Chapter 9
Self-Employment and Unemployment in Spanish Regions in the Period 1979–2001

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Abstract This chapter investigates the relation between changes in self-employment and changes in unemployment at the regional level in Spain in the period 1979-2001. We estimate a vector autoregression model as proposed by Audretsch, Carree, van Stel and Thurik (2005) using a data base for Spanish regions. By estimating the model we are able to empirically distinguish between two directions of causality. On the one hand increases in self-employment may contribute to lower unemployment rates (the 'entrepreneurial' effect). On the other hand, higher unemployment rates may push individuals into self-employment, thereby contributing to higher self-employment rates (the 'refugee' effect). In our analysis of these two effects we distinguish between higher and lower income regions within Spain. We find empirical support for the 'entrepreneurial' effect to exist, both in higher income and in lower income regions. As regards the 'refugee' effect, the evidence is mixed. We find empirical support for this effect for higher income regions. Remarkably, we do not find evidence for a 'refugee' effect in lower income regions of Spain, even though unemployment rates are on average higher in these regions. We argue that this may be partly related to a lack of incentives for unemployed individuals in these regions to find paid employment.

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9.1 Introduction

Recently the relation between self-employment and unemployment has been the topic of many scientific investigations. The relation is of considerable policy importance as self-employment is seen as a route to escape unemployment. Not only do unemployed individuals who turn self-employed contribute to bringing down unemployment by providing a job for themselves, but they may also hire employees who would otherwise not find a job. The relation is quite complex however as there are two directions of causality involved. On the one hand self-employment may lead to a decrease in unemployment, and on the other hand unemployment may lead to an increase in self-employment (Audretsch et al. 2005). The first effect may be labeled the 'entrepreneurial' effect. A higher number of entrepreneurs in an economy contributes to higher levels of competition which, in the longer run, may lead to higher productivity levels and lower levels of unemployment (Geroski 1989). The second effect may be labeled the 'refugee' effect. When unemployment levels are high, an unemployed individual may find it hard to find a wage-job as a paid employee, and may found a new firm in order to escape from unemployment.[1]

As the 'entrepreneurial' and 'refugee' effects are in opposite directions, it is important to disentangle these two effects in empirical work. Also, it is important to use long times series as there may be considerable lags involved in the relation (Fritsch and Mueller 2004). Using a data base for 23 OECD countries in the period 1974-2002, Audretsch et al. (2005) estimate a two-equation model where the two effects are estimated in separate equations. These authors find evidence for both effects to exist, but the 'entrepreneurial' effect is found to be stronger. However, as the estimation results of Audretsch et al. (2005) are based on 23 countries, it is imaginable that the relation is different for individual countries. For instance, the 'refugee' effect may be stronger in countries with relatively high unemployment levels such as Spain.

The present chapter focuses on the relation between self-employment and unemployment in Spain. The relation may be particularly interesting for Spain as unemployment levels are historically very high. Our approach is inspired by that of Verheul et al. (2006). These authors also focus on the relationship for Spain, by investigating the specific residuals for Spain from the Audretsch et al. (2005) estimations. Their analysis suggests that not only the quantity but also the increased quality of self-employment may have contributed to recent decreases in the Spanish unemployment rate. However, their research method is indirect as the coefficients on which the studied residuals are based, are established for the whole sample of 23 OECD countries. In the present paper we propose a more direct method to investigate the relation for Spain by estimating the Audretsch et al. (2005) model using data on self-employment and unemployment rates for 17 Spanish regions in the period 1979-2001. In addition, as there are quite severe differences in income levels between different parts of Spain, we also investigate whether the relation

[1] For a more elaborate description of these effects we refer to Audretsch et al. (2005).

differs between higher income regions and lower income regions within Spain. For instance, we may expect the 'refugee' effect in lower income regions (where unemployment levels are higher) to be stronger compared to higher income regions.[2] The aim of our exercises is to throw more light on the nature of the relation between self-employment and unemployment for Spain.

The chapter is organised as follows. In Section 2 we will present our data base on self-employment and unemployment rates for Spanish regions. In Section 3 we will describe the empirical model. In Section 4 we will present and interpret the estimation results while the final section concludes.

9.2 Self-employment and Unemployment Rates in Spanish Regions

Our data base consists of annual data for 17 Spanish regions (NUTS-II spatial aggregation level) and the sample period spans from 1979 to 2001. We use two variables: the self-employment rate and the unemployment rate. The self-employment rate is defined as the number of self-employed individuals including own account workers and employers, divided by total labour force. The unemployment rate is defined as the number of unemployed divided by total labour force. Both variables have been gathered from Encuesta de Poblacion Activa (EPA) provided by the Statistical Spanish Institute (INE). The data relate to the whole private sector, i.e. including all sectors of the regional economies.

As an illustration Table 9.1 shows the self-employment rates for each region for the years 1979, 1989 and 2001. There are great differences across regions. For example, Galician self-employment rates are on average twice as high as Basque Country (País Vasco) self-employment rate. As we can see, self-employment rates are decreasing during the last years. The predominant trend is downward with the exception of País Vasco. Statistics on international labour (e.g. *OECD Labour Force Statistics*) show that the downward trend in self-employment is mainly due to agriculture where the number of self-employed decreases drastically over the last few decades.

Table 9.2 reports data on the unemployment rate for the same years in our sample. As we can observe, during the 1980s, the unemployment rate was, on average, increasing and in the 1990s, this rate was decreasing again. The increasing unemployment rate during the 1980s was in part related to economic reforms following the switch from the Franco dictatorship to democracy in the 1970s. The decrease in unemployment during the 1990s was in part related to the large amounts of EU structural funds being channelled to the Spanish economy following EU-entry

[2] Alba-Ramírez (1994) shows that the duration of unemployment significantly increases the probability of becoming self-employed for Spain and the United States.

Table 9.1 Self-employment rates in Spanish regions over the period 1979-20011

Region	1979	1989	2001
Andalucía	18.43	14.24	13.34
Asturias	21.89	18.85	20.09
Canarias	16.58	12.70	12.07
Cantabria	23.70	19.43	16.60
Castilla la Mancha	26.66	22.61	19.77
Castilla León	27.15	24.38	21.43
Extremadura	25.17	20.06	20.16
Galicia	33.03	28.57	22.51
Murcia	19.61	14.18	14.06
Comunidad Valenciana	17.23	17.19	15.20
Average of lower income regions	22.95	19.22	17.52
Aragón	22.94	22.55	18.90
Baleares	20.95	17.68	14.82
Cataluña	15.11	14.46	14.54
Madrid	10.04	9.58	9.64
Navarra	19.92	18.23	18.55
País Vasco	11.89	13.59	14.70
La Rioja	29.33	24.16	25.34
Average of higher income regions	18.60	17.18	16.64

Source: INE (EPA). Self-employed workers include both own account workers and employers. Self-employment rates relate to the whole economy (i.e. including agriculture)

Table 9.2 Unemployment rates in Spanish regions over the period 1979-2001

Region	1979	1989	2001
Andalucía	13.85	27.00	18.67
Asturias	7.34	18.01	7.74
Canarias	10.63	21.25	10.75
Cantabria	5.50	17.65	8.69
Castilla la Mancha	7.67	14.19	9.49
Castilla León	6.73	16.58	10.05
Extremadura	13.49	26.63	14.51
Galicia	3.40	12.32	11.02
Murcia	7.96	16.43	10.66
Cdad. Valenciana	6.64	15.46	9.44
Average of lower income regions	8.32	18.55	11.10
Aragón	6.48	12.16	4.99
Baleares	4.83	10.76	5.95
Cataluña	7.99	14.16	8.63
Madrid	10.38	13.00	7.57
Navarra	8.42	12.60	4.85
País Vasco	9.36	19.28	9.79
La Rioja	4.14	9.91	4.52
Average of higher income regions	7.37	13.12	6.61

Source: INE (EPA).

in 1986.[3] Besides the heavy *fluctuations* in the unemployment rates we also note that the *level* of unemployment is structurally high, in particular in the low-income regions.[4] Verheul et al. (2006) argue that this may be related to the relatively generous unemployment benefits in Spain and a relatively low level of labour market flexibility.

In the present chapter we will investigate whether increases in self-employment lead to subsequent decreases in unemployment (the 'entrepreneurial' effect) and whether increases in unemployment lead to subsequent increases in self-employment (the 'refugee' effect). We also investigate whether there are differences in these hypothesized effects between higher income regions and lower income regions. For instance, from Table 9.2 we see that unemployment is considerably higher in lower income regions hence we may expect the 'refugee' effect in these regions to be stronger compared to higher income regions. Concerning the 'entrepreneurial' effect, it could be that human capital levels differ between higher and lower income regions and hence that the impact of self-employment on unemployment differs as well (van Stel et al. 2005).

9.3 Model and Methods[5]

As we have seen the relationship between unemployment and entrepreneurship is complex. It is generally assumed that there is a two-way causation between changes in the level of entrepreneurship and that of unemployment: an *entrepreneurial* effect of entrepreneurship reducing unemployment and a *refugee* effect of unemployment stimulating entrepreneurship. Audretsch et al. (2005) try to reconcile the ambiguities found in the relationship between unemployment and entrepreneurship and estimate a vector auto-regression (VAR) model. In a VAR model a vector of dependent variables is explained by one or more lags of the vector of dependent variables, i.e., each dependent variable is explained by one or more lags of itself and of the other dependent variables. Audretsch et al. (2005) estimate a two-equation VAR model with the change in unemployment and the change in entrepreneurial activity as dependent variables. While these authors use a data base on self-employment at the country level (this is the so-called COMPENDIA data base, described in detail elsewhere in

[3] For a more elaborate description of developments in the Spanish economy during the 1970s, 1980s and 1990s we refer to Verheul et al. (2006).

[4] In order to split our sample in higher and lower income regions, we use the regional per capita income levels. The lower income regions (regional per capita income is lower than Spanish per capita income) are Andalucía, Asturias, Canarias, Cantabria, Castilla La Mancha, Castilla León, Extremadura, Galicia, Murcia and Comunidad Valenciana. The other group (per capita income is higher than Spanish per capita income) is formed by Aragón, Islas Baleares, Cataluña, La Rioja, Madrid, Navarra and País Vasco.

[5] This section is based on Verheul et al. (2006).

this book), in the present chapter we will estimate the VAR model using data at the regional level for Spain (see Section 2). The model reads as follows:

$$U_{it} - U_{i,t-L} = \alpha + \sum_{j=1}^{J} \beta_j (E_{i,t-jL} - E_{i,t-(j+1)L}) + \sum_{j=1}^{J} \gamma_j (U_{i,t-jL} - U_{i,t-(j+1)L}) + \varepsilon_{1it} \tag{9.1}$$

$$E_{it} - E_{i,t-L} = \kappa + \sum_{j=1}^{J} \lambda_j (U_{i,t-jL} - U_{i,t-(j+1)L}) + \sum_{j=1}^{J} \mu_j (E_{i,t-jL} - E_{i,t-(j+1)L}) + \varepsilon_{2it} \tag{9.2}$$

where U is unemployment, E is entrepreneurial activity (self-employment), i is a region-index, L is the time span in number of years, and J is the number of time lags included. The expected sign of the joint impact of the β-coefficients is negative and the expected sign of the joint impact of the γ-coefficients is positive. The inclusion of lagged dependent variables on the right hand side in the VAR model allows for a test for the direction of causality (Granger 1969).

Equations (1) and (2) are estimated using ordinary least squares.[6] We consider changes in self-employment and unemployment over periods of two years, i.e., L equals 2. Furthermore, following Audretsch et al. (2005) we test for different time lags, in order to gain insight in the lag structure between unemployment and self-employment. Inclusion of more lags seems more compelling because the employment impact of entrepreneurship is not instantaneous. Rather it requires a number of years for the firm to grow (Fritsch and Mueller 2004). Rather than imposing a lag structure for the impact of the lagged variables in Equations (1) and (2), we test for the statistically superior lag structure by using likelihood ratio tests. We start by including only one lag, and then, one lag at a time, we include further lags until the LR test rejects inclusion of further lags. In terms of Equations (1) and (2), this procedure determines the value of J.

9.4 Results

We estimate the VAR model using data for Spanish NUTS-II regions over the period 1979-2001. As we use bi-annual data, and the maximum lag is four years (given the inclusion of a lagged dependent variable), the number of years included is ten (1983, 1985,..., 2001). Hence in the one-lag model the number of observations is 170 (as there are 17 regions). In the two- and three-lag models we lose one or two years of observations hence the number of observations for these models equals 153 and 136, respectively. As mentioned in the Introduction, we also split the sample in higher and lower income regions to see whether estimation results differ between the two groups. Estimation results are presented in Tables 9.3 to 9.5.

[6] We also applied weighted least squares. The results were similar to those presented in Section 4.

Table 9.3 Estimation results for whole sample

	Model Ia 1 lag	Model Ib 1 lag	Model IIa 2 lags	Model IIb 2 lags	Model III 3 lags
Equation (1):dependent variable $U_t - U_{t-2}$					
Constant	–0.944	–0.992	–1.133	–1.446	–1.139
	(–3.289)	(–3.092)	(–3.281)	(–4.494)	(–3.281)
$E_{t-2} - E_{t-4}$	–0.938	–0.440	–0.467	–0.362	–0.355
	(–3.234)	(–1.348)	(–1.474)	(–1.181)	(–1.188)
$E_{t-4} - E_{t-6}$			–1.240	–1.052	–0.931
			(–3.899)	(–3.493)	(–3.134)
$E_{t-6} - E_{t-8}$					–0.357
					(–1.122)
$U_{t-2} - U_{t-4}$	0.442	0.354	0.368	0.311	0.213
	(6.464)	(4.438)	(4.568)	(4.146)	(2.673)
$U_{t-4} - U_{t-6}$			–0.245	–0.410	–0.351
			(–2.934)	(–5.048)	(–4.299)
$U_{t-6} - U_{t-8}$					–0.274
					(–3.414)
Loglikehood	–1701.268	–1541.124	–1530.420	–1346.324	–1340.352
R^2	0.232	0.143	0.254	0.298	0.365
P-value Granger causality	0.001	0.202	0.001	0.002	0.012
N	170	153	153	136	136
Equation (2):dependent variable $E_t - E_{t-2}$					
Constant	–0.325	–0.305	0.226	–0.229	–0.112
	(–4.208)	(–3.820)	-(–2.500)	(–2.473)	(–1.103)
$U_{t-2} - U_{t-4}$	0.009	0.015	0.026	0.024	0.018
	(0.517)	(0.779)	(1.222)	(1.101)	(0.768)
$U_{t-4} - U_{t-6}$			–0.003	–0.007	0.010
			(–0.153)	(–0.302)	(0.437)
$U_{t-6} - U_{t-8}$					–0.049
					(–2.076)
$E_{t-2} - E_{t-4}$	–0.168	–0.144	–0.110	–0.137	–0.159
	(–2.157)	(–1.769)	(–1.324)	(–1.559)	(–1.823)
$E_{t-4} - E_{t-6}$					
			0.183	0.172	0.218
			(2.192)	(1.984)	(2.511)
$E_{t-6} - E_{t-8}$					0.104
					(1.116)
Loglikehood	–1474.348	–1326.982	–1324.480	–1176.838	–1173.354
R^2	0.022	0.020	0.052	0.064	0.113
P-value Granger causality	0.624	0.437	0.462	0.546	0.088
N	170	153	153	136	136

Note: T-values are between brackets. 'Preferred' models are indicated in italics.

Table 9.4 Estimation results for higher income regions

	Model Ia 1 lag	Model Ib 1 lag	Model IIa 2 lags	Model IIb 2 lags	Model III 3 lags
Equation (1):dependent variable $U_t - U_{t-2}$					
Constant	–0.795	–1.083	–0.746	–1.189	–0.914
	(–1.837)	(–2.334)	(–1.780)	(–3.051)	(–2.473)
$E_{t-2} - E_{t-4}$	–0.105	–0.043	–0.082	0.505	0.419
	(–0.234)	(–0.092)	(–0.175)	(1.052)	(0.951)
$E_{t-4} - E_{t-6}$			–1.471	–1.201	–0.894
			(–3.076)	(–2.740)	(–1.975)
$E_{t-6} - E_{t-8}$					–0.320
					(–0.711)
$U_{t-2} - U_{t-4}$	0.398	0.289	0.389	0.297	0.112
	(3.891)	(2.480)	(3.564)	(2.944)	(1.007)
$U_{t-4} - U_{t-6}$			–0.384	–0.602	–0.449
			(–3.296)	(–5.081)	(–3.849)
$U_{t-6} - U_{t-8}$					–0.371
					(–3.488)
Loglikehood	–699.9941	–631.0241	–620.4896	–544.8206	–538.5164
R^2	0.192	0.120	0.375	0.493	0.585
P-value Granger causality	0.812	0.927	0.006	0.003	0.074
N	70	63	63	56	56
Equation (2):dependent variable E Constant $E_t - E_{t-2}$					
Constant	–0.097	–0.023	–0.023	–0.007	0.052
	(–0.953)	(–0.231)	(–0.203)	(–0.062)	(0.435)
$U_{t-2} - U_{t-4}$	0.063	0.091	0.091	0.095	0.093
	(2.614)	(3.606)	(3.259)	(3.162)	(2.580)
$U_{t-4} - U_{t-6}$			–0.004	0.008	0.027
			(–0.130)	(0.240)	(0.728)
$U_{t-6} - U_{t-8}$					–0.045
					(–1.310)
$E_{t-2} - E_{t-4}$	–0.459	–0.433	–0.447	–0.504	–0.492
	(–4.350)	(–4.268)	(–3.698)	(–3.523)	(–3.471)
$E_{t-4} - E_{t-6}$			–0.052	–0.072	0.052
			(–0.424)	(–0.554)	(0.354)
$E_{t-6} - E_{t-8}$					0.175
					(1.210)
Loglikehood	–597.8075	–534.6414	–534.1511	–476.9339	–475.0365
R^2	0.267	0.328	0.331	0.326	0.367
P-value Granger causality	0.009	0.000	0.004	0.007	0.002
N	70	63	63	56	56

Note: T-values are between brackets. ‘Preferred’ models are indicated in italics.

Table 9.5 Estimation results for lower income regions

	Model Ia 1 lag	Model Ib 1 lag	Model IIa 2 lags	Model IIb 2 lags	Model III 3 lags
Equation (1):dependent variable $U_t - U_{t-2}$					
Constant	–0.987	–1.069	–1.490	–1.567	–1.760
	(–2.261)	(–2.301)	(–2.652)	(–3.418)	(–2.560)
$E_{t-2} - E_{t-4}$	–0.721	–0.718	–0.806	–0.895	–0.822
	(–1.624)	(–1.491)	(–1.6869)	(–1.973)	(–1.799)
$E_{t-4} - E_{t-6}$			–1.020	–0.746	–0.715
			(–2.127)	(–1.666)	(–1.578)
$E_{t-6} - E_{t-8}$				–0.351	
					(–0.736)
$U_{t-2} - U_{t-4}$	0.404	0.381	0.360	0.306	0.259
	(3.989)	(3.400)	(3.105)	(2.881)	(2.337)
$U_{t-4} - U_{t-6}$		–0.136	–0.317	–0.307	
			(–1.123)	(–2.756)	(–2.635)
$U_{t-6} - U_{t-8}$					–0.181
					(–1.525)
Loglikehood	–1004.800	–908.0787	–905.4444	–796.0758	–794.7470
	0.200	0.165	0.213	0.258	0.283
P-value Granger causality	0.108	0.139	0.041	0.052	0.121
N	100	90	90	80	80
Equation (2):dependent variable $E_t - E_{t-2}$					
Constant	–0.434	–0.426	–0.355	–0.337	–0.267
	(–4.083)	(–3.896)	(–2.632)	(–2.488)	(–1.641)
$U_{t-2} - U_{t-4}$	–0.019	–0.023	–0.019	–0.016	–0.022
	(–0.754)	(–0.885)	(–0.683)	(–0.588)	(–0.751)
$U_{t-4} - U_{t-6}$		0.016	0.018	0.023	
			(0.557)	(0.603)	(0.723)
$U_{t-6} - U_{t-8}$					–0.033
					(–1.035)
$E_{t-2} - E_{t-4}$	–0.075	–0.039	–0.024	–0.069	–0.063
	(–0.691)	(–0.341)	(–0.205)	(–0.576)	(–0.521)
$E_{t-4} - E_{t-6}$			0.156	0.181	0.195
			(1.353)	(1.535)	(1.625)
$E_{t-6} - E_{t-8}$					–0.003
					(–0.020)
Loglikehood	–863.5121	–777.9787	–776.9628	–689.2842	–688.6701
	0.012	0.012	0.034	0.061	0.075
P-value Granger causality	0.453	0.379	0.727	0.740	0.647
N	100	90	90	80	80

Note: T-values are between brackets. 'Preferred' models are indicated in italics.

Determining the 'Preferred' Models

First, we determine the optimal number of lags. Looking at the upper part of Table 9.3, comparing Model Ib to IIa,[7] we can establish that the LR test statistic equals 2 × (1541.124-1530.420) = 21.408. As the χ^2 critical value at 5% level equals 5.99 (there are two restrictions here), Model Ib is rejected in favour of Model IIa. Indeed, we can see that the additional self-employment term (E_{t-4}-E_{t-6}), is highly significant.

Similarly, based on the LR test, Model IIb is rejected in favour of Model III. However, in this case the value of the LR test statistic is much lower (11.944). Furthermore, the rejection is established primarily because of the additional lagged dependent variable, which is highly significant (t-value -3.414). The additional self-employment term is not significant though (t-value -1.122). Because in Equation (1) we are mainly interested in the lag of the self-employment variable (indicating the 'entrepreneurial' effect), we will base our interpretations of the results on the two lag model (Model IIa), despite the rejection of the two lag model in the LR test.

When looking at the lower part of Table 9.3, comparing Model Ib to IIa, the LR test statistic equals 5.004 which is not significant at the 5% level. Therefore we consider Model Ia the statistically optimal model.[8] In a similar line of reasoning, we consider Models IIa (upper part of the table) and Ia (lower part of the table) the optimal models for the higher income regions estimations in Table 9.4 Looking at the upper part of Table 9.5 (lower income regions), comparing Model Ib to IIa, the LR test statistic equals 5.269 which is not significant at the 5% level. However, because the additional self-employment variable is significant (t-value -2.127), and the test statistic is close to the critical value (5.99), we consider Model IIa a better model than Model Ib. A third lag does not add to the explanatory power of the model though. From the lower part of Table 9.5 it is clear that Model Ia is the preferred model.

To summarize, in all three tables the two-lag model is the preferred model for the 'entrepreneurial' effect, while for the 'refugee' effect the one-lag model is to be preferred. Apparently, it takes more time for entrepreneurship to contribute to economic development, than it takes unemployed individuals to start new businesses. The preferred models will be the basis for our interpretations and are indicated in the tables in italics.

[7] Note that the estimation sample has to be identical before the likelihood ratio test may be applied. For this purpose Model Ia was re-estimated using 153 observations, resulting in Model Ib.

[8] We note that in Model III there is a significantly negative estimate for the third lag of unemployment. However, as there is no single significantly negative estimate for the unemployment variables in the lower parts of Tables 4 and 5 (where the sample is split into higher and lower income regions), we consider this a non-representative result.

Interpreting the Estimation Results

From Model IIa in Table 9.3 we conclude that there is a clear 'entrepreneurial' effect. Both lagged self-employment rates have a negative sign, and the second lag is highly significant. The empirical support for the 'entrepreneurial' effect is confirmed by the significance of the Granger causality test (p-value 0.001). The value of this test statistic indicates that self-employment contributes significantly to bringing down regional unemployment, even when lagged dependent variables are included as control variables. The same patterns can be found for the 'entrepreneurial' effect in Tables 9.4 and 9.5. Comparing the values of the coefficients across the three tables, we see that the magnitude of the effect is approximately the same. Hence we conclude that there is clear evidence for an 'entrepreneurial' effect, both in higher income regions and in lower income regions in Spain. These results are in line with research by Congregado et al. (2005). Using a micro-econometric approach these authors show that particularly *higher educated* entrepreneurs are likely to grow their businesses. Either they hire employees directly at the start of business operations or they expand their business after having worked some time as an own-account worker. Congregado et al. (2005) also show that the share of higher educated self-employed individuals in total self-employment in Spain has increased considerably from the early 1990s onwards. Hence the negative effect of self-employment on unemployment found in Tables 9.3-9.3 is not surprising.

Considering the 'refugee' effect, we find mixed results. In Table 9.4 (higher income regions) there is a significantly positive effect of changes in unemployment on subsequent changes in self-employment, confirming the 'refugee' hypothesis. The Granger causality test is also passed. However, for the lower income regions (Table 9.5) the effect of unemployment on self-employment is not significant.[9] Indeed, in this case the Granger causality test is not passed. Apparently, in the complete sample regressions the lower-income regions result dominates as there is also no significant effect in Table 9.3 The absence of a 'refugee' effect in the lower income regions may seem surprising, in particular when considering the relatively high unemployment rates. We might have expected a positive impact, in particular because wage employment is likely to be even harder to find in regions with high unemployment rates (see Table 9.2). What then might explain the non-significant result? There may be several explanations. *First*, it could be that unemployed individuals lack the skills to set up and maintain a firm. *Second*, the demand conditions in high unemployment regions may be unfavourable for the start-up of new firms. In particular this second reason might in part explain the different results for the higher and lower income regions samples.

However, we believe a *third* reason may also play a role. This is related to a possible lack of incentives for young unemployed individuals in Spain to find employment (either wage- or self-employment). Some studies show that unemployment

[9] The effect is even estimated to be negative. This may indicate that in regions with high unemployment the (demand) conditions are not favourable for starting a business. Note however that the t-value is below unity.

among high-educated and young individuals in Spain is relatively high (e.g. Bentolila and Jimeno 2003). For instance, university students in Spain have a lower probability of finding employment than students in other OECD countries: the unemployment rate among university students in the age category of 25 to 34 years old in Spain is 11.5 percent, compared to a European average of 6.2 percent (OECD 2005; European Commission 2005). Although the first-mentioned argument (lack of skills to start a business) may explain why lower-educated unemployed do not start businesses, this explanation does not seem valid for these higher-educated unemployed. Instead it may be that there are not enough incentives to find employment. This may be related to the relatively high replacement rate (the percentage of the last-earned income that an unemployed individual receives) in Spain, compared to other countries (OECD 2004). Also, cultural attitudes may play a role. In particular in the South of Spain[10] (which overlaps greatly with the lower income regions, see Tables 9.1 and 9.2) people appear to accept unemployment as a part of everyday life. Unemployment is perceived of as an opportunity to increase the quality of life – having more flexibility in time use and more leisure time available – rather than as a problem. Ahn et al. (2004) show that, for a sample of unemployed individuals in Spain, maintaining social relations (with neighbours, friends or relatives) has a significantly positive influence on individual satisfaction levels in the domains of leisure time and health. This observation is in line with the observation that in Spain most young people stay home with their parents until they get married (and sometimes even after marriage). As a result the economic consequences of being unemployed are not that harsh (Garcia-Rubiales 2004).

9.5 Conclusions

In this chapter we investigated the relation between changes in self-employment and unemployment at the regional level in Spain in the period 1979-2001. We estimated a vector autoregression model using a data base for Spanish regions. We found empirical support for the 'entrepreneurial' effect (i.e. a negative effect of self-employment on subsequent unemployment) to exist, both in higher income and in lower income regions. As regards the 'refugee' effect (i.e. a positive effect of unemployment on subsequent self-employment), the evidence was mixed. We found empirical support for this effect for higher income regions but we did not find evidence for a 'refugee' effect in lower income regions of Spain.

Our chapter has several policy implications. *First*, the empirical support for the 'entrepreneurial effect' found in this chapter suggests that entrepreneurship is a promising route to combat unemployment. Research by Congregado et al. (2005) shows that particularly the high-educated self-employed are likely to contribute to bringing down unemployment. Hence it may be good policy to invest in (higher)

[10] For information on regional disparities in unemployment see: López-Bazo et al. (2002), Villaverde and Maza (2002), Bande et al. (2004), Garcia-Rubiales (2004).

education levels of the population in general and in entrepreneurship education in particular. *Second*, concerning the lack of a 'refugee' effect in the lower income regions, we argued that high unemployment benefits and a cultural component of preferring leisure time over labour time (and the associated higher income), might be explanatory factors. This suggests that the government might at least think about reforming parts of the social security system.[11] Considering the mentioned cultural component, this may be harder to influence by policy, but at least an attempt could be made to change the attitude towards unemployment (for instance by pointing at the positive influence on self-esteem levels of earning your own money). See also Verheul et al. (2006) for a discussion of possible policy measures to be taken in Spain. Finally we want to mention some limitations of our work. *First*, our self-employment measure is not ideal in the sense that it includes the self-employed in the agricultural sector. Due to problems related with sampling design, it is not possible to split the data into sectors at the Spanish regional level. As the number of self-employed in agriculture is relatively large, and because this sector is different from other sectors in the economy, we need to be careful with our interpretations. Future research may study the impact of agriculture on the results when data availability has improved. *Second*, we realise that there may be other factors that determine changes in unemployment and self-employment at the regional level. Future research may concentrate on including additional independent variables like the regional wage level.

Acknowledgments The current chapter builds on Audretsch, Carree, van Stel and Thurik (2005) and on Verheul, van Stel, Thurik and Urbano (2006).

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[11] Using Spanish micro data, Congregado et al. (2005) find that those unemployed individuals who receive higher unemployment benefits have a smaller probability to enter self-employment.

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