Discussion Papers on Entrepreneurship, Growth and Public Policy

0806

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Number of Pages: 10

The *Papers on Entrepreneurship, Growth and Public Policy* are edited by the Group Entrepreneurship, Growth and Public Policy, MPI Jena.
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ISSN 1613-8333

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DOES ENTREPRENEURSHIP CREATE ENOUGH JOBS IN EUROPE?

A NOTE.

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ABSTRACT

In the present note an effort will be made for a contribution to economic theory by extending the discussion paper "Entrepreneurship, Regional Development and Job Creation: The Case of Portugal" by R. Baptista, V. Escárta and P. Madruga, MPI, #0605, in which the authors conclude (among others) that entrepreneurship creates jobs and reduces unemployment. This extension will be feasible by estimating the total economy's entrepreneurship reward for Western European countries and relating it with the total economy's unemployment rate. A regression based on the estimation of total economy's entrepreneurship reward will yield the same main results with the above article not only for Portugal but also for all Western European countries, that in any Western European country entrepreneurship creates enough jobs to reduce unemployment. This generalization with panel data econometric analysis is based on the discussion paper "A Practical Method to Measure Entrepreneurship's Reward: A Note" by M. N. Georgiou, MPI, #3805.

Keywords: Entrepreneurship, Unemployment

JEL classification: M13, E24

This article expresses only the personal opinion of the author and of nobody else.
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PART 1. THEORY

I found the discussion paper of Baptista et al. (2005) very interesting because it proves that entrepreneurship (between other things) creates jobs in Portugal, yielding unemployment reduction. On the other hand, having estimated the banking entrepreneurship's reward in Georgiou (2005), I will try in the present note to measure the total economy's entrepreneurship and relate it with the total economy's unemployment rate. My aim is to examine how entrepreneusrhip reduces unemployment not only in Portugal but also in all Western European countries.

Recalling the paper of Georgiou N. M. (2005), equation (1) can be modified as follows:

$$(1 + wp) = (1 + r_L)(1+ i)(1+ r_{EM}) \qquad (1)$$

where [$\mathbf{r_{EM}}$] expresses the residual as the average annual reward of total entrepreneurship, [**wp**] stands for the annual growth rate in wholesale prices (total manufacturing sector, as in line 63 of International Financial Statistics (IFS)). Besides, [$\mathbf{r_L}$], which is the lending rate (as in line 60p of IFS) will be now the average cost of loans that each company bears for the working capital as well as the fixed assets. It should be noted however that since [$\mathbf{r_L}$] includes the inflationary adjustment, this lending rate will be "deflated" and converted into [$\mathbf{r_{LD}}$] as in (2):

$$r_{LD} = \frac{r_L}{(1+i)} \qquad (2)$$

Since the inflationary adjustment appears already in (1) above, therefore a double counting of inflationary adjustment will be avoided. I further assume that wages and salaries are 100% linked to consumer inflation [**i**] (as expressed in line 64 of IFS). At this point I would like to mention as a comment, that if the cost of labour (wages and salaries) is linked to consumer inflation [**i**] by a fraction of 100% (say α: $0 < \alpha < 1$), then the above term (1 + i) will be converted to $(1 + \alpha * i)$, and ceteris-paribus the estimated value of [$\mathbf{r_{EM}}$] will be a bit higher. However, no matter what the value of [α] is, the remaining part [$\mathbf{r_{EM}}$] expresses as an average the entrepreneurship's reward for the total economy. In the value of [$\mathbf{r_{EM}}$] it is included the inflationary risk and the risk of undertaking a venture.

Hence, assuming that α = 1, according to the above mentioned we are able to estimate the total economy's entrepreneurship reward as in (3):

$$r_{EM} = \frac{(1+wp)}{(1+i)*(1+r_{LD})} - 1 \qquad (3)$$

PART 2. THE ECONOMETRIC MODEL

2.1 The Formulation of the Model

I test the hypothesis that in the whole economy entrepreneurship reduces unemployment, because it creates enough jobs. In econometrics this is expressed as in (4):

$$U_{it} = c_0 + c_1 r_{EMit} + error_{it} \qquad (4)$$

With ex-ante expected $c_1 < 0$.

The subscript [i] refers to the country and the subscript [t] refers to the year. U is the total unemployment rate of each country in each year. Data are taken from the IFS, and are elaborated. The examined period is 1993 – 2002, on an annual basis, covering

the countries: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Netherlands, Norway, Portugal, Spain, Sweden and UK (as in table 3). The panel data sample is not balanced, and the total number of observations is 133. Panel data equation (4) will be estimated based on the software package EVIEWS.5.

2.2 Econometric Comments

In this sample there is heteroskedasticity (cross section and in time periods). To handle this problem, since the sample is large, the method of EGLS or FGLS (feasible generalized least squares) will be used. According to the work of Yaffee (2003, p.10) the methods of "fixed effect" as well as "random effect" are not efficient when there is heteroskedasticity (either between time periods or between cross sections). In large samples however the method of EGLS or FGLS (feasible generalized least squares) can handle the above-mentioned problem of heteroskedasticity.

This method EGLS will be used twice. At first with cross section weights, and second with period weights. The results are in table 1 and diagnostic tests in table 2. The estimated regression is accepted only in the cross section weights (see equation (5)). This means that the correction of cross section heteroskedasticity is more important than the correction of time heteroskedasticity (causing in the case of time heteroskedasticity an unaccepted normality, although the other tests (1, 2,…8) are satisfactory (see in table 2, period weights)). In other words, according to the above model, it seems that the cross country differences are more serious than the time differences. Hence the estimated regression is as in (5):

$$U = 0{,}088 - 0{,}040\ r_{EM} \qquad (5)$$

I observe that model (4) estimated as in (5) meets the three required criteria of homoskedasticity, specification and normality. Further there is not autocorrelation. The constant term is positive and statistically significant. Besides, the coefficient of [$\mathbf{r_{EM}}$] is negative and statistically significant, as initially assumed. The adjusted R^2 is high.

PART 3. CONCLUSIONS

In the present note it is showed that in all Western European countries entrepreneurship reduces unemployment, because it creates enough jobs.

This method can be modified to estimate the entrepreneurship's reward in any sector of the economy (say: food, chemicals, clothing, construction, and so forth) provided that sectoral data are available. In case they are, then we can make inter-sectoral comparisons regarding how much a sectoral entrepreneurship reduces the corresponding sectoral unemployment and hence to take appropriate corrective actions.

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APPENDIX

Table 1: Results

Model	**Method EGLS (Cross section weights)**	**Method EGLS (period weights)**
Constant	0,088 (18,38)	0,102 (19,62)
r_{EM}	-0,040 (-3,03)	0,009 (0,19)
Adjusted R^2	0,640	0,760
Durbin-Watson	2,077	1,889

Table 2: Diagnostic Tests

TESTS	Method EGLS (Cross section weights)	Method EGLS (period weights)	Critical values (at 95%)
Heteroskedasticity	0,028	0,375	3,840
Heteroskedasticity	0,118	0,528	3,840
Heteroskedasticity	0,028	0,380	3,841
Heteroskedasticity	0,113	0,393	5,991
Heteroskedasticity	0,097	0,880	7,815
$RESET_1$	1,409	1,549	3,841
$RESET_2$	1,351	1,562	5,991
$RESET_3$	1,292	1,574	7,815
Normality	0,560	7,197	5,991

Test 1: Regression of the squared residuals on X. That is, $u_t^2 = x_t'\gamma_1 + v_{t,1}$

Test 2: Regression of absolute residuals on X. That is, $| u_t | = x_t'\gamma_2 + v_{t,2}$ (a Glejser test)

Test 3: Regression of the squared residuals on $\hat{Y}$

Test 4: Regression of the squared residuals on $\hat{Y}$ and $\hat{Y}^2$

Test 5: Regression of the log of squared residuals on X (a Harvey test)

Test 6: Regression of residuals on $\hat{Y}^2$

Test 7: Regression of residuals on $\hat{Y}^3$

Test 8: Regression of residuals on $\hat{Y}^4$

Test 9: Normality test

Table 3. Data Collection

Year	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	Total 1
Austria						ν	ν				**2**
Belgium	ν	ν	ν	ν	ν	ν	ν	ν	ν	ν	**10**
Denmark	ν	ν	ν	ν	ν	ν	ν	ν	ν	ν	**10**
Finland	ν	ν	ν	ν	ν		ν	ν	ν	ν	**9**
France	ν	ν	ν	ν	ν	ν	ν	ν	ν	ν	**10**
Germany	ν	ν	ν	ν	ν	ν	ν	ν	ν	ν	**10**
Greece	ν	ν	ν	ν	ν	ν	ν	ν	ν	ν	**10**
Ireland	ν	ν	ν	ν	ν	ν	ν	ν	ν	ν	**10**
Italy	ν	ν	ν	ν	ν	ν	ν	ν	ν	ν	**10**
Netherlands	ν	ν	ν	ν	ν	ν	ν	ν	ν	ν	**10**
Norway	ν	ν	ν	ν	ν	ν	ν	ν	ν	ν	**10**
Portugal									ν	ν	**2**
Spain	ν	ν	ν	ν	ν	ν	ν	ν	ν	ν	**10**
Sweden	ν	ν	ν	ν	ν	ν	ν	ν	ν	ν	**10**
UK	ν	ν	ν	ν	ν	ν	ν	ν	ν	ν	**10**
Total 2	**13**	**13**	**13**	**13**	**13**	**13**	**14**	**13**	**14**	**14**	**133**

Source: International Financial Statistics, calculations are mine.