

THE SUSTAINABILITY OF START-UP FIRMS AMONG FORMERLY WAGE WORKERS

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Abstract:

In this paper we analyse the survival of start-up firms among formerly wage workers in Spain. In particular, we address the question of how long do these workers remain self-employed before entering into unemployment or returning to a new paid-employment. For this purpose, we make use of labour records and other relevant information contained in a longitudinal administrative dataset in order to apply well-known duration model techniques. Results show that a higher survival rate in self-employment is associated to men, prime-age workers and individuals with higher previous labour turnover. Moreover, longer unemployment spells are found to speed up the rate of transition to non-employment and to reduce that to paid employment. Finally, the probability of exiting from self-employment decreases with duration in this status.

Keywords: self-employment, duration analysis

JEL codes: J23

1. Introduction

A rising rate of nascent entrepreneurs in an economy may have positive effects on market efficiency and the rate of innovations. Growing levels of entrepreneurial activity may also reduce the unemployment rate, which may decrease if more people establish new firms both because founders themselves —by starting a new firm— avoid becoming unemployed and because newly established firms may increase labour demand if successful. The 2000 edition of the OECD *Employment Outlook* stressed this importance of self-employment as a source of employment during the 1990s. Indeed, self-employment has increased at a greater pace than salaried employment in many countries. In Spain —where above 1.8 million people are unemployed (which amounts to a disturbingly high unemployment rate of about 8 percent)— this has been particularly relevant, since the pressure to bring people into employment is one of the most challenging issues facing the Spanish Government. Self-employment in this country involves more than 3.2 million of individuals and it reaches 16.1 percent of total employment, according to the figures from the Labour Force Survey.

In this paper, we analyze the duration of self-employment of former wage workers who decide to start a business in Spain, the characteristics that determine the sustainability of their self-employment experiences and how does the exit rate from self-employment change over the self-employment spell. This issue is relevant not only because most self-employed start out as wage workers (Carrasco, 1999), but also because a substantial number of businesses do not survive for long —even though there exist a wide range of policies in Spain fostering transitions into self-employment (Cueto and Taboada, 2004; Congregado et al., 2006). A similar situation occurs in other industrialized countries — for instance, Fritsch et al. (2006) find that more than 50 percent of start-ups become bankrupt within the first five years in Germany. Therefore, if the aim of such policies is to increase the number of self-employed individuals, it is essential to find out the determinants of the duration of such self-employment spells. A second motivation for this research is to know to what extent individuals use self-employment as a step to other forms of employment. Self-employed individuals have to decide whether the newly established business should be carried on or whether they should take up dependent employment (which may or may not be a better opportunity for them). Thus, we analyze what self-employed individuals do after terminating their businesses. Does the self-employment experience lead them to reintegration in dependent employment or do unsuccessful entrepreneurs return to the pool of unemployment?

For this purpose, we use a longitudinal dataset from Spanish Social Security that permits us to construct the self-employment duration for wage workers who enter self-employment, avoiding stock-sample biases. In addition, one advantage of this dataset over previous studies is that we are able to observe entrants into self-employment over a long period of time (5 years) and to determine exactly the length of time an individual has operated his business. This dynamic approach to entrepreneurship contrasts sharply with previous literature, which has mainly involved static analyses of cross-section studies (Carrasco, 1999). In addition, literature on self-employment mostly refers to the U.S. and the U.K., while the evidence regarding other European countries is rather limited. Finally, the questions addressed in the present contribution have been paid scant attention so far: compared to the plethora of studies examining self-employment entry (e.g., Blanchflower, 2000; Carrasco, 1999; Evans and Jovanovic, 1989; Evans and Leighton, 1989; Acs *et al.*, 1994; Georgellis and Wall, 2000 or Zissimopoulos and Karoly, 2007), relatively few studies examine the determinants of self-employment

survival and exit. Among the few exceptions, Reize (2004) finds that self-employment in Germany is more stable than dependent employment, since the self-employed face a lower risk of becoming unemployed again—in this paper, we also obtain similar evidence for Spain in the present contribution. The majority of the analyses conclude that survival in self-employment increases with duration in this status and under favourable economic conditions. It is also higher for middle-aged individuals who have suffered short prior periods of unemployment (Taylor, 1999; Van Praag, 2003; Andersson, 2006; Georgellis et al., 2007).

In Spain, however, research on self-employment has been rather scarce. While some researchers have analyzed the transitions into self-employment (e.g., Alba Ramirez, 1994), the only study to our knowledge that analyzed self-employment duration is that of Carrasco (1999). She focused on the effect of past unemployment on the exit rates from self-employment and concluded that previous unemployment experiences increase the probability of leaving self-employment.

Our findings show that self-employment duration of formerly wage workers in Spain appears to be substantial on average: more than 70 (45) percent of start-ups are still in business 1.5 (4) years after they have been set up. In addition, the probability of exiting from self-employment decreases with duration in such a state, which is a common result in the international context (see Evans and Leighton, 1989; Carrasco, 1999 or Lin *et al.*, 2000). We also find that the transition rate to dependent employment after an unsuccessful business is closed down is negligible. This small transition rate may be due either to unavailable outside options or because the labour market does not value skills from self-employment¹. On the contrary, the transition rate to non-employment is substantially large for businesses whose duration has been short. These findings have important policy implications for the adjustment of recent labour market reforms in Spain.

2. Dataset

The *Muestra Continua de Vidas Laborales* dataset (MCV) includes all the electronically recorded information that the Social Security keeps in relation to the labour history for approximately 1,100,000 individuals, whose anonymity is preserved. It is a 4% random draw from a reference population, which is composed of all the people who at any time during 2004 had a registered record with the Social Security system (either because they were contributing or because they were receiving a pension)². This dataset provides information on every employment (and non-employment spell) along their work history (from the moment when they first enter the labor force up to the year 2005)³. It contains rich information on worker's labor market trajectory and their individual characteristics.

¹ In this sense, evidence suggests that those returning paid-employment after a self-employment spell have lower wages than those who stay in the wage sector (Hyytinen and Rouvinen, 2007; Bruce and Schuetze, 2004; Williams, 2004).

² Therefore, it does not include the population that had been inactive throughout the year, except if they either received a contributory pension or received unemployment benefits (since, in this latter case, the National Employment Service pays their social contributions to the Social Security Funds).

³ Since in this database we cannot distinguish between unemployment and out of the labor force—the information we have is simply that workers are not employed at some point of their history—we address these spells as "non-employment".

We restrict our sample to formerly wage-employed individuals who enter into self-employment for the first time in their working life from 1990 up to 2000. Thus, although these individuals have been employed at least once at the General System of the Social Security prior to their current self-employment spell, they have had no other previous experiences in self-employment. In addition, given the large size of the resulting dataset, we extracted a 10% random sample of these individuals. After filtering the sample, the number of entrants into self-employment is 1,936. The selected group is then followed until they end their self-employment experience or until they are removed from the sample at the year 2005. In this initial sample, the spells of self-employment (SE) experiences can end up either in another self-employment experience (SE), in paid employment (PE), in non-employment (U), or are censored observations. However, given that there are too few observations finishing in another self-employment experience, and that we are mostly interested in non-employment and dependent employment, we consider the transition SE-SE as censored. Therefore, in the final dataset, self-employment spells can end up either in paid employment, in non-employment, or are censored observations. In the transition from SE to PE, the unemployment period in between these two labour spells has to be no longer than 30 days. The transition SE-U implies that the initial self-employment spell finishes and the subsequent non-employment spell lasts longer than 30 days.

The variables used can be classified into three groups: demographic characteristics, individuals' labour market experience prior to entering self-employment, and economic variables relating to business cycle conditions. In the first group we include gender, age and nationality. The second group contains the workers' labour market situation before entering self-employment, which can be very informative about their probability of survival (Carrasco, 1999). It collects individuals' prior employer —its industry and location— as well as information on previous labour market history —the qualification level required in the previous job⁴, the number of jobs held prior to self-employment experience, the type of contract in the previous wage employment⁵, the length of time they have stayed unemployed before initiating the business, whether or not they were previously hired by a Temporary Help Agency and whether or not they received unemployment benefits. In the third group we consider two aggregate variables at the regional and national level: the growth rate of the domestic product (i.e., a control for the business cycle) and the regional unemployment rate (i.e., a control for the local labor market situation). Labour market conditions are assumed to be directly related to the prospects for business: when such conditions worsen, one should expect a larger probability that the business venture will fail.

The duration variable is the duration of the self-employment spell (either completed or censored). It is built from its beginning and ending dates and is measured in months. Every individual with tenure in self-employment beyond 60 months is considered as censored (given the scarcity of observations beyond this duration), as well as individuals who continue as self-employed at the end of the observation window (the year 2005).

[TABLE 1]

⁴ The specific categories within each qualification group are detailed in Table 1 of the Appendix A.

⁵ See Table A.2 in Appendix A for definitions for each type of temporary contract. In order to know more details on each type of contract, see the *Guía Laboral*, elaborated by the *Ministerio de Trabajo y Asuntos Sociales*, which is freely available in the following web page: <http://www.mtas.es>

Table 1 describes the background characteristics of 1,926 individuals who established a new firm out of dependent employment for their first time in their labour market history between 1990 and 2000. Fewer females decided to establish a new business (around 61.3 percent were males). Only 2.5 percent of individuals are immigrants, and very few (2.6 percent) received unemployment benefits after their dependent employment had finished. Most workers are observed in the age category 25-34 years-old, while about 28.5 percent are between 16-24 years-old. The third most observed category is 35-44 years-old. Thus, the age distribution is hump-shaped with a maximum at the thirties.

As regards previous labour market experience, the majority of individuals have had less than 6 jobs prior to entering into self-employment (47.2 percent have held more than 1 and less than 6 jobs), and around one quarter were holding an open-ended contract in their former dependent employment. The majority of self-employed workers have been less than one month jobless before they entered into self-employment, and around 20.7 percent of them have had a non-employment experience longer than 1 month and shorter than 6 months. Finally, 25.8 percent of individuals have been non-employed for more than 6 months. Thus, most of individuals have suffered non-employment for only short periods of time before entering into self-employment.

Although the dataset used does not include the individual's educational attainment or occupation, we include a variable which collects the required level of qualification for the job (see Table A in Appendix). The majority of the self-employed had either low or lower-intermediate qualification (40.6 and 30.7 per cent, respectively) —the highest-qualified ones are indeed a minority. With respect to the industry in former wage employment, more than half of the self-employed developed their activity in the services sector (especially in those services other than tourism).

On the whole, the average profile of the self-employed corresponds to a low-qualified middle-age man, who has previously worked in the services sector and has suffered a relatively short non-employment period before entering self-employment.

3. Non-parametric analysis

Figure 1 plots the empirical and predicted hazards of exiting from self-employment by the competing destinations —i.e., entry into a paid-employment or entry into non-employment. In constructing this figure, we make the conventional assumption of independent competing risks (e.g., Katz and Meyer, 1990) —the hazard plot for paid-employment treats entry into non-employment as censored, while the hazard plot for non-employment treats entry into paid-employment as censored. The hazard rate rises up to the highest level of 2.49 percent at the second month for the transition into non-employment. Moreover, while the paid-employment hazard is larger for durations in self-employment up to 1 year, there is no substantial difference from then on between both figures.

[FIGURE 1]

Thus, the longer the worker remains in self-employment, the lower is the likelihood of entering into non-employment once the self-employment experience has finished. This negative duration in self-employment may reflect a learning process by the self-employed (Parker, 2004). In particular, some self-employed may learn that either the entrepreneurial opportunity they discovered is not as good as they thought it would be

or that they are not quite as good as running a business as they expected (Jovanovic, 1982). Such learning will take place during the early years of being an entrepreneur, so the longer an individual has been self-employed the more likely he/she is to continue. This may be due both to self-employed businesses taking some time to become securely established and to people less suited to self-employment giving up after relatively short periods of time (Carrasco, 1999).

4. Econometric approach: competing-risks discrete-time duration analysis

In this section we examine the dependence of the exit from self-employment on the length of time in business. We estimate the probability that an individual will survive T periods in self-employment and the probability of leaving self-employment during the next period, given that the individual has been self-employed for T periods. We consider a competing risks model, since the estimation of a single-risk model — where only one hazard may cause failure; i.e., leaving self-employment— will not let us specify separately the effect of the variables on the self-employment duration through their effect on the probability of accepting a dependent employment and the probability of exit into non-employment⁶. Therefore, we specify a discrete-time duration model with competing risks following the formulation proposed by Allison (1982) and Jenkins (1995). Competing risks are used to estimate the probability of exit to different states, namely paid employment (PE), non-employment (U). An advantage of the competing risks model is that it allows us to test whether the explanatory variables have different effects on the propensity to leaving self-employment depending on the state of destination.

For modelling the transition from self-employment to PE or U, we define the discrete hazard rate. For the i -th person, the hazard rate into state j ($j=1,2$) in period t , $h_{ij}(t)$, is the conditional probability of a transition to state j in this period, given that individual i has been self-employed until t :

$$h_{ij}(t) = \Pr[T_i=t_i, J=j \mid T_i \geq t_i] \quad (6)$$

Assuming that the competing risks are independent, the hazard rate from self-employment is given by:

$$h_i(t) = \sum_{j=1}^2 h_{ij}(t) \quad (7)$$

And assuming that all spell observations are independent, the likelihood function for the original state j can be written in terms of hazard rates as follows:

$$L = \prod_{i=1}^n \left[\prod_{j=1}^2 \left[\frac{h_{ij}(t)}{(1-h_{ij}(t))} \right]^{\delta_{ij}} \left[\prod_{k=1}^t (1-h_{ik}) \right] \right] \quad (8)$$

In this expression, the indicator function δ_{ij} , equals one if the duration is complete (individual i makes a transition to state j), and equals zero if duration is censored. Therefore, the first component of (8) captures the transition rate and the second

⁶ Since estimation results of this single-risk model provide a starting point for the duration analysis, they are available from the authors upon request.

component is the survivor function, which represents the conditional probability that individual i remains self-employed in period t .

Given that (8) is in function of the transition rates, we just need to specify the dependence of the latter on a set of explanatory variables. For the hazard rate we choose the logistic specification that, with multiple events, generates the multinomial *logit* model (Maddala, 1983). It allows for the three possible states considered: paid employment (PE), non-employment (U) and remaining self-employed (which is the reference state category). For individual i , the transition rate to state j in period t specified as a multinomial logit can be written as:

$$h_j(t | z(t), \varepsilon_j) = \frac{\exp(\gamma(t) + Z'(t)\beta_j)}{1 + \sum_{m=1}^2 \exp(\gamma(t)_m + Z'(t)\beta_m)} \quad (9)$$

where $Z(t)$ is a vector of explanatory variables which may vary with time; β is the vector of parameters to be estimated, and the terms $\gamma(t)$ stands for the baseline hazard which captures the duration dependence. A common but restrictive approach consists of specifying a parametric form for the baseline hazard. This approach is rather strong, given that the assumptions on the form are difficult to justify from an economic point of view, and provokes a misspecification problem. Instead of this, duration dependence is captured through an additive term $\gamma(t)$, to be estimated in the most general way as possible through the inclusion of a second-order polynomial in $\log(t)$ —this polynomial offered the best results in terms of significance and likelihood values. This method presents the advantage of being flexible and is very common in the literature (see e.g., García-Pérez and Muñoz-Bullón, 2005).

Before proceeding with the estimation we have performed the Hausman test (Hausman and McFadden, 1984) on the assumption of ‘independence of irrelevant alternatives’ (IIA). This test partitions the choice set of alternatives into subsets and compares the coefficients from the complete model with those of the restricted model (the latter being obtained by leaving out one or more alternatives). Results in Table 2 tell us that the null hypothesis of IIA is accepted. Therefore, the multinomial *logit* specification seems to be appropriate for each departure state.

[TABLE 2]

In addition, Table 2 reports the results of a Wald test and a Likelihood Ratio test, in order to examine the null hypothesis that the coefficients of two categories do not differ significantly from each other, for all the possible combinations. In other words, that some of the alternatives might be combined or aggregated into a simple category, in which case the specification should be binomial rather than a multinomial. In both tests the rejection of the null hypothesis means that it is adequate to distinguish between exits into non-employment and paid employment. Thus, the multinomial specification seems to be appropriate, since none of the categories should be combined.

5. Estimation results: transition rates into non-employment and paid-employment

Since much of the interest comes in the analysis of data in which failure can arise from two sources (entry into non-employment or entry into paid-employment), Table 3 presents the results from the estimations of the competing-risks model outlined in Section 4 above. Two single risk estimations have been obtained based on the likelihood function (8) by the maximum likelihood estimator. The first column reports estimated coefficients for exit from self-employment to paid-employment and the second column reports estimated coefficients for exit from self-employment into non-employment. Therefore, this competing-risks specification allows us to distinguish whether the independent variables have a different effect on the two destination states considered. Note that the exponential function of the parameter of a dummy variable measures the hazard rate for an individual with the dummy equals to one relative to the reference person.

[FIGURE 2]

Figure 2 shows the estimated hazard rate at mean of covariates. As regards the duration dependence of the hazard rates of leaving self-employment, both hazard rates increase during the first months in self-employment, but decrease thereafter. Therefore, the longer an individual has been self-employed, the more likely he is to continue (except for very short durations). This may be due to the fact that a self-employed business takes some time to become securely established and it has access to more resources than when it first started. In addition, as explained above, a learning process by self-employed may be underlying this result (Parker, 2004). However, as was expected from the empirical hazard rates shown in Figure 1, both predicted hazards exhibit quite different shapes: the hazard rate into wage work is lower than the hazard rate into non-employment. Moreover, the non-employment hazard rises sharply during the first two months, and declines thereafter, while the paid employment hazard shows a flatter trend (despite an initial peak during the first 4 months). Thus, individuals in our sample have difficulty returning to dependent employment as time goes by (see in this respect, Bruce and Schuetze, 2004)⁷.

[TABLE 3]

Even though most prior research finds no differences in survival rates between men and women, results in Table 2 indicate that men are less likely than women to exit from self-employment into non-employment. This is analogous to results by Andersson (2006), who found that women were more likely than men to become unemployed compared to continuing in self-employment. Our estimated coefficient translates into a probability differential of 75.20 percent. This implies that women tend to enjoy shorter self-employment durations than men when they return to non-employment. However, it does not take women significantly less time than men to find paid-employment (since no significant differences as regards gender arise when the exit into paid-employment is considered).

⁷ On the contrary, Van Praag (2003) obtains that experience in self-employment does not significantly influence the length of a business venture; neither general labour market experience nor relevant experience (in the same industry or in the same occupation) helps to survive.

As regards age, ages above 25 years-old mark the difference: the older workers are, the less likely they are to exit from self-employment (either into paid-employment or into unemployment). This result for age is most probably related to the fact that older people may use self-employment to bridge their remaining time till retirement, because they may have fewer “outside options”. Thus, a lower hazard rate of elderly people does not necessarily imply that their start-ups are more successful. This result on age is in line with results found in other countries. For instance, Taylor (1999) finds that the lowest exit rate corresponds to people aged less than fifty years at the start of the spell for the UK. For the U.S., Van Praag (2003), using the National Longitudinal Survey of Youth finds that the older one starts, the longer one survives. For Sweden, Andersson (2006) also finds that the youngest group is more likely to exit self-employment. Finally, similar evidence is found for Canada by Lin *et al.* (2000).

Qualification does not exert a significant impact on the hazard rates out of self-employment —the only exception is that of the lower-intermediate qualified individuals, who are less likely to exit self-employment into paid-employment. This may be attributed to the fact that it is a specific sort of human capital one needs to be an entrepreneur (Blanchflower, 2004), and it is unclear whether the labour market values qualification levels held by individuals —similarly, Taylor (1999) suggested that academic success is a poor indicator of entrepreneurial ability.

One important variable that provides interesting insights into the way workers exit self-employment in Spain is previous non-employment duration. Those individuals who have had spells of non-employment longer than two years are substantially more likely to moving into non-employment and less likely to enter into paid-employment. Human capital may be devaluated during an unemployment spell. Thus, being unemployed for a too long period may be a stigma and may hence decrease the chance of finding new employment. In addition, self-employed individuals suffering prior non-employment experiences above one month and below one year also have higher hazard rates into non-employment higher than the reference individual (the ones who have been unemployed for less than 1 month). These results are coherent with prior evidence suggesting that past unemployment experience is negatively associated with staying in self-employment (Carrasco, 1999; Taylor, 1999; Van Praag, 2003; Andersson, 2006).

Individuals more accustomed to move from jobs are supposedly more “employable” and thus are expected to leave self-employment earlier. This expectation is confirmed in results obtained for the variable which measures the number of previous jobs held: individuals subject to higher turnover (in terms of the number of previous jobs held) enjoy a higher escape rate from self-employment. In particular, this is the case for those who have held more than six jobs, both as regards the transitions into paid-employment and into non-employment.

Whether the self-employed had received unemployment benefits prior to entering into self-employment is a statistically significant variable that reduces the likelihood of returning to wage work and, at the same time, increases the probability of moving into non-employment. Finally, the regional unemployment rates exert a negative effect on survival (see, e.g., Van Praag, 2003). And entrepreneurs in agriculture and fishing, as well as those in the tourism sector enter into non-employment sooner than the reference industry (manufacturing). This is coherent both with results by Taylor (1999), who found the highest exit rates from self-employment in distribution, hotels and catering, and by Andersson (2006) —who found that starting a firm in manufacturing,

construction, transportation or health care implied a smaller probability of exiting self-employment compared to self-employment in industrial services.

6. Conclusions #Completar algo más resumiendo brevemente los resultados más importantes#

In this paper we have analysed transitions out of self-employment in Spain. We have considered two alternative ways of exiting from the self-employment status: entry into non-employment versus entry into paid-employment. The dataset used comes from the Spanish Social Security records, and focuses on formerly wage-employed individuals who enter into self-employment for the first time in their working life from 1990 up to 2000. It contains individuals' demographic characteristics and labour market experience prior to entering the self-employment spell. Using these rich data, we have estimated a discrete-time duration model with competing risks of exits to wage work or to non-employment.

The probability of exiting from self-employment is larger for young entrepreneurs (either into non-employment or into paid employment). In addition, women exit into non-employment sooner than men. Longer non-employment spells before self-employment are associated with a sooner exit into non-employment and a postponed transition into paid-employment. This result is consistent with similar findings for other countries. Thus, given that the majority of policies which foster self-employment are targeted to unemployed people, more attention (in terms of training, funding, etc.) would be advisable in order to reduce outflows from self-employment. In particular, although there are many policies that focus at the pre-start phase of the businesses, few programmes follow them until they are consolidated. Our results suggest that it could be advisable to maintaining such support once the business has been created in order to increase the survival probability.

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APPENDIX. TABLES

TABLE A.1

Occupation category groups

Category	Description: Social Security Contribution Category
High	1- ingenieros and licenciados - <i>engineers and graduates</i> 2- ingenieros técnicos, peritos and ayudantes titulados - <i>technical engineers and other skilled workers</i> 3- jefes administrativos and de taller - <i>chief and departmental heads</i>
Upper Intermediate	4 - ayudantes no titulados - <i>other semi-skilled workers</i> 5 - oficiales administrativos - <i>skilled clerks</i> 6 - subalternos - <i>auxiliary workers</i>
Lower-Intermediate	7 - auxiliares administrativos - <i>semi-skilled clerks</i> 8 - oficiales de primera and segunda - <i>skilled laborers</i>
Low	9 - oficiales de tercera and especialistas - <i>semi-skilled laborers</i> 10 - peones - <i>unskilled laborers</i>

TABLE A.2

Description of Work Contract Denominations Used in the Analysis

Work Contract Name	Description
Work-Experience (Practice) Contract <i>(Contrato de prácticas)</i>	The purpose of this contract is to enable persons who have completed secondary, vocational training or university education to gain work experience according to their educational level.
Training Contract <i>(Contrato de formación)</i>	This contract is related to the provision of theoretical and practical knowledge required to perform a skilled job. This contract replaced the old apprenticeship contract in 1997.
Interim Contract <i>(Contrato de interinidad)</i>	This temporary contract is related to interim situations in the firm
Per-task Contract <i>(Contrato de obra o servicio)</i>	This contract was introduced for temporary needs of the firms related to specific works or services of unknown duration (but presumably not permanent).
Casual Contract <i>(Contrato eventual por circunstancias de la producción)</i>	This contract is related to unusual or seasonal circumstances of the goods markets and excess of work in the firm.

FIGURE 1.
Kaplan-Meier exit rate from self-employment by destination states: paid employment (PE) and non-employment (U).

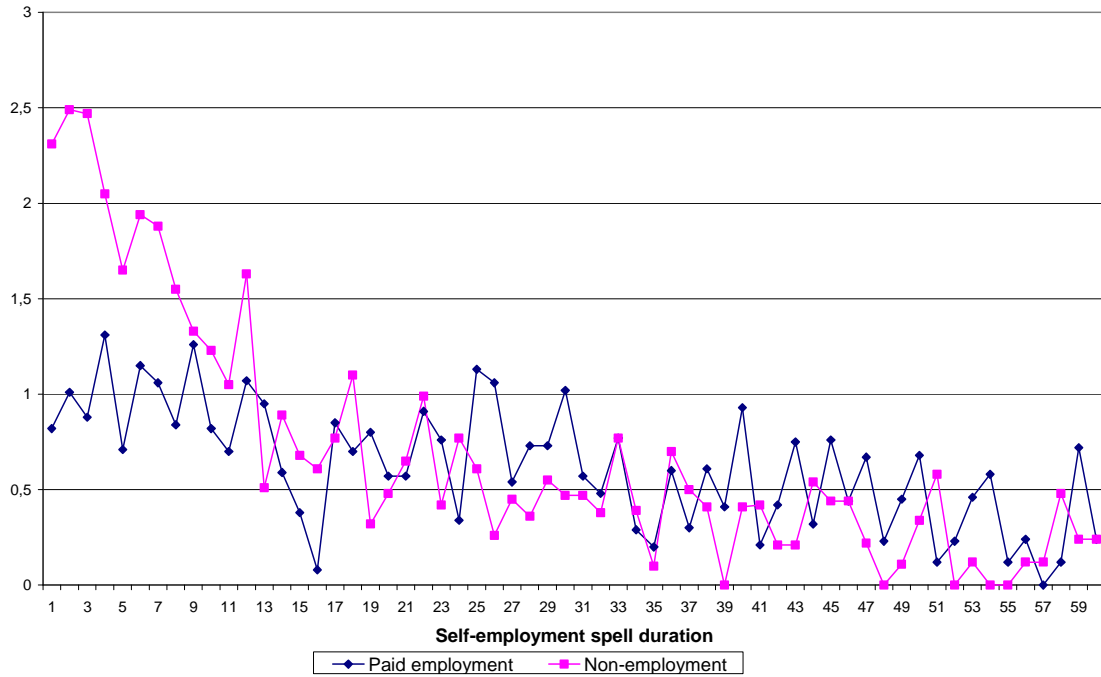


FIGURE 2.
Estimated hazard rates from self-employment into paid employment or non-employment. Predicted values are obtained at the means of covariates.

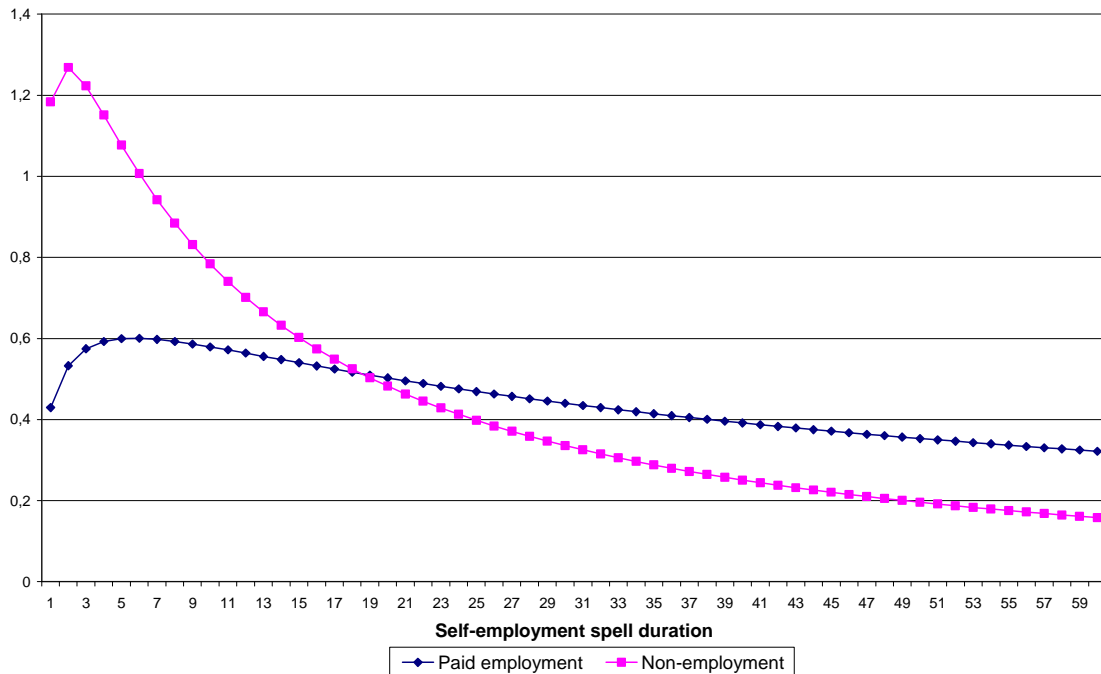


TABLE 1. Main descriptive statistics

Variable		Mean	Std. Dev.	Min	Max
Censored*		0.463	0.499	0.000	1.000
Gender (1=Male)		0.613	0.487	0.000	1.000
Inmigrant (1=Yes)		0.025	0.157	0.000	1.000
Age at beginning of spell:					
	16-24	0.285	0.451	0.000	1.000
	25-34	0.483	0.500	0.000	1.000
	35-44	0.139	0.347	0.000	1.000
	>44	0.092	0.290	0.000	1.000
Previous unemployment duration (months):					
	<=1	0.535	0.499	0.000	1.000
	>1 & <=6	0.207	0.405	0.000	1.000
	>6 & <=12	0.101	0.301	0.000	1.000
	>12 & <=24	0.086	0.281	0.000	1.000
	>24	0.071	0.256	0.000	1.000
Received unemployment benefits (1=Yes)					
		0.026	0.159	0.000	1.000
Number of previous job held up to beginning of self-employment:					
	1	0.151	0.358	0.000	1.000
	2-5	0.472	0.499	0.000	1.000
	6-10	0.237	0.425	0.000	1.000
	>10	0.140	0.347	0.000	1.000
Type of contract in previous wage employment:					
	Open-ended	0.259	0.438	0.000	1.000
	Per task	0.162	0.368	0.000	1.000
	Casual	0.158	0.364	0.000	1.000
	Work-experience	0.014	0.117	0.000	1.000
	Training	0.009	0.096	0.000	1.000
	Interim	0.015	0.121	0.000	1.000
	Other temporary contracts	0.383	0.486	0.000	1.000
Previously employed through a Temporary Help Agency					
		0.032	0.176	0.000	1.000
Qualification group in former wage employment:					
	High	0.144	0.351	0.000	1.000
	Upper-Intermediate	0.143	0.350	0.000	1.000
	Low-intermediate	0.307	0.461	0.000	1.000
	Low	0.406	0.491	0.000	1.000
Previous industry in former wage employment:					
	Agriculture & Fishing	0.011	0.104	0.000	1.000
	Manufacturing	0.139	0.346	0.000	1.000
	Construction	0.127	0.333	0.000	1.000
	Tourism	0.164	0.370	0.000	1.000
	Other services different from tourism	0.560	0.497	0.000	1.000

Note: Censored observations include also those that end into a new self-employment spell.

TABLE 1. Cont.

Variable	Mean	Std. Dev.	Min	Max
Previous region in former dependent employment:				
Andalucia	0.146	0.353	0.000	1.000
Aragon	0.030	0.172	0.000	1.000
Asturias	0.028	0.166	0.000	1.000
Baleares	0.034	0.182	0.000	1.000
Canarias	0.043	0.204	0.000	1.000
Cantabria	0.016	0.126	0.000	1.000
Castilla-la-Mancha	0.026	0.160	0.000	1.000
Castilla-león	0.045	0.208	0.000	1.000
Madrid	0.143	0.350	0.000	1.000
Cataluña	0.183	0.387	0.000	1.000
Valencia	0.105	0.306	0.000	1.000
Extremadura	0.020	0.141	0.000	1.000
Galicia	0.053	0.223	0.000	1.000
Murcia	0.034	0.180	0.000	1.000
Navarra	0.014	0.119	0.000	1.000
País Vasco	0.072	0.258	0.000	1.000
Rioja	0.007	0.082	0.000	1.000
Year of entry into self-employment				
From 1990 to 1993	0.050	0.218	0.000	1.000
From 1994 to 1997	0.283	0.451	0.000	1.000
From 1997 to 2000	0.667	0.471	0.000	1.000
Number of individuals	1,936			

TABLE 2. Specification tests for multinomial *logit* specification

Test for IIA	$\chi^2(P>\chi^2)$
Ho: Odds(Outcome-J vs Outcome-K) are independent of other alternatives.	
Hausman	
Omitted: Paid employment	0.342 (1.00)
Omitted: Non-employment	0.338 (1.00)
Wald and LR tests for combining outcomes	
Ho: All coefficients except intercepts associated with given pair of outcomes are 0 (i.e., categories can be collapsed).	
Wald test	
Combining paid employment & non-employment	179.037 (0.00)
Combining paid-employment and self-employment	345.101 (0.00)
Combining non-employment & self-employment	708.020 (0.00)
Likelihood Ratio test	
Combining paid employment and non-employment	198.922 (0.00)
Combining paid employment and self-employment	361.427 (0.00)
Combining non-employment and self-employment	768.883 (0.00)

TABLE 3. Selected parameter estimates. Discrete-time model – competing risks

	Paid-employment			Non-employment		
	Coef.	Std.	Signif.	Coef.	Std.	Signif.
Log(t)	0.389	0.182	**	0.222	0.136	*
Log(t) ²	-0.112	0.039	***	-0.175	0.033	***
Gender (1=Male)	0.100	0.109		-0.285	0.095	***
Inmigrant (1=Yes)	-0.652	0.461		0.099	0.273	
Age at beginning of spell:						
16-24	-	-	-	-	-	-
25-34	-0.498	0.120	***	-0.352	0.109	***
35-44	-0.487	0.178	***	-0.395	0.162	**
>44	-0.885	0.230	***	-0.558	0.198	***
Previous unemployment duration (months):						
<=1	-	-	-	-	-	-
>1 & <=6	0.096	0.118		0.241	0.112	**
>6 & <=12	-0.152	0.179		0.350	0.137	***
>12 & <=24	-0.173	0.188		0.128	0.161	
>24	-0.406	0.244	*	0.513	0.164	***
Received unemployment benefits (1=Yes)	-0.875	0.510	*	1.212	0.188	***
Number of previous job held up to beginning of self-employment:						
1	-	-	-	-	-	-
2-5	0.197	0.159		0.145	0.129	
6-10	0.573	0.176	***	0.294	0.149	**
>10	0.950	0.192	***	0.289	0.177	**
Type of contract in previous wage employment:						
Open-ended	-	-	-	-	-	-
Per task	0.492	0.176	***	0.656	0.169	***
Casual	0.696	0.157	***	0.488	0.160	***
Work-experience	0.779	0.376	**	0.141	0.443	
Training	-0.113	0.530		-0.205	0.603	
Interim	0.437	0.342		0.285	0.437	
Other temporary contracts	0.141	0.153		0.374	0.143	**
Previously employed through a Temporary Help Agency	0.195	0.231		-0.218	0.270	
Qualification group in former wage employment:						
High	0.118	0.165		-0.165	0.161	
Upper-Intermediate	-0.146	0.162		-0.066	0.146	
Low-intermediate	-0.243	0.123	**	-0.036	0.106	
Low	-	-	-	-	-	-
Previous industry in former wage employment:						
Agriculture & Fishing	0.234	0.440		0.647	0.374	*
Manufacturing	-	-	-	-	-	-
Construction	-0.082	0.192		0.035	0.186	
Tourism	0.037	0.181		0.288	0.164	*
Other services different from tourism	0.181	0.153		0.074	0.147	
Regional unemployment rate (tvc)	0.186	0.017	***	0.197	0.015	***
Quarterly growth GDP (tvc)	0.017	0.034		0.009	0.030	
Constant	-9.096	-0.598	***	-7.264	-0.479	***
Number of observations & Log-likelihood	68,811; -5539.9415					

Notes: Regressions also control for 17 regions and for both the year and the month of entry into self-employment (dummy variables for January-February, March-April, May-June, July-August and September-October). “tvc” means time varying covariate. Source: Social Security records, except for the regional unemployment rate and the and the quarterly GDP growth rate (which were obtained from the Spanish Labour Force Survey, EPA). *** indicates significance at 1 per cent; ** indicates significance at 5 per cent; * indicates significance at 10 per cent.