

# Say Goodbye to my Little Firm

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## Abstract

Exits from entrepreneurship and how entrepreneurs face and learn from exits have been debated by many authors. This work explores entrepreneurs' paths after leaving their firms, whether they take a traditional job, exit the labor market, or reenter self-employment. It aims to understand which factors influence these post-exit decisions, how entrepreneurs perceive industry change after entrepreneurial exit, and why individuals with entrepreneurial characteristics might be recruited for innovation. The Portuguese dataset *Quadros de Pessoal* is used to conduct this research, including essential variables regarding industry characteristics, company performance, and the entrepreneurs' personal context, such as their age, education, and gender. This analysis uses descriptive statistics and the econometric models Logit and Multinomial Logit. We find that age makes individuals more likely to reenter entrepreneurship, and so does being a male. More educated individuals are less likely to be non-employed. However, the longer the tenure in their previous company is, the more probable it is for them not to find an occupation after entrepreneurial exit. Previous entrepreneurial experience and accumulated human capital make entrepreneurs more likely to reenter self-employment, and entrepreneurs coming from companies performing above the industry's average results are also more likely to follow entrepreneurship. Lastly, our results show that industry change is more influenced by education, industry experience, and company closures. At the same time, previous entrepreneurial success and high skill levels make entrepreneurs more likely to be recruited for innovation. Our results provide insights for policymakers interested in developing entrepreneurship and diversifying the labor force in Portugal.

**Keywords:** Entrepreneurial Exit, Post-Exit Trajectories, Industry Change, Innovation Roles, Econometric Models

## 1. Introduction

The risk of creating a new venture includes the possibility of entrepreneurial failure. The need to understand why businesses fail and what the consequences are for entrepreneurs has led many authors to study this topic. Failure is fundamental in the process of entrepreneurial learning, however, there is still no academic consensus on the definition of entrepreneurial failure, as some authors simply link it with entrepreneurial exit, regardless of whether it is voluntary or involuntary, while others present more complex ways to measure this failure, stating that most exits from entrepreneurship are voluntary and have nothing to do with business failure. Academics also intend to understand how the characteristics of the entrepreneurs affect the company they created and how these individuals learn from their entrepreneurial endeavors. Entrepreneurial reentry is also a topic warranting discussion. What are entrepreneurs going to do after saying goodbye to their firm? On the one hand, some can, in fact, reenter entrepreneurship by becoming serial entrepreneurs who are always looking for opportunities and market gaps, so, as the name suggests, they start several businesses one after another, making use of the specific entrepreneurial human capital acquired in previous businesses. However, after exiting their company, some entrepreneurs may prefer to start looking for traditional jobs, likelier in innovation or management.

Our main goal is to use econometric models to understand which paths entrepreneurs are more likely to follow after leaving their firms and what influences their decisions. This study provides insights for policymakers and academics in-

terested in encouraging entrepreneurship and diversifying the labor force in Portugal, including topics on the impact of education and previous background on entrepreneurial decisions as well as the role of gender and age in entrepreneurial reentry. We also find how company performance and industries affect the entrepreneur's career. Moreover, we want to contribute to the literature by providing knowledge on what makes former entrepreneurs go to non-employment, as this topic remains under-researched.

## 2. Literature Review

This Section provides a theoretical framework that supports the econometric and empirical investigation in Sections 3 and 5. We also formulate several hypotheses to be explored.

### 2.1. Entrepreneurial Exit and Failure

Company exits can be separated into voluntary and involuntary (Taylor, 1999). When an entrepreneur leaves his company involuntarily, this entrepreneurial exit can be associated with entrepreneurial failure. However, some authors reduce all entrepreneurial exits and business closures to entrepreneurial failure and, for that reason, suggest that an excellent way to measure success is through firm survival. Cope (2011) defines failure as the conclusion of a business that has not achieved its objectives. Three types of failure are proposed by Lattacher and Wdowiak (2020): *failure as the disappearance of the firm from a market*; *failure in an organizational term*; and *failure as defined by the personal perception of the entrepreneur*.

Consistently with Taylor (1999), Amaral et al. (2007) disassociate entrepreneurial failure from entrepreneurial exit,

given that most exits are unrelated to entrepreneurial failure and involuntary business closure, and present four different modes of company exit: *entrepreneurial failure*, which is closure with low performance; *divestment choice*, which is closure with high performance; *managerial turnover*, which is sell-off with low performance; and *planned exit strategy*, which is sell-off with high performance. The first mode of exit is the only business termination considered involuntary. Entrepreneurial voluntary exit can happen for two motives, as discussed by Amaral et al. (2007): either the firm performance does not meet the economic and performance levels expected and needed to stay competitive in the market, or it does not meet the entrepreneur's expectations and preferences, which are his objectives. The entrepreneurs may be reluctant to continue in business, acknowledge that there may be a better and more promising entrepreneurial opportunity, find a new allocation of resources to different markets, find better career opportunities as an employee, or have the desire to enter or reenter the entrepreneurial market with a new project or by acquiring an already existing firm. These authors find that over half of the entrepreneurs exit their firms through sell-off, with low performance, which does not necessarily suggest the firm was closed and the business terminated. Amaral and Baptista (2007) also state that individuals with more outstanding expertise and advanced professional qualifications are more inclined to identify and capitalize on superior business opportunities. The presence of a high level of human capital can also enhance innovation, productivity, and adaptability (Del Sarto et al., 2021).

## 2.2. Entrepreneurial Learning

A recurring idea from theorists is that failure is a fundamental requirement for the process of learning, moving onto a new business, and generating human capital. Ellis et al. (2006) state that failures serve as the catalyst that amplifies the cognitive processes, influencing behavior. Moreover, Amankwah-Amoah et al. (2022) show that, even in the face of failure, most entrepreneurs demonstrate a willingness to persist in their entrepreneurial pursuits. Entrepreneurs can choose to abandon self-employment and use acquired skills to find traditional wage-based employment, but the probability of abandonment of self-employment decreases with time in entrepreneurship (Carrasco, 1999; Evans and Leighton, 1990). Entrepreneurs who persist in their businesses eventually discover their true abilities, while those who exit often have relatively unclear assessments of their true capabilities (Jovanovic, 1982). However, according to Ucbasaran et al. (2013), if the financial, social, and psychological costs associated with failure outweigh the benefits of learning from it, entrepreneurs might opt to leave entrepreneurship. Entrepreneurs must overcome the loss of their venture and recover from grief (Cardon et al., 2011; Shepherd, 2003). Failure works as a transitional stage that facilitates progress and advancement toward entrepreneurs' goals in the entrepreneurial processes, helping the entrepreneur discover new perspectives and opportunities (Cope, 2011). The continuous learning process changes the entrepreneur's mindset and willingness to re-engage in entrepreneurial ventures, influencing their post-exit decisions on reentering entrepreneurship or finding an occupation elsewhere.

## 2.3. Paths after Entrepreneurial Exit

While leaving their firm behind, entrepreneurs face three possibilities: they may become unemployed, seek conventional employment, or move to another entrepreneurial venture, becoming self-employed again. The literature on transitions from self-employment to unemployment is scarce, as most authors study what makes unemployed individuals follow entrepreneurship, a subject that is out of the scope of our work. Therefore, this Subsection intends to study the transitions to Paid-Employment and to Self-Employment.

We want to fill the gap in the literature regarding unemployment after entrepreneurial exit and provide insights into what factors influence this transition. Also, there is still room to explore the intersectionality between the three possible paths in aspects like age, gender, education, industries, or previous company status when considering the exit strategies. Lastly, we also aim to contribute to the Portuguese literature regarding entrepreneurship and labor status.

### 2.3.1 Paid-Employment

After leaving their firms, business owners who embody true entrepreneurship shine in situations requiring full ownership of a venture or problem. However, this leadership profile can create obstacles in complex organizations where collaboration across established business units is crucial, and leaders must regularly share both information and power (Butler, 2017). Therefore, a more favorable choice for individuals with this profile is to be recruited by a firm to work as innovators (Vaillant and Lafuente, 2019). Lindbjerg et al. (2021) find that individuals with a history of founding enterprises have a combination of innate and specifically acquired entrepreneurial human capital. The advantage in execution skills that former entrepreneurs hold over non-entrepreneurs enhances their effectiveness in actively pursuing, acquiring, and mobilizing diverse social, human, or financial capital resources. These authors find that a greater proportion of newly hired entrepreneurs is linked positively with the portion of a company's sales generated from innovation.

### 2.3.2 Self-Employment and Entrepreneurship

Another possible trajectory for entrepreneurs after leaving their firms is to reenter self-employment by creating a new business or by acquiring an already existing firm. Given the scope of this work, serial entrepreneurs are relevant to be analyzed. Former firm founders can, in fact, become serial entrepreneurs, individuals who conclude one venture before embarking on a subsequent one, or portfolio entrepreneurs, individuals who possess multiple businesses simultaneously. Individuals in specialized and, specifically, managerial roles are more likely to become or remain entrepreneurs (Nyström, 2020). Plehn-Dujowich (2010) proposes that a high-skilled entrepreneur keeps her business running as long as it is profitable. However, if the company is low quality, he adopts the role of a serial entrepreneur, initiating and eventually shutting down firms until he finds one that yields sufficient profits. Yet, a low-skill entrepreneur will close a low-quality business and transition into the labor market without pursuing serial entrepreneurship.

Becker (2009) defines human capital as activities that improve skills, knowledge, or well-being. Parker (2004) underlines that human capital makes individuals likelier to

survive in self-employment, as more educated individuals are more informed, more able to access business opportunities, and more productive (Carrasco, 1999). In contrast, other authors say there is a negative relationship between transitioning into self-employment and education because it is easier for these individuals to find better jobs. According to Cueto et al. (2021), very low-skilled individuals have a lower probability of enterprise survival, but a university degree does not make much difference.

Regarding the age of the entrepreneur, Lin and Wang (2019) suggest that older entrepreneurs require more time to initiate a new business and reenter entrepreneurship than younger individuals. Stam et al. (2008) say that younger individuals are more prone to reentering entrepreneurship, becoming what they call *renascent entrepreneurs*. Baù et al. (2017) suggest that the age of the failed entrepreneur can influence the probability of reentry to self-employment, however, it depends intensely on the career stage of the entrepreneur. Baù et al. (2017) also find that the likelihood of entrepreneurial reentry after business failure varies between genders while still depending on the individual's age. In their study, while males and females show an increasing likelihood of reentry self-employment in the early years, in the mid-career stage, males are more likely to reenter.

Another pertinent aspect is whether, after business failure, the entrepreneur will persist within the same industry or transition to another. Serial entrepreneurs tend to attribute the failure of their preceding firm to external industry factors, and consequently, they may opt to change industries between their prior and subsequent ventures. Nevertheless, the change in the sector will eliminate any potential advantages derived from industry-specific knowledge and, therefore, eliminate the learning from failure gained in the process (Parker, 2013; Eggers and Song, 2015). Parker (2013) finds that advantages from previous firms are transitory and depreciate over time since they are worn out, eventually becoming irrelevant. The longer the period between exiting a firm and embarking on a new one, the more devaluation occurs, which suggests that an individual who leaves their previous firm and wants to continue being self-employed should do it as fast as possible.

#### 2.4. Hypotheses

Based on the literature presented before, we derive some hypotheses to explore in our work.

**Hypothesis 1A:** Younger entrepreneurs are more likely to reenter entrepreneurship.

**Hypothesis 1B:** Within the individuals who do not exit the labor market, younger entrepreneurs are more likely to reenter entrepreneurship than following paid-employment.

**Hypothesis 2A:** Males are more likely than females to reenter entrepreneurship.

**Hypothesis 2B:** Within the individuals who do not exit the labor market, males are more likely than females to reenter entrepreneurship than following paid-employment.

**Hypothesis 3A:** Better-educated entrepreneurs are more likely to reenter entrepreneurship.

**Hypothesis 3B:** Within the individuals who do not exit the labor market, better-educated entrepreneurs are more likely to reenter entrepreneurship than following paid-employment.

**Hypothesis 4:** Within the individuals who do not exit

the labor market, the longer the period between the exit and reentry, the less relevant the entrepreneurial skills obtained in the previous company become, making them less likely to reenter entrepreneurship than following paid-employment.

**Hypothesis 5:** If their company fails, entrepreneurs are more likely to change industries.

**Hypothesis 6:** Entrepreneurs with greater industry experience are less likely to change industries.

**Hypothesis 7:** Previous entrepreneurs entering paid employment are more likely to be recruited to work in innovation.

### 3. Data

Our analysis will rely on the *Quadros de Pessoal* (QP) dataset, a Portuguese dataset containing data related to companies, establishments, and employed individuals. Our study spans from 2010 to 2020, encompassing 32 055 081 observations. These observations correspond to approximately 5 151 262 workers across 579 883 companies.

#### 3.1. Sample construction

To create a viable sample for this work, a data quality process is necessary to eliminate all invalid and incoherent observations and ensure that all observations maintain consistency across years. As 2020 is the last year represented in the sample, it is impossible to identify whether any entrepreneur left a company in 2020 because there is no evidence about 2021. The same logic applies to firm closures in 2020.

The dataset combines information on companies and workers, creating a cross-sectional working sample. This sample is organized as follows: each observation corresponds to an exit of an entrepreneur from his previous firm. It is possible to see the path chosen by each individual when leaving their company, whether they decide to continue in self-employment, find a traditional wage-based job, or become non-employed. Those who disappear from the database are considered non-employed, including those transitioning out of the private sector, becoming unemployed, retiring, pursuing a military career, or even emigrating.

In the initial dataset, 6% of the total observations correspond to entrepreneurs. Given the scope of this analysis, only the individuals who are entrepreneurs and have exited their firms will be considered, corresponding to approximately 0.8% of the original panel dataset. After analyzing the data, we find that 82% of the entrepreneurs take a maximum of three years to find a new company or create their own. For this reason, the individuals who took more than three years to find a new job were considered non-employed in our study, since we found this period of time already considerable. We also assumed that all individuals over 55 years old (30%) may have retired, and these will not be considered in our study. With all these restrictions, the final working sample corresponds to about 0.5% of the initial dataset and has 170 845 observations, corresponding to 148 612 workers across 131 882 companies.

A wide definition of *entrepreneur* is used, like in other works using *QP* (Amaral et al., 2007). *Entrepreneur* includes full or partial business owners, whether they have founded, purchased, or inherited the company. Thus, *business owner* and *entrepreneur* are used synonymously.

### 3.2. Variables

We have four different dependent variables in this study to understand different effects. The first two allow us to investigate and understand what factors influence the choice of pursuing entrepreneurship and becoming a serial entrepreneur or finding a traditional wage job or going to non-employment: the first one is a categorical variable with the value 0 if the individual exits to non-employment, 1 if the individual exits to self-employment, and 2 if the individual exits to paid employment and the second one is a binary variable that is 1 if the individual exits to self-employment, and 0 if the individual exits to paid employment. The third dependent variable is a binary variable that is 1 if the individual exits to the same industry and 0 if the individual changes industries, whether he creates his own company or finds a job in a different one. The fourth one is a binary variable that takes the value 1 if the individual exits to an innovation role in an existing company. These last two variables are created with *ISCO-08* at the two-digit level. *ISCO-08* stands for *International Standard Classification of Occupations* and provides a systematic classification of occupations.

Table 1 shows descriptive statistics for the independent variables across the three possible paths entrepreneurs follow after exiting their companies: non-employment, self-employment or entrepreneurship, and paid employment. The second column of the table gives the mean values and standard deviations for the entire working sample, considering all the individuals who exited their firms independently of the path they will pursue.

Table 1: Descriptive Statistics for Entrepreneurial Exit.

Variable	Entire Sample	Non Employment	Self Employment	Paid Employment
Age	41.20 (8.03)	41.28 (8.13)	41.70 (9.53)	40.00 (8.21)
Male (D)	0.67 (0.47)	0.65 (0.48)	0.71 (0.45)	0.67 (0.47)
College (D)	0.25 (0.44)	0.24 (0.43)	0.28 (0.45)	0.25 (0.43)
Tenure	6.27 (6.47)	5.91 (6.38)	7.23 (6.72)	6.25 (6.31)
Years working as employer	3.36 (2.49)	2.90 (2.18)	4.89 (2.84)	2.81 (2.05)
Years until finding a new company	2.26 (1.80)	-	1.62 (0.87)	1.47 (0.90)
Company ≤ 50 employees (D)	0.98 (0.12)	0.99 (0.09)	0.98 (0.14)	0.96 (0.18)
Company's Turnover Bracket ≤ 2 million euros (D)	0.88 (0.32)	0.88 (0.34)	0.89 (0.31)	0.87 (0.33)
Company Tenure	9.31 (11.20)	8.34 (10.02)	10.79 (11.64)	11.12 (14.04)
Company Closure (D)	0.58 (0.49)	0.71 (0.45)	0.24 (0.42)	0.57 (0.49)
Company is Knowledge Intensive (D)	0.27 (0.44)	0.27 (0.44)	0.29 (0.45)	0.25 (0.44)
Company is High Technology (D)	0.07 (0.25)	0.06 (0.25)	0.08 (0.27)	0.07 (0.26)
Company High Performance (D)	0.10 (0.30)	0.09 (0.29)	0.14 (0.34)	0.11 (0.31)
Number of Observations	170 845	106 610	39 663	24 572
Number of Workers	148 612	104 346	34 089	24 126
Number of Companies	131 882	91 609	32 324	22 468

Mean values and standard deviations (in parentheses). (D) stands for Dummy Variables.

Most independent variables have self-explanatory names. Nevertheless, some may require an explanation: *Tenure* refers to the years spent in the company as a worker, *Years working as an employer* are the number of years the individual spent working as an employer in the company since 2010; *Years until finding a new company* are the number of years the individual spent between exit and starting or finding a new company; *Company Tenure* is the number of years since establishment of the company; *Company Closure* takes the value 1 if the company closes at the time of the entrepreneurial exit. We also have two variables that

check if the company offers *Knowledge-Intensive* or *High-Technology Services*. These variables take the value 1 if the company is High-technology or offers Knowledge-Intensive Services (KIS) and 0 if it is Low-technology or offers less knowledge-intensive services and are defined using *CAE Rev.3* and 'High-technology' and 'Knowledge Intensive Services' aggregations based on *NACE Rev.2*. *CAE Rev.3*, provided by the Portuguese *Instituto Nacional de Estatística (INE)*, stands for *Portuguese Classification of Economic Activities, Revision 3* and is a classification system used in Portugal to categorize economic activities and companies. *NACE Rev.2* stands for *Nomenclature of Economic Activities* and is a system used by all European Union countries to standardize economic activities. Both of these systems give us industry codes. Lastly, the variable that checks the *Company High Performance* shows its performance at the time of exit. It takes the value 1 if the company has high performance. As Amaral et al. (2007) state, "in order to account for 'exits with high or low performance', we constructed a dummy variable as a based on information on the average sales per sector, at the two-digit level of NACE. This variable equals 1 ('high performance') if, at the moment of exit, the sales per employee of the firm were the same or higher than the sector average; and equals 0 ('low performance') if they were lower than the sector average" (p.5). We defined our variable using the same logic.

We will also use controls for the years 2010 to 2019 to account for macroeconomic effects and the firm's location.

### 3.3. Descriptive Statistics

This Subsection applies a data profiling process to our sample to gain more knowledge about the data and provide descriptive statistics on the variables.

In our sample, after exiting their company, 62% of the individuals follow non-employment, 23% return to self-employment, and 15% go to paid employment. Figure 1 shows how our three options evolved. The three-year time constraint to find a new company is the reason why the results in the last three years seem so different from the past. Therefore, the exponential increase in Non-Employment and decreases in Paid-Employment and Self-Employment do not necessarily represent reality. The reality is that Non-Employment appears to remain constant. At the same time, Self-Employment presents a subtle but increasing trendline from 2012, after the Portuguese financial crisis, contrary to what happens on Paid-Employment.

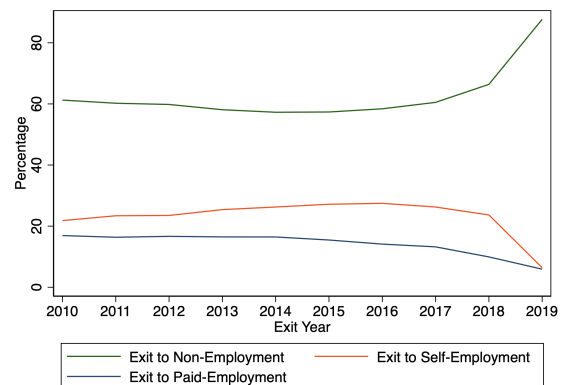


Figure 1: Evolution of Entrepreneurial Exit over time.

The sample is composed mainly of males (67%), and these are more likely to follow entrepreneurship than females. The average age of the individuals is 41 years old, and most individuals are between 40 and 50 years old. In the initial stages of their career, individuals are more likely to exit to paid employment, while in the mid stages of their career, they are more likely to follow self-employment. This may be because younger entrepreneurs have less money to invest in their projects, so they look for traditional wage-based jobs to gain more experience, network, and savings to follow self-employment maybe later.

Regarding education, about half of the entrepreneurs have only studied until ninth grade, a quarter concluded High School, and less than 20% have a Bachelor's Degree, with the top degree in Business Sciences. Individuals with a college education are more prone to follow self-employment, probably because they are more informed and more able to identify gaps in the market and good business opportunities. These individuals are also less likely to go to non-employment.

When analyzing the company performance in the same year that the entrepreneurs left the firm, we find that approximately 90% of the companies have low performance. When facing low performance, most entrepreneurs exit to non-employment. We also find that around 60% of the companies close when the entrepreneur leaves it, suggesting that it may have been a business failure. On average, individuals who exit to self-employment are more likely to come from companies with higher performance, and these companies are also less likely to close at the time of exit.

It is possible to confirm whether entrepreneurs are more likely to be recruited as innovators in our sample, given their skills and personality, using *ISCO-08* occupational codes. We conclude that about 4% of the individuals are recruited to work in these roles, using an *ISCO-08* value of 2. However, among the individuals who join paid employment, around 11% of the individuals are for innovation.

Using *CAE Rev.3* and 'High-technology' and 'Knowledge intensive services' aggregations based on *NACE Rev.2*, it is possible to analyze industry changes among the individuals and see how the knowledge acquired in their previous firm affects their career path. After their exit, about 70% of the entrepreneurs who do not follow non-employment or retirement continue working in the same industry. In our sample, workers who remain in the same industry or do jobs within the same technological categories are likelier to follow self-employment than paid employment. This is because many entrepreneurs stay in the same industry, so applying previous knowledge acquired in other projects is more effortless. Before exiting, most individuals remain in their firms for, on average, six years. The more years an individual works as an employer, the more likely he is to exit to self-employment and the less likely he is to go non-employed. This reinforces the idea that entrepreneurs use the acquired skills in the new companies they start. Another relevant result of this finding is that individuals who go to traditional wage-based jobs are likelier to change industries than those who remain self-employed and start their own companies. We also find that most individuals who change industries come from companies that closed after entrepreneurial exit.

## 4. Methodology

Based on Wooldridge (2016) and Cameron and Trivedi (2005), in this Section we present the theory behind the Logit Model and the Multinomial Logit Model.

### 4.1. Logit Model

The Logit Model is a regression methodology frequently used to analyze binary dependent variables in cross-sectional data. In this model, the dependent variable,  $y$ , may take two values: 1, with probability  $p$ , and 0, with probability  $1 - p$ . This regression model intends to define the probability  $p$  as a function of a regressor vector  $\mathbf{x}$  and a parameter  $\beta$ . This conditional probability is given by Equation 1, where  $F$  is the cumulative distribution function of the logistic distribution, ensuring that  $p$  will always be between 0 and 1.

$$p = Pr[y = 1 | \mathbf{x}] = F(\mathbf{x}'\beta) = \frac{e^{\mathbf{x}'\beta}}{1 + e^{\mathbf{x}'\beta}} \quad (1)$$

When all other factors are held constant, the Marginal Effects (ME) show the change in the probability of the outcome when one of the independent variables has a one-unit change. For a change in the  $j$ th regressor, the ME can be calculated as seen in Equation 2, for individual  $i$ .

$$ME = \frac{\partial p_i}{\partial x_j} = p_i(1 - p_i)\beta_j \quad (2)$$

### 4.2. Multinomial Logit Model

A Multinomial Model is a statistical model used to analyze categorical outcomes with more than two categories. In the Multinomial Logit Model, the dependent variable,  $y$ , is modeled using a logistic function and is defined to take value  $j$  if the  $j$ th alternative is taken,  $j = 1, \dots, m$ . The parameter  $p_j$  defines the probability of alternative  $j$  being chosen. The subscript  $i$  identifies the individuals and the regressors, also known as independent variables or predictors, are represented as  $\mathbf{x}_i$ . This model also assumes that the regressors are the same for all alternatives. With that, the probability that individual  $i$  chooses the  $j$ th alternative is given by equation 3, usually considering that  $\beta_1$  is 0 so that  $\sum_{j=1}^m p_{ij}$  is 1.

$$p_{ij} = Pr[y_i = j] = F_j(\mathbf{x}_i, \beta) = \frac{e^{\mathbf{x}_i'\beta_j}}{\sum_{l=1}^m e^{\mathbf{x}_i'\beta_l}} \quad (3)$$

The main limitation of the Multinomial Logit is called the *Independence of Irrelevant Alternatives* (IIA) assumption, which states that preference between any two alternatives does not change when a third alternative is added or removed. This restricts the choice between any two pairs of alternatives to a binary logit model. An alternative is the Multinomial Probit Model, which, although being more computationally intensive, allows relaxation of the IIA assumption, meaning that this model does not strictly require the IIA assumption to be met which can lead to more accurate modeling and a more realistic representation of decision-making processes where the choices may be interdependent. However, the Multinomial Probit Model has met with relatively little empirical success, and when run on *Stata*, this model does not necessarily relax the IIA assumption. For these reasons, the Multinomial Logit Model is the one selected.

Interpreting regression parameters directly in Multinomial Logit Models can be challenging, as these models are non-linear. Alternatively, as mentioned before, examining

the ME of regressor on the probabilities of outcomes proves beneficial. Equation 4 shows the ME for individual  $i$  of a change in the  $k$ th regressor on the probability that alternative  $j$  is the outcome.

$$ME = \frac{\partial Pr(y_i = j)}{\partial x_{ik}} = \frac{\partial F_j(x_i, \beta)}{\partial x_{ik}} \quad (4)$$

## 5. Results

In this Section, we show the econometric models' main results while discussing their relevance and possible meaning.

### 5.1. Paths after Entrepreneurial Exit

Tables 2, 3 and 4 show the ME from three Multinomial Logit Models on our entire sample, 170 845 observations, with the dependent variable being an indicator of which path an entrepreneur decides to follow after leaving their firm behind: Non-Employment, Self-Employment, or Paid-Employment. Each model presents a different set of independent variables to demonstrate different effects. Model 1 is more straightforward and intends to see the impact of the individual's characteristics on the exit. Model 2 aims to understand if the type of industry (High-technology or KIS) impacts the individual's choice. Model 3 aims to comprehend how the company's performance affects the entrepreneur.

Table 2 shows the ME from Multinomial Logit Model 1. It shows that, even though we are only considering individuals under 55 years old, as they age, the likelihood of exiting to non-employment increases by 0.3 percentage points, and the likelihood of exiting to paid employment and self-employment decreases, confirming *Hypothesis 1A*.

Table 2: Marginal Effects on the Multinomial Logit Model 1, regarding the possible paths for entrepreneurial exit.

Variable	To Non Employment	To Self Employment	To Paid Employment
Age	0.003*** (0.000)	-0.000*** (0.000)	-0.003*** (0.000)
Male (D)	-0.042*** (0.002)	0.048*** (0.002)	-0.006*** (0.002)
College (D)	-0.038*** (0.003)	0.038*** (0.002)	0.000 (0.002)
Tenure	0.003*** (0.000)	-0.006*** (0.000)	0.003*** (0.000)
Years working as employer	-0.053*** (0.001)	0.063*** (0.000)	-0.010*** (0.000)
Company $\leq$ 50 employees (D)	0.254*** (0.010)	-0.121*** (0.008)	-0.133*** (0.006)
Company's Turnover Bracket $\leq$ 2 million euros (D)	-0.027*** (0.004)	0.015*** (0.003)	0.012*** (0.003)
Number of Observations	170 845		
Pseudo R2	0.1034		
Log pseudolikelihood	-139737.35		

Note: Regressions include controls for year dummies and the firm's location. Standard errors in parentheses.

\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

Regarding gender, our results indicate that, holding other factors constant, on average, being male increases the probability of reentering self-employment. This result confirms *Hypothesis 2A*. On the other hand, being male decreases the probability of following non-employment after exiting the firm by 4.2 percentage points and the probability of following paid employment by 0.6 percentage points, compared to being female. This may be due to societal norms or individual perceptions of gender roles. Female entrepreneurs tend to have lower risk propensity (Yordanova and Alexandrova-Boshnakova, 2011). Also, women still face consistent challenges in securing funding from venture capitalists, obtaining loans, and earning the confidence of shareholders (Chamorro-Premuzic, 2014). Additionally, women entrepreneurs may find it more challenging to main-

tain a work-life balance according to social norms, familial expectations, and gender roles (Mann, 2024).

Higher educated entrepreneurs are likelier to follow self-employment by 3.8 percentage points, validating *Hypothesis 3A*. Contrary to Cueto et al. (2021), we find that having a university degree impacts the choice made by entrepreneurs, and human capital is significant to entrepreneurship, making higher-educated individuals less likely to be non-employed. The results for paid employment are not significant.

When analyzing worker tenure, we find the likelihood of exiting to non-employment or paid employment increases by 0.3 percentage points when an individual spends more years working in the company, while the likelihood of exiting to self-employment decreases by 0.6 percentage points. This may be due to the fact that individuals may become more committed to their existing positions as their tenure grows. Due to this attachment, they may favor security and stability, which increases their likelihood of selecting paid employment over entrepreneurship. On the other hand, as the number of years working as an employer in the previous firm increases, the likelihood of remaining in entrepreneurship increases. These individuals are more likely to have accumulated the necessary skills to survive in self-employment, after a learning process that occurs when someone has time to acquire entrepreneurial expertise and learn from experience (Agarwal et al., 2023).

The Multinomial Logit Model 2 in Table 3 shows how industries affect the entrepreneur's choice post-exit. Our results show that when an entrepreneur exits from a KIS company, he is 1.7 percentage points more likely to go to non-employment and 1.3 percentage points less likely to go to paid employment. When an entrepreneur exits from a company that provides high-technology services, he is 4.8 percentage points less likely to go to non-employment and 2.7 percentage points more likely to go to paid employment. In this model, the result for the exit to self-employment only exhibits a significance level of 10% but shows that individuals highly qualified in roles involving technology are 2.1 more likely to remain self-employed. These individuals may have valuable skills for other companies.

Table 3: Marginal Effects on the Multinomial Logit Model 2, regarding the possible paths for entrepreneurial exit.

Variable	To Non Employment	To Self Employment	To Paid Employment
Company is Knowledge Intensive (D)	0.017*** (0.003)	-0.003*** (0.003)	-0.013*** (0.002)
Company is High Technology (D)	-0.048*** (0.013)	0.021* (0.011)	0.027*** (0.009)
Number of Observations	170 845		
Pseudo R2	0.1035		
Log pseudolikelihood	-139710.36		

Note: Regressions include controls for year dummies and the firm's location, and for all the variables in Table 2. Standard errors in parentheses.

\*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

The literature review broadly discusses entrepreneurial failure. In Multinomial Logit Model 3, with the ME in Table 4, we studied how the company's performance during entrepreneurial exit affects the individual. We find that if the company has high performance, the likelihood of exiting to non-employment decreases by 5.3 percentage points, the likelihood of exiting to self-employment increases by

4 percentage points, and the likelihood of exiting to paid employment increases by 1.4 percentage points. There are many reasons why individuals may decide to exit their firm even though it has high performance: new business and opportunities, desire for innovation, personal motives, and even good exit opportunities, such as a business sale. However, since it is not considered a business failure, naturally, it is probable for these entrepreneurs to use acquired network and skills and decide to start a new business, whether it is within the same industry or not.

Table 4: Marginal Effects on the Multinomial Logit Model 3, regarding the possible paths for entrepreneurial exit.

Variable	To Non Employment	To Self Employment	To Paid Employment
Company High Performance (D)	-0.053*** (0.004)	0.040*** (0.003)	0.014*** (0.003)
Company Closure (D)	0.226*** (0.002)	-0.214*** (0.003)	-0.012*** (0.002)
Number of Observations	170 845		
Pseudo R2	0.1554		
Log pseudolikelihood	-131629.82		

Note: Regressions include controls for year dummies and the firm's location, and for all the variables in Table 2. Standard errors in parentheses.

\* p < 0.10, \*\* p < 0.05, \*\*\* p < 0.01

The link between company closure and business failure is not always true. If the company closes at the time of entrepreneurial exit, as Table 4 shows, the likelihood of exiting to non-employment increases by 22.6 percentage points, and the likelihood of exiting to self-employment and paid employment decreases by 21.4 and 1.2 percentage points, respectively. The value obtained for the probability of going to non-employment is exceptionally high, which is natural, according to Everett and Watson (1998). When discussing company performance and closure and business failure, the psychology of the entrepreneur plays a significant role when evaluating which path to follow.

## 5.2. Individuals remaining in the Labor Force

Table 5 shows the ME of two Logit Models performed on the individuals who remain in the labor force, whether they reenter entrepreneurship or follow paid employment. These models intend to explore further the analysis performed by Models 1, 2, and 3 and see how increasing the time spent between exiting and starting working again influences this choice. This analysis is only possible by introducing a variable that only concerns the individuals who do not go to non-employment: the years the entrepreneurs take to find a new company.

Models 4 and 5 reject *Hypothesis 1B*, showing that individuals are 0.2 percentage points more likely to go to self-employment over paid employment as age increases. Experience, expertise accumulation, networking, and resource access, may explain this result. Cueto et al. (2021) also say that younger individuals require more support to survive in self-employment. However, these models confirm *Hypothesis 2B*, showing that males are more likely than females to go to self-employment over paid employment.

Our study shows that more educated entrepreneurs are approximately 12 percentage points more likely to choose self-employment over paid employment, all else equal, confirming *Hypothesis 3B*. Even though it may be easier for these individuals to apply to a traditional job with a college

Table 5: Marginal effects on the Logit Models 4 and 5, regarding the likelihood of exiting to Self-Employment rather than to Paid Employment: without interactions.

Variable	Model 4	Model 5
Age	0.002*** (0.000)	0.002*** (0.000)
Male (D)	0.064*** (0.004)	0.063*** (0.004)
College (D)	0.125*** (0.004)	0.118*** (0.004)
Years working as employer	0.056*** (0.001)	0.056*** (0.001)
Company is Knowledge-Intensive (D)	0.019*** (0.005)	0.019*** (0.005)
Company is High-Technology (D)	-0.051*** (0.018)	-0.051*** (0.018)
Company High Performance (D)	0.034*** (0.005)	0.033*** (0.005)
Company Closure (D)	-0.210*** (0.003)	-0.211*** (0.003)
Years until finding a new company		-0.006*** (0.002)
Number of Observations	64 235	64 235
Pseudo R2	0.1654	0.1655
Log pseudolikelihood	-35667.827	-35663.862

Regressions include controls for year dummies and the firm's location. Standard errors in parentheses.

\* p < 0.10, \*\* p < 0.05, \*\*\* p < 0.01

diploma, they are also more informed and trained to recognize and exploit a viable opportunity (Carrasco, 1999).

Individuals with more years of experience working as employers are more likely to exit to self-employment. This result is really relevant to our study because it shows the importance of accumulating skills and experience in entrepreneurship. These individuals often have a strong network of contacts and are used to the autonomy and flexibility that self-employment provides.

Our results show that, with good company performance, individuals are approximately 3.4 percentage points more likely to remain self-employed. Regarding company closure, the likelihood of remaining self-employed over paid-employment decreases by 21 percentage points. After company closure, these individuals may seek financial stability, reduced risk and responsibility, and work-life balance provided by a traditional wage-based job. Even though individuals with an entrepreneurial profile benefit from decision-making liberty and the possibility of higher rewards, the possible need to work more hours a week puts them at risk of having an insufficient work-life balance, always with the risk of business failure (Basavapattan, 2020).

The newest and relevant result of these models comes from analyzing the years spent until the entrepreneurs find a new company or start their own. Parker (2013) states that benefits from prior companies are temporary and, diminish over time, becoming obsolete. Our results show exactly that: every year that increases from the exit to finding a new company, the likelihood of remaining self-employed over going to paid employment decreases by 0.6 percentage points, confirming *Hypothesis 4*.

Table 6 shows the ME for the same variables as Logit Model 5, presented in Table 5, but accounts for three interactions between some independent variables. Model 6 intends to show how males and females are influenced by their previous company performance when deciding which path to follow. Model 7 reveals how college diplomas affect reentry into self-employment. Lastly, Model 8 intends to understand how the time between leaving a firm and finding a new one is influenced by the years spent as an employer and the capabilities acquired in previous firms.

The first interaction is not significant, but as seen in Table 6, the ME are significant at the 5% level and the 1% level. We decided to analyze these results still, knowing that, even though the company's high performance influences both gender choices, the difference between them is not significant, meaning that both male and female entrepreneurs are likelier to choose self-employment over paid employment when their previous company had high performance.

Table 6: Marginal effects on the Logit Models 6, 7 and 8, regarding the likelihood of exiting to Self-Employment rather than to Paid Employment: with interactions.

Variable	Model 6	Model 7	Model 8
Company High Performance (D) for Females	0.021** (0.010)		
Company High Performance (D) for Males	0.037*** (0.006)		
Company Closure (D) for Individuals without a College Diploma		-0.252*** (0.005)	
Company Closure (D) for Individuals with a College Diploma		-0.173*** (0.008)	
Years until finding a new company when working as employer = 1			-0.064*** (0.003)
Years until finding a new company when working as employer = 5			0.041*** (0.003)
Years until finding a new company when working as employer = 10			0.080*** (0.004)
Number of Observations	64 235	64 235	64 235
Pseudo R2	0.1655	0.1664	0.1705
Log pseudolikelihood	-35662.883	-35625.59	-35448.218

Note: Regressions include controls for year dummies and the firm's location, and also for all the same variables presented in Models 4 and 5 in Table 5. Standard errors in parentheses.

\* p < 0.10, \*\* p < 0.05, \*\*\* p < 0.01

Considering all other factors constant, the other two interactions are statistically significant at the 1% level. The results of the interaction between company closure and college degree show that individuals with or without a college degree are less likely to create a new firm when their previous company closes, but having a college degree seems to diminish the negative impact of company closure on the decision to reenter self-employment. This may be due to the fear and doubts associated with entrepreneurial failure (Ucbasaran et al., 2013; Costa et al., 2023). Nonetheless, more educated individuals might still have more options or resources available to better access and evaluate why their firm closed and use that knowledge in other projects (Ellis et al., 2006), taking part of an entrepreneurial learning process. Lastly, the results for the interaction between the years until finding a new company and the years the individual worked as an employer in the previous firm show that individuals with a shorter period of employment before finding a new company have a lower likelihood of reentering self-employment, while those with more years of experience are more likely to continue self-employed and create a new company. Individuals with more years of experience may have better networks to find new opportunities.

### 5.3. Entrepreneurship and Industry Change

Table 7 shows the ME from two different logit models that analyze what influences the entrepreneur to remain in the

same industry after entrepreneurial exit. Model 9 studies the individuals who exit to paid employment and Model 10 the individuals who reentered self-employment.

Table 7: Marginal effects on the Logit Models 9 and 10, studying what influences industry change after entrepreneurial exit.

Variable	Model 9	Model 10
Age	-0.004*** (0.000)	-0.001*** (0.000)
College (D)	0.090*** (0.008)	0.077*** (0.005)
Tenure	-0.004*** (0.001)	-0.003*** (0.000)
Company is Knowledge-Intensive (D)	0.048*** (0.009)	-0.000 (0.005)
Company is High-Technology (D)	0.122*** (0.034)	0.098*** (0.018)
Company High Performance (D)	-0.054*** (0.010)	0.021*** (0.005)
Company Closure (D)	0.124*** (0.007)	0.211*** (0.004)
Company Tenure	0.004*** (0.001)	0.003*** (0.000)
Number of Observations	24 572	39 663
Pseudo R2	0.0212	0.0996
Log pseudolikelihood	-16627.906	-17587.327

Model 9 is related to individuals who exit to Paid-Employment and Model 10 is related to individuals who exit to Self-Employment.

Regressions include controls for year dummies and the firm's location. Standard errors in parentheses.

\* p < 0.10, \*\* p < 0.05, \*\*\* p < 0.01

Age and worker tenure function as impediments to transitioning between industries, while having a college education promotes industry changes. These findings exhibit that younger people and those with more education tend to actively pursue job diversification (Holzer et al., 1999). Any possible benefits from industry-specific expertise will be eliminated by the sector shift, and with it, the process's lessons learned from failure (Parker, 2013), and older and more experienced entrepreneurs may want to avoid this.

Our results show that the closure of their last business motivates industry change, partially confirming *Hypothesis 5*, as company closure does not necessarily mean failure. However, our results for company performance in Model 9, show that a good performance makes these entrepreneurs less likely to change industries, as these individuals had a positive experience in the field, already have an established network, and may believe their knowledge and contribute will be valuable to a new company. These results also help support *Hypothesis 5*. A different result is observed in Model 10. For those exiting to Self-Employment, a good performance makes them more likely to change industries. These individuals have specific skills and characteristics and tend to be risk-seekers, so serial entrepreneurs may opt to change industries, maybe driven by confidence in their ability to identify market opportunities or the desire to have a new successful business. These may also explain why the longer the company tenure, the more likely it is for them to change industries, as they might desire new challenges. Longer tenure provides knowledge and experience, but it also gives entrepreneurs curiosity about other fields.

The study reveals that classifications of 'High-technology' and KIS significantly influence entrepreneurs' industry choices. Individuals who exited to a traditional-wage base job are 4.8 percentage points more likely to change industries if their previous firm was classified as KIS and 12.2 percentage points more likely to change industries if their last firm was classified as High-technology. Individuals working in KIS and high-technology industries are more qualified and highly skilled and therefore, their input

is needed to adapt to a continuously changing environment brought on by changes in society or technological advancements (Miles, 2005), as their expertise is easily transferable across industries. Regarding the individuals who stay self-employed, they are more likely to change industries if their previous firm was classified as High-technology, and the ME for KIS industries are not statistically significant. These results reject *Hypothesis 6* for highly skilled individuals, however we have seen before the impact that accumulating entrepreneurial human capital has.

#### 5.4. Entrepreneurs in Innovation Roles

This final analysis confirms *Hypothesis 7* by examining the factors influencing former entrepreneurs' recruitment to innovation roles, due to their profile and characteristics. Table 8 shows the ME from this Logit Model, only considering the individuals who exit to paid employment.

Table 8: Marginal effects on the Logit Model 11, studying what influences individuals being recruited to work on innovation.

Variable	Model 11
Male (D)	0.010*** (0.004)
Years working as employer	-0.002* (0.001)
Company is Knowledge-Intensive (D)	0.166*** (0.004)
Company is High-Technology (D)	0.056*** (0.018)
Company High Performance (D)	0.018*** (0.018)
Company Closure (D)	-0.021*** (0.004)
Number of Observations	24 572
Pseudo R2	0.1136
Log pseudolikelihood	-7558.6768

Regressions include controls for year dummies and the firm's location. Standard errors in parentheses.

\* p < 0.10, \*\* p < 0.05, \*\*\* p < 0.01

Our results show that entrepreneurs coming from high-performance companies are more likely to be hired as innovators, and those who come from companies that closed at the time of entrepreneurial exit are less likely to be hired as innovators. This may be due to the association of low performance and business closure with failure.

When discussing human capital, it is easier to evaluate the results regarding experience as an employer and the industry that the entrepreneur comes from. For every year of experience as an employer in their previous company, entrepreneurs are 0.2 percentage points less likely to be hired as innovators. This may be an unexpected result, but many motives can explain it. One of them is that entrepreneurship is often linked with narcissism, a trait that may not be conducive to teamwork. The longer an individual has worked as an employer, the more used he is to having power and making decisions, making him overqualified and more suitable for management roles, as, probably, he is no longer working directly with creative and innovative tasks.

Regarding the previous firm industry, our results show that coming from a KIS or high-tech company makes entrepreneurs 16.6 and 5.6 percentage points more likely to be recruited as innovators, respectively. Industries like high-tech and KIS usually require specialized skills and expertise to perform innovative tasks. These entrepreneurs are used to working on problem-solving projects. They are familiar with risk-taking and adjusting to the need for rapid, creative,

and innovative solutions as technology changes. So, these individuals have an advantage in the innovation job market.

## 6. Conclusions

This Section aims to recap the contributions of this research and to pave the way for new findings and research.

### 6.1. Main Achievements and Implications

The way an entrepreneur leaves his firm is crucial for the subsequent path he decides or is forced to follow: whether he reenters self-employment, takes a traditional wage-based job, or goes into non-employment. Using the Portuguese dataset *Quadros de Pessoal*, our study focuses on individuals under 55 who left a company where they were business owners. We studied their paths and what may have affected their decisions and journeys, implementing probabilistic econometric methods.

We find that the older the entrepreneurs get, the more likely they are to reenter entrepreneurship, but also to go to non-employment. Males are more likely to pursue self-employment after entrepreneurial exit than females. These results show that Portugal should invest in entrepreneurship to diversify the labor force by providing younger entrepreneurs with access to capital and giving women the necessary conditions to pursue entrepreneurship. The literature broadly discusses the role of education on occupational choice, and we find that it significantly impacts entrepreneurship and makes more educated individuals less likely to be non-employed. Therefore, Portugal should continue to invest in education, making it a priority, as we find that having a college degree seems to diminish the negative impact that company closure has on reentering self-employment. Our results show that the longer the entrepreneur's tenure as an employer, accumulating entrepreneurial human capital and experience, the more likely he is to launch a new startup. He is also more likely to be a serial entrepreneur if the company does not close and is performing above the industry's average results, emphasizing how important the process of entrepreneurial learning is. Company closure makes individuals more likely to join other industries. However, we find that entrepreneurial failure affects business owners differently. For those who decided to pursue paid employment, a good company performance makes them more likely to remain in the same industry to possibly use their already acquired experience and network, but for those who remain self-employed, a good company performance makes them more likely to change industries and look for new challenges. Highly skilled individuals in KIS or high-tech companies are more likely to change industries due to increased technological usage and the need for experienced employees. A final analysis lies in the fact that entrepreneurs are more likely to be recruited to innovation roles due to their profiles and skills, while those over-qualified are less likely to be recruited. Portugal is becoming a more innovative country but still has a long way to go to become more competitive worldwide.

### 6.2. Limitations and Future Work

The Multinomial Logit Model's main limitation is the Independence of Irrelevant Alternatives. Another limitation that affected our study is the broad definition of firm founder. Future research could focus on the effect that wages and la-

bor hours have on post-exit decisions since the dataset does not have this type of data for employers.

The concept of entrepreneurial skills and its effect on entrepreneurial failure and learning was impossible to directly quantify in this study, and we did it using the tenure of the worker in the company, the years the individual worked as an employer, and by determining the industry type of his former company. Nonetheless, it could be interesting to explore further and more precisely.

Economic cycles over the years impact entrepreneurs and their careers. Despite considering this effect in our year dummies, this analysis is beyond our work but could be interesting. Also, since 2020, economic fluctuations and COVID-19 have profoundly changed the labor market and the way individuals and entrepreneurs perceive business and opportunities. As our work comprehends data until October 2020, we can assume that the effect of COVID-19 is partially captured in the results, but its study could be relevant.

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