NA	NA		-0.23	0.37	0.543	0.80
Intra-firm training	NA	NA	NA	NA		-18.7	***	0.999	0.00
CVT	NA	NA	NA	NA		0.47	0.46	0.310	1.60
Popular training	NA	NA	NA	NA		-18.2	***	0.999	0.00
Non-participation in the past in training course(s)	NA	NA	NA	NA		-----	-----	-----	-----
Constant	-2.03	0.31	0.000	0.13		-1.85	0.25	0.000	0.16
*** standard errors are large and not reported									

5.6. Quantifying the effect of explanatory variables

In 1988 and 1992 in the whole of Greece (Table 4) the estimated odds that a woman is unemployed are 2.52 (or 152% increase) and 2.75 (or 175% increase) times the estimated odds for a man at any given level of marital status, educational and urbanization level, age group and type of training completed. In the RCM those figures are 2.33 and 2.48 (Table 5) respectively, whereas in Attica those figures are 2.24 and 2.50 times (Table 6) respectively.

In the whole of Greece in 1988, the estimated odds of being unemployed in Athens Area are 2.52 times the estimated odds in rural areas indicating a 152% increase in the estimated odds given the other variables in the model. Whereas, in 1992, we found a 116% increase in the same odds. The estimated odds in Thessaloniki, the rest of urban areas and semi-urban areas are 2.06, 2.78 and 1.87 times respectively the estimated odds in rural areas indicating a 106%, 178% and 87% increase. Similar percentages were found in 1992 (93%, 162% and 116%).

Similarly, in the RCM in 1988, the estimated odds of being unemployed in Thessaloniki are 2.31 times (131% increase) the estimated odds in rural areas given the other variables in the model. The estimated odds in urban areas and semi-urban areas are 3.23 and 1.53 times respectively the estimated odds in rural areas indicating a 223% and 53% increase. Similar but slightly higher percentages are found in 1992 in the RCM. In Attica in 1988, the estimated odds show a 142% increase in the estimated odds in Athens and 126% increase in the rest of urban areas than in rural areas. No significance differences were found in 1992 in Attica.

In the whole of Greece in 1988, the estimated odds for high-school graduates to be unemployed are 1.26 times (26% increase) the estimated odds for university graduates controlling for all other variables in the model. In 1992 the estimated odds of being unemployed for primary school graduates, 9-years compulsory schooling, 12-years of schooling and TEI graduates are 1.26 (26% increase), 1.47 (47% increase), 1.35 (35% increase) and 1.36 (36% increase) times respectively the estimated odds for university graduates.

In the RCM in 1988, the estimated odds for high-school graduates are 0.71 of those with university degree (indicating a 29% decrease in the estimated odds), whereas in 1992 the

estimated odds for Lyceum and primary school graduates are 1.54 and 1.37 times respectively the estimated odds for university graduates indicating a 54% and 37% increase in the odds. In Attica in 1992, the estimated odds for Lyceum graduates, high-school and primary school graduates are 1.38, 1.51 and 1.95 times the estimated odds for university graduates indicating a 38%, 51% and 95% respectively increase in the estimated odds for unemployed.

In the RCM in 1988, the estimated odds of people in the age groups 25-34, 35-44 and 45-64 are 0.42, 0.23 and 0.21 respectively of those in the age group of 15-24 years old (a decrease in the estimated odds by 58%, 77% and 79%). Same patterns have been found in the RCM in 1992, as well as in Attica both in 1988 and in 1992 and in Greece as a whole.

5.7. Interaction effect among variables

Only for the 1992 sample, did we fit the interaction effects between training and urbanisation level, and between training and level of education, as well as between age group and participation in training courses. Interactions terms were not found to be statistically significant in either region or the entire country. Therefore, the variable “training” does not alter the relationship between unemployment and education, unemployment and age group, as well as unemployment and urbanisation level. In other words, the chances of finding a job do not change when we count training as an additional qualification in relation to residence location, age group and level of education.

6. Conclusions

A significant number of researchers making use of accessible data and studies to examine the potential impacts of training on employment have been referred to. In spite of being restricted to only a small number of nations, micro-economic studies of effect evaluations indicate that some programmes have managed to noticeably better employment prospects for those taking part. On the other hand, the findings include a number of programmes which appear to have had almost no effect. Programmes with fairly specific targeting have managed positive results and this may be due to the fact that these programmes usually take account of individual requirements. However, a number of programmes that were most widely targeted have had little impact. Lastly, to establish the ways in which programmes can be made better more research is necessary. The situation in Greece is complicated with low level of investments to training programmes compared to the rest of the EU, and weak interconnection among targeting of training programmes and needs of labour market.

According to our findings, the level of education is statistically non-significant for 1988 in both regions, apart from high-school graduates (less likely to be unemployed than the University graduates) in the RCM. This result is probably related to the fact that the 1988 LFS questionnaire is less detailed concerning questions on education than the corresponding one in 1992. In 1992, in both regions, the University graduates were in a better position in the labour market than the primary school or lyceum graduates; comparing high-school graduates with the University graduates the latter were in a better position in 1992 only in Attica. Also in both regions, in both years, whether or not someone had a degree from TEI or had a Master or PhD is statistically non-significant. For Greece as a whole, in the domain of education in both years, there are no common results with the two regions among the statistically significant variables. Apart from MSc or PhD holders the results on education for the entire country are clear in 1992 in these samples and confirm the human capital theory, whereas in 1988 this is in force only for lyceum graduates in comparison to the University graduates.

All training variables are statistically non-significant for 1992 in both regions and the entire country as well (as already mentioned in section 5, we cannot explore training in 1988 due to the limitations of data); so, the results of the logistic regression confirm the conclusions of the various studies for the limited impact of vocational training in Greece (see on the vocational training policies for the unemployed in Greece). Testing of interactions between training programmes and education, training courses and age, and training programmes and residence location, did not verify any significant pair. Thus, it is also to the productive structure of the examined areas that this effect is linked; the demand for qualified workers and real income might be raised by economic policies aimed at encouraging high quality services.

Finally, regarding the urbanisation level of the settlement system, the results for the RCM and Greece as a whole are the same for 1988 and 1992; namely, people who lived in rural areas were in a better position in the labour market than those in the Thessaloniki Area, Athens Area, the rest of urban areas and semi-urban areas. Concerning the residence location in the case of Attica in 1988 there were some reservations which may be related to the fact that the 1992 LFS data are better than those of 1988, as the most recent data are better than those of 1992. Consequently the investigation of the subsequent years is needed in order to have a clearer picture in the 1990s given the fact that, as mentioned in the introduction, the Greek LFS micro-data are now available to researchers.

The research would merit attention of a wider international readership, since the paper does offer results that are useful for comparative research among European regions and European countries as well, especially comparing CSFs. Also, the study will be valuable to those who are interested in designing and implementing training programmes for structural change investigating the deficiencies and inefficiencies which have occurred in the Greek case.

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