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Determinants of Entrepreneurial Entry and Exit in Portugal, 2010–2022

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Abstract

This dissertation examines the determinants of entrepreneurial entry and exit in Portugal during the period 2010–2022, a time marked by economic recession, recovery, and the disruptions of the Covid-19 pandemic. Building on the framework of Rocha et al. (2015), we apply multinomial discrete choice models, competing-risks models, and duration models with selection to the *Quadros de Pessoal* matched employer–employee dataset. The analysis distinguishes between three entry routes—start-up, acquisition, and intrapreneurship—and two exit modes—dissolution and ownership transfer. The results show that entrepreneurial entry and exit are shaped by individual characteristics, prior labor market experiences, and broader macroeconomic conditions. In addition, the choice of entry mode, as well as whether ownership is shared with partners, significantly influences exit outcomes. We also found that recently displaced workers are more likely to enter entrepreneurship, yet once established they tend to persist longer as business owners. Overall, the findings indicate that the core patterns of entrepreneurial behavior in Portugal have remained stable despite the economic shocks experienced over the past decade.

JEL codes: J24; L26; M13

Keywords: Entrepreneurship; Entry; Exit

Resumo

Esta dissertação analisa as determinantes da entrada e saída do empreendedorismo em Portugal no período de 2010–2022, caracterizado por recessão económica, recuperação e pelas perturbações provocadas pela pandemia de Covid-19. Com base na metodologia de Rocha et al. (2015), aplicam-se modelos logit multinomiais de escolha discreta, modelos de riscos competitivos e modelos de duração com seleção à base de dados *Quadros de Pessoal*, que faz a correspondência entre empregadores e trabalhadores. A análise distingue três vias de entrada —start-up, aquisição e intrapreneurship — e dois modos de saída — dissolução e venda. Os resultados demonstram que a entrada e a saída do empreendedorismo são moldadas por características individuais, experiências prévias no mercado de trabalho e condições macroeconómicas. Além disso, a via de entrada escolhida, bem como a existência de outros sócios, influenciam de forma significativa os resultados de saída. Verificou-se também que trabalhadores recentemente desempregados têm maior probabilidade de entrar no empreendedorismo, mas, uma vez estabelecidos, tendem a permanecer mais tempo como empreendedores. No geral, os resultados sugerem que os principais padrões do comportamento dos empreendedores em Portugal se mantiveram estáveis, apesar dos choques económicos verificados na última década.

Códigos JEL: J24; L26; M13

Palavras-chave: Empreendedorismo; Entrada; Saída

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1. Introduction

Entrepreneurship plays a critical role in fostering innovation, driving productivity growth, and creating employment opportunities. The processes of creating and closing firms are central to this dynamism, as they enable the reallocation of resources towards more productive uses. While much of the literature focuses on the entry and exit of firms, it is also important to distinguish and examine the entry and exit of entrepreneurs, since entrepreneurs are the decision-makers who ultimately determine whether to start, cease or sell their businesses. Understanding the factors that influence entrepreneurs—such as past labor market experiences, individual characteristics, and broader macroeconomic conditions—provides valuable insights into the mechanisms of entry and exit decisions. Such knowledge is essential for designing public policies that lower barriers to entry, preserve the stock of entrepreneurs, and ultimately promote a more adaptable and competitive economy.

Building on the importance of understanding entrepreneurs' entry and exit decisions, Rocha et al. (2015) used the *Quadros de Pessoal* matched employer-employee dataset to follow over 157,000 individuals who left paid employment to become business owners during 1992–2007 in Portugal. The authors identified first-time entrepreneurs and analyzed both their entry routes, which include start-ups, acquisitions and intrapreneurs, and exit modes, namely business dissolution and ownership transfer (OT). The study revealed that nascent entrepreneurs enter at younger ages, have worked for a higher number of different employers in the past, possess higher levels of education, and are less likely to have professional backgrounds in large-sized or foreign-owned companies. Moreover, different entry routes shape survival outcomes, with start-up founders facing higher dissolution risk, especially early on, while acquirers and intrapreneurs are more likely to exit via OT. Furthermore, past labor market experiences affect business survival. Notably, individuals who became entrepreneurs after job loss due to firm closure tended to persist longer in business, challenging the notion that necessity-driven entrepreneurs are inherently less successful. Additionally, individuals with more experience in the industry tend to have a higher likelihood of business survival, while those with experience in large-sized firms are more likely to sell or dissolve their business.

Portugal's economy underwent profound changes in the 2010–2022 period. Following the global financial crisis and the subsequent European sovereign debt crisis, the country

experienced a deep recession, marked by high unemployment rates, fiscal austerity measures, and structural labor market reforms. These macroeconomic shocks altered the landscape for entrepreneurship, with shifts in labor mobility, wages, and access to credit. Additionally, demographic changes, including an aging population and increased emigration of young workers, further influenced the pool of potential entrepreneurs. From 2014 onwards, the economy gradually recovered, supported by improving labor market conditions. The Covid-19 pandemic, however, caused a new wave of disruption, particularly in tourism and services, while also accelerating digital adoption and the emergence of new business models. Given these substantial economic and social transformations, it is crucial to examine whether the factors influencing entrepreneurial entry and exit have evolved over time.

This dissertation extends the work of Rocha et al. (2015) by applying their methodology to the 2010–2022 period, in order to assess whether the determinants of entrepreneurial entry and exit have changed with Portugal's evolving economic and demographic context. Using the *Quadros de Pessoal* dataset, we employ multinomial discrete choice logit models, competing risks models, and duration models with selection to analyze entrepreneurial dynamics across different entry routes (start-up, acquisition, and intrapreneurship) and exit modes (dissolution and ownership transfer). Our models control for prior labor market experience, individual-level characteristics, firm-level characteristics, and macroeconomic conditions. On the entry side, the empirical results reveal that prior experience in large or foreign firms discourages entrepreneurial entry, while management experience increases it. We also find that having worked for a greater number of employers raises the probability of starting up or acquiring a business but reduces the probability of intrapreneurship. In addition, higher wages in the previous job discourage entry for start-up entrepreneurs and intrapreneurs. Finally, entry is more likely among men, individuals with higher levels of education, and during periods of higher unemployment. On the exit side, our analysis shows that both dissolution and OT become less likely as businesses mature, with OT being the more prevalent form of exit. Furthermore, acquisition entrepreneurs and intrapreneurs exhibit lower hazards of dissolution but higher hazards of OT compared to start-up entrepreneurs. Similarly, shared ownership has a lower hazard of exit by dissolution and a higher hazard of exit by OT compared to sole ownership. In addition, recent displacement reduces the hazard of exit by both routes, while having a college degree decreases the hazard of exit by dissolution but increases the hazard of exit by OT. Lastly,

larger firms have a lower hazard of exit by dissolution but a higher hazard of exit by OT. These findings are broadly consistent with those reported by Rocha et al. (2015), suggesting that the core patterns in entrepreneurial behavior have remained stable over time in Portugal.

The remainder of this thesis is structured as follows. Section 2 reviews the relevant literature on entrepreneurship dynamics. Section 3 presents the data sources used in the analysis. Section 4 outlines the methodological framework employed. Section 5 discusses the empirical results on entry into entrepreneurship, while Section 6 focuses on exit dynamics. Finally, Section 7 concludes with a summary of the main findings, their policy implications, the study's limitations, and directions for future research.

2. Literature review

2.1 Theoretical Perspectives on Entrepreneurial Entry and Exit

Economic theories of entrepreneurship have evolved over centuries, providing insights into why individuals enter, sustain, or exit entrepreneurial activity. As Parker (2018) notes, these theories highlight multiple mechanisms that help explain entrepreneurial behavior. Cantillon (1755) views the entrepreneur as an arbitrageur who bears the uncertainty inherent in buying at certain prices and selling at uncertain ones. In this framework, entrepreneurship is fundamentally linked to risk-bearing, with market equilibrium emerging through the entry of perceptive and risk-tolerant individuals and the exit of less capable ones. Cantillon's perspective was extended by Kirzner (1973, 1985), who emphasized the entrepreneur's alertness to overlooked opportunities, and by Knight (1921), which framed entrepreneurial choice as a function of risk-adjusted returns relative to paid employment. This Knightian tradition has been particularly influential in shaping modern occupational choice models, which depict individuals as neither inherently entrepreneurial nor permanently committed to one occupation, but as responsive to changing relative payoffs.

Other classical contributions underscored the entrepreneur's organizational and innovative roles. Say (1828) highlighted the entrepreneur as a coordinator of production factors, endowed with scarce and non-substitutable qualities such as judgement, perseverance, and resourcefulness. Schumpeter (1934) redefined entrepreneurship as the engine of economic development via innovation and "creative destruction", in which new products, processes, and markets disrupt existing equilibria and initiate new growth cycles. Additional contributions, such as those by Leibenstein (1968), framed entrepreneurship in terms of a gradual improvement of existing products and processes through a combination of leadership, motivation, and risk-taking, while psychological trait theories sought to link entrepreneurial behavior to innate characteristics.

Modern economic theories of entrepreneurial entry and exit build directly upon the Knightian insight that individuals choose between entrepreneurship and paid employment by comparing expected utility. These occupational choice models, initially developed for homogeneous agents, incorporate risk preferences, income distributions, and market conditions to explain selection into entrepreneurship. Extensions of these models introduce

heterogeneity in entrepreneurial ability (Lucas, 1978), showing that abler individuals tend to operate larger firms and that shifts in the capital-labor ratio can affect both the number of entrepreneurs and the average firm size. Other refinements, such as the Kihlstrom and Laffont (1979) model, assume heterogeneous aversion to risk instead of heterogeneous entrepreneurial ability, predicting that the least risk-averse individuals self-select into entrepreneurship and operate larger firms, and that increases in aggregate risk aversion reduce equilibrium wages. These frameworks also accommodate dynamic considerations, such as switching costs (Dixit & Rob, 1994), which help explain the persistence of individuals in suboptimal occupations.

Building on the individual-centered occupational choice models, the "theory of the firm" provides a complementary perspective by focusing on the firm-level considerations. The existence of entrepreneurial opportunities depends partly on whether production is organized internally within firms ("make") or contracted out to independent producers ("buy") (Holmstrom & Milgrom, 1994). Following Coase (1937), firms internalize production when doing so reduces transaction costs, but they may outsource to independent entrepreneurs when in-house organization entails higher costs due to agency problems, monitoring difficulties, or rigid labor market regulations. Asset-specificity also plays a central role: when production generates valuable spillovers, requires coordinated routines, or depends on firm-specific reputation and training, incumbents have an incentive to retain activities in-house, limiting the scope for entrepreneurship (Nickerson & Silverman, 2003; Sherer et al., 1998). This "make or buy" framework thus implies that entry into entrepreneurship is more likely when output is hard to measure, employee monitoring is costly, and markets for specialized services are thick. It also suggests that shifts in technology, labor regulation, and the cost of monitoring can alter the relative efficiency of employment versus independent contracting, influencing the rates of entrepreneurial entry and exit over time.

Other theories highlight additional mechanisms shaping entrepreneurial entry and exit. The literature on entrepreneurial spawning examines why employees, especially from small firms, transition into entrepreneurship, highlighting mechanisms such as the transmission of entrepreneurial skills, blocked mobility, self-selection, and bureaucracy (Parker, 2009). Macroeconomic theories link entrepreneurship to long-run growth through: wealth-based models, where borrowing constraints and wealth distribution shape entrepreneurial

dynamics (Banerjee & Newman, 1993); technology-based models, where exogenous or endogenous technological change affects the relative efficiency of small versus large firms (Aghion & Howitt, 1992; Calvo & Wellisz, 1980); and knowledge-based models, where entrepreneurship serves as a channel for commercializing knowledge spillovers (Acs et al., 2009). Finally, multiple-equilibrium models show how regions with similar fundamentals can end up with persistently different entrepreneurial outcomes due to differences in ability, non-pecuniary benefits, or human capital (Ghatak et al., 2007; Landier, 2005; Parker, 2005). Collectively, the theories reviewed in this section emphasize that entrepreneurship emerges not from a single causal pathway but from the interplay of individual traits, firm-level incentives, market structures, institutional conditions, and dynamic feedback effects. This integrated framework sets the stage for the empirical analysis in the following chapters.[1]

2.2 Empirical Evidence on Entrepreneurial Entry and Exit

Empirical research on entrepreneurial entry and exit has relied on a variety of methodological approaches. According to Parker (2018), these include discrete choice models, such as logit and probit specifications, which are suited to binary outcomes like entry into or survival in entrepreneurship, and can be extended to panel settings to control for unobserved heterogeneity, or to multinomial formats for multiple types of entry or exit. Sample selection models, popularized by Heckman, address the non-random selection of individuals into entrepreneurship, thereby producing unbiased estimates of the regression coefficients. Hazard models, including Cox proportional hazards and competing-risks specifications, are employed to examine the duration of entrepreneurial spells and the determinants of exit while accommodating right-censored data. At the macro level, cointegration estimators are used with time-series or panel data to identify long-run relationships between entrepreneurship rates and aggregate economic or policy variables, while avoiding the "spurious regression" problem. Decomposition techniques, such as the Oaxaca–Blinder approach, break down observed differences in entrepreneurial entry or survival between groups into two parts: one explained by differences in observable

[1] The theories discussed here predominantly reflect macroeconomic-level perspectives. There exists a wide array of complementary theoretical approaches to entrepreneurial entry and exit that focus on other dimensions, such as sociology (e.g., embeddedness theory, Granovetter, 1985) and psychology (e.g., need for achievement, McClelland, 1961; locus of control, Rotter, 1966). While these frameworks provide valuable insights, they extend beyond the scope of the present dissertation.

characteristics, and another explained by differences in how those characteristics affect entry or survival. Earnings-function estimations, rooted in human capital theory, are used to relate entrepreneurial success measures such as profits to factors like education, experience, and other forms of human capital. Instrumental variable methods are often applied alongside these estimations to address endogeneity, ensuring that the estimated effects of key variables are not biased by omitted factors or reverse causality. Finally, quantile regression techniques complement these approaches by examining how the influence of explanatory variables varies across different points of the profit or income distribution.

Determinants of entrepreneurial entry have been widely studied, with individual characteristics such as age, gender, education, and marital status emerging as key factors (Berglann et al., 2011; Livanos, 2009; Poschke, 2013). Ability, measured as the residual from an income regression (Andersson & Wadensjö, 2013), has also been shown to influence entry decisions. Characteristics of prior employers, such as such as firm size (Hyytinen & Maliranta, 2008; Parker, 2009), R&D intensity and productivity (Hyytinen & Maliranta, 2008), are also correlated with entry decisions. The macroeconomic environment (Koellinger & Roy Thurik, 2012; Siemer, 2014), the availability of credit (Bazzi et al., 2023), and regulation on entry (Klapper et al., 2006) also affect firm entry rates. Displacement can act as a "push" factor into self-employment (von Greiff, 2009), while household financial situations, such as housing debt, may constrain entry (Yu et al., 2024). In addition, the entry route chosen, whether start-up or acquisition (Bastié et al., 2013; Block et al., 2013; Parker & van Praag, 2012), and the type of entrepreneurship, such as opportunity- or necessity-driven (van der Zwan et al., 2016) affect the impact of individual characteristics on entrepreneurial entry. Finally, in acquisition entrepreneurship, financial capital availability is particularly critical to entry (Vanoorbeek, 2022).

Similarly, the determinants of entrepreneurial exit encompass both individual- and firm-level factors. Age, gender, education, and ethnicity are associated with differences in business survival (Block & Sandner, 2009; Carpenter & Loveridge, 2019; Millán et al., 2012). Socio-economic integration of migrant entrepreneurs is crucial for the survival of their businesses (Zou et al., 2023). Previous displacement events can precipitate closure (Andersson & Wadensjö, 2007; Carrasco, 1999; Taylor, 2001). Firms located in rural areas last longer (Haapanen & Tervo, 2009), as do firms located in countries with higher start-up or employment incentives as percentage of GDP (Millán et al., 2012). Product or process

innovation increases firm survival (Colombelli et al., 2016). Finally, acquired firms survive longer than start-ups (Xi et al., 2020).

Within this literature, Rocha et al. (2015) make a distinctive contribution by jointly analyzing both entry into and exit from nascent business ownership, rather than treating them in isolation. They also distinguish between multiple entry routes—start-ups, acquisitions, and intrapreneurship—and exit modes—dissolution and ownership transfer—moving beyond the common association of entrepreneurial entry with new firm creation and exit with failure. They introduce new variables of prior labor market experience such as the cause of job displacement (distinguishing between previous employer closure and large-scale downsizing), the number of different past employers, and the number of years employed in large-sized or foreign-owned firms. In addition, they account for individual-level characteristics, firm-level characteristics, and macroeconomic variables, providing a more comprehensive view of the entrepreneurial entry and exit dynamics.

3. Data

3.1 Quadros de Pessoal

The main dataset used in this dissertation is the *Quadros de Pessoal* (QP), a matched employer–employee panel compiled annually by the Portuguese Ministry of Labour, Solidarity and Social Security. It includes all private-sector establishments with at least one employee and is based on mandatory declarations submitted by firms during a reference period in October of each year. This administrative dataset provides detailed information on both workers and firms, enabling the construction of individual employment trajectories and firm dynamics over time.

At the worker level, QP contains information such as age, gender, educational attainment, occupation, type of employment contract, job tenure, monthly gross wages, and hours worked. At the firm level, it provides details on the year of foundation, legal form, capital structure, location, industry, number of establishments, number of employees, and revenues. It also includes establishment-level identifiers, which allow for the identification of different business units within the same firm.

The QP dataset has a longitudinal structure, allowing individuals and firms to be tracked over time through anonymized unique identifiers. This structure makes it possible to observe transitions from paid employment to self-employment, as well as movements from entrepreneurship back into wage employment. The sample is limited to individuals aged between 18 and 65.

3.2 Macroeconomic Data: Consumer Price Index and Unemployment

In addition to the individual and firm-level variables obtained from the QP dataset, this dissertation uses two national-level indicators from the Organisation for Economic Co-operation and Development (OECD): the Consumer Price Index (CPI) and the unemployment rate.

The CPI is used to deflate nominal wages reported in the QP data, allowing for the calculation of real wage values across the study period. This adjustment is necessary to ensure that wage comparisons over time reflect changes in purchasing power rather than price level

fluctuations. The CPI data are reported on an annual basis and matched to the corresponding year of observation in the microdata.

The national unemployment rate is used as a contextual variable to reflect general labor market conditions. It is measured as the annual average share of the labor force without work for individuals aged 15 and older. This variable helps to situate entrepreneurial transitions within broader economic cycles, as higher unemployment levels may influence individuals' decisions to enter or exit self-employment.

4. Methodology

This dissertation follows the methodology employed by Rocha et al. (2015). This allows for direct comparison of the results across time periods and helps assess whether entrepreneurial dynamics have shifted in response to Portugal's recent economic and demographic changes.

4.1 Definitions of Business Entry and Exit

The initial step involved processing raw data files to classify individuals as either a Business Owner (BO) or a paid employee. A nascent business owner is defined as an individual who transitions from paid employment to become a business owner of a new or existing business for the first time. Each paid employee was tracked to identify the first year they appeared as a BO. Individuals with no record as a BO throughout the entire observation period were categorized as "Never BOs", serving as the control group for the analysis of entry determinants. The career history of identified BOs was traced backward from their entry year to understand their prior employment trajectory. The analysis focused on individuals who were in paid employment in year t-1, t-2, or t-3 and subsequently became BOs in year t, allowing for a maximum interval of two years of absence between the last record in paid employment and the first record as a BO. This restriction is applied to capture transitions from paid employment to entrepreneurship, while accommodating for short periods of unemployment or periods not captured in the dataset prior to entry. Individuals who are simultaneously BOs and paid employees are excluded from the analysis.

Based on their transition pathway, nascent business owners were categorized into two primary groups. Nascent intrapreneurs are defined as individuals who were paid employees in a specific firm and subsequently became business owners within the same firm. This definition encompasses scenarios such as an employee buyout, where the worker becomes the sole BO of their former employer, or a partnership, where the worker transitions from paid employee status to become one of the BOs of the employer firm. Nascent entrepreneurs include individuals previously in paid employment who became BOs in a different firm. This group is further differentiated by their mode of entry. Start-up entrepreneurs are identified when the firm's first record in the dataset coincides with the individual's year of transition into entrepreneurship, signifying the creation of a new venture. Acquisition entrepreneurs

are identified when the individual becomes an entrepreneur in a pre-existing firm that was previously owned by another BO, representing entry through the acquisition of an established business. Both start-up and acquisition entrepreneurs are further divided by whether they entered the business alone or in partnership. Individuals becoming BOs in two or more different firms in the same year were excluded from the analysis.

To identify a BO's exit year, we require an absence of the BO from the firm, or from the BO category, for a period greater than or equal to two consecutive years. This criterion helps to distinguish temporary absences from definitive exits from business ownership. Each identified nascent BO was tracked from their year of entry until their last record as a BO in the firm. If a BO remained present in the last year of our observation period, their case was considered right-censored. A firm was classified as exiting in year t if it was present in the dataset in year t-1 but was absent in year t and all subsequent years.

In addition to identifying the timing of a BO's exit, we also distinguish between two main exit modes. Dissolution occurs when the BO's exit year coincides with the firm's exit year, implying the cessation of business operations. Ownership transfer (OT) is identified when the BO exits, but the firm continues operating in the market under the ownership of other entrepreneurs, indicating a change in ownership rather than a failure.

4.2 Empirical Strategy

To examine the entry into business ownership, a multinomial logit model was employed. The dependent variable for each individual can take one of four distinct, mutually exclusive alternatives: (1) Never BO (serving as the reference group), (2) Start-up entrepreneur, (3) Acquisition entrepreneur, or (4) Intrapreneur. Drawing on previous literature on entrepreneurial entry (Berglann et al., 2011; Fairlie, 2013; Livanos, 2009; von Greiff, 2009), the independent variables included individual characteristics (gender, age, and education), prior labor market experiences (years of experience in a large or foreign firm, and number of different employers), characteristics specific to the previous job (hourly wage, tenure, firm size, management position, overeducation), and macroeconomic conditions (lagged unemployment rate). All independent variables are alternative invariant. Formally, the probability of observing outcome *j* for individual *i,* conditional on the vector of explanatory variables *Xi*, is given by

$$p_{ij} = \frac{\exp(X_i'\beta_j)}{\sum_{l=1}^{4}\exp(X_i'\beta_l)}, \quad j = 1, 2, 3, 4. \tag{4.2.1}$$

An extended version of this model incorporated two additional displacement variables, consistent with previous literature on the relationship between displacement and self-employment (von Greiff, 2009). The first, recent displacement due to employer's closure, is defined by an individual's departure from a firm that subsequently ceased operations. The second, recent displacement due to employer's downsizing, refers to an individual's departure from a firm that reduced its workforce by at least 30% and a minimum of 5 employees. These definitions were used to address the ambiguity in identifying unemployment, as an individual's absence from the dataset does not definitively indicate unemployment status.

The study of exit decisions was first approached using a non-parametric analysis based on Kaplan-Meier estimators. This method allows for the estimation of survivor functions without imposing functional form assumptions, providing an initial descriptive overview of exit patterns across groups. Formally, the Kaplan–Meier estimator of the survivor function $\hat{S}(t)$ is given by

$$\hat{S}(t) = \prod_{\substack{j \\ t_j \le t}} \left(\frac{r_j - n_j}{r_j} \right) \tag{4.2.2}$$

where n_j is the number of exits at time t_j, and r_j is the number of individuals at risk of exiting just before t_j.

Building on the non-parametric results, we next employ a competing-risks model (see Heckman & Honoré, 1989; Narendranathan & Stewart, 1991), distinguishing exit by dissolution or OT. In a competing-risks framework, the likelihood function for all event types taken together can be factored into a separate likelihood function for each event type, and the likelihood function for each event type treats all other events as if the individual were censored at the time when the other event occurred. This approach allows each likelihood function to be estimated independently without any loss of statistical precision. The competing-risks specification is suitable in this context because exits are mutually exclusive: an individual can leave entrepreneurship either by dissolution or OT, but not both simultaneously. In contrast, a standard survival model that ignores the competing nature of exit types would treat alternative exits as censored observations, which can lead to biased

estimates of the effects of covariates on the hazard of each specific exit type. Formally, let T_i be a discrete random variable denoting the time of exit for business owner *i*, and let $J_i \in (1,2)$ indicate the type of exit event. For each exit type *j*, the cause-specific discrete-time hazard function is defined as

$$h_{ij}(t) = \mathrm{P}(T_i = t, J_i = j \mid T_i \geq t) \tag{4.2.3}$$

which is the probability that business owner *i* experiences exit type *j* at time *t*, conditional on not exiting up to *t*. We estimate these hazard functions using a discrete-time complementary log-log model with frailty, which approximates the continuous-time Weibull proportional hazards model and accounts for unobserved heterogeneity. Specifically, for exit type *j*, we specify the model as

$$\log\left(h_{ij}(t)\right) = \log(\gamma\alpha) + (\alpha - 1)\log(t) + X'_{ij}\beta_j + u_i \tag{4.2.4}$$

where X_{it} is a vector of independent variables, β_j is the vector of parameters for exit type *j*, u_i represents individual-specific frailty capturing unobserved heterogeneity, γ is the scale parameter, and α is the shape parameter of the Weibull baseline hazard. By estimating separate models for dissolution and OT hazards, while incorporating frailty, we properly capture the competing nature of exit events and control for both observed and unobserved differences across business owners. As independent variables we used the previously mentioned individual characteristics, prior labor market experiences, characteristics specific to the previous job, macroeconomic conditions, and recent displacement variables. We also used the type of entry (start-up entrepreneur, acquisition entrepreneur, and intrapreneur, subdividing each by entry done alone or in partnership), firm-level characteristics (age, size, industry, and region) and duration dummies. The results from this model allow us to visualize the estimated discrete-time hazard of exit, across different business owners' entry mode, while accounting for competing risks.

Finally, to investigate the determinants of exit we use an exponential duration model. Let T_i denote the duration of the entrepreneurial spell for business owner *i*. We assume that T_i follows an exponential distribution, which implies a constant hazard rate over time. The hazard rate is given by

$$h_{ij}(t) = h_0 \exp\left(X'_{ij}\beta_j + \varepsilon_i\right) \tag{4.2.5}$$

In this expression, $h_{ij}(t)$ is the hazard rate for individual *i* and exit type *j*, h_0 is the baseline hazard, X_{ij} is a vector of covariates, β_j is a vector of coefficients for exit type *j*, and ε_i is an individual-specific error term capturing unobserved heterogeneity. We estimate separate models for each type of exit (dissolution and OT).

Exit from entrepreneurship may be subject to selection bias, as the decision to enter entrepreneurship is itself non-random and potentially correlated with unobserved characteristics that also influence the likelihood of exit. To account for this, we also estimate a duration model with sample selection using a bivariate exponential distribution. We follow the approach proposed by Boehmke et al. (2006). This framework consists of two equations: a selection equation for the decision to enter entrepreneurship, and a duration equation for the time until exit. The selection equation is modeled as a standard probit

$$C_i^* = Z_i'\gamma + \eta_i \tag{4.2.6}$$

$$C_i = 1 \; if C_i^* > 0, and \; C_i = 0 \; otherwise \tag{4.2.7}$$

where C^*_i is a latent variable representing the propensity of individual *i* to become an entrepreneur, Z_i is a vector of observed characteristics influencing the entry decision, γ is a parameter vector, and η_i is an individual-specific error term assumed to follow a standard normal distribution. Conditional on selection into entrepreneurship ($C_i = 1$), we model the duration until exit using the exponential hazard model as defined in equation (4.2.5). To account for the potential correlation between the unobserved factors affecting selection and those affecting duration (i.e., between η_i and ε_i), we assume a joint bivariate exponential distribution for the error terms. Estimation is performed using full-information maximum likelihood, combining both the selection and duration equations.

We use the same covariates in the duration model as in the competing-risks model: individual characteristics, prior labor market experiences, characteristics specific to the previous job, macroeconomic conditions, recent displacement variables, type of entry, and firm-level characteristics, consistent with previous literature on exit from entrepreneurship (Block & Sandner, 2009; Parker & Belghitar, 2006; Rocha et al., 2015; Stam et al., 2010). For the selection equation, we include demographic variables, prior labor market experiences, recent displacement variables, and macroeconomic conditions.

5. Results on entry into business ownership

5.1 Descriptive Statistics

Table 1: Descriptive statistics, by groups of nascent BOs (Portugal, 2010-2022)

	Never BO (N=26,948,131)	**Start-up entrepreneur (N=51,009)**	**Acquisition entrepreneur (N=12,452)**	**Intrapreneur (N =47,707)**
Prior experiences in the labor market as paid employee				
Experience in a large firm (years)	1.380	.486	.717	.078
Experience in a foreign firm (years)	.604	.290	.352	.076
Number of different employers	1.418	2.406	2.389	1.229
Recent displacement due to employer's closure (%)	.015	.150	.103	N.A.
Recent displacement due to employer's downsizing (%)	.005	.029	.026	N.A.
Previous wage job characteristics				
Overeducation (%)	.256	.297	.287	.223
Tenure (years)	8.270	5.110	6.357	8.635
Management position (%)	.0280	.077	.129	.443
Hourly wage (in logs, 2010 euros)	1.667	1.682	1.810	1.623
Micro firm (%)	.206	.448	.387	.780
Small firm (%)	.261	.287	.287	.192
Medium firm (%)	.231	.136	.164	.026
Large firm (%)	.302	.129	.162	.003
Individual-level characteristics				
Male (%)	.525	.671	.634	.656
Age (years)	39.881	38.827	40.321	44.500
Less than 9 years of schooling (%)	.274	.096	.096	.248
9 years of schooling (%)	.262	.243	.224	.251
12 years of schooling (%)	.277	.378	.339	.268
College education (%)	.187	.283	.342	.232

N.A. not applicable.

Table 1 presents descriptive statistics for four distinct groups in the Portuguese labor market between 2010 and 2022: individuals who were never business owners (Never BO), start-up entrepreneurs, acquisition entrepreneurs, and intrapreneurs.

Start-up and acquisition entrepreneurs exhibit a markedly higher average number of previous employers compared to Never BOs, suggesting more frequent job mobility before

entering business ownership. In contrast, Never BOs report greater cumulative experience in large and foreign firms.

Job displacement patterns also differ across groups. The proportion of individuals experiencing recent displacement due to employer closure or downsizing is substantially higher among start-up and acquisition entrepreneurs than among Never BOs, indicating that a non-negligible share of entrepreneurial activity in these categories may be driven by necessity. Specifically, 17.9% of start-up entrepreneurs and 12.9% of acquisition entrepreneurs faced recent displacement events.

Regarding tenure, start-up and acquisition entrepreneurs have shorter average job tenures than Never BOs, while intrapreneurs display the highest tenure. Intrapreneurs also have the highest incidence of prior managerial experience, as well as a strong concentration of previous employment in micro and small firms. Conversely, Never BOs are more frequently found in medium and large firms.

In terms of earnings, acquisition entrepreneurs record the highest average wages, whereas wages across the remaining groups are relatively similar. Nascent BOs also show a higher proportion of male participants compared to Never BOs.

Demographically, intrapreneurs tend to be older than members of other groups. Educational attainment varies across categories, with start-up and acquisition entrepreneurs demonstrating higher levels of formal education, particularly in tertiary qualifications, compared to intrapreneurs and Never BOs.

5.2 Estimation Results

Table 2: Multinomial logit estimation results (Portugal, 2010-2022)

	Start-up entrepreneur	Acquisition entrepreneur	Intrapreneur
Prior experiences in the labor market as paid employee			
Experience in a large firm	-.350***	-.206***	-.018*
	(.006)	(.009)	(.010)
Experience in a foreign firm	-.173***	-.165***	-.013
	(.008)	(.014)	(.011)
Number of different employers	1.080***	1.085***	-.175***
	(.005)	(.009)	(.010)
Previous wage job characteristics			
Overeducation	-.240***	-.177***	-.104***
	(.012)	(.024)	(.012)
Tenure	.129***	.163***	.031***
	(.003)	(.005)	(.002)
Tenure squared/100	-.004***	-.005***	-.001***
	(.000)	(.000)	(.000)
Management position	.719***	1.166***	2.762***
	(.020)	(.033)	(.011)
Hourly wage	-.208***	.025	-.111***
	(.014)	(.025)	(.011)
Small firm [a]	-.744***	-.617***	-1.380***
	(.013)	(.025)	(.012)
Medium firm [a]	-1.413***	-1.123***	-3.178***
	(.017)	(.031)	(.030)
Large firm [a]	-.845***	-.816***	-5.492***
	(.023)	(.042)	(.093)
Individual-level characteristics			
Male	.729***	.505***	.437***
	(.011)	(.022)	(.010)
Age	.140***	.048***	.124***
	(.005)	(.008)	(.004)
Age squared/100	-.179***	-.053***	-.111***
	(.006)	(.010)	(.004)
9 years of schooling [b]	.901***	.914***	.357***
	(.020)	(.040)	(.014)
12 years of schooling [b]	1.596***	1.459***	.605***
	(.020)	(.040)	(.015)
College education [b]	1.987***	1.975***	.812***
	(.023)	(.045)	(.018)
Macroeconomic environment			
Lagged unemployment rate	.113***	.097***	.061***
	(.002)	(.003)	(.001)
Constant	-13.004***	-13.255***	-9.661***
	(.091)	(.172)	(.083)
Industry dummies (2-digit)	Yes	Yes	Yes
Regional dummies (NUTS II)	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes
Number of observations		27,043,125	
Log pseudo-likelihood		-584354.780	

Pseudo R^2	.190

*, **, and *** denote significant at 10, 5, and 1 %, respectively. Worker-clustered standard errors in parentheses. Reference categories: [a] micro firms; [b] less than 9 years of schooling. The base outcome is Never BOs.

Table 2 presents the results of the multinomial logit estimations for the probability of entry into business ownership in Portugal during the period 2010–2022. The dependent variable distinguishes between three types of nascent entrepreneurs: start-up entrepreneurs, acquisition entrepreneurs, and intrapreneurs, with Never BOs as the base outcome. The estimations control for a range of individual-level characteristics, prior labor market experiences, previous wage job characteristics, as well as macroeconomic, industry, regional, and year fixed effects.

The results show that prior experience in large or foreign firms is associated with a lower probability of entering into business ownership through either start-up or acquisition. One possible explanation is that large and foreign-owned employers typically offer higher pay premia and use tenure-contingent compensation that reward staying (Bloom et al., 2018; van der Straaten et al., 2020), raising the opportunity cost of quitting to found a firm and thereby lowering entry into entrepreneurship. Conversely, a higher number of different employers in the past increases the probability of becoming a start-up or acquisition entrepreneur, while it decreases the probability of becoming an intrapreneur. This is in line with Lazear (2004) Jack-of-All-Trades theory of entrepreneurship, which argues that varied career experience fosters the balanced skill set required for entrepreneurship. The negative association with intrapreneurship in our estimates is consistent with the idea that firm-specific knowledge is more profitably exploited within the firm rather than outside it (Parker, 2011).

Regarding the characteristics of the previous wage job, holding a management position increases the probability of all three forms of nascent entrepreneurship, with larger marginal effects for intrapreneurs, which is in line with Parker and van Praag (2012). Similarly, prior work experience in micro or small firms have higher probability of entrepreneurial entry relative to experience in medium or large firms, which is in line with previous empirical evidence (Elfenbein et al., 2010; Sørensen, 2007). In contrast, higher hourly wages in the previous job are associated with a lower probability of entry for start-up entrepreneurs and

intrapreneurs, which could reflect the higher opportunity costs of leaving well-paid employment. This finding is in line with Hyytinen and Maliranta (2008).

With respect to individual demographic characteristics, being male and having higher levels of schooling increase the likelihood of entrepreneurial entry, with the effect magnitude rising with educational attainment. This gender gap is well-documented in the literature (Minniti & Nardone, 2007) and is often attributed to differences in risk preferences, human and social capital, and other factors. The positive role of formal education is consistent with the majority of studies reviewed by van der Sluis et al. (2008), although their meta-analysis finds the overall effect on entry to be statistically insignificant. Age and tenure in the previous job exhibit an inverted U-shaped relationship with entry into entrepreneurship, suggesting that at early stages higher age and tenure are associated with greater entry probabilities, up to a peak, after which these probabilities decline. This pattern finds empirical support in Bates (1995) and Rider et al. (2019), respectively.

Finally, higher lagged unemployment rates are positively associated with entry into all forms of nascent entrepreneurship, suggesting that adverse labor market conditions may act as a push factor into self-employment. This finding supports the "recession-push" hypothesis (Congregado et al., 2012), which argues that adverse labor market conditions push individuals into self-employment.

These findings are largely consistent with those reported in Rocha et al. (2015). However, there are some notable differences. Specifically, Rocha et al. (2015) find that tenure in the intrapreneur category exhibits a U-shaped relationship with entry into business ownership, contrasting with the inverted U-shape observed here. Additionally, they report that higher hourly wages increase the probability of entry for start-up entrepreneurs, while our results suggest that it decreases the probability for this category. In terms of age, Rocha et al. (2015) identify a U-shaped relationship for acquisition entrepreneurs and a negative relationship for start-up entrepreneurs, while we find an inverted U-shape relationship for both. Lastly, unlike the positive association found in the current dissertation, their results suggest that higher lagged unemployment rates reduce the probability of entry for acquisition entrepreneurs and intrapreneurs.

Table 3: Effect of a recent displacement on the transition into entrepreneurship

	Start-up entrepreneur	**Acquisition entrepreneur**
Recent displacement due to employer's closure	2.142***	1.692***
	(.014)	(.031)
Recent displacement due to employer's downsizing	1.629***	1.401***
	(.028)	(.058)
Prior experiences in the labor market as paid employee control variables	Yes	Yes
Macroeconomic environment control variables	Yes	Yes
Individual-level control variables	Yes	Yes
Previous wage job control variables	Yes	Yes
Industry, region, and year dummies	Yes	Yes
Number of observations	26,996,640	
Log pseudo-likelihood	-316437.740	
Pseudo R^2	.166	

*** denotes significant at 1 % level. Worker-clustered standard errors in parentheses. The base outcome is Never BOs.

Table 3 extends the specification from Table 2 by including two displacement variables: recent displacement due to employer's closure and recent displacement due to employer's downsizing. Control variables for prior labor market experience, individual characteristics, previous wage job attributes, macroeconomic environment, as well as industry, region, and year fixed effects, are included.

The results indicate that recent displacement increases the probability of entry into entrepreneurship for both start-up and acquisition entrepreneurs. Specifically, individuals displaced by employer closure are more likely to becoming nascent entrepreneurs compared to those displaced by downsizing. This finding is consistent with the notion of entrepreneurship by necessity, whereby labor market shocks such as job loss prompt individuals to pursue self-employment as an alternative economic strategy (von Greiff, 2009). The results are in line with Rocha et al. (2015).

6. Results on exit from business ownership

6.1 Descriptive Statistics

Table 4: Descriptive statistics, by BOs' exit mode (Portugal, 2010-2022)

	BOs exiting by dissolution (N=30,394)	**BOs exiting by OT (N=34,812)**
Entry mode		
Start-up entrepreneur—alone (%)	.427	.196
Start-up entrepreneur—shared ownership (%)	.132	.115
Acquisition entrepreneur—alone (%)	.059	.064
Acquisition entrepreneur—shared ownership (%)	.029	.073
Intrapreneur—alone (%)	.224	.240
Intrapreneur—shared ownership (%)	.125	.301
Prior experiences in the labor market as paid employee		
Experience in a large firm (years)	.137	.103
Experience in a foreign firm (years)	.087	.065
Number of different employers	1.944	1.750
Recent displacement due to employer's closure (%)	.031	.030
Recent displacement due to employer's downsizing (%)	.008	.006
Years of experience in the sector	3.091	3.552
Individual-level characteristics		
Male (%)	.633	.643
Age (years)	42.292	44.371
Less than 9 years of schooling (%)	.156	.205
9 years of schooling (%)	.257	.238
12 years of schooling (%)	.343	.287
College education (%)	.244	.269
Firm-level characteristics		
Firm age (years)	8.255	12.931
Micro firm (%)	.931	.778
Small firm (%)	.063	.183
Medium firm (%)	.005	.034
Large firm (%)	.000	.005

Table 4 presents descriptive statistics for business owners (BOs) in Portugal who exited their businesses between 2010 and 2022, differentiated by their mode of exit: dissolution or ownership transfer (OT).

A majority of BOs who exited by dissolution were start-up entrepreneurs, predominantly start-up alone, whereas intrapreneurs constitute the largest share of those exiting via OT. BOs exiting through OT tend to have more years of prior labor market

experience in the sector in which their firm operates then the ones exiting through dissolution, although the difference is modest. Firm age differs substantially between the two groups, with firms exiting by OT being, on average, significantly older than those exiting by dissolution. Regarding firm size, the majority of exiting BOs operate micro firms; however, those exiting by dissolution are generally associated with smaller firm sizes compared to their OT counterparts. Finally, individual-level characteristics and prior paid labor market experiences are broadly similar across both exit modes.

6.2 Nonparametric analysis

Figure 1: KM survivor function, by BO type

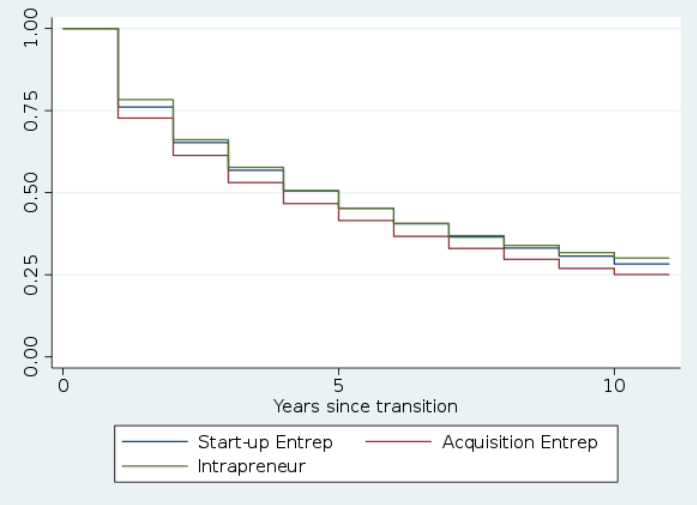


Figure 1 compares the estimated survivor function, based on Kaplan-Meier curves, of start-up entrepreneurs, acquisition entrepreneurs, and intrapreneurs, without controlling for observable characteristics or differentiating by exit mode. The figure suggests that approximately 25% of nascent business owners exit within the first year, 50% exit by the fourth year, and around 70% exit by the tenth year. Notably, acquisition entrepreneurs display a lower survival probability throughout the observed period compared to start-up entrepreneurs and intrapreneurs, indicating that they are more likely to exit their businesses.

Figure 2: KM survivor function, by type of ownership

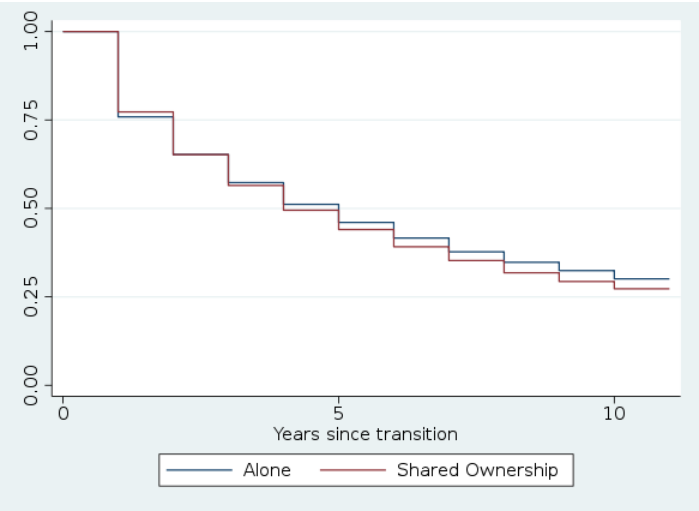


Figure 2 additionally compares the estimated survivor function of nascent BOs entering alone or with shared ownership. The figure suggests that exit patterns of both types are similar during the first four years but begin to diverge thereafter, with nascent business owners entering with shared ownership becoming increasingly more likely to exit their businesses compared to those entering alone.

6.3 Estimation Results

Table 5: Estimation results from the competing-risks model (Portugal 2010–2022)

	Exit by dissolution	**Exit by OT**
Entry mode[a]		
Start-up entrepreneur—shared ownership	.880***	1.907***
	(.020)	(.022)
Acquisition entrepreneur—alone	1.300***	2.270***
	(.027)	(.027)
Acquisition entrepreneur—shared ownership	.975***	2.725***
	(.037)	(.025)
Intrapreneur—alone	2.017***	2.958***
	(.024)	(.026)
Intrapreneur—shared ownership	1.819***	3.497***
	(.029)	(.025)
Prior experiences in the labor market as paid employee		
Experience in a large firm	.328***	.168***
	(.021)	(.022)
Experience in a foreign firm	.106***	.022
	(.025)	(.027)
Number of different employers	.025***	.090***
	(.009)	(.010)
Recent displacement due to employer's closure	-.180***	-.024

	(.036)	(.036)
Recent displacement due to employer's downsizing	.170**	-.053
	(.068)	(.077)
Years of experience in the sector	-.088***	-.030***
	(.004)	(.004)
Individual-level characteristics		
Male	-.100***	-.050***
	(.014)	(.015)
Age	.008	-.091***
	(.006)	(.005)
Age squared/100	-.001	.118***
	(.007)	(.006)
9 years of schooling [b]	.079***	.007
	(.024)	(.025)
12 years of schooling [b]	.046*	.021
	(.024)	(.025)
College education [b]	-.166***	.088***
	(.025)	(.025)
Firm-level characteristics		
Firm age	-.077***	-.021***
	(.002)	(.001)
Firm age squared/100	.015***	.004***
	(.000)	(.000)
Small firm [c]	-1.283***	-.244***
	(.028)	(.019)
Medium firm [c]	-2.413***	-.413***
	(.094)	(.040)
Large firm [c]	-4.619***	-1.719***
	(.308)	(.091)
Constant	-2.256***	-1.399***
	(.122)	(.119)
Industry dummies (2-digit)	Yes	Yes
Regional dummies (NUTS II)	Yes	Yes
Duration dummies	Yes	Yes
Number of observations	647,379	647,379
Log likelihood	-78489.872	-70368.960
σ_u	.003	.003
ρ	0.000***	0.000***

The values reported are marginal effects. Values in parentheses are robust standard errors * , ** , and *** denote significant at 10, 5, and 1 %, respectively. Reference categories: [a] Start-up entrepreneurs alone; [b] less than 9 years of schooling; [c] micro firms.

Table 5 reports the estimation results from the competing-risks model analyzing the exit from business ownership in Portugal over the period 2010–2022. The dependent variable distinguishes between two types of exit: exit by dissolution and exit by OT. The reported coefficients are marginal effects from models that account for competing risks of exit, controlling for entry mode, prior labor market experiences, individual-level

characteristics, firm-level attributes, and a set of industry, regional, and duration dummies. These results were used to calculate the functions presented in Figure 3.

Figure 3: Duration dependence of dissolutions and ownership transfers, by BOs' entry mode

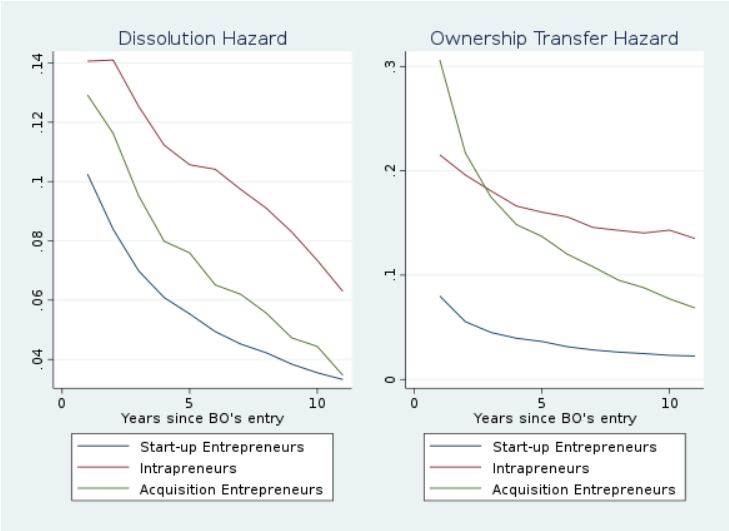


Figure 3 displays the discrete-time hazard functions estimated from the competing-risks model, differentiating by type of exit (dissolution and ownership transfer) and by mode of entry (start-up entrepreneurs, acquisition entrepreneurs, and intrapreneurs). The figure shows that the risk of dissolution exhibits negative duration dependence, indicating that the likelihood of exit through dissolution or OT declines as the business ages. This pattern is consistent regardless of the entrepreneur's mode of entry. Moreover, the hazard rates for dissolution are lower than those for ownership transfer, suggesting that entrepreneurs are more likely to exit via OT than through dissolution. Across both exit types, start-up entrepreneurs display the lowest hazard rates, followed by acquisition entrepreneurs, while intrapreneurs present the highest likelihood of exit.

Table 6: Estimation results of duration models with selection (Portugal, 1992–2007)

	Exit by dissolution		Exit by OT	
	Without selection	**With selection**	**Without selection**	**With selection**
Entry mode [a]				
Start-up entrepreneur—shared ownership	-.258*** (.020)	-.194*** (.015)	.345*** (.022)	.263*** (.017)
Acquisition entrepreneur—alone	-.304*** (.028)	-.219*** (.022)	.506*** (.027)	.397*** (.021)
Acquisition entrepreneur—shared ownership	-.739*** (.039)	-.541*** (.029)	.782*** (.026)	.621*** (.021)
Intrapreneur—alone	-.137*** (.021)	-.065*** (.016)	.479*** (.022)	.401*** (.017)
Intrapreneur—shared ownership	-.603*** (.025)	-.401*** (.018)	.727*** (.022)	.594*** (.017)
Prior experiences in the labor market as paid employee				
Experience in a large firm	.134*** (.022)	.115*** (.016)	.046** (.023)	.035** (.018)
Experience in a foreign firm	.058** (.025)	.047** (.019)	.017 (.027)	.012 (.021)
Number of different employers	.160*** (.010)	.164*** (.007)	.218*** (.009)	.197*** (.007)
Recent displacement due to employer's closure	-.090*** (.022)	-.166*** (.017)	-.148*** (.024)	-.216*** (.018)
Recent displacement due to employer's downsizing	-.061 (.038)	-.168*** (.031)	-.291*** (.047)	-.358*** (.036)
Years of experience in the sector	.008*** (.004)	.0301*** (.003)	.085*** (.003)	.082*** (.002)
Individual-level characteristics				
Male	-.050*** (.013)	-.042*** (.010)	-.027** (.012)	-.030*** (.009)
Age	.040*** (.005)	.026*** (.004)	-.086*** (.004)	-.072*** (.003)
Age squared/100	-.057*** (.006)	-.039*** (.004)	.101*** (.005)	.082*** (.004)
9 years of schooling [b]	.085*** (.020)	.072*** (.015)	-.009 (.018)	-.003 (.014)
12 years of schooling [b]	.066*** (.020)	.056*** (.015)	-.006 (.018)	-.010 (.014)
College education [b]	-.091*** (.021)	-.061*** (.016)	.063*** (.018)	.033** (.014)
Firm-level characteristics				
Small firm [c]	-.473*** (.025)	-.310*** (.018)	.210*** (.016)	.180*** (.012)
Medium firm [c]	-.816*** (.080)	-.468*** (.051)	.351*** (.033)	.322*** (.028)
Large firm [c]	-1.582*** (.334)	-.727*** (.217)	.676*** (.081)	.638*** (.064)
Constant	-2.469*** (.104)	-1.786*** (.080)	-.939*** (.091)	-.543*** (.071)
Industry dummies (2-digit)	Yes	Yes	Yes	Yes
Number of observations	56,391	742,569	56,391	742,569

Number of uncensored observations	–	53,575	–	53,575
ϱ	–	.250***	–	.250***
Log pseudo-likelihood	-49461.110	-226510.620	-56412.898	-233619.290

Values in parentheses are robust standard errors * , ** , and *** denote significant at 10, 5, and 1 %, respectively. Reference categories: [a] Start-up entrepreneurs alone; [b] less than 9 years of schooling; [c] micro firms.

Table 6 presents the results of exponential duration models estimating the hazard of exit from business ownership in Portugal over the period 2010–2022, distinguishing between exits by dissolution and exits by OT. For each exit route, two specifications are reported: a baseline model without selection and a model that accounts for selection. The estimations control for a range of individual-level characteristics, prior labor market experiences, entry mode, and firm-level characteristics, as well as industry fixed effects.

Considering the baseline models without selection, the estimation results reveal distinct patterns in the determinants of exit from business ownership by dissolution and OT. In the case of exit by dissolution, entry as acquisition entrepreneurs and intrapreneurs is associated with a lower hazard of exit compared to entry as start-up entrepreneurs, in line with Xi et al. (2020). Moreover, entry with shared ownership consistently reduces the hazard of exit relative to the corresponding entry mode alone. In contrast, for exit by OT, acquisition entrepreneurs and intrapreneurs exhibit a higher hazard of exit compared to start-ups, and shared ownership increases the hazard relative to single ownership within the same entry mode. A plausible justification is that acquisition entrepreneurs and intrapreneurs enter with pre-existing organizational structures, external networks, and market knowledge, which can reduce the probability of dissolution but make these firms more attractive candidates for sale. Similarly, shared ownership enables entrepreneurs to pool human, social, and financial capital, which may lower the probability of dissolution, but increase the probability of a successful exit by OT.

Regarding prior labor market experience, more years employed in a large firm is associated with an increased hazard of exit by both dissolution and OT, consistent with the argument that careers in bureaucratic environments may hinder the development of the skills necessary for successful entrepreneurship (Sørensen, 2007). Similarly, having a greater number of previous employers is also linked to higher exit hazards across both exit routes, which aligns with evidence that although diverse work experience facilitates entrepreneurial

entry (see Table 2), it does not necessarily improve entrepreneurial performance (Åstebro & Thompson, 2011). In contrast, recent displacement events, whether due to employer closure or downsizing, reduce the hazard of exit in both exit categories. This finding diverges from prior studies (Andersson & Wadensjö, 2007; Carrasco, 1999; Taylor, 2001).

With respect to individual-level characteristics, male entrepreneurs tend to have a lower hazard of exit across both types of exit, which may reflect the fact that a much higher proportion of women exit their business due to family care responsibilities (Taylor, 2001). In terms of age, the relationship with exit hazard differs by exit type: exit by dissolution follows an inverted U-shaped pattern, whereas exit by OT exhibits a U-shaped relationship. Additionally, holding a college degree decreases the hazard of exit by dissolution but increases the hazard of exit by OT, supporting the hypothesis that higher human capital reduces failure but increases opportunities for harvest exits (Wennberg et al., 2010).

Finally, the larger the firm, the lower the hazard of exit by dissolution, which is in line with previous literature (Dunne et al., 1989). In contrast, for exit by OT, larger firm size is associated with a higher hazard of exit, which is consistent with the idea that larger firms are more marketable for transfer (Wennberg et al., 2010).

These results are broadly consistent with the findings reported by Rocha et al. (2015), with one notable difference: whereas Rocha et al. (2015) find that more years of experience in the sector reduce the hazard of exit for both dissolution and occupational transitions, this dissertation finds that greater sector-specific experience is associated with a higher hazard of exit by both routes.

The selection parameter ϱ is positive and statistically significant, which confirms that individuals who become business owners are not a random sample of paid employees. Despite this, correcting for selection has little effect on the results: the signs of the estimated coefficients remain unchanged, and the magnitudes are broadly similar when comparing models with and without the selection correction.

7. Discussion and Conclusion

This dissertation set out to extend the analysis of entrepreneurial entry and exit dynamics originally undertaken by Rocha et al. (2015), by applying their methodological framework to a more recent period, 2010–2022. The objective was to investigate whether the determinants of entrepreneurial entry and exit in Portugal have evolved in light of significant economic, social, and institutional transformations.

7.1 Main results

To examine the factors influencing entrepreneurial entry, we use a multinomial discrete choice logit model. The dependent variable distinguishes between start-up entrepreneurs, acquisition entrepreneurs, intrapreneurs, and never business owners (which is the base outcome). The model incorporates a comprehensive set of controls, including individual-level characteristics, prior labor market experiences, and previous wage job attributes, as well as macroeconomic, industry, regional, and year fixed effects. The main findings are:

- Prior experience in large or foreign firms reduces the probability of entry into entrepreneurship.
- Having worked for a greater number of employers increases the likelihood of becoming a start-up or acquisition entrepreneur but decreases the likelihood of becoming an intrapreneur.
- Management experience raises the probability of all forms of entrepreneurial entry.
- Higher wages in the previous job lower the probability of entry for start-up entrepreneurs and intrapreneurs.
- Entry is more likely among men and individuals with higher levels of education.
- Entry follows an inverted U-shape with respect to age and tenure.
- Higher unemployment rates are associated with greater entry into all types of entrepreneurship.

To analyze entrepreneurial exit, we applied a competing risks model, where the dependent variable distinguishes between exit by dissolution and exit by ownership transfer (OT). The model controls for entry mode, prior labor market experiences, individual-level characteristics, firm-level attributes, and industry, regional, and duration dummies. The results form the basis for the calculation of the duration dependence of dissolution and OT by mode of entry (see Figure 3), which show that:

- The likelihood of exit through dissolution or OT declines as the business ages, regardless of the entrepreneur's mode of entry.
- Entrepreneurs are more likely to exit via ownership transfer than through dissolution.

To further explore the determinants of entrepreneurial exit, we estimate exponential duration models, distinguishing between exit by dissolution and exit by OT. For each exit route, we report both a baseline specification and an alternative that accounts for selection. The models control for individual-level characteristics, prior labor market experiences, entry mode, and firm-level attributes, as well as industry fixed effects. The analysis reveals that:

- Acquisition entrepreneurs and intrapreneurs show a lower hazard of exit by dissolution but a higher hazard of exit by OT compared to start-ups.
- Shared ownership has a lower hazard of exit by dissolution and a higher hazard of exit by OT.
- Experience in large firms and having more previous employers increase the hazard of exit through both dissolution and transfer.
- Recent displacement reduces the hazard of exit.
- Male entrepreneurs have a lower hazard of exit in both categories.
- Age has an inverted U-shaped relationship with dissolution and a U-shaped relationship with OT.
- Holding a college degree decreases the hazard of exit by dissolution while increasing the hazard of exit by OT.

- Larger firms have a lower hazard of exit by dissolution but a higher hazard of exit by OT.

These results are broadly in line with Rocha et al. (2015), indicating that the main patterns of entrepreneurial entry and exit in Portugal have remained stable over time.

7.2 Public Policy Recommendations

These findings carry several implications for economic policy. First, given that displaced workers are more likely to enter entrepreneurship and have a lower hazard of exit, policies that facilitate entrepreneurship among the unemployed, such as retraining programs, start-up subsidies, or credit support, could serve as effective tools to stabilize the labor market and foster economic growth. Displaced workers may lack the financial and advisory resources to start a business, and supporting their entrepreneurship can generate positive spillovers (Los & Verspagen, 2000; Nordhaus, 2004) that benefit consumers, workers, and local communities. To be effective, such policies should adhere to three key principles: generate additional entrepreneurship rather than merely displace existing firms, target support to viable businesses with realistic prospects of survival and growth, and remain simple enough for participants to access while keeping administrative costs manageable (Parker, 2018). In Portugal, two programs exemplify policies supporting displaced workers' entrepreneurship: the *Programa de Apoio ao Empreendedorismo e à Criação do Próprio Emprego* (PAECPE), and the European Union's *European Globalisation Adjustment Fund* (EGF). PAECPE provides individuals receiving unemployment benefits with full or partial advance payment of unemployment benefits and access to credit with more advantageous conditions, enabling them to start their own businesses and transition into self-employment. Similarly, EGF supports workers in European Union displaced due to structural changes in the economy by offering counseling, training, and credit. Despite the apparent benefits of programs such as PAECPE and the EGF, there is currently insufficient data and limited empirical research to rigorously evaluate their impact on entrepreneurial entry and success (Claeys & Sapir, 2020). To enable a proper evaluation, it is essential to systematically collect and publish data on participants, including their demographic profile, firm-level characteristics, as well as the financial support they received through the program. Making such data publicly accessible would allow researchers to rigorously evaluate the effectiveness

of these programs and inform the design of future policies aimed at promoting sustainable entrepreneurship among displaced workers.

Second, since college education increases the probability of entrepreneurial entry, reduces the hazard of exit through dissolution, and increases the hazard of exit through OT, expanding access to higher education could enhance both the quantity and quality of entrepreneurial activity. Expanding access to higher education could be pursued through multiple channels, which include: reducing financial barriers via scholarships, grants, or low-interest student loans (Nguyen et al., 2019); promoting flexible and part-time study options to accommodate working adults (Duarte et al., 2018); and strengthening vocational and entrepreneurship-oriented curricula to better equip students with practical skills, including the access to incubators (Zhao et al., 2022). The positive spillovers generated by the additional entrepreneurs, through innovation, job creation, and knowledge diffusion (Los & Verspagen, 2000; Nordhaus, 2004), could help offset part of the costs of these measures. Beyond entrepreneurship, expanding access to higher education has other benefits which would help justify the costs: it reduces income inequality (Coady & Dizioli, 2018), fosters social mobility (Chetty et al., 2017), and enhances economic growth (Gyimah-Brempong et al., 2006; Pastor et al., 2018).

Third, the persistence of gender disparities in entrepreneurial entry and survival underscores the need for targeted interventions that support female entrepreneurs. For instance, childcare policies would help reduce the unequal distribution of family responsibilities between men and women, which often contributes to higher business exit rates among female entrepreneurs compared to their male counterparts (Taylor, 2001). Similarly, targeted financial support would addresses the gender-based gap in credit access (de Andrés et al., 2021). Together, these measures would lower the barriers and opportunity costs of entrepreneurship for women, enhance business viability, and contribute to narrowing the gender gap in entrepreneurial activity.

7.3 Limitations and Avenues for Future Research

This dissertation faces both methodological and data-related limitations. With respect to methodological limitations, unobserved confounders (such as entrepreneurial motivation, risk preferences, or access to informal financing) are not directly measured or instrumented, which may bias the estimates. The "recent displacement due to downsizing" variable, defined

as a workforce reduction of at least 30% and a minimum of 5 employees, relies on an arbitrary threshold, and alternative cut-offs could lead to different results. The competing risks framework assumes independence between the times of different exit types, or at least that each event is non-informative for the others, an assumption that may not fully hold in practice. Finally, while Weibull and exponential models were employed, alternative models could capture the underlying duration and hazard function differently.

Turning to data-related limitations, the analysis is constrained by the scope of the *Quadros de Pessoal* dataset, which excludes forms of entrepreneurship conducted via "recibos verdes" or through firms without employees. The workers dataset does not allow identification of the precise reasons for exit, which could stem from unemployment, inactivity, transitions to self-employment through "recibos verdes" or without employees, or movement into the public sector. The analysis cannot distinguish high- from low-performance exits, and interpreting exit by dissolution as low performance and exit by OT as high performance is simplistic, since results can differ significantly between harvest or distress exits for both exit routes (Wennberg et al., 2010). Lastly, results are context-dependent and may not generalize to countries with different institutional environments or to other historical periods.

Several directions for future research arise from these limitations. Extending the analysis to incorporate firm performance variables such as revenues, profits, or innovation outcomes would allow for a richer understanding of entrepreneurial success. Including additional individual-level characteristics, such as marital status, parental background, and number of children could shed light on the role of family and social capital. The role of migrants in shaping entrepreneurial dynamics in Portugal is another promising area, given ongoing demographic change. Examining institutional determinants, such as labor regulation, bankruptcy law and taxation, through cross-country comparisons could provide more generalizable insights. Finally, future research should place greater emphasis on understanding the persistent gender gap in both entrepreneurial entry and exit dynamics.

Appendix

Table 7: Description of variables

Variables	Description of variables
Prior experiences in the labor market as paid employee	
Experience in a large firm	Years of experience (as paid employee) in large-sized firms (250 + employees)
Experience in a foreign firm	Years of experience (as paid employee) in foreign-owned firms (foreign capital ≥ 50 %)
Number of different jobs	Number of different firms where the individual has already worked as paid employee until period t
Recent displacement caused by previous employer's closure	Dummy = 1 if the individual has exited (in t-1 or t-2) a previous job in a firm that closed down
Recent displacement caused by previous employer's downsizing	Dummy = 1 if the individual has exited (in t-1 or t-2) a previous job in a firm that suffered a significant downsizing (greater than or equal to 30 % of the workforce, with a minimum number of 5 displacements)
Experience in the sector	Number of years of experience (as paid employee) in the sector (2-digit) where the individual has entered as business owner
Macroeconomic environment	
Lagged unemployment rate	Annual lagged unemployment rate (1-year lag)
Entry mode	
Start-up entrepreneur alone	Dummy = 1 if the individual becomes a Nascent Entrepreneur by establishing a new business alone; 0 otherwise
Start-up entrepreneur shared	Dummy = 1 if the individual becomes a Nascent Entrepreneur by establishing a new business with others; 0 otherwise
Acquisition entrepreneur alone	Dummy = 1 if the individual becomes a Nascent Entrepreneur by acquiring an existing business alone; 0 otherwise
Acquisition entrepreneur shared	Dummy = 1 if the individual becomes a nascent entrepreneur by acquiring an existing business with others; 0 otherwise
Intrapreneur alone	Dummy = 1 if the individual becomes the only BO of the employer firm; 0 otherwise
Intrapreneur shared	Dummy = 1 if the individual becomes one of the BOs of the employer firm; 0 otherwise
Individual-level characteristics	
Male	Dummy = 1 for males, 0 for females
Age	Age of the individual in years, in period t
Age squared/100	Squared value of the age of the individual in period t, divided by 100
Less than 9 years of schooling	Dummy = 1 if the individual has less than 9 years of schooling completed in period t, 0 otherwise
9 years of schooling	Dummy = 1 if the individual has 9 years of schooling completed in period t, 0 otherwise
12 years of schooling	Dummy = 1 if the individual has 12 years of schooling completed in period t, 0 otherwise

College education	Dummy = 1 if the individual has a college degree (including masters and/or PhD degrees) in period t, 0 otherwise
Previous wage job characteristics	
Overeducation	Dummy = 1 if the individual was overeducated in the previous wage job, 0 otherwise
Tenure	Tenure of the worker in the previous wage job, in years
Tenure squared	Squared value of the individual's tenure in the previous wage job
Management position	Dummy = 1 if the individual occupied a top management position in the previous wage job, 0 otherwise
Hourly wage	Ratio of the base wage over the total number of normal hours worked in the reference month (wages in 2010 constant prices). Values in logs
Micro firm	Dummy = 1 if the firm where the individual was previously employed had less than 10 employees, 0 otherwise
Small firm	Dummy = 1 if the firm where the individual was previously employed had between 10 and 49 employees, 0 otherwise
Medium firm	Dummy = 1 if the firm where the individual was previously employed had between 50 and 249 employees, 0 otherwise
Large firm	Dummy = 1 if the firm where the individual was previously employed had 250 or more employees, 0 otherwise
Industry dummies	Dummy variables for each 2-digit industry of the previous employer
Region dummies	Dummy variables for each NUTS II region of the previous employer
Firm-level characteristics[a]	
Firm age	Age of the firm in years
Firm age squared/100	Squared value of the firm age, divided by 100
Micro firm	Dummy = 1 if the BO's firm is micro-sized (less than 10 employees); 0 otherwise
Small firm	Dummy = 1 if the BO's firm is small-sized (10–49 employees); 0 otherwise
Medium firm	Dummy = 1 if the BO's firm is medium-sized (50–249 employees); 0 otherwise
Large firm	Dummy = 1 if the BO's firm is large-sized (250 or more employees); 0 otherwise
Industry dummies	Dummy variables for each 2-digit industry where the BO might be established
Region dummies	Dummy variables for each NUTS II region where the BO might be established

[a]These variables are only included in the estimations of duration models to study business owner's duration in the firm

Reference

Acs, Z. J., Braunerhjelm, P., Audretsch, D. B., & Carlsson, B. (2009). The knowledge spillover theory of entrepreneurship. *Small Business Economics*, *32*(1), 15-30. https://doi.org/10.1007/s11187-008-9157-3

Aghion, P., & Howitt, P. (1992). A Model of Growth Through Creative Destruction. *Econometrica*, *60*(2), 323-351. https://doi.org/10.2307/2951599

Andersson, P., & Wadensjö, E. (2007). Do the unemployed become successful entrepreneurs? *International Journal of Manpower*, *28*(7), 604-626. https://doi.org/10.1108/01437720710830070

Andersson, P., & Wadensjö, E. (2013). The best and the brightest or the least successful? Self-employment entry among male wage-earners in Sweden. *Small Business Economics*, *40*(1), 155-172. https://doi.org/10.1007/s11187-011-9365-0

Åstebro, T., & Thompson, P. (2011). Entrepreneurs, Jacks of all trades or Hobos? *Research Policy*, *40*(5), 637-649. https://doi.org/10.1016/j.respol.2011.01.010

Banerjee, A. V., & Newman, A. F. (1993). Occupational Choice and the Process of Development. *Journal of Political Economy*, *101*(2), 274-298. https://doi.org/10.1086/261876

Bastié, F., Cieply, S., & Cussy, P. (2013). The entrepreneur's mode of entry: the effect of social and financial capital. *Small Business Economics*, *40*(4), 865-877. https://doi.org/10.1007/s11187-011-9391-y

Bates, T. (1995). Self-employment entry across industry groups. *Journal of Business Venturing*, *10*(2), 143-156. https://doi.org/10.1016/0883-9026(94)00018-P

Bazzi, S., Muendler, M.-A., Oliveira, R. F., & Rauch, J. E. (2023). *Credit Supply Shocks and Firm Dynamics: Evidence from Brazil* (Working Paper No. 31721). National Bureau of Economic Research. https://doi.org/10.3386/w31721

Berglann, H., Moen, E. R., Røed, K., & Skogstrøm, J. F. (2011). Entrepreneurship: Origins and returns. *Labour Economics*, *18*(2), 180-193. https://doi.org/10.1016/j.labeco.2010.10.002

Block, J., & Sandner, P. (2009). Necessity and Opportunity Entrepreneurs and Their Duration in Self-employment: Evidence from German Micro Data. *Journal of Industry, Competition and Trade*, *9*(2), 117-137. https://doi.org/10.1007/s10842-007-0029-3

Block, J., Thurik, R., van der Zwan, P., & Walter, S. (2013). Business Takeover or New Venture? Individual and Environmental Determinants from a Cross–Country Study. *Entrepreneurship Theory and Practice*, *37*(5), 1099-1121. https://doi.org/10.1111/j.1540-6520.2012.00521.x

Bloom, N., Guvenen, F., Smith, B. S., Song, J., & von Wachter, T. (2018). The Disappearing Large-Firm Wage Premium. *AEA Papers and Proceedings*, *108*, 317–322. https://doi.org/10.1257/pandp.20181066

Boehmke, F. J., Morey, D. S., & Shannon, M. (2006). Selection Bias and Continuous-Time Duration Models: Consequences and a Proposed Solution. *American Journal of Political Science*, *50*(1), 192-207. https://doi.org/10.1111/j.1540-5907.2006.00178.x

Calvo, G. A., & Wellisz, S. (1980). Technology, Entrepreneurs, and Firm Size. *The Quarterly Journal of Economics*, *95*(4), 663-677. https://doi.org/10.2307/1885486

Cantillon, R. (1755). *Essai Sur la Nature du Commerce en Général* (1931 ed.). Macmillan.

Carpenter, C., & Loveridge, S. (2019). Factors Associated with Latino-Owned Business Survival in the United States. *Review of Regional Studies*, *49*. https://doi.org/10.52324/001c.7933

Carrasco, R. (1999). Transitions to and From Self-employment in Spain: An Empirical Analysis. *Oxford Bulletin of Economics and Statistics*, *61*(3), 315-341. https://doi.org/10.1111/1468-0084.00132

Chetty, R., Friedman, J. N., Saez, E., Turner, N., & Yagan, D. (2017). *Mobility Report Cards: The Role of Colleges in Intergenerational Mobility* (Working Paper No. 23618). National Bureau of Economic Research. http://doi.org/10.3386/w23618

Claeys, G., & Sapir, A. (2020). The European Globalisation Adjustment Fund: Easing the Pain from Trade? In L. Paganetto (Ed.), *Capitalism, Global Change and Sustainable Development* (pp. 97-110). Springer International Publishing. https://doi.org/10.1007/978-3-030-46143-0_7

Coady, D., & Dizioli, A. (2018). Income inequality and education revisited: persistence, endogeneity and heterogeneity. *Applied Economics*, *50*(25), 2747-2761. https://doi.org/10.1080/00036846.2017.1406659

Coase, R. H. (1937). The Nature of the Firm. *Economica*, *4*(16), 386-405. https://doi.org/10.1111/j.1468-0335.1937.tb00002.x

Colombelli, A., Krafft, J., & Vivarelli, M. (2016). To be born is not enough: the key role of innovative start-ups. *Small Business Economics*, *47*(2), 277-291. https://doi.org/10.1007/s11187-016-9716-y

Congregado, E., Golpe, A., & van Stel, A. (2012). The 'recession-push' hypothesis reconsidered. *International Entrepreneurship and Management Journal*, *8*(3), 325-342. https://doi.org/10.1007/s11365-011-0176-1

de Andrés, P., Gimeno, R., & Mateos de Cabo, R. (2021). The gender gap in bank credit access. *Journal of Corporate Finance*, *71*, 101782. https://doi.org/10.1016/j.jcorpfin.2020.101782

Dixit, A., & Rob, R. (1994). Switching Costs and Sectoral Adjustments in General Equilibrium with Uninsured Risk. *Journal of Economic Theory*, *62*(1), 48-69. https://doi.org/10.1006/jeth.1994.1003

Duarte, R., de Oliveira Pires, A. L., & Nobre, Â. L. (2018). Mature Learners' Participation in Higher Education and Flexible Learning Pathways: Lessons Learned from an Exploratory Experimental Research. In M. M. Nascimento, G. R. Alves, & E. V. A. Morais (Eds.), *Contributions to Higher Engineering Education* (pp. 33-53). Springer Singapore. https://doi.org/10.1007/978-981-10-8917-6_2

Dunne, T., Roberts, M. J., & Samuelson, L. (1989). The Growth and Failure of U. S. Manufacturing Plants. *The Quarterly Journal of Economics*, *104*(4), 671-698. https://doi.org/10.2307/2937862

Elfenbein, D. W., Hamilton, B. H., & Zenger, T. R. (2010). The Small Firm Effect and the Entrepreneurial Spawning of Scientists and Engineers. *Management Science*, *56*(4), 659-681. https://doi.org/10.1287/mnsc.1090.1130

Fairlie, R. W. (2013). Entrepreneurship, Economic Conditions, and the Great Recession. *Journal of Economics & Management Strategy*, *22*(2), 207-231. https://doi.org/10.1111/jems.12017

Ghatak, M., Morelli, M., & Sjöström, T. (2007). Entrepreneurial talent, occupational choice, and trickle up policies. *Journal of Economic Theory*, *137*(1), 27-48. https://doi.org/10.1016/j.jet.2006.02.007

Granovetter, M. (1985). Economic Action and Social Structure: The Problem of Embeddedness. *American Journal of Sociology*, *91*(3), 481-510. https://doi.org/10.1086/228311

Gyimah-Brempong, K., Paddison, O., & Mitiku, W. (2006). Higher education and economic growth in Africa. *The Journal of Development Studies*, *42*(3), 509-529. https://doi.org/10.1080/00220380600576490

Haapanen, M., & Tervo, H. (2009). Self-employment duration in urban and rural locations. *Applied Economics*, *41*(19), 2449-2461. https://doi.org/10.1080/00036840802360278

Heckman, J. J., & Honoré, B. E. (1989). The identifiability of the competing risks model. *Biometrika*, *76*(2), 325-330. https://doi.org/10.1093/biomet/76.2.325

Holmstrom, B., & Milgrom, P. (1994). The Firm as an Incentive System. *American Economic Review*, *84*(4), 972-991. http://www.jstor.org/stable/2118041

Hyytinen, A., & Maliranta, M. (2008). When Do Employees Leave Their Job for Entrepreneurship? *The Scandinavian Journal of Economics*, *110*(1), 1-21. https://doi.org/10.1111/j.1467-9442.2008.00522.x

Kihlstrom, R. E., & Laffont, J.-J. (1979). A General Equilibrium Entrepreneurial Theory of Firm Formation Based on Risk Aversion. *Journal of Political Economy*, *87*(4), 719-748. https://doi.org/10.1086/260790

Kirzner, I. M. (1973). *Competition and Entrepreneurship*. University of Chicago Press.

Kirzner, I. M. (1985). *Discovery and the Capitalist Process*. University of Chicago Press.

Klapper, L., Laeven, L., & Rajan, R. (2006). Entry regulation as a barrier to entrepreneurship. *Journal of Financial Economics*, *82*(3), 591-629. https://doi.org/10.1016/j.jfineco.2005.09.006

Knight, F. H. (1921). *Risk, Uncertainty and Profit*. Houghton-Mifflin.

Koellinger, P. D., & Roy Thurik, A. (2012). Entrepreneurship and the Business Cycle. *The Review of Economics and Statistics*, *94*(4), 1143-1156. https://doi.org/10.1162/REST_a_00224

Landier, A. (2005). Entrepreneurship and the Stigma of Failure. *Stern School of Business*. https://doi.org/10.2139/ssrn.850446

Lazear, E. P. (2004). Balanced Skills and Entrepreneurship. *American Economic Review*, *94*(2), 208-211. http://www.jstor.org/stable/3592884

Leibenstein, H. (1968). Entrepreneurship and Development. *American Economic Review*, *58*(2), 72-83. http://www.jstor.org/stable/1831799

Livanos, I. (2009). What determines self-employment? A comparative study. *Applied Economics Letters*, *16*(3), 227-232. https://doi.org/10.1080/13504850601018320

Los, B., & Verspagen, B. (2000). R&D spillovers and productivity: Evidence from U.S. manufacturing microdata. *Empirical Economics*, *25*(1), 127-148. https://doi.org/10.1007/s001810050007

Lucas, R. E. (1978). On the Size Distribution of Business Firms. *The Bell Journal of Economics*, *9*(2), 508-523. https://doi.org/10.2307/3003596

McClelland, D. C. (1961). *The achieving society*. Van Nostrand.

Millán, J. M., Congregado, E., & Román, C. (2012). Determinants of self-employment survival in Europe. *Small Business Economics*, *38*(2), 231-258. https://doi.org/10.1007/s11187-010-9260-0

Minniti, M., & Nardone, C. (2007). Being in Someone Else's Shoes: the Role of Gender in Nascent Entrepreneurship. *Small Business Economics*, *28*(2), 223-238. https://doi.org/10.1007/s11187-006-9017-y

Narendranathan, W., & Stewart, M. B. (1991). Simple Methods for Testing for the Proportionality of Cause-Specific Hazards in Competing Risks Models. *Oxford Bulletin of Economics and Statistics*, *53*(3), 331-340. https://doi.org/10.1111/j.1468-0084.1991.mp53003007.x

Nguyen, T. D., Kramer, J. W., & Evans, B. J. (2019). The Effects of Grant Aid on Student Persistence and Degree Attainment: A Systematic Review and Meta-Analysis of the Causal Evidence. *Review of Educational Research*, *89*(6), 831-874. https://doi.org/10.3102/0034654319877156

Nickerson, J. A., & Silverman, B. S. (2003). Why aren't all Truck Drivers Owner-Operators? Asset Ownership and the Employment Relation in Interstate for-hire Trucking. *Journal of Economics & Management Strategy*, *12*(1), 91-118. https://doi.org/10.1111/j.1430-9134.2003.00091.x

Nordhaus, W. D. (2004). *Schumpeterian profits in the American economy: Theory and measurement* (Working Paper No. 10433). National Bureau of Economic Research. https://doi.org/10.3386/w10433

OECD. (n.d.-a). *Consumer price index in Portugal 2010–2022* [Dataset]. OECD Data Explorer. https://data-explorer.oecd.org/vis?lc=en&fs[0]=Topic%2C1%7CEconomy%23ECO%23%7CPrices%23ECO_PRI%23&pg=0&fc=Topic&bp=true&snb=30&vw=tb&df[ds]=dsDisseminateFinalDMZ&df[id]=DSD_PRICES%40DF_PRICES_ALL&df[ag]=OECD.SDD.T

PS&df[vs]=1.0&dq=PRT.A.N.CPI.IX._T.N.GY%2B_Z&pd=2010%2C2022&to[TIME_PERIOD]=false

OECD. (n.d.-b). *Unemployment rate in Portugal 2010–2022* [Dataset]. OECD Data Explorer. https://data-explorer.oecd.org/vis?pg=0&snb=1&vw=tb&df[ds]=dsDisseminateFinalDMZ&df[id]=DSD_LFS%40DF_IALFS_INDIC&df[ag]=OECD.SDD.TPS&df[vs]=1.0&dq=PRT.UNE_LF...N._T.Y_GE15..A&to[TIME_PERIOD]=false&lb=nm&lc=en&pd=2010%2C2022

Parker, S. C. (2005). Explaining Regional Variations in Entrepreneurship as Multiple Occupational Equilibria. *Journal of Regional Science*, *45*(4), 829-850. https://doi.org/10.1111/j.0022-4146.2005.00394.x

Parker, S. C. (2009). Why do small firms produce the entrepreneurs? *The Journal of Socio-Economics*, *38*(3), 484-494. https://doi.org/10.1016/j.socec.2008.07.013

Parker, S. C. (2011). Intrapreneurship or entrepreneurship? *Journal of Business Venturing*, *26*(1), 19-34. https://doi.org/10.1016/j.jbusvent.2009.07.003

Parker, S. C. (2018). *The Economics of Entrepreneurship* (2nd ed.). Cambridge University Press. https://doi.org/10.1017/9781316756706

Parker, S. C., & Belghitar, Y. (2006). What Happens to Nascent Entrepreneurs? An Econometric Analysis of the PSED. *Small Business Economics*, *27*(1), 81-101. https://doi.org/10.1007/s11187-006-9003-4

Parker, S. C., & van Praag, C. M. (2012). The entrepreneur's mode of entry: Business takeover or new venture start? *Journal of Business Venturing*, *27*(1), 31-46. https://doi.org/10.1016/j.jbusvent.2010.08.002

Pastor, J. M., Peraita, C., Serrano, L., & Soler, Á. (2018). Higher education institutions, economic growth and GDP per capita in European Union countries. *European Planning Studies*, *26*(8), 1616-1637. https://doi.org/10.1080/09654313.2018.1480707

Poschke, M. (2013). Who becomes an entrepreneur? Labor market prospects and occupational choice. *Journal of Economic Dynamics and Control*, *37*(3), 693-710. https://doi.org/10.1016/j.jedc.2012.11.003

Rider, C. I., Thompson, P., Kacperczyk, A., & Tåg, J. (2019). Experience and Entrepreneurship: A Career Transition Perspective. *ILR Review*, *72*(5), 1149-1181. https://doi.org/10.1177/0019793919852919

Rocha, V., Carneiro, A., & Varum, C. A. (2015). Entry and exit dynamics of nascent business owners. *Small Business Economics*, *45*(1), 63-84. https://doi.org/10.1007/s11187-015-9641-5

Rotter, J. B. (1966). Generalized expectancies for internal versus external control of reinforcement. *Psychological Monographs: General and Applied*, *80*(1), 1-28. https://doi.org/10.1037/h0092976

Say, J.-B. (1828). *Cours Complet d'Economie Politique Pratique*. Chez Rapilly Libraire.

Schumpeter, J. (1934). *The Theory of Economic Development*. Harvard University Press.

Sherer, P. D., Rogovsky, N., & Wright, N. (1998). What Drives Employment Relationships in Taxicab Organizations? Linking Agency to Firm Capabilities and Strategic Opportunities. *Organization Science*, *9*(1), 34-48. https://doi.org/10.1287/orsc.9.1.34

Siemer, M. (2014). *Firm Entry and Employment Dynamics in the Great Recession* (Working Paper No. 2014-56). Federal Reserve Board. https://ssrn.com/abstract=3879387

Sørensen, J. B. (2007). Bureaucracy and Entrepreneurship: Workplace Effects on Entrepreneurial Entry. *Administrative Science Quarterly*, *52*(3), 387-412. https://doi.org/10.2189/asqu.52.3.387

Stam, E., Thurik, R., & van der Zwan, P. (2010). Entrepreneurial exit in real and imagined markets. *Industrial and Corporate Change*, *19*(4), 1109-1139. https://doi.org/10.1093/icc/dtp047

Taylor, M. P. (2001). Survival of the Fittest? An Analysis of Self-Employment Duration in Britain. *The Economic Journal*, *109*(454), 140-155. https://doi.org/10.1111/1468-0297.00422

van der Sluis, J., van Praag, M., & Vijverberg, W. (2008). Education and entrepreneurship selection and performance: A review of the empirical literature. *Journal of Economic Surveys*, *22*(5), 795-841. https://doi.org/10.1111/j.1467-6419.2008.00550.x

van der Straaten, K., Pisani, N., & Kolk, A. (2020). Unraveling the MNE wage premium. *Journal of International Business Studies*, *51*(9), 1355-1390. https://doi.org/10.1057/s41267-019-00285-x

van der Zwan, P., Thurik, R., Verheul, I., & Hessels, J. (2016). Factors influencing the entrepreneurial engagement of opportunity and necessity entrepreneurs. *Eurasian Business Review*, *6*(3), 273-295. https://doi.org/10.1007/s40821-016-0065-1

Vanoorbeek, H. (2022). *A Constitutive View on Entrepreneurship Through Acquisition: Towards a Conceptual Framework* (Publication Number 191831) [Doctoral dissertation, Antwerp Management School]. Antwerp Management School Repository. https://hdl.handle.net/10067/1918310151162165141

von Greiff, J. (2009). Displacement and self-employment entry. *Labour Economics*, *16*(5), 556-565. https://doi.org/10.1016/j.labeco.2009.02.005

Wennberg, K., Wiklund, J., DeTienne, D. R., & Cardon, M. S. (2010). Reconceptualizing entrepreneurial exit: Divergent exit routes and their drivers. *Journal of Business Venturing*, *25*(4), 361-375. https://doi.org/10.1016/j.jbusvent.2009.01.001

Xi, G., Block, J., Lasch, F., Robert, F., & Thurik, R. (2020). The survival of business takeovers and new venture start-ups. *Industrial and Corporate Change*, *29*(3), 797-826. https://doi.org/10.1093/icc/dtz076

Yu, X., Hu, D., & Hu, M. (2024). Unveiling the impact of housing debt on entrepreneurship: Evidence from China. *Asia & the Pacific Policy Studies*, *11*(2), e388. https://doi.org/10.1002/app5.388

Zhao, Y., Zhao, X., Shi, J., Du, H., Marjerison, R. K., & Peng, C. (2022). Impact of entrepreneurship education in colleges and universities on entrepreneurial entry and performance. *Economic Research-Ekonomska Istraživanja*, *35*(1), 6165-6184. https://doi.org/10.1080/1331677X.2022.2048189

Zou, J., Yao, L., Lan, X., & Deng, X. (2023). Promoting or inhibiting: The role of socio-economic integration on migrant entrepreneurship. *Transactions in Planning and Urban Research*, *2*(4), 432-458. https://doi.org/10.1177/27541223231216655

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