Journal of Studies in Social Sciences and Humanities
http://www.jssshonline.com/
Volume 9, No. 4, 2023, 352-374
ISSN: 2413-9270

A Multi-Level and Interaction Effects Analysis of the Effectiveness of Educational Level and Training in Job Finding by Gender, Age Groups and Location

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Abstract
Basically, this study aims to empirically determine the level at which the labour market of semi-peripheral EU countries have been or is being controlled by the outcomes of formal education together with technical/vocational training programmes, using the Greek labour market survey data as a case study. The data employed in this study were comprehensively collated, phased and analyzed at three levels: 1. The micro-level which relayed the econometric analysis of the Greek Labour Force. 2. The meso-level with all analytical activities wrapped around the Greek formal and informal educational system. 3. The macro-level where all data were scrutinized for outcomes relative to the Greek political economy. To the end the results of this study could systematically challenge the provision of training programmes by measuring the minimal impact and ultimately, the usefulness of these policies. However, this is not to say that Greece does not require training; it only means that they can only be used to their full potential in the context of an appropriate institutional framework, which still does not exist.

Key words: Labor Economics Policies, Public Policy, Human Capital, Skills, Microeconomic Policy: Formulation, Implementation, and Evaluation, Quantitative Policy Modeling, Education: Government Policy.

Introduction

Training activities in Greece have been jointly financed by the EU, the government and private providers, but despite the EU having been the biggest contributor, it has not at any time evaluated the impact of training on employment or taken steps to ensure that the types of training courses funded in that country were compatible with the needs of its economy. The EU, through the European Employment Strategy (EES), expected that national systems would be reformed into supply-side oriented systems (Seferiades, 2006), but was never explicit about the manner in which this should be achieved. The conditions for making the employment and growth model functional as happens in Northern European countries, have been absent in the Greek context.

In the case of Greece, it is questionable whether the training "revolution" from the end of the 1980s onwards, through the structural funds and the European Social Fund (ESF) in particular, was accompanied by any real improvement in matching supply with demand or increasing people's chances of finding a job. Consequently, behavioural models (micro-level), institutions and investment in relation to training (meso-

level) in Greece have yet to be considered along with the macro-context of its political economy, thereby allowing for robust evaluation of its effectiveness.

The Research Questions

The key research questions of the paper are as follows:

a) 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?
b) How can this impact be explained?

To address these questions my research is organized along three inter-related levels of analysis (micro, meso and macro).

Limitations of the Research

I could not examine the impact of educational level and training on earnings, because this kind of information is not covered in the questionnaire schedule of the Greek LFS. Also, due to data limitations, I could not explore the impact that the duration of courses, thematic fields, number of participants or duration of unemployment period of the trainees had on unemployment. The system of codification excluded any linkage of data for the same household in successive years, as was true in other countries. However, I have seen that my econometric results on training agree with extant research findings regarding the other two levels of analysis, namely at meso and macro levels. In Greece, the LFS is still the most reliable and widely used source of labour market data.

Micro-level Analysis

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

Brodaty *et al.*, 2001, van Ours, 2001, Kluve and Schmidt, 2002, Raaum and Torp, 2002, Kluve *et al.*, 2005, found that the more expensive programmes with a significant amount of training appear to have been the most effective at increasing job prospects. However, national studies of Gerfin and Lechner, 2000, and Regner, 2002, did not find positive impacts of training on employment. Lechner and Wunsch (2009), Fitzenberger *et al.* (2010), Lechner *et al.* (2011), McGuinness *et al.* (2014), Riphahn and Zibrowius (2016), Brunello and Rocco (2017), and Bratti *et al.* (2018) found mixed effects of participation in training programmes on employment/unemployment 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 (Larsson, 2002; Stenberg, 2003; Weber and Hofer, 2003; Graversen, 2004; Hujer *et al.*, 2004; Rosholm and Svarer, 2004; Centeno *et al.*, 2005; Hogelund and Holm, 2005; Aakvik and Dahl, 2006; Meadows and Metcalf, 2008; Rosholm and Skipper, 2009) found no positive impact of training on employment probability in European labour markets.

Whilst micro-econometric analyses have reported "mixed" results regarding training, the prospects of employment have almost invariably proven to be insignificant. Notably, macro-economic investigations have found that training is the sole proactive employment strategy leading to improved overall performance of the labour market (CEC, 2006:145).

Concerning more recent literature, in a specific Italian region participants are more likely to be employed compared to similar non-participants, and a higher probability of obtaining an apprenticeship contract after completing the training. Furthermore, males having a higher probability of being employed with a permanent contract or an apprenticeship contract (Ghirelli *et al.*, 2019), Also, the effect of training on continued employment is notably stronger in the South than in the North of Italy during the recent financial crisis (Iammarino *et al.*, 2019). Also, (Cerqua *et al.*, 2020) uncover a pattern of impacts that suggest the partially treated secure some form of return to human capital accumulation, and this is on average at a lower level than that achieved by the fully treated. In addition, Farias and Resende (2020)

found positive impact of training combined with organizational support for the adoption and use of new technologies.

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

Econometric Analysis for Greece

The econometric analysis: 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.

For examining the variation amongst participants and non-participants in training programmes, a logistic regression model is utilised. Such models enable comparisons at the group level when adjusted for demographic and socioeconomic variables. Observation for the above three years have been merged, thereby capturing the time-series features of the data and used dummies for the years instead. For the three focal areas, namely Central Macedonia, Attica and the rest of Greece, one logit model, including all the main effects, variables of interest and control variables, has been constructed and deployed in a pooled format. That is, all the data have been collated into one database. Moreover, there has been aggregation of those categorical variables with scant observations (types of training) so as to increase the number of observations in each cell, thereby avoiding unacceptably 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 subsection, the first part of the micro-level analysis of the paper is discussed.

Main effects

The *Table 1* 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 1*, b_k is the log of the odds, whereas Exp (b_k) is the odds ratio.

After taking into account missing records, restricting the sample by age (15-64 years old) and removing the non-active population, *Appendix I* (**see in appendix**) shows the numbers of records eligible for analysis in the LFS samples.

Table 1.

Results (main effects) for Greece, 1992, 1994 and 2000 (parameter estimates b_k, standard errors (s.e.), p-values, exponent of b_k)

Variables	bk	S.E.	Sig.	Exp (bk)
Gender	0 .915	0 .019	0.000	2.497
Marital status	-0.398	0.039	0.000	0.671
Aged 15-24	ref.	ref.	ref.	ref.
Aged 25-34	-1.023	0.024	0.000	0.359
Aged 35-44	-1.706	0.029	0.000	0.182
Aged 45-64	-1.977	0.031	0.000	0.139
University graduates	ref.	ref.	ref.	ref.
MSc or PhD holders	0.110	0.183	0.546	1.116

TEI graduates	0.371	0.046	0.000	1.449
12 years of schooling	0.601	0.038	0.000	1.824
9 years compulsory education	0.550	0.044	0.000	1.734
Primary school graduates and below	0.518	0.040	0.000	1.679
Rest of Greece	ref.	ref.	ref.	ref.
Attica	0.083	0.041	0.046	1.086
Central Macedonia	-0.075	0.041	0.064	0.927
Rural areas	ref.	ref.	ref.	ref.
Athens area	0.738	0.050	0.000	2.091
Thessaloniki area	0.787	0.054	0.000	2.196
Rest of urban areas	0.899	0.030	0.000	2.457
Semi-urban areas	0.518	0.037	0.000	1.679
Non-participation in training course(s)	ref.	ref.	ref.	ref.
Training	-0.013	0.052	0.808	0.987
Citizenship	0.077	0.058	0.179	1.080
Year 1992	ref.	ref.	ref.	ref.
Year 1994	0.025	0.022	0.266	1.025
Year 2000	0.055	0.033	0.096	1.056
Constant	-2.262	0.062	0.000	0.104

Main Effects (model summary)

146,815 cases selected

-2 Log likelihood	*Cox & Snell R^2*	*Nagelkerke R^2*
80810.622	0.082	0.174

Hosmer and Lemeshow Test

Chi-square	*Df*	*Sig.*
89.197	8	0.000

Overall percentage of classification table: 90.2

Whether or not someone lived in Central Macedonia, concerning the above mentioned three years, was statistically non-significant. In contrast, those living in Attica were less likely to be employed than those residing in the rest of Greece. Both 1994 and 2000 emerged as being statistically non-significant, that is, the variable 'time' had no influence on the likelihood of being unemployed.

In general, the econometric results for the nation as whole support human capital theory regarding education. In other words, it was found that university graduates had a greater probability of finding a job than those with lower educational backgrounds. This finding contrasts with other studies that have elicited the opposite. However, this was not the outcome in the context of training, which emerged as being statistically insignificant. In fact, this finding for training was the case for all the Greek regions and the entire country as a whole, with a couple of exceptions (see Livanos, 2007 and 2009; Rodokanakis, 2010a and 2010b; Rodokanakis and Vlachos, 2013), these being the results for Eastern Macedonia and Thrace in 2000 in relation to the training variables 'apprenticeship' and 'continuing vocational training-CVT' (less likely to be unemployed than the non-trainees - see Rodokanakis and Vlachos, 2012). Hence, in the Greek context, it seems that matching theory provides greater explanatory power than human capital theory. That is, under the former perspective, those with more education need less training and the reality is that in

Greece there are too many people who have been over-educated. Below I proceed to the interaction effects analysis.

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. The interaction effect results in all the *Tables 3 to 5* start immediately after the line "year 2000".

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 3*, females when compared to males, who were both Technological Educational Institutions (TEI) graduates, had higher probabilities of being unemployed in comparison to the case where both males and females were University graduates. Also, males who were TEI graduates were 1.46 times more likely to be employed than females and this was similar for the remaining three educational categories in terms of gender.

In addition, concerning age group and educational category, people in the age group 15-24 in the four educational categories were more likely to be employed in comparison to those in this age group who were university degree holders. The same applied to those aged 25-34. Also, someone who was between 45 and 64 years old was more likely to be unemployed than those in the same age group who were university graduates.

Table 3.

Interactions with education and gender, age groups and education, age groups and areas, age groups and years, gender and years (variables in the equation)

Variables	**b_k**	**S.E.**	**Sig.**	**Exp (b_k)**
Gender	0.360	0.079	0.000	1.434
Marital status	-0.746	0.049	0.000	0.474
Aged 15-24	ref.	ref.	ref.	ref.
Aged 25-34	-1.732	0.130	0.000	0.177
Aged 35-44	-3.762	0.159	0.000	0.023
Aged 45-64	-4.723	0.173	0.000	0.009
University graduates	ref.	ref.	ref.	ref.
MSc or PhD holders	-0.215	0.597	0.719	0.807
TEI graduates	0.787	0.154	0.000	2.198
12 years of schooling	0.734	0.122	0.000	2.083
9 years compulsory education	0.793	0.143	0.000	2.209
Primary school graduates and below	0.959	0.115	0.000	2.610
Rest of Greece	ref.	ref.	ref.	ref.
Attica	-0.024	0.071	0.733	0.976
Central Macedonia	-0.089	0.071	0.210	0.915

Athens area	1.616	0.123	0.000	5.033
Thessaloniki area	1.919	0.137	0.000	6.814
Rest of urban areas	1.767	0.082	0.000	5.853
Semi-urban areas	1.137	0.096	0.000	3.118
Rural areas	ref.	ref.	ref.	ref.
Training	0.010	0.052	0.845	1.010
Citizenship	0.166	0.057	0.004	1.180
Year 1992	ref.	ref.	ref.	ref.
Year 1994	0.107	0.045	0.016	1.113
Year 2000	0.244	0.052	0.000	1.276
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.
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 15-24 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
Aged45-64 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
Aged 25-34 and year 2000	-0.331	0.065	0.000	0.718
Aged 35-44 and year 1992	ref.	ref.	ref.	ref.
Aged 35-44 and year 1994	-0.118	0.059	0.046	0.889
Aged 35-44 and year 2000	0.351	0.070	0.000	1.420
Aged 45-64 and year 1992	ref.	ref.	ref.	ref.
Aged 45-64 and year 1994	0.085	0.060	0.157	1.089
Aged 45-64 and year 2000	0.449	0.076	0.000	1.567
Constant	-0.502	0.130	0.000	0.605

Interactions with education and gender (model summary)

146815 cases selected

-2 Log likelihood	*Cox & Snell R^2*	*Nagelkerke R^2*
79674.874	0.089	0.189

Hosmer and Lemeshow Test

Chi-square	*df*	*Sig.*
77.657	8	0.000

Overall percentage of classification table: 90.3

Interaction effects concerning training

The interaction effects are fitted between training and age groups, training and level of education, training and geographical areas or residence location, and training and years.

According to *Table 4*, people 25-64 years old who had participated in vocational training programmes were less likely to be employed than those aged 15-24 who had also done so. Also, people in agrarian areas who participated in such courses had less chances of finding a job in relation to those who also undertook training and were inhabitants of the Thessaloniki area or the rest of the urban areas.

Table 4.

Interactions with training (variables in the equation)

Variables	**b_k**	**S.E.**	**Sig.**	**Exp (b_k)**
Gender	0.918	0.019	0.000	2.504
Marital status	-0.421	0.040	0.000	0.657
Aged 15-24	ref.	ref.	ref.	ref.
Aged 25-34	-1.040	0.024	0.000	0.354
Aged 35-44	-1.722	0.030	0.000	0.179
Aged 45-64	-1.996	0.032	0.000	0.136
University graduates	ref.	ref.	ref.	ref.
MSc or PhD holders	0.153	0.183	0.403	1.166
TEI graduates	0.373	0.048	0.000	1.452
12 years of schooling	0.595	0.038	0.000	1.814
9 years compulsory education	0.549	0.045	0.000	1.732
Primary school graduates and below	0.527	0.040	0.000	1.694
Rest of Greece	ref.	ref.	ref.	ref.
Attica	0.090	0.043	0.035	1.094
Central Macedonia	-0.086	0.041	0.038	0.918
Rural areas	ref.	ref.	ref.	ref.
Athens area	0.754	0.051	0.000	2.125
Thessaloniki area	0.813	0.055	0.000	2.256
Rest of urban areas	0.911	0.031	0.000	2.486
Semi-urban areas	0.517	0.038	0.000	1.677
Non-participation in training course(s)	ref.	ref.	ref.	ref.
Training	-0.048	0.399	0.905	0.954
Citizenship	0.072	0.058	0.213	1.074
Year 1992	ref.	ref.	ref.	ref.
Year 1994	0.022	0.022	0.314	1.023
Year 2000	0.051	0.033	0.122	1.053
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	0.000	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

Interactions with training (model summary)

146815 cases selected

-2 Log likelihood	*Cox & Snell R^2*	*Nagelkerke R^2*
80750.728	0.082	0.175

Hosmer and Lemeshow Test

Chi-square	*df*	*Sig.*
79.478	8	0.000

Overall percentage of classification table: 90.2

From *Table 5*, it can be seen that those educated up to lyceum graduate level (12 years of schooling), living in the rest of the urban areas, rather than rural ones, had a greater likelihood of being unemployed than their university graduate counterparts. This was also found for those in residing in semi-urban areas and in the Athens area, whereas in the Thessaloniki area this was only the case for those who had completed up to a high-school graduate level of education (nine years compulsory education). Moreover, compared with the rest of Greece, university graduates in Attica were more likely to be employed. In both Attica and Central Macedonia, TEI, lyceum and high-school graduates had a greater probability of being employed than their counterparts in the rest of Greece. Notably, those completing primary school education or below in both the studied NUTS-2 regions were the only people less likely to be employed than for the same educational category in the rest of the country.

Table 5.
Interactions with education and areas (variables in the equation)*

Variables	**b_k**	**S.E.**	**Sig.**	**Exp (b_k)**
Gender	0.938	0.019	0.000	2.554
Marital status	-0.373	0.039	0.000	0.688
Aged 15-24	ref.	ref.	ref.	ref.
Aged 25-34	-1.013	0.024	0.000	0.363
Aged 35-44	-1.706	0.030	0.000	0.182
Aged 45-64	-1.951	0.032	0.000	0.142
University graduates	ref.	ref.	ref.	ref.
MSc or PhD holders	-18.723	14594,110	0.999	0.000
TEI graduates	0.232	0.156	0.136	1.261

12 years of schooling	0.093	0.128	0.468	1.097
9 years compulsory education	-0.396	0.136	0.004	0.673
Primary school graduates and below	-1.089	0.127	0.000	0.337
Rest of Greece	ref.	ref.	ref.	ref.
Attica	0.049	0.042	0.239	1.050
Central Macedonia	-0.065	0.041	0.112	0.937
Rural areas	ref.	ref.	ref.	ref.
Athens area	-0.420	0.138	0.002	0.657
Thessaloniki area	-0.074	0.154	0.631	0.929
Rest of urban areas	-0.318	0.135	0.019	0.727
Semi-urban areas	-0.559	0.172	0.001	0.572
Non-participation in training course(s)	ref.	ref.	ref.	ref.
Training	0.003	0.052	0.949	1.003
Citizenship	0.056	0.058	0.330	1.058
Year 1992	ref.	ref.	ref.	ref.
Year 1994	0.025	0.022	0.267	1.025
Year 2000	0.057	0.033	0.084	1.058
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

*Rural areas are set as reference across all interactions with areas

Interactions with education and areas (model summary)

146815 cases selected

-2 Log likelihood	*Cox & Snell R^2*	*Nagelkerke R^2*
80031.176	0.087	0.185

Hosmer and Lemeshow Test

Chi-square	*df*	*Sig.*
48.468	8	0.000

Overall percentage of classification table: 90.3

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 Vocational Education and Training (VET) system to facilitate skills formation and skills matching. In the next section, a critique in the field of vocational training in Greece during the implementation of the first three CSFs is examined, as well as a critique of skill mismatches between education, training and the labour market in that country follows.

Meso-level Analysis

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 educational and vocational training system in Greece during the time period of the study.

Education and vocational training in Greece

The structure of the Greek national system of education and training during the period under review (and even nowadays) is shown in Figure 1.

The reality is that, Greece belonged to the cohort of EU countries with the greatest number of new intake to universities coupled with a substantial decrease in those leaving education (Katsikas and Panagiotidis, 2011).

Vocational training in Greece

During CSF-2 (1994-1999), an issue of crucial importance in the field of CVT was there being a lack of any certification or recognition of skills and competences attained by trainees. Under the responsibility and jurisdiction of the Centre of Vocational Training (KEK), there was no examinations in place nor was the structure and content of curricula controlled. Hence, the certificates of course attendance issued to trainees had currency in the labour market; they represented no universally recognised qualifications. To address this situation, a system akin to that for initial training was inaugurated for CVT (IN.E./GSEE-ADEDY, 2000).

One of the most important policies for the development of human potential in the country was the 2000-06 Operational Programme (OP) of CVT and Promotion of Employment (IN.E./GSEE-ADEDY, 2000). However, it was riddled with contradictions in relation to the establishment of policies in response to the acknowledged requirements for the flourishing of human potential in Greece, whilst being prone to generalities. In addition, policies and actions to resolve the employment issue lacked any coordination. Moreover, they were not processed in full and, hence, their timely, reliable and effective implementation could not be guaranteed by the programme. Finally, whether initial, continuing or training for the unemployed, the vocational training policies did not involve applying a comprehensive system of evaluation and observation of their results that would allow for ongoing improved provision and readjustment. Rather, they took the form of closed systems, with the determining factor for the planning and implementation of policies being the supply other than the demand for the relevant vocations and specialisations (INE/GSEE-ADEDY, 2007).

Despite CVT being generally privatised, the Greek state did support it from the 1990s up to now (CEDEFOP, 2020; Karalis, 2021). Prokou (2011) pointed to how the growing dependency on the private sector for training was owing to public initiatives against unemployment being increasingly called into question regarding their efficacy.

The over-regulation and multitude of laws and the systematic abolishment of institutional frameworks before being implemented for a long period of time and before being evaluated is a pathogeny of the VET governance (Dianeosis, 2022).

There is a serious inconsistency between knowledge and skills accruing by the initial VET and those which the labour market demands. The correspondence of the various types of EEK according to National Vocational Qualifications Framework (NQF) levels wasn't guided by knowledge achieved, abilities and skills, namely by learning outcomes (output), but according to the duration of studies and the educational level (input) - (Dianeosis, 2022).

According to the study of IOBE (2021), main characteristics in the field of training in Greece are the irregularities in the organization of continuing VET, the lack of reliability in the certification of vocational qualifications, the irrational choice of specialities and trainers, the absence of social partners' participation to the planning of VET, the lack of VET structures at post high-school level, and the overlapping between structures and educational routes. According to the study of K.AN.E.P./GSEE (2020) and in comparison to the previous relevant study eight years ago, structural deficiencies still remain in the field of initial training.

The main obstacles in the field of adult education and training (EKE) are mainly found at the macro-level and more specifically the absence of a coherent policy and strategy, and the institutional framework, as well as the planning of EKE programmes (Dianeosis, 2021).

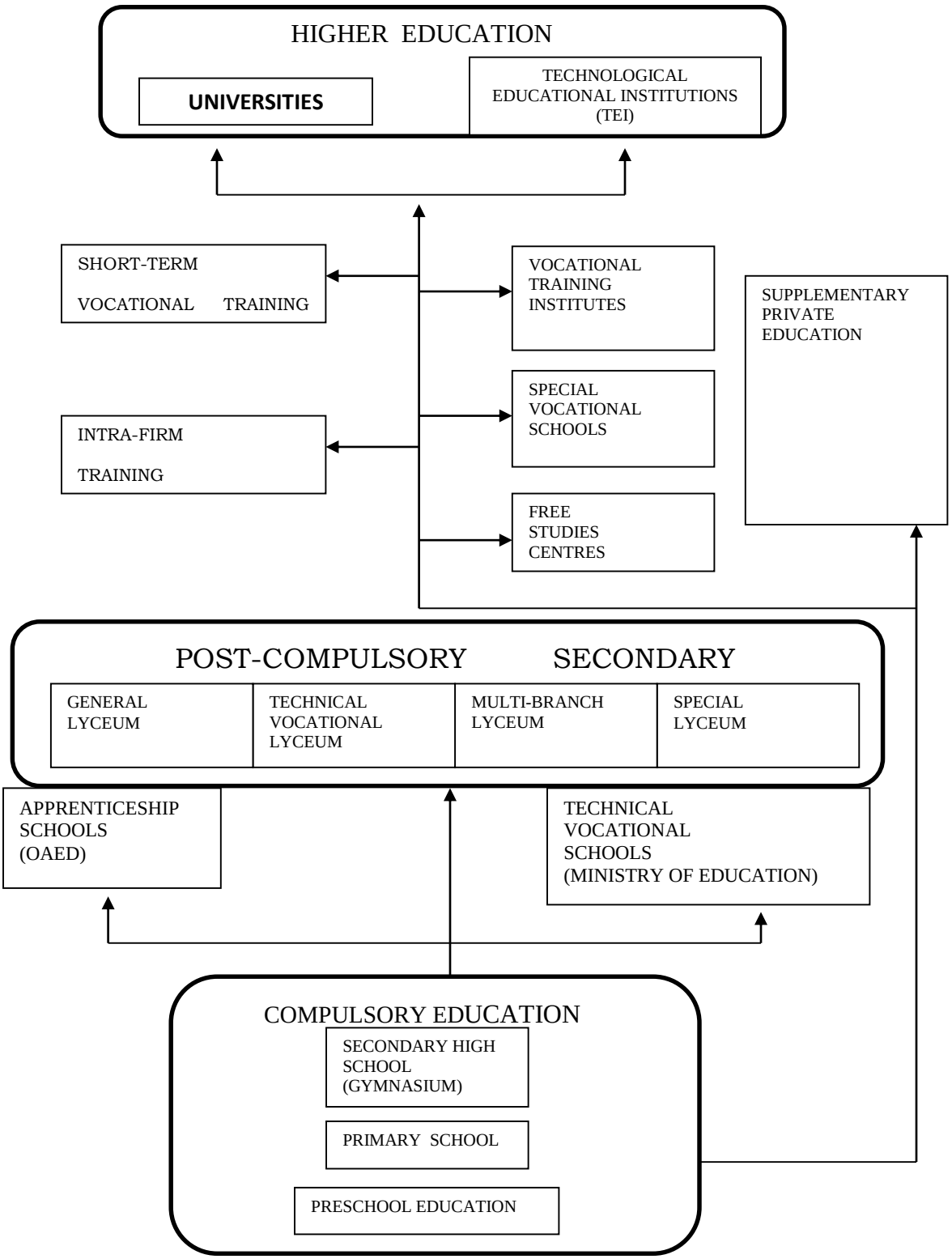

Figure 1: Structure of the greek educational system during the 1990s
Source: (Kafkalas *et al.*, 1995)

VET and especially apprenticeship are key pillars of the new set of EU measures for youth employment. EU funds for supporting reforms and investments in VET are included in structural funds and tools of the regular Multi-annual Fiscal Framework 2021-2027 (like the ESF +, Erasmus +, ERDF, etc.), but also the tool "Next Generation EU" (like the mechanism of recovery and resilience, and REACT-EU). Consequently, there is a big opportunity for the substantial upgrading of the VET system in Greece, but institutional changes are essential in order to achieve better connection of EU co-financing with the performance of VET programmes in terms of employability, upgrading of skills and social inclusion.

Co-ordinating the Greek educational system and labour market requirements

As a result of the ineffective school and vocational orientation (SEP), drop-out rate in vocational lyceums (EPA.L.) amounts to 11%, which is two and a half times over the average rate of the educational system as a whole. Also, the proportion of girls (37%) and boys (63%) in the pupil's population of EPA.L. is always at the expense of the females and diminishes the chances to increase the employability of women (Dianeosis, 2020).

Apart from the social cost, drop-out has economic consequences not only in the short-run (high-youth unemployment, benefits, higher number of NEETs - young people not in education, employment or training), but also in the long-run (low productivity, marginalization part of the labour force, and lower tax revenues). For the last, existing studies show that one more year of schooling can increase personal income in total by 4-10%. Besides, the decrease of drop-out rates in schools is an important objective of the EU (Dianeosis, 2022). The percentage of young people (aged 20-24) not in education, employment or training (NEETs) is 22.5% in comparison to 17.5% in 2009 (OECD, 2020), one of the highest among OECD countries.

Between 1988 and 1999, according to Tsakloglou and Cholezas (2005), the proportion of the labour force having tertiary education qualifications increased from 14.1% to 22.2%. Moreover, using comparable ECHPS data for 1994 to 2001, Dolton and Marcenaro-Gutierrez (2009) found that Greece had one of the highest over-education rates in the EU. Thus, it would seem to have been the case that a high percentage of the big investment in human capital had been ploughed into professions that contrasted with the requirements of the Greek labour market (Livanos and Pouliakas, 2009; Ministry of Education, 2021).

During the time period of the focal study, for the vast numbers of young people who did not succeed in gaining tertiary education places the need for procedures for their education, training and entry into the labour market was not anticipated (Iliades, 1995). Subsequent work by Greek researchers illuminates further the underlying causes of high rates of unemployment among graduates and the difficulties of their transitioning from education into work. For Kanellopoulos et al. (2003), these problems came about owing to higher education being oriented towards public sector requirements and hence, failed to address business sector needs. In contrast, Liagouras et al. (2003), Karamessini (2008, 2010) and Thomaidou et al. (2009) argued that the most important issue was the mismatch between higher education outflows and the domestic requirement for highly educated staff.

The current performance of the Greek VET system is lagging behind in comparison to the rest of the EU, regarding the participation in initial and continuing VET in skills' development, as well as concerning the matching between education and labour market needs (IOBE, 2021). Also, the efficiency of the matching between vocational training and employment although progressing in the 2010s, it is still not satisfactory (K.AN.E.P./GSEE, 2020). The VET faces long-run challenges, like the transition to the knowledge society, rapid technological and climate changes, and the internationalization of education and labour market.

I now proceed to discuss the macro-level of the analysis.

Macro-level Analysis

First, the Greek political economy, the EES and that nation's reform capacity are discussed, and then there is a link of this research to the present economic situation in Greece and also during the severe economic crisis.

Political economy, the EES and reform capacity in Greece

When it comes to adopting reforms in accordance with the Lisbon Agenda (2000), for example, Greece has had a lamentable record, despite their implementation being strongly promoted by successive governments. This can be greatly attributed to the lack of of an economic or social 'model' being promulgated by those involved in policy making (Featherstone, 2008).

According to the varieties of capitalism (VoC) or comparative political economy (CPE) perspective regarding Southern European states (see Amable, 2003; Bettio and Plantenga, 2004), in Greece, distorted welfare policies and robust regulation have worked together in a detrimental manner. The state's in providing public goods was further weakened by its manifest poor competence and capability. The OECD attributed its failings to the weakness of Greek competition policy in terms of the absence of a competition culture along with entrenched state regulation and price controls (OECD, 2001).

Zartaloudis (2014) raised the matter of the ministerial elites seeing the EES goals as being unworkable in the Greek context and as a consequence, they were generally ignored. In other words, policymakers were reluctant to participate in policy learning from other nations by drawing up a National Action Plan (NAP)/ National Reform Programme (NRP); seeing it as an onerous unnecessary bureaucratic endeavour and hence, no central body for EES was put in place. As a consequence, EES perspectives, goals, reports, country-specific proposals and benchmarking failed to have any impact on Greek employment policy, despite their appearing in a whole host of official documents (Zartaloudis, 2014). In light of this review of the features of the labour market, the structure of vocational training and employment, policy makers' welfare preferences and the backdrop of Greece's political economy, the conclusion drawn here is that the expenditure of EU money for training and the associated training policies were not effective in tackling unemployment.

Associating this research with the economic situation during the Greek crisis

The crisis had a serious impact on employment in Greece, in particular, exacerbating the structural unemployment and long-term unemployment (LTU) situation (OECD, 2011). It seems that cyclical unemployment had become structurally embedded, which meant became even more problematic for those seeking to return to the workplace after the recession (OECD, 2010; Guichard and Rusticelli, 2010). Greek GDP has fallen by over 25% since 2008 (Antonopoulou *et al.*, 2014). In addition, one million more people entered the ranks of the unemployed, totalling 1,387,520 persons (EL.STAT, LFS, January 2014), 71% of whom, had been jobless for more than a year (EL.STAT) (Antonopoulou *et al.*, 2014).

Through this research, in terms of the linking of past and present in Greece by comparing the meso and macro levels, the following has emerged:

(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);

(c) this 'non-effect' and the 'inadequate'/limited vocational training 'system' are outcomes and institutions of a type of political economy that produces and sustains a labour market with a low and medium-skills equilibrium (macro-level).

Despite the EU continuing to promote and fund vocational training inspired by an unchanged paradigm, the evidence suggests that this does not work in the Greek case. In fact, contemporary reforms in Greece would appear to have pushed labour costs even lower, without there being any growth in demand for high skilled employees. In response, substantial numbers of well educated Greeks have decided try their luck in Northern Europe in terms of employment and a better lifestyle. This could turn out to be an immovable barrier to any redirecting of Greece's economy to one embracing higher level skills (Dedoussopoulos *et*

al., 2013). Further, the rising demand for social security payments will drive pension pots down, thus requiring significant additional resources being earmarked for pension funds (Dedoussopoulos *et al.*, 2013).

Failure of successive governments to grasp what reforms are required, has led to further deterioration, particularly after the recent economic crisis. Clearly, policy makers at the national level need to undertake institutional reform that involves a joined up approach to addressing the failings of the current policy configuration. At the supranational level, the EU Commission needs to be urged to move away from its one-size-fits-all approach to skills development and it also, should widen its audit to cover the content of programmes so as to assess their appropriateness for improving the situation.

Summary of Findings and Implications of the Research

In general, the econometric findings concerning education have revealed that university graduates had a greater probability of a job than those with lower educational achievement, thereby confirming human capital theory. Nevertheless, this was not so in the field of training, with this variable emerging as being statistically insignificant. Moreover, the results of the interaction effects analysis for training did not vary from those for the main effects, except for those from 25 to 64, who were found to be less likely to be in employment than those 15-24 years old. In addition, regarding training, people who lived in rural areas were less likely to be employed than those living in Thessaloniki or in the rest of the urban areas.

The overall conclusion for the period under investigation regarding education and training delivery in Greece, as covered in sections 5 and 6, is that the results of the econometric analysis give supporting evidence to the meso and macro-levels in relation to the structural weaknesses of the labour market, training policies and the state as a whole. Drawing upon the review of the interplay between the labour market structures, vocational institutional characteristics and attributes of the Greek political economy, the conclusion is made that the investment of EU money for training and the policies promoted by that body, have, by and large, been ineffective. While it is acknowledged that EU training agendas may have been ineffectual even in Northern European countries, the underlying causes for this differ when compared to the Greek case. One key idiosyncrasy of that nation's labour market landscape manifests itself in the staggeringly high levels of unemployment for the skilled labour force.

The failure of the feedback mechanisms to function effectively interlinked/interacted can be attribute to domestic factors and the financing processes of EU training, a situation that has continued to the present day. The EU institution responsible for allocating the funding completely disregarded labour market outcomes, restricting its role to ascertaining whether the money was being directed towards skills training in its auditing process. Whilst the approach of the EU in the context of vocational training is predominantly shaped by human capital theory, this is incompatible with the Greek VET system. The fundamental flaw in education and vocational training in Greece has been the failure to develop an integrated system for assessing the skill needs and shortages in the economy, which has hindered its capacity to match labour supply and demand. In spite of this obvious incongruity, the EU has continued and is continuing to finance training programmes that would seem to be doomed to fail, if it continues to project itself as low to medium-skilled economy in relation to its skills requirements. Hence human capital theory regarding training does not resonate with the Greek context, because its labour market in its current form is unable to absorb people with high skills. It would appear that a well thought through plan aimed at matching training to labour market requirements remains elusive. In sum, whether intentionally or not, EU funded training was utilised generally for 'parking' the unemployed rather than being part of a well articulated national economic strategy for meeting Greek labour market needs.

One of the contributions of my study 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. I have demonstrated that human capital theory, under certain circumstances, cannot provide explanatory power regarding the workings of labour markets. Specifically, I have shown how Greece is such a case, because high unemployment has traditionally coincided with phenomena like over-education and a low skills employment equilibrium, thereby not following the trajectory of human capital theory. The

results of my research bring into question the usefulness of vocational training programmes as it was at the end of the last millennium and still are today. For, I have provided strong evidence that they have been poorly run, uncoordinated and lack any evaluation, something that has not been so comprehensively brought to light previously.

My approach in this study - and its potential for future research applications - contributes to the effort for better analytical strategies that widen our understanding of the impact of vocational training programmes, beyond the characteristics of the individual trainee, to include important institutional and macro-economic factors to explain policy success or failure, and draw lessons for policy more generally.

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Appendix I

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