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## COMPARING THE PROBABILITY OF UNEMPLOYMENT IN SOUTHERN GREECE VIS-À-VIS 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 Southern Greece (namely the regions of Southern Aegean and Crete) during the implementation of the first Community Support Framework (1989–1993). We also research the differences between the two regions under study and the entire country. We try to see whether the educational level itself and participation in training programmes increased the chances of finding a job. 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 for Greece conclude. To the author's knowledge, this is the first attempt to analyse individual anonymised records (micro-data) from the Labour Force Survey (LFS) for both employed and unemployed in those two regions at NUTS 2 level.

**KEYWORDS:** spatial econometrics; labour economics policies; human capital; skills; regional, urban and rural analyses.

### 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 Southern Aegean and Crete, as well as in Greece as a whole, during the implementation of the CSF-1 (1989–93). Namely, we try to see whether the educational level

itself and participation in training programmes increased the chances of finding a job. The vocational training programmes of the CSF-1 in the regions under examination started in March 1990 and ended in March 1994. All training actions in Greece are co-financed by the EU funds, whereas during the examined time period both regions belonged to the Objective 1 of the EU Structural Funds.

We work first at national level, second at regional level, third at urban, semi-urban and rural level, and fourth at the level of Athens Area and Thessaloniki Area (the two biggest urban agglomerations in the country).

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) 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.

The importance of this research lies in the fact that, to the author's knowledge, it is the first time that the analysis of investigating the impact of training on the Greek labour market – and specifically on the Regions of Southern Aegean and Crete – is based on the micro-data of the Greek LFS. This is because 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.

The article starts with the issue of over-education and why it is important to this research. Then, we examine 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. Finally, we refer to the socio-economic characteristics of the examined areas 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.

### WHY IS OVER-EDUCATION IMPORTANT TO THIS RESEARCH?

According to the OECD (1990, p. 67, Table 2.3), in Greece – contrary to what happens in many other European countries – the unemployment rate of university graduates was higher than that of the less educated, whilst, mainly since the late 1980s, a lot of graduates of tertiary education, especially of certain old traditional specializations, faced problems of absorption into the labour market (Iliades, 1995). Also, according to Katsikas (2005) the University graduates in Greece face greater difficulties finding a job in comparison to the less educated. Meghir *et al.* (1989) analysed the main determinants of female participation in the labour force and male unemployment duration in Greece using data from the 1981 Greek LFS. An interesting finding is that male unemployment duration increased with education. Also, according to the study of IN.E./GSEE-ADEDY (1999), based on the processing of ESYE (National Statistical Service of Greece) aggregated data, the probability of an unemployed person becoming long-term unemployed depends on his/her age, gender and family status. Contrary to the common perception, this probability did not depend on the educational level.

Greek farming and especially Greek industry consisted of many pre-eminently small businesses of traditional activities, which did not require administrative and technical staff with higher education and specialization (Kanellopoulos, 1984). Besides, the family character of many Greek businesses made their owners avoid hiring staff (including those with high qualifications) or implementing innovative ideas of high skilled people, with the result that industry was unable to create enough new positions for people with relatively high specialization and to be unable to absorb the increased number of graduates (Kanellopoulos, 1984). Exactly the opposite happened in the public sector, where many new positions were created to absorb unemployed graduates. Although this waiting (queuing for a public sector job) raised the apparent unemployment of graduates (see, for instance, Krueger and Summers, 1987, p. 44), some of them held temporary jobs, often in the concealed economy (Glytsos, 1990). Moreover, the public sector limits its action to essentially bureaucratic competence and activities or to the provision of non-exchangeable services internationally. Greece seems to manifest over-education by any of the criteria mentioned above. The relative remuneration of university graduates was decreasing through time, mainly because of their over-supply (Glytsos, 1990). (For the causes of graduate unemployment see Johnes *et al.*, 1987; Sanyal, 1987; Dolton and Vignoles, 2000).

## THE HUMAN CAPITAL APPROACH AND THE HUMAN CAPITAL THEORY

During the late 1950s and early 1960s the current neoclassical theory of the labour market emerged with the development of the human capital theory. Gary Becker (1964 – 2<sup>nd</sup> ed., 1975) published a book with the title “Human Capital” which developed a theory of human capital formation and analysed the rate of return to investment in education and training. However, investment in human capital remains a controversial issue (Woodhall, 1987).

Whilst the human capital literature has highlighted a number of productivity-related characteristics, human capital theorists give most emphasis to the importance of education and training as the main component of productivity (Blaug, 1975). Education, it is suggested, provides the basic skills of reading and writing, cognitive skills, and the “ability to learn” which will increase an individual’s productivity in all jobs (general human capital), whilst vocational education, on the other hand, will increase an individual’s productivity in a narrower range of jobs by providing more specific skills (specific human capital).

Becker (1962) distinguishes general from specific human capital of workers, and within specific human capital between employer- and employee-financed on-the-job training. Most broadly the theory of specific human capital predicts that where the fixed costs of employment, due to on-the-job training, are greatest, unemployment is lowest (Rees, 1973, pp. 118–20).

Following Becker’s (1964) analysis on the economic role of human capital, particularly education, there is now a considerable amount of empirical research on the closely related topics of education and skills (see Prais, 1995; Murray and Steedman, 1998) and, more specifically, the increasing role of skilled labour in the economy (Berman *et al.*, 1994; Machin, 1996; Green *et al.*, 1998; Machin and van Reenen, 1998).

## UNEMPLOYMENT AND SKILLS IN GREECE AND THE REST OF THE EU

It has since long been confirmed in almost all EU and other countries that there is an inverse relationship between the level of education and training on the one hand and unemployment rates on the other. The reasons are the processes of screening and credentialism, but also the assumed higher productivity of better qualified people. Apparently employers not only associate higher skills with specific performance capabilities, but also with the social and flexible competences increasingly required in the course of technical progress (CEDEFOP, 1998).

Data on unemployment and qualifications showed deviations with regard to different countries and national data sources, which cannot be presented here

in detail. A comparison of statistics from different sources should be done very carefully. Thus, for example, Eurostat relates unemployment rates to the 25–59 years old, and OECD to people between 25 and 64 years of age (1).

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<sup>(1)</sup>; EU 1994

Country	ISCED 0–2 <sup>a</sup>	ISCED 3 <sup>b</sup>	ISCED 5–7 <sup>c</sup>
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

Notes:

(1) 25–59 years old

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

ISCED 0–1: No qualifications.

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

Source: Eurostat: Education and Employment prospects, 1995.

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).

### 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 5.2), 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).

#### 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 centring 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).

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

In contrast to the early European evaluation studies – cited in section 5.1 – 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 5.2 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; Centeno *et al.*, 2004 – on earnings as well; Graversen, 2004; Graversen and Jensen, 2004; Hujer *et al.*, 2004; Rosholm and Svarer, 2004; Hogelund and Holm, 2005; Aakvik and Dahl, 2006), 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; Hämäläinen and Ollikainen, 2004; 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; Kluge *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; 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.

### 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: 37; Christodoulakis and Kalyvitis, 1995; Balourdos and Chryssakis, 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% (Economic and Social Committee of Greece, 1998: 31).

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).

### SOCIO-ECONOMIC CHARACTERISTICS OF GREECE

According to 1991 census the population of the entire Greece was approximately 10.26 million. 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 18<sup>th</sup> in the world and 11<sup>th</sup> 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 1988–1998 (2) the unemployment rate climbed from 7.7% in 1988 to 11.5% in 1998 (3) (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).

### THE REGION OF SOUTHERN AEGEAN

The Region of Southern Aegean contains the counties of the Cyclades and the Dodecanese. The per capita GDP was 16,200 euro in 2003 (94% of the EU-25 average, and 116% of the Greek GDP average, second richest region in the country after that of Central Greece). With Ermoupolis, Syros, as its centre, 2.8% of the country's population is concentrated in the region. Between the census of 1991 and 2001 the population rose 17.6%, the highest rise in the country. The famous tourist destinations of Mykonos, Santorini and Rhodes are situated in this region. The region produces 3.2% of the GDP, 3.6% of the agricultural produce, 0.3% of manufacturing and 3.8% of services. Eighty-seven percent of its produce comes from services, with a significant role in tourism, 24% of the gross product accrues from hotels and restaurants, the highest proportion in the country (data of 2003). The region accounts for the second lowest proportion of cultivated land in the country with 1.9% (2001). Unemployment in the region rose by half a point in 2001 to 12% of the workforce, the fifth highest rate of unemployment in the country (source: www.economics.gr).

### THE REGION OF CRETE

The Region of Crete contains the counties of Iraklio, Lasithi, Rethymno and Chania. In 2001 the per capita GDP was equal to 67% of the EU-15 average (69%

for Greece as a whole), whereas in 2003 the regional GDP per head was 97% of the country's mean (98% in 1995) and 78% of the EU-25 mean (80.9% for the country as a whole). With Iraklio as its centre, 5.5% of the country's population is concentrated in the region with a distinct upward trend, noting that between the census of 1991 and 2001 the region had the second highest rate of population increase (11.3%) nationally after the Southern Aegean. It produces 5.3% of the national GDP, 7.9% of the agricultural produce, 1.3% of manufacturing and 5.9% of services. Seventy-five percent of its produce comes from services, with its significant role in tourism, noting that 15% of its gross product stems from hotels and restaurants (2003). It accounts for 7.5% of cultivated land in the country and 35% of total olive oil production (first in the country in 2001). Unemployment in Crete fell for the third consecutive year by 0.2 units in 2001, to 6.7% of the workforce (10.5% for the whole of Greece), the second lowest proportion nationally (source: www.economics.gr).

### NUMBERS OF RECORDS IN THE LFS SAMPLES

The questionnaire of the European (and Greek) LFS was greatly modified in 1992 (Felstead *et al.*, 1998). 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 2 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, namely from the 14th to 26th week of the year):

Table 2. Numbers of records eligible for analysis in the LFS samples

Year	Region	No. of records
1988	Greece	56,212
	Southern Aegean	1,224
	Crete	2,726
1992	Greece	53,297
	Southern Aegean	1,244
	Crete	2,462

## THE LOGISTIC REGRESSION BASED ON THE MICRO-DATA OF THE GREEK LFS

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 Southern Aegean and Crete, 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 try to see whether participation in training programmes and educational level increased the chances of finding a job. We compare the two regions with Greece as a whole. In the paper, we use a logistic regression model for studying differences between those that did participate in training programmes and those that did not. Regression models allow 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). The explanatory variables (six for 1992 and five for 1988) are the participation in training courses (only available in 1992 with five categories including the four types of training completed, as mentioned above, and non-participation in training courses as the reference category), six levels of education, gender, age level (four categories), marital status and residence location (Athens Area or Thessaloniki Area, the rest of urban areas, semi-urban areas and rural areas).

The effect of demographic variables such as age, gender, marital status, residence location, as well as educational level and participation in training programmes on the employment status, is investigated with a logistic regression model due to the categorical nature of the dependent variable. The logistic regression model is written as:

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

where  $P(y=1|x_1, \dots, x_k)$  and  $1-P(y=1|x_1, \dots, x_k)$  denote the conditional probability a randomly selected individual to be 'unemployed' and 'employed' respectively. The coefficient  $\beta_k$  denotes the effect that a unit increase in the explanatory variable  $x_k$  has on the log odds of being 'unemployed' than 'employed' controlling for all other variables in the model and  $\beta_0$  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  $e^{\beta_k}$  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.

### Description of the variables

We define now the complete list of variables together with their coding values that we use in the model.

#### Dependent variable

Employment Status (STA1) (Unemployed = 1, Employed = 0)

#### Explanatory variables

The reference category of each variable is underlined.

- 1) Gender (STA 2) (Female = 1, Male = 0)
- 2) Marital status (STA 3) (Married, divorced or widows = 1, Non-married = 0)
- 3) Level of education (STA8A-STA8D)
  - STA 8A = University graduates
  - STA 8A1 = MSc or PhD holders
  - STA 8B = Polytechnic (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 (STA9A-STA9E)  
 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) (STA26A-STA26E)  
 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 (STA40A-STA40E)  
 STA 40A = 15–24 years old  
 STA 40D = 25–34 years old  
 STA 40E = 35–44 years old  
 STA 40C = 45–64 years old

The base (or reference) categories are those with which the rest of the corresponding variables are compared. The reference categories are chosen so as to match the needs of the research.

We have excluded the 14 and 65 year olds in order to avoid including in our analysis those who are younger than 14 and older than 65 years old.

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 end of the 1980s. 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.

### Results for Greece

Tables 3 and 4 present 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 in those 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.

In addition, for 1988, significant differences have been found only between lyceum graduates and university graduates, indicating that lyceum graduates were more likely to be unemployed than university graduates, whereas in 1992

Table 3. Results for Greece, 1988 (parameter estimates  $b_k$ , standard errors (s.e.), p-value, exponent of  $b_k$ )

Variables	B	S.E.	Wald	df	Sig.	Exp (B)
Gender	0.924	0.034	723.280	1	0.000	2.520
Marital status	-0.677	0.044	242.117	1	0.000	0.508
Aged 25–34	-0.936	0.045	431.641	1	0.000	0.392
Aged 35–44	-1.502	0.060	634.747	1	0.000	0.223
Aged 45–64	-1.784	0.065	764.859	1	0.000	0.168
MSc or PhD holders	-0.203	0.254	0.638	1	0.424	0.817
TEI graduates	0.000	0.073	0.000	1	0.995	1.000
12 years of schooling	0.233	0.053	19.371	1	0.000	1.263
9 years-compulsory education	-0.007	0.065	0.012	1	0.914	0.993
Primary school graduates and below	-0.071	0.056	1.618	1	0.203	0.931
Athens Area	0.925	0.055	282.412	1	0.000	2.523
Thessaloniki Area	0.724	0.074	96.295	1	0.000	2.064
Rest of urban areas	1.021	0.057	322.324	1	0.000	2.775
Semi-urban areas	0.626	0.070	80.849	1	0.000	1.869
Constant	-2.156	0.072	892.028	1	0.000	0.116

Table 4. Results for Greece, 1992 (parameter estimates  $b_k$ , standard errors (s.e.), p-value, exponent of  $b_k$ )

Variables	B	S.E.	Wald	df	Sig.	Exp (B)
Gender	1.010	0.033	919.872	1	0.000	2.747
Marital status	-0.617	0.044	200.154	1	0.000	0.540
Aged 25–34	-0.879	0.045	383.264	1	0.000	0.415
Aged 35–44	-1.390	0.059	560.782	1	0.000	0.249
Aged 45–64	-1.645	0.063	681.129	1	0.000	0.193
MSc or PhD holders	0.368	0.267	1.911	1	0.167	1.445
TEI graduates	0.230	0.087	7.064	1	0.008	1.259
12 years of schooling	0.386	0.054	50.326	1	0.000	1.472
9 years-compulsory education	0.301	0.065	21.389	1	0.000	1.352
Primary school graduates and below	0.306	0.058	27.848	1	0.000	1.358
Athens Area	0.770	0.053	213.189	1	0.000	2.160
Thessaloniki Area	0.660	0.071	87.443	1	0.000	1.934
Rest of urban areas	0.964	0.055	309.390	1	0.000	2.622
Semi-urban areas	0.769	0.064	144.325	1	0.000	2.158
Apprenticeship	-0.126	0.208	0.367	1	0.544	0.882
Intra-firm training	-0.623	0.542	1.322	1	0.250	0.536
CVT	0.222	0.253	0.769	1	0.381	1.249
Popular training	-0.656	1.046	0.393	1	0.531	0.519
Constant	-2.378	0.075	1017.540	1	0.000	0.093

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). The 1992 findings confirm the human capital theory that higher education levels increase chances of employment.

Most importantly, none of the four types of training programmes seemed to reduce the odds of unemployment.

### Results for Southern Aegean

Tables 5 and 6 present the results of the logistic regression in Southern Aegean for 1988 and 1992. In 1988, women, non-married individuals, people in the age group 15–24 years old, people who lived either in the 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. Again, the effect of urbanization level can be explained since in the Greek agrarian sector unemployment was not properly counted.

In addition, for 1992, the variable “gender” is statistically non-significant (perhaps due to the family nature of the tourist companies). Marital status is statistically non-significant as well, whereas people who lived in the urban areas were more likely to be unemployed than in rural areas; living in semi-urban areas was not found statistically significant. Also in 1992, people in the age group 15–24 years old were more likely to be unemployed than people in the age range from 35 to 64 (other differences were not found significant).

Also, for both years, all educational variables are statistically non-significant. Furthermore, in the Region of Southern Aegean, all training variables were found to be statistically non-significant.

Table 5. Results for Southern Aegean, 1988 (parameter estimates  $b_k$ , standard errors (s.e.), p-value, exponent of  $b_k$ )

Variables	B	S.E.	Wald	df	Sig.	Exp (B)
Gender	1.069	0.286	13.971	1	0.000	2.912
Marital status	-0.944	0.381	6.131	1	0.013	0.389
Aged 25–34	-0.808	0.361	5.008	1	0.025	0.446
Aged 35–44	-1.226	0.495	6.142	1	0.013	0.293
Aged 45–64	-2.251	0.631	12.715	1	0.000	0.105
MSc or PhD holders	-16.584	40190	0.000	1	1.000	0.000
TEI graduates	-0.348	0.889	0.153	1	0.695	0.706
12 years of schooling	0.424	0.522	0.659	1	0.417	1.527
9 years-compulsory education	0.155	0.610	0.064	1	0.800	1.167
Primary school graduates and below	0.276	0.521	0.281	1	0.596	1.318
Urban areas	1.576	0.430	13.414	1	0.000	4.835
Semi-urban areas	1.740	0.486	12.800	1	0.000	5.697
Constant	-3.393	0.654	26.903	1	0.000	0.034

Table 6. Results for Southern Aegean, 1992 (parameter estimates  $b_k$ , standard errors (s.e.), p-value, exponent of  $b_k$ )

Variables	B	S.E.	Wald	df	Sig.	Exp (B)
Gender	0.493	0.316	2.441	1	0.118	1.637
Marital status	-0.393	0.435	0.817	1	0.366	.675
Aged 25–34	-0.789	0.412	3.659	1	0.056	0.455
Aged 35–44	-2.239	0.667	11.249	1	0.001	0.107
Aged 45–64	-1.701	0.592	8.268	1	0.004	0.182
TEI graduates	-0.549	1.195	0.211	1	0.646	0.577
12 years of schooling	0.369	0.666	0.307	1	0.579	1.446
9 years-compulsory education	0.604	0.700	0.746	1	.388	1.830
Primary school graduates and below	0.385	0.671	0.328	1	0.567	1.469
Urban areas	1.087	0.366	8.818	1	0.003	2.966
Semi-urban areas	0.907	0.484	3.511	1	0.061	2.476
Apprenticeship	-17.583	12790	.000	1	0.999	0.000
Intra-firm training	-18.711	40190	0.000	1	1.000	0.000
CVT	-19.012	15900	0.000	1	0.999	0.000
Popular training	-18.352	40190	0.000	1	1.000	0.000
Constant	-3.160	0.741	18.177	1	0.000	0.042

### Results for Crete

Tables 7 and 8 present the results of the logistic regression in Crete for 1988 and 1992. In both years, women, non-married individuals, people who lived either in the urban areas or semi-urban areas were more likely to be unemployed than men, married people, 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 as analysed in section 11.2. Also in both years, people in the age group 15–24 years old were more likely to be unemployed than people in the age between 25 to 64.

In addition, for 1988, significant differences have been found only between primary school graduates and university graduates indicating that primary school graduates were less likely to be unemployed than university graduates, whereas all the rest of the educational variables are statistically non-significant in both 1988 and 1992.

Most importantly, none of the four types of training programmes seemed to reduce the odds of unemployment. The same results on training were found for other Greek regions as well (see Rodokanakis and Tryfonidis, 2008;

Rodokanakis, 2009; Rodokanakis and Tryfonidis, 2009). Also, the results of the logistic regression confirm the conclusions of the various studies for the limited impact of vocational training in Greece (see section 6).

Table 7. Results for Crete, 1988 (parameter estimates  $b_k$ , standard errors (s.e.), p-value, exponent of  $b_k$ )

Variables	B	S.E.	Wald	df	Sig.	Exp (B)
Gender	1.094	0.226	23.405	1	0.000	2.985
Marital status	-0.784	0.277	8.045	1	0.005	0.456
Aged 25–34	-0.667	0.293	5.173	1	0.023	0.513
Aged 35–44	-1.088	0.382	8.105	1	0.004	0.337
Aged 45–64	-1.638	0.436	14.098	1	0.000	0.194
MSc or PhD holders	1.333	1.149	1.346	1	0.246	3.793
TEI graduates	0.693	0.395	3.079	1	0.079	2.000
12 years of schooling	0.362	0.332	1.187	1	0.276	1.436
9 years-compulsory education	-0.682	0.488	1.954	1	0.162	0.505
Primary school graduates and below	-0.755	0.370	4.161	1	0.041	0.470
Urban areas	1.379	0.313	19.429	1	0.000	3.970
Semi-urban areas	1.057	0.392	7.265	1	0.007	2.878
Constant	-3.173	0.446	50.725	1	0.000	0.042

Table 8. Results for Crete, 1992 (parameter estimates  $b_k$ , standard errors (s.e.), p-value, exponent of  $b_k$ )

Variables	B	S.E.	Wald	df	Sig.	Exp (B)
Gender	1.248	0.238	27.607	1	0.000	3.485
Marital status	-0.861	0.325	7.037	1	0.008	0.423
Aged 25–34	-1.847	0.320	33.393	1	0.000	0.158
Aged 35–44	-1.801	0.417	18.671	1	0.000	0.165
Aged 45–64	-2.424	0.485	24.999	1	0.000	0.089
MSc or PhD holders	-16.822	17840	0.000	1	0.999	0.000
TEI graduates	0.774	0.527	2.154	1	0.142	2.168
12 years of schooling	0.368	0.436	0.714	1	0.398	1.445
9 years-compulsory education	0.202	0.495	0.166	1	0.683	1.224
Primary school graduates and below	-0.299	0.457	0.428	1	0.513	0.741
Urban areas	1.693	0.330	26.240	1	0.000	5.434
Semi-urban areas	1.095	0.436	6.311	1	0.012	2.988
Apprenticeship	-19.156	10410	0.000	1	.999	0.000
Intra-firm training	-16.762	28350	0.000	1	1.000	0.000
CVT	1.210	1.665	0.528	1	.467	3.354
Popular training	-19.082	28420	0.000	1	0.999	0.000
Constant	-3.070	0.539	32.419	1	0.000	0.046

### 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. 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, 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 and level of education.

## 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.

According to the findings of the logistic regression for Southern Aegean and Crete, the results for gender, marital status and residence location are mixed. On the contrary, regarding age groups the findings are common and clear (the same with Greece as a whole) apart from the age group 25–34 in Southern Aegean. For the whole of Greece, the results for gender, marital status and residence location are the same for 1988 and 1992.

The level of education is statistically non-significant for 1988 and 1992 in both regions, apart from primary school graduates in Crete in 1988 who were less likely to be unemployed than university graduates. In the field of education there are no common results with the entire country. All training variables are statistically non-significant for 1992 in both regions, as well as in the whole of Greece (as already mentioned in section 11, 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 section 6 on the vocational training policies for the unemployed in Greece).

The results of educational and training variables are not compatible with the human capital theory, so the more educated and the more trained a person did not improve his position in the labour market, in Crete and Southern Aegean, during the time period of the CSF-1, contrary to the findings for the whole of Greece. One explanation could be the fact that the tourist sector plays a major role in the economy of the regions under examination and so very often higher education is not necessary for the local manpower to find a job. Also, the labour market of the examined regions, like most of the highly attractive Greek tourist destinations, are characterised by high levels of seasonal employment. However, the investigation of the subsequent years is needed in order to have a clearer picture of the 1990s given the fact that, as mentioned in the introduction, the Greek LFS micro-data are now available to researchers.

Finally, the results of the interaction effect analysis show again that training is statistically non-significant in relation to both urbanisation level and educational level in both regions, and the entire country as well.

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. 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.

## JEL CLASSIFICATION

C21, J08, J24, O18

## NOTES

- (1) In addition there are different definitions of educational attainment. Eurostat (in: Education across the EU, 1996) has defined a combined variable “education and training level achieved” based on two questions in the LFS (question for attained general level of education, and for attainment of vocational or university training), whereas OECD refers to the conventional ISCED nomenclature.
- (2) 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.
- (3) 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%.

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