What determines self-employment? A comparative study

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Abstract

This paper consists of a comparative study of the incidence of self-employment between Greece, which has the highest rate of self-employment in the European Union, and the UK, which has amongst the lowest. Data from the Greek and the UK Labour Force Surveys are used in order to assess how personal attributes of an individual have an impact on the incidence of self-employment. It is found that common patterns exist between these two countries. In particular, it is found that for both countries, males have greater odds of being self-employed than females, older people have greater odds than younger, individuals employed in the primary and tertiary sectors have greater odds than the ones employed in the secondary, and that individuals with primary or secondary education have greater odds of being self-employed than individuals holding higher degrees. The incidence of self-employment is also found to differ according to the occupation of the individual. On the other hand, the findings indicate that individuals, residing in London, have greater odds of being self-employed than individuals working outside UK's capital, whereas in Greece the pattern is reversed.

Introduction

There is a wide range of studies researching aspects of self-employment (SE) both at macroeconomic and microeconomic level. At the macroeconomic level, many of the studies research the determinants of SE within a number of macroeconomic variables, such as unemployment rate and *per capita* GDP (Acs, Audretsch and Evans 1994; Staber and Bogenhold (1993); Robson and Wren (1999); Blanchflower (2000); Parker and Robson (2004). On the other hand, most of the studies at the microeconomic level explain why an individual might choose to be self-employed over paid employment, having as dependent variables negative employment experiences, desire for autonomy, discrimination and expected earnings (Taylor 1999, 2001, 2004; Martinez-Granazo 2002, Henley 2004). This study uses micro data in order to examine how the personal attributes of the individual influence the incidence of SE. The present study aims to contribute to the SE literature by comparing the evidence of two countries with very different patterns of SE. Whereas for the UK a wide literature on SE already exists (e.g Taylor 1999, 2004; Galt and Moenning 1996), no previous studies have examined the incidence of SE in Greece.

Self-employment in Greece and the UK

Even though the number of self-employed people rose dramatically in the UK during the 1980s, the rate of SE in the UK today is below the average EU level. On the other hand, in Greece, despite the fact that the rates of SE are decreasing, the average rate is significantly higher than the EU average. Figure 1 presents the rates of SE, defined as the percentage of self-employed people in total

employment, for the European Union (EU15), Greece, and the United Kingdom for the period 1975-2004.

Data used

The analysis draws on micro data from Labour Force Surveys (LFS) of Greece and of the UK for the second (spring) quarter. The examined period is 2000-2004 for Greece and 2001-2004 for the UK. For the purposes of the analysis of this paper, only the observations that classify an individual as economically active are used. Seven individual level attributes are set as independent variables: marital status, sector of economic activity, age group, region of residence, level of qualification, and occupational category. In addition, a time trend has been set as independent variable.

Econometric Specification

In order to carry out the analysis, it will be assumed that the available data informs us of only whether individual observations are in one category (self-employed) or in a second category (wage earners). Therefore, the dependent variable is a dummy variable that takes the value 1 if an individual is self-employed (positive outcome) and the value 0 if an individual is a wage earner (negative outcome).

The logit model assumes that Z_i is a logistic random variable. Therefore, the probability that an individual will be self-employed given her/his attributes can be computed from the logistic cumulative distribution function (cdf) evaluated at Z_i:

$$P_i = F(Z_i) = 1 / (1 + e^{-z_i}) \qquad (1)$$

where P_i is the probability that individual i is self-unemployed, F(.) is the logistic cdf evaluated at a specific value. Z_i ranges usually from -4 to +4 as P_i goes from 0 to 1, and when $Z_i=0$, $P_i=0.5$.

From equation (1), we get

$$P_i (1 + e^{-z_i}) = 1$$

$$1 + e^{-z_i} = 1 / P_i$$

$$e^{-z_i} = (1 - P_i) / P_i$$

$$e^{z_i} = P_i / (1 - P_i) \qquad (2)$$

$$Z_i = Ln [P_i / (1 - P_i)] =.$$

$$Ln [P_i / (1 - P_i)] = \alpha + X_{i1}\beta_1 + X_{i2}\beta_2 + X_{i3}\beta_3 + X_{i4}\beta_4 + X_{i5}\beta_5 + X_{i6}\beta_6 + X_{i7}\beta_7 + X_{i8}\beta_8 + \varepsilon_i \quad (3)$$

Where X_{i1} denotes marital status, X_{i2} denotes sector of economic activity, X_{i3} denotes marital status, X_{i4} denotes age group, X_{i5} denotes region of residence, X_{i6} denotes level of qualification, X_{i7} denotes occupational category and X_{i8} denotes a time trend.

The dependent variable in the logit model is the log of the odds that an individual will be self-employed. The regression coefficients are estimated using the maximum likelihood method. A given slope coefficient shows how the log of the odds changes as the corresponding explanatory variable changes by one unit, or as an attribute different from that of the base category changes for nominal variables.

When the regression coefficients are exponentiated, the derived values (or antilogs) indicate the effect of each explanatory variable directly on the odds of being self-employed rather than on the log of odds. In order to calculate the percentage changes in the odds that corresponds to one unit change in explanatory variables, 1 must be subtracted from the antilogs and the results must be multiplied by 100 (Gujarati 1999).

The probability that an individual i will be self-employed can be estimated from the antilogs of both sides of equation (3):

$$P_i / (1 - P_i) = e^{L_i}$$

$$P_i = (1 - P_i) \, e^{L_i}$$

$$P_i = e^{L_i} / (1 + e^{L_i})$$

Where L_i is the estimated value of the response variable from the regression for individual i.

Empirical results

The results of the econometric analysis are reported in Tables 1&2. The coefficients are computed using the maximum likelihood estimation (MLE). The model chi-square suggests that the models are statistically significant (chi2=0.000), and the results of the model are quite robust as most of the coefficients are significant at the 1% level.

The odds ratio is a measure of association for two variables and is presented in column 1 of Tables 1&2. For example, the odds of being self-employed is calculated as follows for the gender variable: suppose the odds of being self-employed for a female individual is A, and the odds of being self-employed for a male individual is B (which is [1-A]). The odds ratio is calculated by dividing the odds of being self-employed for a female by the odds of being self-employed for a male. For example, in the UK, the odds ratio of .59 for Female (from Table 2) means that the odds of a female individual being self-employed is .59 times less than the odds of a male individual being self-employed. Similarly, in Greece a female has lower odds (.76) of being self-employed than a male (from Table 1); however, the odds are higher comparing to the UK. An odds ratio above 1.0 means that the odds of being self-employed for a given category are greater than for the reference category and similarly an odds ratio below 1.0 means that the odds of being self-employed for a given category are less than the reference category. The closer the odds ratio is to 1.0, the more independent is the dependent variable of the explanatory variables.

The sector of economic activity is another factor that influences the incidence of self-employment. In particular, in both Greece and the UK, individuals in the

primary (25.65 and 7.42 respectively for Greece and the UK) and tertiary sector (1.39 and 1.40) have lower odds of SE when compared to the secondary sector.

It is also found that the probability of being self-employed varies according to an individual's marital status. Married individuals, both in Greece and the in UK, have higher probabilities of being self-employed than single and divorced individuals. In particular, for a single individual in the UK (Greece) the odds of being self-employed is .78 (.84) times less than that of a married individual, which is set as the reference category. In addition, divorced individuals have lower odds (.69 and .94 respectively in Greece and the UK) of being self-employed than married ones. As for widower individuals, the odds of SE are higher than the married ones in the UK (1.16) but lower in Greece (0.69). Furthermore, it is found that the age-group of the individual also affects the odds of being self-employed. In particular, young individuals have lower odds of SE than older ones. As it can be seen from Tables 1&2, in both examined countries, the older an individual is, the higher the probability of being self-employed.

A very interesting and comparative finding of this paper is that the incidence of SE is much more likely for individuals who are residents of the capital city of the UK, London, than other regions of the UK whereas in Greece, the picture is the opposite. In particular, residents of regions outside Athens have much higher odds of being self-employed than residents of Athens.

Furthermore, the level of education of the individual is also found to affect the odds of SE. In Greece, compared to with university degree holders, the odds of SE are lower for individuals holding other types of qualifications but higher for

those with primary and secondary education. As for the UK, individuals holding lower qualification than NVQ 5, which is set as the reference category, have higher odds of SE. The individuals with no qualifications, comparable to NVQ1, are found to have the highest odds of SE.

The odds of SE are also affected by the occupational category of the individual. Here, the reference categories were set as clerks for Greece and as administrative and secretarial for the UK as the occupational classification used in these countries differ. However, the categories chosen are very similar. In both counties, the incidence of SE is higher for other occupations than the ones set as reference category. In Greece, the legislators have the highest odds of SE (27.46), followed by the skilled agricultural workers (4.49), and the craft and related trades workers (2.01). As for the UK, skilled trades occupations have the highest odds of being self-employed (10.75), followed by managers and senior officials (4.90), and professional occupations (4.70).

Finally, the incidence of SE is affected by the time trend to a greater extent in Greece (1.16) than in the UK (1.02).

Conclusions

This study has examined the incidence of self-employment in Greece and the UK. In particular, data from the Labour Force Surveys were used in order to identify how personal attributes of an individual influence whether he/she will be self-employed or not. Even though the rates of SE are very different between these two countries some common patterns were found across to exist. In particular, it was found that males have greater odds of being self-employed

than females, older people have greater odds than younger, individuals acting in the primary and tertiary have greater odds than the ones acting in the secondary, and that individuals with primary or secondary education have greater odds of being self-employed than individuals holding higher degrees. In addition, the incidence of self-employment was found to differ according to the occupational category of the individual. On the other hand, it was found that residents of the capital city of the UK have greater odds of being self-employed than the ones living outside of London whereas in Greece the pattern is reversed.

Acknowledgements

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Figure 1 Self-employment (%) 1975-2004
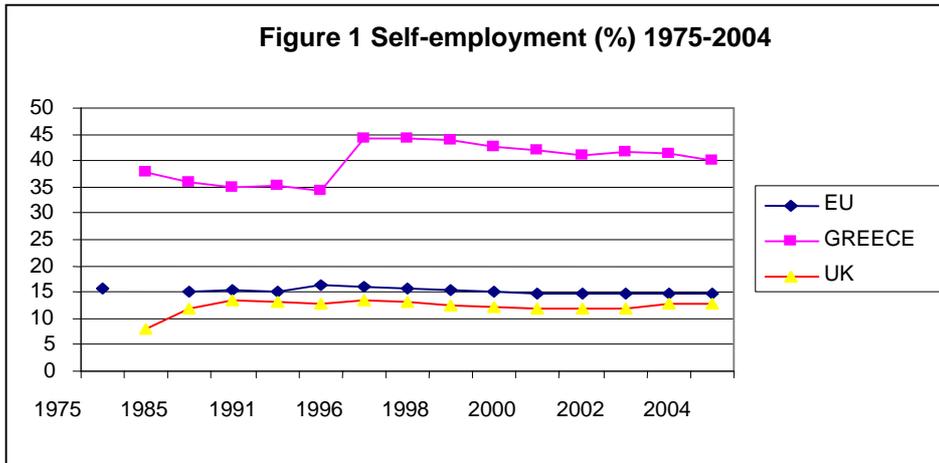
Source: Employment in Europe 2000 (for the period 1975-1994), Employment in Europe 2004 (for the period 1994-2004)

Table 1 Self-employment in Greece, Logit regression results, 2000-2004 (LFS data, 2nd quarter)

Explanatory variables		(1) Odd Ratios$^{\#}$	(2) z-ratios
Gender	Male	§	
	Female	.76	-17.29(***)
Sector	Primary	25.65	79.68(***)
	Secondary	§	
	Tertiary	1.39	17.66(***)
Marital Status	Single	.84	-8.85(***)
	Married	§	
	Widow	.68	-6.62(***)
	Divorced	.69	-8.41(***)
Age Group	15-24	.75	-8.69(***)
	25-34	§	
	35-44	1.22	10.16(***)
	45-54	1.37	14.63(***)
	55+	2.53	35.44(***)
Region	Eastern Macedonia	1.41	10.85(***)
	Central Macedonia	2.08	23.50(***)
	Western Macedonia	1.55	10.81(***)
	Ipeiros	1.72	16.95(***)
	Thessaly	1.87	19.50(***)
	Ionian Islands	2.08	19.50(***)
	Western Greece	1.74	17.71(***)
	Sterea Ellada	1.63	15.08(***)
	Rest of Attica	1.34	10.13(***)
	Peloponnisos	2.13	24.18(***)
	North Aegean	2.15	17.09(***)
	South Aegean	1.76	14.30(***)
	Crete	1.61	15.90(***)
	Athens	§	
	Thessalonica	1.23	8.50(***)
Level of Qualification	PhD	.37	-6.18(***)
	Masters	.62	-4.27(***)
	University Degree	§	
	Tech. University Degree	.79	-4.70(***)
	Vocational Q./College	.99	-0.13
	Other Qualification	.19	-16.10(***)
	Primary Education	1.35	12.57(***)
	Secondary Education	1.76	20.82(***)
Occupational Category	Legislators, senior officials and managers	27.46	85.70(***)
	Professionals	1.58	14.63(***)
	Technicians and associate professionals	1.01	0.27
	Clerks	§	
	Service workers and shop workers	1.37	12.11(***)
	Skilled agricultural and fishery workers	4.49	22.65(***)
	Craft and related trades workers	2.01	27.18(***)
	Plant and machine operators and assemblers	1.13	3.77(***)
Time		1.16	26.39(***)

$^{\#}$ Percentage changes in the odds of being self-employed. § = Indicates the omitted dummy variable
*** = Statistically significant at the 1% level. ** = Statistically significant at the 5% level.
Log likelihood =-66363.874. Prob > chi2= 0.000. Pseudo R2 = 0.3041. Number of obs.: 141,469.

Table 2 Self-employment in the UK, Logit regression results, 2001-2004 (LFS data ,2nd quarter)

Explanatory variables		(1) Odd Ratios[#]	(2) z-ratios
Gender	Male	§	
	Female	.59	-27.33(***)
Sector	Primary	7.42	41.07(***)
	Secondary	§	
	Tertiary	1.40	17.44(***)
Marital Status	Single	.78	-11.04(***)
	Married	§	
	Widow	1.16	2.56(***)
	Divorced	.94	-2.02(**)
Age Group	15-24	.33	-23.97(***)
	25-34	§	
	35-44	1.22	8.89(***)
	45-54	1.33	12.39(***)
	55+	1.87	24.31(***)
Region	North	.51	-14.84(***)
	Yorkshire and Humberside	.58	-15.07(***)
	East Midlands	.66	-11.40(***)
	East Anglia	.73	-7.09(***)
	London	§	
	Rest of South East	.80	-7.85(***)
	South West	.88	-3.82(***)
	West Midlands	.58	-15.31(***)
	North West	.64	-12.69(***)
	Wales	.74	-7.28(***)
	Scotland	.57	-15.76(***)
	Northern Ireland	.80	-4.82(***)
Level of Qualification	NVQ 5	§	
	NVQ 4	1.18	4.56(***)
	NVQ 3	1.54	11.20(***)
	NVQ 2	1.26	5.52(***)
	NVQ 1	1.34	7.37(***)
	No qualification	1.82	13.96(***)
Occupational Category	Managers and senior officials	4.90	37.20(***)
	Professional occupations	4.70	33.86(***)
	Associate professional and technical	4.47	34.44(***)
	Administrative and secretarial	§	
	Skilled trades occupations	10.75	54.16(***)
	Personal service occupations	3.35	25.10(***)
	Sales and customer service occupation	1.60	8.23(***)
	Process, plant and machine operatives	3.23	24.61(***)
	Elementary occupations	1.32	5.61(***)
Time		1.02	2.96(***)

[#] Percentage changes in the odds of being self-employed. § = Indicates the omitted dummy variable.

*** = Statistically significant at the 1% level. ** = Statistically significant at the 5% level.

Log likelihood = -59409.37. Prob > chi2= 0.000. Pseudo R2 = 0.1291. Number of obs.: 183,116.