“Human Capital Theory, Matching Theory And The Greek Labour Market”

Dr Stavros Rodokanakis

Abstract

In particular, the human capital theory is tested, as well as the matching theory. This article examines the impact that vocational training programmes and level of education had on the labour market, and especially on the chances of finding a job, of semi-peripheral EU countries, using Greece as a case study during the period 1988-2000, and links the research to the present economic situation in Greece. Apart from an extended interaction effects analysis, the study moves beyond the econometric analysis of micro-level data, and embeds the empirical findings within the institutional/organizational environment of Greek vocational training (meso-level) to provide a comprehensive explanation of what empirically is identified as the minimal impact of these policies. One of the contributions of this paper is that, given the experience in Greece, it is evident that abstract micro-level theories of skills mismatch, like the human capital theory, cannot be applied in political economies where labour markets cannot absorb high skills and where demand for jobs requiring these is weak. The results of this research support matching theory better than human capital theory.

Keywords: J08 Labor Economics Policies; J18 Public Policy; J24 Human Capital; Skills; D04 Microeconomic Policy: Formulation, Implementation, and Evaluation; C54 Quantitative Policy Modeling; I280 Education: Government Policy.

1. Introduction

Since the early 1990s, there was a shift from ‘passive’ to active labour market policies (ALMPs) in European countries. In the case of Greece, it is questionable whether vocational training from the end of the 1980s onwards was accompanied by any real improvement in matching supply with demand or increasing people’s chances of finding a job. Behavioural models (micro-level), have yet to be considered along with the institutions and investment in relation to training (meso-level) in Greece, thereby allowing for robust evaluation of its effectiveness.

2. Research Questions and Methodology

2.1 The two levels (micro-meso) of analysis and how they are related

In particular, the human capital theory is tested, as well as the matching theory. What has become clear is that the EU approach to vocational training has been very much influenced by the human capital theory. The matching theory is also considered, because in contrast to the human capital view under this perspective too much education leads to a lack of training and consequently, an over-educated often unemployable workforce, which appears to be the case in Greece and other Southern European countries (Liagouras et al., 2003; Tsakloglou and Cholezas, 2005; Dolton and Marcenaro-Gutierrez, 2009; Thomaidou et al., 2009; Karamessini, 2010).

The key research questions of the paper are as follows:
What was the impact of EU funded vocational training on the Greek labour market and individual job seekers who undertook this training from 1988 to 2000?
How can this impact be explained?

To address these questions my research is organized along two inter-related levels of analysis (micro and meso) that correspond to specific research sub-questions discussed in the methodology section. The key point is to make explicit how we can evaluate success or failure of EU funded training programmes in Greece.

1 Department of Social and Policy Sciences, University of Bath, Claverton Down, Bath BA2 7AY, England, E-mail: srodokanakis@hotmail.com
An analytical strategy is proposed that brings together two levels of analysis that demonstrates that they relate to each other.

This analysis comprises two steps in accordance with the two identified levels. At the micro-level (sections 3 and 4), whether the vocational training courses and educational level increased the chances of finding a job at the participant level is examined econometrically. This part of the research will determine whether or not the programmes did help the unemployed to get any work and addresses the first sub-question, namely ‘What was the impact of the training programmes at the participant level?’. This question was operationalized by empirically testing the following sub-questions:

- Did the social and demographic characteristics of an individual in Greece affect the probability of finding employment during the period under investigation?
- Did the introduction of training courses funded by the EU have a statistically significant effect on the probability of finding employment?
- Did university graduates in Greece face greater difficulties in finding a job compared to those less educated (as relevant literature and aggregate statistics have suggested - see Meghir et al., 1989; OECD, 1990; Eurostat: Education and Employment Prospects, 1995; Illiades, 1995; IN.E./GSEE-ADEDY, 1999; Katsikas, 2005)?

At the meso-level (section 5), any parameters that were not working effectively in Greece are identified (i.e. if there was any serious evaluation of the effects of vocational training courses on employment, whether there was a mechanism to estimate the real needs regarding continuing vocational training (CVT), if the function of employment offices was helpful for the matching between supply and demand for labour) and how these impacted on the matching mechanisms in the Greek labour market. The aim of section 5 is to describe the vocational education and training (VET) structure and to investigate why the Greek organisational structure could not provide adequate skills-matching, through the use of secondary data (other studies). This addresses the second sub-question ‘Was the training system, i.e. the institutions, in Greece, both regionally and nationally, effective in helping people to find jobs and if not, why?’.

To help the reader to understand the two levels and their associated literature, Table 1 summarizes the above discussion.

**Table 1: The analytical framework of the research**

| Level of analysis | Corresponding sections | Indicative literatures reviewed in this paper | Type of analysis | Type of data |
|-------------------|------------------------|---------------------------------------------|-----------------|--------------|
| Micro-level       | 3 and 4                | Human capital approach and human capital theory Matching theory The impact of training at participant level | Quantitative (micro-econometric analysis) | Quantitative data: individual anonymized records (micro-data) of the 1992, 1994 and 2000 LFSs for both employed and unemployed |
| Meso-level        | 5                      | Vocational education & training structure Matching mechanisms in Greece | Qualitative (institutional analysis and secondary analysis of evaluation studies) | Policy documents, a number of (mainly) qualitative evaluation studies, aggregate statistics |

3. Micro-Level of Analysis I: Theoretical Approaches

3.1 Training as human capital and the matching theory

The theory of human capital (Becker, 1964; Ben-Porath, 1967; Mincer 1974) has been criticized for not being able to explain comprehensively the functions of vocational training, for it merely considers it as an investment (Papakonstantinou, 1998).

There has also been a considerable amount of empirical research on the closely related topics of education and skills, including Prais (1995) and Murray and Steedman (1998); closely related to the current research is study on the increasing role of skilled labour in the economy (Berman et al., 1994; Machin and van Reenen, 1998).
By contrast, the advocates of matching theory claim that under-education will result in an increased necessity for more training. However, it is not yet clear whether training can make up for inadequacies in formal education (substitution) or if it can just add to variations in human capital (complementarity) that are already present. It could be the case that it is only the features of the job (level and kind of job) in which the substitution aspects of training are to be found, and that it is only in those aspects of formal education (level and breadth) that the complementarity nature of training is obvious (van Smoorenburg and van der Velden, 2000).

3.2 Literature review on the impact of training at the micro-level

The findings show that the more expensive programmes with a significant amount of training appear to have been the most effective at increasing employment prospects (see Brodaty et al., 2001; van Ours, 2001; Kluve and Schmidt, 2002; Raam and Torp, 2002; Kluve et al., 2005). However, national studies during the early to mid-2000s did not find positive impacts of training on employment (Gerfin and Lechner, 2000; Regner, 2002). Other studies that found mixed effects of participation in training programmes on employment/unemployment are those of Lechner and Wunsch (2009), Fitzenberger et al. (2010), Lechner et al. (2011), McGuinness et al. (2014), Riphahn and Zibrowsius (2016), Brunello and Rocco (2017), and Bratti et al. (2018 - on earnings as well) depending on the section of the population being targeted, but overall they reported a positive linkage, especially the last three mentioned studies where the differences among target groups are small.

A number of studies in the 2000s found no positive impact of training on employment probability in European labour markets (Larsson, 2002 - on earnings as well; Stenberg, 2003 - on mobility between branches and on earnings; Weber and Hofer, 2003; Graversen, 2004; Hujer et al., 2004; Rosholm and Svarer, 2004; Centeno et al., 2005 - on earnings as well; Hogelund and Holm, 2005; Aakvik and Dahl, 2006; Meadows and Metcalf, 2008; Rosholm and Skipper, 2009). According to Rosholm and Skipper (2009) training raised the unemployment rate of participants but this effect disappeared over time and this would indicate a locking-in effect, i.e. technical knowledge which is specific to a particular production process and is not transferable to other processes. Other research (Malmberg-Heimonen and Vuori, 2005; Steiger, 2005; Andren and Andren, 2006 - unobservables slightly increased the effect for those treated; Lechner et al., 2007 - on earnings as well; Cueto and Mato, 2009 - the locking-in effect found regarding trainees suggested decreasing labour mobility; Lechner et al., 2011 - on earnings as well) found that the employment effects of training were mixed, i.e. there were positive and negative results.

The findings suggest that training programmes seem to have had some positive effects on employment and no effects on earnings. Moreover, the effects on the former appear to 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 seemed to enrol in training merely in order to collect unemployment insurance benefits (Cueto and Mato, 2009).

Micro-econometric analyses usually confirm that training had “mixed” results, but nearly always a statistically insignificant impact on the participants’ prospects of employment. Training might help an unemployed person to return to work faster and because another unemployed worker therefore finds a job more slowly the training programme is lacking effectiveness (Boone and van Ours, 2004). On the other hand, macro-economic studies have reached the conclusion that training was the only category of active employment policy that appears to have had a notable positive effect on the overall performance of the labour market (CEC, 2006:145).

3.3 Mismatch and over-education

According to Chevalier and Lindley (2007), over-education can be defined as not being in a graduate job when a person has a degree, thus resulting in skill mismatching. In general, the vast majority of studies during the period 1990-2000 have indicated greater prevalence of over-education rather than under-education (Green et al., 1999).

Despite a great deal of American and European empirical evidence being available on the subject of over-education, it has been argued that “a solid relation [regarding the over-education / under-education literature] with a formal theory of the labour market is lacking” (Hartog, 1997).

According to human capital theory, over-education is not a permanent occurrence and is the result of a 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.
It is possible that there is always over-education in the labour market generally, but for each individual it is short lived. However, it could also be the case that an individual chooses to be over-educated for a position, temporarily, so as to remain in touch with the labour market in order to find a better job in the future. From this point of view, over-education could be thought of as being a sort of human capital investment (Green et al., 1999).

A different interpretation of over-education is offered by matching theory. Under this lens, there might be a poor match between employer and employee causing over-education, often resulting in the worker looking for a better match elsewhere. The fact that both over- and under-education are to be found lends credence to the opinion that they are both indications of the occurrence of poor matching in the labour market. In this instance, over-education would be just short lived for the worker concerned (Green et al., 1999). However, when persistent over-education occurs, according to Patrinos (1997), the focus needs to be shifted away from the individual and his/her characteristics towards institutions and policies regarding employment and vocational training across the focal society and its political economy.

The next section presents the micro-econometric work of the research.

4. Micro-Level of Analysis Ii: Econometric Analysis For Greece

4.1 The logit model for applying the micro-data of the Greek LFS

In this research, the individual anonymised records (micro-data) of the 1992, 1994 and 2000 Labour Force Survey (LFS) for both employed and unemployed (1.5% of the total population of each area) are examined, covering the spring and early summer, namely from the 14th to 26th week of the year. The reason these years are chosen is because 1992 was the first year in the Greek LFS questionnaire with detailed questions on training, 1994 was the first year after the end of the Community Support Framework (CSF)-1, whereas 2000 was one year after the end of the CSF-2.

A logistic regression model is used for studying differences between those that did participate in training programmes and those that did not. Moreover, regression models allow for group comparisons by adjusting for demographic and socioeconomic variables. All three years have merged together in order to take advantage of the time-series features of the data (three time-sets of observations in 1992, 1994 and 2000) and used dummies for the years instead. One logit model for all three areas under examination (Central Macedonia, Attica and the rest of Greece) with all the main effects, all variables of interest, plus all the control variables has been generated and has been run in a pooled format. Namely, all the available data have pooled together into one database. Also, some of the categorical variables with few observations (types of training) have been aggregated in order to increase the observations within each cell, so as to avoid exceptionally large coefficients and confidence intervals.

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. In the next sub-section, the first part of the micro-level econometric analysis of the paper is discussed.

4.2 Main effects

The descriptive statistics of the logit model are summarised in Table 2.

Table 2: Descriptive statistics of the logit model

| Variables/Area/Year          | Frequencies | Percent |
|------------------------------|-------------|---------|
| Employed                     | 138,405     | 90.4%   |
| Unemployed                   | 14,628      | 9.6%    |
| Males                        | 94,943      | 62.0%   |
| Females                      | 58,090      | 38.0%   |
| Non-married                  | 10,339      | 6.8%    |
| Married or divorced or widows| 142,694     | 93.2%   |

2 The working age population is between 14-65 years old. However, SPSS would not accept these age limits, defaulting to 13 and 66 years old, so people from 15 to 64 years of age were included, which the programme was able to compute.
After taking into account missing records, restricting the sample by age (15-64 years old) and removing the non-active population, Table 3 shows the numbers of records eligible for analysis in the LFS samples.

Table 3: Numbers of records eligible for analysis in the LFS samples

| Year | Geographical level | No. of records |
|------|--------------------|----------------|
| 1992 | Greece | 53,297 |
| | Central Macedonia | 9,290 |
| | Attica | 20,301 |
| | Rest of Greece | 23,706 |
| 1994 | Greece | 65,858 |
| | Central Macedonia | 9,543 |
| | Attica | 22,399 |
| | Rest of Greece | 33,916 |
| 2000 | Greece | 33,878 |
| | Central Macedonia | 5,565 |
| | Attica | 11,073 |
| | Rest of Greece | 17,240 |

The Table 4 presents the results (main effects), namely, the estimated coefficients (B), the standard errors (S.E.) and the p values for each explanatory variable in the logistic regression for unemployment in Greece. Column “Sig.” (level of statistical significance or p value) provides the coefficients for the variables and those above 0.05 are not statistically significant. In Table 4, $b_k$ is the log of the odds whereas $\text{Exp}(b_k)$ is the odds ratio.

Table 4

Results (main effects) for Greece, 1992, 1994 and 2000 (parameter estimates $b_k$, standard errors (s.e.), p-values, exponent of $b_k$)
Females, non-married individuals, people in the age group 15-24 years old, people who lived either in the Athens or Thessaloniki areas, the other urban areas or semi-urban areas were more likely to be unemployed than males, married people, people aged between 25 to 64 and those in rural areas. University graduates had more chances of finding a job compared to all other educational categories apart from MSc or PhD holders (these differences were not found significant). These results are in contrast to some studies which have asserted the opposite. The variable ‘immigrant status’ was found to be statistically non-significant.

Most importantly, the participation in vocational training programmes did not seem to reduce the odds of unemployment, that is, training was found to be statistically non-significant during the first and the second CSFs. This means that the results of training variables are not compatible with the human capital theory. In other words, the more trained a person was did not affect his chances of finding a job in Greece, during the time period of CSFs 1 and 2. The same results on training were found for other Greek regions and the entire country as well (see Livanos, 2007 and 2009; Rodokanakis, 2010a and 2010b; Rodokanakis and Vlachos, 2013). The exceptions are the findings for the region of Eastern Macedonia and Thrace in 2000 concerning the training variables ‘apprenticeship’ and ‘CVT’ (less likely to be unemployed than the non-trainees - see Rodokanakis and Vlachos, 2012).

Whether or not someone lived in Central Macedonia in 1992, 1994 or 2000 was statistically non-significant. By contrast, people who lived in the region of Attica were more likely to be unemployed than those living in the rest of Greece. Both of the years 1994 and 2000 were found to be statistically non-significant, i.e. the variable ‘time’ did not influence the probability of being unemployed.

In the main, the econometric results of this paper for Greece confirm the human capital theory concerning education, namely, university graduates had higher probabilities of finding a job than people from lower educational categories. However, this was not the case in the field of training, since this variable was found to be statistically non-significant.
Thus, it would appear that matching theory has better explanatory power than human capital theory in the Greek context. This is because the former perspective holds that those with more education need less training and in Greece there are many over-educated people.

4.3 Interaction effects among variables

For the 1992, 1994 and 2000 samples together, I fitted the interaction effects between education and gender, age groups and education, age groups and areas, age groups and years, gender and years, as well as education and residence location, years and education, and years and areas. Also, I fitted the interaction effects between training and age groups, training and level of education, training and geographical areas or residence location, and training and years.

In all tables of the interaction effects analysis, as with the main effects, the variable “MSc or PhD holders” was statistically non-significant. According to Table 5.1, females when compared to males, who were both Technological Educational Institutions (TEI) graduates, had lower probabilities of being employed in comparison to the case where both males and females were University graduates. In addition, females who were TEI graduates were 1.46 times less likely to be employed than males and this was similar for the remaining three educational categories in terms of gender.

Also, concerning age group and educational category, someone who was between 15 and 24 years old in the four educational categories was less likely to be unemployed in relation to those in this age group who were university graduates. The same applied to those aged 25-34. Moreover, people in the age group 45-64 were less likely to be employed than those in the same age group who were university graduates. In addition, in Attica, people aged 35-64 were more likely to be unemployed than those between 15 and 24 in the same region. Furthermore, someone aged 15-44 in all residential locations (Athens area, Thessaloniki area, semi-urban areas and rest of the urban areas) had less probability of being unemployed when compared to those in the same age group in rural areas; however, the opposite was the case in the age group 45-64. Moreover, females, when compared to males, had a lower probability of being unemployed in 1994 than in 1992. Age groups 15-24 and 25-34 in 2000 were less likely to be unemployed than the same age groups in 1992. In contrast, people in the age groups 35-44 and 45-64 were less likely to be employed than those in the same age groups in 1992.

Table 5.1

| Variables | \( b_k \) | S.E. | Sig. | Exp (\( b_k \)) |
|-----------|----------|------|------|-----------------|
| Gender and University graduates | ref. | ref | ref | ref. |
| Gender and MSc or PhD holders | -0.286 | 0.385 | 0.457 | 0.751 |
| Gender and TEI graduates | 0.381 | 0.095 | 0.000 | 1.464 |
| Gender and twelve years of schooling | 0.559 | 0.078 | 0.000 | 1.748 |
| Gender and nine years compulsory education | 0.902 | 0.089 | 0.000 | 2.465 |
| Gender and primary school graduates and below | 0.681 | 0.079 | 0.000 | 1.976 |
| Aged 15-24 and University graduates | ref. | ref | ref | ref. |
| Aged 15-24 and MSc or PhD holders | -0.976 | 1.241 | 0.431 | 0.377 |
| Aged 15-24 and TEI graduates | -1.130 | 0.187 | 0.000 | 0.323 |
| Aged 15-24 and twelve years of schooling | -0.905 | 0.156 | 0.000 | 0.404 |
| Aged 15-24 and nine years compulsory education | -1.487 | 0.174 | 0.000 | 0.226 |
| Aged 15-24 and primary school graduates and below | -1.929 | 0.155 | 0.000 | 0.145 |
| Aged 25-34 and University graduates | ref. | ref | ref | ref. |
| Aged 25-34 and MSc or PhD holders | 0.510 | 0.638 | 0.424 | 1.666 |
| Aged 25-34 and TEI graduates | -0.784 | 0.163 | 0.000 | 0.457 |
| Aged 25-34 and twelve years of schooling | -0.748 | 0.131 | 0.000 | 0.473 |
| Aged 25-34 and nine years compulsory education | -0.931 | 0.154 | 0.000 | 0.394 |
| Aged 25-34 and primary school graduates and below | -1.063 | 0.128 | 0.000 | 0.345 |
| Aged 35-44 and University graduates | ref. | ref | ref | ref. |
| Category                                                                 | Coefficient 1 | Coefficient 2 | Coefficient 3 | Coefficient 4 |
|-------------------------------------------------------------------------|--------------|--------------|--------------|--------------|
| Aged 35-44 and MSc or PhD holders                                       | 0.651        | 0.717        | 0.364        | 1.918        |
| Aged 35-44 and TEI graduates                                            | -0.357       | 0.193        | 0.065        | 0.700        |
| Aged 35-44 and twelve years of schooling                                | -0.071       | 0.153        | 0.645        | 0.932        |
| Aged 35-44 and nine years compulsory education                          | 0.047        | 0.177        | 0.791        | 1.048        |
| Aged 35-44 and primary school graduates and below                       | 0.052        | 0.146        | 0.723        | 1.053        |
| Aged 45-64 and University graduates                                     | ref.         | ref.         | ref.         | ref.         |
| Aged 45-64 and MSc or PhD holders                                       | -0.329       | 0.624        | 0.599        | 0.720        |
| Aged 45-64 and TEI graduates                                            | 0.652        | 0.157        | 0.000        | 1.919        |
| Aged 45-64 and twelve years of schooling                                | 0.431        | 0.126        | 0.001        | 1.539        |
| Aged 45-64 and nine years compulsory education                          | 0.717        | 0.146        | 0.000        | 2.049        |
| Aged 45-64 and primary school graduates and below                       | 0.850        | 0.120        | 0.000        | 2.339        |
| Aged 15-24 and Attica                                                  | ref.         | ref.         | ref.         | ref.         |
| Aged 25-34 and Attica                                                  | -0.082       | 0.104        | 0.433        | 0.922        |
| Aged 35-44 and Attica                                                  | 0.265        | 0.119        | 0.026        | 1.303        |
| Aged 45-64 and Attica                                                  | 0.481        | 0.121        | 0.000        | 1.618        |
| Aged 15-24 and Central Macedonia                                       | ref.         | ref.         | ref.         | ref.         |
| Aged 25-34 and Central Macedonia                                       | 0.031        | 0.101        | 0.759        | 1.031        |
| Aged 35-44 and Central Macedonia                                       | 0.067        | 0.120        | 0.578        | 1.069        |
| Aged 45-64 and Central Macedonia                                       | -0.012       | 0.126        | 0.927        | 0.989        |
| Aged 15-24 and rural areas                                            | ref.         | ref.         | ref.         | ref.         |
| Aged 25-34 and Athens area                                             | -1.329       | 0.149        | 0.000        | 0.265        |
| Aged 15-24 and Thessaloniki area                                       | -1.650       | 0.166        | 0.000        | 0.192        |
| Aged 15-24 and rest of urban areas                                     | -1.245       | 0.096        | 0.000        | 0.288        |
| Aged 15-24 and semi-urban areas                                        | -0.903       | 0.115        | 0.000        | 0.405        |
| Aged 25-34 and rural areas                                            | ref.         | ref.         | ref.         | ref.         |
| Aged 25-34 and Athens area                                             | -0.988       | 0.153        | 0.000        | 0.373        |
| Aged 25-34 and Thessaloniki area                                       | -1.331       | 0.166        | 0.000        | 0.264        |
| Aged 25-34 and rest of urban areas                                     | -1.054       | 0.099        | 0.000        | 0.348        |
| Aged 25-34 and semi-urban areas                                        | -0.715       | 0.118        | 0.000        | 0.489        |
| Aged 35-44 and rural areas                                            | ref.         | ref.         | ref.         | ref.         |
| Aged 35-44 and Athens area                                             | -0.667       | 0.172        | 0.000        | 0.513        |
| Aged 35-44 and Thessaloniki area                                       | -0.930       | 0.190        | 0.000        | 0.395        |
| Aged 35-44 and rest of urban areas                                     | -0.594       | 0.113        | 0.000        | 0.552        |
| Aged 35-44 and semi-urban areas                                        | -0.454       | 0.134        | 0.001        | 0.635        |
| Aged 45-64 and rural areas                                            | ref.         | ref.         | ref.         | ref.         |
| Aged 45-64 and Athens area                                             | 1.506        | 0.086        | 0.000        | 4.509        |
| Aged 45-64 and Thessaloniki area                                       | 1.324        | 0.112        | 0.000        | 3.758        |
| Aged 45-64 and the rest of urban areas                                 | 1.097        | 0.088        | 0.000        | 2.994        |
| Aged 45-64 and semi-urban areas                                        | 0.813        | 0.103        | 0.000        | 2.255        |
| Gender and year 1992                                                  | ref.         | ref.         | ref.         | ref.         |
| Gender and year 1994                                                  | -0.099       | 0.045        | 0.028        | 0.906        |
| Gender and year 2000                                                  | 0.060        | 0.052        | 0.243        | 1.062        |
| Aged 15-24 and year 1992                                              | ref.         | ref.         | ref.         | ref.         |
| Aged 15-24 and year 1994                                              | -0.060       | 0.054        | 0.268        | 0.942        |
| Aged 15-24 and year 2000                                              | -0.961       | 0.074        | 0.000        | 0.382        |
| Aged 25-34 and year 1992                                              | ref.         | ref.         | ref.         | ref.         |
| Aged 25-34 and year 1994                                              | -0.013       | 0.055        | 0.815        | 0.987        |
According to Table 5-2, people aged 25-64 who had participated in vocational training courses were more likely to be unemployed than those 15-24 years old who had also done so. In addition, those who undertook training and were residents of the Thessaloniki area or the rest of the urban areas had more chances of finding a job in relation to people in agrarian areas who also participated in such courses.

Table 5.2
Interactions with training (variables in the equation)

| Variables                              | b_k   | S.E.  | Sig.   | Exp (b_k)  |
|----------------------------------------|-------|-------|--------|------------|
| Gender and training                    | 0.025 | 0.101 | 0.806  | 1.025      |
| Aged 15-24 and training                | ref.  | ref.  | ref.   | ref.       |
| Aged 25-34 and training                | 0.408 | 0.112 | 0.005  | 1.503      |
| Aged 35-44 and training                | 0.484 | 0.149 | 0.001  | 1.623      |
| Aged 45-64 and training                | 0.757 | 0.175 | 0.000  | 2.132      |
| University graduates and training      | ref.  | ref.  | ref.   | ref.       |
| MSc or PhD holders and training        | -18.519 | 8563.539 | 0.998 | 0.000      |
| TEI graduates and training             | 0.179 | 0.324 | 0.580  | 1.196      |
| Training and twelve years of schooling | 0.146 | 0.325 | 0.652  | 1.158      |
| Training and nine years compulsory education | 0.005 | 0.353 | 0.989  | 1.005      |
| Training and primary school graduates and below | -0.249 | 0.411 | 0.545  | 0.780      |
| Training and the rest of Greece        | ref.  | ref.  | ref.   | ref.       |
| Training and Attica                    | -0.261 | 0.197 | 0.186  | 0.771      |
| Training and Central Macedonia        | 0.452 | 0.250 | 0.070  | 1.572      |
| Training and rural areas               | ref.  | ref.  | ref.   | ref.       |
| Training and Athens area               | -0.422 | 0.250 | 0.091  | 0.656      |
| Training and Thessaloniki area         | -0.992 | 0.305 | 0.001  | 0.371      |
| Training and the rest of urban areas   | -0.408 | 0.179 | 0.022  | 0.665      |
| Training and semi-urban areas          | -0.014 | 0.216 | 0.947  | 0.986      |
| Training and year 1992                 | ref.  | ref.  | ref.   | ref.       |
| Training and year 1994                 | 0.360 | 0.212 | 0.089  | 1.433      |
| Training and year 2000                 | 0.021 | 0.183 | 0.908  | 1.021      |
| Constant                               | -2.243 | 0.062 | 0.000  | 0.106      |

According to Table 5-3, those who had been educated up to lyceum graduate level (12 years of schooling) living in the rest of the urban areas and not in rural ones, had a higher probability of being unemployed than university graduates residing in the same areas. This was also the case for those in semi-urban areas and in the Athens area, but in the Thessaloniki area this was so only for people with up to a high-school graduate level of education (nine years compulsory education). University graduates in Attica were less likely to be unemployed than in the rest of Greece. In both Attica and Central Macedonia, TEI, lyceum and high-school graduates were more likely to be employed than their corresponding educational categories in the rest of the country. Only those completing primary school education or below this level in both the NUTS-2 regions under investigation were more likely to be unemployed than the same educational category in the rest of Greece.
### Table 5.3

**Interactions with education and areas* (variables in the equation)**

| Variables | $b_k$ | S.E. | Sig. | Exp ($b_k$) |
|-----------|-------|------|------|-------------|
| University graduates in Athens area | ref. | ref. | ref. | ref. |
| MSc or PhD holders in Athens area | 18.970 | 14594,110 | 0.999 | 17330000 |
| TEI graduates in Athens area | 0.116 | 0.171 | 0.496 | 1.123 |
| Twelve years of schooling in Athens area | 0.492 | 0.140 | 0.000 | 1.635 |
| Nine years compulsory education in Athens area | 1.187 | 0.153 | 0.000 | 3.277 |
| Primary school graduates and below in Athens area | 2.049 | 0.142 | 0.000 | 7.762 |
| University graduates in Thessaloniki area | ref. | ref. | ref. | ref. |
| MSc or PhD holders in Thessaloniki area | 18.777 | 14594,110 | 0.999 | 14280000 |
| TEI graduates in Thessaloniki area | -0.204 | 0.202 | 0.314 | 0.816 |
| Twelve years of schooling in Thessaloniki area | 0.157 | 0.163 | 0.335 | 1.170 |
| Nine years compulsory education in Thessaloniki area | 0.578 | 0.189 | 0.002 | 1.783 |
| Primary school graduates and below in Thessaloniki area | 1.617 | 0.167 | 0.000 | 5.039 |
| University graduates in the rest of urban areas | ref. | ref. | ref. | ref. |
| MSc or PhD holders in the rest of urban areas | 19.015 | 14594,110 | 0.999 | 18110000 |
| TEI graduates in the rest of urban areas | 0.206 | 0.176 | 0.244 | 1.228 |
| Twelve years of schooling in the rest of urban areas | 0.607 | 0.144 | 0.000 | 1.834 |
| Nine years compulsory education in the rest of urban areas | 0.986 | 0.157 | 0.000 | 2.680 |
| Primary school graduates and below in the rest of urban areas | 1.905 | 0.144 | 0.000 | 6.721 |
| University graduates in semi-urban areas | ref. | ref. | ref. | ref. |
| MSc or PhD holders in semi-urban areas | 0.442 | 16746,825 | 1.000 | 1.555 |
| TEI graduates in semi-urban areas | 0.458 | 0221 | 0.038 | 1.581 |
| Twelve years of schooling in semi-urban areas | 0.635 | 0.182 | 0.000 | 1.886 |
| Nine years compulsory education in semi-urban areas | 0.814 | 0.198 | 0.000 | 2.258 |
| Primary school graduates and below in semi-urban areas | 1.493 | 0.181 | 0.000 | 4.450 |
| University graduates in the rest of Greece | ref. | ref. | ref. | ref. |
| University graduates in Attica | -0.640 | 0.085 | 0.000 | 0.527 |
| University graduates in Central Macedonia | 0.003 | 0.109 | 0.981 | 1.003 |
| MSc or PhD holders in the rest of Greece | ref. | ref. | ref. | ref. |
| MSc or PhD holders in Attica | -0.283 | 0.634 | 0.656 | 0.754 |
| MSc or PhD holders in Central Macedonia | 0.176 | 0.762 | 0.817 | 1.192 |
| TEI graduates in the rest of Greece | ref. | ref. | ref. | ref. |
| TEI graduates in Attica | -0.855 | 0.077 | 0.000 | 0.425 |
| TEI graduates in Central Macedonia | -0.389 | 0.105 | 0.000 | 0.678 |
| Twelve years of schooling in the rest of Greece | ref. | ref. | ref. | ref. |
| Twelve years of schooling in Attica | -0.807 | 0.050 | 0.000 | 0.446 |
| Twelve years of schooling in Central Macedonia | -0.384 | 0.069 | 0.000 | 0.681 |
| Nine years compulsory education in the rest of Greece | ref. | ref. | ref. | ref. |
| Nine years compulsory education in Attica | -0.395 | 0.069 | 0.000 | 0.674 |
| Nine years compulsory education in Central Macedonia | -0.246 | 0.095 | 0.010 | 0.782 |
| Primary school graduates and below in the rest of Greece | ref. | ref. | ref. | ref. |
| Primary school graduates and below in Attica | 0.395 | 0.069 | 0.000 | 1.485 |
| Primary school graduates and below in Central Macedonia | 0.246 | 0.095 | 0.010 | 1.279 |
| Constant | -0.502 | 0.130 | 0.000 | 0.605 |
According to Table 5-4, all educational categories (apart from MSc or PhD holders) in 1994 were more likely to be unemployed than university graduates and the same was true for 2000. Also, in 1994, those living in Athens or Thessaloniki were more likely to be unemployed than people in rural areas, whilst the opposite was the case for those living in semi-urban areas in 1994 and 2000, as well as in the rest of the urban areas in 2000. Finally, in 1994 it was more likely that someone was unemployed in Attica than in the rest of Greece. Also, marginal effect analysis was conducted, but this did not contribute anything new or different in comparison to the analysis of the main effects and therefore it was omitted from the analysis.

Table 5.4
Interactions with years and education, and with years and areas* (variables in the equation)

| Variables                                  | $b_k$ | S.E. | Sig. | Exp ($b_k$) |
|--------------------------------------------|-------|------|------|-------------|
| Year 1994 and University graduates         | ref.  | ref. | ref. | ref.        |
| Year 1994 and MSc or PhD holders           | -0.313| 0.46 | 0.496| 0.731       |
| Year 1994 and TEI graduates                | 0.407 | 0.123| 0.001| 1.502       |
| Year 1994 and twelve years of schooling    | 0.447 | 0.102| 0     | 1.563       |
| Year 1994 and nine years compulsory education | 0.446 | 0.115| 0     | 1.563       |
| Year 1994 and primary school graduates and below | 0.485 | 0.105| 0     | 1.624       |
| Year 2000 and University graduates         | ref.  | ref. | ref. | ref.        |
| Year 2000 and MSc or PhD holders           | -0.649| 0.436| 0.136| 0.522       |
| Year 2000 and TEI graduates                | -0.059| 0.129| 0.65 | 0.943       |
| Year 2000 and twelve years of schooling    | 0.16  | 0.108| 0.14 | 1.173       |
| Year 2000 and nine years compulsory education | 0.163 | 0.124| 0.188| 1.177       |
| Year 2000 and primary school graduates and below | 0.53  | 0.113| 0     | 1.698       |
| Year 1994 and rural areas                  | ref.  | ref. | ref. | ref.        |
| Year 1994 and Athens area                  | 0.17  | 0.071| 0.016| 1.186       |
| Year 1994 and Thessaloniki area            | 0.188 | 0.096| 0.051| 1.207       |
| Year 1994 and rest of urban areas          | 0.044 | 0.072| 0.543| 1.045       |
| Year 1994 and semi-urban areas             | -0.294| 0.087| 0.001| 0.745       |
| Year 2000 and rural areas                  | ref.  | ref. | ref. | ref.        |
| Year 2000 and Athens area                  | -0.084| 0.08 | 0.295| 0.919       |
| Year 2000 and Thessaloniki area            | -0.1  | 0.105| 0.338| 0.904       |
| Year 2000 and rest of urban areas          | -0.173| 0.08 | 0.03 | 0.841       |
| Year 2000 and semi-urban areas             | -0.275| 0.095| 0.004| 0.759       |
| Year 1994 and the rest of Greece           | ref.  | ref. | ref. | ref.        |
| Year 1994 and Attica                       | 0.213 | 0.052| 0.000| 1.238       |
| Year 1994 and Central Macedonia            | 0.126 | 0.069| 0.067| 1.134       |
| Year 2000 and the rest of Greece           | ref.  | ref. | ref. | ref.        |
| Year 2000 and Attica                       | -0.029| 0.055| 0.601| 0.971       |
| Year 2000 and Central Macedonia            | 0.140 | 0.073| 0.057| 1.150       |
| Constant                                   | -1.914| 0.103| 0     | 0.147       |

* Year 1992 is set as reference across all interactions with years.
The micro-level individual characteristics analysis has addressed the question ‘what was the impact of the training programmes at the participant level?’ and links to next level, namely the organisation of VET system to facilitate skills formation and skills matching. In the next section, the training system is examined and the situation in the field of vocational training during the implementation of the first three CSFs is researched. Also, a critique of matching mechanisms in that country follows.

5. Meso-Level Analysis

The aim here is to describe the VET structure and investigate how adequate or not was the Greek organisational structure to do skills-matching, through secondary data (other studies). The meso-level organisational structure analysis addresses the question ‘Was the training system, i.e. the institutions, in Greece, both regionally and nationally, effective in helping people to find jobs and if not, why?’. The next two subsections focus on the characteristics of the vocational training system in Greece during the time period of the study.

5.1 The Greek VET and CVT systems

To date, there has never been a single, official, institutionalised system of CVT in Greece, even though the term itself was introduced in the late 1980s. Vocational training in Greece developed fast and in an uncoordinated manner under the influence of funding from the ESF. As a result of this development there was a conceptual ambiguity in Greece concerning the distinction between activities of initial and continuing vocational training. Many organisations of CVT offered, in reality, initial-basic vocational training; for instance, many of their programmes provided general knowledge aimed at flexibilisation and adaptability, an objective which should be the target of basic training. Activities of CVT in the real sense of the word had, therefore, remained essentially marginal, both in terms of their extent and in terms of their role until the end of the 1980s (Chasapis, 1994). Since then, and especially during the period 1990-2010, there was an impressive development of CVT activities, mainly as a result of fast restructuring of manufacturing processes, due to the rapid introduction of new technologies to Greek industry and the service sector.

Although CVT was generally privatized, it was supported by the Greek state in the last decade of the twentieth century and in the 2000s. According to Prokou (2011), the increasing reliance on the private sector for training was because public initiatives against unemployment were increasingly being called into question.

There were problems which created obstacles and made it difficult for the CVT programme to reach its recipients, even when it was specially designed for them. This was the result of a lack of preparatory and reinforcing efforts as well as the absence of an adequate and effective information networks (Dedoussopoulos, 1996). There were no figures relating to the whole picture for the number of people who were working on CVT programmes (Iliades, 1995). Moreover, the programmes that were funded were selected using criteria that did not allow for the evaluation of their effects on production and employment. The prevailing criteria referred to typical specifications relating to the management of the programmes, and not to the content of the training. Owing to the impossibility of collecting the relevant information regarding the skills that were being selected and the content of the education, Centres of Vocational Training (KEK) programmes could not be evaluated (Linardos-Rylmon, 1998). Also, Brussels did not (and until now does not) evaluate the impact of vocational training programmes funded by the EU on the Greek labour market, focusing only on ensuring that bureaucratic and financial controls were in place.

The lack of a general institutional framework in relation to CVT resulted in, apart from other things, the weakness of the planning and application of a training policy, in connection with the development of specific geographical regions and branches of the economy (Iliades, 1995). The education-training policy could not, by itself, constitute the solution to unemployment, because unemployment was not exclusively due to the lack of educational qualifications and skills, but to the absence of a particular model of economic development (Chletsos, 1998).

5.2 Vocational training in Greece during the first three CSFs (1980-2006)

Even during the CSF-2 an issue of fundamental importance in the field of CVT was that there was no certification or recognition of skills and competences acquired by trainees. No system of examinations was in place and the structure and content of curricula was not controlled, which came under the responsibility and jurisdiction of the KEK. Thus, ordinary certificates of course attendance issued to participants had no value whatsoever in the labour market, as they reflected no recognised qualifications (IN.E./GSEE-ADEDY, 2000). As a result, a system similar to that of initial training was established for CVT, the main features of which were as follows:
The majority of training course contents were neither job-specific nor firm-specific, but rather subject-specific (annual report by the National Employment Observatory - GSEE, 1999).

The prevalence of a casual attitude to the preparation of curricula and the selection of teaching means, teaching methods and teaching staff (KEPE-REMACO, 1998).

The absence of any systematic monitoring and evaluation of the activities of various agencies (apart from bureaucratic controls) and the skills and knowledge acquired by the trainees upon completion of the course, which often led to the preparation of programmes only minimally corresponding to the objectives and principles of the implementation framework (IN.E./GSEE-ADEDY, 2000).

Difficulties in implementing actions, especially the more innovative ones.

Lack of data with clear information on the funds spent on different programmes, e.g. comparing programme participants and their educational characteristics (IN.E./GSEE-ADEDY, 2000).

The 2000-06 Operational Programme (OP) of CVT and Promotion of Employment was one of the most important policies for the development of human potential in the country (IN.E./GSEE-ADEDY, 2000). The programme was characterised by contradictions in the preparation of policies responding to recognised needs for the development of the human potential in Greece, also being limited to generalities. Furthermore, there was a lack of co-ordination of policies and actions to resolve the employment issue, which were not fully processed and, therefore, the programme could not guarantee their timely, reliable and effective implementation. Finally, all the vocational training policies, whether they were initial, continuing or training for the unemployed, did not apply a complete system of evaluation and observation of their results that allowed permanent re-providing and readjustment. Instead, they functioned as closed systems where the determining factor for the planning and materialization of policies was the supply and not the demand of the relative vocations and specializations (INE/GSEE-ADEDY, 2007).

5.3 Matching mechanisms in Greece

In Greece, the matching of labour supply and demand remained the exclusive responsibility of the state during the reference time period of the study, and legally the only institution competent to supply such services was the Manpower Employment Organisation (OAED). Efforts to rationalise the distribution of personnel and the staffing of employment bureaux - both territorially and administratively - made during the 1980s came to nothing. It should be noted, meanwhile, that the staff of the organisation had been significantly reduced over the period 1987-1997, while at the same time there had been a considerable increase in the volume of work (unemployment subsidies and active interventions) (Dedoussopoulos et al., 1998). Subsequently, several international institutions (OECD, EU) viewed reforming the OAED as essential, if Greek employment policy were to be improved. In line with this, successive laws were passed during the late 1990s and 2000s, which represented a substantial break from the historical legacy of immobility and stagnation (Zartaloudis, 2014).

The nature of European Employment Strategy (EES)-induced change was indirect, whereby the Greek employment policy introduced new programmes through Centres of Employment Promotion (KPA) and KPA2, aimed at providing individualized support to the unemployed in the form of consultation, training and employment subsidies. Nevertheless, the EES did not succeed in heading off the original aims of the Greek employment policy, KPA and KPA2, because they did not replace the OAED as its main institution (see Zartaloudis, 2014). Indeed, despite the change of the Greek employment policy's content, it remained and Europeanization was outsourced to small independent agencies tasked with delivering the new EES-induced policy. Consequently, it becomes apparent that the EES did not bring about a paradigm shift in the Greek employment policy. That is, Greece merely adjusted its existing processes, policies and institutions without altering their basic features or the underlying collective meanings attributed to them. In particular, although there was pressing the need to provide robust data on ESF programme performance, the Greek employment policy did not manage to achieve this. As a result, there was little produced at the policy evaluation level and there was no change at the domestic level, largely because the EES drivers failed to take hold.

6. Linking This Research To The Present Economic Situation In Greece

Employment in Greece was seriously affected by the crisis (starting according to official data on the third quarter of 2008 - EL.STAT), raising the estimated structural unemployment and the long-term unemployment (LTU) even further (OECD, 2011). High structural unemployment probably reflected policies that caused the labour market to function less strongly, including quite rigorous employment protection legislation, according to OECD surveys (OECD, 2009). Obstacles, like restrictions on investment, have also been noted by business surveys (World Bank, 2010).
It appears that cyclical unemployment has become structural in Greece, which means that it is more difficult to return people to employment after the recession (OECD, 2010; Guichard and Rusticelli, 2010).

In the past, the weaknesses of budget deficits, increasing public debt and a growing external trade deficit, had been partly offset by EU funds and policies. However, by 2009 the Greek economy was in an extremely bad way (Bakas and Papapetrou, 2014).

Since 2008, the GDP has fallen by over 25% (Antonopoulou et al., 2014) and the events that caused this have been subject to heated debate. There are still unresolved questions regarding the extent of the problem, its management by the then Government and the rationale for the policy advocated (Dedoussopoulos et al., 2013). In terms of figures, the unemployment rate rose from 7.7% in 2008, with the onset of recession, to over 27.8% in October 2013. In absolute terms, 1,000,000 more people became unemployed, making a total of 1,387,520 persons (EL.STAT, LFS, January 2014), of whom, 71% have been out of work for over a year (EL.STAT) (Antonopoulou et al., 2014). These statistics are the worst for any Western economy since the Second World War and even the 1929–34 U.S. Great Depression levels have been overtaken by Greece in terms of depth and duration (Papadimitriou et al., 2013).

Concerning now the linking of past and present in Greece comparing the micro and meso levels, what this research found is that:

(a) there was no effect of training for the period under investigation (micro-level). This finding has been further contextualised with reference to secondary analysis of evidence and available academic research. The findings show that:

(b) this ‘non-effect’ took place in (and can be seen as a by-product of) a particular context of vocational training ‘system’ that had specific characteristics (meso-level);

So, logically, one can expect that if (b) continues to be unreformed in the second period under investigation (post crisis Greece) then (a) will also remain the same. From the author’s preliminary extra work it does not seem to be any serious changes in the reforms in the VET system, to indicate that any change in the outcomes is to be expected. Of course, this is an empirical question that we can only be expected to investigate as part of future research. The EU seems to continue to promote/fund training inspired by the same paradigm - which does not seem to work for Greece. Current reforms in Greece seem only to drive the labour costs even lower without any increase in demand for high skills. The solution for many well educated Greeks is now to migrate to Northern Europe. This could prove to be serious barrier to any re-orientation of the Greek economy involving higher level skills (Dedoussopoulos et al., 2013). Also, the increase in social security demand will drive pensions down with significant new resources being allocated to pension funds (Dedoussopoulos et al., 2013).

The next section is the concluding section of the paper.

7. Conclusion

The econometric results for Greece (main effects) support the human capital theory with regards to education, i.e. university graduates had a higher probability of finding employment than people with lower education levels. Hence, the findings of this paper support the main policy lessons of human capital theory in the field of education. However, this was not so in the case of training, as this variable emerged as being statistically non-significant. That is, the results of the logit model confirm the conclusions of the various studies that there was very limited impact of training on the labour market in terms of helping people to find long-term employment (see the critique of the vocational training policies in Greece in section 5). Also, the output of the logit model contrasts with some studies in that they found a positive impact of apprenticeship on the labour market (see below).

Regarding the interaction effects analysis, the findings in relation to education support the human capital theory, with the exceptions to this being the relation between educational level and age groups 15-34. Hence, most of the educational variable findings concerning this aspect of the analysis did not support human capital theory. In particular, the more educated a person was did not mean an improvement in his/her position in the Greek labour market during the period 1988-2000. These findings on education are consistent with those of some studies and aggregate statistics mentioned in section 1, which assert that university graduates in Greece were not in a better position in the labour market than non-university degree holders with regards to the probability of finding a job.

The results of the interaction effects analysis for training are not different from the findings of the main effects, with the exceptions being the age groups 25 to 64, who were more likely to be unemployed in relation to those 15-24 years old and concerning training, people who lived in Thessaloniki or in the rest of the urban areas were more likely to be employed than those living in rural ones.
In other words, the chances of finding a job did not change when training is counted as an additional qualification in relation to the other characteristics of individuals in the LFS.

These results were expected, first, because the findings on all training variables in the logit model were non-significant and second, because the number of training records used was apparently even smaller when the interaction effects were examined, hence logically, the same outcomes would be expected.

The results support matching theory better than human capital theory, because the former supports the perspective that more education leads to less training and Greece has many over-educated people. This supports even more my stance that the human capital theory could (and still can) not provide an explanation for the training configuration found in Greece. One of the contributions of this paper is that, given the experience in Greece, it is evident that abstract micro-level theories of skills mismatch, like the human capital theory, cannot be applied in political economies where labour markets cannot absorb high skills and where demand for jobs requiring these is weak.

The results of this research indicate that the mismatch between supply and demand for labour could be partially attributed to the training mismatch, but this was only one cause of the unemployment problem. The econometric findings on training are in line with those of Livanos (2007 and 2009) and to the best of my knowledge, our studies are the only econometric studies for Greece on this topic based on LFS micro-data. The results of this paper, in general, verify the conclusions of the studies carried out by other authors discussed in section 5 based on qualitative research concerning the impact of training courses on the Greek labour market (meso-level). However, the econometric findings contrast with a number of studies that set out to evaluate the apprenticeship system in Greece as a whole and found a positive influence (Kassimati et al., 1984; University of Macedonia, 1994; University of Patra, 1994). But they are consistent with the more pessimistic perspective that the training was not ‘fit for purpose’ as determined in other studies (University of Piraeus, 1990; University of Piraeus Research Centre, 1994), and even by the OAED itself.

Of course the current crisis has not been magnified in Greece because of the ineffectiveness and inefficiency of these training programmes, but has to do with the structural problems already existing in the economy and the labour market well before the crisis. The country entered the euro under these conditions and dynamics and their non-resolution contributed, to an extent, to the country’s current economic and social bottlenecks (Rodokanakis, 2017).

Although the EU approach to vocational training is very much influenced by the human capital theory, the Greek VET system was, and remains, incompatible with this EU perspective. In other words, the human capital theory on training does not appear to be applicable in the Greek context. Still, for the period under investigation, the high-skilled labour force could not be absorbed in Greece. It appears that a strategic plan to create demand for training was absent. Intentionally or not, the evidence suggests that EU funded training was utilized more for ‘parking’ the unemployed and less as part of a well articulated national economic strategy.

References

Aakvik A. and Dahl S. (2006), Transitions to employment from labour market enterprises in Norway, International Journal of Social Welfare, vol. 15 (2), pp. 121-30.

Andrén T. and Andrén D. (2006), Assessing the employment effects of vocational training using a one-factor model, Applied Economics, 38 (21), pp. 2469-86.

Antonopoulou R., Adam S., Kim K., Masterson T. and Papadimitriou D. B. (2014), Responding to the unemployment challenge: A job guarantee proposal for Greece, Levy Economics Institute of Bard College, April, Annandale-on-Hudson, New York.

Bakas D. and Papapetrou E. (2014), Unemployment in Greece: Evidence from Greek regions using panel unit root tests, The Quarterly Review of Economics and Finance, vol. 54, pp. 551-62.

Becker G. S. (1964), Human capital, New York: Columbia University Press.

Ben-Porath Y. (1967), The production of human capital and the life cycle of earnings, Journal of Political Economy, vol. 75, pp. 352-65.

Berman E., Bound J. and Griliches Z. (1994), Changes in the demand for skilled labor within US manufacturing industries: Evidence from the annual survey of manufacturing, Quarterly Journal of Economics, C5, pp. 367-98.

Boone J. and van Ours J. C. (2004), Effective Active Labor Market Policies, IZA Discussion Paper No 1335, IZA, Bonn.

Bratti M., Ghirelli C., Havari E. and Santangelo G. (2018), Vocational training for unemployed youth in Latvia: Evidence from a regression discontinuity, IZA Discussion Paper No 11870, IZA, Bonn.
Brodaty T., Crepon B. and Fougeré D. (2001), Using matching estimators to evaluate alternative youth employment programs: Evidence from France, 1986-1988, in Lechner M. and Pfeiffer F. (eds), Econometric evaluation of labour market policies, Heidelberg: Physica.

Brunello G. and Rocco L. (2017), The effects of vocational education on adult skills, employment and wages: What can we learn from PIAAC?, SERIES, 8 (4), pp. 315-43.

CEC (2006), Employment in Europe, Official Publications of the European Communities, Luxembourg.

Centeno L., Centeno M. and Novo A.A. (2005), Evaluating the impact of a mandatory job search program: Evidence from a large longitudinal data set (mimeo).

Chasapis (1994), Quality of the CVT in Greece (in Greek), Greek National Unit of Coordination for FORCE / EUROTECNET in the context of the FORCE study: Quality of the CVT in Europe. Co-ordinators: Gronwold P. and Verardi A., EC Task Force Human Resources, Brussels, under the auspices of the Consultative Committee for FORCE/ EUROTECNET, Brussels - Athens.

Cheng S., Wu T., Lee K. and Chang T. (2014), Flexible Fourier unit root test of unemployment for PIIGS countries, Economic Modelling, vol. 36, pp. 142-8.

Chevalier A. and Lindley J. (2007), Over-education and the skills of UK graduates, Centre for the Economics of Education, LSE, DP 79.

Chletos M. (1998), The education as an active employment policy: Limits and preconditions of implementation. The case of Greece (in Greek), in Maratou-Alipranti L. and Hatzigianni A. (eds), Unemployment, employment, education-training in Greece and France, Proceedings of the Franco-hellenic Colloquium, EKKE, Athens, pp. 151-79.

Cueto B. and Mato F. J. (2009), A non-experimental evaluation of training programmes: Regional evidence for Spain, The Annals of Regional Science, vol. 43 (2), pp. 415-33.

Dedoussopoulos A. (1996), Guiding directions of CVT programmes, Panteion University, Athens (in Greek).

Dedoussopoulos A. and collaborators (1998), Active and passive policies to tackle unemployment: The role of OAED (1983-1993), Panteion University, Department of Urban and Regional Development, Athens, March (in Greek).

Dedoussopoulos A., Aranitrou V., Koutentakis F. and Maropoulou M. (2013), Assessing the impact of the memorandum on Greek labour market and labour relations, Project financed by the European Commission, ILO, Geneva, November, Working Paper No. 53.

Dolton P. and Marcenaro-Gutierrez O. (2009), Overeducation across Europe, in Dolton P., Asplund R. and Barth E. (eds), Education and inequality across Europe, Ch. 4, Cheltenham, Northampton, Mass: Edward Elgar Publishing.

EL. STAT (Hellenic Statistical Authority), various years.

Eurostat (1995), Education and employment prospects.

Fitzenberger B., Osikominu A. and Paul M. (2010), The heterogeneous effects of training incidence and duration on labour market transitions, IZA Discussion paper No. 5269.

Gerfin M. and Lechner M. (2000), Micro-econometric evaluation of the active labour market policy in Switzerland, IZA Discussion paper No 154, IZA, Bonn.

Graversen B. (2004), Employment effects of active labor market programs: Do the programs help welfare benefit recipients to find jobs?, PhD thesis, Department of Economics, University of Aarhus.

Green F., McIntosh S. and Vignoles A. (1999), Over-education and skills – Clarifying the concepts, Discussion Paper No 435, CEP, LSE.

GSEE (1999), Memorandum to the National Employment Observatory, June.

Guichard S. and Rusticelli E. (2010), Assessing the impact of the financial crisis on structural unemployment in OECD countries, OECD Economics Department Working Papers, No 767.

Hartog J. (1997), On returns to education: Wandering along the hills of ORU land, Keynote speech for the LVIlth Conference of the Applied Econometrics Association, Maastricht, May.

Hogelund J. and Holm A. (2005), Returning the long-term sick-listed to work: The efforts of educational measures and employer separations in Denmark, in Saunders P. (ed.), Welfare to Work in Practice. Social Security and Participation in Economic and Social Life, International Studies on Social Security, vol. 10, Aldershot, Ashgate.

Hujer R., Thomsen S. and Zeiss C. (2004), The effects of vocational training programmes on the duration of unemployment in Eastern Germany, IZA Discussion Paper 1117, IZA, Bonn.

Iliades N. (1995), Continuing vocational training in Greece, National Report (in the context of FORCE), National Institute of Labour, October (in Greek).

IN.E. (Institute of Labour)/GSEE. (General Confederation of Workers of Greece) - ADEDY (Civil Servants’ Supreme Administrative Council) (1999), The Greek economy and the employment, Annual Report, Reports no 1, Athens, August (in Greek).
IN.E./GSEE-ADEDY (2000), The Greek economy and the employment, Annual Report, Reports no 2, Athens, August (in Greek).

IN.E./GSEE-ADEDY (2007), The Greek economy and the employment, Annual Report, chapter 5, pp. 155-76, Athens, August (in Greek).

Karamessini M. (2010), Transition strategies and labour market integration of Greek University graduates, Hellenic Observatory papers on Greece and Southeast Europe, GreeSE paper No 32, The Hellenic Observatory, European Institute, LSE, February.

Kassimati K. et al. (1984), The OAED Apprenticeship Centres: Findings, problems, proposals, EKKE, Athens (in Greek).

Katsikas C. (2005), Studies-Vocation and labour market, Athens: Atrapos Publishing (in Greek).

KEPE-REMACO Business Consultants S.A. (1998), Initial approach to the interim evaluation of CSF-2, ch. 2 (Athen: Ministry of National Economy, unpublished study), pp. 21-3.

Kluve J. and Schmidt C. M. (2002), Can training and employment subsidies combat European unemployment?, Economic Policy: A European Forum, vol. 17 (35), October, pp. 411-48.

Kluve J., Lehmann H. and Schmidt C.M. (2005), Disentangling treatment effects of Active Labor Market Policies: The role of labor force status sequences, RWI Essen (mimeo).

Larsson L. (2002), Evaluating social programs: Active labor market policies and social insurance, IFAU Dissertation Series 1, Uppsala.

Lechner M. and Wunsch C. (2009), Are training programs more effective when unemployment is high?, Journal of Labour Economics, vol. 27 (4), pp. 653-92.

Lechner M., Miquel R. and Wunsch C. (2007), The curse and blessing of training the unemployed in a changing economy: The case of East Germany after unification, German Economic Review, vol. 8 (4), November, pp. 468-509.

Lechner M., Miquel R. and Wunsch C. (2011), Long-run effects of public sector sponsored training in West Germany, Journal of the European Economic Association, vol. 9 (4), pp. 742-84.

Ligouras G., Protogerou A. and Kalogirou Y. (2003), Exploring mismatches between higher education and the labour market in Greece, European Journal of Education, 38 (4), pp. 413-26.

Linaros Rylmon P. (1998), Vocational training and labour market: Indispensable changes into the function of the continuing training system in Greece (in Greek), in Maratou-Aliprantli L. and Hatziigianni A. (eds), Unemployment, employment, education-training in Greece and France, Proceedings of the Franco-Hellenic Colloquium, EKKE, Athens, pp. 233-6.

Livanos I. (2007), The incidence of long-term unemployment: Evidence from Greece, Applied Economics Letters, 14 (6), pp. 405-8.

Livanos I. (2009), Modelling the incidence of unemployment: The case of Greece, Applied Economics Letters, 16 (16), pp. 1607-11.

Machin S. and van Reenen J. (1998), Technology and changes in skill structure: Evidence from seven OECD countries, The Quarterly Journal of Economics, November, pp. 1215-44.

Malmberg-Heimonen I. and Vuori J. (2005), Activation or discouragement? The effect of enforced participation on the success of job-search training, European Journal of Social Work, 8 (4), pp. 451-67.

McGuinness S., O’Connell P. J. and Kelly E. (2014), The impact of training programme type and duration on the employment chances of the unemployed in Ireland, The Economic and Social Review, vol. 45 (3), pp. 425-50.

Meadows P. and Metcalf H. (2008), Does literacy and numeracy training for adults increase employment and employability? Evidence from the Skills for Life programme in England, Industrial Relations Journal, 39 (5), pp. 354-69.

Megalir C., Ioannides Y. and Pissarides C. (1989), Female participation and male unemployment duration in Greece, European Economic Review, vol. 33 (2-3), pp. 395-406.

Mincer J. (1974), Schooling, experience and earnings, New York: Columbia University Press.

Murray A. and Steedman H. (1998), Growing skills in Europe: The changing skills profiles of France, Germany, the Netherlands, Portugal, Sweden and the UK, TSER, Discussion Paper No 399, CEP, LSE.

OECD (1990), Employment Outlook, Paris: OECD.

Papadimitriou D. B., Nikiforos M. and Zezsa G. (2013), The Greek economic crisis and the experience of austerity: A strategic analysis, Strategic Analysis Annandale-on-Hudson, N.Y.: Levy Economics Institute of Bard College, July.

Papakonstantinou G. (1998), Education-training as factors of investment in human capital (in Greek), in Maratou-Alipranti L. and Hatziigianni A. (eds), Unemployment, employment, education-training in Greece and France, Proceedings of the Franco-Hellenic Colloquium, EKKE, Athens, pp. 125-32.
Patrinos H. (1997), Over-education in Greece, International Review of Education, vol. 43 (2/3), pp. 203-23.
Prais S. J. (1995), Productivity, education and training: An international perspective, National Institute for Economic and Social Research, Cambridge University Press.
Prokou E. (2011), The aims of employability and social inclusion: Active citizenship in lifelong learning policies in Greece, The Greek Review of Social Research, special issue 136 C, pp. 203-23.
Raaum O. and Torp H. (2002), Labour market training in Norway: Effect on earnings, Labour Economics, vol. 9 (2), pp. 207-47.
Regner H. (2002), A non-experimental evaluation of training programmes for the unemployed in Sweden, Labour Economics, vol. 9 (2), pp. 187-206.
Riphahn R. T. and Zibrowius M. (2016), Apprenticeship, vocational training and early labor market outcomes - evidence from East and West Germany, Education Economics, 24 (1), pp. 33-57.
Rodokanakis S. (2010a), The dynamics of regional labour markets and training programmes: Greek evidence, European Spatial Research and Policy, vol. 17 (1), pp. 93-115.
Rodokanakis S. (2010b), Comparing the probability of unemployment in Northern Greece vis-à-vis the entire country, Journal of Economic Asymmetries, vol. 7 (1), pp. 137-74.
Rodokanakis S. (2017), Southern Europe, varieties of capitalism and vocational training: The case of Greece, LAP Lambert Academic Publishing, Saarbrucken, Germany.
Rodokanakis S. and Vlachos V. (2012), Measuring the unemployment risk in Northern Greece from the LFS micro-data during the period 1994-2006, Review of Economic Analysis, vol. 4 (2), pp. 224-46.
Rodokanakis S. and Vlachos V. (2013), Investigating the unemployment risk in pre-crisis Greece using LFS micro-data, International Employment Relations Review, vol. 19 (1), pp. 47-67.
Rosholm M. and Skipper L. (2009), Is labour market training a curse for the unemployed? Evidence from a social experiment, Journal of Applied Econometrics, 24 (2), pp. 338-65.
Rosholm M. and Svarer M. (2004), Estimating the threat effect of Active Labor Market Programs, Working Paper No 6, Department of Economics, University of Aarhus.
Steiger H. (2005), Is less more? A look at non-participation in Swiss active labor market programmes, University of St. Gallen (mimeo).
Stenberg A. (2003), The Adult Education Initiative in Sweden - Second year effects on wage earnings and the influence on branch mobility, Umeå Economics Studies 593, Umeå.
Tsakloglou P. and Cholezas I. (2005), Education and inequality in Greece, IZA Discussion Paper, No. 1582, IZA, Bonn.
University of Macedonia (1994), Assessment of the OAED apprenticeship system (by Tsekouras I., Stavrou S. and Papatheodossiou Th.), Department of Economic and Political Sciences, Thessaloniki, November (in Greek).
University of Patra (1994), OAED study on the workers in the automotive repair sector, University of Patra/OAED (in Greek).
University of Piraeus (1990), Study on the apprenticeship system of OAED, Centre of Economic and Administrative Research, OAED/ University of Piraeus (in Greek).
University of Piraeus Research Centre (1994), Evaluation of the Intra-firm Training Programme for the improvement of the competitiveness of the Greek private companies, Athens: OAED (in Greek).
van Ours J.C. (2001), Do active labour market policies help unemployed workers to find and keep regular jobs?, in Lechner M. and Pfeiffer F. (eds), Econometric evaluation of labour market policies, Heidelberg: Physica.
van Smoorenburg M.S.M. and van der Velden R.K.W. (2000), The training of school leavers: Complementarity or substitution?, Economics of Education Review, 19, pp. 207-17.
Weber A. and Hofer H. (2003), Active job-search programs a promising tool? A micro-econometric evaluation for Austria, IHS working paper, Economic Series 131, Vienna.
World Bank (2010), Doing Business 2010: Making a difference for entrepreneurs, The International Bank for Reconstruction and Development/The World Bank, Washington, DC.
Zartaloudis S. (2014), The impact of European Employment Strategy in Greece and Portugal: Europeanization in a world of neglect, Palgrave: Macmillan, London.