

Entrepreneurship persistence with and without personnel: The role of human capital and previous unemployment

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Abstract By considering entrepreneurs who hire employees (employers) and entrepreneurs without personnel (own-account workers) as related but distinct entrepreneurship groups, this work analyses factors in entrepreneurship survival from a new perspective: we contrast the determinants of employers' survival with those affecting own-account workers' survival. Discrete choice models under competing risks frameworks are applied to data drawn from the European Community Household Panel for the EU-15 (EUROSTAT). Our results suggest that survival chances are markedly higher for employers than for own-account workers—especially when non-employment exits are considered. We also observe that high qualifications have positive and statistically significant effects on survival rates of employers, regardless of exit routes, while high qualifications have no significant effect on survival rates of own-account workers. Finally, we find that entering entrepreneurship from unemployment—the target group for entrepreneurship incentives—strongly increases the probability of re-entering unemployment for both entrepreneurship groups. Thus, entrepreneurship and higher education policies should be considered together to develop high quality entrepreneurial businesses.

Keywords Entrepreneurship · Employers · Own-account workers · Persistence · Formal education · Unemployment

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Introduction

The global economy is emerging from the worst financial and economic crisis of the past 50 years. While the economic recovery is broadening and strengthening, the challenge is to ensure that the recovery is accompanied by employment growth. Specifically, there is near consensus among academics and policymakers that entrepreneurship is a major driver of economic growth, job creation, and competitiveness in global markets.¹ Consequently, successful strategies to solve the jobs crisis should recognise entrepreneurship as a key element.

In this line, several OECD Member countries have set up or expanded schemes to support enterprise creation by job seekers in the crisis and recovery phases. Successful entrepreneurship, however, also requires appropriate skills and resources that are not always available among the unemployed target group (see OECD 2009a, 2009b, 2010). These difficulties imply the need to carefully revise the role of relevant factors such as human capital and previous unemployed experiences on entrepreneurship success.

Entrepreneurship is a heterogeneous group (Kuhn 2000 and Shane 2009) and only a minority contributes to job creation and economic growth; *true* entrepreneurs can be distinguished from other categories such as *last resort* self-employed. Similarly, entrepreneurs who hire external labour (employers) are distinct from entrepreneurs without personnel (own-account workers²), but this distinction is commonly ignored within the literature (Honig 1998 and Carrasco 1999 are notable exceptions).³

Understanding entrepreneur heterogeneity becomes a key question in the current economic framework where several governments have renewed interest in the development and implementation of start-up programs. In line with this problem, the newly proposed *Europe 2020 strategy* calls on Member States to remove measures that discourage entrepreneurship but, at the same time, urges countries not to promote involuntary or precarious self-employment.⁴

Hence, a comprehensive strategy to promote job creation and sustained economic growth may involve reconsidering some aspects of entrepreneurship, including its heterogeneous character, the performance expectations of its different types, and the determinants for the success (or failure) of these related but distinct groups. The main aim of this work is (i) to determine whether employers are more likely to survive than own-account workers; (ii) to establish the probable hazards for own-account workers and employers while accounting for their destination states, including paid employment, unemployment, and inactivity; (iii) to examine how educational levels affect the likelihood of survival for own-account workers and

¹ The key role of entrepreneurship has been well documented in academic publications (see, for instance, recent works by Acs 2008; Carree and Thurik 2008; Thurik et al. 2008; or Parker 2009). Policy reports, including the new *Europe 2020 strategy* (the EU's growth strategy for the coming decade), also place special emphasis on entrepreneurship. For more information, see http://ec.europa.eu/eu2020/index_en.htm.

² Own-account work covers a diverse range of occupations from carpenters, plumbers, electricians, artisans, and farmers to liberal professions (e.g., consultants, lawyers, engineers, architects, accountants, and pharmacists).

³ Despite the fact that such a distinction does not allow for the separation of true entrepreneurs from other categories, we disaggregate entrepreneurship into employers who hire external labour (and contribute to the job-generation process), and self-employed who work on their own as own-account workers (Earle and Sakova 2000).

⁴ See European Commission (2010) for a detailed review of these measures.

employers; and (iv) to analyse whether exit rates are higher for previously unemployed individuals—the target group for start-up incentives—to determine the effectiveness of incentives in terms of the persistence of their effects.

Towards this end, discrete choice models under competing risks frameworks are applied to data drawn from the European Community Household Panel from 1994 to 2001 for the EU-15. We analyse entrepreneurship survival in Europe from a new perspective by comparing the roles of different factors in own-account workers' survival with those affecting employers' survival.

Our results suggest that survival chances are markedly higher for employers than for own-account workers, especially when non-employment exits are considered. We also observe that high qualifications have positive and statistically significant effects on survival rates of employers, regardless of exit routes, while qualifications have no significant effect on survival rates of own-account workers. Finally, we find that entering entrepreneurship (with and without personnel) from unemployment strongly increases the probability of re-entering unemployment. Therefore, to improve the medium-and long-term effectiveness of the newly proposed *Europe 2020 strategy*, policymakers should consider the heterogeneity in entrepreneurship performance and the role of human capital and previous unemployment.

The remainder of this paper is structured as follows: Next section reviews related literature. Then, data, sample design, covariates and econometric framework are described. Later, our main empirical results are presented and discussed. Finally, concluding remarks are showed.

Related literature

Three groups of key factors have been acknowledged to broadly influence business survival. First, individual-related factors, such as the entrepreneur's or business owner-manager's characteristics, explain a considerable part of why some firms fail while others survive. Second, firm-specific structural factors, such as the age and size of firms, systematically influence survival likelihood. Finally, macroeconomic and institutional conditions and constraints can explain survival chances (see Santarelli and Vivarelli 2007, Parker 2009 or Millán et al. 2011 for a review of the role of these groups of factors).

However, given the current economic situation where projected output growth will not be robust enough to quickly absorb the massive labour market slack accumulated in many countries, some factors favouring or hindering business survival deserve particular attention. As highlighted in the introduction, education and previous unemployment are particularly important. Not surprisingly, human capital obtained through education is one of the strongest drivers of entrepreneurship performance, irrespective of whether earnings, survival, employment or sales growth are used to measure entrepreneur performance (cf. the overview in Van der Sluis et al. 2008). Focusing on previous unemployment experience, it has been argued that founding a new firm may be an alternative to uncertain future career prospects or may even be an "escape from unemployment" (Oxenfeldt 1943; Evans and Leighton 1990; Storey 1991, 1994). In this sense, Carrasco (1999), Taylor (1999), Van Praag (2003), Andersson and Wadensjö (2007), Georgellis et al.

(2007), and Millán et al. (2011) report that entrepreneurs with past unemployment periods are more likely to fail.

These texts, however, consider a unique entrepreneurship state. The distinction between employers and own-account workers is almost nonexistent within the existing literature on business survival. To the best of our knowledge, Headd (2003) and Kapsalis and Tourigny (2004) are the only exceptions that make such a distinction to analyse business survival.⁵ However, if the determinants of business survival were different (or even contrary) for these heterogeneous entrepreneurship groups, a separate analysis would become necessary for an adequate entrepreneurship policy design. To this end, this study contributes to the existing body of literature on business survival by separately investigating the determinants of employers' and own-account workers' survival by accounting for multiple exit states: paid employment, unemployment, and inactivity.

Data, sample design, and covariates

Data source: European community household panel (ECHP)

We use data from the European Community Household Panel (ECHP) covering the period 1994–2001.⁶ The ECHP is a standardised multi-purpose annual longitudinal survey carried out at the level of the EU-15.⁷ It was designed and coordinated by the Statistical Office of the European Communities (EUROSTAT). The target population of the ECHP consists of people living in private households throughout the national territory of each country. The definition of household is based on the standard criteria of “sharing the same dwelling” and having “common living arrangements”. Individuals in the sample who move or join a new household are followed up at their new location. Finally, the survey covers all persons cohabiting with any of the original sample persons. These rules are followed to reflect the demographic changes in the population and to maintain the panels' cross-sectional representativeness of the population.⁸

Each year, all members of the selected households in the participating countries are interviewed about issues relating to demographics, labour market characteristics, income, and living conditions. The same questionnaire is used in all countries, which makes the information directly comparable. The first wave of data collection was held in 1994. We have information on 60,500 nationally representative households, which includes approximately 130,000 individuals aged 16 years and older, for the entire period 1994–2001.

⁵ Honig (1998) also accounts for these different categories to analyze earnings differences among entrepreneurs.

⁶ ECHP data are used with the permission of Eurostat (contract ECHP/2006/09 with the Universidad de Huelva).

⁷ We excluded France, Luxembourg, and Sweden for different reasons. First, during the period of 1997–2001, own-account workers cannot be distinguished from employers in France due to the high number of missing values for the variable we observe within the ECHP that permits making such a distinction: the number of regular paid employees in the local unit in current job. For Sweden and Luxembourg, the ECHP does not include information related to first waves and presents missing values for relevant variables in other waves.

⁸ See Peracchi (2002) for a review of the organization of the survey and a discussion of the issues a researcher may face when using these data.

Generating our sample

The individuals in our dataset are asked about (i) their main activity status (paid employment, entrepreneurship, unpaid work in a family enterprise, education or training, unemployment or inactivity); (ii) the number of regular paid employees in the local unit in their current job (those entrepreneurs with no employees are considered own-account workers); and (iii) the year in which they began working at their current business (before 1981, 1981, 1982, ..., 2001). From this self-reported information, we can construct the duration of spells as either own-account workers or employers for up to 21 years for individuals entering entrepreneurship at the time of the interview (the *observation window*: 1994–2001) or before 1994.⁹ Thus, our sample presents a left truncation (or *delayed entry*) problem because of how it is constructed. To account for this, we exclude from our sample any individual whose entrepreneurship spell occurs before we started observing spells (before 1994). In addition, the sample includes entrepreneurship spells (with or without employees) that are still in progress at the end of the observation window, which are treated as right-censored observations.¹⁰ Hence, spells can end in paid employment, unemployment, or inactivity,¹¹ or they can be censored observations.

Our final sample includes men and women aged 21 to 59 years so as to exclude possible exits out of entrepreneurship due to retirement. Workers in the agricultural industries are excluded from this analysis because of structural differences from the rest of the economy.

Main explanatory variables: Formal education and previous unemployment

The main explanatory variables of interest refer to formal education and previous unemployment. Formal education is captured by the education level of the respondents; individuals are self-classified into three categories: (i) no education or primary education; (ii) secondary education; and (iii) tertiary education. A binary variable identifies whether the individual entered entrepreneurship from unemployment. A detailed definition of the variables is presented in the [appendix](#).

Control variables

The empirical models include a set of explanatory variables that are known to influence entrepreneurial performance. These variables include the following: (i) gender (most previous studies observe that female entrepreneurs show significantly higher failure rates and lower job creation rates; see, for example, Taylor 1999, Boden and Nucci 2000, and Burke et al. 2002); (ii) age and age squared (the relationship between age and persistence in entrepreneurship is often found to be non-linear; see, for example, Taylor

⁹ Those individuals entering entrepreneurship before 1981 are excluded from our sample because we do not have information about the exact entrepreneurship spell duration. However, the number of entrepreneurs within this group is smaller than 3% of the initial sample, and their exclusion does not affect our results in a significant way.

¹⁰ The way we handle left-truncation and right-censoring problems is described in [Empirical framework and estimation](#).

¹¹ Exits to inactivity involve education or training, early retirement (before 59 years of age), doing housework, looking after children or other persons, and some other activities.

2004 and Block and Sandner 2009); (iii) cohabiting status (being married is associated with a lower likelihood of leaving entrepreneurship; see Georgellis et al. 2007 and Haapanen and Tervo 2009); (iv) the number of (young) children in the household (the empirical evidence regarding the effect of children on entrepreneurship duration is mixed; see Williams 2004); (v) the presence of relatives working as entrepreneurs in the household (parental labour market status may act as a proxy for intergenerational transfers of entrepreneurial human capital and ability; see Cooper et al. 1991, 1992, 1994 and Gimeno-Gascon et al. 1997); and (vi) unemployment rates (the unemployment rate has a significant upward effect on the probability of exiting entrepreneurship; see Carrasco 1999, Fertala 2008, Andersson 2010, and Haapanen and Tervo 2009).

Variables that capture entrepreneurship incomes (which can work as a proxy for the financial state of the business)¹² and working hours (which can be interpreted as a proxy for the existing demand each business faces), and a control for duration dependence (a learning effect might be expected; see, for example, Evans and Leighton 1989; Bates 1990; Brüderl et al. 1992; Holtz-Eakin et al. 1994; Gimeno-Gascon et al. 1997; Taylor 1999, 2004; Lin et al. 2000; Van Praag 2003; Rissman 2006; Haapanen and Tervo 2009, and Millán et al. 2011), are also included in this analysis. Finally, typical variables such as business sector dummies and country dummies are included. For a more extensive literature review of the role of these variables in determining entrepreneurial performance, we refer to Parker (2009) and Millán et al. (2011). A detailed definition of these control variables is presented in the [appendix](#), where Tables 3 and 4 summarise the mean values of all entrepreneurship spells for own-account workers and employers, distinguished by destination state.

Empirical framework and estimation

This section describes the econometric frameworks used in our analysis.¹³ We consider the possibility of exit from entrepreneurship (own-account work or employership) to one of the three following destination states: paid employment, unemployment, and inactivity. Competing risks models are estimated to distinguish among the various routes out of entrepreneurship. Due to the nature of our data (survival spells are recorded in *years*—grouped duration data), discrete time specifications are considered. The length of the entrepreneurship spell, T , is therefore assumed to be a discrete random variable. Our reference category for both exercises (i.e., survival as an own-account worker and as an employer) is the group of censored observations.¹⁴ With the assumption of independence of the destination-specific hazard rates, the discrete hazard

¹² Entrepreneurship incomes are corrected by purchasing power parities (comparability across countries) and harmonized consumer price indices (comparability across time). This variable is lagged one year due to the possible endogeneity problem of the changes in these incomes related to business failures.

¹³ This section draws especially on the *Stephen P. Jenkins' Lecture Notes* corresponding to the course *Survival Analysis* by Stephen P. Jenkins, provided by the University of Essex Summer School.

¹⁴ For persons with censored spells, all observations are censored; for persons with a completed spell, all observations are censored except the final one.

rate for exit at time j to any of the three destinations is simply the sum of the destination-specific discrete hazard rates:

$$h_{ij} = h_{ij}^{PE} + h_{ij}^U + h_{ij}^I$$

where h_{ij}^{PE} , h_{ij}^U , and h_{ij}^I are the hazard rates of experiencing a transition to paid employment, unemployment, and inactivity, respectively. Thus, there are four types of likelihood contributions for the discrete time model, the first referring to the censored case and the other three corresponding to the different exits.

Therefore, the likelihood contribution of a censored spell is given by:

$$L_i^C = S_i(j)$$

whereas for $m=PE, U,$ and $I,$ the contributions to the likelihood function of a complete spell are:

$$L_i^m = \frac{h_{ij}^m}{1 - h_{ij}^m} \prod_{k=1}^j (1 - h_{ik}^m) = \frac{h_{ij}^m}{1 - h_{ij}^m} S_i(j)$$

and the likelihood for the whole sample is:

$$L_i = \left(\prod_m (L_i^m)^{\delta^m} \right) (L_i^C)^{1 - \sum_m \delta^m} = \left(\prod_m \left(\frac{h_{ij}^m}{1 - h_{ij}^m} \right)^{\delta^m} \right) \prod_{k=1}^j (1 - h_{ik}^m)$$

where δ^m is a destination-specific censoring indicator that equals 1 if individual i exits to state $m,$ and 0 otherwise (exit to another destination or censored).

We assume a particular form for the destination-specific hazards:

$$h_{ik}^m = \frac{\exp(\beta_m^j X_{i,k-1})}{1 + \sum_m \exp(\beta_m^j X_{i,k-1})}$$

where $X_{i, k-1}$ is a vector of conditioning variables, strictly exogenous (time-varying covariates), which includes the term $\ln(j)$ to capture duration dependence. For the given hazard rate described above, the individual worker’s likelihood contribution has the same form as the likelihood of a standard multinomial logit model (Allison 1982).¹⁵ Regarding the multinomial logit specifications, standard errors are adjusted for intra-individual correlation to control for possible unobserved heterogeneity.¹⁶

As previously indicated, our sample presents a left truncation (or *delayed entry*) problem because of how it is constructed. This problem arises because the spell start

¹⁵ The multinomial logit model imposes the assumption of independence from irrelevant alternatives (IIA), which implies that the probability of choosing between two outcomes is not affected by the characteristics of the other alternatives. In this regard, McFadden (1974) argued that multinomial logit models should be used only in cases where the alternatives can plausibly be assumed to be distinct and weighted independently. In our view, the assumption of IIA in the context of our analysis is reasonable. In addition, we performed a set of Wald and Likelihood Ratio tests to examine the null hypothesis that the coefficients of the alternatives do not differ significantly from each other for all possible combinations. In both tests, none of the categories should be combined because the null hypothesis is rejected. Therefore, the multinomial logit specification seems to be appropriate. For brevity, the results of these tests are not shown but are available upon request.

¹⁶ This standard errors correction reflects associations across the spells and, therefore, addresses the issue of repeated spells of entrepreneurship. Let us stress that this issue is relatively small in our sample (less than 10% of cases).

and end dates for some individuals occur before we started observing spells (before 1994). Therefore, we cannot assume that these missing observations are randomly excluded. In other words, this sample is non-random because longer spells in entrepreneurship (*slower exiters*) are over-represented, while shorter spells in entrepreneurship (*faster exiters*) are under-represented.

We handle the selection bias by estimating the probability of remaining as an own-account worker (or employer) between the start of a spell and its exit, *conditional on not having left own-account work (or employership) before 1994* (the condition that made them eligible for selection in the sample).

With delayed entry at time d_i for individual i , we have to condition on survival up to time d_i , which means dividing the above expression by $S_i(d_i)$. Hence, each of the likelihood expressions for the left truncation case is:

$$L_i^m = \frac{h_{ij}^m}{1-h_{ij}} S_i(j) / S_i(d_i)$$

Results and discussion

This paper investigates the determinants of entrepreneurship survival in Europe by considering employers and own-account workers as related but distinct entrepreneurship groups. This section presents the main results of the empirical analysis in **Main results**, while **Controls** concentrates on our results concerning variables that serve as controls. All results are presented in Table 1.

Table 1 presents four specifications. Specifications (I) and (II) report the results concerning the hazard rate of own-account work by means of a competing risks framework where multiple exit states are considered: paid employment, unemployment, and inactivity. Similarly, specifications (III) and (IV) present the probabilities of exiting from the employer state by means of the same framework. Together with our main explanatory variables (formal education and previous unemployment), specifications (I) and (III) include demographic characteristics, business sector dummies, and country dummies as explanatory variables. As robustness checks for the obtained results, specifications (II) and (IV) also include variables capturing the number of weekly working hours, the wealth of the individual, and the state of the European economy.¹⁷

We present our results in the following manner: at the top of Table 1, the number of observations and the number of spells are reported. Each specification shows the corresponding predicted exit probabilities for sample means of continuous and discrete explanatory variables. Each specification is presented in a two-column format where marginal effects (and not coefficients) and t-statistics are reported.

¹⁷ Comparisons between specifications (I)–(II) and (III)–(IV) show that the inclusion of the variables accounting for wealth, weekly working hours, and unemployment rate does not alter the obtained effects for other variables, which is consistent with an absence of endogeneity problems caused by these variables. In addition, likelihood ratio tests confirmed that the inclusion of these variables in specifications (II) and (IV) significantly improves the explanatory power of specifications (I) and (III) at the 1% significance level. For brevity, the results of these tests are not shown but are available upon request.

Table 1 Departure from own-account work and employership to different states: Paid employment, unemployment and inactivity-Competing risks models-

Model	Prob [$T^{OA}=j T^{OA}>j-1$]			Prob [$T^{EMP}=j T^{EMP}>j-1$]		
	(I)	(II)	t-stat.	(I)	(II)	t-stat.
Specification						
# observations	11,907	11,907		13,731	13,731	
# spells	5,240	5,240		5,673	5,673	
# censored spells	4,349	4,349		4,959	4,959	
Log likelihood	-3,707.8	-3,649.3		-3,203.8	-3,174.5	
Risk 1: Exits to paid employment						
# completed spells	418	418		344	344	
Predicted probability (y)	0.022	0.0213		0.0187	0.0182	
Independent variables	dy/dx	dy/dx	t-stat.	dy/dx	dy/dx	t-stat.
<i>Education</i>						
Basic education (ref.)						
Secondary education	-0.0027	-0.97	-0.60	-0.0030	-0.0024	-1.04
Tertiary education	-0.0013	-0.44	-0.06	-0.0056	-0.0050	-1.69*
<i>Previous labour market situation</i>						
Entering from unemployment	0.0046	1.67*	1.36	0.0111	0.0100	3.24***
<i>Demographic characteristics</i>						
Female	-0.0063	-2.39**	-2.88***	-0.0027	-0.0041	-1.69*
Age	-0.0027	-2.70***	-2.36**	-0.0012	-0.0010	-1.11
Age squared	2.4E-05	1.90*	1.64	8.1E-06	5.9E-06	0.50
Cohabiting	0.0048	1.73*	1.85*	-0.0019	-0.0013	-0.46
Number of children under 14	0.0002	0.18	0.13	-0.0003	-0.0002	-0.16
Relatives working as entrepreneurs	-0.0009	-0.35	-0.14	-0.0076	-0.0071	-3.27***
<i>Job characteristics</i>						

Table 1 (continued)

Model	Prob [$T^{OA} = j T^{OA} > j - 1$]	Prob [$T^{EMP} = j T^{EMP} > j - 1$]		
Hours of work	-0.0002	-2.27**	-2.4E-04	-2.58***
Work incomes (1 lag) ('000)	-0.0003	-2.07**	-1.9E-04	-1.76*
<i>Business cycle</i>				
National unemployment rate (%)	0.0023	4.39***	0.0014	2.45**
<i>Duration dependence</i>				
Ln (duration as an entrepreneur)	-0.0077	-5.81***	-0.0111	-8.59***
<i>Business sector dummies</i> (17 categories; ref. Construction)	Yes	Yes	Yes	Yes
<i>Country dummies</i> (12 categories; ref. Spain)	Yes	Yes	Yes	Yes
Risk 2: Exits to paid unemployment				
# completed spells	184	184	168	168
Predicted probability (y)	0.0055	0.0045	0.0024	0.0021
Independent variables	dy/dx	dy/dx	dy/dx	dy/dx
<i>Education</i>				
Basic education (ref.)				
Secondary education	-0.0012	-1.25	-0.0006	-0.70
Tertiary education	-0.0013	-1.12	-0.0006	-0.57
<i>Previous labour market situation</i>				
Entering from unemployment	0.0074	5.00***	0.0055	4.23***
<i>Demographic characteristics</i>				
Female	-0.0009	-1.00	-0.0014	-1.84*
Age	-0.0009	-2.36***	-0.0007	-2.08**
Age squared	1.2E-05	2.42**	9.1E-06	2.18**
Cohabiting	-0.0018	-1.46	-0.0012	-1.09
			-0.0011	-1.72*
			0.0006	1.23
			-0.0004	-2.66***
			5.7E-06	2.70***
			-0.0009	-1.72*
			0.0002	0.58
			-0.0004	-2.39***
			4.6E-06	2.46**
			-0.0009	-1.57

Number of children under 14	-6.9E-06	-0.01	-1.8E-05	-0.04	0.0002	0.65	0.0002	0.78
Relatives working as entrepreneurs	-0.0009	-0.91	-0.0007	-0.85	-0.0002	-0.51	-0.0002	-0.48
<i>Job characteristics</i>								
Hours of work			-9.2E-05	-3.26***			-4.0E-05	-2.65***
Work incomes (1 lag) ('000)			-0.0003	-3.27***			-4.5E-05	-2.31**
<i>Business cycle</i>								
National unemployment rate (%)			0.0009	4.67***			0.0004	3.40***
<i>Duration dependence</i>								
Ln (duration as an entrepreneur)	-0.0032	-5.91***	-0.0019	-3.46***	-0.0016	-6.72***	-0.0012	-5.12***
<i>Business sector dummies (17 categories; ref. Construction)</i>								
<i>Country dummies (12 categories; ref. Spain)</i>								
Risk 3: Exits to inactivity								
# completed spells	289	Yes	Yes	Yes	202	Yes	Yes	Yes
Predicted probability (y)	0.0135	Yes	Yes	Yes	0.007	Yes	Yes	Yes
<i>Independent variables</i>								
<i>Education</i>								
Basic education (ref.)								
Secondary education	0.0005	0.23	0.0011	0.49	-0.0014	-1.23	-0.0012	-1.09
Tertiary education	-0.0034	-1.51	-0.0027	-1.24	-0.0031	-2.32**	-0.0027	-2.05**
<i>Previous labour market situation</i>								
Entering from unemployment	-0.0015	-0.77	-0.0016	-0.87	0.0037	2.42**	0.0032	2.25**
<i>Demographic characteristics</i>								
Female	0.0327	7.43***	0.0275	6.90***	0.0216	6.49***	0.0188	5.90***
Age	-0.0036	-4.95***	-0.0034	-4.87***	-0.0013	-2.89***	-0.0011	-2.69***
Age squared	4.8E-05	5.30***	4.6E-05	5.26***	1.8E-05	3.19***	1.6E-05	3.04***
Cohabiting	0.0091	5.41***	0.0087	5.30***	0.0040	3.66***	0.0037	3.43***
Number of children under 14	0.0008	0.79	0.0007	0.76	-0.0006	-0.89	-0.0005	-0.79***

Table 1 (continued)

Model	Prob [$T^{OA} > j - 1$]	Prob [$T^{EMP} > j - 1$]
Relatives working as entrepreneurs	-0.0046	-0.0040
<i>Job characteristics</i>	-2.65***	-2.38**
Hours of work	-0.0003	-0.0003
Work incomes (1 lag) ('000)	-0.0002	-0.0002
<i>Business cycle</i>		
National unemployment rate (%)	0.0013	0.0013
<i>Duration dependence</i>		
Ln (duration as an entrepreneur)	-0.0056	-0.0050
<i>Business sector dummies</i> (17 categories; ref. Construction)	Yes	Yes
<i>Country dummies</i> (12 categories; ref. Spain)	Yes	Yes
	-0.0031	-0.0026
	-4.69***	-2.14**
	-0.0021	-0.0021
	-1.1E-04	-1.1E-04
	-1.66*	-1.66*
	0.0006	0.0006
	2.15**	2.15**
	-3.86***	-3.86***

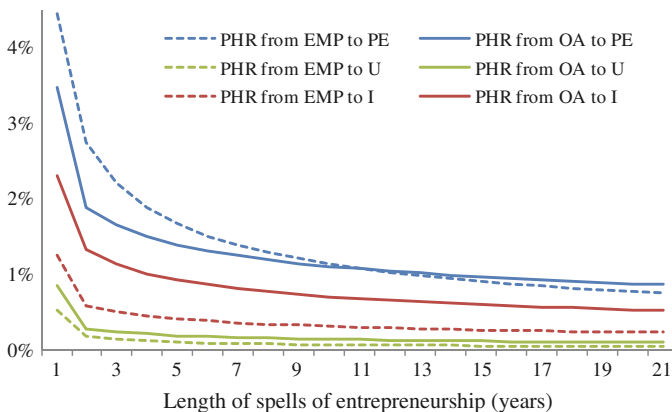
Data source: ECHP 1994–2001; * 0.1 > p ≥ 0.05; ** 0.05 > p ≥ 0.01; *** p < 0.01.

Note that a marginal effect greater than zero implies a positive impact on the hazard rate or a negative impact on survival.

Main results

First, we observe that the predicted probability of exiting own-account work is higher than the predicted probability of leaving employership when the exits occur to non-employment: unemployment (0.5% against 0.2%) and inactivity (1.3% against 0.7%). While these differences might appear irrelevant in absolute terms, note that hazard rates for own-account workers are twice those of employers. How long an entrepreneur lasts depends on the value of his discovery and his success at exploiting it. However, entrepreneurs with employees may have considered their enterprises from a more strategic viewpoint, whereas those without employees may simply have been waiting for a better alternative. Our results seem to support this view of employers as entrepreneurs whose activity is more entrepreneurial. In addition, we find that paid employment seems to be the more probable hazard for both groups of entrepreneurs, with less notable differences between own-account workers and employers (2.1% against 1.8%). Figure 1 shows predicted hazard rates for both groups while accounting for all possible final states.

Second, we find that high qualifications have positive and statistically significant effects on survival rates of employers. These rates increase by around 27%, 53%, and 40% when the final destinations are paid employment, unemployment, and inactivity, respectively. However, educational attainment does not seem to have a significant effect on the survival of own-account workers. The fact that own-account workers are a diverse group formed by both low-skilled occupations and liberal professions with high qualifications might be causing two effects to work in opposite directions, which is consistent with this



Notes:

- (i) Predicted hazard rate conditional on not having left entrepreneurship before 1994
- (ii) Simulations are based on the estimates of specifications (II) and (IV) of Table 1
- (iii) Simulation for sample means of continuous and discrete variables

Fig. 1 Departure from own-account work (OA) and employership (EMP) to different states: Paid employment (PE), unemployment (U) and inactivity (I)

observed zero-effect. By understanding employers as those entrepreneurs whose activity is more entrepreneurial, it also makes sense that employers with higher qualifications are more likely to succeed.

Third, the role of previous unemployment in determining survival should also be emphasised. We find that entering entrepreneurship from unemployment, for both types of entrepreneurs, increases the chances of returning to unemployment by around 120%. Thus, stimulating self-employment among the unemployed might distort individuals' occupational choices. By providing an extra incentive to the unemployed who face higher probabilities of long-term unemployment, these subsidies might contribute to an adverse selection problem that may alter the relative weight of *true* entrepreneurs over other forms of self-employment (such as *last resort*). These individuals may return to unemployment when incentives disappear. However, because these policies are aimed at not only enhancing entrepreneurship but also at promoting the economic growth and job creation processes, it becomes necessary to test the effectiveness of these measures.

Controls

The effects of individual characteristics and family background can be summarised as follows. Females are more likely to switch to inactivity, while males have higher probabilities of switching to paid employment, whatever their entrepreneurship type. Family circumstances might explain higher exit rates to inactivity for females (which seem to be supported by the role of cohabitation status on exits to inactivity), while higher earnings for males in paid employment might indicate a higher opportunity cost of entrepreneurship compared to wage work.

We find an inverted U-shaped effect of age on survival among own-account workers, whatever the exit route; the same is true for employers entering unemployment and inactivity. The role of intergenerational transfers of entrepreneurial human capital and ability (proxied by the existence of relatives who are entrepreneurs) seems to be stronger for employers. Thus, having entrepreneur relatives decreases exits from employership to paid employment and inactivity, while this only reduces the hazard of inactivity for own-account workers.

As far as work characteristics are concerned, the number of working hours is taken as a proxy for the existing demand each business faces. Our separate analyses for employers and own-account workers support this assumption. More working hours increase the survival chances for own-account workers for all hazards, whereas more hours increase the chances of survival for employers for all hazards except inactivity.

Turning to the effects of variables describing the wealth of the individual, a positive effect of entrepreneurship incomes on the probability of survival as an employer and own-account worker is observed for exits to paid employment and unemployment. Exits to inactivity do not seem to be related to entrepreneurship incomes.

Regarding the effect of macroeconomic conditions, there is a negative relationship between exits from employership and own-account work, regardless of the route out of entrepreneurship; this supports the *prosperity-pull* argument.¹⁸

¹⁸ We obtained similar results by considering harmonized employment rates and national output gaps (OECD) as alternative measures of the macroeconomic conditions.

Finally, we note that the shapes of the hazard rates of durations as an employer and an own-account worker exhibit a negative effect on the exit rates to paid employment, unemployment, and inactivity; that is, the hazards decrease with duration (see Fig. 1).

Conclusions

By recognising entrepreneurship as a key element to solve the jobs crisis, several OECD Member countries have set up or expanded schemes to support enterprise creation by job seekers. However, entrepreneurship is a heterogeneous group where only a minority contributes to job creation and economic growth, and successful entrepreneurship entails a requirement for appropriate skills and resources that are not always in place among the unemployed target group; therefore, there is a need to carefully revise the role of relevant factors such as human capital and previous experiences as unemployed on entrepreneurship success, and their possible implications for the design of an adequate entrepreneurial promotion policy.

With this in mind, this paper has analysed entrepreneurship survival in Europe from a new perspective by accounting for the existing entrepreneurship heterogeneity. Therefore, this paper separately evaluates success as an employer and as an own-account worker, with special emphasis on the role of human capital and previous experiences as unemployed.

Our results suggest that survival chances are markedly higher for employers than for own-account workers, especially when non-employment exits are considered. We also observe that formal education has positive and statistically significant effects on survival rates of employers, whatever the exit route, while education has no significant effect on survival rates of own-account workers. Finally, we find that entering entrepreneurship (with and without personnel) from unemployment strongly increases the probability of returning to unemployment.

These results illustrate that a comprehensive strategy to promote job creation and sustained economic growth may involve reconsidering some aspects of entrepreneurship, including the following: (i) its heterogeneous character; (ii) the better performances expectations of employers over own-account workers; (iii) the importance of higher education for capturing more and better profit opportunities; and (iv) the negative effect of previous unemployment on entrepreneurship survival.

Educational policies may be viewed as an additional instrument to develop high quality entrepreneurial businesses. In other words, entrepreneurship and higher education policies should be considered in tandem.

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Appendix

Table 2 Definitions of variables

Variable	Description
Survival as own-account worker	Dependent variable equals 1 for individuals who are own-account workers in period $t-1$ and enter paid-employment in period t . The variable equals 2 for individuals who are own-account workers in period $t-1$ and enter unemployment in period t . The variable equals 3 for individuals who are own-account workers in period $t-1$ and enter inactivity in period t . Finally, the variable equals 0 for individuals who are own-account workers in periods $t-1$ and t , or the information about the labour status in t is censored.
Survival as employer	Dependent variable equals 1 for individuals who are employers in period $t-1$ and enter paid-employment in period t . The variable equals 2 for individuals who are employers in period $t-1$ and enter unemployment in period t . The variable equals 3 for individuals who are employers in period $t-1$ and enter inactivity in period t . Finally, the variable equals 0 for individuals who are employers in periods $t-1$ and t , or the information about the labour status in t is censored.
Education	
Basic education (reference category)	Dummy equals 1 for individuals with less than second stage of secondary level education (ISCED 0–2).
Secondary education	Dummy equals 1 for individuals with second stage of secondary level education (ISCED 3).
Tertiary education	Dummy equals 1 for individuals with recognized third level education (ISCED 5–7).
Previous labour market situation	
Entering from unemployment	Dummy equals 1 for individuals entering entrepreneurship from unemployment.
Demographic characteristics	
Female	Dummy equals 1 for females
Age	Age of the individual, ranging from 21 to 59.
Cohabiting	Dummy equals 1 for cohabiting individuals.
Number of children under 14	Number of children aged under 14 living in the household.
Relatives working as entrepreneurs	Dummy equals to 1 if there are any in the household.
Job characteristics	
Hours of work	Hours of work per week.
Work incomes (1 lag) ('000)	Incomes earned as an entrepreneur during period $t-1$, converted to average euros of 1996, being corrected by purchasing power parity (across countries) and harmonised consumer price index (across time). Variable expressed in thousands of euros.
Business cycle	
National unemployment rate	Harmonised annual unemployment rate (source: OECD)
Duration dependence	
Ln (duration as an entrepreneur)	Number of years as an entrepreneur (in logs).
Business sector dummies	17 dummies equalling 1 for individuals whose codes of main activity of the local unit of the business, by means of the Nomenclature of Economic Activities (NACE-93), are the following: C+E Mining and quarrying+Electricity, gas and water supply. DA Manufacture of food products, beverages and tobacco.

Table 2 (continued)

Variable	Description
	DB+DC Manufacture of textiles, clothing and leather products.
	DD+DE Manufacture of wood and paper products; publishing and printing.
	DF-DI Manufacture of coke, refined petroleum/chemicals/rubber/plastic and other non-metallic mineral products.
	DJ+DK Manufacture of metal products, machinery and equipment.
	DL-DN Other manufacturing.
	F (<i>reference category</i>) Construction
	G Wholesale and retail trade; repair of motor vehicles, motorcycles and personal/household goods.
	H Hotels and restaurants.
	I Transport, storage and communication.
	J Financial intermediation.
	K Real estate, renting and business activities.
	L Public administration and defence; compulsory social security.
	M Education.
	N Health and social work.
	O-Q Other community, social and personal service activities; private households with employed persons; extra-territorial organizations and bodies.
Country dummies	12 dummies equalling 1 for individuals living in the named country: Austria, Belgium, Denmark, Finland, Germany, Greece, Ireland, Italy, Netherlands, Portugal, Spain (<i>reference category</i>), and the United Kingdom.

Table 3 Descriptive statistics of the departure from work as own-account worker

Final destination	Censored	Paid employment	Unemployment	Inactive
Number of spells	4,349	418	184	289
Education				
Basic education	39.96%	44.98%	48.91%	48.44%
Secondary education	33.34%	29.67%	32.07%	30.80%
Tertiary education	26.70%	25.36%	19.02%	20.76%
Previous labour market situation				
Entering from unemployment	26.05%	31.10%	56.52%	22.84%
Demographic characteristics				
Female	27.66%	22.01%	28.80%	61.94%
Average age	39.19	35.84	37.08	40.73
Cohabiting	75.51%	75.60%	65.22%	85.47%
Number of children under 14	0.669	0.744	0.598	0.671
Relatives working as entrepreneurs	27.66%	24.64%	25.54%	25.26%
Job characteristics				
Average hours of work per week	50.5	49.2	48.6	47.9
Average annual work incomes	€10,082	€7,285	€4,373	€6,540

Table 3 (continued)

Final destination	Censored	Paid employment	Unemployment	Inactive
Country				
Austria	1.98%	1.91%	0.00%	2.08%
Belgium	3.15%	1.20%	2.17%	1.04%
Denmark	1.31%	2.87%	3.26%	1.04%
Finland	5.98%	6.22%	7.61%	3.46%
Germany	5.96%	6.22%	2.72%	10.03%
Greece	17.84%	13.40%	21.2%	17.3%
Ireland	5.33%	4.31%	5.98%	4.15%
Italy	10.88%	5.98%	15.76%	6.23%
Netherlands	2.74%	2.87%	1.63%	0.69%
Portugal	9.45%	14.83%	3.80%	8.65%
Spain	19.31%	21.53%	27.72%	21.11%
United Kingdom	16.07%	18.66%	8.15%	24.22%

Table 4 Descriptive statistics of the departure from work as employer

Final destination	Censored	Paid employment	Unemployment	Inactive
Number of spells	4,959	344	168	202
Education				
Basic education	36.02%	40.99%	44.05%	40.59%
Secondary education	35.81%	35.76%	38.69%	36.63%
Tertiary education	28.17%	23.26%	17.26%	22.77%
Previous labour market situation				
Entering from unemployment	22.02%	33.72%	44.05%	27.72%
Demographic characteristics				
Female	25.19%	22.67%	32.14%	59.90%
Average age	39.02	35.11	36.40	40.23
Cohabiting	77.76%	71.22%	66.07%	84.65%
Number of children under 14	0.701	0.695	0.607	0.554
Relatives working as entrepreneurs	32.22%	23.84%	33.93%	33.17%
Job characteristics				
Average hours of work per week	51.8	50.2	50.1	50.3
Average annual work incomes	€13,891	€9,239	€7,513	€9,501
Country				
Austria	2.92%	1.74%	1.79%	0.99%
Belgium	4.62%	3.78%	5.95%	1.49%
Denmark	1.98%	3.20%	0.00%	0.50%
Finland	4.72%	2.91%	5.36%	2.48%
Germany	10.61%	12.21%	12.50%	18.32%
Greece	15.45%	11.34%	21.43%	14.36%
Ireland	5.73%	4.36%	2.38%	5.45%
Italy	21.31%	21.80%	26.19%	27.72%
Netherlands	0.30%	1.16%	0.60%	0.00%

Table 4 (continued)

Final destination	Censored	Paid employment	Unemployment	Inactive
Portugal	10.97%	16.86%	7.14%	5.45%
Spain	13.09%	15.70%	13.69%	8.42%
United Kingdom	8.31%	4.94%	2.98%	14.85%

References

- Acs, Z. J. (2008). Foundations of high impact entrepreneurship. *Foundations and Trends in Entrepreneurship*, 4(6), 535–620.
- Allison, P. (1982). Discrete time methods for the analysis of event histories. In S. Leinhardt (Ed.), *Sociological methodology* (pp. 61–98). San Francisco: Jossey-Bass.
- Andersson, P. (2010). Exits from Self-Employment: Is there a native-immigrant difference in Sweden? *International Migration Review*, 44(3), 539–559.
- Andersson, P. A., & Wadensjö, E. (2007). Do the unemployed become successful entrepreneurs? *International Journal of Manpower*, 28, 604–626.
- Bates, T. (1990). Entrepreneur human capital inputs and small business longevity. *The Review of Economics and Statistics*, 72(4), 551–559.
- Block, J., & Sandner, P. (2009). Necessity and opportunity entrepreneurs and their duration in self-employment: evidence from German micro data. *Journal of Industry, Competition and Trade*, 9, 117–137.
- Boden, R. J., & Nucci, A. R. (2000). On the survival prospects of men's and women's new business ventures. *Journal of Business Venturing*, 15, 347–362.
- Brüderl, J., Preisendörfer, P., & Ziegler, R. (1992). Survival chances of newly founded business organizations. *American Sociological Review*, 57, 227–242.
- Burke, A. E., FitzRoy, F. R., & Nolan, M. A. (2002). Self-employment wealth and job creation: The roles of gender, non-pecuniary motivation and entrepreneurial ability. *Small Business Economics*, 19, 255–270.
- Carrasco, R. (1999). Transitions to and from self-employment in Spain: an empirical analysis. *Oxford Bulletin of Economics and Statistics*, 61, 315–341.
- Carree, M., & Thurik, R. (2008). The lag structure of the impact of business ownership on economic performance in OECD countries. *Small Business Economics*, 30, 101–110.
- Cooper, A. C., Gimeno-Gascon, F. J., & Woo, C. Y. (1991). A resource-based prediction of new venture survival and growth. In J. L. Wall, L. R. Jauch, D. Roberts, R. Ross, & C. Kelly (Eds.), *Academy of management best paper proceedings* (pp. 68–72). Madison, WI: Omnipress.
- Cooper, A. C., Gimeno-Gascon, F. J., Folta, T., & Woo, C. Y. (1992). Entrepreneurs' exit decisions: the role of threshold expectations. In J. L. Wall & L. R. Jauch (Eds.), *Academy of management best paper proceedings* (pp. 75–79). Las Vegas, NV: Academy of Management.
- Cooper, A. C., Gimeno-Gascon, F. J., & Woo, C. Y. (1994). Initial human and financial capital as predictors of new venture performance. *Journal of Business Venturing*, 9, 371–395.
- Earle, J. S., & Sakova, Z. (2000). Business start-ups or disguised unemployment? Evidence on the character of self-employment from transition economies. *Labour Economics*, 7, 575–601.
- European Commission (2010). European Employment Observatory Review: Self-employment in Europe 2010.
- Evans, D. S., & Leighton, L. S. (1989). Some empirical aspects of entrepreneurship. *The American Economic Review*, 79, 519–535.
- Evans, L., & Leighton, L. (1990). Small business formation by unemployed and employed workers. *Small Business Economics*, 2, 319–330.
- Fertala, N. (2008). The shadow of death: do regional differences matter for firm survival across native and immigrant entrepreneurs? *Empirica*, 35, 59–80.
- Georgellis, Y., Sessions, J. G., & Tsitsianis, N. (2007). Pecuniary and non-pecuniary aspects of self-employment survival. *The Quarterly Review of Economics and Finance*, 47, 94–112.
- Gimeno-Gascon, F. J., Folta, T. B., Cooper, A. C., & Woo, C. Y. (1997). Survival of the fittest? Entrepreneurial human capital and the persistence of underperforming firms. *Administrative Science Quarterly*, 42, 750–783.

- Haapanen, M., & Tervo, H. (2009). Self-employment duration in urban and rural locations. *Applied Economics*, 41, 2449–2461.
- Headd, B. (2003). Redefining Business Success: Distinguishing Between Closure and Failure. *Small Business Economics*, 21, 51–61.
- Holtz-Eakin, D., Joulfaian, D., & Rosen, R. H. (1994). Sticking it out: entrepreneurial survival and liquidity constraints. *Journal of Political Economy*, 102, 53–75.
- Honig, B. (1998). What determines success? Examining the human, financial, and social capital of Jamaican microentrepreneurs. *Journal of Business Venturing*, 13, 371–394.
- Kapsalis, C., & Tourigny, P. (2004). Duration of non-standard employment. *Perspectives on Labour and Income*, 5(12), 5–13.
- Kuhn, P. (2000). Editor's note. *Labour Economics*, 7(5), 463–469.
- Lin, Z., Picot, G., & Compton, J. (2000). Entry and exit dynamics of self-employment in Canada. *Small Business Economics*, 15, 105–125.
- McFadden, D. (1974). Conditional logit analysis of qualitative choice behaviour. In P. Zarembka (Ed.), *Frontiers in econometrics* (pp. 105–142). New York: Academic.
- Millán, J. M., Congregado, E., & Román, C. (2011). Determinants of self-employment survival in Europe. *Small Business Economics*. doi:10.1007/s11187-010-9260-0.
- OECD. (2009a). *Policy responses to the economic crisis: investing in innovation for long-term growth*. Technology and Industry, OECD: Directorate for Science.
- OECD. (2009b). *Coping with the crisis at local level: policy lessons from the OECD Programme on Local Economic and Employment Development (LEED)*. CFE, OECD: Internal working document.
- OECD. (2010). *OECD Employment Outlook 2010, Moving beyond the jobs crisis*. Paris: OECD Publications.
- Oxenfeldt, A. R. (1943). *New firms and free enterprise: Pre-war and post-war aspects*. Washington: American Council on Public Affairs.
- Parker, S. C. (2009). *The economics of entrepreneurship*. Cambridge, UK: Cambridge University Press.
- Peracchi, F. (2002). The European community household panel: A review. *Empirical Economics*, 27, 63–90.
- Rissman, E. R. (2006). The self-employment duration of younger men over the business cycle. *Economic Perspectives*, 30, 14–27.
- Santarelli, E., & Vivarelli, M. (2007). Entrepreneurship and the process of firms' entry, survival and growth. *Industrial and Corporate Change*, 16(3), 455–488.
- Shane, S. (2009). Why encouraging more people to become entrepreneurs is bad public policy. *Small Business Economics*, 33, 141–149.
- Storey, D. J. (1991). The birth of new firms—does unemployment matter? A review of the evidence. *Small Business Economics*, 3, 167–178.
- Storey, D. (1994). *Understanding the small business sector*. London: Routledge.
- Taylor, M. P. (1999). Survival of the fittest? An analysis of self-employment duration in Britain. *The Economic Journal*, 109, 140–155.
- Taylor, M. P. (2004). Self-employment in Britain: when, who and why? *Swedish Economic Policy Review*, 11, 139–173.
- Thurik, A. R., Carree, M. A., Van Stel, A. J., & Audretsch, D. B. (2008). Does self-employment reduce unemployment? *Journal of Business Venturing*, 23(6), 673–686.
- Van der Sluis, J., Van Praag, C. M., & Vijverberg, W. (2008). Education and entrepreneurship selection and performance: A review of the empirical literature. *Journal of Economic Surveys*, 22(5), 795–841.
- Van Praag, C. M. (2003). Business survival and success of young small business owners. *Small Business Economics*, 21, 1–17.
- Williams, D. R. (2004). Effects of Childcare Activities on the Duration of Self-Employment in Europe. *Entrepreneurship Theory and Practice*, 28(5), 467–485.

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