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## **Say Goodbye to my Little Firm**

**Carolina de Oliveira e Barbeira**

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### **Industrial Engineering and Management**

Supervisor: Prof. Dr. Hugo Miguel Fragoso de Castro Silva

Chairperson: Prof. Dr. Rui Miguel Loureiro Nobre Baptista

Supervisor: Prof. Dr. Hugo Miguel Fragoso de Castro Silva

Member of the Committee: Prof. Dr. António Miguel Areias Dias Amaral

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#### Declaração

Declaro que o presente documento é um trabalho original da minha autoria e que cumpre todos os requisitos do Código de Conduta e Boas Práticas da Universidade de Lisboa.

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I declare that this document is an original work of my own authorship and that it fulfills all the requirements of the Code of Conduct and Good Practices of the Universidade de Lisboa.



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## Resumo

Esta dissertação explora os percursos dos empreendedores depois de saírem das suas empresas, quer aceitem um emprego por conta de outrem, saiam do mercado de trabalho ou voltem a trabalhar por conta própria. O objetivo é compreender quais os factores que influenciam estas decisões pós-saída. A forma como os empreendedores percebem a mudança de indústria e por que é que os indivíduos com características empreendedoras são recrutados para a inovação são estudadas. A base de dados *Quadros de Pessoal* é utilizada, incluindo variáveis relativas à indústria, ao desempenho da empresa e ao contexto pessoal dos indivíduos. Esta análise recorre à estatística descritiva e a modelos econométricos.

Verificámos que a idade e o género masculino aumentam a probabilidade dos indivíduos reingressarem ao empreendedorismo. Indivíduos com mais habilitações literárias têm menos probabilidades de não terem emprego. No entanto, quanto maior for o tempo de permanência na empresa anterior, maior é a probabilidade de não encontrarem uma ocupação após a saída. Os anos de experiência empreendedora, o capital humano acumulado e o sucesso da empresa anterior aumentam a probabilidade do indivíduo regressar ao empreendedorismo. Os nossos resultados mostram que a mudança de indústria é mais influenciada pela educação, pela experiência no sector e pelo encerramento de empresas. Também o sucesso empresarial anterior e elevados níveis de competências tornam os empresários mais susceptíveis de serem recrutados para a inovação. Os nossos resultados fornecem informações para os decisores políticos interessados em desenvolver o empreendedorismo e diversificar a força de trabalho em Portugal.

**Palavras-chave:** Saída do Empreendedorismo, Trajectórias Pós-Saída, Mudança Industrial, Inovação, Modelos Económicos, Portugal.



## Abstract

Exits from entrepreneurship and how entrepreneurs face and learn from exits have been debated by many authors. This dissertation 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, Portugal.



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# Nomenclature

<b>D</b>	Dummy Variable
<b>IIA</b>	Independence of Irrelevant Alternatives
<b>INE</b>	Instituto Nacional de Estatística
<b>KIS</b>	Knowledge-Intensive Services
<b>LKIS</b>	Less Knowledge-Intensive Services
<b>ME</b>	Marginal Effects
<b>QP</b>	Quadros de Pessoal



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# Chapter 1

## Introduction

In this Chapter, we state the research problem and the reasons for choosing this topic. Section 1.1 presents the motivation and context for this study, and Section 1.2 explains how the dissertation is structured.

### 1.1 Contextualization and Motivation

The risk of creating a new venture includes the possibility of entrepreneurial failure. The necessity to understand why businesses fail and what the consequences are for entrepreneurs has led many authors to study this topic over the last years (Amaral et al., 2007; Baù et al., 2017; Jenkins and McKelvie, 2016; Lattacher and Wdowiak, 2020). Failure is fundamental in the process of entrepreneurial learning (Ellis et al., 2006), 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 (Amaral et al., 2007). 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 (Amankwah-Amoah et al., 2022; Cope, 2011).

Entrepreneurial reentry is also a topic warranting discussion (Costa et al., 2023; Nyström, 2020). 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 (Amaral et al., 2011; Plehn-Dujowich, 2010), making use of the specific entrepreneurial human capital acquired in previous businesses (Becker, 2009; Cueto et al., 2021; Baptista et al., 2014). However, after exiting their company, some entrepreneurs may prefer to start looking for traditional jobs, likelier in innovation or management (Butler, 2017; Lindbjerg et al., 2021).

Our main goal is to understand which paths entrepreneurs are more likely to follow after leaving their firms and what influences their decisions. This study will be conducted in the context of Portugal's en-

trepreneurship environment, including the labor market, population demographics, and entrepreneurial endeavors. Portugal still has a long way to go to become more competitive in the innovation world market, as according to the *World Intellectual Property Organization*, which creates the *Global Innovation Index* that ranks world economies according to their innovation capabilities, Portugal ranks 30th among the 132 economies under study in 2023.<sup>1</sup> However, in these last few years, Portugal has been investing in entrepreneurship, and the increasing number of startups may be due to multiple factors, besides the recovery from the financial crisis. One of them is the improved access to funding through venture capital, angel investors, and European Union benefits and subsidies. Another one is the new government policies and startup accelerators and incubators created that offer mentoring and resources to new entrepreneurs wanting to start their own companies. Additionally, technological progress and online innovations facilitate the implementation of new companies and create an enormous and extremely well-paid new sector for entrepreneurs to explore. The growth of entrepreneurship in Portugal supports the development of the country's economic activity and fosters a dynamic entrepreneurial culture, thereby enabling the creation of more employment and investments.

Using econometric models, we want to present empirical findings that shed light on the factors influencing entrepreneurial decisions post-exit. This study provides valuable insights for policymakers and academics interested 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.

## 1.2 Structure

This dissertation is structured as follows. Chapter 1 includes a contextualization of the problem under research and a delineation of the document's structure. Chapter 2 presents a literature review on the topics of entrepreneurial failure, learning, and exit. This Chapter also defines the gaps found in the literature we aim to cover, as well as some hypotheses to be tested. Chapter 3 describes the dataset under study and the variables used, and provides a descriptive statistics analysis. Chapter 4 theoretically describes the econometric models employed. Chapter 5 presents the results obtained with the econometric models and discusses their effects and possible implications. Chapter 6 provides a conclusion for the conducted study and some limitations and recommendations for future research.

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<sup>1</sup><https://www.wipo.int/edocs/pubdocs/en/wipo-pub-2000-2023/pt.pdf>

# Chapter 2

## Literature Review

This Chapter examines the literature on the most relevant topics in entrepreneurial exit and learning. In Section 2.1, we present the concept of entrepreneurial exit and how some authors link it with entrepreneurial failure. In Section 2.2, the idea of learning from entrepreneurship is explored, presenting failure as a learning journey. In Section 2.3, we outline three possible paths for entrepreneurs who exit their companies: paid employment, self-employment, and unemployment. Lastly, several hypotheses to be explored in our study are presented in Section 2.4. This literature review provides a theoretical framework that supports the econometric and empirical investigation presented in Chapters 3 and 5.

### 2.1 Entrepreneurial Exit and Failure

Taylor (1999) separates company exits from voluntary and involuntary. 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. Lattacher and Wdowiak (2020) present two ways to measure failure: objectively, through economic performance, and subjectively, by contrasting the founder's personal goals and the actual results and outcomes. 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*. For the first, the non-survival of the company within a given market, according to Perkins (2014), is the criterion considered. However, Lattacher and Wdowiak (2020) state that this may be a narrow definition, considering that if a company leaves a specific market, it does not mean the business has closed. Instead, it can just tell it is now offering new products or services in a new market or industry. The second definition mainly occurs when a company closes due to financial reasons, such as bankruptcy, insolvency, or even if it simply does not reach its goals (Shepherd, 2003). A business can also fail due to personal reasons, such as the entrepreneur's retirement, health reasons, or unforeseen situations like legal limitations, conflicts, or health crises. Lastly, the third occurs when the entrepreneur

sees the business as a failure because it is not meeting his expectations. Jenkins and McKelvie (2016) define four criteria to identify failure: *objective firm-level criteria*, where, as suggested by Shepherd (2003), insolvency is used as the decisive criterion to encompass failure; *subjective firm-level criteria*, that depends on the entrepreneur's evaluation of the firm's performance at the time of exit; *objective individual level criteria*, relying on the assessment of returns to human capital in alternative employment options; and *subjective individual-level criteria*, that uses the personal impact of failure as the primary benchmark for conceptualizing failure.

Consistently with Taylor (1999), Amaral et al. (2007) disassociate entrepreneurial failure from entrepreneurial exit 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 a traditional wage-based employee, or have the desire to enter or reenter the entrepreneurial market with a new project or business/start-up or by acquiring an already existing firm. The 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. So, Amaral et al. (2007) propose that exit should be dissociated from failure, given that most exits are unrelated to entrepreneurial failure and involuntary business closure. Jenkins and McKelvie (2016) find that, while an entrepreneur may encounter failure, it is possible for another individual to take over their business successfully and that even if a firm experiences failure, the entrepreneur might rebound by establishing prosperous ventures in the future. Regarding firm founders, Amaral et al. (2007) suggest that there is a negative correlation between being the founder of the firm and entrepreneurial exit and that being the firm's founder significantly shapes the likelihood of exit through sell-off rather than closure.

For more experienced entrepreneurs, it is easier to have good judgment and know when to terminate their business and follow a new path (Ucbasaran et al., 2013). Amaral and Baptista (2007) also state this, saying 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, making start-ups more competitive in the global market (Del Sarto et al., 2021).

Cueto et al. (2021) show how the age of the entrepreneur affects firm survival, and suggest that government policies for entrepreneurship should aim at younger workers, as per their findings, this demographic requires more robust support to survive in self-employment and avoid entrepreneurial exits. They also discuss the firm's location, showing that the probability of firm survival depends on where the business is situated. For instance, if a region has more people looking for a specific product, a company

that sells it is unlikely to go bankrupt. Another example is in the agricultural sector, where a farming enterprise is better located in a region with soils that are more suitable for plantations. Moreover, a firm's success can also be influenced by the other companies around it, as a digital company located in Silicon Valley is more likely to survive due to the fact that it is a location that facilitates collaboration and networking opportunities in the technological field. A final yet pertinent consideration is the access a region has to financial capital to embark on entrepreneurship. There is comparatively limited access to finance and support from formal institutions in emerging markets when contrasted with developed markets (Amankwah-Amoah et al., 2022).

Finally, from a more psychological perspective, it is clear that failure can inflict emotional and financial consequences on the entrepreneur, impacting his confidence, self-assurance, and willingness to take risks or move on to a new business (Shepherd, 2003). Social connections, including family ties, can also impact the entrepreneurs' ability to progress (Amankwah-Amoah et al., 2022).

## 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) state 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). Likewise, Parker (2004) finds that departures from self-employment decrease with the age of the business and the tenure of business managers. 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). Jovanovic (1982) also proposes that business owners managing younger firms have had a limited time to accumulate knowledge regarding their actual capabilities, and, consequently, the extent and fluctuation in growth rates are most pronounced among smaller and newer companies. 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 their entrepreneurial pursuits.

Entrepreneurs may acknowledge failure as a learning journey, meaning that learning from failure is time-intensive. 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, as it is a source of learning that encompasses lessons aimed at enhancing performance in future business since it helps the entrepreneur discover new perspectives and opportunities (Cope, 2011). Sitkin (1992) suggests the concept of *intelligent failures* as minor and relatively benign failures that prove to be the most effective in promoting learning. He states that failures that may change the entrepreneurs' beliefs and knowledge

are not as effective in the learning process. On the other hand, Kolb (2014) says that the learner must go through a profound experience to obtain knowledge.

Costa et al. (2023) study fear as a consequence of failure and find how it impacts the entrepreneurial learning journey. Fear has psychological and economic dimensions, influenced by factors such as shame, social and family influences, and the subsequent decline in the entrepreneur's self-esteem. It can also affect the risk analysis made by the entrepreneur. Nonetheless, the more knowledge individuals possess, the more effectively they manage and analyze their fear, pain, emotions, surroundings, and reality.

When an entrepreneur begins a learning process to acquire information and expertise, it positively impacts their willingness to pursue entrepreneurial activities and their overall perception of entrepreneurship (Agarwal et al., 2023). In conclusion, 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. This Section intends to study these options in detail: paid-employment in Subsection 2.3.1, self-employment in Subsection 2.3.2, and unemployment in Subsection 2.3.3. 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.

We intend to fill the gap in the literature regarding unemployment after entrepreneurial exit and provide insights into what factors influence this transition. As mentioned, the literature describes several ways that entrepreneurs might end their business. However, there is still room to explore the intersectionality of these paths in aspects like age, gender, education, industries, or previous company status when considering these exit strategies. Studies examining the entrepreneurial exit strategies of various demographic groups may shed light on the different effects and suggest measures. Lastly, we also aim to contribute to the Portuguese literature regarding entrepreneurship and labor status.

### **2.3.1 Paid-Employment**

When being recruited to a traditional wage-based job, former business owners have a greater likelihood of entering the firm at a managerial job level than those who are not, according to Baptista et al. (2012). This experience is more relevant for strategic leadership roles rather than organizational overseeing roles. Additionally, these authors find that the probability of being promoted to a managerial level is more significant if the individual has experience with business ownership. Moreover, the influence of business ownership experience on promotions increases with the duration spent in entrepreneurial endeavors. Nonetheless, compared to individuals with a long experience in the wage sector, a short self-

employment experience does not enhance and might even negatively impact subsequent employment wages (Bruce and Schuetze, 2004).

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) contributed significant findings on this topic. The fundamental proposition of their work is 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.

Recruiting individuals with founder experience is also positively related to increased sales derived from innovation. However, if these individuals did not find a company, their impact on companies' sales from innovation is quite irrelevant. Lindbjerg et al. (2021) also suggest that middle management entrepreneur hires contribute more to the innovation of hiring firms than entrepreneurs in top management. They additionally state that, within the innovation field, innovations applied can be new to the firm or new to the world, being the last one more radical and disruptive. Hires with founder experience positively impact sales from innovations that are new to the firm. As the firm becomes more innovative and creates new and more disruptive ideas, the impact of new founder hires reduces since they no longer have the expertise leverage (Lindbjerg et al., 2021). This shows the critical role that human capital related to entrepreneurship plays in driving incremental improvements to firms' offerings.

### **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. 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. According to Amaral and Baptista (2007), serial entrepreneurs may enter self-employment by creating a start-up or by acquiring an already existing firm. 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, she adopts the role of a serial entrepreneur, initiating and eventually shutting down firms until he finds one that yields sufficient profits. On the other hand, a low-skill entrepreneur will close a low-quality business and transition into the labor market without pursuing serial entrepreneurship.

Parker (2004) underlines that human capital makes individuals likelier to survive in self-employment. Becker (2009) defines human capital as activities that improve skills, knowledge, or well-being. More educated individuals are more likely to enter self-employment because they are more informed, more able to access business opportunities, and more productive (Carrasco, 1999). On the other hand, 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 traditional wage-based employment. 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 than females.

Another pertinent aspect warranting discussion 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.

Fairlie and Fossen (2018) study the difference between necessity and opportunity entrepreneurs regarding the entrepreneurs' motivations. *Opportunity entrepreneurs* start new companies when they find good market gaps to explore or are presented with good opportunities to create new products or services, while *necessity entrepreneurs* are individuals who enter self-employment out of a necessity, usually financial. They find that engaging in opportunity entrepreneurship is linked with businesses with a greater orientation toward growth. Contrary to common beliefs, Ratten et al. (2019) conclude that the drive for both opportunity and necessity is not directly related to economic development. Nonetheless, they find that, for most entrepreneurs, an economic and financial crisis is seen as an opportunity to start a new business, even though it does not necessarily mean there is a necessity or demand.

Living in a digital world, technological services and artificial intelligence growth also affect entrepreneurship and the entrepreneur's decisions. Wang et al. (2023) define Digital Technology Capability as an ability that allows entrepreneurs to look for information and knowledge via digital technology and discern its

potential for new products, services, and innovations. They find that this specific form of human capital is positively related to the individual's willingness to reenter entrepreneurship and that this relationship is mediated by entrepreneurial alertness, which is the capacity to discern and recognize opportunities overlooked by others. They state that entrepreneurs can take advantage of new digital means to help them grow their businesses and become more innovative. This is even more important for entrepreneurs who have faced challenges, such as entrepreneurial failure, as it enables them to access new information faster, establish better contacts, and increase their awareness of new potentially profitable business opportunities.

### **2.3.3 Unemployment**

When a former business owner cannot find a traditional wage job and has no desire or possibility of finding a new project and remaining self-employed, he may leave the labor market or become unemployed. As mentioned, there is not much literature on the factors influencing the transition from self-employment to unemployment directly. Assuming that, after entrepreneurial exit, there may be periods of unemployment before reentering the labor market, in this Subsection, we provide some insights on transitions from unemployment to self-employment or paid-employment.

Carrasco (1999) finds that the likelihood of transitioning into self-employment diminishes when one receives unemployment benefits. On the other hand, Andersson and Wadensjö (2007) suggest that unemployed individuals who are offered allowances to start a new business present better results than those who do not, considering that not only do the allowances help them build the firm but also allow those who give the allowances to properly select the most suitable candidates to start a new venture.

The country's economy plays a significant role in the attractiveness of following self-employment for unemployed individuals. Carrasco (1999) also proposes that individuals with lower education who are currently employed are more likely to follow self-employment as unemployment rates increase. Cueto et al. (2021) suggest that individuals transitioning from unemployment to self-employment have a higher probability of survival than those who are from traditional wage-based jobs to self-employment. This result is only valid if the individual is not in a long-term period of unemployment because if he is not working and not looking for a job, it means he belongs to a group of individuals with the least recently updated human capital, and it can be presumed that their motivation for entering self-employment is out of necessity.

## **2.4 Hypotheses**

In this Section, we derive several hypotheses related to the previously examined theoretical content to explore and analyze in this dissertation.

Regarding labor transitions after entrepreneurial exit, many academics study how age and gender influence the entrepreneurs' post-exit decisions (Lin and Wang, 2019; Stam et al., 2008; Baù et al., 2017). With the use of different econometric models, our study will analyze different groups of entrepreneurs:

firstly, we will study all individuals who exit their companies, but then a smaller sample will be used to compare only those who remain in the labor market, leaving to paid-employment or self-employment (excluding the individuals who go to unemployment). Having that in mind, we derive the following hypotheses:

- **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.

Education and human capital are well-discussed topics, but that still lack consensus, as some authors say that better-educated individuals are more likely to become self-employed (Carrasco, 1999), but others say that, as it is easier for these individuals to find a conventional job, they are less likely to follow entrepreneurship (Cueto et al., 2021). Therefore, we formulate the following hypotheses:

- **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.

Parker (2013) finds that the advantages entrepreneurs acquire in previous firms, such as specific expertise and entrepreneurial human capital, depreciate over time, eventually becoming irrelevant. We want to study how the time between entrepreneurial exit and labor market reentry influences the decisions made by entrepreneurs. Consequently, we derive the following hypothesis:

- **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.

Regarding industry change, we want to study how entrepreneurs perceive company closure and low performance and if that makes them want to change industries to find new opportunities and explore new fields. We formulate the following hypothesis:

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

The specific expertise and entrepreneurial human capital accumulated in previous entrepreneurial endeavors can also affect industry changes after entrepreneurial exit. We find it relevant to analyze if entrepreneurs are more likely to remain in the same industries or not, deriving the following hypothesis:

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

Lindbjerg et al. (2021) suggest that individuals working in entrepreneurship are more likely to be recruited to work in innovation roles as recruiting individuals with founder experience is also related to increased sales derived from innovation in companies. Our final hypothesis is the following:

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



# Chapter 3

## Data

Given the scope of this study, econometric methods will be used to assess the probability of returning to self-employment, paid employment, or non-employment and the factors that influence this decision. This Chapter presents a statistical and numerical analysis of the data that will be investigated. The dataset is presented in Sections 3.1 and 3.2, and we explain the working sample construction process. Section 3.3 presents the variables under study. Lastly, Section 3.4 applies a data profiling process to the sample to gain more knowledge about our data and provide descriptive statistics on the variables.

### 3.1 *Quadros de Pessoal*

The analysis will rely on the *Quadros de Pessoal* (QP) dataset, a Portuguese dataset containing data related to companies, establishments, and employed individuals since 1985. The Portuguese Ministry of Employment and Social Security compiles this annual longitudinal linked employer-employee dataset. *Quadros de Pessoal* provides information about workers, such as their age, gender, nationality, education, occupation, company they are working for that year, wages, working hours, type of contract, and tenure. Regarding companies, it provides information such as their establishments, industries and sectors, sales volume, location, number of employees, and year of the constitution.

### 3.2 Sample construction

This study spans from 2010 to 2020, encompassing 32 055 081 observations. These observations correspond to approximately 5 151 262 workers across 579 883 companies. Intending to create a viable sample to conduct this work, a data quality process is necessary to eliminate all invalid and incoherent observations and ensure that all observations and variables are consistent throughout the years. In our study, we want to examine entrepreneurial exits, so the values considered always relate to the exit year since some variables have incoherent values throughout the 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 information regarding companies and workers is merged through identifiers of each worker and company, creating a cross-sectional working sample. A cross-sectional dataset studies a specific moment in time, as opposed to panel data studies, which gather data on the same topic over a period of time. Our working sample is organized as follows: each observation of the dataset corresponds to an exit of an entrepreneur from his previous company. Each one of these exits is identified with a specific worker ID from a particular firm, identified by a company ID. It is also 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. All individuals who disappear from the database are considered non-employed, even though this can mean various outcomes, including transitioning out of the private sector, becoming unemployed, retiring, pursuing a military career, or even emigrating.

In the initial dataset, the individuals who are entrepreneurs correspond to 6% of the total observations. Nevertheless, given the scope of this analysis, only the individuals who are entrepreneurs and have exited their firms will be considered. These correspond 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 may have retired, and these will not be considered in our study, corresponding to 30% of the dataset. 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 broad definition of *entrepreneur* is used, such as in other works using *QP*, like Amaral et al. (2007). The term *entrepreneur* includes those identified as business owners, whether they have full or partial ownership and have founded, purchased, or inherited the company. Thus, *business owner* and *entrepreneur* are used synonymously.

### 3.3 Variables

The dependent variables are also known as variables of interest. In this study, we have four dependent variables, presented in Subsection 3.3.1. An independent variable, also known as a response variable, is used to explain changes in the dependent variables. These variables are also called explanatory variables and are presented in Subsection 3.3.2. Regarding control variables, these are presented in Subsection 3.3.3.

#### 3.3.1 Dependent 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 and last 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.<sup>1</sup> *ISCO-08* stands for *International Standard Classification of Occupations* and provides a systematic classification of occupations.

### 3.3.2 Independent Variables

Table 3.1 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.

These variables can be described as follows: *Age* refers to the age of the individual; *Male* is 1 if the individual is a Male and 0 if the individual is a Female; *College* takes the value 1 if the individual has a Bachelor, Master's or Doctoral Degree; The variable *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; The variable that identifies if the *Company has less than 50 employees* takes the value 1 if the company is small; The variable that determines if the *Company has a Turnover Bracket inferior to 2 million euros* takes the value 1 if the company's turnover (revenue) is below 3 million euros; *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*.<sup>2</sup> *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.<sup>3</sup> *NACE Rev.2* stands for *Nomenclature of Economic Activities* and is a system used by all European Union countries to standardize economic activities.<sup>4</sup> Both of these systems give us industry codes.

Lastly, the variable that checks the *Company High Performance* shows its performance at the time of

<sup>1</sup>[https://webapps.ilo.org/wcmsp5/groups/public/—dgreports/—dcomm/—publ/documents/publication/wcms\\_172572.pdf](https://webapps.ilo.org/wcmsp5/groups/public/—dgreports/—dcomm/—publ/documents/publication/wcms_172572.pdf)

<sup>2</sup>[https://ec.europa.eu/eurostat/cache/metadata/Annexes/htec.esms\\_an\\_3.pdf](https://ec.europa.eu/eurostat/cache/metadata/Annexes/htec.esms_an_3.pdf)

<sup>3</sup>[https://www.ine.pt/ine\\_novidades/semin/cae/CAE\\_REV\\_3.pdf](https://www.ine.pt/ine_novidades/semin/cae/CAE_REV_3.pdf)

<sup>4</sup><https://ec.europa.eu/eurostat/documents/3859598/5902521/KS-RA-07-015-EN.PDF>

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.

Table 3.1: Descriptive Statistics for Entrepreneurial Exit.

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

Variable	Entire Sample	To Non-Employment	To Self-Employment	To 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 $\leq$ 50 employees (D)	0.98 (0.12)	0.99 (0.09)	0.98 (0.14)	0.96 (0.18)
Company's Turnover Bracket $\leq$ 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

### 3.3.3 Control Variables

Control variables are factors in an experiment or study that are held constant or controlled to prevent them from influencing the relationship between the independent and dependent variables. In this study, we will use controls for the years 2010 to 2019 to take into account macroeconomic effects and for the firm's location as, as mentioned in Section 2.1, the firm survival may depend on its location.

## 3.4 Descriptive Statistics

Figure 3.1 shows the distribution of possible paths that an entrepreneur has after exiting the firm: 62% of the individuals follow non-employment, 23% return to self-employment, and 15% go to paid employment. As mentioned before, entrepreneurs who take over three years to find a new company or create their own were considered non-employed, and these correspond to about 17% of the individuals in the sample.

Figure 3.2 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

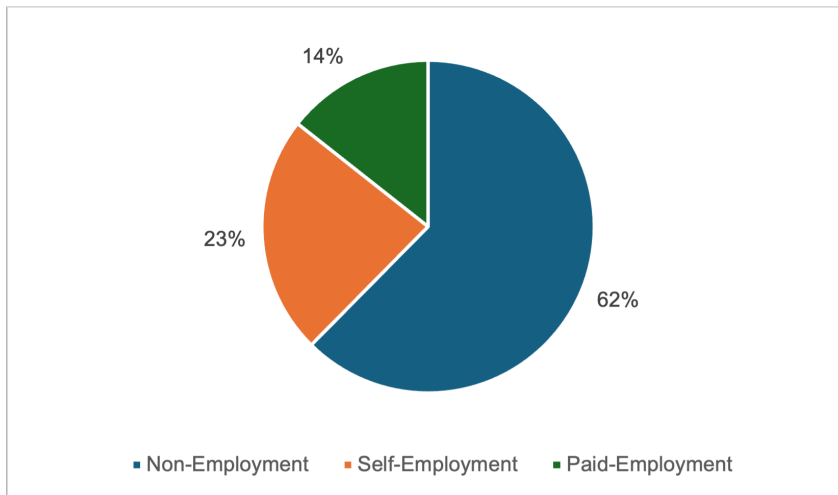


Figure 3.1: Paths followed by entrepreneurs after leaving their firms.

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.

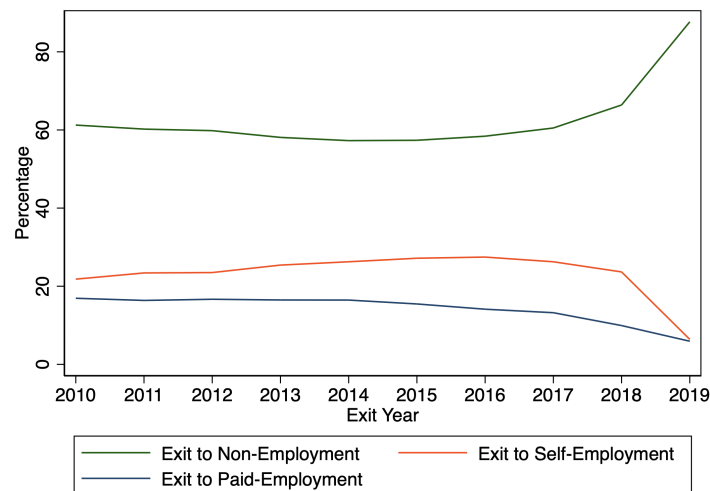


Figure 3.2: Evolution of Entrepreneurial Exit over time.

The sample is composed mainly of males (67%), and the average age of the individuals is 41 years old. Figure 3.3 in the Appendix shows the age distribution in this sample, where most individuals are between 40 and 50 years old. Figure A.1 shows that, 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. Figure A.2 in the Appendix shows that regarding gender, males are more likely to follow entrepreneurship than females.

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

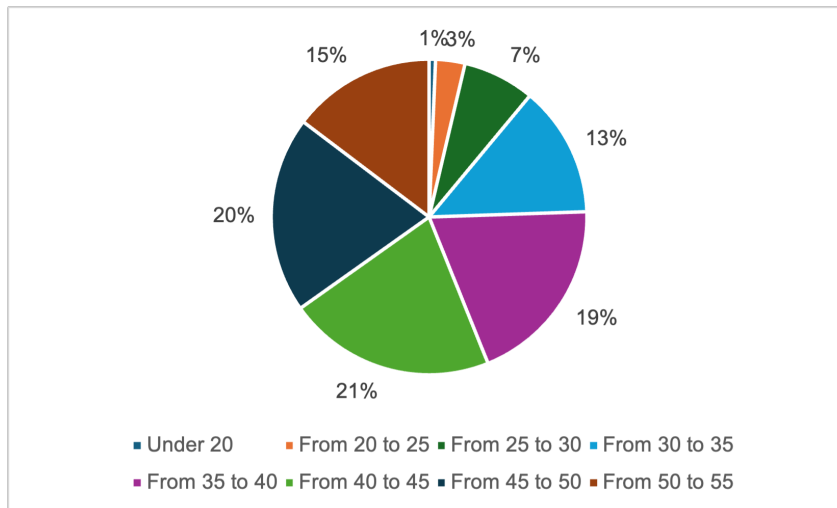


Figure 3.3: Age of the Entrepreneurs.

Sciences (around 3% of the individuals). As Figure A.3 in the Appendix shows, individuals with higher education, Bachelor's, Master's, or Doctoral Degrees, 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. Figure 3.4 shows the different levels of education of the individuals in the sample.

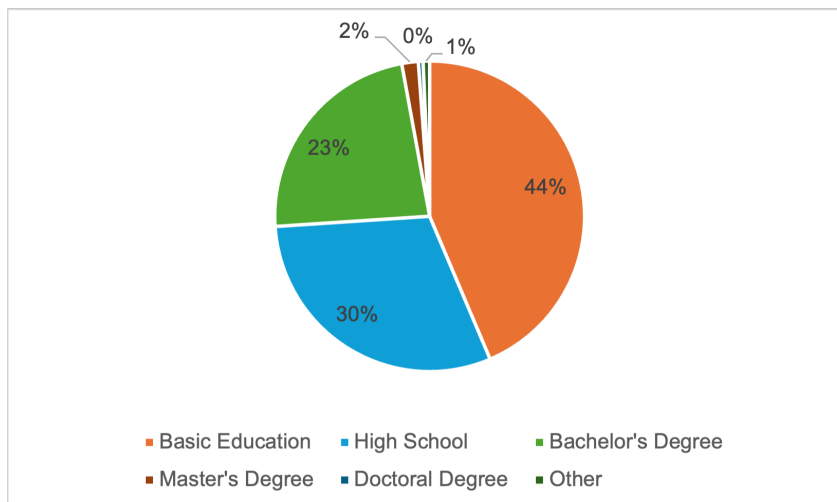


Figure 3.4: Education of the Entrepreneurs.

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. Table 3.2 shows that around 60% of the companies close when the entrepreneur leaves it, suggesting that it may have been a business failure. Most companies that shut down have between one and nine employees, which is considered small and has less than 2 million euros in business volume per year. Table 3.3 shows the relationship between a company's performance and the path followed by the entrepreneur who exited it. It shows that when facing low performance, most entrepreneurs exit to non-employment. On average, individuals who exit to self-employment are more likely to come from companies with higher performance, as Figure

A.6 in the Appendix shows, and these companies are also less likely to close at the time of exit.

Table 3.2: Company continuance at time of entrepreneurial exit and Company Performance.

	Continuance of the Company	Discontinuance of the Company
Low Performance	37%	53%
High Performance	5%	5%
Total	42%	58%

Table 3.3: Entrepreneurial Exit and Company Performance.

	Low Performance	High Performance
Exit to Non-Employment	57%	6%
Exit to Self-Employment	20%	3%
Exit to Paid-Employment	13%	1%
Total	90%	10%

Using *ISCO-08* occupational codes, it is possible to confirm whether entrepreneurs are more likely to be recruited as innovators, given their skills and personality. We conclude that about 4% of the individuals are working in these roles, using an *ISCO-08* value of 2. However, among the individuals who join paid employment, around 11% of the individuals are recruited for innovation. Portugal, only in more recent years, is being considered a more innovative country, and in this research, only exits until 2019 are being considered.

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. As Figure A.5 shows, 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, as Figure A.4 in the Appendix illustrates. 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, which can also be seen in Figure A.5 in the Appendix. As Table 3.4 shows, most individuals who change industries come from companies that closed after entrepreneurial exit.

Table 3.4: Industry Change and Company Closure.

	Same Industry	Industry Change
Continuance of the Company	50%	14%
Discontinuance of the Company	18%	18%
Total	68%	32%

# Chapter 4

## Methodology

The Logit Model is a regression methodology frequently used to analyze binary dependent variables in cross-sectional data. This model is appropriate for determining the link between predictor variables and the probability of a specific result, as we want in this study. The Multinomial Logit Model is a variant of the logit model that handles mutually exclusive categorical outcomes rather than binary ones. These models are used in cross-sectional data when there is no explicit ordering of the dependent variable, and they can take on more than two discrete categories. This is the case for one of our dependent variables, which checks what path the entrepreneurs follow after leaving their firms and has three different alternatives.

Based on Wooldridge (2016) and Cameron and Trivedi (2005), in Section 4.1 we present the theory behind the Logit Model for binary response and in Section 4.2 we discuss the theory behind Multinomial Models and present the explanation for why we chose to use the Multinomial Logit Model, while exploring this approach in more detail.

### 4.1 Logit Model

In the Logit 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 4.1, where  $F$  is the cumulative distribution function of the logistic distribution, ensuring that  $p$  will always be between 0 and 1.

$$p = Pr[y = 1|\mathbf{x}] = F(\mathbf{x}'\beta) = \frac{e^{\mathbf{x}'\beta}}{1 + e^{\mathbf{x}'\beta}} \quad (4.1)$$

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 Marginal Effects can be calculated as seen in Equation 4.2, for individual  $i$ . When analyzing these models, the coefficient gives the sign of the marginal effect.

$$ME = \frac{\partial p_i}{\partial x_j} = p_i(1 - p_i)\beta_j \quad (4.2)$$

The Logit coefficients are presented in odds ratio (exponential coefficients), and for that reason, the results obtained from the Logit Model can be interpreted using the log-odds ratio. This method provides insights into the association between the independent variable and the dependent variable on the log-odds scale, showing how the odds of the outcome change with the changes in the independent variable. On the other hand, the marginal effects show changes in the probability of the dependent variable, as explained before. Unlike the log-odds ratio, marginal effects are directly interpreted because they provide the expected change in probability and will, therefore, be used in our study.

## 4.2 Multinomial Logit Model

A Multinomial Model is a statistical model used to analyze categorical outcomes with more than two categories. For all Multinomial Models, there are  $m$  possible alternatives. The dependent variable,  $y$ , 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  $\mathbf{x}_i$ . In the Multinomial Logit Model, the dependent variable is modeled using a logistic function. 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 4.3, usually considering that  $\beta_1$  is 0 so that  $\sum_{j=1}^m p_{ij}$  is 1. The functional form for  $F_j$  should be such that probabilities lie between 0 and 1.

$$p_{ij} = Pr[y_i = j] = F_j(\mathbf{x}_i, \beta) = \frac{e^{\mathbf{x}_i' \beta_j}}{\sum_{l=1}^m e^{\mathbf{x}_i' \beta_l}}, \quad j = 1, \dots, m, \quad i = 1, \dots, N. \quad (4.3)$$

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 marginal effects of regressor on the probabilities of outcomes proves beneficial. Equation 4.4 shows the marginal effects for individual  $i$  of a change in the  $k$ th regressor on the probability that alternative  $j$  is the outcome. An example of this, in the scope of this study, is what would be the effect on the probability of choosing to follow self-

employment if age increases by one year?

$$ME = \frac{\partial Pr(y_i = j)}{\partial x_{ik}} = \frac{\partial F_j(x_i, \beta)}{\partial x_{ik}} \quad (4.4)$$



# Chapter 5

## Results

In this Chapter, we present the results from the regressions performed with the econometric models. A discussion of the relevance and possible meaning of these results is also performed. Sections 5.1 and 5.2 present the results on which factors influence the decision of the individual of going to non-employment, follow paid employment, or remain in self-employment. Section 5.3 studies the likelihood of entrepreneurs changing industries after exiting their firms. Section 5.4 explores the premise that most entrepreneurs are hired to work in innovation roles.

### 5.1 Paths after Entrepreneurial Exit

Tables 5.1, 5.2 and 5.3 show the marginal effects from three different 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 'Knowledge-based services', impacts the individual's choice. Model 3 aims to comprehend how the company's performance affects the entrepreneur.

Table 5.1 shows the marginal effects from Multinomial Logit Model 1. It shows that age has negative marginal effects on the exit to non-employment and a positive marginal impact on the exit to paid employment. This implies 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*.

Regarding gender, our results indicate that, on average, being male increases the probability of remaining self-employed after exiting the firm by 4.8 percentage points compared to being female, holding other factors constant. 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.

Table 5.1: 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 ≤ 50 employees (D)	0.254*** (0.010)	-0.121*** (0.008)	-0.133*** (0.006)
Company's Turnover Bracket ≤ 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: Marginal Effects derived from the Multinomial Logit Model 1 coefficients presented in Table A.1 in the Appendix. Regressions include controls for year dummies and the firm's location. Standard errors in parentheses. \* p < 0.10, \*\* p < 0.05, \*\*\* p < 0.01

Many motives may explain these results. Entrepreneurship and self-employment often require risk-taking and confidence, which may be influenced by societal norms or individual perceptions of gender roles. Female entrepreneurs exhibit lower risk propensity than male entrepreneurs (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 maintain a work-life balance according to social norms, familial expectations, and gender roles (Mann, 2024).

More educated entrepreneurs are more likely to follow self-employment by 3.8 percentage points, which validates *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 by 3.8 percentage points. The results for paid employment are not significant.

Upon analyzing the effect that worker tenure has, 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. The results may be explained by 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 (Gammarano, 2018). Baptista et al. (2012) also show that the longer someone has been involved in entrepreneurial endeavors, the more impact it had on promotions. 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 by 6.3 percentage points. These individuals are more likely to have accumulated the necessary skills to survive in self-employment. According to Agarwal et al. (2023), entrepreneurs are more likely to pursue

entrepreneurship after a learning process that occurs when someone has time to acquire entrepreneurial expertise and learn from experience.

We also computed the average marginal effects of three dummy variables related to the company: if the company is small and has a low turnover bracket. These variables show that individuals who exit from a small company are more likely to go to non-employment than individuals who exit from a company with a low turnover bracket are more likely to go to self-employment.

Table 5.2 shows the marginal effects from Multinomial Logit Model 2. This model allows us to see how industries affect the entrepreneur's choice post-exit. Using *NACE Rev. 2*, the companies' Technological Intensity Categories (type of industry) are defined. Our results show that when an entrepreneur exits from a company that provides knowledge-intensive services, 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 also have valuable skills for other companies.

Table 5.2: 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
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)	-0.044*** (0.003)	0.039*** (0.002)	0.005** (0.002)
Tenure	0.003*** (0.000)	-0.006*** (0.000)	0.002*** (0.000)
Years working as employer	-0.053*** (0.001)	0.063*** (0.000)	-0.010*** (0.000)
Company ≤ 50 employees (D)	0.253*** (0.010)	-0.121*** (0.008)	-0.132*** (0.006)
Company's Turnover Bracket ≤ 2 million euros (D)	-0.028*** (0.004)	0.016*** (0.003)	0.012*** (0.003)
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: Marginal Effects derived from the Multinomial Logit Model 2 coefficients presented in Table A.1 in the Appendix. Regressions include controls for year dummies and the firm's location. Standard errors in parentheses. \* p < 0.10, \*\* p < 0.05, \*\*\* p < 0.01

Another topic well discussed in the literature review is entrepreneurial failure. In Multinomial Logit Model 3, with the marginal effects presented in Table 5.3, 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 possibility 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, measured here objectively, according to Lattacher and Wdowiak (2020): 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 (Nyström, 2020).

Table 5.3: 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
Age	0.002*** (0.000)	0.000 (0.000)	-0.003*** (0.000)
Male (D)	-0.038*** (0.002)	0.044*** (0.002)	-0.006*** (0.002)
College (D)	-0.015*** (0.002)	0.019*** (0.002)	-0.003 (0.002)
Tenure	0.002*** (0.000)	-0.004*** (0.000)	0.002*** (0.000)
Years working as employer	-0.036*** (0.001)	0.046*** (0.000)	-0.010*** (0.000)
Company ≤ 50 employees (D)	0.158*** (0.009)	-0.035*** (0.007)	-0.123*** (0.006)
Company's Turnover Bracket ≤ 2 million euros (D)	-0.012*** (0.003)	0.001 (0.003)	0.011*** (0.003)
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: Marginal Effects derived from the Multinomial Logit Model 3 coefficients presented in Table A.1 in the Appendix. Regressions include controls for year dummies and the firm's location. Standard errors in parentheses. \*  $p < 0.10$ , \*\*  $p < 0.05$ , \*\*\*  $p < 0.01$

Company closure is easily associated with business failure, but it is not necessarily true. Suppose the company closes at the time of entrepreneurial exit. In that case, as Table 5.3 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). As mentioned in Section 2.1, when discussing company performance and closure and business failure, the psychology of the entrepreneur and the way he perceives his company play a significant role when evaluating which path to follow.

## 5.2 Individuals remaining in the Labor Force

Table 5.4 shows the marginal effects from two different Logit Models performed only on the individuals who remain in the labor force, whether they remain in Entrepreneurship or not, following paid employment, and for that reason, accounts for 64 235 observations. Models 4 and 5 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.

Table 5.4: 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

Note: Marginal effects derived from the Logit coefficients presented in Table A.2 in the Appendix. Regressions include controls for year dummies and the firm's location. Standard errors in parentheses.

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

Models 4 and 5 reject *Hypothesis 1B* since they show that individuals are 0.2 percentage points more likely to go to self-employment over paid employment as age increases. Many motives, such as experience, expertise accumulation, networking, and resource access, may support this result. Also, Cueto et al. (2021) say that younger individuals require more support to survive in self-employment. However, these models confirm *Hypothesis 2B*, showing that males are approximately 6 percentage points more likely to go to self-employment over paid employment than females.

Regarding education, our results show that more educated entrepreneurs are approximately 12 percentage points more likely to choose self-employment over paid employment than individuals without a college diploma, all else equal, confirming *Hypothesis 3B*. Even though it may be easier for these individuals to apply to a traditional job with a college diploma, they are also more informed and trained to recognize and exploit a viable opportunity (Carrasco, 1999).

The likelihood of exiting to self-employment over paid employment increases by 5.6 percentage points when the individuals have more years of experience working as employers. This result is really relevant to our study because it shows that accumulating skills and experience is essential to entrepreneurship, as mentioned by Amaral and Baptista (2007). Usually, these individuals already have a

strong network of contacts and are used to the autonomy and flexibility that self-employment provides.

Regarding industry, when only comparing self-employment with paid employment, individuals are 1.9 percentage points less likely to go to paid employment when they come from a KIS company and 5.1 percentage points more likely to go to paid employment when they come from a company providing high-tech services.

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-employed 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 than usual 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 5.5 shows the marginal effects for the same variables as Logit Model 5, presented in Table 5.4, but accounts for three interactions between some independent variables, allowing us to give a more detailed result, also considering 64 235 observations. Model 6 intends to show how males and females are influenced by their previous company performance when deciding which path to follow. Model 7 demonstrates how individuals with a college diploma see company closure and how it affects the likelihood of reentering 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 an individual spent as an employer and the capabilities he acquired while working in entrepreneurship.

The first interaction is not significant (see Table A.3 in Appendix). Nevertheless, as seen in Table 5.5, the marginal effects 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 the effect is the same for males and females. We can observe that both male and female entrepreneurs are likelier to choose self-employment over paid employment when their previous company had high performance, as expected. Both genders are influenced by the success of their previous ventures when making decisions about future employment choices despite adverse conditions.

Considering all other factors constant, the other two interactions are statistically significant at the 1% level (see Table A.3 in Appendix). This means that both of these effects are likely robust and not due to random factors.

The results of the interaction between company closure and college show that individuals with or without a college degree are less likely to create a new firm when their previous company closes. How-

Table 5.5: 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 Years working as employer = 1			-0.064*** (0.003)
Years until finding a new company when Years working as employer = 2			-0.037*** (0.003)
Years until finding a new company when Years working as employer = 3			-0.008*** (0.002)
Years until finding a new company when Years working as employer = 4			0.018*** (0.002)
Years until finding a new company when Years working as employer = 5			0.041*** (0.003)
Years until finding a new company when Years working as employer = 6			0.058*** (0.003)
Years until finding a new company when Years working as employer = 7			0.070*** (0.003)
Years until finding a new company when Years working as employer = 8			0.076*** (0.003)
Years until finding a new company when Years working as employer = 9			0.079*** (0.004)
Years until finding a new company when Years 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: Marginal effects derived from the Logit coefficients presented on Table A.3 in the Appendix. Regressions include controls for year dummies and the firm's location and also for age, gender, education, years working as an employer, years spent until finding a new company, type of industry (KIS or High-Tech), company performance and company closure (same variables as Models 4 and 5). Standard errors in parentheses.

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

ever, having a college degree seems to diminish the negative impact of company closure on the decision to reenter self-employment. These results may be explained by the fact that a company closure may be associated with entrepreneurial failure and create some fear and doubts for the entrepreneur (Ucbasaran et al., 2013; Costa et al., 2023) nonetheless, more educated individuals might still have relatively more options or resources available to them and be able to access better and evaluate why their firm closed and use that knowledge in other projects (Ellis et al., 2006), taking part of an entrepreneurial learning process, as discussed in Section 2.2.

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 for individuals that were employers for one to three years, an increase in the period until finding a new company is associated with a decrease in the probability of reentering self-employment while for individuals with more years of employer experience (more than three years of experience), a year increase is associated with an increase in

the probability of continuing self-employed and creating a new company. Individuals with more years of working as employers in entrepreneurial endeavors are more experienced and maybe more patient or have better networks to find new opportunities.

### 5.3 Entrepreneurship and Industry Change

Table 5.6 shows the marginal effects from two different Logit Models that analyze what factors influence the entrepreneur to remain in the same industry after entrepreneurial exit. Model 9 studies the individuals who exit to paid employment and, therefore, has 24 572 observations. Model 10 has 39 663 observations as it studies the individuals who reentered self-employment and created a new company.

Table 5.6: Marginal effects on the Logit Models 9 and 10, studying what influences industry change after entrepreneurial exit.

Variable	Model 9 (To Paid-Employment)	Model 10 (To Self-Employment)
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 Closure (D)	0.124*** (0.007)	0.211*** (0.004)
Company High Performance (D)	-0.054*** (0.010)	0.021*** (0.005)
Company 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)
Number of Observations	24 572	39 663
Pseudo R2	0.0212	0.0996
Log pseudolikelihood	-16627.906	-17587.327

Note: Model 9 is related to individuals who exit to Paid-Employment and Model 10 is related to individuals who exit to Self-Employment. Marginal effects derived from the Logit coefficients presented in Table A.4 in the Appendix.

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

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

For each additional year of age, the odds of changing industries in paid employment decrease by 0.4 percentage points and 0.1 in self-employment. Regarding college education, our results show that individuals with a college degree are more likely to change industries by 9 percentage points if they exit to paid employment and by 7.7 if they remain self-employed. For each additional year of worker tenure at the previous company, the likelihood of changing industries decreases by 0.4 percentage points if they exit to paid employment and 0.3 if they remain self-employed. The negative results of age and worker tenure suggest that these function as impediments to transitioning between industries. On the other hand, the positive marginal effects indicate that 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 and continue their careers.

A more exciting analysis lies in evaluating the results regarding the characteristics of the entrepreneur's previous company. 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, within the individuals following paid employment in Model 9 on Table 5.6, show that a good performance makes the entrepreneurs 5.4 percentage points less likely to change industries, which makes sense 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 (Evans and Leighton, 1990). These results also help support *Hypothesis 5*. A different result is observed for those who decided to remain self-employed in Model 10 in Table 5.6. For this group, a good performance makes them 2.1 percentage points more likely to change industries. Having in mind that these individuals have specific skills and characteristics and tend to be risk-seekers and adventurous, as mentioned in Subsection 2.3.2, serial entrepreneurs may opt to change industries, maybe driven by the confidence in their ability to identify market opportunities or the desire to have a successful and profitable 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.

Regarding 'High-technology' and 'Knowledge-based services' aggregations based on *NACE Rev. 2*, our results show that both these classifications play an essential role in the entrepreneur's choice of changing industries. Considering all other factors constant, 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. Several motives may explain these results. Individuals working in Knowledge-intensive 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. We face a dynamic labor market where companies are forced to make changes and bet on IT and innovation to remain competitive (Van Kuiken, 2022), so more competent individuals are extremely valuable. Regarding the individuals who stay self-employed, these are 9.8 percentage points more likely to change industries if their previous firm was classified as High-technology, and the marginal effects 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

Our final analysis confirms *Hypothesis 7*. Table 5.7 shows the marginal effects from a Logit Model that aims to see what factors influence former entrepreneurs being recruited to work on innovation roles.

Only the individuals who exit to paid employment are being considered, so we have 24 572 observations. As mentioned in Subsection 2.3.1, entrepreneurs are more likely to be recruited to work on innovation due to their profile and characteristics. Cypris (2023) says that entrepreneurs foster innovation by setting an example of creativity, risk-taking, and leadership.

Our results show that entrepreneurs who come from a company with high performance are 1.8 percentage points more likely to be hired as innovators, and those who come from companies that closed at the time of entrepreneurial exit are 2.1 percentage points less likely to be hired as innovators. This may be because low performance and company closure are associated with business failure, and companies do not want to hire entrepreneurs who don't seem to be successful.

When discussing human capital, it is easier to evaluate the results regarding experience as an employer and the industry that the entrepreneur comes from. We observe that 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 variable has a significance of 10%. This may be an unexpected result, but many motives can explain it. One of them is that, as mentioned by Mathieu and St-Jean (2013), entrepreneurship is often linked with narcissism, a trait which may not be conducive to team working. 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 company that provides knowledge-intensive services or is high-tech makes entrepreneurs 16.6 and 5.6 percentage points more likely to be recruited as innovators, respectively. Industries like high-tech and knowledge-intensive services 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. Therefore, these individuals have an advantage in the innovation job market.

Table 5.7: 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 High Performance (D)	0.018*** (0.006)
Company Closure (D)	-0.021*** (0.004)
Company is Knowledge-Intensive (D)	0.166*** (0.004)
Company is High-Technology (D)	0.056*** (0.018)
Number of Observations	24 572
Pseudo R2	0.1136
Log pseudolikelihood	-7558.6768

Note: Marginal effects derived from the Logit coefficients presented in Table A.5 in the Appendix. Regressions include controls for year dummies and the firm's location. Standard errors in parentheses.

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



## Chapter 6

# Conclusion

This Chapter aims not only to recap the contributions of this research but also to pave the way for new findings and research in this field. Section 6.1 identifies and summarizes the most relevant findings of this dissertation and their implications. Section 6.2 describes the main limitations of this work and gives suggestions for future work.

### 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, as well as for the company's survival, beliefs, and continuance. Under these circumstances, the entrepreneur may reenter self-employment by starting a new firm and becoming a serial entrepreneur, may receive an offer to take a traditional wage-based job, or may go to non-employment, voluntarily or not. Entrepreneurial exit and failure can psychologically and socially impact the individual and change his perspective on entrepreneurship and the labor market. Therefore, many factors influence the labor status of business owners after saying goodbye to their firms.

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 remain in entrepreneurship rather than go to work as employees in another company. However, age also makes former entrepreneurs more likely to go to non-employment. The same result is obtained for males, who are more likely to pursue self-employment after entrepreneurial exit than females. These results suggest that to promote entrepreneurship in Portugal and diversify the labor force, actions should be taken in order to help younger entrepreneurs access capital and create their own startups, as well as give women the necessary conditions to pursue entrepreneurship, making it more appealing, whether these conditions are family support measures or more education and information on risk analysis.

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. The Portuguese unemployment rate has decreased in the past ten years, and the number of individuals with a college degree has increased. Portugal should continue to invest in education, making it a priority. We find that having a college degree seems to diminish the negative impact that company closure and possible failure have on the decision to reenter self-employment.

Our results also show that the more years someone works as an employer, accumulating entrepreneurial human capital and experience, the more likely he is to be a serial entrepreneur and launch a new startup. On the other hand, spending more years working in a company just as an employee makes these individuals more likely to go to non-employment. The previous company's state at the time of entrepreneurial exit also affects its owner, as he is more likely to be a serial entrepreneur if the company did not close and is performing above the industry's average results. These results emphasize how important the process of entrepreneurial learning is.

Industry changes are also an interesting aspect to discuss. 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. Regarding individuals in highly-skilled industries, in KIS or High-Technology companies, these are more likely to change industries and be needed in different companies and fields. With the increase in technological usage and investment in IT companies, individuals working in these roles are becoming more valuable.

A final analysis lies in the fact that entrepreneurs are more likely to be recruited to innovation roles due to their profiles and skills. We also find that if an entrepreneur has worked many years as an employer, he is less likely to be recruited for innovation probability because he is overqualified. 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. According to this principle, the likelihood of choosing one alternative over another is not affected by the characteristics of the other option. Future work could concentrate on evaluating other econometric models.

Besides the computational limitations, others were encountered. In the first place, future research could focus on seeing the effect that wages and labor hours have on entrepreneurial exit and reentry since the dataset does not have this type of data for employers. Another limitation of the dataset used that affected our study is regarding the definition of firm founder, as the one that was possible and, for that reason used, is broad. The concept of entrepreneurial skills and its effect on entrepreneurial failure and learning is frequently mentioned by many authors in the literature. In our study, it was impossible to directly quantify this kind of human capital, which could be interesting to explore further. We identified 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.

Studying how economic cycles over the years affect entrepreneurs and their careers could also be interesting. Even though we consider these effects when using the year dummies as control variables in all our models, this analysis is outside the scope of our work.

Several things have occurred since 2020, the last year comprehended in our work. Not only were there some economic fluctuations, but we also experienced a global pandemic that 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 we believe that it had a significant impact on entrepreneurial exit and reentry and that its study could be relevant and disruptive.



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# Appendix

## Clustered Bar Charts

Clustered bar charts, also known as grouped bar charts, are a type of bar chart that displays multiple bars for each category, with each group of bars representing a different subgroup. In this case, there are three subgroups: non-employment, self-employment, and paid employment. Each graph shows the difference in percentage terms regarding the mean values for each variable.

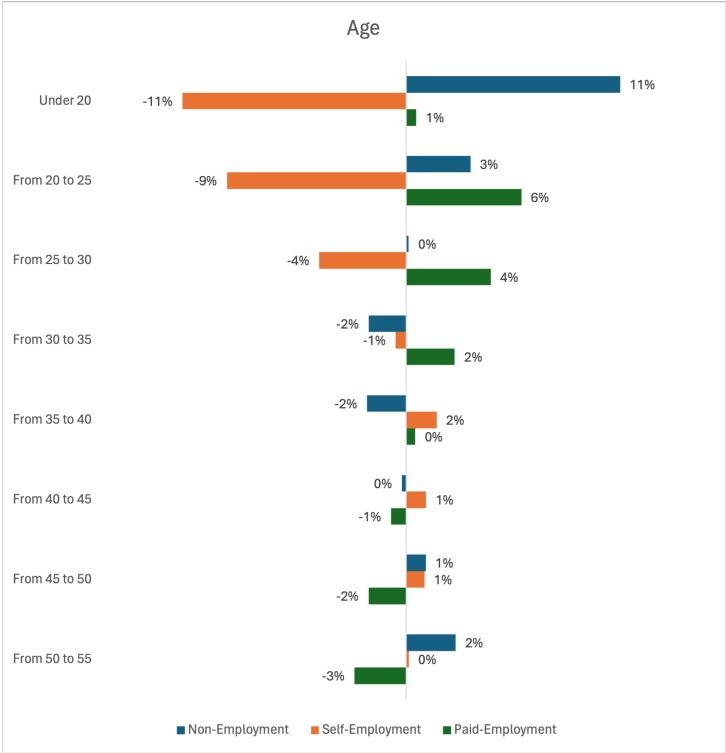


Figure A.1: Deviation from the mean of the Age of the Entrepreneurs.

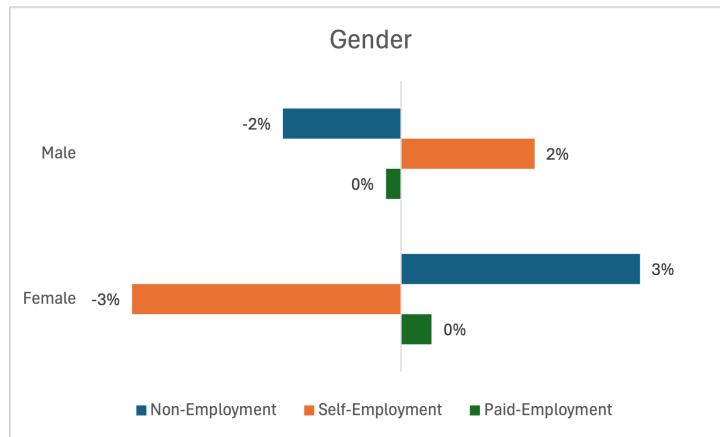


Figure A.2: Deviation from the mean of the Gender of the Entrepreneurs.

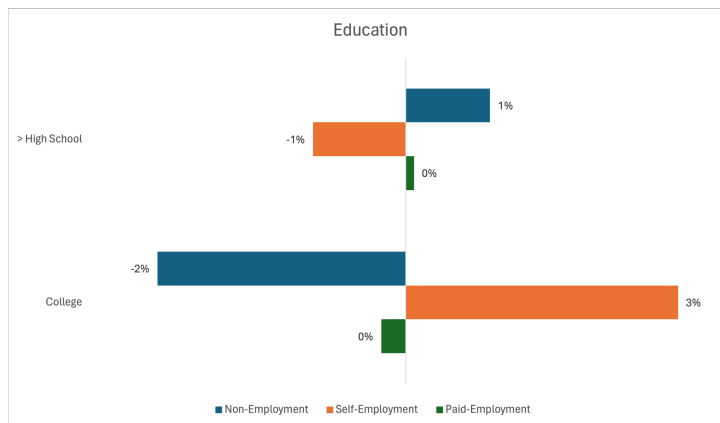


Figure A.3: Deviation from the mean of the Education of the Entrepreneurs.

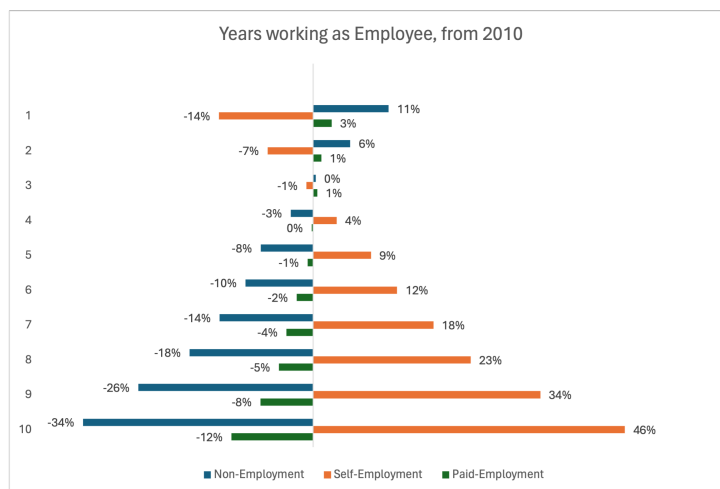


Figure A.4: Deviation from the mean of the Years working as Employers.

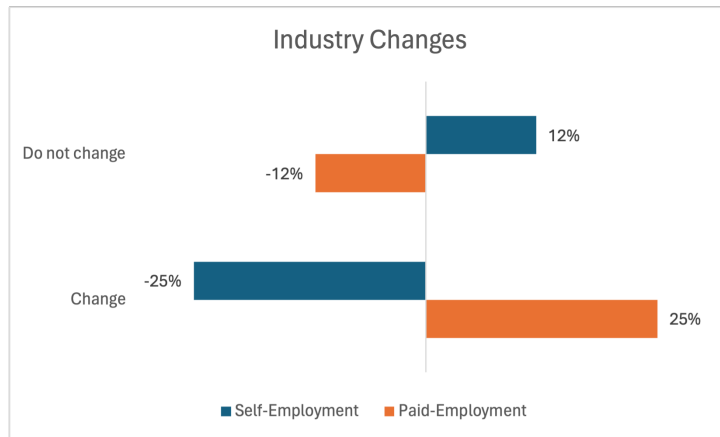


Figure A.5: Deviation from the mean of the Industry Changes.

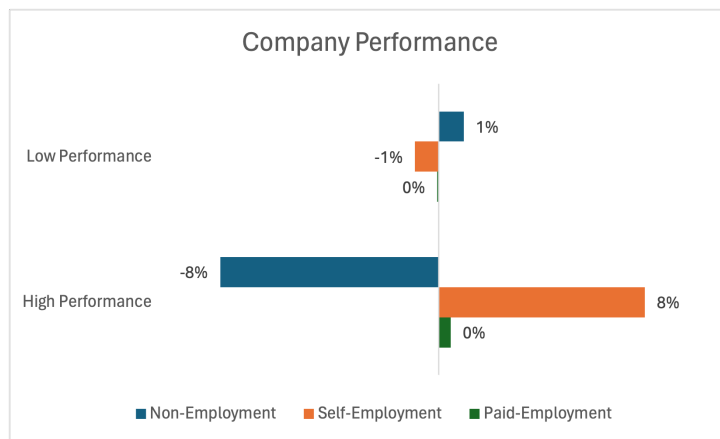


Figure A.6: Deviation from the mean of the Company Performance.

## Econometric Models' Coefficients

Table A.1: Multinomial Logit coefficients regarding the three possible paths for entrepreneurial exit, with exit to Non-Employment as the base outcome.

Exit to	Variable	Model 1	Model 2	Model 3
Self-Employment	Age	-0.008*** (0.001)	-0.008*** (0.001)	-0.004*** (0.001)
	Male (D)	0.334*** (0.014)	0.333*** (0.014)	0.344*** (0.015)
	College (D)	0.272*** (0.015)	0.290*** (0.017)	0.144*** (0.016)
	Tenure	-0.035*** (0.001)	-0.035*** (0.001)	-0.028*** (0.001)
	Years working as employer	0.432*** (0.003)	0.432*** (0.003)	0.347*** (0.003)
	Company ≤ 50 employees (D)	-1.106*** (0.056)	-1.101*** (0.056)	-0.531*** (0.058)
	Company's Turnover Bracket ≤ 2000 thousand euros (D)	0.131*** (0.021)	0.133*** (0.021)	0.034*** (0.023)
	Company is Knowledge-Intensive (D)		-0.121*** (0.021)	
	Company is High-Technology (D)		0.274*** (0.081)	
	Company Performance (D)			0.348*** (0.022)
	Company Closure (D)			-1.747*** (0.015)
	Constant	-0.708*** (0.066)	-0.712*** (0.066)	-0.473*** (0.068)
	Paid-Employment	Age	-0.023*** (0.001)	-0.023*** (0.001)
Male (D)		-0.032*** (0.001)	-0.023*** (0.001)	-0.022*** (0.001)
College (D)		0.069*** (0.017)	0.114*** (0.019)	0.025 (0.017)
Tenure		0.012*** (0.001)	0.012*** (0.001)	0.012*** (0.001)
Years working as employer		0.023*** (0.004)	0.023*** (0.004)	0.006 (0.004)
Company ≤ 50 employees (D)		-1.387*** (0.052)	-1.380*** (0.053)	-1.173*** (0.053)
Company's Turnover Bracket ≤ 2000 thousand euros (D)		0.130*** (0.023)	0.134*** (0.023)	0.102*** (0.023)
Company is Knowledge-Intensive (D)			-0.048*** (0.018)	
Company is High-Technology (D)			0.196*** (0.076)	
Company Performance (D)				0.200*** (0.024)
Company Closure (D)				-0.543*** (0.015)
Constant		0.771*** (0.065)	0.769*** (0.065)	0.889*** (0.065)
Number of Observations			170 845	170 845
Pseudo R2		0.1034	0.1035	0.1554
Log pseudolikelihood		-139737.35	-139710.36	-131629.82

Note: Regressions include controls for year dummies and the firm's location.

Standard errors in parentheses.

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

Table A.2: Logit coefficients for 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	0.011*** (0.001)	0.011*** (0.001)
Male (D)	0.342*** (0.020)	0.338*** (0.020)
College (D)	0.125*** (0.023)	0.118*** (0.023)
Years working as an employer	0.299*** (0.004)	0.300*** (0.004)
Company is Knowledge-Intensive (D)	0.100*** (0.026)	0.100*** (0.026)
Company is High-Technology (D)	-0.271*** (0.096)	-0.273*** (0.096)
Company Performance (D)	0.179*** (0.029)	0.176*** (0.029)
Company Closure (D)	-1.113*** (0.019)	-1.119*** (0.020)
Years until finding a new company		-0.030*** (0.011)
Constant	-0.720*** (0.055)	-0.668*** (0.058)
Number of Observations	64 235	64 235
Pseudo R2	0.1655	0.1655
Log pseudolikelihood	-35663.862	-35663.862

Note: Regressions include controls for year dummies and the firm's location.

Standard errors in parentheses.

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

Table A.3: Logit coefficients for 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
Age	0.011*** (0.001)	0.011*** (0.001)	0.011*** (0.001)
Male (D)	0.326*** (0.021)	0.339*** (0.020)	0.345*** (0.020)
College (D)	0.118*** (0.023)	-0.023 (0.027)	0.111*** (0.023)
Years working as an employer	0.300*** (0.004)	0.300*** (0.004)	0.097*** (0.008)
Company is Knowledge-Intensive (D)	0.099*** (0.026)	0.101*** (0.025)	0.099*** (0.026)
Company is High-Technology (D)	-0.273*** (0.096)	-0.271*** (0.096)	-0.253*** (0.095)
Company Performance (D)	0.200*** (0.034)	0.176*** (0.029)	0.179*** (0.029)
Company Closure (D)	-1.120*** (0.020)	-0.846*** (0.038)	-1.076*** (0.020)
Years until finding a new company	-0.030*** (0.011)	-0.030*** (0.011)	-0.404*** (0.019)
Male (D) x Company High Performance	-0.089 (0.064)		
College (D) x Company Closure (D)		-0.369*** (0.043)	
Years until finding a new company x Years working as an employer			0.122*** (0.005)
Constant	-0.662*** (0.058)	-0.625*** (0.059)	-0.338*** (0.058)
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.

Standard errors in parentheses.

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

Table A.4: Logit coefficients for Models 9 and 10, studying what influences industry change after entrepreneurial exit.

Variable	Model 9	Model 10
Age	-0.019*** (0.002)	-0.007*** (0.002)
College (D)	0.372*** (0.033)	0.553*** (0.034)
Tenure	-0.016*** (0.003)	-0.020*** (0.003)
Company Closure (D)	0.516*** (0.028)	1.515*** (0.028)
Company Performance (D)	-0.224*** (0.043)	0.153*** (0.039)
Company Tenure	0.015*** (0.002)	0.018*** (0.003)
Company is Knowledge-Intensive (D)	0.200*** (0.037)	-0.004 (0.038)
Company is High-Technology (D)	0.507*** (0.143)	0.705*** (0.130)
Constant	0.469*** (0.045)	-1.783*** (0.047)
Number of Observations	24 572	39 663
Pseudo R2	0.0245	0.0999
Log pseudolikelihood	-16572.082	-17581.636

Notes: 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.

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

Table A.5: Logit coefficients for Model 11, studying what influences individuals being recruited to innovation roles.

Variable	Model 11
Male (D)	0.117*** (0.045)
Years working as employer	-0.022*** (0.012)
Company Performance (D)	0.206*** (0.073)
Company Closure (D)	-0.233*** (0.044)
Company is Knowledge-Intensive (D)	1.883*** (0.045)
Company is High-Technology (D)	0.665*** (0.208)
Constant (D)	-2.676*** (0.094)
Number of Observations	24 572
Pseudo R2	0.1136
Log pseudolikelihood	-7558.6768

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

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

