A NON-EXPERIMENTAL EVALUATION OF EDUCATION AND TRAINING IN GREECE: THE CASES OF NORTHERN AEGEAN AND CRETE

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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 Greek regions of Northern Aegean and Crete, both highly attractive tourist destinations, during the implementation of the first Community Support Framework - CSF (1989-1993). 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 or aggregate statistics for Greece conclude. We use individual anonymised records (micro-data) of the Labour Force Survey (LFS) for both employed and unemployed in both regions at NUTS 2 level.

Keywords: Spatial econometrics; Labour economics policies; Human capital; Skills; Regional, urban and rural analyses.

JEL classification: C21, J08, J24, O18

1. Introduction

The importance of vocational training in the EU has grown in the last two decades in terms of both funds allocated and the number of participants in the training programmes. This is the situation, although there are doubts concerning its impact on the labour market prospects of those participating in the training courses.

In the case of Greece the role of the EU was catalytic in changing the whole area of training in the country. This is evident from the amounts spent on training activities from the end of the 1980s up to now, the numerous training agencies which have been established in order to be involved in the training process and the increasing numbers of trainees on the various training courses. However, as we shall see, this training “revolution” in the Greek case was not accompanied by a real improvement in matching supply with demand or increasing people’s chances of finding a job.

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 Northern Aegean and Crete, during the implementation of the CSF-1 (1989-93). Namely, we try to see whether

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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. The total population of the above two regions constitute 7.4% of Greece’s total.

We work first at regional level, and second at urban, semi-urban and rural level. 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 (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.

The analysis of investigating the impact of training on the Greek labour market – and specifically on the Regions of Northern Aegean and Crete – 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.

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. We discuss the vocational training policies for the unemployed in Greece. Finally, we refer to the socio-economic characteristics of the examined regions 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. 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. Review of the literature

2.1. The definition of educational mismatches and over-education

A great deal of American and European empirical evidence, in fact, is now available on the subject of over-education. On the other hand, as Joop Hartog showed, “a
solid relation (of the over-education / under-education literature) with a formal theory of the labour market is lacking” (Hartog, 1997). A further difficulty is the confusion between the term ‘over-education’ specifically, and very different notions like ‘qualification inflation’ or ‘credentialism’ (Green et al., 1999). According to human capital theory, over-education is not a permanent occurrence and is the result of a temporary poor match between employer and employee. This appears to go against the empirical evidence, which suggests there is always a large percentage of the labour force that is over- educated (Green et al., 1999).

Hartog (1997) extensively surveyed the literature and found signs that over-education has grown in frequency over the years (i.e. especially since the 1970s, whilst there is less frequency of under-education, in Europe, anyway). In the UK there is less evidence on under-education, but Sloane et al. (1995) showed a 17% of under-education for the labour market generally. A reduced evaluation of 8-10% of under-education was shown by Groot and van den Brink (1997). In the vast majority of studies there is a great deal more frequency of over-education than under-education and this outcome fits in with that of Green et al., 1999.

For recent studies on over-education in the EU and the positive effect of education expenditure and educational level on economic development of EU countries, see Guisan (2004 and 2009).

2.2. 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 more information on the causes of graduate unemployment see Johnes et al., 1987; Sanyal, 1987; Dolton and Vignoles, 2000.

2.3. 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 - 2nd 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).

3. Training evaluation in Greece and Europe

3.1. 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. See Table 1 in the Annex.

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).

### 3.2. 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 3.2.1), 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 (1993) 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). Heckman et al. (1999) and Stanley et al. (1999) concluded that if there were any positive treatment effects, concerning ALMP effectiveness in the U.S., then they would be negligible.

#### 3.2.1. Findings from recent European Programme evaluation on training and ALMPs (second generation studies)

To judge the impact of programmes, the majority of the ALMP studies examine treatment impacts on either employment (unemployment) figures or length of employment (unemployment) or risks. A few studies (Bell et al., 1999; Larsson, 2000; Lechner, 2000; Raaum and Torp, 2002; Regner, 2002) also view earnings as outcome variables worthy of attention. Regarding evaluation techniques, the majority of studies use matching estimators. These try to copy a randomized experiment *ex post* because of a plethora of non-experimental data.

In contrast to the early European evaluation studies, cross-sectional data is hardly to be found and training research in Europe has replaced it with the more useful

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\(^1\) 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.
longitudinal data, allowing for the possibility that impact assessments will be more robust (Kluve and Schmidt, 2002). Namely, the studies of section 3.2.1 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), 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; 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; Mato and Cueto, 2008 - but no effects on earnings].

Kluve and Schmidt (2002) assert that in view of the fact that Heckman et al. (1999) did not discover a reliable pattern arising from the first generation of European studies, the provisional results - that employment subsidies are less effective than training and that public sector programmes are not as good as private sector ones - help to explain ALMP impacts in Europe. The above authors stress that the findings of their basic quantitative perquisition should be viewed tentatively, they successfully link earlier results on European evaluation research to more up-to-date findings and provide a new explanation for ALMPs’ impact in Europe. If nothing else, their analysis shows that (1) training and help with job-hunting are capable of being worthwhile, (2) it is not easy to help the youth and (3) previous evaluation findings were too hopeful. Also, according to them, in spite of the fact that a number of the specific evaluation characteristics - the stress on youth schemes, or the concentration on employment as opposed to remuneration - are discernably European in nature, European programmes are relatively diverse.

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 (Cuetto 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.

3.3. 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). 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, p. 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).

None of the vocational training policies, whether focusing on initial or continuing training or on training for the unemployed, applies an integral system for evaluating and monitoring its results that allows for continuous feedback and re-adjustment; rather, they operate as closed systems, where the determinant factor in policy design and implementation is the supply of skills and occupations and not the demand for them. The general characteristic of vocational training policies is their lack of any link, co-ordinated or otherwise, with development and unemployment policies and their strategic choices, either in their design and implementation or in the way they function (Economic and Social Committee of Greece, 1998).
4. Macroeconomic data of the examined regions

4.1. The Region of Northern Aegean
The Region of Northern Aegean contains the counties of Lesvos, Samos and Chios, and consists of nine inhabited islands (Lesvos, Limnos, Agios Efstratios, Chios, Oinousses, Psara, Samos, Ikaria and Fournoi). The per capita GDP was 14,500 euro in 2003 (84% of the EU-25 average, and 104% of the Greek GDP mean which was 80.9% of the EU-25, fourth more affluent region in the country). The region is noteworthy that in 1995 the region’s GDP was just 83% of the country’s average. With Mytilini as its centre, it is inhabited by 1.9% of the country’s population (204,108 inhabitants according to 2001 census), thereby being the smallest region. Between the census of 1991 and 2001 the population rose by 3.4%, as opposed to the national average of 6.9%. The region produces 1.9% of the GNP (the smallest contributor), 3.3% of agricultural produce, 0.2% of manufacturing and 1.7% of services. Sixty-seven percent of the region’s produce comes from services (data of 2003). The region accounts for 2.8% of the country’s cultivated land. Unemployment in the region fell by half a unit in 2001 - after a fall of four units in 2000 - to 6.6% of the workforce (10.5% for the whole of Greece), the lowest proportion nationally (source: www.economics.gr).

4.2. 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).

5. Econometric model: Logistic regression for Unemployment

5.1. 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 region).

Table 2 shows the numbers of records eligible for analysis in the LFS samples of the two regions under examination 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 region (in the spring, namely from the 14th to 26th week of the year). See Table 2 in the Annex.

5.2. 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 Northern Aegean and Crete, 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. 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 (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:

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

where $P(y = 1 | x_1, ..., x_k)$ and $1 - P(y = 1 | x_1, ..., x_k)$ 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:
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.

**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 = 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 (STA9C-STA9E)
   - STA 9C = 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
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.

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 Northern Aegean

Tables 3 and 4 present the results of the logistic regression in Northern Aegean for 1988 and 1992. In 1992, 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. The effect of urbanization level can be explained since in the Greek agrarian sector unemployment was not properly counted. In 1992 all age groups are statistically non-significant. On the contrary, in 1988 people in the age group 15-24 years old were more likely to be unemployed than people in the age between 25 to 64. Also, for 1988, the variables “gender” (perhaps due to the family nature of the tourist companies) and “marital status” are statistically non-significant, whereas people who lived in the urban areas were more likely to be unemployed than in rural areas.

In addition, for 1988, significant differences have been found only between primary school graduates and university graduates (the reference group), 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 1992 university graduates were less likely to be unemployed compared to TEI graduates (other differences were not found significant). Most importantly, none of the four types of training programmes seemed to reduce the odds of unemployment.

The little effect of high levels of education in finding a job in this region are indeed related with the production structure, given the great dependence of the region on tourism and agriculture. Thus, the success of training policies in this Greek region should be combined with economic policies to foster high value-added services that would increase the demand of qualified workers and improve real income per capita. See Tables 3 and 4 in the Annex.
5.4. Results for Crete

Tables 5 and 6 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. The results are in accordance with the family strategies and the gender roles in traditional Greek families, as well as with the unequal opportunities and discrimination against women by companies.

The higher probability of women in relation to men could also be explained by the fact that women often join the labour market earlier in relation to men. 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 urbanisation level can be explained since in the Greek agrarian sector unemployment was not properly counted. 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, 2009a and 2009b; Rodokanakis and Tryfonidis, 2009; Rodokanakis, 2010a and 2010b). Also, the results of the logistic regression confirm the conclusions of the various studies for the limited impact of vocational training in Greece. See tables 5 and 6 in the Annex.

5.5. 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. 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.

6. Conclusions

According to the findings of the logistic regression of the variable Employment Status (1 for unemployment and 0 for employment) for the regions of Northern Aegean and Crete, the results for gender, marital status and residence location are mixed. On the contrary, regarding age groups the findings are clear for Crete and mixed for Northern Aegean.

The level of education is statistically significant only for primary school graduates in 1988 (less likely to be unemployed than university graduates) in both Crete and Northern Aegean, and TEI graduates in 1992 (more likely to be unemployed than the University graduates) in Northern Aegean.
All training variables are statistically non-significant for 1992 in both regions (as already mentioned in section 5, we cannot explore training for 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).

The results of educational and training variables, in these samples, 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 Northern Aegean and Crete, during the time period of the CSF-1. 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.

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. As we have pointed out this finding is also conditioned to the productive structure of these regions; so, economic policies addressed to foster high quality services could contribute to increase the demand of qualified workers and real income in these areas.

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. 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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www.economics.gr
Annex

Table 1: Unemployment rates by level of educational attainment\(^{(1)}\); EU 1994

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

(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.

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

<table>
<thead>
<tr>
<th>Year</th>
<th>Region</th>
<th>No. of records</th>
</tr>
</thead>
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<td>1988</td>
<td>Northern Aegean</td>
<td>993</td>
</tr>
<tr>
<td></td>
<td>Crete</td>
<td>2,726</td>
</tr>
<tr>
<td>1992</td>
<td>Northern Aegean</td>
<td>858</td>
</tr>
<tr>
<td></td>
<td>Crete</td>
<td>2,462</td>
</tr>
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</table>

Table 3. Results for Northern Aegean, 1988

<table>
<thead>
<tr>
<th>Variables</th>
<th>B</th>
<th>S.E.</th>
<th>Wald</th>
<th>df</th>
<th>Sig.</th>
<th>Exp(B)</th>
</tr>
</thead>
<tbody>
<tr>
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<td>.320</td>
<td>2,627</td>
<td>1</td>
<td>.105</td>
<td>1,679</td>
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<td>.412</td>
<td>.930</td>
<td>1</td>
<td>.335</td>
<td>.672</td>
</tr>
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<td>1</td>
<td>.011</td>
<td>.330</td>
</tr>
<tr>
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<td>1</td>
<td>.000</td>
<td>.117</td>
</tr>
<tr>
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<td>.346</td>
</tr>
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<td>.613</td>
<td>.007</td>
<td>1</td>
<td>.933</td>
<td>1,053</td>
</tr>
<tr>
<td>12 years of schooling</td>
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<td>.471</td>
<td>.154</td>
<td>1</td>
<td>.694</td>
<td>1,203</td>
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<td>.005</td>
<td>1</td>
<td>.946</td>
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<tr>
<td>Urban areas</td>
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<td>3,139</td>
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</table>
Table 4. Results for Northern Aegean, 1992

(parameter estimates $b_k$, standard errors (s.e.), p-value, exponent of $b_k$)

<table>
<thead>
<tr>
<th>Variables</th>
<th>B</th>
<th>S.E.</th>
<th>Wald</th>
<th>df</th>
<th>Sig.</th>
<th>Exp(B)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
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<td>.033</td>
<td>.390</td>
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<td>3,615</td>
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<td>.057</td>
<td>.418</td>
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<tr>
<td>Aged 35-44</td>
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<td>.999</td>
<td>.000</td>
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<td>TEI graduates</td>
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<td>4,040</td>
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<tr>
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<td>-16,535</td>
<td>4,019E4</td>
<td>.000</td>
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<tr>
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<td>.999</td>
<td>.000</td>
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<tr>
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<td>.000</td>
<td>.014</td>
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</table>

Table 5. Results for Crete, 1988

(parameter estimates $b_k$, standard errors (s.e.), p-value, exponent of $b_k$)

<table>
<thead>
<tr>
<th>Variables</th>
<th>B</th>
<th>S.E.</th>
<th>Wald</th>
<th>df</th>
<th>Sig.</th>
<th>Exp(B)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
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<td>23,405</td>
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<td>.000</td>
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<td>.005</td>
<td>.456</td>
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<td>Aged 25-34</td>
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<td>.023</td>
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<td>.004</td>
<td>.337</td>
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<td>.079</td>
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<td>.276</td>
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<td>.505</td>
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<td>.041</td>
<td>.470</td>
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<td>.313</td>
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<td>.000</td>
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<td>.000</td>
<td>.042</td>
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</table>
Table 6. Results for Crete, 1992

(parameter estimates $b_k$, standard errors (s.e.), p-value, exponent of $b_k$)

<table>
<thead>
<tr>
<th>Variables</th>
<th>B</th>
<th>S.E.</th>
<th>Wald</th>
<th>df</th>
<th>Sig.</th>
<th>Exp(B)</th>
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</thead>
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<tr>
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<td>.000</td>
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<td>.000</td>
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<td>.000</td>
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<td>.398</td>
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<td>.495</td>
<td>.166</td>
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<td>.683</td>
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<td>.741</td>
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<td>5.434</td>
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<td>1</td>
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<td>2.988</td>
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<td>.999</td>
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